Pollardine Farm 211 DEFRA Test - Final Report, June 2021

T&T name	Pollardine Farm 211
Author (individual)	Elizabeth Hulton-Harrop
Organisation	NA
Date submitted	30th June 2021
Reviewer name	Farah Akthar

Contents

Executive Summary

The Proposal submitted to DEFRA in May 2020 was to undertake a 'Test' as part of the Test & Trials programme to inform the development of future Environmental Land Management schemes. The Test was explorative and iterative, and looked at what might form the building blocks of future schemes. It primarily looked at the use of technology among farmers/landowners and the feasibility of using a digital mapping tool to create individual and collaborative Land Management Plans. The themes of advice, payments and spatial prioritisation were also discussed with the participants but in less detail. The Report makes recommendations on how these themes could be examined further in a future Test & Trial based on the initial findings.

The Test aimed to answer the following research questions:
- What mechanism will participants use to plan and record which public goods they will deliver? (Land Management Plans)
- What data/information will participants require? (Land Management Plans)
- What expert support will participants require to help them plan and record which public goods they will deliver? (Advice)
- How are you setting payment rates for outcomes? (Payments)
- How do we encourage and incentivise collaboration for the delivery of public goods? (Spatial Prioritisation)

The Test used a mixed-methods approach, collecting qualitative and quantitative data to address the questions listed above. This included two questionnaires, five in-person training sessions, and two in-person group workshops. The Test was developed and delivered by Elizabeth Hulton-Harrop, a landowner in South Shropshire, and it involved ten local participants covering an area of approximately 1,700 acres.

At the outset, the aim was to undertake the Test with farmers/landowners with adjoining land. However, seven local farmers/landowners who were invited to participate declined and two local farmers/landowners did not respond to the invitation. This meant that Elizabeth was required to look further afield for people to be involved. It is recommended that a future Test & Trial looks into the reasons why these farmers/landowners did not want to participate and to see if/how attitudes have changed over the last twelve months. This was one of the limitations of the approach.

Other limitations included the Test being developed and delivered entirely by Elizabeth Hulton-Harrop, who as a landowner herself, has ideas and opinions on the content and mechanics of future Environmental Land Management schemes. This may have influenced the design of the Test and the facilitation of discussions. Elizabeth was aware of this limitation from the outset and put mitigation strategies in place to try to limit this subjectivity. These are discussed in Section 2.5 of the Report.

The top five key learning points of the Test are:

1. The digital systems selected/accepted for future Environmental Land Management schemes need to be **compatible with one another and accessible across a range of devices** for the following reasons:
   a. The participants in this Test have experienced difficulties in the past where different mapping systems have conflicted with one another (for example, giving different boundaries/acreages) and they do not want to see this problem continue in future schemes.
   b. Two of the participants in this Test only use a mobile or a tablet to record information about their land management. This shows that even with a small sample, a range of devices are used.
2. If entrants to future Environmental Land Management schemes are expected to use digital software to monitor and record the public goods they are delivering, **training must be available**. Ideally, the training would be designed and delivered by a local person (for example, a member of the farm cluster) so that it could be tailored and continually improved as feedback is received.
3. The training (described above) must be **made available to the person using technology** in the land business. In 4/10 cases in this Test, the person using the technology was not the frontline farmer/landowner, it was their partner/sibling/children/agent.
4. **Local knowledge** must be respected as a form of advice. Some participants in the Test have farmed in this area for over forty years and know the land, as well as its history, in great detail. This knowledge is an asset and needs to be valued by future schemes. An introduction to collaboration among farmers/landowners could be based on knowledge sharing, showing what has and has not worked on group members' land in previous years.
5. Farmers/landowners who have been managing their land in an environmentally-friendly way for many years **must be rewarded by receiving an attractive maintenance payment** to continue doing so. A standard metric needs to be agreed to allow farmers/landowners to carry out straightforward calculations of the public goods they are delivering and their economic value.

1. Introduction

1.1 Background

The Pollardine Farm Test was developed by Elizabeth Hulton-Harrop, a landowner in South Shropshire. Elizabeth felt it essential that Tests & Trials are developed and facilitated by individual landowners and farmers, as well as larger organisations. Elizabeth grew up on her family farm in South Shropshire but only became involved in the business in 2018. She is passionate about seeing wide-scale nature recovery in her area that works symbiotically with food production. Elizabeth is determined to see future Environmental Land Management schemes work for landowners and farmers and is delighted to have had the opportunity to be part of the Test & Trials programme and have a voice in the schemes' development.

One of the first projects Elizabeth worked on when returning to the farm was finding a way to present key information about the farm that was easily accessible, interactive and gave a holistic view. The tool Elizabeth and her family felt most comfortable with and found easiest to use was Google My Maps.

At the beginning of the project, the mapping tool was mainly used to record infrastructure on the farm, such as the private water supply, but as farm projects developed Elizabeth saw using Google My Maps as a mechanism to record other areas of land management, such as woodland, grassland, watercourses, etc., to be increasingly useful.

Figure 1 - Pollardine Farm, Land Uses presented on Google My Maps
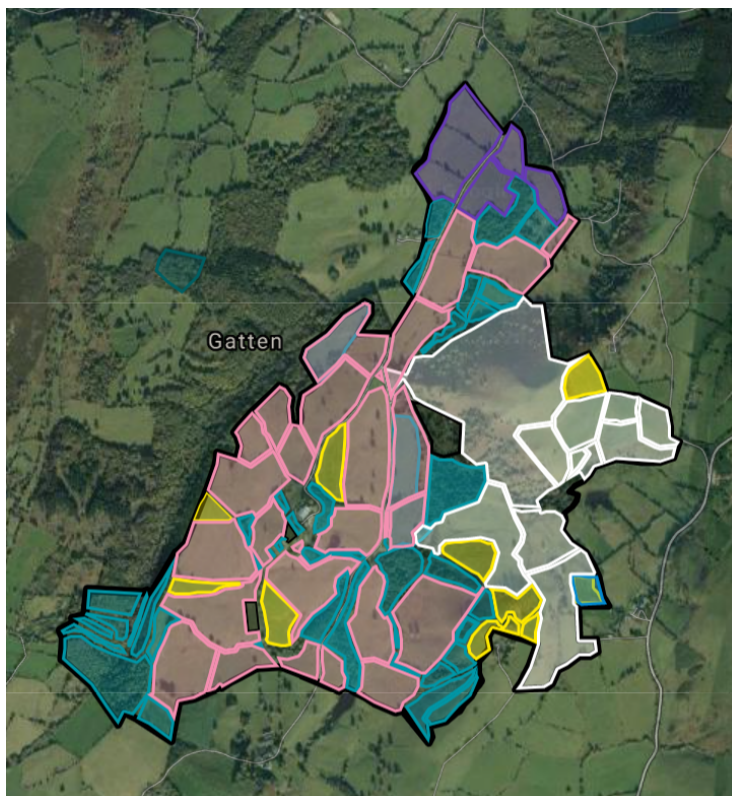
Elizabeth spoke to local environmental organisations about the tool and found enough interest to run a training session on Google My Maps in December 2019.

Figure 2: Elizabeth Hulton-Harrop facilitating a Google My Maps training session, December 2019

Given the interest among local organisations regarding the use of Google My Maps for recording land management practices and the value experienced by Elizabeth and her family of using the tool for day-to-day decision making, it seemed a significant opportunity to test the tool in more depth through the Test & Trials programme.

1.2 Participants selected for the Test

Instead of continuing to work with the group who had already received the training session (see above), of which most of the participants represented local environmental organisations, Elizabeth felt it important to work with local farmers/landowners whose livelihoods will be more directly affected by the roll out of Environmental Land Management schemes in the coming years. It was also considered crucial to work with people with a range of experience in digital technologies and particularly to give a voice to those who do not use technology in their farm business.

This Test involved 10 participants (farmers, landowners, and smallholders) all based in South Shropshire running a variety of enterprises (sheep, beef, woodland, shooting, deer, glamping, pigs, nature conservation and rewilding). The Test covered approximately 1,700 acres (rented land was not taken into account) and most of the area can be described as marginal upland (mostly severely disadvantaged).

The whole Test was facilitated by Elizabeth Hulton-Harrop, who will be referred to as the Facilitator from this point on in the Report.

1.3 Theme One - Land Management Plan

The primary theme running through the Pollardine Farm Test was the creation of Land Management Plans using a digital mapping mechanism (in this case, Google My Maps). This sought to answer the main policy question for the Land Management Plan theme, **'What mechanism will participants use to plan and record which public goods they will deliver?'**

To test whether Google My Maps could be a feasible mechanism for creating a Land Management Plan, the Test was broken down into the following areas:

- Participants were introduced to the concept of digital mapping as part of the questionnaire delivered by the Facilitator in Milestone #1. The participants were able to choose whether they would like to receive detailed in-person training or guidance documents only to create their Land Management Plan in Google My Maps.
- Milestone #2 saw the delivery of several 1:1 training sessions and the creation of guidance documents.
- Using the training/guidance documents from Milestone #2, the participants were given two months to create their Land Management Plan. The aim of these individual Land Management Plans was to show the delivery of public goods at present and the participants' aspirations for the future.
- The process of creating the Land Management Plan in Google My Maps was evaluated in Milestone #4 with an in-person questionnaire delivered by the Facilitator.
- The final Milestone saw the participants come together as a group to explore the creation of a landscape-scale Land Management Plan. Based on feedback from Milestone #4 and the complexity of this task, the software used to create this was the Land App as opposed to Google My Maps.
  - One session of the group workshop focussed on the Land Management Plan policy sub-question, **'What data/information will participants require?'** in relation to habitat creation/land-use change. The participants were asked to think about if/how they could use a combination of data sources to find out about local habitat and species data as either an enhancement to, or as a replacement for, an advisor.

To better understand the context of where farmers/landowners were coming from when creating their individual Land Management Plan in Google My Maps, the questionnaire in Milestone #1 looked broadly at the general ability of the participants regarding their computer use, particularly in relation to recording farm/land management work. It also investigated any barriers the

participants currently face or may face in future regarding the use of technology to access funding for the delivery of public goods, such as digital mapping, accessing digital data sources, and sharing information online.

1.4 Theme Two - Advice

As part of the creation of the individual Land Management Plans (undertaken by the participants), the theme of advice was explored. The Facilitator sought to respond to the main policy question, **'What expert support will participants require to help them plan and record which public goods they will deliver?'** by offering the participants a choice between in-person 1:1 training and/or guidance documents.

It is important to note that this part of the Test did not explore advice in relation to the delivery of the public goods themselves, rather the level of advice required by the participants to be able to independently use a digital mapping mechanism to record the delivery of their public goods at present and in the future. The former (advice on the public goods themselves) was addressed in Milestone #5 where the Facilitator engaged the participants in a discussion on what information they would need to deliver habitat creation and land-use change, which touched on the specific advice needed to help the participants prioritise public goods and ensure they are in line with local nature priorities.

1.5 Theme Three - Payments

The workshop delivered in the final stage of this Test gave the participants an opportunity to discuss how different payment models might work for maintaining the public goods they are already delivering and how farmers/landowners might be rewarded for creating new habitats/land-use change to increase the delivery of public goods.

The participants were specifically asked how, and for what, they should be paid in an environmental land management scheme, which included discussion on the positives and negatives of income forgone, costs of management, costs of management + profit, and payment by results. For this last category, the Facilitator encouraged discussion on how to place an economic value on the benefits delivered by different habitats and how this might be calculated, beginning to address the policy sub-question, **'How are you setting payment rates for outcomes?'**

Furthermore, participants were encouraged to think about payment rates in relation to short and long-term contracts and how this might affect their willingness to enter into a contract.

1.6 Theme Four - Spatial Prioritisation

Finally, the workshop allocated time to the Spatial Prioritisation theme, specifically looking at the sub-question, **'How do we encourage and incentivise collaboration for the delivery of public goods?'** The group discussed the opportunities and barriers to entering a collaborative contract (whether public or privately funded) in comparison to holding an individual contract and talked more generally about the advantages and disadvantages of working together on the delivery of public goods in a more informal way (e.g. knowledge sharing).

2. Methodology

To answer the questions asked by this Test, the Facilitator used a combination of both quantitative and qualitative data collection methods. These included:

- Questionnaires with mainly closed-ended questions (Milestones #1 and #4)
- 1:1 training sessions (Milestone #2)
- Open-ended data collection (Milestone #3)
- Group workshops (Milestone #5)

Each method is explained in more detail below.

2.1 Closed-ended questionnaires

Two questionnaires were undertaken as part of this Test. The purpose of the first questionnaire was to understand how the participants are currently recording their land management practices and whether they would consider recording this information on a digital map, with training if required. The questionnaire also gathered information on the participants' general views towards the use of technology for recording land management practices.

The purpose of the second questionnaire was to evaluate the process of creating a Land Management Plan using Google My Maps.

The Facilitator carried out both questionnaires in-person with each of the participants to encourage participation and reduce the time taken for questionnaires to be returned. The Facilitator asked the questions and recorded the participants' responses, which meant the data was collected in a consistent format and was easier to analyse following the completion of the 10 questionnaires. As the majority of the questions were closed-ended, the data were categorised and analysed as quantitative data.

2.2 1:1 Training sessions

In the questionnaire undertaken in Milestone #1, the participants were asked to select from a list of statements describing their level of confidence using Google My Maps and how much help they anticipated needing. Two participants requested 'detailed training' and one participant responded 'I don't think I'll be able to do it but try to convince me'. For these three participants, a 1:1 training session was provided.

For the 1:1 training sessions, the participants were required to bring their own devices and the Facilitator led the participants through the guidance document step-by-step using a monitor to demonstrate what to do/where to click etc. with the participant following along on their device.

As well as recording their feedback on Google My Maps as a tool to create a Land Management Plan, the Facilitator noted observations on the participants' use of technology to see how the training could be improved in the future. In contrast to the questionnaires, this is qualitative data

that was analysed according to thematic codes at the reporting stage. The same is true of the other data collection methods described in sections 2.3 and 2.4.

2.3 Open-ended data collection

In Milestone #3, the participants worked independently to create a Land Management Plan using Google My Maps. While there was no 'active' advice being given by the Facilitator during this Milestone, the participants were able to contact the Facilitator over email or telephone to ask questions if they were unsure of how to do something. The Facilitator recorded the incoming queries to help identify gaps in the guidance or to highlight information that was unclear. This data will be treated as qualitative.

2.4 Group workshops

The final Milestone involved running a workshop with the participants to explore the creation of a landscape-scale Land Management Plan as a group of 10 farmers/landowners and to discuss payment models and contract lengths for delivering public goods. Due to Covid-19 restrictions, the group had to be split in two and the workshop was run by the Facilitator over two consecutive days.

The Facilitator prepared an outline for the workshop to steer the discussion but otherwise the participants were able to speak freely in response to the questions posed. Several facilitation exercises were proposed to the group (e.g. writing on post-it notes, working in small groups) but as there were only a small number in each group, the participants preferred to work together.

The Facilitator recorded points made by the participants on a white board to give the group full visibility of the notes being taken. The Facilitator also made a conscious effort to record the number of participants agreeing/disagreeing with certain statements to ensure the correct weighting was given in the analysis of the data.

2.5 Limitations with the approach

The whole of this Test was developed and delivered by the Facilitator, Elizabeth Hulton-Harrop, who is herself a landowner with an interest in, and opinions on, the development of the Environmental Land Management schemes. It is therefore essential for the Facilitator to recognise her role in this Test and to ensure that when reporting the data, she must only report what is in the data, and her personal point of view and stance on the subject must be set aside. There is a particular risk of this in the reporting of the workshop data. To mitigate this risk, a participant from each of the workshops will 'sense-check' the Report to ensure it is fair in summarising what was said on the day.

Secondly, while the Facilitator has a high level of knowledge in terms of digital mapping, she has limited experience of the other themes addressed in the Test (advice, payments, spatial prioritisation). This means that the discussion facilitated during the workshops in Milestone #5 may have missed key areas or not drilled down into enough detail on the themes. However, the advantage of the workshops being delivered by Elizabeth is that the participants may have felt more at ease than if an unknown 'professional' had taken on the role (yet this is hard to qualify).

Thirdly, when the Test was initially designed, the Facilitator aimed to involve 10 adjoining landowners/farmers as this would have added weight to the discussion on landscape-scale management in Milestone #5. However, several landowners/farmers neighbouring Pollardine Farm declined the invitation to participate. The reasons for this were never fully explored; part of a second Test & Trial (if approved) would be to understand why these landowners did not want to be involved and what would encourage them to participate in future.

3. Results & Discussion

The results of the Test are presented in relation to the themes outlined in the Introduction. This section presents the key findings from each Milestone. The full results are available as appendices (please see Section 6).

3.1 Results & Discussion for the Land Management Plan theme
3.1.1 Use of technology in rural land management
As set out in the Methodology section, the first Milestone of the Test consisted of a questionnaire completed by each participant in-person with the Facilitator. To establish a baseline for how the participants felt about using technology as a tool for land management, they were asked to describe their thoughts towards it in a few sentences.

The percentage split between positive and negative comments in response to this question was 60/40, with 60% expressing more negative comments. Positive comments included:
- "I love it, it's very useful, I can record lots of data and keep it safe."
- "Technology is improving all the time, it is an essential tool in many strands of our business."
- "Positive - as long as it's accurate and easy to use."
- "Positive - always have done." [i.e. always felt this way]

Those who expressed more negative comments about the use of technology can be split into two categories:
1. Not looking to use technology in any way because **they are not interested.**
2. Not looking to use technology in any way because **another family member does it for them.**

> **The second point (above) is one of the key takeaways from this questionnaire. In 4/10 cases, the farmer/landowner participating in the Test is not the one using technology in their business. It is their wife/sibling/children/agent. This is important for the training aspect of this Test, as for these four participants, it needs to be made available to the family members/agent as well as the farmer/landowner.**

Other key findings on the use of technology were:
- 9/10 participants keep some digital records about their land/farm management.
- Comments for why participants keep digital records included:
  - "For ease of access, making alterations, and communicating with others."
  - "For those who manage the records [i.e. family members] it is easier on the computer."
  - "We usually record things on paper and then convert to a digital file."
  - "Because everybody else does and if that's what the world does, you have to be
  - compatible with that and other organisations."
  - "More secure to have multiple back-ups."
- One participant keeps mostly paper records. The reasons for doing this are fear of security breach, difficulty accessing records, increased risk of making mistakes, and unreliable systems, with the example, "I tried to do the Single Farm Payment online and the system crashed, so now I do it on paper."
- The most popular device used for recording/storing information for land management purposes was laptop, followed by mobile (4 participants) and tablet (1 participant).
- 5/10 participants said 'Access to training' would make it easier to record information about their land/farm on a digital device followed by 3 votes for 'More appropriate software' with one participant commenting "The people building the software need to understand how farms work."
- Software the participants are currently using for land management purposes are Microsoft Office (6/10), online accounting software (5/10), Rural Payments Agency (4/10), Google Drive (3/10), and MAGIC Maps (1/10).
- 2/10 participants already have a digital map of their land with one participant using Google My Maps and the other using an agent who has created digital maps. Any mentions of the digital maps on the Rural Payments Agency were discounted as these maps cannot be easily edited and used as a Land Management Plan.

A comment that was regularly fed back to the Facilitator was,
"Whatever digital mapping software is rolled out in the upcoming Environmental Land Management scheme, it needs to be compatible with, and not conflict with, other mapping systems."

Participants explained that in the past there have been difficulties where different mapping systems have conflicted with one another e.g. giving different boundaries/acreages and they do not want to see that happen with future schemes. Either different digital systems need to be able to 'talk to' each other or there needs to be an agreed platform for all scheme entrants to use.

3.1.2 Feedback on using Google My Maps as a mechanism to create a Land Management Plan (LMP)

To view the LMPs created by the participants, please see Appendix 3. To protect the identity of the participants, the website URLs for each LMP have been omitted. The Facilitator created an example LMP (available here) to show the interactive nature of the Google My Maps software.

Pros	Cons
Functionality ● Ability to add lines, polygons (areas) and individual markers. ● Ability to import data (CSV, TSV, KML, KMZ, GPX, XLSX, Google Sheet, one or more photos in Google Drive or Google Photos). ● Ability to link to information from a variety of sources giving access to a huge amount of information from one place. ● Layers - Having different sets of information in different layers and having the ability to turn the layers on and off to view the information either in isolation or holistically as a whole farm plan.	Limited functionality ● Can only view area units in hectares (not acres). ● Maximum of 10 layers available. ● Unzipped KML and KMZ files can be up to 5MB. Other files can be up to 40MB. Not possible to import national data sets to overlay on Google My Maps as they are too large. Participants wanted to be able to import data directly from the Rural Payments Agency and the Rural Land Registry.
Sharing options ● Easy to share by adding the recipient's email. The recipient does not need a Google account to view the LMP. ● By sharing the LMP, the recipient can only view the Google My Map and not any of the linked documents. This offers some protection to the participant if they want to share their LMP with others but keep the detail restricted.	Security issues ● Length of time LMP is shared with the recipient. Length of contract? Longer? ● Risk of information being shared more widely than intended. ● Information "getting into the wrong hands" (participant comment).
Control ● Farmer/landowner is in control of the information added as they are starting with a 'blank canvas'.	Accuracy ● Out-of-date satellite image. ● Blurry when zoomed in. ● Areas/distances do not take into account topography of the land therefore data does not match up to other systems e.g. Rural Payments Agency.

Ease of use
   ● The participants generally found Google My Maps easy to use (but difficult to say as 8/10 had not used a digital mapping tool before).
   ● Simplicity - only a limited amount of options to choose from; not overwhelmed by lots of buttons.
	Manual data input
	   ● Have to do everything from scratch i.e. add boundary, field parcels, public goods and this can easily lead to inaccuracies.
	   ● Data added in different formats by each participant.

Interactive
   ● Ability to click on everything added to the map, comment, personalise, etc.
	Device compatibility
	   ● Difficult to use on mobile/iPad (or any touch screen device).

Free to use	Access
	   ● Must have a Google account to access Google My Maps.
	   ● Must be connected to the internet to edit the LMP and save progress.

> **"We need a balance between having a system that is easy enough for all landowning/farming families to use, but one that is not too simplistic for what we want to achieve."**

The feedback on how well Google My Maps works as a land management tool was mixed. Some thought it was useful and will continue to use it, while others found it more difficult. There are limitations with the tool, particularly in relation to accurately mapping the participants' boundaries and land parcels. This process should be automated in the mapping system used in future Environmental Land Management schemes.

The participants liked how the Land Management Plan could act as the central 'hub' of information for their land/farm and how all supporting documentation could be accessed from there, but they would need more time/training/information to really see what can be done with the tool.

One participant commented, "A really interesting exercise. I think I will consider this a first draft, it's been really helpful to have a play with it."

In terms of future use, most of the participants will continue using Google My Maps and some will recommend it to others, while other participants are only interested in learning, setting up and using the mapping tool that is going to be required in future schemes.

3.1.3 What should be included in a Land Management Plan?
✔ Access to publicly available data on participant's land/farm.
✔ Access to data held by Rural Payments Agency on boundaries and field parcels.

✔ Detailed habitat classification e.g. types of grassland, woodland (to be categorised by the landowner/farmer unless publicly available data sets are accurate).
✔ Value of natural capital assets.
✔ Habitat management (cost of management and actions undertaken).
✔ Public goods derived from the management.
✔ Evidence to support the delivery of the public goods:
  - Photographs/videos stamped with time and date, and geotagged. Drone footage.
  - Carbon sequestration/storage measurements.
  - Benchmarking - take a reading at year 0, then again at 2 years, 5 years, etc. so the effects of the management can be recorded.
  - Invoices for fencing materials, labour, contractor, etc.
✔ Historic data - any data farmers/landowners already have on their land should be added to the Land Management Plan to help explain what is there now and what could be done in the future.
✔ Future plans for the delivery of public goods.
✔ All participants' farms/land holdings with above information to be shown on the same Land Management Plan.

While the participants are generally willing to include this information in a Land Management Plan, they will only do so if they can see the value in submitting this evidence i.e. positive feedback from the funder. Landowners/farmers must not be burdened with unnecessary bureaucracy.

3.1.4 Pros and cons of a collaborative Land Management Plan
In the workshop in Milestone #5, the participants were asked about the pros and cons of having a collaborative Land Management Plan and whether or not this would be preferred to having an individual Land Management Plan.

Pros	Cons
● Simplest way is to have one shared Land Management Plan in one place. ● One source of data, less chance of confusion/conflicting information.	● Who manages it? Risk of information being added incorrectly, deleted mistakenly, shared beyond group, etc. ● Would all participants have access? Different levels of access e.g. editor vs viewer. ● Would depend on who else is in the group.

3.2 Results & Discussion for the Advice theme
3.2.1 Feedback on the 1:1 training sessions
1:1 training sessions were offered in this Test on the use of Google My Maps to create a Land Management Plan. 5/10 participants attended a 1:1 training session. One participant attended two sessions as they needed additional guidance.

One of the key findings from the questionnaire in Milestone #1 was that it is often not the frontline farmer/landowner who is using the technology; it is a family member/agent. As a result of this, the training session was made available to both the frontline farmer/landowner and to the person who uses technology for their business purposes. 4/5 participants attended the training session with a family member.

While this was the case, a positive aspect of the training sessions was seeing the farmer/landowner want to get involved. They were engaging with the training and wanted to be the one adding things to the Land Management Plan. When the Facilitator explained each step, the farmer/landowner responded positively saying things like "Oh yes, I can see that", "Yes, I can do that."

The questionnaire delivered in Milestone #4 asked the participants to rate the 1:1 training session on a scale of 1-5 across the following areas: Delivery, Detail, Training Ratio, Frequency, Format. The results are presented below.

Delivery	★★★★★
Detail	★★★★★
Training Ratio	★★★★ (while some of the participants preferred 1:1, some would have been happy to do the training session in a group. Felt a peer learning setting would have been easier than a teacher/student environment.)
Frequency	★★★★ (for the task at hand, most were happy with 1-2 training sessions, but in a real-world scenario, multiple training sessions would have been useful.)
Format	★★★★

3/5 of the participants said the training 'significantly' increased their confidence in using technology to record land management practices. 2/5 said it increased their confidence 'a bit'. Most gave their answer in the context of the Test, not referring to the use of technology in general.

In terms of paying for a similar training session in the future, 3/5 participants said 'Yes', provided it was relevant to the business and a reasonable cost. One participant said outright 'No' and the other responded 'I don't know'.

3.2.2 Feedback on the written guidance
The Facilitator created three separate guidance documents on how to use Google My Maps to create a Land Management Plan to cater for the different devices used across the group (laptop/desktop, Android mobile phone and iPhone/iPad).

The aim of the guidance documents was to create something that could be easily followed by someone who has never used Google My Maps before. It therefore contains step-by-step instructions with screenshots and text to explain to the participant what needs to be done next. Participants were sent both digital and hard copies of the guidance for the device they were using.

Similar to the evaluation of the training sessions, the questionnaire undertaken in Milestone #4 asked the participants to rate the written guidance on a scale of 1-5 across the following areas: Layout, Difficulty to follow, Length, Detail and Format. The results are presented below.

Layout	★★★★
Difficulty to follow	★★★★ (1 star = very difficult, 5 stars = very easy)
Length	★★★★★
Detail	★★★★ (1 participant said had they only received the written guidance, they said they would have struggled.)
Format	Hard copied preferred

78% of participants who received the written guidance felt it increased their confidence 'significantly' in using technology to record their land management practices. Most gave this answer in the context of the Test, not referring to the use of technology in general.

One participant commented, "The guidance was like a bible!"

While 78% of participants said they would be interested in receiving similar guidance in the future on other types of software that could be used for land management purposes, two of the participants highlighted concerns about guidance being created for a range of mapping softwares.

> "I am interested in receiving the written guidance (or any other guidance) for the tool that we will be required to use for land management purposes in the future (i.e. in Environmental Land Management schemes)."

> "I am deeply concerned about compatibility issues with mapping systems. Subject to this system being compatible with everything else, yes I would be interested [in receiving guidance]."

The participants provided feedback on how the guidance could be improved. If this were a 'real-word' scenario, the Facilitator would be able to update the guidance to reflect the

participants' suggestions. This is the advantage of the guidance being created by farm-clusters, rather than top-down guidance documents that would be more difficult to update regularly.

For all the participants to have been able to create a Land Management Plan in Google My Maps without the option/addition of a 1:1 training session, the guidance would have needed to be more basic and the steps broken down better i.e. making no assumptions about any previous knowledge.

3.2.3 Need for advice in habitat creation/land-use change

In the workshop held in Milestone #5, the participants were asked about what information they would need if they wanted to create a new habitat on their land or undertake a land-use change project. Their responses are summarised below:

- Some participants have had bad experiences of advice from 'experts' in the past, so would probably not seek an individual's/organisation's advice on habitat creation/land-use change in the first instance, although it would depend on who they could approach for advice.
- The participants who have farmed in this area for long periods of time feel local knowledge is significantly undervalued and the only way to work successfully with local organisations is for the experience and knowledge of landowners/farmers to be respected.
- Participants who are newer to the area and to the sector of land management would happily seek advice from local organisations with the understanding that these organisations have their own agenda. They would seek advice from a range of organisations and then take a decision based on their own objectives.
- 5/10 participants use an agent to help with grants, accounts, stewardship applications, so would use this as their preferred 'advice' mechanism.
- Some participants would favour access to data as a form of 'advice', such as opportunity mapping, using MAGIC maps to understand existing habitat/species records in the area, using the environmental layers on the Land App, etc. The problem here is that the data on these systems can be inaccurate/out-of-date, which can mean a lack of consistency between different systems. However, the interest is there. In the questionnaire in Milestone #1, all 10 participants responded 'Yes' to finding out what publicly available data there is about their land/farm. The key is being able to combine this data with farmers/landowners' knowledge.

3.3 Results & Discussion for the Payments theme

One of the sessions in the workshop for Milestone #5 asked the participants how they would expect to be paid for a specific type of habitat management (hedgerows) and whether this would be different for other habitats / whole farm management. The results are summarised below.

Hedgerow management payments	Other habitat / whole farm payments
Cover costs + profit - because there is no	**Paid for the bigger picture** - It shouldn't be

basic payment, covering costs alone will not be enough. The profit margin should be based on a third-party contractor's rate.	about payments for specific habitat management - we need to look at the bigger picture e.g. by people going for a walk and enjoying this landscape, this is £x money saved in hospital care, mental health costs. Could look at carbon markets as an indicator.
Maintenance rate calculated over multi-annual period - The cost of managing hedgerows should be worked out over say a 10 year period and then divide the total cost by 10 to set an annual payment (some years you would spend more than this, some years less, so it would balance out).	**Paid to deliver funder's objectives** - All depends on what the funder's objectives are - beauty, carbon sequestration/storage, biodiversity, all of the above? Their objective(s) will mean different types of management for the landowners/farmer which will result in different costs/payments.
Economic value of benefits of hedgerows - How can we work out the value of what hedges are really worth - they provide many additional benefits than a single fence line would e.g. shelter, habitat, wildlife corridor, etc. Is there a metric we can use to put an economic value on a hedgerow and on different types of hedgerow?	**Fair payments to create/maintain diversity** - Different payment models based on the habitat the farmer/landowner is trying to create and what species you're trying to attract - but this needs to be appropriate for the area. If, for example, wetland creation was one of the most highly valued habitats and the payment rates were attractive, it is likely many people would try to do this, which might not be good for nature recovery as a whole. We need to be able to reward diversity fairly, which is going to be very difficult!
Opportunity cost - The amount we would need to be paid would depend on the opportunity cost of ripping out the hedge to have more grass for productive grazing.	**Combination of payments by action and payments by result** - say 80% of the payment to create/maintain a habitat is guaranteed provided you follow everything in your contract. The recipient would be rewarded the additional 20% if the project is exceptional. Then the farmer/landowner is incentivised to get the best results, but the payment does not 100% rely on results being achieved.
Attractive maintenance payments - Farmers/landowners who have been doing the right things for decades need to be recognised and rewarded fairly. Need to be paid for maintaining hedgerows, not only creating them.	**Paid for time/quality of evidence** - If the funder expects farmers/landowners to provide evidence for the public goods they are delivering, will their time to collect this evidence be compensated? Will there be a higher level payment depending on the type of evidence supplied e.g. an extensive farm survey vs several photos?

Sustained maintenance payments - Aggravation among farmers/landowners who were in the Environmentally Sensitive Areas scheme and put in hedgerows, but now have to maintain them at their own cost.	All payments must be index-linked. More feedback recorded on length of contracts in Appendix 5.
Paid by volume - Work out the volume of the hedgerow and be paid per cubic meter.	**Payments treated as trading income** - income from future environmental schemes must be treated as trading income for inheritance tax purposes if DEFRA wants to achieve high take up.

3.4 Results & Discussion for the Spatial Prioritisation theme

To address the question, 'How do we encourage and incentivise collaboration for the delivery of public goods?', the participants were asked how they feel about entering collaborative (vs individual) contracts.

Incentives for collaboration
Higher payment rate - to cover a Facilitator's cost. Need a scheme that involves smaller farm clusters than the Facilitation Fund. A minimum land coverage of 2,000 hectares as an entry requirement is out of reach for this group.
Increase payment rate with time - If the group decides to renew the contract beyond the initial term, the payment rate should increase to offer an incentive to stay in the scheme. If the contract ends and is started again 5 years later, the recipients would start again on the entry-level payment. This could work for both individual and collaborative contracts.
Flexibility - There needs to be an acknowledgement that the group members are still running individual businesses alongside a collaborative contract so there needs to be flexibility built into the contract to allow the participants to manage things at different times and in different ways if needed. Include assessment points where clauses in the contract could be amended if there is agreement between all parties i.e. the funder or the group could not amend the contract without the other's approval.
Realistic exit and entry points - If a group member is not abiding by the terms of the contract, there needs to be a simple process in place for managing that, eventually ending in termination. The other group members should not be liable for one individual breaching the contract. If a group member wants to sell their holding, there needs to be an opportunity for them to exit the scheme if there is a risk the contract will devalue their land. Clarity needed on any remaining restrictions on land when exiting the contract.

> **Insurance** - If something happens outside of the group's control (e.g. wildfire), the group should not be penalised for it. The group would expect to be compensated for loss caused by damage outside of their control.

> **Incentives to trial collaboration** - Some participants would prefer to trial collaboration before entering into a joint contract. Offer an incentive to create a collaborative Land Management Plan and test working together before entering into a contract.

As part of this discussion, the participants raised the question of how we would agree on what is best for the land. While there are lots of organisations in the area that we could ask (Shropshire Hills AONB, Natural England, Shropshire Wildlife Trust, National Trust, etc.) they may give different answers depending on their objectives. This could be followed up in a second Test & Trial by exploring this question with the farmers/landowners and the organisations mentioned above.

In general terms, the participants were happy to work together. It seems that perhaps no matter what the future schemes look like, neighbouring farmers/landowners should work together to come to terms with the changes and opportunities, which could be a great entry point for future collaboration.

4. Conclusion & Recommendations

This Test set out to address the following policy questions:
- What mechanism will participants use to plan and record which public goods they will deliver?
- What data/information will participants require?
- What expert support will participants require to help them plan and record which public goods they will deliver?
- How are you setting payment rates for outcomes?
- How do we encourage and incentivise collaboration for the delivery of public goods?

This chapter will take each question in turn to explain how the key findings can inform future Environmental Land Management schemes, as well as suggesting areas that could be explored in a future Test & Trial.

4.1 What mechanism will participants use to plan and record which public goods they will deliver?

A digital map provides an excellent basis for a Land Management Plan and the participants in this Test found this format more useful than a standard paper report for the following reasons: It is interactive, it can be easily updated and shared, it can store a lot of information without becoming cluttered and it gives a holistic overview of the holding. The participants felt they would look at a digital map Land Management Plan more frequently than a paper report that might "sit on the shelf" after it is written and "quickly become out of date".

However, it is not felt that Google My Maps offers the best solution for the digital mapping mechanism to be used in future Environmental Land Management schemes due to its limitations outlined on pages 13-14. The software 'The Land App' used in Milestone #5 appears to be more in line with what is needed but it would need to be tested more to uncover any limitations.

> **Recommendation - A digital map should form the basis of a Land Management Plan (whether individual or collaborative). Key requirements of the digital map are for it to be compatible with other systems and user-friendly across different devices. The Facilitator does not yet have enough information as to which piece of software would be best to deliver this. It would need further investigation through a future Test & Trial.**

4.2 What data/information will participants require?

From the information available at the time of writing, the provision of free advice is expected to be limited in future Environmental Land Management schemes. To avoid landowners/farmers paying for specialist advice, we need to ensure they have access to reliable, consistent data to make the best decisions. In this Test we have learned that there are public data sets available which can be useful (such as MAGIC, UK Centre for Ecology and Hydrology ASSIST Environmental Planner, the environmental layers in the Land App, the Shropshire Ecological Data Network, etc.), but there can be problems with these tools, such as inconsistencies between them, the underlying data is not always good enough to use with confidence, and there is no opportunity for input from landowners/farmers.

> **Recommendation - Prior to the roll out of Environmental Land Management schemes, attention should be given to the development of a central mapping system that shows verified habitat/species data that landowners/farmers can contribute to. This is likely to be part of the Nature Recovery Network mapping initiatives that organisations such as The Wildlife Trusts and AONBs are currently undertaking. A future Test & Trial could explore these initiatives, establish any differences between them and gather landowner/farmer feedback on their usefulness in making practical land management decisions. Furthermore, from a technical point of view, it would be useful to know if it is possible to overlay publicly available data sets onto a digital map for a Land Management Plan.**
>
> **Secondly, farmers/landowners should be included in discussions on setting local nature priorities. In South Shropshire, we have the Stepping Stones project hosted by the National Trust, and other organisations such as Natural England, the Shropshire Hills AONB, and the Shropshire Wildlife Trust, who all have plans for working with farmers/landowners to deliver environmental outcomes. Who will be responsible for deciding on the local nature priorities and how to deliver them? A coordinated approach that includes farmers/landowners in the process is essential.**

4.3 What expert support will participants require to help them plan and record which public goods they will deliver?

9/10 participants in this Test required some form of guidance/training to be able to use the chosen digital mapping tool (Google My Maps) to create a Land Management Plan. Three guidance documents were created to cater for different devices used across the group (laptop, mobile, iPad) and 1:1 in-person training sessions were offered. Some of the participants would not have been able to create their Land Management Plan without the in-person training session.

Regardless of the digital tool(s) farmers/landowners will be required to use to plan and record the public goods they deliver in Environmental Land Management schemes, training must be provided to ensure everyone has an equal chance to learn how to use the tools. While one might argue that there are already guidance documents available for a mapping mechanism like Google My Maps or the Land App online, this Test found it was more beneficial for the documentation and training sessions to be created by the Facilitator so that they could be tailored to the group of participants. This also made it possible for the Facilitator to review, update and improve the guidance documents following the evaluation from participants in Milestone #4.

These may sound like time-intensive interventions, but the guidance documents do not have to be created from scratch, they could be simple compilations of the most relevant materials found online. In terms of the training sessions, some participants said they would have preferred a 1:many training ratio (instead of 1:1) to be able to work with their neighbours in a more informal setting and learn alongside their peers.

> **Recommendation - To have a fund similar to the Facilitation Fund in future Environmental Land Management schemes with a lower area entry point (e.g. 1,000 hectares) to make it accessible to smaller farm clusters. One of the areas of the Facilitator's role would be to ensure the members of the group have access to appropriate training/guidance documents for any digital tools that would help them to plan and record public goods delivery.**
>
> **In terms of a future Test & Trial in this area, it would be useful to explore the practicalities of adding evidence to a Land Management Plan and the types of evidence that are most suited to the funder's requirements. For example, some participants in this Test suggested the use of a drone to be beneficial in recording public goods delivery, but the Facilitator only has limited evidence to support this suggestion (see Appendix 6 for further information).**

4.4 How are you setting payment rates for outcomes?

Payment rates for outcomes need to be more financially attractive than payment rates for actions. The main reason for this is to ensure habitat restoration and creation is undertaken in

the right places. By putting the right habitat in the right place, one is more likely to achieve the intended outcomes. However, if payment rates for actions e.g. tree planting, are high, it may result in trees being planted in the wrong places.

The second reason for favoring payment rates for outcomes is that we must reward farmers/landowners who have been doing the right thing for decades (e.g. planting and restoring hedgerows, managing low-input grassland, etc.). If the emphasis is on payments for actions, it is possible that those who have been managing land in a more harmful way in recent decades will be seen to benefit by taking advantage of payments to change their practices. This could easily disengage many environmentally-friendly farmers who the future schemes should be celebrating.

By arguing that the payment rates for outcomes should be higher than the rate for actions, feedback from the participants on how to calculate the latter must be noted. Generally, the participants felt this could be calculated at costs covered for any material purchases plus the third party market rate contracting fee to undertake the work.

In addition to the rates for outcomes simply being higher than the rates for actions, there needs to be an agreed metric that the sector can use to place an economic value on the benefits of public good outcomes. Some participants in the Test felt that this calculation needs to look at the 'bigger picture' and take into account things like the value of improved health and wellbeing by more people visiting the countryside. There will be an amount of money that this saves the NHS, which should be redistributed to farmers who are delivering this public good. However, to be able to calculate this, there needs to be an agreed metric in place that outputs a fair payment.

> **Recommendation - To encourage farmers/landowners to test the available metrics to measure the outcomes of public goods and provide feedback. Farmers/landowners need to be able to calculate the value of the public goods they are delivering by using a straightforward, user-friendly tool. Current models of entering large amounts of data into spreadsheets are not accessible to many farmers/landowners and we must not push farmers/landowners into a position where they are required to pay an agent to undertake costly natural capital assessments, unless this is subsidised/funded by future schemes.**

4.5 How do we encourage and incentivise collaboration for the delivery of public goods?

Two key areas emerged when discussing this question with the participants:

1. The financial incentives for collaboration need to be more attractive than for individual work. This is because it is likely to be more difficult, so there needs to be a reason to consider this option from the outset.

2. Having a deep understanding of the social, financial and environmental barriers and opportunities for collaboration for different types of farm enterprises.

To be able to encourage and incentivise collaboration, it is crucial to first have a deep understanding of why farmers/landowners may or may not want to work together. This may include elements of all, or some of, the following characteristics: social, historical, financial and environmental. This Test only scratched the surface when it comes to understanding these reasons.

An obvious incentive is to make collaboration financially attractive, which is important, but we need to go further when thinking about how to encourage collaboration and make it sustainable. We need to be able to demonstrate the benefits to individual businesses that can be derived from collaboration. Can we show farmers/landowners real examples of how healthier landscapes (i.e. more joined-up nature recovery) can improve the profitability and sustainability of commercial farm businesses? If we can, it would be an obvious choice for farmers to collaborate.

> **Recommendation - To test a variety of scenarios that represent different types of farmers/landowners and how they might respond to collaborating. For example,**
> - **Farmer A has poor farmland and does not want to farm**
> - **Farmer B has great farmland and wants to farm**
> - **Farmer C has great farmland but does not want to farm**
>
> **How would these farmers feel when talking to each other? How could we encourage them to see the effects of their farming/non-farming practices beyond their own farm gate? Who else might be involved to help resolve any tensions between group members? How can we measure the effects of individual actions vs collaborative actions and compare the value of the outcomes (both in terms of environmental payments and payments for the delivery of private goods e.g. pasture-fed meat).**

5. Final comments

Overall, this Test has been a useful starting point for the establishment of a small farm cluster in South Shropshire. The graph below shows how participants responded when asked about their understanding of future Environmental Land Management schemes in Milestone #1.

Question 2 - On a scale of 1 to 5 (with 1 being 'I've never heard of ELMS' and 5 being 'I have an excellent understanding'), how would you rate your understanding of ELMS?

Participants understanding of ELMS
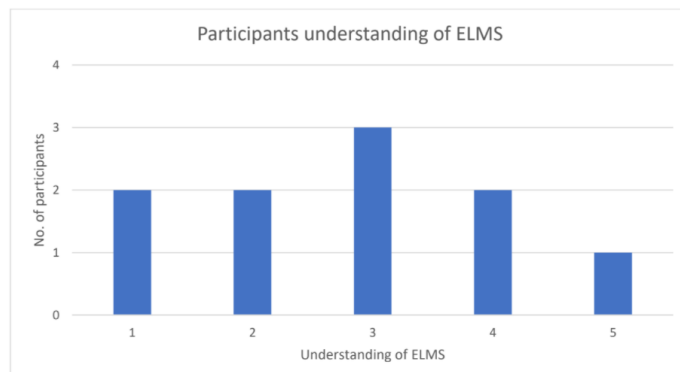
According to anecdotal feedback, the participants have increased their understanding of future Environmental Land Management schemes as a result of the Test and all ten participants would like to stay involved going forwards. The Facilitator is pleased with this result as even those who do not want to enter any future schemes have expressed an interest in staying involved with the group.

The Facilitator has aimed to present the findings of this Test objectively and does not necessarily endorse all of the comments made.

On behalf of the participants involved, the Facilitator would like to express sincere thanks to DEFRA for supporting this Test in the Test & Trials programme.

6. Appendices

1. Pollardine 211 - Milestone 1, Questionnaire 1 Results Report

2. Pollardine 211 - Milestone 2, Written narrative

3. Pollardine 211 - Milestone 3, 10 x LMPs

4. Pollardine 211 - Milestone 4, Questionnaire 2 Results Report.

5. Pollardine 211 - Milestone 5, Workshop write-up

6. Feedback on using a drone for habitat mapping