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4. Test integrated whole farm business and natural capital planning for up to 28 farm businesses engaged with the Trial
5. Test farm business responsiveness to costed natural capital offers
6. Assess the likelihood that the offers will meet the landscape plan priorities (agreed at 1, above)
7. Undertake a farm advisor skills and capabilities gap analysis
8. Final report

Interim reports have been delivered for each objective of the Trial, including Monitoring and Evaluation reports, so the purpose of this document is to summarise the learning points of each objective and provide the key messages from this Trial for the development of the E.L.M scheme. Links to previous reports will be provided within the text.

Acknowledgements

We would particularly like to thank all the farmers who kindly took part in the Trial; they were very helpful, giving up a lot of time to help make the Trial a success and forgiving of the constraints placed on the Trial by the Coronavirus restrictions. We are also very grateful to all the project board for their input to the Trial and to Natural England specialists, particularly Jenny Craven for her valuable input to the natural capital elements of the project and Steve Chaplin, for their support.

Limitations

1. The scope of this Trial did not include an assessment of each farm's compliance with relevant Regulations (eg SSAFO and Farming Rules for Water) and therefore a baseline assessment to establish environmental risks has not been undertaken on each farm and the costs associated with achieving regulatory compliance has not been included in each farm's business situation reports. This should be noted because the cost of providing farm infrastructure to comply with regulations can be a significant factor in farm business management.
2. The Trial began in January 2020, just as the Covid-19 pandemic was starting. While the project team maintained the original timescale for the project, many elements were delivered in a different way from those originally anticipated and used new and unfamiliar methods of communication, such as online workshops, which may have impacted on participation, particularly with poor internet connectivity in rural North Devon.

2. Summary Methodology

1. Spatial prioritisation. An initial Stakeholder Engagement Strategy was produced by the project team in March 2020, just as the initial impacts of Covid-19 were becoming known, and with the first UK lockdown coming into force on 23rd March. A revised strategy that could be based online rather than using workshops was therefore required. The Farming and Wildlife Advisory Group (FWAG) were appointed through competitive tender to identify and collate datasets, creating a 'geodatabase' relevant to the 4 landscape areas, which had been selected for their differing topography and habitats and were based on water catchments. FWAG facilitated a stakeholder consultation process using the available baseline data, questionnaires and workshops to identify the E.L.M priorities for each landscape area. 'Landscape plans' were then drafted and shared with local farmers and landowners for their input about how the priorities might be delivered in their area, including on their holdings. Following the consultation, the landscape plans were refined and finalised.
2. Farm scale natural capital indicators were developed by the project team working closely with the NE Natural Capital specialists over a period of several months. This was a very challenging area of work that was refined as the land management plans started to be created and the feasibility of measuring the different indicators in a meaningful way in a real situation became evident. Westcountry Rivers Trust (WRT) were contracted to summarise a final list applicable to the farmed landscapes of North Devon, providing potential indicators, methodologies and limitations, appropriate in this context.
3. A whole farm land management plan template was produced by the land management adviser which links farm business finance (farm profitability, markets, inputs and outputs) to a natural capital assessment of farm assets. It identifies opportunities to mitigate environmental pressures, create natural capital assets, or increase the quantity and/or quality of those assets against the landscape priorities identified by stakeholders through the consultation process. The template is designed to be completed by an adviser and to be supported by a 'farm pack' - a series of maps useful for discussion with the farmers and to highlight where improving the natural capital on the farm may be of most value.

The farm business finance element of the template was designed under contract by a farm business finance adviser and includes: the profit and loss of individual enterprises, without support from the Basic Payment Scheme (BPS); the use of the Farm Business Survey to provide a comparison with other farms; a detailed assessment of the impact of the three NC scenarios on the farm business; and an indication of how natural capital payments could contribute to farm income as BPS is phased out.

Feedback from the organisations represented on the Project Board was key to developing a template that would be useful across a wide range of farm types.

4. Test whole farm business and natural capital planning (up to 28 farm businesses). Farmers from the landscape areas were engaged in the Trial through submitting expressions of interest to the project team, with adverts circulated locally, including via the Project Board, followed up with leaflets providing detailed information about the Trial (see Annex 2.1). Over 90 applications were received, which were evaluated by the project team according to criteria produced by Exeter University in phase 1 of the Trial, identifying the proportion of different farm types and sizes typical in North Devon. In Hartland and Wistlandpound areas,

where there were fewer applications, individual letters and phone calls were used to recruit farmers. 28 farmers were selected for the Trial, 9 each in Taw and Torridge and 5 each in Hartland and Wistlandpound (although 1 Hartland farmer subsequently withdrew). The farmers were visited individually by the land management advisor in August and September 2020; this visit comprised a discussion of the farming system, potential opportunities for natural capital enhancement, followed by a walk around the farm to verify mapping and other data (e.g. from previous CS agreements), carry out woodland condition assessments and identify and map priority habitats and opportunities for enhancements. This visit was followed up by the production of a draft land management plan linked to the agreed priorities for the landscape area in which the farm was situated.

The farm business finance contractor then visited each farm to discuss the farm financial situation and to obtain all the relevant information about each enterprise, based on the Farm Business Survey, to be able to produce a current situation report, which was used to populate the Land Management Plan. The impact of the proposed reductions in BPS on the farm business finances was identified for each farm.

Three scenarios were then developed by the land management advisor for each farm, in discussion with the farmer, based on the 3 levels – basic, medium and high – of the Sustainable Farming Incentive (SFI) standards. Feedback from farmers regarding the feasibility of implementing the standards was fed back to the teams developing them as part of a reality check exercise, to help develop workable standards for the E.L.M pilot. Potential Local Nature Recovery actions and Landscape Recovery projects were also identified for each farm.

Table 2.1 Characterisation of the 27 farms involved in the Trial (Robust Farm Type refers to main farm business). Farms categorised as ‘No stewardship’ had not previously engaged with Countryside Stewardship (Mid-tier or Higher Tier) or Higher Level Stewardship.

Robust Farm Type	No of farms	Size	No of farms	Organic	No of farms	Stewardships	No of farms
1. Cereals	0	<100ha	10	Organic	4	No stewardship	5
2. General cropping	0	100-200ha	9	Conventional	23	Previous stewardship	22
3. Horticulture	0	>200ha	8				
4. Specialist Pigs	1						
5. Specialist Poultry	2						
6. Dairy	4						
7. LFA Grazing Livestock	6						
8. Lowland Grazing Livestock	7						
9. Mixed	7						

- The potential payments on which the costed offers to farmers were made, were based on the draft payment rates for each of the standards in the SFI National Pilot. Payment rates were broadly based on CS payment rates (Income Foregone+Costs) where possible. The 3

scenarios were costed for each farm by the project economist. The farm business finance team discussed the costs of delivering each scenario with the farmers, standardising costs where possible (e.g. soil sampling) to ensure the calculations were comparable. Farmers were then made 3 costed offers - low, intermediate and high - and asked to make their preferred choice according to the impact on their individual business.

6. Evaluate the extent to which the farm offers, if upscaled to the landscape area, would deliver the local priorities identified at the start of the trial. Westcountry Rivers Trust (WRT) were contracted to produce an evaluation methodology and estimate the potential of the farm offers to deliver the landscape priorities.

In parallel with this work, Rothamsted Research have undertaken modelling of the potential impact of the waterbody buffering standard at the landscape scale. The results of this work, which was completed at the end of the Trial, are included in section 5.

7. A farm advisor skills and capabilities gap analysis was undertaken by the land management advisor through circulating a questionnaire to local advisors, based on the skills required to produce a LMP similar to that delivered through this Trial (see Annex 7.1). Advisors were also asked about their training needs to help farmers to apply for E.L.M as a wide range of different skills have been identified through the Trial. A total of 32 farm advisors responded to the survey, comprising a mix of land agents, chartered surveyors, agronomists, agricultural consultants, and farm advisors from environmental charities.
8. End of Trial reporting. In the last month of the Trial, it had been planned to hold workshops with the farmers to bring them together and gather their overall reflections of participating in the Trial to feed into the final report. Unfortunately this wasn't possible due to continuing Covid restrictions, so a Farmer Feedback Questionnaire was circulated, which covered the different phases, including spatial priority setting, the LMP process and the SFI standards, farm business finance, the advice farmers might seek to help them apply for E.L.M, and whether co-design was considered beneficial. See Annex 2.2 for questionnaire and 2.3 for farmers feedback on being involved in the Trial.

Following the return of the questionnaires, four farmer online workshops were facilitated by FWAG with the land management advisor, to provide an opportunity for discussion of the following core themes: setting local priorities; farm business assessments; standards and scenarios; advice and support. Participation in the workshops was good, with 21 of the 27 farmers attending, and a range of topics were discussed that have fed into this report (summary of workshops included in Annex 2.4).

Learning points

Key learning points for each theme (LMPs, Advice etc) are provided at the beginning of each chapter to avoid repetition.

Definitions and Acronyms

Word or Acronym	Description or Definition
25 YEP	25 Year Environment Plan
ALB's	Arm's-length bodies (Natural England, Environment Agency, Forestry Commission)
ALERT map	Agricultural Land Environmental Tool (EA data)
BPS	Basic Payment Scheme
CIWEM	The Chartered Institution of Water and Environmental Management
E.L.M.	Environmental Land Management
SFI	Sustainable Farming Incentive
FIO	Faecal Indicator Organism
GIS	Geographic Information System
HEFER	Historic Environment Farm Environment Record
LMP	Land Management Plan
LNR	Local Nature Recovery
LR	Landscape Recovery
NC	Natural Capital
NE	Natural England
PMGRP	Purple Moor Grass Rush Pasture (Priority Habitat)
PROW	Public Right of Way
SFI	Sustainable Farming Incentive
SSAFO	The Water Resources (Control of Pollution) (Silage, Slurry and Agricultural Fuel Oil) (England)/ (Wales) Regulations 2010

3. Spatial Prioritisation

Introduction

The spatial prioritisation process was undertaken across the 4 landscape areas identified for this Trial (Figure 1.1, above), facilitated by FWAG, working closely with the project team. This section identifies the key learning points from the process, responses to policy questions and the results of the end of Trial questionnaire and workshops, which have not been included in previous reports. The detailed methodology and results of the process can be found in the spatial prioritisation monitoring and evaluation report.

Stakeholders from 18 organisations participated in the consultation across the four landscapes, including those involved in conservation of wildlife and historic assets, county council and local councils, public bodies and farmer representative groups. 49 land managers participated by responding to questionnaires and contributing to online workshops. Considering this is a trial, and communication methods were new to many (e.g. online workshops), we believe this participation rate indicates a strong desire among stakeholders and land managers to be involved in local development and implementation of E.L.M.

Key learning points

1. The optimum scale at which consultations are delivered will depend on the public good being addressed and the size of the area over which stakeholders operate. Large organisations can be consulted at a smaller scale, while smaller organisation e.g. targeting specific species, and farmers / landowners prefer to be consulted at a larger scale, ideally with detailed or zoomable maps.
2. Landscape Character Areas and Types (as defined by the Devon Landscape Character Assessment) largely reflect the quantity and type of natural capital assets, meaning most environmental priorities are likely to be relevant throughout any one of those areas. This may therefore be a suitable scale at which to consult at the local level.
3. The licensing of national datasets, including those used in Countryside Stewardship targeting, meant some data could not be made available for the reproduction of maps, making this aspect of the project challenging and overly time consuming.
4. Consulting stakeholders and land managers in the development of landscape plans is unlikely to change targeting areas significantly, but is essential for engaging people and for developing a shared understanding of the aims of E.L.M locally. This consultation also generates useful information that can be used to produce a detailed explanation of why priorities should be addressed locally.
5. It is important that landscape plans are visually attractive and user friendly for land managers, and are made relevant to their farming experiences with examples and photos. Farm-scale opportunity maps, based on local priorities, are also particularly useful to land managers as it is easier to interpret and understand what is being targeted and recommended on the ground.
6. It is possible to develop a landscape plan within a relatively short timeframe. This process took place over three months in this trial, including planning, stakeholder engagement delivery and the construction of landscape plans.

Methods used to identify local priorities at different scales

The same method of undertaking stakeholder consultation was used across all four landscape areas of the Trial. Organisational stakeholders were sent a questionnaire and maps that related to all the landscape areas as their interests tended to cover a wider (regional) area and they were asked to comment on the priorities for each landscape area as relevant to their interest. It had been anticipated that this standard approach would be effective across all the stakeholders but in fact there were a number of queries and requests for further guidance. Some work at a much more local level than others. It may have been more effective to consult stakeholders according to their area of expertise and experience, but this would have taken significantly longer and been more expensive to achieve.

Farmer / landowner stakeholders were circulated a standard questionnaire and the landscape plan covering their local area, and were asked to confirm whether they agreed the draft priorities were appropriate and how they might be delivered locally / on their land holding. They provided feedback on this information through Zoom calls in groups of 8 – 10 people.

Information provided by stakeholders allowed environmental priorities to be described in landscape plans in a way that accurately explains why and how they are relevant locally, but did not significantly inform or alter the local refinement of priority targeting maps.

When creating landscape plans, the input of stakeholders and land managers was useful for the development of written explanations of the key environmental issues and priorities in the area, rather than the refinement of targeting maps. For example, stakeholders mentioned important habitats and species locally, the key causes of pollution, key objectives for the creation of public access, and landscape characters that should be preserved. This information is valuable as it advises what features should be prioritised in the target areas mapped, rather than the actual spatial positioning of target areas. Gathering this descriptive information should therefore be a key focus of stakeholder engagement for agreeing priorities.

Different scales for objective priority setting

In this Trial, we took a ‘top down’ approach to setting priorities, with organisational stakeholders being consulted first to establish the priorities and then local draft landscape plans being circulated to landowners and farmers for refinement. It was clear that different stakeholders preferred to be consulted at different scales, depending on the coverage of their organisation.

Also, different public goods are suited to prioritisation at different scales, for example:

- Historic landscapes relevant to Hartland extend beyond the landscape area defined for the project.
- Comments given by stakeholders about air quality and climate change were generally relevant to larger landscape areas than those being trialled.
- The prioritisation of habitats and species tends to be done at a much more specific, localised scale.

Consulting on different public goods at their most relevant scales will be more efficient for stakeholders, so that they are not reproducing their responses across multiple consultations. A national map viewer, similar to MAGIC maps, could show the different data layers for each public good or outcome, with opportunity for stakeholders to download, refine and submit maps for areas most relevant to them. Landscape plans could then be compiled by cutting an appropriately sized

landscape area through all the layers, and the resulting datasets used for consultation more locally, for example at the scale of Hartland (60 km²).

Landscape Character Areas and Types (as defined by the Devon Landscape Character Assessment) largely reflect the quantity and type of natural capital, meaning most environmental priorities are likely to be relevant throughout any one of those areas.

The role of the natural capital approach in facilitating the development of regional /local priority setting

Two methods of consulting organisational stakeholders were considered at the start of the process, initially taking a natural capital based approach to identify what natural capital assets could be created or managed to best deliver public goods locally, but after developing a draft questionnaire and presentation, this approach was thought to be too complex for many of the stakeholders, so would not be inclusive and would not produce good quality, reliable responses. The questionnaire was subsequently simplified to identify and prioritise public goods delivery as stated in the 25 YEP.

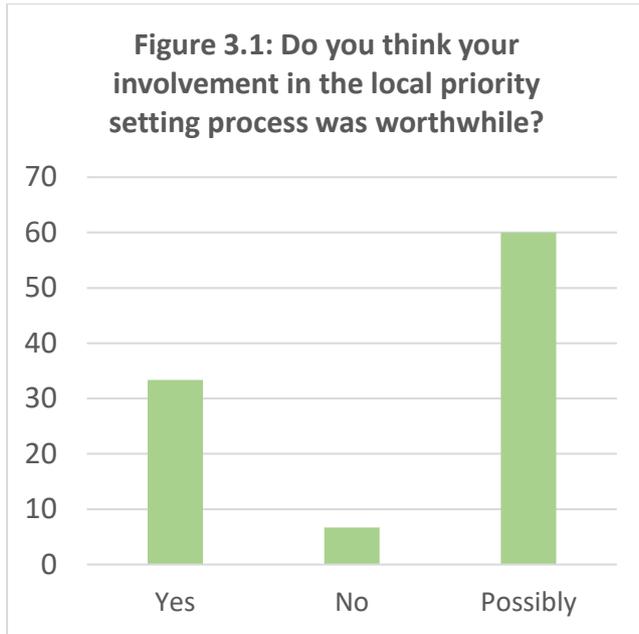
We found that the natural capital approach is more suited to priority setting at the farm scale. Opportunity maps showing where natural habitats would have the greatest impact on a farm were popular among land managers and allows a natural capital approach to be taken as they indicate where habitats would be most valuable. These maps can then be used to facilitate a discussion around the environmental value of the assets relative to the cost of implementing management (more detail about this and an example opportunity map can be found within Annex 4.2).

Involving local stakeholders and communities in local priority setting for E.L.M delivery

For local landowners and farmers to understand what E.L.M. needs to deliver locally in terms of delivering public goods, they ideally need to be involved in the priority setting phase. This will encourage a better understanding of the scheme and if other elements are right (e.g. payments and high quality farm advice), will encourage participation. Farmers also fed back to the project team that, in such diverse landscape as those found in North Devon, farmers are able to contribute a level of detail and identify challenges that others won't be aware of. Linking wider scale priorities with the detail of local issues is important to ensure delivery of priorities in the right place, which is essential to the success of E.L.M.

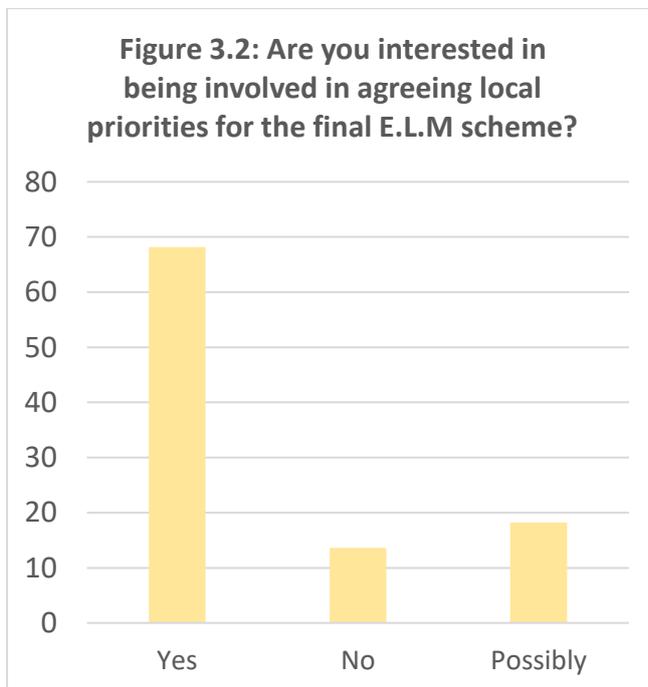
When asked if they felt their involvement in local priority setting was worthwhile, only 6 farmers engaged in the Trial felt that it was, while the majority felt it was 'possibly' worthwhile (see Figure 3.1 below) , because for example:

- (a) farmers felt that they couldn't influence local priorities as these were data / evidence based e.g. water quality or air quality data.
- (b) they felt priorities had already been set before they were consulted and that in some cases those priorities were too focussed on wildlife and not on outcomes for farmers or producing food, and that the plan needs to describe the landscapes as primarily farmed areas that can also deliver environmental public goods.
- (c) Some felt that this was a good opportunity to feed messages into Defra and to share their knowledge and experience more widely.



'by involving farmers (and by this people knowledgeable about the area) in the process it was possible to ground truth the plan and add more local context. Our involvement also helped to highlight what was important and possible to work on at the local scale.'

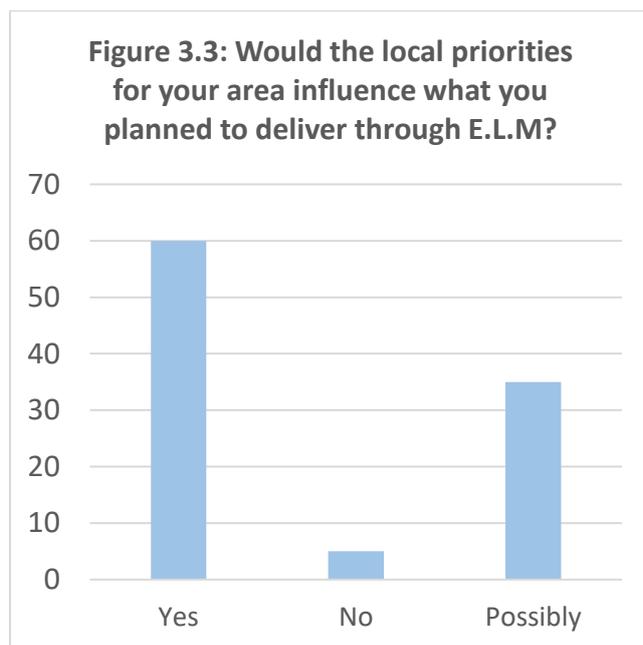
However, the majority (15) of farmers on the Trial would be interested in being involved in agreeing the priorities for the final E.L.M scheme.



'Land managers should be involved at all stages of developing the plan as we have the local knowledge.'

Feedback suggested that they would be more interested in being involved in a bottom-up landscape planning exercise, helping to agree 'what should happen where' and while some would prefer a physical workshop rather than online, others liked the flexibility and inclusiveness of online workshops that they could attend more easily to fit in with the farming day. This suggests alternative routes for farmers to engage should ideally be available.

The language used in priority setting needs to be inclusive and recognise the experience and point of view of all contributors. We also found in this Trial that getting the terminology right is important to maintaining engagement. One farmer summed up a common theme: 'the use of the term 'stakeholders' is divisive & must include farmers otherwise peoples' ideas of priorities are being imposed on farmers and that seems non-inclusive'.



'Yes, but only if it fitted in with our farming system and had an economic benefit'

Farmers delivering against the local environmental priorities is fundamental to the success of E.L.M. Farmers engaged with this Trial say they are willing to help deliver local priorities, but this needs to fit with their farm business situation and farming system. Incentives will be needed to deliver the right intervention in the right place, especially while there is so much uncertainty in the industry following Brexit and the Covid situation. If delivery is not targeted to the right place, the opportunities for environmental gain that are presented through E.L.M. will not be made.

Conclusions

Spatial prioritisation needs to be facilitated at a range of scales and through different engagement methods to encourage the broadest range of participation by organisations and landowners / farmers in the area. Stakeholders are keen to participate at all levels as this is an opportunity to feed their key messages through to Defra to inform the priorities in E.L.M. Interacting with stakeholders at the right scale and using inclusive language is key to maintaining participation.

Delivering the right interventions in the right place to deliver environmental gain is the focus of the E.L.M scheme and appropriate incentives will be required to ensure the scheme is a success in meeting the aims of the 25 YEP.

4. Land Management Plans

Introduction

This section will outline the main learning points from testing a land management planning process on 27 farms that included both farm business and natural capital planning. Integrating the farm business finance with an assessment of natural capital on farms, aligned to the landscape priorities identified by our stakeholders through the consultation process, tests how E.L.M could potentially maximise the environmental outcomes delivered across a range of farm business types. However, it is worth noting that the LMP trialled here was designed for the purposes of this trial and included evaluation of the predicted impact of three scenarios (principally based on the SFI standards) on the total farm business profit/loss. It was not designed to be a potential template for the E.L.M. LMP in its entirety but it is hoped that learning from its use will help inform the design of such a template.

This section focuses on the land management elements of the LMP (farm business elements covered in more detail in Section 6).

Key learning points

1. **Farm Packs**, comprising a range of background maps, facilitate the LMP process, both by providing readily accessible information, during the farm visit, regarding opportunities to deliver particular outcomes, and as a focus for discussion with farmers.
2. **Design of LMP**: The combination of a farm business situation report (that clearly identifies which of the farm's enterprises are making a profit and which are making a loss, and the impact of the loss of BPS on the farm business) with maps and tables, summarising the baseline situation and identifying key opportunities to enhance the quality and quantity of natural capital on the farm, appears to help farmers make informed decisions regarding future management and how /where to shift the balance between food production and environmental delivery, particularly when they have no business plan in place.
3. **The farm business elements** of the Trial template were not useful to all farmers; it is not envisaged that E.L.M should require farmers to complete a farm business situation report but encouraging applicants to understand which elements of their farm business are profitable, and the opportunities and limitations presented by the current farm business situation, as part of the application process, would be beneficial.
4. **LMP template** needs to be simple and flexible - to ensure that relevant key issues are covered but enables an advisor to address farm individuality and focus on key opportunities.
5. **LMP process**: The value of the LMP is often more in the process/discussions that led to its delivery than in the plan itself.
6. **LMP format**: Farmers generally liked the simple format of the template trialled here, comprising outline tables and maps, showing the location of key natural assets and opportunities to enhance those assets.
7. **Components of the LMP**: While the Trial farmers thought it might be useful to include additional elements to our template, particularly a baseline soil health assessment, baseline Run-off and Soil Erosion Risk Assessment, whole farm Nutrient Management Plan and Soil Management Plan, they were wary of making it over complicated/expensive to deliver and these elements are often already required for other reasons (eg Red Tractor Scheme); duplication needs to be avoided.
8. **Need for simplicity**: Based on the simple LMP format we trialled, c. 80% of farmers thought they could develop an LMP for their farm, or at least some elements of it. However, farmers

are more likely to select higher environmental delivery options/standards if they are well supported by farm advisors during the application process. The cost of employing an advisor to deliver an LMP for their farm may discourage farmers from engaging in the LMP process. Consequently, if farmers are to be expected to pay for farm advice during the LMP process, it is essential that the LMP is kept as straightforward as possible, and unnecessary on-farm data collection/details avoided. While the LMP should ideally cover the whole farm, this doesn't mean that the whole farm needs to receive the same level of attention. The use of targeting maps, provided in farm packs, can help focus advisor effort.

Developing the Land Management Plans: Methods Outline (see Objective 4 M & E report for more detail)

1. **Farm pack** produced for each farm comprising a variety of maps (see below) to help inform/structure the discussions between the advisor and the farmer, regarding the opportunities for environmental delivery on farm.
2. **LMP template drafted (see Annex 4.1)**, designed to provide a baseline assessment of the natural capital assets on each farm, the opportunities to enhance those assets and to deliver the local priorities agreed through the landscape plans, and identify how those opportunities might best be delivered.
3. **27 Farms visited by Trial Land Management (10th August to 23rd September 2021)**: c. 1-2 hour discussion with the farmer followed by a walk-over of the farm. The walk-over focused on opportunities to enhance the farm's natural capital and did not assess the extent to which the farm was currently compliant with SSAFO and Farming Rules for Water.
4. **Completion of Sections A, C, D and Annex 1 of LMP template** for each farm by the Trial land management advisor, along with a simple asset map (showing primarily NC assets relevant to SFI standards) and rough opportunity map (example in Annex 4.2, overlain on asset map).
5. **Farm business advisors gather baseline financial information (10th August – December 2020)**. Completion of farm business situation report (section B).
6. **Three E.L.M scenarios drafted for the farm** varying in the level of environmental delivery and based on differing levels of SFI standards and potential Local Nature Recovery and Landscape Recovery actions. This required agreement of asset type and risk of runoff and soil erosion for each field parcel and, having agreed with the farmer roughly what the potential outcomes they wanted to deliver on their farm, establishing to what extent these could be delivered through the SFI standards and what additional actions would need to be delivered through LNR/LR type actions.
7. **Draft LMP shared with each farmer, and feedback collected on the draft SFI standards by the land management advisor**. Farmers were provided with the main elements of the SFI standards (in draft) and a table showing which indicators and standards were relevant to each locally identified priority.
8. **LMPs updated following discussions with farmers**.
9. **Farm business team discussed three scenarios** with each farmer and evaluated implications in terms of impact on farm business, feasibility etc.
10. **LMP updated with** evaluation of the total business profit/loss before and after implementation of the three scenarios.
11. **Farmer feedback questionnaire and farmer workshops**

Facilitating the LMP process: Farm Packs

Farm packs, effectively comprising a set of opportunity maps created from existing data, were found to be valuable (see learning point 1). Including records of nationally and locally significant species on the farm pack maps would have been helpful. Although the information is available on Webmap (Natural England internal mapping system) and in some cases publicly available on MAGIC, hard copy maps simplified and speeded up discussions on farm.

The farm packs included the following maps:

Maps
Farm maps including field parcels
Farm ‘in wider context’: Statutory and non-statutory designations, scheduled monuments, PROW, etc
Natural Capital baseline – using UK Habitat Classification system (habitat data derived from Devon Biological Records Centre), with hedgerows and tree lines mapped based on Ordnance Survey data.
Combined Habitat Network for the farm and local area– these maps were derived from Natural England modelling carried out specifically for the trial.
Working with Natural Processes: Woodland Potential, Floodplain Reconnection Potential, Run-off Attenuation and Flood Risk: Designed to signpost areas for managing flood risk by protecting, restoring and emulating the natural regulating function of catchments and rivers.
Fine Sediment and Erosion Risk – based on SciMap modelling for each farm. Designed to help identify where the highest risk of sediment erosion is likely to occur, to help spatially target land management to improve water quality and reduce flood hazards by identifying key run-off pathways.
Landscape Character (Natural England dataset)
Air quality map showing the location of local priority habitats and SSSIs sensitive to ammonia and approximate buffer zones.
Water quality map – showing the key factors contributing to local failure of water quality targets (soil, livestock and nutrient management, EA data).

Key components of the LMP

The LMP template trialled comprised three main components:

- A farm ‘business situation’ template
- A natural capital assessment template
- A framework to undertake analysis for producing three natural capital scenarios.

The LMP template we have developed for this trial aims to help farmers make informed decisions, regarding how to balance food production with delivery of public goods, and capture the ideas and opportunities discussed during the adviser visit. It is envisaged as facilitating the first step in the process of developing an E.L.M agreement/contract – i.e. helping the farmer decide what opportunities to develop, but not a means of recording exactly what is going to be delivered where and when, or how the success of that delivery will be assessed. It was envisaged that farmers would then explore in more detail the various opportunities if they wanted to take these forward.

The value of the plan was primarily in the discussions that its development instigated. Farmers valued the opportunity to spend time talking through various options for their farm with the land management and farm business advisers, often as a sounding board for ideas they had been considering for some time.

The land management element of LMP template was designed to identify opportunities on farm to deliver local priorities. It principally comprised three elements:

1. Measure the baseline - assess the quantity and quality of the environmental assets on farm, using 'farm scale indicators'
2. Outline the opportunities on farm to help deliver local priorities (including landscape scale)
3. Identify how best to deliver/implement those opportunities – SFI, LNR and LR

In detail, the LMP comprised:

Section A: Brief summary of farm and farmer objectives for the next 5/10 years.

Section B: Farm business situation report (which clearly identifies which of the farm's enterprises are making a profit and which are making a loss and the impact of the loss of BPS on the farm business profit).

Section C: Map showing the location of key NC assets (simplified to SFI assets), and simple graphic showing a sub-set of farm scale natural capital indicators, which together aim to capture the baseline quantity and quality of the farm's natural capital (focusing on those indicators which link to the local priorities for the relevant landscape and captures baseline SFI standard delivery). The map also showed fields considered to have a high risk of soil erosion and runoff, and designated/non-designated historic environment features.

Section D. Table highlighting how the farm is currently helping to deliver local priorities, identifies the key opportunities for additional delivery (illustrated by an opportunity map) and identifies how those opportunities might be delivered (SFI, LNR and LR). It also includes a brief description of relevant landscape character type. Accompanied by an opportunity map (hand drawn in most cases).

Section E: Description of three potential scenarios based on the SFI standards with potential payments (based on the National Pilot draft payment rates) and outline of potential LNR/LR type actions (see Annex 4.3).

Section F: An evaluation of the total business profit/loss before, and estimation of total business profit/loss after, implementation of the three scenarios

Annex 1: Brief notes on individual fields identifying particular issues/opportunities.

Annex 2: ALERT map to help delivery of Baseline Run-off and Soil Erosion Risk Assessment.

The farmers appeared to like the simple structure/format and the key elements of the LMP we trialled (Table 4.1).

Table 4.1: Trial farmer evaluation of key sections of the LMP (from farmer feedback questionnaire Annex 2.2)

LMP section	Trial farmer evaluation (% rating this section of the LMP)			Farmer comments/Notes on how this section could be improved
	Useful or essential	Quite useful	Not useful	
Simple map showing the location of key farm environmental assets	87	13	0	Visually appealing; more detail could be included. Note that the map should have also shown hedges/tree lines – these were omitted from final asset maps due to licensing issues.
Graphic showing some key natural capital asset indicators	73	18	9	Needs to include information on what good quality means for each asset; area measurements need to be also presented as % of farm area (not just actual area); interesting to see how farm compares with others but not particularly useful.
Table and opportunity map outlining what farm is already delivering in terms of the local environmental priorities for the area and identifying additional opportunities	86	14	0	Good format – it could be really easy to produce a proforma and worked example for farmers to fill out for themselves; could use a traffic light system to show the highest change priorities (most impactful); would be useful to give more detail of the costs and benefits of the key opportunities identified and where to go to take the next steps on the opportunities; contains an abundance of information; pretty much covers everything, probably more than is necessary; needs more emphasis on soil opportunities for storing carbon.
Notes on particular fields identifying any issues/opportunities	85	15	0	Clear and to the point - just what we need; Inclusion of appropriate capital options in opportunities would be helpful; this is probably more useful than table D, would be good in map form too; high risk fields could be split into ones with steep slopes and ones next to streams that flood.
Farm business elements (evaluated in more detail in Section 6)	41*	23	36	* includes 3 farmers who thought that it was useful only when backed up with time for detailed discussion with farm business advisor

Potential additional elements to include in LMP

All 27 LMPs were produced by one land management advisor in a short period of time, and time on farm was heavily constrained by Covid restrictions. Consequently, some planned elements of the LMP were not able to be delivered, particularly the baseline soil health assessment.

Farmers were asked, in the final feedback questionnaire, to identify any additional elements they thought would be useful (Table 4.2). While they could see the value of including additional elements, particularly assessments and plans that are required for delivery of the SFI standards (see Table 4.2), the Trial farmers were wary of making it over complicated and realistic that they may have to pay for

the creation of the plan; making it more complicated would make it more expensive and less likely they (and other farmers) would be prepared to engage with the LMP process.

Farm advisors (see Section 7) were also asked what other elements should be included in the LMP, and their views on four particular elements evaluated (see Table 4.2).

Table 4.2: The views of farm advisors and Trial farmers on potential elements to include in LMP

	Trial farmer evaluation (% rating this potential element of the LMP as useful/ essential)	Farm advisor evaluation (% of farm advisors who considered this element should be part of LMP)
Baseline soil health assessment	77	100
Baseline Run-off and Soil Erosion Risk Assessment	82	100
Whole farm Nutrient Management Plan	68	96
Soil Management Plan	73	96
Other suggestions	Carbon footprint plan; Map of best location for small areas fenced out of management under the improved grassland SFI standard; Species data; Potential losses of income due to erosion & loss of nutrients; Key constraints eg water mains pipelines; Comparison of farm to other farms in local area; Permissions required to deliver land management (eg felling licences); Landscape impacts of any large scale actions.	Numerous suggestions (see Section 7) including: Grazing Management Plan; Integrated Management Plan; Habitat Management Plan; Pesticide Management Plan; Water protection assessment; Climate change impact assessment

Farm Business situation report (considered in more detail in Section 6)

In the feedback survey, 41% of Trial farmers thought the farm business elements of the LMP were useful while 26% thought that farm business planning should be part of the E.L.M application process/land management plan (39% thought possibly, depending on the farmer's situation). The value of this element seems to depend on the extent to which the farmers engage with their farm accounts (see Section 6 for more detail).

Format of the LMP

Most farmers favoured a map-based format, with accompanying short tables summarising key opportunities on the farm and field by field advice, opportunities, and constraints information.

One farmer suggested an app-based plan which also stored any E.L.M. evidence required eg number of loads of manure spread on each field, soil sampling by field, number of stock grazing, when ploughed etc.

Encouraging farmers to deliver local priorities

The project aimed to trial a means of encouraging farmers to deliver local priorities, through engaging them in the agreement of those priorities and developing a template which clearly identified which actions would help deliver the local priorities.

Organising Table D by local priority worked well in terms of emphasising how potential actions on farm influence local outcomes but it could result in repetition (as identified actions on farm delivered a number of different priorities). While simply referring to previously agreed local priorities in an LMP was unlikely to encourage farmers to deliver particular outcomes, the table was designed to prompt/frame discussion regarding the opportunities identified. However, it was clear from the feedback from Trial farmers that, while they are keen to help deliver local priorities, they are far more likely to do so if it makes farm business sense.

The value of including farm scale natural capital indicators in the LMP

We have trialled using a set of farm scale indicators, measured through a combination of GIS and field work on farm, to provide a baseline assessment of the farm's natural capital assets. The indicators help identify where improved management and/or restoration interventions could be best implemented to improve the quality of the existing assets (for example if one woodland has a low woodland condition score), as well as enabling monitoring of the impact of E.L.M. on the natural capital assets (see Section 5 for more detail). However, because of Coronavirus restrictions, we were only able to complete one farm survey visit, at which the indicators were measured (or estimated). Consequently, we weren't able to test to what extent they helped inform the decision-making process or shape the discussions with the farmer (e.g. the indicator shows this woodland is in poor condition – can we discuss what could be done to improve it).

Several farmers mentioned that the indicators shouldn't be confined to natural capital - they should also capture what the farm produces (tonnes of wheat, kg of meat etc) together with a measure of the social benefits to society i.e. employment for the local community (jobs, contractors) or income to the local economy, so providing a more complete picture of the farm.

Farmers ability to create an LMP

Of the Trial farmers who responded to the questionnaire, 43% thought they could develop an LMP for their farm (using the template trialled here; this % is likely to be increased by the fact that they had a draft LMP created as part of the Trial), while a further 43% thought they might be able to complete some elements if they had a simple form/template; the rest thought they would need help, either because they were too busy or didn't have the skills to do it themselves.

Conclusions

Farmers are more likely to select higher environmental delivery options/standards if they are well supported by farm advisors during the application process (see Section 7). However, the cost of employing a farm advisor may discourage farmers from engaging in the LMP process. Consequently, if farmers are to be expected to pay for farm advice during the LMP process, it is essential that the on-farm data/information required for its completion is kept to the minimum required to deliver the objectives of the process. The land management elements of the LMP trialled here was completed after one day on farm (average farm size 138ha but generally comprising numerous small fields), including a meeting with the farmer, enabling a relatively superficial natural capital baseline assessment. The design of the LMP template(s) and the methods used to measure baseline natural

capital indicators need to be kept as simple and straightforward as possible, to reduce costs, and ensure that farmers are not put off from engaging with the valuable LMP process.

5. Farm Scale Natural Capital Indicators

Aims

The trial aimed to develop a set of 10-15 natural capital indicators aligned to local priorities agreed by stakeholders for our four landscape areas.

In the context of E.L.M, it is envisaged that farm scale indicators may be useful for:

- Capturing what each farm is currently delivering in terms of provision of public goods and ecosystem services;
- Monitoring the state of the environmental assets on farmland and impact of E.L.M (what is public money delivering?);
- Providing an indication of where improved management and/or restoration interventions could be implemented to improve the quality/condition of pre-existing assets on the farm and, in so doing, increase the natural capital value of the farm (i.e. improved function of existing assets to increase provision of public goods and services and natural capital benefits/value).

Key learning points

Landscape priority setting to facilitate use of farm scale natural capital indicators

- (a) Framing landscape priorities in a consistent way makes the identification of relevant farm scale indicators more straightforward. Where priorities are framed in terms of outcomes which relate directly to natural capital asset state (quantity, quality or location), then there is a clear link to potential indicators, but where priorities reflect ecosystem service flows or benefits then it is necessary to first identify the assets that underpin the provision of those flows and be clear what changes in asset state are required to deliver the outcomes.
- (b) Using farm scale indicators to monitor the impact of E.L.M. in delivering the landscape priorities is made easier and more meaningful if the landscape priorities identified are SMART (specific, measurable, achievable, realistic and time bound), particularly in terms of setting measurable targets for delivery (e.g. x ha of culm grassland in 10 years). If the focus of an outcome is on reducing pressures, and it is difficult to quantify the impact of the pressures on the assets, then it is necessary to be specific about the scale of pressure reduction required (and to understand this may overlap with other asset-related outcomes.) However, as we discovered on this trial, agreeing SMART priorities, based on outcomes, for large landscape areas with a wide range of stakeholders in a tight timeframe can be demanding, particularly under lockdown restrictions.

Identifying relevant indicators

- (c) We identified a large number of potential farm scale indicators that could be used in North Devon, reflecting the quantity, quality and location of natural capital assets (Annex 5.1), and a shorter list aligned with local priorities for the four landscape areas (Table 5.1). All those that could quickly be assessed on farm or where data existed were used to establish a baseline for each farm, but it became clear that finalising a short list that fully captures the local priorities without missing attributes underpinning key ecosystem services requires more time and resource. The long list provides a useful summary of potential indicators,

methodologies and limitations but is tailored to North Devon and would need further refinement and development for use elsewhere.

Farmers' views of indicators

- (d) The trial farmers seemed to like the concept of the indicators (in terms of capturing what they are already delivering with respect to the natural capital assets they have on the farm and how they manage them) (see Section 4). Farmers were particularly interested in how their farm compared to others in the local area. They observed that the graphic presenting the measurements of some key indicators for their farm (within Annex 4.1) needed to include more explanatory text as it was not always clear what 'good' looked like (what they should be aiming to deliver) and because some indicators (e.g. habitat diversity) were not easily interpretable.

Measuring indicators

- (e) The quantity/extent, quality/condition and location of natural assets determine their ability to provide flows of ecosystem services and benefits, and therefore their overall natural capital value. However, the quality/condition of these assets (and by inference their function and ability to generate benefits) can be challenging to assess comprehensively and in detail, mainly due to the lack of geospatial data of suitable resolution available and the fact that field-based assessment can be both highly technically demanding and resource intensive.
- (f) The importance of natural ecosystem function to protecting and restoring biodiversity and other services is being increasingly recognised, and ideally the asset quality measures would evaluate the extent to which the habitat was functioning naturally. Assessing natural function per se can be complex and needs to take into account hydrology, sediment processes, nutrient/chemical status, species composition and vegetation processes and structure. In some cases, indicators of the extent to which natural ecosystem function has been modified can be used as a proxy (e.g. absence of drainage as an indication of the naturalness of hydrological function). We trialled the use of the River Naturalness Assessment, developed by Natural England and Rivers Stakeholder Group, and found it straightforward and quick to use on farms. Other natural process-based methodologies for assessing assets are currently being developed by the Integrated Biodiversity Advice Project Core Working Group at Natural England.
- (g) To be useful, the natural capital indicators need to be simple to understand and straightforward to measure, so that the data can be collected by a farmer or their advisor, quickly, without specialist knowledge, and with a good degree of repeatability. Measuring extent of a natural capital asset is relatively straightforward but quality is often more complicated. Existing data on the quality of natural assets is often scarce and assessment using current methodologies (e.g. BEHTA priority habitat assessments) generally requires a site visit by an experienced farm advisor. When surveyed (see Section 7), few farm advisors felt they had the skills currently to undertake the BEHTA priority habitat assessments or the Woodland Condition Survey (England Woodland Biodiversity Group and Forest Research) trialled here, underlining the need for more training and/or development of methodologies accessible to a broader range of assessors, including the farmers themselves.
- (h) Existing methodologies for measuring the quality of the assets may not capture all the relevant attributes of the asset and tailoring the methodologies or developing new ones may be required. For example, the BEHTA hedgerow condition assessment captures some key attributes, such as structure but does not fully capture the extent to which the hedge provides food resources for farmland wildlife (eg amount of fruit/seeds available over winter

etc). It therefore needed to be amended to include this in the assessment methodology (through a requirement for high quality hedges to be cut on rotation).

- (i) Although a number of indicators (particularly the extent indicators) can potentially use existing data sources, time on farm is key to ground truth the data as existing data is sometimes out of date, missing or inaccurate (for example differentiating hedgerows from tree lines in the OS data set used here), particularly on farms which have not previously been in stewardship. There is also an issue that, whilst extent data may be available for establishing a baseline, it is often not updated sufficiently frequently to be used for monitoring change as a result of agri-environment schemes.
- (j) Some of the farm scale indicators identified require GIS manipulation (interpatch distance for example), but once farm assets are accurately mapped, automated GIS methods to calculate these would be straightforward.
- (k) Ecological Network indicators, measuring habitat patch size and connectivity, require measurement at a larger scale than the farm and need to be linked to the development of Nature Recovery Networks in the wider landscape.

Soil health/condition indicator

- (l) Soil health/condition is a very important baseline indicator, underlying the delivery of a number of key local priorities and E.L.M. outcomes, as well as being a priority in its own right. However, measuring it is technically challenging and resource-intensive using existing methodologies, and the limited time on farm prevented us from measuring the quality of this key natural asset. A range of soil health measures are already available (eg SRUC's Visual Evaluation of Soil Structure Score Chart and the ADHB soil assessment), providing a direct assessment of soil organic matter, degree of compaction etc. The development of a simple assessment based on natural functioning could be potentially helpful as an adjunct to more detailed assessment. It is common for land management advisors to use an assessment of farming and land management practices as a surrogate from which they can infer likely soil condition (e.g. poor crop or nutrient management practices that will result in the degradation of soil condition).

Grassland indicators

- (m) The mapping of grassland extent in the farmed environment can be challenging. Although there are several geospatial datasets that can be effectively used to support a field-based survey, the greatest challenge is the accurate classification of grassland type, which is a key determinant of natural capital value and which can be confounded by grassland/grazing management. Categories may include semi-natural (or un-improved), semi-improved, improved, temporary and permanent grassland types, but they are often poorly defined and there is overlap between these categories. It is vital therefore to establish a clear classification of grassland types to be used for baseline assessments.
- (n) Identifying a feasible, straightforward methodology for measuring the quality/condition of pasture grassland (non-priority habitat) is also challenging, taking into account the varied ecosystem services this asset can potentially deliver. Methods for assessing grassland condition or quality as a semi-natural habitat (i.e. biodiversity or wildlife habitat value) do exist, but these remain largely experimental and are likely to be highly resource-intensive to apply. It is more feasible to base the quality measure on the management of the grassland. Essentially it is the 'naturalness' of a grassland which influences its ability to provide ecosystem services and the naturalness is a function of how it is managed – is it permanent or temporary, improved or unimproved, drained or undrained. The quality assessment

method can be tailored to the specific priority outcome (for example flower rich grasslands to provide resources for farm wildlife).

Location indicators

- (o) The location of assets can be a key determinant of their ability to deliver ecosystem services. This is particularly true for flood regulation, soil erosion, water quality, air quality and cultural services. Capturing this as an indicator is therefore important, but often extremely difficult. For example, the location of woodland has the potential to both increase as well as decrease flood risk. The most effective locations are thought to be areas with soils that have a high propensity to generate rapid runoff, along or across pathways where overland flow is concentrated, along streamsides, and within floodplains. Areas where woodland could have a negative effect are where slowing the flow could synchronise rather than desynchronise downstream flood flows, where bridges and culverts are vulnerable to blockage by woody debris, and where properties or infrastructure could be affected by the backing-up of waters upstream of floodplain woodland. Capturing these elements in a single, simple to measure indicator is very challenging.

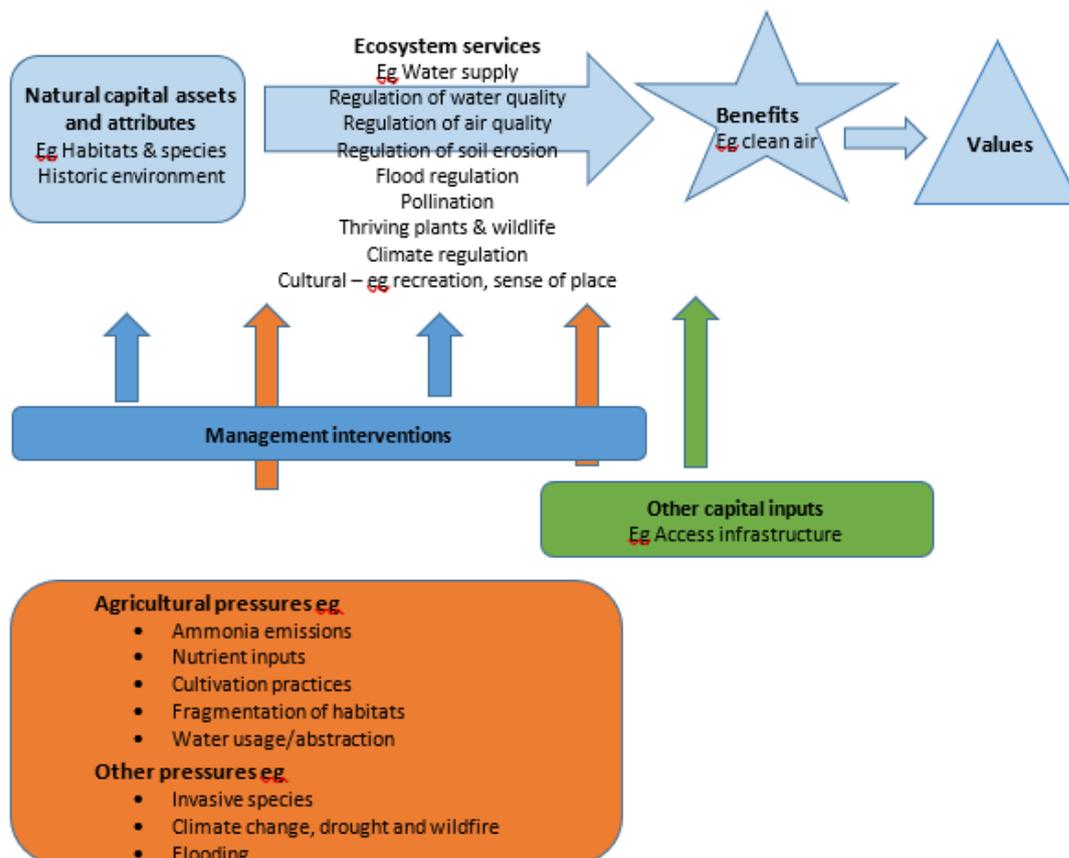
Using indicators to monitor the impact of E.L.M./SFI

- (p) Although we can use indicators to monitor the quality and quantity of SFI delivery, in terms of its impact on key assets, this is restricted by the fact that the SFI standards are action based (rather than outcome based), primarily address the agricultural pressures on assets rather than delivering significant increases in asset quantity (or quality in the case of woodland and priority habitats), and generally do not take asset location into account. Their use is likely to be more straightforward within an outcome based Local Nature Recovery scheme.
- (q) We have predicted the impact of implementing SFI on key farm scale indicators but note that these predictions are based on a system where farmers are provided with 1 to 1 farm advice during the SFI application/LMP process – this is likely to both increase the delivery of higher levels of SFI and its effectiveness (e.g. improving the location of actions in appropriate locations).
- (r) The clean air (reduction in ammonia) local priority is difficult to address using natural capital indicators at a farm-scale because, whilst air is an asset, it does not operate at a level which is within a land manager's control. In addition, the role of woodland planted close to ammonia sources in mitigating air pollution is captured within the indicators but not within the standards so the opportunity to affect change through the location of the woodland is missed (particularly in the absence of expert farm advice). Many of the critical interventions require changes to infrastructure and/or management practice and so are not directly captured by the indicators, although the practices are addressed, at least to some extent, in the SFI standards.
- (s) Overall, this study was able to develop a method for estimating the environmental benefits/changes and landscape-scale impacts that could result from the preferred farm-offers made by farmers in the North Devon E.L.M Trial. However, actually estimating the likelihood that they would result in the achievement of the agreed landscape priorities for the E.L.M Trial proved very difficult, due to the fact that the three scenarios were primarily based around the delivery of different levels of the SFI Standards, rather than being based on natural capital outcomes. Preliminary modelling by Rothamsted Research suggests that implementing the SFI Waterbody Buffering standard could reduce inputs of phosphate, nitrates and sediments by over 40% and of FIO's by 25-40% in the Trial landscape areas.

Background

This Trial set out to identify landscape-scale natural capital priorities and then explore what a sample of farmers within that area would be prepared to do to contribute to those, assessing whether their 'offer', if scaled up, would deliver the priorities. We aimed to do this by identifying 10-15 farm scale natural capital indicators that captured the contribution farms were making to the delivery of the local priorities identified by stakeholders. To assess the current state of natural capital at a farm-scale and to infer the contribution that land managers can make towards landscape priorities requires the identification of metrics that will detect change at appropriate spatial and temporal scales. Measurable outcomes could be identified at any point along the natural capital logic chain but it becomes increasingly difficult to measure and quantify relevant change the further along the chain you get (moving left to right). It is likely to be easier to measure change in the quantity, quality and location of assets and more difficult to find appropriate metrics for ecosystem services or benefits relating to change at a farm level. This is shown in Figure 5.1 below. Measuring change in asset status also has the advantage that it provides an 'early warning system' as asset state can deteriorate significantly before there is a resultant change in service provision.

Figure 5.1: Natural Capital Logic Chain



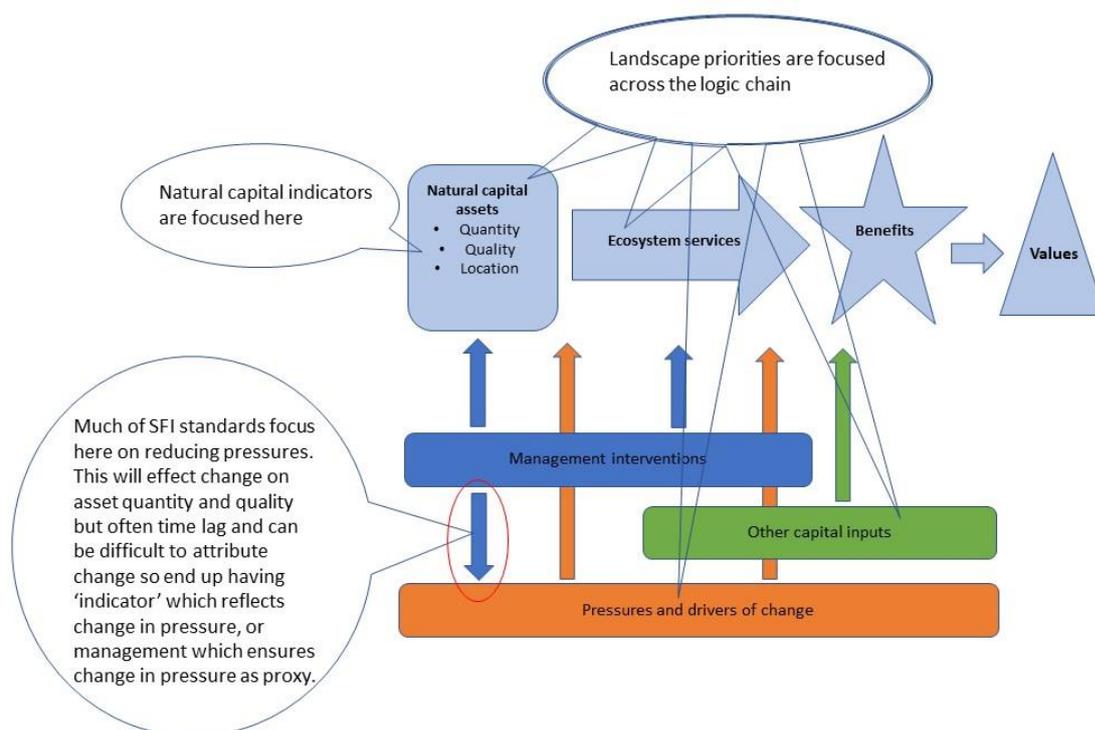
The trial worked with 27 farmers to identify what they could offer in terms of conserving and enhancing their natural capital on their farm to deliver the local priorities identified. Farmers can change their land management to improve the quality of the natural assets they have on their farm (for example more diverse woodland) and/or change their land use to increase the extent of the natural assets (for example create more woodland). Where they target their actions (asset 'location') is important for some ecosystem services, for example, any woodland creation is likely to have

benefits for climate regulation wherever it is done, but it needs to be located in the right place in the landscape to help with flood regulation.

Achieving the local priorities also requires farmers to reduce the pressure on those natural assets from farming activities, such as from excessive nutrient inputs. This requires changes in land management (and in some cases the provision of appropriate farm infrastructure (e.g. larger slurry stores)).

Mitigating the pressures on assets could be achieved, at least in part, through the implementation of the Sustainable Farming Incentive (SFI) standards. These standards are action based, and principally focus on directly reducing the pressures on existing natural assets and direct enhancement of the quality of those assets (see Figure 5.2 below). In some cases they can be used to increase the extent of particular asset types (for example it is possible to create small areas of woodland through the Farm Woodland standard; based on the draft versions of the SFI standards provided for this trial at least). Very few of the standards include targeting requirements and so have little demonstrable impact on the location of assets and consequently will not enhance provision of a number of ecosystem services.

Figure 5.2: Natural capital logic chain showing the link to standards and indicators.



The contribution the farms are making to the delivery of local priorities needs to be evaluated in terms of the impact of the proposed farm 'offer' on a key set of natural capital indicators aligned to local priorities. This means assessing the impact of the standards, at whichever level the farmers are prepared to deliver, on the natural capital indicators. The LMPs prepared for each farm business identified the relevant SFI standards (based on the asset types present on the farm) and potential Local Nature Recovery/Landscape Recovery actions. It is anticipated that the LR/LNR elements of E.L.M. are likely to be much more focused on restoration, enhancement or creation of habitats. However, because a key element of the trial was testing the farm business responsiveness to three

costed scenarios (low, medium and high offers), and potential payment rates were only available for the SFI element of E.L.M., the three scenarios focused on the SFI standards, despite the fact that the LR/LNR elements of E.L.M. are likely to make greater contributions towards delivering the quantity and quality of the natural assets required to deliver the local priorities.

At the end of the Trial, the farmers were asked to select which of their three scenarios they were most likely to select (and also which level of which standards they would choose in a realistic situation).

Development and use of farm scale natural capital indicators in the trial

Step 1: Identified local priorities (see Section 3). The local priorities for each of the four landscape areas were identified by groups of stakeholders and were framed in a number of different ways. Some of them were framed in terms of relevant ecosystem services (ecosystem services are the benefits we get from nature) – for example reduction of flooding. Others were focused on assets (for example creating more culm grassland), and others on reducing the pressure on natural capital assets (such as ammonia reduction). Some were framed in terms of enhancement only whilst others encompassed maintenance as well as enhancement. Due to the timescale (partly resulting from the complexity of delivering the prioritisation process under Covid restrictions), the identified priorities didn't include timescales, and outcomes weren't quantified.

Step 2: Working with NE natural capital specialists and Westcountry Rivers Trust, we created a long-list of potential farm scale natural capital indicators for North Devon (Annex 5.1). This is not a complete list of potential indicators but aims to at least capture the quantity and quality of key natural assets on the farm. The location elements are particularly tricky to capture and were only included for some assets. See Objective 2 M&E report for more detail.

Step 3: Identified the relevant outcomes for each of the key local priorities, the relevant natural assets which underpin the outcomes and the indirect agricultural pressures which need to be mitigated to deliver each landscape priority (see Annex 5.2). Annex 5.2 also identifies which SFI standards are expected to deliver the mitigation of the agricultural pressures identified. The natural capital logic chain helps us link the priorities identified in step 1 to the ecosystem assets that provide them, so for example more woodland in better condition on a farm can be linked to specific services.

Step 4: Finalised a sub-set of farm-scale natural capital indicators aligned to priority outcomes based on the landscape priorities identified for our four landscape areas (Annex 5.2). Key indicators for our landscape areas (all four combined) are summarized below (Table 5.1):

Step 5: Evaluated potential ways of measuring the farm scale indicators, using existing methodologies where possible (to help with consistency and because they have generally been well tested). Where possible we used methodologies which are designed to be used by non-experts so that they could be measured by farmers and their advisors with relatively little training/guidance (Annex 5.3). The importance of natural ecosystem function to protecting and restoring biodiversity is being increasingly recognised, and ideally the asset quality measures would evaluate the extent to which the habitat was functioning naturally – i.e. natural processes were allowed to happen (e.g. absence of draining as an indication of the naturalness of hydrological function). Such natural process-based methodologies for assessing assets are only now being developed but we trialled such a method for the river quality measure.

Table 5.1: Key farm scale natural capital indicators for North Devon aligned to the local priorities of our four landscape areas (combined for simplicity).

Indicator	Measure
W1/2: Quantity and quality of broadleaved woodland	Area of high quality broadleaved woodland
WB3: Extent of riparian vegetation	Length of river with riparian vegetation >6m wide (or in semi-improved grassland or woodland) (aligned with Waterbody Buffering SFI standard)
WB5: Naturalness of water bodies	Length of watercourse in/not in good hydro-morphological condition (functioning naturally)
WB6: Absence of invasive species	Presence/absence of Himalayan Balsam along the river/streams
H1/2: Quantity and quality of hedgerows	Length of hedges in good condition
H3: Location of hedges with respect to run-off/flood mitigation	% of runoff pathways intercepted by hedges
SNH1: Extent of priority habitat	Area of farm comprising culm grassland /lowland meadow/lowland heathland/blanket bog (separately)
SNH2: Condition of priority habitat	% of priority habitat in good condition
G2: Quality of grassland (Pasture)	Area of flower rich grassland providing food resource for farmland wildlife OR area of low input, permanent semi-improved grassland
A2: Length of PROW/permissive footpaths	Length of PROW or permissive access (linear routes only)
HE2/3: Designated /Non-designated historic environment Quality	Area of sites where principal land management vulnerabilities are/are not addressed over whole feature (not measured on farm)
S1: Soil health / condition	Area of each major soil type in/not in good condition (not measured on farm)
S3: Area of drained/cultivated peat	% of peat soils drained (none cultivated on Trial farms)
SD1: Structural diversity of vegetation on farmed land	Area of farmed land (pasture & cultivated land) comprising tussocky grass margins, tall ruderals, fenced off field corners, scrub, wildlife plots, mature in field trees and tree lines, conservation crops, etc
EN1: Ecological Network – Patch Size	Average size of all semi-natural habitat patches (only calculated for purple moor grass and rush pasture/broadleaved woodland for this trial)
EN2: Ecological Network –Connectivity/ Fragmentation	Average interpatch distance (only calculated for purple moor grass and rush pasture – ideally would cover all semi-natural habitat)
RO1: Asset location in relation to run-off mitigation	% of high risk land in semi-natural habitat or well managed permanent grassland

Step 6: Measured the key farm scale indicators on the 27 Trial farms at baseline (average figures for each indicator are given in Table 5.2). Unfortunately, due to Covid lockdown restrictions, the land management adviser only had one day on each farm so was unable to measure some key indicators, including soil health and historic environment management. The results of the baseline assessment were recorded in each LMP in the form of simple graphic (within Annex 4.1). This presented some headline indicators but needs refinement to ensure the indicators selected are tailored to the landscape priorities and to provide more detail regarding how the indicators are measured and the basis on which the relative score (providing a comparison with the wider landscape) is assessed.

Step 7: The land management adviser worked with Trial farmers to discuss what actions they could take to conserve and enhance the natural capital on their farm in terms of the priorities identified. The land management adviser determined how the farmers intentions would be delivered through a mix of SFI standards and potential LNR/LR actions (Annex 4.3).

Step 8: Assessed the predicted impact of our three scenarios (and a potential additional LNR scenario) on our key indicators and evaluated to what extent the indicators can be used to monitor the delivery of priority outcomes. The land management advisor drafted three scenarios for each farm and estimated the extent to which each indicator is predicted to change for each of the three scenarios, using the relevant actions identified for each level of each standard (Table 5.2). The low scenario was based on the basic level of each of the relevant SFI standards, the medium scenario on the intermediate level of each of the standards and the high scenario on the advanced level of each of the standards. Small areas of new woodland that could potentially be created under the Farm Woodland standard and lengths of new hedgerow which could potentially be created under the Hedgerow Standard were included in the high scenario for simplicity (and because that best reflected the farmers' intentions). In addition, the impact of potential Local Nature Recovery actions (Annex 4.3) on each indicator was estimated where feasible.

Step 9: Identified which is the preferred scenario for each farmer (through the farmer feedback questionnaire or direct feedback). To keep the process simpler, farmers were initially only given the option of the low, medium or high scenario but they were also asked to identify which level of which standards they would be likely to deliver. This information can then be used to estimate the predicted impact of the proposed SFI payment methodology on outcomes and delivery of the landscape priorities.

Step 10: Developed a method for aggregating the environmental benefits/changes that could result from the delivery of the SFI standards and evaluated the likelihood that the preferred scenarios, when aggregated across the landscape, would result in the achievement of the agreed landscape priorities for the E.L.M Trial. This element was completed by Westcountry Rivers Trust.

For more detailed discussion of the development of the indicators see Objective 2 M&E Report.

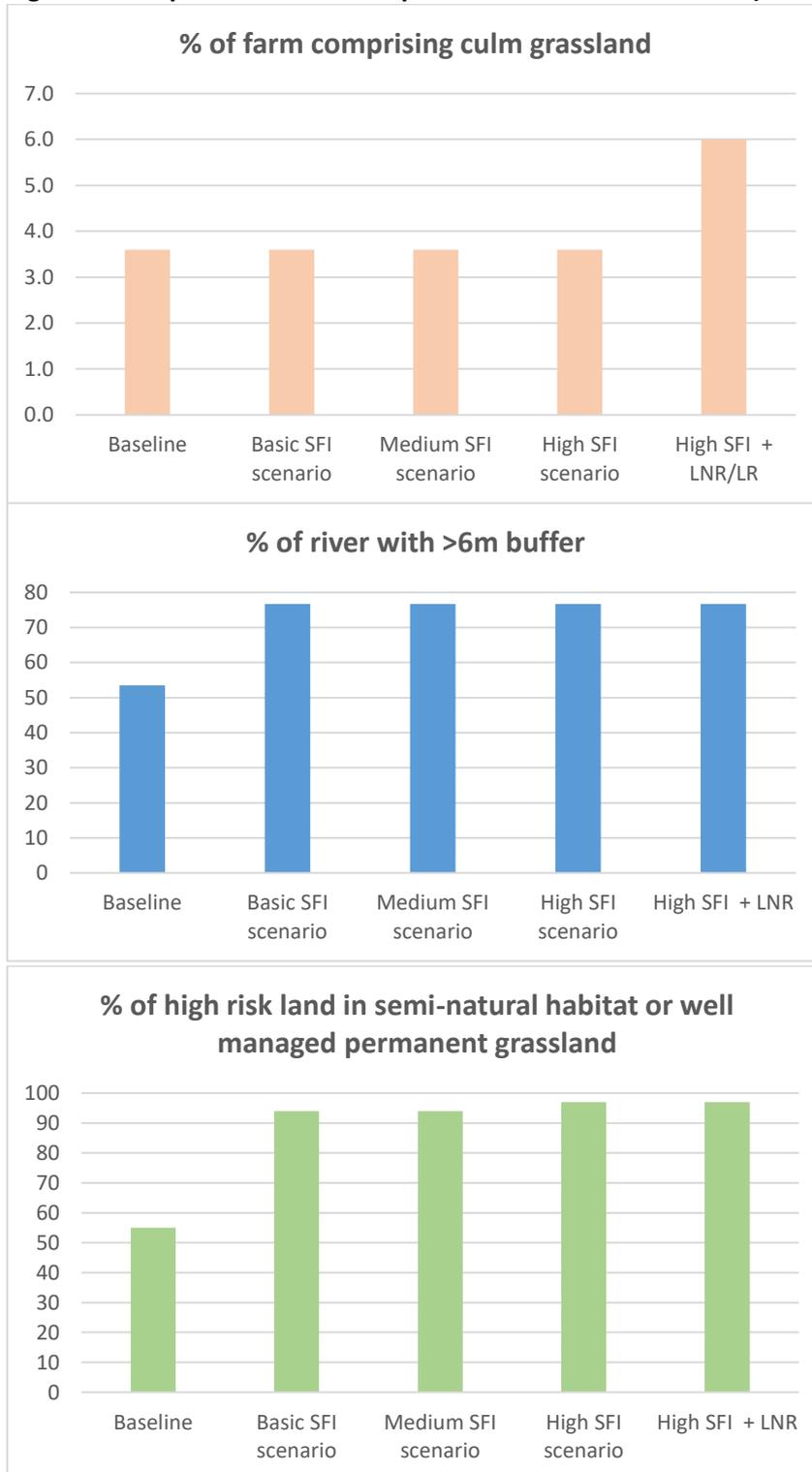
Using farm scale NC indicators to estimate what the scenarios might deliver

The main changes in farm scale indicators (averaged across all 27 farms) predicted to result from the farmers implementing the three SFI based scenarios, compared to the measured baseline, are summarised below and detailed in Table 5.2. Note that these (rough) predictions are based on the actions included in version 10 (March 2021) of the SFI standards. Some of the changes, the buffering of ammonia sources for example, are a result of including tailored 1 to 1 farm advice in the SFI process and are not likely to have happened in the absence of farm advice.

- Small increase in area of broadleaved woodland and length of hedges under high scenario;
- No change in the quality of broadleaved woodland or extent of priority habitats;
- 2 extra farms where the main ammonia sources (slurry pits, barns) are buffered downwind by woodland;
- Increase in structural diversity (resulting from increases in scrub, tussocky grassland, wildflower mixes etc) under all scenarios;
- Increase in area of permanent improved grassland;
- No change in area of semi-improved permanent grassland;
- Increase in flower rich grassland under the medium and high scenarios, but a small decrease from baseline under the low scenario;

- Increases in the % of farm comprising arable land managed for wildlife;
- Significant increases in the % of high risk land in semi-natural habitat or well managed permanent grassland.

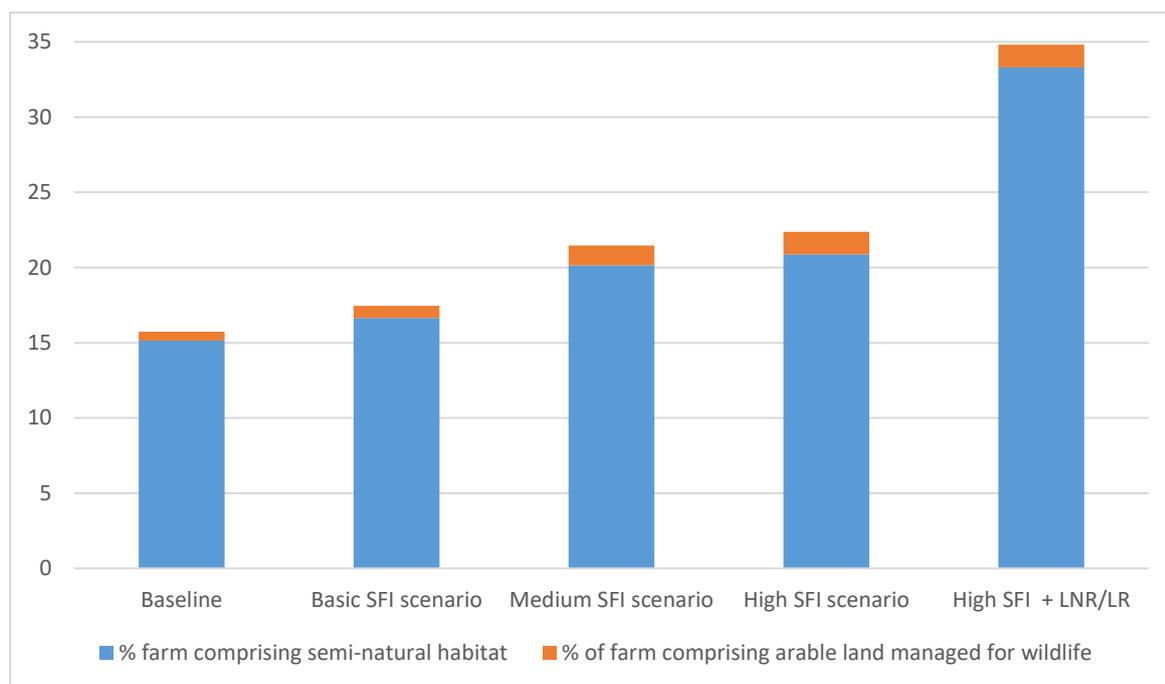
Figure 5.3: Impact of scenario on predicted levels of indicators (averaged for all 27 farms)



Semi-natural habitat on farms provides important habitat for wildlife, not only in its own right but in terms of connecting existing areas of priority habitats, as well as delivering other benefits, such as

reducing run-off, carbon storage and potentially enhancing landscape character. The predicted change in the total area of semi-natural habitat (broadleaved woodland, wood pasture, hedges (estimated at 2m wide), priority habitats, tussocky grassland and scrub) under the three scenarios is shown in Figure 5.4. The baseline is c. 15%, reduced to 13% if the two farms with large areas of SSSI land are excluded.

Figure 5.4: Average % of Trial farms comprising semi-natural habitat (and arable land managed for wildlife) measured at baseline, together with the % predicted to result from the three SFI scenarios and a fourth scenario based on potential, uncosted LNR/LR actions.



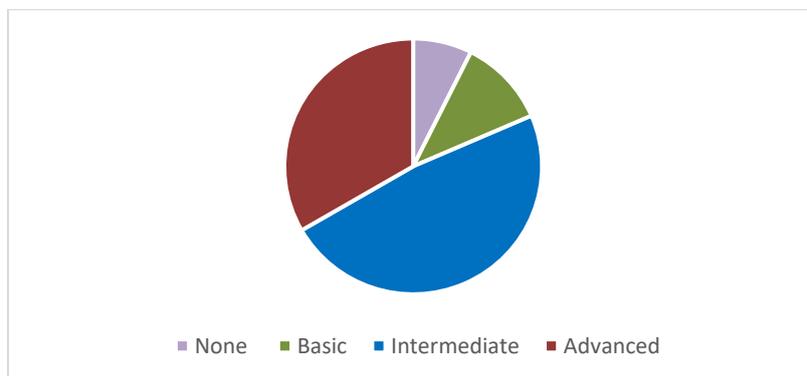
SFI standards are focused on the more intensively farmed parts of the farm and therefore not expected to result in significant changes to the area or quality of priority habitats or woodland. However, there is significant potential to create additional areas of culm grassland (purple moor grass rush pasture) and other priority habitats on the farms (estimated in Table 5.2, based on realistic, but uncosted, LNR/LR actions identified for each farm (detailed in Annex 4.3)). Few farmers were considering creating large areas of tree planting (based on current incentives) although that might change if incentives improved and the length of E.L.M agreements was sufficiently long, to give farmers the security that investment in woodland was worthwhile. Creating wood pasture was a more popular option.

The indicators do not capture well the reduction in agricultural pressures on the natural assets on farm, which are mitigated by the delivery of the various standards. This is considered in more detail below where Westcountry Rivers Trust have evaluated the extent to which the delivery of the farmers' preferred SFI scenarios would result in the achievement of the agreed landscape priorities.

Impact of farmer scenario choice

The most popular overall SFI scenario choice was intermediate (13 farmers), closely followed by advanced (9). Two farmers indicated that they would not choose to deliver any SFI scenario, while the remaining 3 indicated they would select the basic (Figure 5.5). The reasons for these choices are discussed in more detail in Section 6.

Figure 5.5: Farmer choice of SFI scenario (N=27)



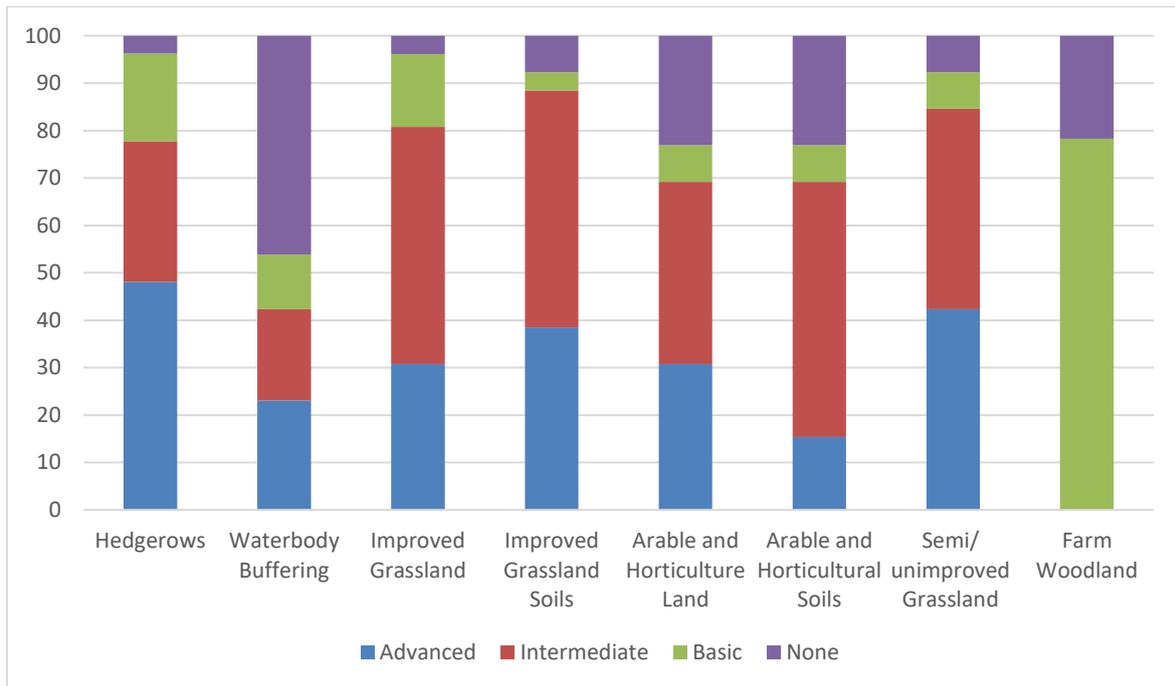
In reality, it is likely that farmers will be able to mix and match different levels of the SFI standards (so they could for example deliver the high level of the hedgerow standard but only the basic of the waterbody buffering standard). Farmers were therefore also asked which level of which standards they would select if they had the choice (Table 5.3, Figure 5.6). Farmers were generally unkeen on the waterbody buffering standard, considering payment rates to be too low to compensate for the hassle and cost of providing alternative water supply. For other standards, the intermediate level was generally most popular (see Section 6 for more detailed discussion).

Table 5.3: Farmers’ choice of SFI standards, and of the levels within each standard (27 farms). (N/A: none of the relevant asset on farm; None: farmer would not choose to select to deliver any level of that standard)

% of farms	Hedge-rows	Waterbody Buffering	Improved Grassland	Improved Grassland Soils	Arable/Horticulture Land	Arable/Horticultural Soils	Semi/unimproved Grassland	Farm Woodland*
Advanced	48	22	30	37	15	7	41	
Intermediate	30	19	48	48	19	26	41	
Basic	19	11	15	4	4	4	7	67
None	4	44	4	7	11	11	7	19
N/A	0	4	4	4	52	52	4	15

(*Note there are no intermediate or advanced levels of the Farm Woodland standard)

Figure 5.6: Farmers' choice of the levels within each SFI standard (presented as % of farmers choosing each level, only including farms where the relevant asset is present). Note there are no intermediate or advanced levels of the Farm Woodland standard



Using the expected uptake of each of the levels of each standard, the expected value of each indicator can be estimated, averaged across the 27 farms (Table 5.4).

Table 5.4: Baseline measure of a sub-set of farm scale NC indicators (averaged for all 27 farms) and the level predicted from the delivery of SFI standards, based on the farmers' choice of level for each standard (averaged for all 27 farms, see Table above). Where the indicator is predicted to change from the baseline, the expected measure is shown in red.

Indicator (how measured in brackets). Results presented as % of farm unless otherwise stated Key indicators aligned to landscape priorities in bold	Indicator value	
	Baseline	Expected indicator measure based on farmers' choice of standards
ASSET-TYPE SPECIFIC INDICATORS		
Woodland		
W1a: Woodland extent (% of farm in broadleaved, conifer and wood pasture)	7.2	7.4
W1b: Woodland extent (% of farm in broadleaved woodland only)	6.0	6.2
W1/2: Extent of high quality broadleaved woodland (% of farm)	3.2	3.2
W4: Shading of watercourse (% of watercourse shaded)	89	89
W3: Location of woodland in relation to sources of ammonia (No of farms with ammonia sources buffered by downwind woodland)	1/27	1/27
Waterbodies		
WB1: Number of ponds	1.5	1.5
WB3: Extent of riparian vegetation (% of river with >6m riparian vegetation or in SI grassland/woodland)	53	76
WB5: Naturalness of water bodies (% of river of high quality (naturalness))	52	52
WB6: % of farms with Himalayan Balsam present in riparian zone	27	Likely to increase
Hedges		
H1: Hedgerow and hedge bank extent (Length of hedges)	17919m	18137m
H2: Hedgerow quality (% hedges in good condition)	52	52
H3: Location with respect to run-off/flood mitigation (% of runoff pathways intercepted by hedges)	67	67
Priority habitats and semi-natural habitat		
SNH1a: Extent of priority habitat (% of farm in priority habitat (excludes woodland))	6.8	6.8
SNH1b: Extent of PMGRP/culm grassland (% of farm)	3.6	3.6
SNH2: Condition of priority habitat (% of PMGRP in good condition)	75.4	75.4
Grassland (pasture)		
G1: Grassland (pasture) quantity (permanent improved grassland)	49.4	75.3
G1/2: Extent of high quality grassland (% of farm in low input, permanent semi-improved grassland)* ¹	12.6	12.6
G1/2: Extent of high quality grassland (% of farm comprising flower rich grassland providing food resource for farmland wildlife* ²)	14.1	20.4
ALL FARM INDICATORS		
A2: Length of PROW and permissive access	896m	896m
S3: Extent of drained/cultivated peat (% of deep peat area drained and/or cultivated)	26	26
EN1: Ecological Network –Patch size (average size broadleaved woodland patches) (ha)	17.7ha	17.8ha
EN1: Ecological Network –Patch size (average size PMGRP patches) (ha)	5.4ha	5.4ha
EN2: Ecological Network –Connectivity (average interpatch distance PMGRP) (m)	794m	794m
SD1: Structural Diversity (% of farmed land comprising structurally diverse vegetation including scrub, tall ruderals, tussocky buffer strips, conservation crops etc)	1.1	7.2
RO1: Asset location in relation to runoff mitigation (% of high-risk land in semi-natural habitat or well managed permanent grassland)	55.4	91.0
Semi-natural habitat summary indicator		
% semi-natural habitat (including all semi-natural habitats and hedges but not conifers or arable managed for wildlife)	15.1	19.1

¹ Excludes priority habitat grasslands; ²: defined as semi-improved grassland plus herbal leys plus flower enriched improved grassland

Upscaling offers to the landscape scale

The aim of this element of the Trial was to develop a method for aggregating the environmental benefits/changes that could result from the delivery of the SFI standards and estimate the likelihood that the preferred scenarios, when upscaled to all the farms in the relevant landscape, would result in the achievement of the agreed landscape priorities. This element was contracted out to Westcountry Rivers Trust and more detail is provided in their report (WRT (2021) North Devon ELM Trial: Natural Capital Offers and Landscape Plan Priorities).

Method used

There are three principal mechanisms via which the implementation of the SFI standards can enhance the natural capital value in a landscape and support the delivery of landscape priorities. These are: 1) implementation of more sustainable management practices that reduce the negative pressures acting to degrade the quality or condition of the pre-existing natural assets in the landscape, 2) the specific delivery of restorative management actions or interventions that enhance the quality or condition of existing natural assets in the landscape, and 3) actions that create new natural capital assets/features in the landscape.

To estimate the landscape-scale changes in NC benefits and landscape-scale outcomes resulting from the implementation of the SFI standards, it was first necessary to identify the potential for each level of each standard to influence these three main mechanisms. To achieve this, each standard was reviewed semi-quantitatively (with three analysed in detail) and the actions required for the attainment of each level of the standard identified that had an impact on the overall extent, quality/condition, and structure/location of the natural capital on the farm. In this way the implementation of the standards could be mapped across to the indicators developed during the trial, the influence of the baseline situation on farms considered and then the ecosystem services likely to be affected by these measures assessed. Once this semi-quantitative assessment was made, the ecosystem services likely to be affected by these changes in the broad-brush NC indicators were deduced using expert judgement in combination with a look-up table developed from Natural England's Natural Capital Indicators (NCI) report to link natural capital indicators to E.L.M. outcomes. Where there was higher confidence that these ecosystem services may be influenced by the actions implemented, the likely impact of these improvements on landscape-scale outcomes, priorities and targets could then be estimated.

Results

Undertaking a detailed analysis of the landscape-scale impacts of the proposed E.L.M. Standards proved to be a highly complex and challenging exercise, as the ultimate realisation of impacts/outcomes are influenced by several additional factors, in addition to the practical implementation of measures under the E.L.M. Standards. These include the pre-existing baseline situation in the landscape, the willingness of farmers to implement a particular Standard to a certain level, and the presence of any other barriers or enablers of action (feasibility, costs of implementation, requirement of targeting to be effective, etc).

WRT only had time to complete a detailed evaluation of three of the standards (Hedgerows, Farm Woodland and Waterbody Buffering, results summarised in Table 5.5). This was felt sufficient to evaluate the framework as a means of up-scaling impacts to the landscape scale, particularly given that the actions included in the standards are likely to have changed since the version available to the trial (version 10, dated 10.03.2021), reducing the value of a detailed analysis at this stage.

Having said this, by applying the logical framework developed for this study (see WRT's report: Natural Capital Offers and Landscape Plan Priorities, for details) and taking all these factors into account, it has been possible to make a partial assessment of the impact of the standards (using the three evaluated as an example) on some of the key landscape priorities identified for the North Devon landscapes (Table 5.5).

The analysis shows that the scenarios, based on SFI standards, have the potential to help deliver the landscape priorities but are unlikely to deliver sufficient change to deliver them in full. Delivery of LNR and LR schemes will be key, and the potential large-scale habitat restoration actions identified on the 27 farms (see Annex 4.3), if upscaled to the wider landscape, would contribute considerably to the delivery of local priorities.

Hedgerow Standard: While implementation of the SFI Hedgerow standard is likely to reduce the risk of hedgerow degradation/destruction, increase the amount of food resource available to farmland wildlife, and lead to the creation of some new NC assets in the landscape (mainly buffer strips), the three levels are only expected to achieve marginal gains in terms of NC value, ecosystem services and landscape-scale improvements. This is especially the case in North Devon where the current extent and condition of hedgerows is already relatively high.

Farm Woodland Standard: Clearly, any actions that increase the extent of woodland on farms, enhance the condition of pre-existing woodland or which target woodland creation into specific functional locations have huge potential to enhance the provision of a wide variety of ecosystem services and, because of this, to make a significant contribution to the delivery of landscape-scale priorities.

However, there do not appear to be measures/actions included in the Farm Woodland standard which have the potential to deliver the changes in the NC indicators that are required to affect these changes at a landscape-scale. While there is the option of small scale tree planting under the farm woodland standard, the lack of requirement to locate this in particular locations, which will help reduce ammonia or run-off for example, means it is not possible to conclude any benefits in relation to several of the landscape priorities. Although our analysis of the indicators demonstrates an increase in the number of ammonia sources buffered/high risk land in semi-natural habitat, this is only as a result of tailored farm advice delivered to farmers as part of the Trial.

Waterbody Buffering: It seems highly likely that increasing the level of waterbodies in the landscape that are protected with buffer strips and moving all farms to a standard where 50% waterbodies are protected will have a beneficial effect on water quality (and flooding) at a landscape-scale. However significant uncertainty remains over precisely how effective this will be in contributing to the landscape priorities. This uncertainty is the result of the untargeted nature of the buffers at the basic level, the lack of evidence that 50% buffering is sufficient to mitigate pollution pathways in the farmed environment, and concerns that partial or patchy uptake of these buffer strips across the landscapes may result in very limited pollution mitigation (i.e., a few poor performing farms with low levels of mitigation continue to generate the vast majority of the water quality degradation).

Additional modelling by Rothamsted Research (yet to be finalised) suggests that the implementation of the Waterbody Buffering SFI standard alone could reduce losses of phosphate, nitrates and sediments to water from agricultural land in the Trial catchments by over 40%, while FIO levels could be reduced by 24-40% depending on the catchment (Annex 5.4).

In summary, it is possible to evaluate the extent to which the standards have the potential to impact the NC indicators and, by virtue of this impact, potentially influence the landscape priorities. However this is clearly limited by the fact that the SFI standards are action-focused rather than based on outcomes, and that the majority of actions relate to mitigation of agricultural pressures, affecting the quality of the assets, rather than location or quantity, both of which are key to the delivery of the landscape priorities.

The reasons why the potential impacts may not actually be achieved are summarised below:

Baseline situation. The analysis has revealed that there may be certain baseline conditions at farm or landscape-scale that could undermine the ability of the standards to realise their full impact potential. For example, if provision of NC assets or their condition is already high, then there may be reduced capacity in the landscape for creation or restoration actions (as is the case with hedges on many of the Trial farms). In addition, the pre-existing assets, which may be sufficient for the standard to be met at a certain level, may not exist in the best location or structural configuration to deliver the wider potential benefits.

Structure, targeting and design. The provision/regulation of ecosystem services by NC assets is highly context-dependent – i.e., the location and spatial configuration of the assets play a key role in enabling their delivery of functions, benefits and, ultimately, their ability to influence landscape-scale outcomes. In several of the SFI standards (or at some levels within them), the requirement for spatial targeting and context-specific design is not included as a requirement, which increases the risk that they will not realise their full impact potential if their impact is location or structurally dependent.

Coverage of measures. There are several measures which must be implemented to a certain level across the landscape to be effective in changing environmental outcomes at a landscape-scale - the proportion of a feature type that has been restored or protected, or the proportionate area of an asset type in the landscape, can be critical to delivering environmental outcomes. This is closely related to the uptake rate of any particular measures (see below). For several of the SFI standards, thresholds of implementation are identified (e.g. 50% waterbodies buffered) but the underlying evidence is not provided. In these cases, there is a risk that the level of implementation will not produce any measurable change at a landscape-scale.

Level of restoration. It is also unclear how much improvement in quality or condition of existing NC assets the Standards will deliver and how much will be required in any particular landscape to achieve restoration outcomes. This is again closely related to the uptake rate of any particular measures. The enhancement of quality or condition of NC assets is highly context-specific, and the Standards rarely specify which assets or locations in the landscape should be targeted or prioritised for restoration. The non-targeting of restoration actions and the lack of targets for the levels of restoration achieved in the standards, create a significant risk that insufficient outcomes will be realised to effect change in the priorities at a landscape-scale.

Step-changes through the standard levels. The magnitude of the step-changes achieved between the levels within the Standards appears to be quite variable. In some cases these appear to be linear, with incremental changes in NC outcomes realised as implementation moves up through the levels in a Standard; in other cases most of the NC changes that could be delivered through the implementation of a Standard may be realised through the achievement of just the basic level and moving on to the intermediate and advanced levels will only achieve marginal additional changes. Conversely, in other cases it appears that very little change in NC outcomes will be achieved through

the implementation of the basic and intermediate levels of the Standards and that it is only when the advanced level (or LNR is implemented in addition) are reached that significant changes are predicted to be realised.

Uptake rate of measures. ‘Willingness-to-participate’ is a key factor influencing the impact of the Standards at a landscape-scale. Due to a variety of barriers/issues influencing farmers’ decision-making processes, uptake-rates may be low (e.g. for the Waterbody Buffering Standard). This could place significant limits on the impacts realised through the implementation of these Standards as it may reduce delivery below the thresholds at which measurable effects may be achieved at landscape-scale. Clearly, no matter how much potential for ecosystem services enhancement a Standard represents at a particular level, if uptake is low, for whatever reason, then this potential will not be fully realised.

Feasibility of approach

Overall, this study was able to develop a method for estimating the environmental benefits/changes and landscape-scale impacts that could result from the preferred farm-offers made by farmers in the North Devon E.L.M Trial. However, actually estimating the likelihood that they would result in the achievement of the agreed landscape priorities for the E.L.M Trial proved very difficult, due to the fact that the three scenarios were primarily based around the delivery of different levels of the SFI Standards, rather than being based on natural capital outcomes per se.

This initial study has demonstrated the potential for this approach to generate highly valuable insights into the likely changes in ecosystem service provision and landscape-scale priorities resulting from the systematic implementation of E.L.M schemes but it has revealed just how difficult it is to predict what changes in NC value, ecosystem services and landscape-scale outcomes might be achieved through the implementation of SFI. There is a great deal which remains unknown (to the Trial team at least), at this stage, in relation to the Standards and for many Standards, while their implementation will almost certainly deliver an impact at farm- and landscape-scales, the magnitude of this impact cannot be quantified with any certainty at present and, in some cases, it is difficult to even determine the net direction of change achieved (i.e., positive or negative).

Further detailed analysis (and modelling) will be required to accurately determine the full impact potential of E.L.M. across all 3 levels of the standards and support the targeted and tailored delivery of measures under the scheme once it is launched.

In particular, this approach could be improved and upscaled in the following ways:

- Final versions of the SFI standards should be re-considered/analysed using this approach when the actions have been finalised and more details are available.
- The interaction of the standards with the baseline situation of a farm- and landscape-scale needs to be studied in more detail. It is clear that a significant component of the standards, especially at the basic level, are focused on the maintenance of NC value in the farmed environment during the transition away from Basic Payment to E.L.M. SFI. However, it is currently difficult to discern the divide between these measures designed to prevent deterioration and those that will deliver substantive positive change and outcomes in the landscape. To be successful, this analytical approach and any modelling exercises that are based upon it, will need to accurately determine/estimate the net changes in NC across a farm (and the wider landscape) resulting from the implementation of each Standard, within the context of the baseline in that landscape.

- There are many key barriers or enablers of change in the Standards that remain poorly characterised in the early version studied here. This is particularly notable in relation to the structural and spatial location/ configuration considerations pertinent to many of the measures. For some measures, such as buffer strips or other features dependent on spatial targeting for their efficacy, these key considerations are not adequately addressed in the Standards. This increases the risk that measures could be implemented that meet the requirements of the Standards, but which do not deliver any improvements in ecosystem services provision at either farm- or landscape-scale. The result of this, is that we can only conclude here that some Standards have the potential to effect significant change for some ecosystem services and landscape priorities, but this could equally go entirely un-realised due to how and where they have been implemented.
- The connections between changes in NC indicators at farm- or landscape-scale and changes in ecosystem service regulation/provision need to be characterised in more detail. There has been a significant body of work already undertaken to elaborate these connections, but it needs to be more comprehensively reviewed and synthesised to feed into this approach.
- The level of change (net-change) required in ecosystem services at a landscape-scale to deliver the landscape priorities identified for North Devon needs to be determined. In addition, it seems likely that there are thresholds of implementation (i.e., certain levels of measure-uptake on a certain proportion of farms of certain prior baseline condition) which need to be achieved if changes in environmental outcomes are to be realised at a landscape-scale. At present it is not known what these thresholds are or whether different profiles of implementation are more likely to yield results – for example, we do not yet know whether more outcomes will be realised by having all farms taking up the basic versions of the Standards, or 50% with no uptake and 50% adopting the higher levels. This will need to be determined to support the development of a clear and effective strategy for E.L.M. implementation at a landscape-scale.

Conclusions

We have trialled a set of farm scale natural capital indicators, measured through a combination of GIS and field work on farm, which describe the quality and quantity of a farm’s natural capital, both to potentially enable monitoring of the impact of E.L.M. on our natural capital assets and to provide an indication of where improved management and/or restoration interventions could be best implemented to improve the quality of the existing assets. The long list of indicators developed are potentially a useful and transferable standalone product that could be used to develop sets of indicators tailored to the local priorities in other landscapes but require more work to refine and develop them.

Although we can use indicators to monitor the quality and quantity of SFI delivery, in terms of its impact on key assets, this is restricted by the fact that the SFI Standards are action based (rather than outcome based), primarily address the agricultural pressures on assets rather than delivering significant increases in asset quantity (or quality in the case of woodland and priority habitats), and generally do not take asset location into account. Their use is likely to be more straightforward within an outcome based Local Nature Recovery scheme.

Table 5.2: Baseline measures of each of the NC indicators (averaged for all 27 farms) and the levels predicted from each of the three scenarios – the relevant SFI standard(s) contributing to any change in each case is identified. SFI scenario predictions made based on a 5 year SFI duration; LNR on 10 years. Where the indicator is predicted to change from the previous scenario, the predicted measure is shown in red. LNR based on realistic actions that farmers are keen to pursue given appropriate incentives.

Measure (Results presented as % of farm unless otherwise stated)	Predicted change resulting from scenarios					Notes	
	Baseline	Low scenario	Medium scenario	High scenario	Relevant SFI standard		High scenario +LNR
ASSET TYPE-SPECIFIC INDICATORS							
Woodland							
W1: % of farm in woodland (broadleaved, conifer and wood pasture combined)	7.2	7.2		7.6	Farm woodland (FW) (note there is only a basic level of this standard); High scenario comprises the basic level of the standard plus any potential woodland creation proposed)	10.1	Only small areas of woodland can be created under the FW standard so not surprisingly, the impact of SFI was small. Trial farmers not keen to create large areas of woodland based on current CS payment rates anyway – but keener to create wood pasture as more flexible option. Although FW standard requires a woodland condition assessment to be completed not clear that this will actually result in change in condition FW standard only caters for creation of small areas of woodland adjacent to existing woodland and there is no targeting of woodland at particular locations.
W1: % of farm in broadleaved woodland	6.0	6.0		6.4		7.0	
W1: % of farm in wood pasture	0.1	0.1		0.1		2.0	
W2: % of farm in broadleaved woodland of high quality	3.2	3.2		3.2		3.2	
W3: No of farms with ammonia sources buffered by downwind woodland	1/27	1/27		3/27		3/27	
W4: % watercourse shaded	89	89		89		?	
Waterbodies							
WB1: Number of ponds	1.5	1.5	1.5	1.5	Waterbody buffering (WB)	2	Pond creation not included under SFI?
WB3: % of river with >6m riparian vegetation or in SI grassland or woodland	53	76	76	76		76	Although higher level of WB standard results in wider 10m buffers, this does not change the extent indicator due to the way it has been measured
WB5: % of river of high quality	52	52	52	52		Increase	Based on 'naturalness'
WB6: % of farms with Himalayan Balsam present in riparian zone	27	Potential increase				Waterbody (WB) buffering	?

Measure (Results presented as % of farm unless otherwise stated)	Predicted change resulting from scenarios					Relevant SFI standard	High scenario +LNR	Notes
	Baseline	Low scenario	Medium scenario	High scenario				
Hedges								
H1: Length of hedges	17919m	17919m	17919m	18337m	Hedgerow (H)	18337m	Trial farms had high density of hedges and farmers unkeen to create more as field sizes already small.	
H2: % hedges in good condition (including cut on rotation)	52	52	52	52		52	Indicator as measured by BEHTA method (plus requirement for rotational cutting) not sensitive to different levels of SFI Hedgerow standard	
H3: % of runoff pathways intercepted by hedges	67	67	67	69		69	Not often feasible to create new hedges that work for farms and block run-off pathways	
Priority habitats and other semi-natural habitat								
SNH1: % of farm comprising PMGRP/culm grassland	3.6	3.6	3.6	3.6	Semi-improved/unimproved grassland (SIG)	6.0	Standards not predicted to create priority habitat in short term at least. But significant potential under LNR/LR schemes (subject to appropriate incentives)	
SNH1: % of farm in priority habitat (non woodland)	6.7	6.7	6.7	6.7		11.7		
SNH2: % of PMGRP in good condition	75.4	75.4	75.4	75.4		Increase	SIG standard not predicted to improve quality of PMGRP as requires tailored management.	
Grassland (pasture)								
G1: % of farm in permanent improved grassland	49.4	49.9	56.8	57.9	Improved grassland soils/Arable soils	?	Predicted changes from conversion of temporary grassland on high/moderate risk land to permanent plus high risk arable land converted to permanent grassland under high level of arable soils standard	
G1: % of farm in temporary grassland	7.4	6.9	4.2	3.9		?		
G2a: % of farm in high quality (SI) grassland* ¹	12.6	12.6	12.6	12.6	Semi-improved grassland	Increase	No increase in area of semi-improved grassland predicted under SFI	
G2b: % of farm comprising flower rich grassland providing food resource for farmland wildlife* ²	14.1	12.6	21.1	24.2	Improved grassland (IG)/Arable Soils	Increase	Changes principally result from introduction of clovers and legumes action in medium and high levels of IG standard. Low scenario results in a reduction in indicator due to reduced delivery of herbal leys compared to baseline	
Cultivated land (pasture)								
CL1: % of farm in arable/cultivated	16.0	16.0	16.0	14.9	Arable soil (AS)	?	Change results from conversion of 50% high risk temporary grassland to permanent under AS standard	

Measure (Results presented as % of farm unless otherwise stated)	Predicted change resulting from scenarios					High scenario +LNR	Notes
	Baseline	Low scenario	Medium scenario	High scenario	Relevant SFI standard		
ALL FARM INDICATORS							
A2: Length of PROW	896m	896m	896m	896m		1241m	Includes permissive access routes
S3: % of deep peat area drained and/or cultivated	26	26	26	23	Semi-improved grassland (SIG)	Potentially 0%	Results from blocking drains on wetland areas within grazing land action in higher level of SIG standard.
EN1a: Patch size broadleaved woodland (ha)	17.7	17.7	17.7	17.9	Farm woodland	17.6	LNR actually reduces woodland patch size as more small woods created; SFI would be predicted to impact these indicators if the habitat patches were considered connected/part of same patch when intervening land is semi-natural habitat (or the patch measure was of all semi-natural habitat patches)
EN1b: Patch size PMGRP (ha)	5.4	5.4	5.4	5.4	Semi-improved/unimproved grassland	12.9	
EN2: Interpatch distance PMGRP (m)	794	794	794	794		705	
EN3: Habitat diversity	1.14	1.2	1.29	1.32	All standards	?	Changes result primarily from managing arable land for wildlife (buffers, wild bird food mixes etc), taking field corners out of management under IG standard, area of ungrazed waterbody buffers under WB standard (6m/10m), assumed to revert to scrub or tussocky grassland, and the increased area of SIG comprising tall vegetation and scrub under SIG standard.
SD1: Structural Diversity	1.1	2.4	5.7	5.9	Improved grassland (IG)/ Waterbody buffering (WB)/Arable Land (AL)/Semi-improved Grassland (SIG)	?	
RO1: % of high-risk land in semi-natural habitat or well managed permanent grassland	55.4	94.3	94.3	96.8	Improved grassland soils (IGS)/Arable soils (AS)	96.8	Results from improved management of high risk grassland under IGS standard (and conversion of high risk arable land to permanent pasture under high level of AS standard)
Semi-natural habitat summary indicator							
% semi-natural habitat (including all semi-natural habitats and hedges)	15.1	16.6	20.2	20.9	All standards	33.3	Combined measure covering all priority habitat, broadleaved woodland, hedges (assumed to be 2m wide), other semi-natural habitat, but not conifers or arable land managed for wildlife)

1: defined as low input, permanent semi-improved grassland (excluding priority grasslands); 2: defined as semi-improved grassland plus herbal leys plus flower enriched IG

Table 5.5 Summary table of conclusions relating the implementation of the 3x ELM Standards studied in detail to impacts on the Landscape Priorities – including the theoretically possible impacts and the reasons for this impact being realised or not. Box colours indicate: 1) where the Standards have the potential to influence the broad NC indicators, and 2) where changes in NC indicators have the theoretical potential to impact the landscape priorities. The coloured dots show the estimated likelihood of these impacts being realised through implementation of the ELM Standards in their current form (red=low, amber=medium, green=high likelihood) while the notes indicate reasons (see codes in conclusions section) for this potential impact being realised or not.

Standard ↓	ELM Level	NC Indicators			Landscape Priorities – potential and actual impacts								
		Extent / quantity	Quality / condition	Structure / location	↑ Soil health	↓ NH3 emissions	↓ Water pollution	↑ Natural habitats	↑ Key species	↑ Carbon storage	Protect Hist. Env.	↑ Public access	Landscape character
Hedgerows - hedgerows - boundary trees - 4m buffers	Basic (1) UPTAKE=LOW	● -COVERAGE- -BASELINE-	● -LEVEL- -TARGET-				● -TARGET- -LEVEL-	● -COVERAGE- -LEVEL-	● -COVERAGE- -LEVEL-	● -COVERAGE- -BASELINE-			● -LEVEL- -DESIGN-
	Intermediate (2) UPTAKE=MED	● -COVERAGE- -BASELINE-	● -COVERAGE- -LEVEL-				● -TARGET- -LEVEL-	● -LEVEL- -DESIGN-	● -COVERAGE- -DESIGN-	● -COVERAGE- -BASELINE-			● -LEVEL- -DESIGN-
	Advanced (3) UPTAKE=HIGH	● -COVERAGE- -BASELINE-	● -LEVEL- -UPTAKE-				● -TARGET- -LEVEL-	● -LEVEL- -DESIGN-	● -COVERAGE- -DESIGN-	● -COVERAGE- -BASELINE-			● -LEVEL- -DESIGN-
Woodland - woodland - agro-forest - individual trees - screens/linear	Basic (1) UPTAKE=HIGH	● -COVERAGE- -BASELINE-	● -COVERAGE- -LEVEL-	● -TARGET- -LEVEL-		● -TARGET- -DESIGN-	● -TARGET- -COVERAGE-	● -COVERAGE- -LEVEL-	● -COVERAGE- -LEVEL-	● -COVERAGE- -LEVEL-		● -TARGET- -DESIGN-	● -COVERAGE- -TARGET-
	Intermediate (2) UPTAKE=N/A												
	Advanced (3) UPTAKE=N/A												
Waterbody Buffers - buffer strips - waterbodies	Basic (1) UPTAKE=LOW	● -COVERAGE- -BASELINE-		● -TARGET- -DESIGN-			● -TARGET- -DESIGN-	● -COVERAGE- -DESIGN-	● -COVERAGE- -DESIGN-	● -COVERAGE- -DESIGN-			
	Intermediate (2) UPTAKE=MED	● -COVERAGE- -BASELINE-	● -DESIGN- -COVERAGE-	● -TARGET- -COVERAGE-			● -TARGET- -COVERAGE-	● -COVERAGE- -DESIGN-	● -COVERAGE- -DESIGN-				
	Advanced (3) UPTAKE=LOW		● -DESIGN- -COVERAGE-	● -TARGET- -COVERAGE-			● -TARGET- -UPTAKE-	● -DESIGN- -UPTAKE-	● -DESIGN- -UPTAKE-				

6. Farm Business

This section will highlight the key results from developing the payments, the partial budget analysis and the preferred scenario that the farmers have selected. It also includes the feedback we have received from incorporating the farm business element into the land management plan. This section will not repeat the methodology of developing the payments and undertaking the partial budget analysis as this has been explained in detail in the Objective 5 M & E report.

Definitions

The total business profit/loss (excluding BPS)	The total business profit/loss includes all income earned through farming, diversification, any profit/loss from agri-environment schemes or any other non-farming income. This also excludes BPS
The total business profit/loss after implementing the scenario	The total business profit/loss after implementing the scenario is all of the above without any profit/loss from agri-environment schemes. The sustainable farming incentive scheme will eventually replace existing agri-environment schemes (such as countryside stewardship) so we have not included any payments you receive from current schemes. This also excludes BPS.
Current profit/loss from farming	This includes any income earned/lost from purely farming enterprises i.e. dairy, beef, sheep and crops and excludes any income made from diversification. This figure also excludes any profit/loss made from agri-environment schemes
Enterprise	Is an identifiable sector of the farm or horticultural business, for which output includes valuations of unsold stocks produced by the enterprise i.e. dairy, beef, sheep.
Three scenarios	Basic scenario – all the relevant introductory level SFI standards Medium scenario – all the relevant intermediate level SFI standards High scenario – all the relevant high level SFI standards

Key learning points

1. On average, the farmers on this Trial are either seeing higher profits or smaller losses from farming after implementing the three scenarios. Much of the land on the 27 farms was considered to be of moderate/high risk of soil erosion and run-off, which means that most of our farmers' payments are being uplifted by additional payments for grassland or arable land that is on high/moderate risk land. Without these additional payments, the payments would have been much lower. This may be a regional outcome and it would be interesting to compare this with a region in England that is not classed as moderate/high risk land.
2. The average payment (using the proposed pilot SFI standard payments) for the high scenario is higher than the average amount of BPS that the farmers are currently receiving (£36k compared to £29K). However, after accounting for changes in income and costs using the partial budget analysis, the average improvement in profit/loss from farming is just under £20K for the high scenario.
3. All nine farmers who selected the high scenario are currently in either Higher Level Stewardship or Mid-Tier Countryside Stewardship agreements, which suggests the advanced level standards aren't too much of a step change for these farms. The fact that three of these farmers are making a profit from farming suggests that it is possible for well-run farm enterprises to balance both production and environmental delivery. A few characteristics of

the farms that selected the high scenario are: they own their land; the majority farmed on grassland (7 out of 9); and six out of the nine were close to retiring/wanting to reduce the workload for other reasons.

4. A preference for the high scenario does not appear to be driven by sector – the nine farmers who selected the high scenario were a mix of different sectors, which included farmers whose main enterprises were beef and sheep, organic free-range chickens, arable as well as pigs and beef. None of the three dairy farmers on the Trial chose the high scenario; two chose the scenario which made the most improvement in their profit/loss from farming (basic and medium respectively), and the other chose none of them (although they would be interested in applying if the payment rates were higher.). Two of the farmers who selected the high scenario are organic farmers (out of four on the Trial).
5. The additional profit from the high scenario compared with the medium scenario did not provide enough incentive for some farmers. Eight out of the 13 farmers who chose the medium scenario would have seen greater improvements to their profit/loss from farming figure from the high scenario. However, the difference between the medium and high scenario for six of these farmers was below £2,500, suggesting the incentive was not enough for the additional work associated with the high scenario to be undertaken. Across the 27 farms, the average difference in improvements to the profit/loss from farming figure between the medium and high scenario (just under £3K) is smaller than the difference between the basic and medium scenario (just under £10K). As explained [later](#) in the report, the partial budget analysis doesn't take into account all elements of the time it takes to implement the SFI Standards so some of the 'hassle' factor of implementing the higher scenarios may not be included in the partial budget analysis.
6. Responses on whether the farm business elements in the LMP were useful were mixed, with 8 farmers saying that they didn't find it useful and 6 saying that it was very useful. Anecdotal evidence suggests that those who didn't find it useful already have a good understanding of their accounts, however, they did mention that it was important for those farmers who didn't have information on their production costs to have access to the farm business elements. Farmers who found it very useful commented on the comparison between the total business profit/loss before and after implementing the scenarios as the most useful part of the farm business element. This encompasses the partial budget analysis which looked at the impact on the farmers' costs and income after implementing the scenarios. Three farmers said it was only useful when backed up with a conversation with a farm business advisor.
7. A large number commented on the low payment rates for the waterbody buffering standard which we fed back to the payments team in Natural England. The waterbody buffering payment was subsequently increased to include costs associated with paying for mains water supply. Farmers were pleased that their comments had been taken on board. However, there were continued concerns about the practicality of the watercourse buffering standard and from the questionnaire 11 out of the 24 respondents said they would not apply for the waterbody buffering standard as it currently stands and only two would apply for the basic level. When talking to the farm business advisor, farmers mentioned the precision fertiliser application and the detailed soil mapping to spatially test nutrient variations within fields in the grassland standard as time consuming, and was mentioned as one of the reasons why they didn't choose the high scenario.

Farm business element in the Land Management Plan (LMP)

The farm business element of the LMP included:

- the current financial information of the farm;
- the payments that the farmers would receive from each scenario;
- the impact of undertaking the three scenarios on the farmers' total business profit/loss.

For more information on the type of financial data collected for the current financial situation and how the payments were presented please see the objective 5 M & E report. Investment in compliance has not been addressed through the farm finance reports. Therefore, the costs of bringing the farms up to the regulatory baseline have not been included in our partial budget analysis. Some of the capital costs of doing this may be eligible for grant aid so the impact on farm business finance is unclear and would require further specialist analysis.

The current farm business situation provided the farmer with information to support their short-, medium- and long-term business planning by providing;

- An overview of each individual enterprise profit or loss without the support from the Basic Payment Scheme (BPS) or agri-environmental payments.
- The opportunity to compare the productivity of their enterprises with other farms using the farm business finance tool.
- An indication of the likely income from the farm for the period 2021-2027 as BPS is phased out.

The impact of undertaking the three scenarios on the farmers' total business profit/loss was provided after the presentation of the payments (see objective 5 report on how these payments were presented). These figures compared the before total business profit/loss (not including basic payment scheme payments (2028)) and the total business profit/loss **after implementing** the scenario. Figure 6.1 shows an example of how this was presented to the farmers in the LMP. The total business profit/loss after implementing the scenario encompasses the partial budget analysis which looked at the impact on the farmers' costs and income after implementing the scenarios.

Figure 6.1: Total Business profit/loss before and estimation of total business profit/loss after implementation of the three scenarios

Three scenarios	Total business profit/loss (not including Basic Payment Scheme payments (2028 figure))	Total business profit/loss after implementing the scenario (2028 figure)
Scenario 1: Basic	£4,138	£7,466
Scenario 2: Medium	£4,138	£10,790
Scenario 3: High	£4,138	£8,406

The partial budget analysis looked at the impact of implementing the scenarios which included all the relevant SFI standards that the farmers would apply for. The partial budget methodology uses only the costs and returns that change as a result of the proposed scenarios and looks at any:

Income lost, plus any extra costs. For example, loss in arable production and soil testing
less
Extra income, plus any costs saved. For example, payments from SFI and savings in ewe input costs
= Income foregone + costs

This partial budget analysis was presented to our farmers using a partial budget template for each scenario (see Annex 6.1). More detail on the process can be found in the Objective 5 M & E report.

Was including the farm business element into the Land Management Plan (LMP) useful for our farmers?

The response to including the farm finance elements into the LMP was mixed. Eight of the 24 respondents said that they didn't find the farm business elements of the LMP useful. This was because they already had a good understanding of their farm business. However, two of the farmers in this group said that this element should be a part of the E.L.M application process, particularly when a farmer isn't aware of their costs of production. The remaining six said that it should either not be part of the process or were undecided, with a few comments concerning data privacy.

Three farmers stated that they would only find the farm financial elements of the LMP useful when backed up with time for a detailed discussion with a farm business advisor. Two of these three farmers said that the predicted total business profit/loss before and after implementing the three SFI-based scenarios was the most useful element, with one farmer stating, "the cost benefit analysis is essential to consider if changes make business sense".

Meanwhile, six of the farmers found the farm business elements of the LMP very useful. Anecdotal evidence suggests that some of these farmers really valued the opportunity to discuss their current financial situation and the costs of implementing the scenarios with the farm business advisor. Four of the farmers in this group thought that the farm business planning should be part of the E.L.M application process/land management plan, with one farmer stating, "Doing the business planning created the opportunity to truly assess costs of delivery and in parallel to truly assess the comparative benefits of different scenarios". The remaining two farmers said that the farm business planning should not be part of the E.L.M. application process/LMP, with both suggesting that that farmers would not want to share their financial details. Two of the farmers who found the farm business element useful selected the high scenario as their most preferred scenario.

Among the five farmers who found the farm business elements quite useful, all of them said that the 'the predicted total business profit/loss before and after implementing the three SFI-based scenarios' was the most useful. One farmer commented, "The information presented in the report should largely be self-evident from annual accountancy reports although it is very useful to have it all together along with predictions for how it will be affected by changes in BPS etc". Four out of five said that the farm business planning could possibly be part of the E.L.M. application process/land management plan, with the anecdotal evidence suggesting that the farm business planning should be a precursor to applying for E.L.M.

In order to make the farm business element of the LMP more useful, some farmers suggested that it would be worthwhile to provide a breakdown of the changes in income and costs for each of the SFI standards separately.

Payments and the impact on profit/loss from farming

We have used all the proposed pilot SFI payment rates ([policy paper published on the 16/03/2021](#)) in our analysis; there was only one additional payment and action which we included which is now no longer in the pilot. This action is the 'introducing locally occurring wildflowers on land that is not priority habitat or SSSI' and was originally included as an additional payment in the low and no input grassland advanced level standard. Only 13 out of our 27 farmers selected this action in the low and

no input grassland advanced level standard and is generally only applied to a small area of the farm. Therefore, if we removed this it would only change the average high scenario payment by £600.

At the time we were costing the scenarios, we understood that Defra were considering developing additional SFI standards, particularly a historic environment standard and an upland standard. Consequently, to represent potential payments for these standards, we have included a payment for any historic sites on grassland, arable land and woodland using existing Countryside Stewardship rates. We included a potential Unenclosed Uplands payment using Countryside Stewardship rates for one farmer whose land was mainly on unenclosed uplands. For all details on the payments please see the summary payments workbook excel file (27/05/2021) which breaks down all the payments in each scenario for each farmer (this has been anonymised).

Feedback on payments

A large number commented on the low payment rates for the waterbody buffering standard which we fed back to the payments team in Natural England. The waterbody buffering payment was subsequently increased to include costs associated with paying for a mains water supply.

However, when asked which SFI standards they would apply for, 11 out of the 24 respondents to the questionnaire said they would not apply for the waterbody buffering standard as it currently stands and only two would apply for the basic level.

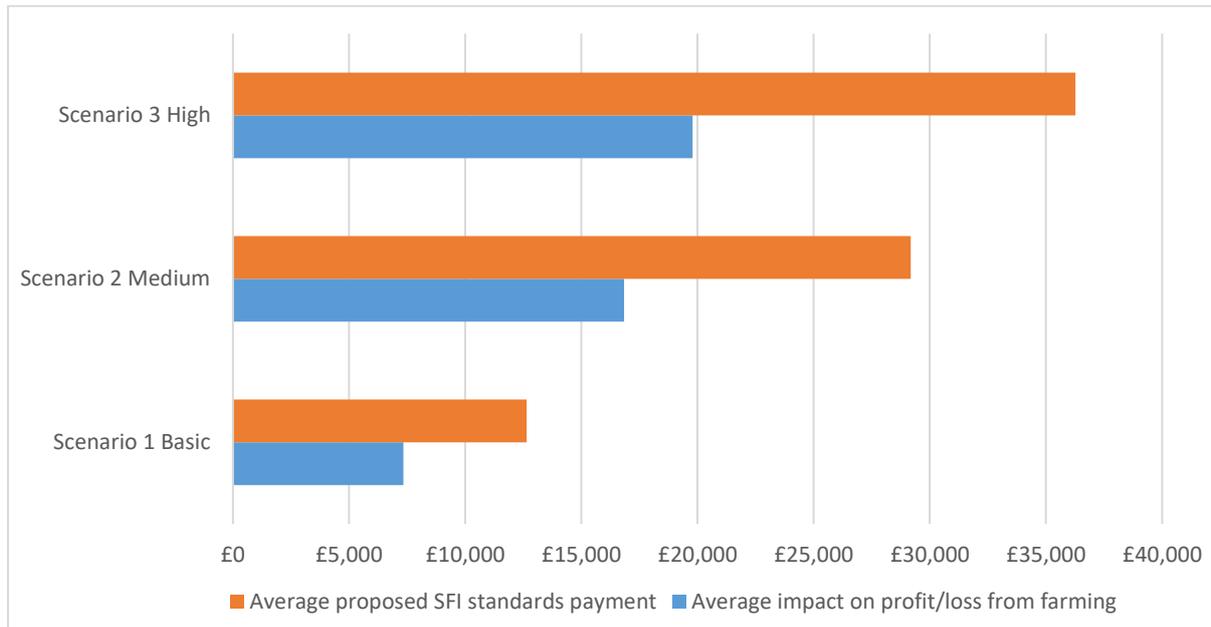
When talking to the farm business advisor, farmers mentioned the precision fertiliser application and the detailed soil mapping to spatially test nutrient variations within fields in the grassland standard as time consuming and this was mentioned as one of the reasons why they didn't choose the high scenario.

Impact on profit/loss from farming

On average, after implementing the three scenarios, the farmers on this Trial would either see higher profits or smaller losses from farming than before. This is shown in Figure 6.2, with the blue bar showing a positive average impact on profit/loss on farming from undertaking the scenarios.

The average proposed SFI standard payment from undertaking the high scenario was over £35K which is higher than the average BPS payment of around £29K (see objective 5 report for breakdown of the average current financial situation of our farmers). However, much of the land on the 27 farms was considered moderate/high risk of soil erosion and run-off, which means that most of our farmers' payments are being uplifted by additional payments for grassland or arable land that is on high/moderate risk land. Without these additional payments the payments would have been much lower. This may be a regional outcome and it would be interesting to compare this with a region in England that is not classed as moderate/high risk land.

Figure 6.2: Average payments (using the proposed pilot SFI standard payments*) compared to the average impact on profit/loss from purely farming enterprises for each scenario



* high payment includes additional wildflower payment which was originally included in the low and no input grassland standard but has since been removed from the pilot – only 13 farmers had this payment so the average for the high payment would reduce by only around £600. We have also included a payment for any historic sites on grassland, arable land and woodland using existing Countryside Stewardship rates for each of the scenarios

The improvement in the profit/loss from farming when undertaking the scenarios is also partly because the farmers are predicting that they will need to reduce their stocking levels in order to deliver the Standards, which in turn reduces their costs. Most of the Trial farms are currently making a loss from their stock-based enterprises (17 out of 27) so a reduction in stock numbers results in a predicted improvement in farmers’ total business profit/loss. However, the costs of delivering the scenarios are only theoretical currently, based on farmers expectations, and without undertaking the Standards the true impact on production won’t be known. Some actions in the standard could potentially result in improvements in productivity, so farmers may not need to reduce their stocking or production levels as much as predicted.

The difference in net financial gains between the basic and medium scenario is quite significant, whereas the uplift between the medium and high scenario is smaller.

Which scenario have our farmers selected and why?

Of the 27 responses back from the farmers, three have selected basic, 13 have selected medium and nine have selected the high scenario as their preferred choice.

Basic scenario

Of the three farmers who chose the basic scenario, for two of them this was the best option with their total net gain in income and net savings in expenditure after the implementing the basic scenario coming out as the most cost effective. Both farmers reported that they would need contractors to implement the medium and high scenarios (e.g. to meet the Standard requirements to spread slurry using low emission technologies and to use efficient precision application

equipment for fertilisers and pesticides), while many of the other farmers on the Trial didn't report that they would need contractors to implement the scenarios.

Meanwhile, the other farmer who chose the basic scenario didn't select the most cost-effective option for them. This is a beef, sheep, cereals and 'other arable' farmer who is currently making a loss from farming. They selected 'maximising overall profit from farm business' and 'impact on core farm business profits and current farming activity' as very important when deciding their preferred scenario. Whereas, 'desire to keep farming productivity' and 'what other local farmers are doing' were ranked as relatively unimportant. However, when asked to select which level SFI Standards they would potentially apply for they selected the advanced level for arable and horticultural land, intermediate for both the soil standards and basic for the hedgerow and farm woodland standards.

Medium scenario

The majority result was the medium scenario, with 13 farmers selecting this. Out of the 13 farmers who selected the medium scenario, for eight of the farmers this was not their most 'cost-effective' option. However, the improvement in the profit/loss from farming figure for six of these farms between the medium and high scenario was below £2,500, which could possibly explain that some farmers didn't want to take on the additional work as the incentive wasn't high enough.

Furthermore, there could be some elements of time that weren't included in the partial budget analysis for the high scenario. The partial budget analysis does consider some elements of time which are costed – for example, producing the nutrient management plan or undertaking the soil testing. However, not everything is included – for example, the time it takes to move stock regularly to meet rotational grazing requirements under the Standards, as this was difficult for the farmers to estimate without undertaking the scenarios. Out of these eight farmers, four did not select the waterbody buffering SFI Standard when asked which Standards they would select; however, they selected intermediate for all the other relevant Standards that their farm would be eligible for. One farmer mentioned "that the waterbody buffering Standard is very difficult achieve in a livestock farm with little financial benefit, it would also require a lot of infrastructure change to move fences etc."

Another reason highlighted by farmers for not undertaking the higher scenario was the amount of land that needed to be taken out of production compared to the medium level, with one farmer mentioning that taking land out of production from a small farm is not attractive.

Of the 13 farmers who selected the medium scenario and answered the questionnaire, 12 said that higher payment rates were important/very important to encourage them to go for the higher scenario.

The remaining farmer scored 'more flexibility in choosing how to deliver the required outcome' and 'reassurance that I will not be subject to a complex inspection' as the most important when deciding to go for the higher scenario. They also mentioned that they felt that the 'precision fertiliser application and soil mapping was too expensive to be of practical use'.

High scenario

Of the nine respondents that decided on the high scenario, this was the most 'cost-effective' option for seven of them meaning this scenario had the largest improvement on their current profit/loss from farming figure. Three of these farmers are currently making a profit from farming and, as mentioned in the objective 5 M & E report, the majority of the farms on the Trial (17 out of 27) are currently making a loss from farming.

Other characteristics of the nine that selected the high scenario was that all of them are currently in either Higher Level Stewardship or Mid-Tier Countryside Stewardship agreements, suggesting that these advanced level standards aren't too much of a step change for these farms and that well-run farm enterprises can balance both productivity and environmental delivery.

One farmer offered this feedback when asked why he chose the high scenario, *"you feel HLS has worked well for your farm to date and you would prefer to go for the 'High SFI scenario' in due course rather than the medium, especially if then also going for Local Nature Recovery (LNR). However, you do feel like the payment rates for the High Standard will need adjusting upwards as the net benefit to the farm is only marginally more than the medium scenario in the theoretical calculations. You would very much like to benefit from the tier two – Local Nature Recovery on top of the sustainable farm income (SFI) part of ELM which is the element we have looked at throughout this test and trial."*

One of the five farmers who selected the high scenario said they already had a good understanding of their farm business finance so didn't find the farm business element useful, although this farmer was making a loss on their farming. The remaining four found the farm business elements of the LMP useful, with two saying both elements were useful.

None of the scenarios

There were two farmers who felt that the sustainable farming incentive would not work for them. One is a dairy farmer and the other is a sheep and cattle farmer and both are currently making a loss from farming. The dairy farmer would be interested in applying if the payment rates were higher.

Meanwhile, the sheep and cattle farmer would make a profit from farming after implementing the three scenarios, although without BPS it is much lower than their current figure (less than half if they choose the medium scenario). They said that as a farm they would like to incorporate the environment as much as they could but looking at the figures for the scenarios means that they would not be financially viable to continue as a family farm. They would look to diversify by renting out their land potentially to nearby mega dairy farms to grow maize/ wholecrop/ high input silage.

Estimating the impact on food production

Farmers did report losses in food production by undertaking the actions in the SFI Standards for each of the three scenarios. The highest scenario had the largest reduction in food production compared to the medium and basic scenarios. However, these estimates are very theoretical and until the farmers undertake the SFI Standards the impact on food production can't be calculated correctly.

A few examples are shown below.

A chicken farm (robust farm type 5) estimated that they would lose 9 tonnes of cereals in the basic scenario, 15 tonnes in the medium scenario and 18 tonnes on the high scenario.

A dairy farm (robust farm type 6) estimated that they would lose one dairy cow in the basic and four in both the medium and high scenarios.

A cattle and sheep farm (robust farm type 7) whose farm size is 315 ha estimated that he would lose 138 lambs in the basic scenario compared to 415 in the high scenario.

A mixed farm with beef, sheep, pigs and dairy (robust farm type 9) whose farm size is 43 ha estimated that they would lose 9 lambs in the basic scenario, 42 in the medium and 222 in the high.

7. Advice

Introduction

Defra envisage that the E.L.M. scheme will deliver a wide range of outcomes, from clean and plentiful water to climate change resilience, and preserved cultural heritage assets and landscape character. A lack of relevant skills and capabilities in the farmers delivering the schemes, and their advisors, is a potentially significant blocker to delivering these outcomes on the scale necessary to deliver the 25 Year Environment Plan. Therefore, the Trial aimed to review what skills are required for the production of a natural capital based land management plan, and then present the results of a skills and capability survey of local farm advisors working in North Devon (see Objective 7 report for detailed results). A questionnaire (see Annex 7.1), drafted by the Trial land management advisor, based on the skills required to deliver the LMP template developed for this Trial, was sent to 34 farm advisors in the North Devon area. A total of 32 farm advisors completed the questionnaire, comprising a mix of land agents, chartered surveyors, agronomists, agricultural consultants, and farm advisors from environmental charities. The survey was designed to determine:

1. What relevant skills do the local farm advisors have in relation to:
 - (a) evaluating the quantity and quality of the natural capital assets on a farm, and the management of those assets.
 - (b) evaluating the on-farm opportunities to deliver environmental outcomes.
 - (c) developing a land management plan.
2. What training do farm advisors feel they need and who should provide this training.
3. Whether advisors think there should be a system of advisor accreditation for consultants preparing Land Management Plans / advising farmers applying for E.L.M.

key learning points

1. Farmers in this trial have confirmed that they would be more likely to select higher environmental delivery options/standards if they are well supported by farm advisors during the application process (and during the course of the scheme).
2. It is rare for any one farm advisor to have all the skills required to complete an LMP that addresses the broad range of E.L.M. outcomes. While expecting farm advisors to have specialist knowledge of the full range of environmental outcomes is probably unrealistic, advisors need to have sufficient knowledge to carry out a baseline assessment and identify a range of opportunities, in order to be able to signpost farmers to more specialist advice.
3. If E.L.M is to deliver the range of outcomes at the scale required to deliver the 25 Year Environment Plan, significant levels of advisor training are likely to be required. Farm advisors vary considerably in the skills they have and therefore in their training needs. Training set up as discrete modules covering different elements is, therefore, likely to be most useful.

Relevant skills required by farm advisors

Farm advisors require a wide range of skills to deliver a natural capital based LMP that provides a baseline assessment of the natural capital assets on a farm, evaluates the opportunities to enhance those assets, and considers the potential to deliver the wide range of E.L.M. outcomes. Although existing data can be very helpful in terms of quantifying environmental assets, identifying priority

outcomes and targeting E.L.M. actions, such data may be sparse on privately owned land, particularly on farms which have not been in stewardship previously, so core advisor skills are likely to be important.

Value of high quality farm advice

Farmers in this Trial have confirmed that they would be more likely to select higher environmental delivery options/standards if they are well supported by farm advisors during the application process (and during the course of the scheme) (see Objective 7 report). Anecdotal evidence, both from farm advisors and Trial farmers, suggested that less experienced agents/advisors put together flawed, low value stewardship agreements for farmers, presumably because they don't have the requisite skills or time to create more complex agreements, covering a wider range of options, and/or to keep their fees down.

The benefits of encouraging farmers to seek advice from farm advisors during the SFI application process include:

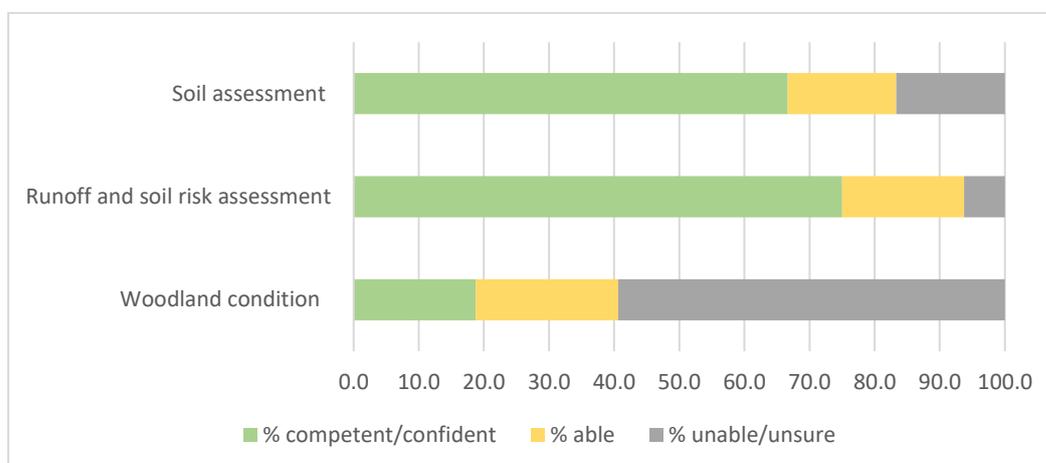
- Improve effectiveness of delivered actions, particularly where the benefits are location specific (e.g. locating waterbody buffers along high risk sections of stream/selecting the areas of grassland taken out of management to link existing patches of habitats or reduce run-off/ creating woodland to buffer ammonia emissions or on high risk land/along streams);
- More consistent identification of high run-off and soil erosion risk land;
- Improved management of semi- and un-improved grassland (e.g. advising which areas of SI grassland would benefit from enhancing with wildflower seed/green hay, explaining the benefits of blocking ditches on wetlands);
- Encouraging farmers to select the relevant standards (and levels) to achieve local priorities;
- Opportunity to draw previously unengaged farmers into more ambitious delivery, and signpost them to other E.L.M. schemes.

Evaluation of farm advisor skills

Baseline assessment of natural capital assets

The majority of farm advisors felt confident/competent to carry out a soil assessment, designed to assess soil texture, soil structure, biological indicators and soil organic matter, and a soil run-off and erosion risk assessment (based on that used for Countryside Stewardship) (Figure 7.1). However, only 40% felt able or competent/confident to carry out a woodland condition assessment, using the England Woodland Biodiversity Group and Forest Research Woodland Condition Survey.

Figure 7.1: Percentage of advisors reporting feeling confident/competent, able or unable/unsure of delivering three example baseline assessments.



The majority of advisors felt able to identify all four example priority habitat types (purple moor grass rush pasture, lowland meadow, lowland dry acid grassland and blanket bog), although 18% thought they couldn't identify any of them. Advisors were less confident in their ability to condition assess the four example priority habitat types, based on the methodology used for Higher Tier Countryside Stewardship (as described in the Baseline Evaluation of Higher Tier Agreements (BEHTA) manual).

On average land agents and surveyors scored higher (i.e. felt less confident/competent; average of 2.9) on the baseline assessment skill questions than more specialised farm advisors from environmental charities (average score 2.2), with agronomists and agricultural advisors in the middle (average score 2.4). However, the sample sizes are small and strongly confounded by levels of experience.

Identifying opportunities on farm to deliver environmental outcomes

The ability to identify opportunities varied considerably depending on the environmental outcome being evaluated; most advisors could identify opportunities to improve soil health and water quality (Figure 7.2), and to reduce local flood risk, for example, but relatively few felt able to advise on increasing carbon storage or management of priority habitats (Figure 7.3).

On average land agents and surveyors (average score of 2.8), and agronomists and agricultural advisors (average score of 2.8) scored higher (i.e. felt less confident/competent) on the identifying opportunities questions than advisors from environmental charities (average score 2.1), but the sample sizes are small and strongly confounded by levels of experience.

It is rare for any one advisor to have all the required skills, to carry out the baseline assessment and evaluate the on-farm opportunities. While expecting farm advisors to have specialist knowledge of the full range of environmental outcomes that E.L.M. will deliver is probably unrealistic, advisors need to have sufficient knowledge to carry out a baseline assessment and identify a range of opportunities, in order to be able to signpost farmers to more specialist advice.

Figure 7.2: Percentage of advisors reporting feeling confident/competent, able or unable/unsure to identify opportunities on farm to deliver environmental outcomes related to soil, water quality and ammonia.

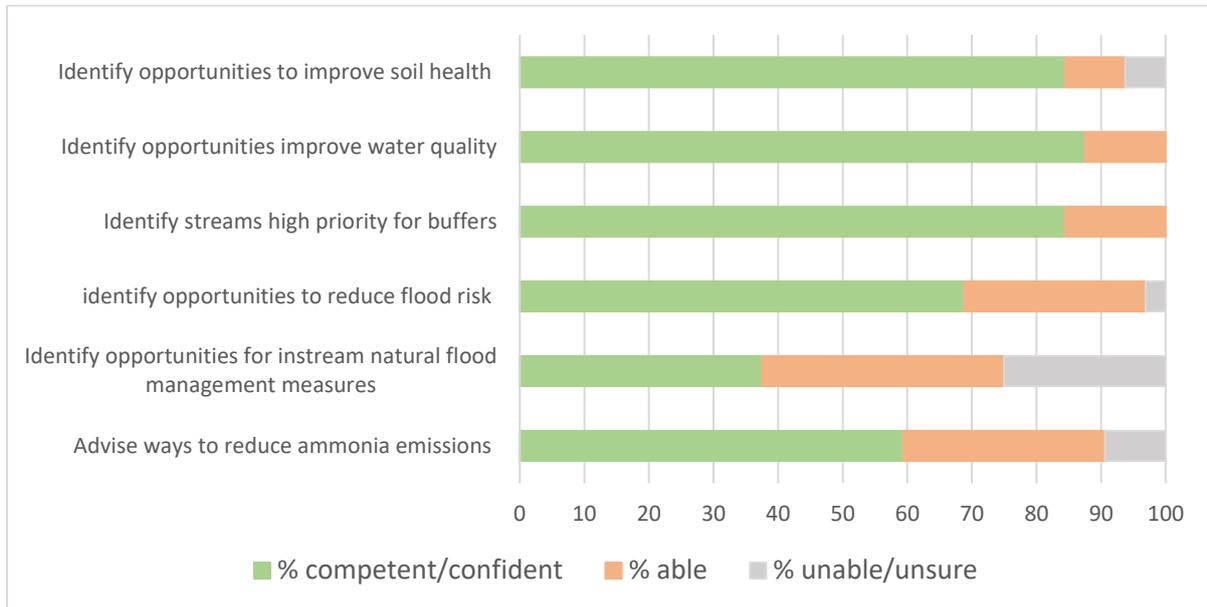
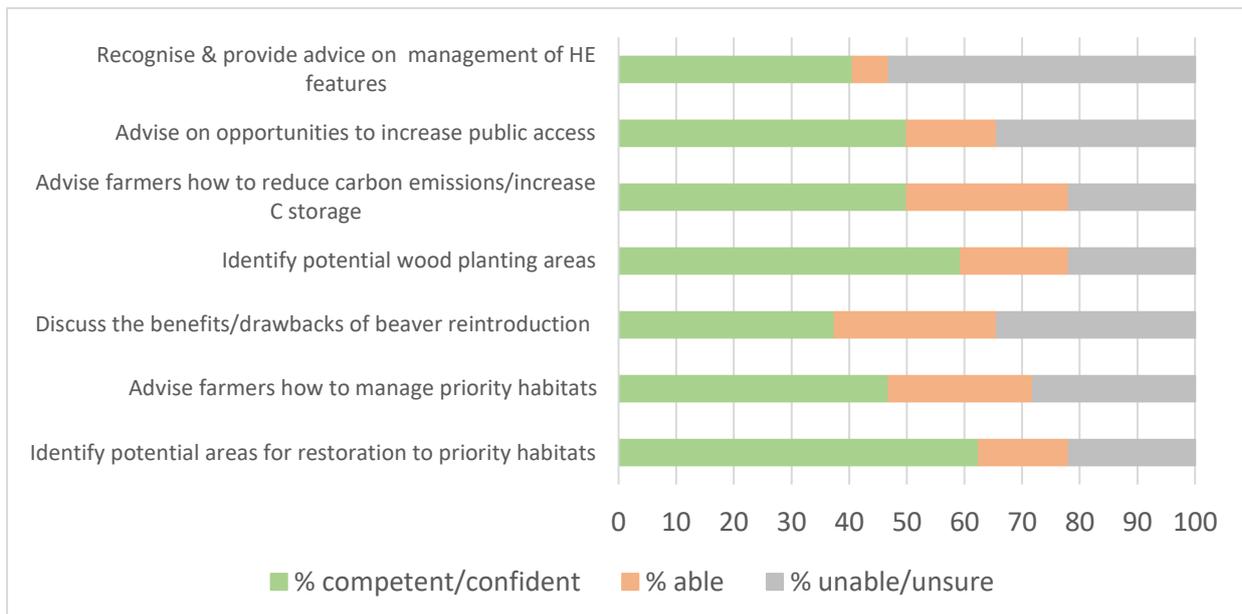


Figure 7.3: Ability of advisors to identify opportunities related to historic environment, access and habitat creation/restoration



Developing a land management plan

The majority of advisors (69%) felt they had the necessary skills to produce an LMP, based on their understanding/interpretation of what that might comprise, while a further 10% thought they probably did. However, it was not clear that the advisors necessarily had the appropriate skills to produce an LMP covering the range of E.L.M. outcomes and incorporating a baseline assessment of the quantity and quality of the farm’s natural capital assets. Of the 22 advisors who considered they did have the necessary skills to produce an LMP, only 9 of them could carry out all three of the

identified baseline assessments (soil health, runoff and soil erosion risk assessment and woodland condition), and only 7 could also identify all 4 priority habitats. Similarly, only 6 of the advisors felt able to identify the full range of opportunities to deliver E.L.M. outcomes evaluated in the questionnaire.

Overall, only 2 of the 32 advisors consulted felt able to carry out all the example baseline assessments required and felt able to identify the example range of on-farm opportunities to deliver public goods. One of these advisors was the only Natural England land management adviser included in the survey, whose experience of delivering HLS and CS HT probably helped considerably to develop the appropriate skillset.

Communication skills

The survey also highlighted that advisor communication skills are important, to ensure that knowledge is disseminated to farmers in an effective way.

Farm advisor training

A need for training to bring advisors with many different qualifications (or none) up to a common standard was identified to ensure that all farmers receive a uniform level and quality of advice in relation to E.L.M. If E.L.M. is to deliver the range of outcomes at the scale required to deliver the 25 Year Environment Plan, significant levels of advisor training are likely to be required.

Who would farmers ask for advice about SFI/E.L.M.?

The farm advisors emphasised the value of upskilling existing trusted advisers, taking advantage of the existing farmer/advisor relationship and the trusted advisor's knowledge of the farm. However, when the Trial farmers were asked who would they ask for advice, the most popular answer was a Natural England land management adviser (if available) or a specialist farm wildlife adviser. Even farmers who had existing trusted advisers (usually a land agent or agronomist) would consider asking for E.L.M. related advice from a Natural England adviser or a specialist wildlife adviser, citing the value of more specialist advice or a second opinion. Ideally a variety of advisor options (including upskilling farmers themselves to deliver the baseline assessments and LMPs) should be available.

Value of advisor accreditation

The majority (72%) of advisors thought advisor accreditation was a good idea, primarily because it would standardise the quality and level of advice provided to farmers; any accreditation scheme should take into account existing qualifications and experience.

Conclusions

We know from our farm scale natural capital indicators work (see section 5) that we need a significant proportion of farmers to select the higher SFI standards and LNR/LR options in order to achieve the scale of change required to deliver the 25 Year Environment Plan (and local priorities). Farmers in this trial have confirmed that they would be more likely to select higher environmental delivery options/standards if they are well supported by farm advisors during the application process (and during the course of the scheme). However, there is huge variability in the extent to which farm advisors have the required skills to deliver natural capital based LMPs and to motivate farmers to deliver more environmental benefits. A significant level of training will be required to enable farm advisors to deliver the extent and quality of advice required.

8 Conclusions

Natural Capital Approach

The North Devon E.L.M Trial aimed to explore the feasibility of using a natural capital approach, setting out to identify landscape-scale natural capital priorities and then explore what a sample of farmers within that area would be prepared to do to contribute to those, assessing whether their 'offer', if scaled up, would deliver the priorities.

Factors that have made the delivery of the overall aims challenging include:

- a) Landscape priorities were identified by groups of stakeholders but were inconsistent in terms of framing (asset-focused, pressure reduction focused, ecosystem-service flow-focused, benefit focused), were not time specific, and did not have quantifiable outcomes. As we discovered, identifying such priorities in a tight time frame and involving large numbers of varied stakeholders is extremely challenging.
- b) Rather than having an entirely natural capital focus, the approach to developing farm offers evolved to reflect E.L.M's developing 'Standards' approach. This was because a significant element of the Trial was the costing of those offers and draft E.L.M. costs were only available for the SFI standards, not the LNR or LR schemes. This placed a lot of emphasis on the sort of actions included in the SFI Standards, namely management actions that aim to reduce agricultural pressures (which obviously have a positive but less easily quantifiable impact on the quality of ecosystem assets) rather than actions that directly relate to habitat restoration, enhancement or creation (or asset quantity, quality and location). Whilst these are obviously important, it makes it more difficult to describe the outcomes in terms of natural capital, and relate the outcomes to the landscape priorities. The majority of SFI standards will affect the condition of natural capital rather than the quantity, and this impact is often difficult to define and quantify due to the way the standards are written with an emphasis on management actions rather than outcomes. The big changes in natural capital are likely to come through the LNR and LR elements of E.L.M but these were not well developed at the time of the trial.
- c) It has become clear that it is very difficult to infer the impact of the SFI standards on natural capital and ecosystem services, and therefore to relate the standards (on which the farm offers are based) to expected changes in natural capital indicators (quantity, quality and location). This is due to:
 - The focus on the reduction of agricultural pressures in the SFI component of E.L.M rather than direct change in habitat condition, extent and location.
 - The optional nature of a number of the actions within the SFI standards.
 - The absence of measurable outcomes for some of the actions e.g. not specifying the extent of woodland required.
 - The absence of targeting of actions linked to delivery of a number of ecosystem services e.g. position of new woodland in relation to air quality; if this is not specified then it cannot be assumed that the provision of benefits will increase and consequently opportunities are missed.
 - The significance of the natural capital baseline which is key to quantifying expected change, and which is different on every farm.

- d) A natural capital approach requires a good knowledge of the quality, quantity and location of the assets in the landscape at baseline and the lack of high quality data, at the level of granularity required to measure farm scale indicators, combined with data sharing restrictions, has made establishing the natural capital baseline time in this Trial consuming and resource heavy. Further refinement of farm-scale natural capital indicators is required, as is significant further investment in data gathering and monitoring, although the development of innovative and rapid approaches to assessing habitat condition and function¹ should help with this. Although there are clearly benefits to farmers collecting their own baseline data, they are busy people and unlikely to all have time to do this; and if they have to pay farm advisors to do the data collection, it is likely to discourage their participation in the valuable land management planning process. The best option therefore may be for baseline farm scale data to be gathered by paid contractors or government agencies, and provided to farmers, to ensure consistency and farmer engagement, with investment in further developing the use of Earth Observation data. Developing a standardised set of farm scale indicators that captures the range of ecosystem services delivered by farmland and is used consistently across E.L.M. would maximise the value of the data collected.

It is clear that if a natural capital approach is to be taken, it needs to be adopted from the beginning with the provision of multiple ecosystem services and benefits driving the selection of outcomes/priorities and interventions. If outcomes are not defined in terms of the desired changes in natural capital, it is much more difficult to quantify the impact of E.L.M. delivery on natural capital outcomes, and thus on the delivery of local priorities. Although we can use indicators to monitor the quality and quantity of SFI delivery, in terms of its impact on key assets, this is restricted by the fact that the SFI standards are action based (rather than outcome based), primarily address the agricultural pressures on assets rather than delivering significant increases in asset quantity (or quality in the case of woodland and priority habitats), and generally do not take asset location into account, which is key to the provision of certain ecosystem services. The use of natural capital indicators is likely to be more straightforward within an outcome-based Local Nature Recovery scheme where the focus is more explicitly on the enhancement and creation of assets for nature and wider benefits.

Spatial prioritisation

The importance of delivering enhancements in natural capital in the right place is key to the successful delivery of key E.L.M. outcomes, and the 25 Year Environment Plan. Farmers need to understand what the local priorities are and be engaged in setting the priorities in order for this to happen (particularly in the absence of farm advice).

However, achieving farmer engagement at an appropriate scale is difficult – clearly it is relatively straightforward in plans covering smaller areas, where a bottom up approach preferred by farmers is possible, but much more challenging in terms of time, resources, and feasibility (just to organise engagement with a large number of farmers) over larger areas (such as the Torridge and Taw catchments where the number of farms is in the thousands). Consequently, involving farmers in

¹ New and rapid approaches to assessing habitat and ecosystem condition and function are being developed for the new Nature Strategy, in line with integrated biodiversity advice in Natural England. See Mainstone *et al.* (2018) [Generating more integrated biodiversity objectives – rationale, principles and practice](#). Natural England Research Report Number NERR071.

large scale priority setting probably isn't realistic. What is more feasible, is involving farmers in working out how best to deliver those priorities at the local level (e.g. a valley), which generally is the scale at which their local knowledge can best contribute.

Simply referring to priorities in the LMP isn't sufficient to encourage farmers to choose actions that best deliver local priorities on its own – they need to understand where those priorities have come from and why they are important. Delivering the relevant actions also needs to make farm business sense, and may require increasing the level of incentivisation (e.g. for waterbody buffering in North Devon where fencing off streams is key to reducing FIO contamination but small field size and geography make provision of alternative water supplies difficult).

Land Management Plans

The combination of a farm business situation report (that clearly identifies which of the farm's enterprises are making a profit and which are making a loss, and the impact of the loss of BPS on the farm business) with maps and tables identifying the key opportunities to enhance the quality and quantity of natural capital on the farm, appears to help farmers make informed decisions regarding future management and how /where to shift the balance between food production and environmental delivery, particularly when they have no business plan in place. However, the farm business elements are not useful to all farmers and therefore shouldn't be mandatory, but our findings suggest that encouraging farmers to take farm business advice, when assessing their engagement with E.L.M, is highly worthwhile.

Most of the farmers thought the template we developed worked well but commented that the value of the LMP is often more in the process/discussions that led to its delivery than in the plan itself.

Advice

The trial has emphasised the importance of good quality farm advice to ensure that E.L.M delivers against its outcomes, and not just for the LNR/LR elements. SFI is intended to engage a large proportion of farmers and is therefore an opportunity to draw them into more ambitious delivery, with advisors able to highlight the farm's potential to deliver a wide range of outcomes (and local priorities), and signpost them to relevant advice. The extent to which SFI will deliver its potential, in terms of the provision of certain ecosystem services and benefits, is highly dependent on the location of the required actions and the new natural capital assets created. Tailored farm advice to ensure this happens will be invaluable. Advisors working in the local area regularly identify missed opportunities in existing CS-MT agreements to deliver environmental benefits (not using the full range of options available for example, or options inappropriately located or delivered). Free (or subsidised) farm advice may actually prove to be cost effective in the end, ensuring better targeting (and implementation) of actions where they will deliver most. However, although the farm advisors we surveyed were often very skilled, they rarely had the breadth of knowledge to signpost farmers to the range of opportunities their farms hold, to deliver more for the environment. A significant level of training will be required to remedy this. Although guidance may help farmers ensure their delivery is most effective in terms of environmental outcomes, it is poor substitute for high quality one-to-one farm advice.

What SFI payments could deliver

Which farms take up which level of which standards is hugely influential in delivering the desired outcomes for E.L.M. If only low environmental impact, regulatory compliant farms engage with SFI,

then the gains are unlikely to be significant. SFI (and E.L.M.) needs to work for all farms, but particularly for those which are currently having the greatest impact. The results of this trial suggest that SFI may not be attractive to all farms – for example, dairy farms which are particularly reliant on high quality silage. More tailored advice is required in these cases, backed up by better enforced regulation (SSAFO and Farming Rules for Water), to make SFI work for these farms, for example demonstrating the value of herbal leys or species enhanced permanent pasture, both for the environment and productivity.

Although payment rates used in the draft SFI standards trialled here are based on Income Foregone + Costs, the farmers are predicted to make a profit, or at least reduce their losses from farming, after implementing the three SFI based scenarios, even once their expected costs of delivery are taken into account.

The trial has emphasised the current importance of BPS in maintaining the viability of the mainly small mixed, and relatively un-intensive/high natural capital value, farms that took part, with many making a loss on their core farm business. If they are not viable in the long-term, there is a risk that they will give up farming, renting their land out to more intensive, larger businesses, to the potential detriment of the local environment (and a missed opportunity to enhance it). On average Trial farms were predicted to receive a larger payment for the high SFI scenario than the current average income from BPS (£36K compared to £29K). However, this is before any additional costs and expenditure is taken into account - the real impact on farm income is predicted to be just under £20K. In addition, it is worth noting that much of the farmland in North Devon is considered to be at high risk of soil erosion and run-off, meaning that the Trial farmers were eligible for significantly higher payments (primarily as a result of the Improved Grassland Soils standard actions to reduce poaching and maintain permanent grassland). Our results suggest that, based on the draft SFI payment rates used in the analysis, SFI will contribute to sustainable farming in North Devon, both environmentally and financially. The relatively high predicted income from SFI may not, however, be applicable to other areas, where the slope and soil types mean the soils are less prone to run-off and erosion.

Although the high SFI scenario was the most financially advantageous option for the majority of Trial farmers, even taking into account the expected costs of delivery, only 33% of farmers selected that scenario, and most of those that did were close to or past retirement age and looking to reduce their workloads. The difference in profits between the high and medium scenarios was generally small and the farmers fed back that it was generally insufficient to compensate them for the increased complexity of delivering the higher standards. In addition, the higher level standards generally required a reduction in stock numbers and farm productivity. Although many of the farmers were actually making a loss on their stock, and therefore reducing the number of stock actually improved their profits (due to reduced costs), they were often reluctant to go down this route (unless they were close to retiring/wanting to reduce the workload for other reasons). Some farmers appeared to want to maximise their productivity, even at the expense of farm business profit – this may be because they felt the farm business accounts did not accurately reflect the true situation (the farm business analysis was based on the 2019/2020 financial year and domestic meat prices have generally increased since then) or because they see themselves foremost as food producers, rather than providers of public goods.

There is some evidence to suggest that the farm business elements of the Trial (the current financial information and the partial budget analysis) encouraged the Trial farmers to select the high scenario because they were better able to plan financially for the future. Of the five who selected the high scenario and responded to the questionnaire, four found the farm business element useful, with one farmer stating *“Doing the business planning created the opportunity to truly assess costs of delivery and in parallel to truly assess the comparative benefits of different scenarios”*. The remaining farmer didn’t find the farm business element useful but only because they had a good understanding of their business already but would like to see farm business planning as part of the E.L.M application process.

The intermediate scenario was the most popular option (48% of farmers), followed by the high. All three SFI scenarios were predicted to result in increases in key natural capital indicators, for example the % of the farm in semi-natural habitat and the % of high risk land in semi-natural habitat/well managed permanent grassland, potentially contributing to the delivery of key local priorities (e.g. improvement of water quality, restoration of farm wildlife, increased carbon storage). However, it was clear that effective and well incentivised LNR/LR schemes are required to take advantage of significant opportunities on the Trial farms to deliver key outcomes, particularly restoration of priority habitat networks, creation of high quality broadleaved woodlands, and the large scale catchment restoration required to restore pearl mussel and salmon stocks.

Westcountry Rivers Trust developed a method, as part of this Trial, for aggregating the environmental benefits/changes that could result from the three SFI based scenarios developed for each farm and estimate the likelihood that they would result in the achievement of the agreed landscape priorities for the E.L.M Trial. The analysis shows that the scenarios, based on SFI standards, have the potential to help deliver the landscape priorities but are unlikely to deliver sufficient change to deliver them in full. Delivery of LNR and LR schemes will be key, and the potential large-scale habitat restoration actions identified on the 27 farms, if upscaled to the wider landscape, would contribute considerably to the delivery of local priorities. Many of the farmers involved in the Trial were not fully aware of the potential their land held for delivering environmental outcomes prior to the land management advisor visit, emphasising the value of farm advice as part of SFI, to signpost farmers to other, more ambitious E.L.M schemes.

On average, it is estimated that about 13% of the farmed land (i.e. excluding existing woodland, priority habitats, scrub etc) was considered relatively unproductive by the Trial farmers (e.g. wet rush pastures) - who could generally see the sense in reverting these areas to more valuable wildlife habitat, to deliver a range of ecosystem services and deliver local priorities, given the right incentives. Although these areas would result in reductions in stocking numbers, this was often less than might be predicted from the areas involved (due to already being relatively low productivity). In contrast, certain actions within the SFI standards required them to take highly productive land out of production/ management, which they felt was a ‘waste’ of good ground, preferring to focus environmental delivery where possible on less productive areas.

Value of the Test and Trial

The Trial has generated a significant amount of learning, to help inform the design of the E.L.M. schemes, which is the ultimate underlying objective of Tests and Trials. One particular example deserves to be highlighted. Designing a set of SFI standards that works across all farming sectors and

a wide range of landscapes is a particularly complex task for the Defra and its Arms-Length Bodies (ALB's). In addition to its agreed objectives, the Trial farmers have contributed to this, by providing detailed comments on draft SFI standards, ensuring that they can be delivered effectively by the relatively small, mixed farms that make up much of North Devon. These comments have resulted in some elements of the standards being reviewed, and in some cases, revised. The farmers, in general, found this a satisfying element of the trial, appreciating the opportunity to feed in at an early stage, when the details can still be influenced.

Defra have not yet released details of potential LNR/LR payment rates so the Trial could not cost the whole farm 'offer' as originally planned. As a result, the opportunity remains, to take advantage of the farm business work done to date, to test the viability of the whole E.L.M package for each farm, potentially also evaluating the contribution that could be made by private finance, should the farmers wish to participate.



North Devon Pioneer ELM Trial

Information for potential participants

Background

The North Devon Pioneer ELM Trial is one of 55 'Test and Trial' projects Defra have commissioned to help inform the new Environmental Land Management Scheme that will be phased in, over the next four years, to replace the existing Basic Payment Scheme and Countryside Stewardship. ELM will provide farmers, foresters and other land managers with an opportunity to secure financial reward in return for delivering environmental benefits.

What the North Devon Pioneer ELM Trial will do

The project aims to trial a new way of working with farmers to deliver sustainable land management through ELM. The project will:

- Develop a process to engage local stakeholders in agreeing the priorities for what ELM should deliver in the local area, and which involves farmers and land managers in deciding how and where those priorities could be delivered, and balanced with food production.
- Help farmers evaluate the costs and benefits of alternative land management options by bringing farm business planning information together with their land management options.
- Test a Land Management Plan (LMP) template drafted by the project team (it is likely that an LMP will form the basis of future ELM agreements). We envisage that the LMP will comprise a baseline environmental assessment for the farm, identify potential environmental enhancement opportunities, and scope out what land management changes the farmer could potentially deliver.
- Cost out, for each of the participating farms, three alternative ELM scenarios, varying in the extent of 'public goods' delivered (things like clean rivers, reduced flooding downstream, more wildlife, and increased carbon storage) – a standard, a medium and a high delivery scenario. At the end of the Trial, participants will be asked to comment on which scenario they might potentially consider implementing for their farm business in the future.
- Note that this will only be a theoretical exercise, and that participants will not be required to deliver the actions identified in the LMP. You can apply to take part even if you are currently in a stewardship scheme.

Why get involved in the Trial?

1. Influence the design of ELM - by being part of this Trial you will have the chance to help Defra design the new ELM scheme, due to be piloted from next year and rolled out fully in 2024.
2. Get bespoke farm business and land management information to help inform future decision making and farm business resilience.
3. The farm planning involved in the trial could help you decide how best to take advantage of the future ELM scheme.

Note: It is clear that the Covid-19 outbreak and the need for social distancing will affect the planned delivery of this ELM Trial, but we will do as much as we can by phone or email until it is safe and practical to meet in person.

How can I get involved in the Trial, and what will it entail?

There are two options to taking part in this trial:

Option 1: Helping agree what ELM should deliver in your local area, and how this could be achieved.

This element of the Trial will take place in late June and July and we are hoping 70 farmers will volunteer to take part, spread across our four working areas (see map below).

Participating farmers will need to comment on a short document outlining the priorities for what ELM should deliver for the natural environment in their area, as identified by local stakeholders (such as the Biosphere Reserve, District Council, Environment Agency, Devon Wildlife Trust), and to provide their views on the reality of delivering those priorities in their local area (ie how and where it might be delivered). For example, the feasibility of managing permanent pasture and hedgerows for wildlife and carbon capture, or woodland planting to reduce downstream flooding.

We expect this will take 2-4 hours of your time, and you can claim up to £100 to help cover the cost of your participation in this element of the project. If you would like to make a claim, you will need to provide us with an invoice and a signed timesheet to evidence your claim for payment.

Option 2: Testing the Land Management Plan template and creating three costed ELM land management scenarios for your farm.

We are aiming to work with 28 farmers for this part of the Trial, spread across four areas (see map below), completing the land management plans and business planning elements between August and November this year.

Participating farmers will need to set aside time to show the Natural England land management adviser around the farm, and discuss what land management measures you might consider delivering under the new ELM scheme (in terms of continuing existing positive management measures as well as potential new ones). Participating farmers will also need to set aside time to work with the farm business adviser, to help them collate the necessary information on your farm business to prepare the farm business situation report.

The land management adviser will complete a Land Management Plan for the farm and draft the three ELM land management scenarios – a standard, a medium and a high delivery scenario. It is envisaged that the standard scenario will entail limited delivery of ‘public goods’, similar perhaps to what you might have delivered under ELS, while a high delivery scenario might entail, for example, creating new areas of wildlife habitat, restoring natural drainage to a floodplain meadow, and planting new woodland. One of the scenarios may be your current situation, depending on your farm business and what you do at the moment.

The farm business adviser will then cost out each of these scenarios for your farm showing your farm’s likely income from the different scenarios. The final stage of the Trial will involve asking you to evaluate which is your preferred option. You will also be asked to provide feedback on the Land Management Plan template (how well it worked for you, what could be improved etc).

Participants in this element of the trial will benefit from the preparation of a draft LMP for their farm and a farm business situation report, as well as the costing of the three scenarios for their farm. No additional payments are available.

NOTE: YOU CAN CHOOSE TO JUST TAKE PART IN OPTION 1 OR BOTH OPTIONS 1 AND 2. However the number of farms taking part will be limited to approximately 70 for option 1 and 28 for option 2. We will select farms to try and ensure a representative sample across the four project areas.

How will the results of the Trial be fed back to Defra?

The Project Team will provide regular reports to Defra together with copies of example documents (for example the Land Management Plan template). Defra will use the information we provide to help design the new ELM scheme.

Will my contribution be confidential?

To ensure that our reports reflect your views, we will want to incorporate your feedback and comments, but they will be anonymised so Defra won't know who said what. We will not include the names of participants or farms in our reports. We will produce summary descriptions of the average costs of delivering natural environment priorities to different levels (standard, medium, and high) in different project areas and different farm types.

How will we protect your personal data?

To protect your identity, and to comply with the General Data Protection Regulations, we will keep your personal data (e.g. contact details, consent form, correspondence about the study) in a password-protected file, to which only the project staff will have access. Personal data will only be used for the purposes of this study.

Where can I get further information?

Please contact the Project Land Management Adviser, Clare FitzGibbon on 07721 758647 Clare.FitzGibbon@naturalengland.org.uk or the Project Manager, Moira Manners on 07385 348564 Moira.Manners@naturalengland.org.uk. We will provide you with a short form to complete to register your interest in taking part, and are happy to discuss any queries you may have.

Deadline for registering your interest: 19th June 2020

Project partners

The Trial has been developed by Natural England with help from our project partners: North Devon Biosphere, North Devon AONB, Environment Agency, Forestry Commission, Devon Wildlife Trust, South West Water, National Farmers Union, National Trust, Clinton Devon Estates and Exeter University.

Project working areas

See map below (taken out of this version)

**North Devon ELM Trial
Farmer Feedback Survey**

Please circle the preferred answer

Your name:

Section A: Background

Q1. Why did you want to take part in the ELM trial? (you can choose more than one reason if you want to)

- | | |
|---|-----|
| Interested in making ELM work better than previous schemes | Y/N |
| Interested in helping make farming more environmentally sustainable | Y/N |
| Interested to find out more about ELM | Y/N |
| Thought it might help me plan for the future | Y/N |
| Farm Business Advice provided as part of Trial | Y/N |
| To engage with other farmers | Y/N |

Other – please provide details below

Section B: Deciding what ELM should deliver in your local area

Q2. At the beginning of the trial, the Farming and Wildlife Advisory Group worked with local stakeholders to trial a process for agreeing what ELM should deliver in your local area. Do you think your involvement in this process was worthwhile? Yes/No/Possibly/Not sure/Didn't take part

Please explain your answer below

Q3. Do you feel your contribution influenced the final landscape plan which detailed the environmental priorities for your local area? Yes/No/Possibly/Not sure/Didn't take part

Please explain your answer below

Q4. Are you interested in being involved in agreeing local priorities for the final ELM scheme?

Yes/No/Possibly

Please explain your answer below

Q5: If you were to join an Environmental Land Management scheme, would the priorities for your local area:

(a) influence your selection of Sustainable Farming Incentive Standards? Yes/No/Maybe/Not sure

(b) influence the land management you deliver under the Local Nature Recovery Scheme?

Yes/No/Maybe/ Not sure

Please explain your answers below

Section C: Land Management Plan

Q6. Defra have said that Land Management Plans (LMP) will be a major feature of ELM, to record the baseline condition of the environmental assets (hedges, woodlands etc.) on the farm and help in planning future land management activities. I produced an outline, draft land management plan for your farm as a potential starting point.

How useful were the various elements of the draft LMP I produced for you?

(a) Simple map showing the location of key farm environmental assets (woodland, improved grassland, priority habitats etc). Essential/Useful/Quite useful/Not useful

How could this be improved?

(b) Set of natural capital asset indicators (see section C in your LMP) which attempts to capture what your farm delivers, in terms of existing environmental assets. Essential/Useful/Quite useful/Not useful/interesting to see how my farm compares with others but not particularly useful

Do you think the indicators provide a good summary of the key environmental assets on your farm? How could they be improved?

--

- (c) Table D and rough map outlining what your farm is already delivering in terms of the local environmental priorities for your area, and identifying various opportunities to deliver more.
Essential/Useful/Quite useful/Not useful

How could these be improved?

--

- (d) Notes on particular fields identifying any particular issues/opportunities (Annex 1)
Essential/Useful/ Quite useful /Not useful

How could these be improved?

--

Q7. What else do you think should be included in the LMP? Some suggestions are included below:

Baseline soil health assessment, to assess levels of compaction, organic matter, etc	Essential/Useful/ Quite useful/ Not useful
Baseline Run-off and Soil Erosion Risk Assessment	Essential/Useful/ Quite useful/ Not useful
Whole farm Nutrient Management Plan, designed to ensure that manure and fertiliser applications meet crop and soil requirements	Essential/Useful/ Quite useful/ Not useful
Soil Management Plan, identifying land management changes which could potentially improve soil structure, soil biology and soil chemistry.	Essential/Useful/ Quite useful/ Not useful
What else do you think should be included?	

Q8. Do you think you could produce a Land Management Plan for your farm? Please select one of the answers below

Yes – could probably do it now, if provided with a simple form to fill in	<input type="radio"/>
Yes – could do it but too busy	<input type="radio"/>
Possibly – with some training/advice	<input type="radio"/>

No – I would need help to do it all	<input type="radio"/>
I would need help with some elements (please specify which in box below)	<input type="radio"/>

Please explain your answer in box below

Section D: Applying for the Sustainable Farming Incentive (SFI)

Q9. Do you think you would have needed help applying for the SFI from a farm adviser/agent if you had not been part of the trial (assuming detailed text-based guidance was available)?

(a) Understanding the SFI scheme and how it works	Y/N/maybe/depending on quality of guidance
(b) Deciding what land is eligible for which SFI standard	Y/N/maybe/depending on quality of guidance
(c) Advice on which standard (and which level) to apply for (ie considering associated land management requirements)	Y/N/maybe/depending on quality of guidance
(d) Identifying opportunities on the farm for other ELM schemes (Local Nature Recovery and Landscape Recovery Schemes), such as culm grassland restoration or large-scale tree planting.	Y/N/maybe
(e) Managing the online application (assuming this is similar to BPS application)	Y/N/maybe/depending on quality of guidance

Any comments/thoughts?

Q10. Who would you ask for advice/help when applying for the SFI (if you weren't part of the trial)?

Your land agent	Y/N
Your agronomist	Y/N
Specialist farm wildlife adviser (eg Devon Wildlife Trust advisers)	Y/N
Natural England adviser (if available)	Y/N
Farm Secretary	Y/N
Other: please specify	

Section E. Financial information and choice of SFI scenario

Q11. If you were applying for the Sustainable Farming Incentive and had the option of one of the three scenarios we have drafted for you, which scenario would you select?

- Basic (Scenario 1)
- Intermediate (Scenario 2)
- Advanced (Scenario 3)
- None of them (I wouldn't apply for the SFI at all)

Q12. When deciding which scenario, what influences your decision? Please rank each of the following factors from unimportant to very important.

	Unimportant				Very important
Maximising overall profit from farm business	<input type="radio"/> ¹	<input type="radio"/> ²	<input type="radio"/> ³	<input type="radio"/> ⁴	<input type="radio"/> ⁵
Impact on core farm business profits and current farming activity (e.g. impact on stocking levels)	<input type="radio"/> ¹	<input type="radio"/> ²	<input type="radio"/> ³	<input type="radio"/> ⁴	<input type="radio"/> ⁵
Desire to look after the wildlife on the farm	<input type="radio"/> ¹	<input type="radio"/> ²	<input type="radio"/> ³	<input type="radio"/> ⁴	<input type="radio"/> ⁵
Desire to farm in an environmentally sustainably way	<input type="radio"/> ¹	<input type="radio"/> ²	<input type="radio"/> ³	<input type="radio"/> ⁴	<input type="radio"/> ⁵
Desire to keep farming productively (eg avoid taking land out of management)	<input type="radio"/> ¹	<input type="radio"/> ²	<input type="radio"/> ³	<input type="radio"/> ⁴	<input type="radio"/> ⁵
How complicated the standards are to deliver and how much monitoring likely to be required (e.g. soil sampling etc)	<input type="radio"/> ¹	<input type="radio"/> ²	<input type="radio"/> ³	<input type="radio"/> ⁴	<input type="radio"/> ⁵
Long-term impact on the value of the land	<input type="radio"/> ¹	<input type="radio"/> ²	<input type="radio"/> ³	<input type="radio"/> ⁴	<input type="radio"/> ⁵
Familiarity/similarity to current management	<input type="radio"/> ¹	<input type="radio"/> ²	<input type="radio"/> ³	<input type="radio"/> ⁴	<input type="radio"/> ⁵
Wanting to try lower level standards before committing to the higher levels	<input type="radio"/> ¹	<input type="radio"/> ²	<input type="radio"/> ³	<input type="radio"/> ⁴	<input type="radio"/> ⁵
What other local farmers are doing	<input type="radio"/> ¹	<input type="radio"/> ²	<input type="radio"/> ³	<input type="radio"/> ⁴	<input type="radio"/> ⁵
<p>Other - please specify below:</p> <p>Other comments</p>					

Q13: What would encourage you to choose the higher scenario?

	Unimportant				Very important
Higher Payment Rates	<input type="radio"/> ¹	<input type="radio"/> ²	<input type="radio"/> ³	<input type="radio"/> ⁴	<input type="radio"/> ⁵
Lots of adviser support during the application process	<input type="radio"/> ¹	<input type="radio"/> ²	<input type="radio"/> ³	<input type="radio"/> ⁴	<input type="radio"/> ⁵
Adviser support throughout life of agreement	<input type="radio"/> ¹	<input type="radio"/> ²	<input type="radio"/> ³	<input type="radio"/> ⁴	<input type="radio"/> ⁵
More flexibility in choosing how to deliver the required outcome (eg improved soil condition)	<input type="radio"/> ¹	<input type="radio"/> ²	<input type="radio"/> ³	<input type="radio"/> ⁴	<input type="radio"/> ⁵
Reassurance that I will not be subject to a complex inspection/auditing regime	<input type="radio"/> ¹	<input type="radio"/> ²	<input type="radio"/> ³	<input type="radio"/> ⁴	<input type="radio"/> ⁵
Being part of a wider group of farmers in my local area focused on achieving the same outcome (eg improving water quality)	<input type="radio"/> ¹	<input type="radio"/> ²	<input type="radio"/> ³	<input type="radio"/> ⁴	<input type="radio"/> ⁵
Removal of particular actions from the standards (eg incorporate FYM within 12 hours). If so, specify which actions you would like to see removed in the box below	<input type="radio"/> ¹	<input type="radio"/> ²	<input type="radio"/> ³	<input type="radio"/> ⁴	<input type="radio"/> ⁵
Other things that would encourage you to select a higher scenario - please explain here:					

Q14: I appreciate that our three scenarios were rather simplistic, and didn't take into account the fact that you can mix and match the different SFI levels (you could choose the high improved grassland standard, but the basic hedgerows standard for example). In a realistic situation, which combination of the three levels for each standard would you select?

Please complete the following table with your answers.

Standard	None, Basic, Intermediate or Advanced
Hedgerows	None/Basic/Intermediate/Advanced
Waterbody buffering	None/Basic/Intermediate/Advanced
Improved Grassland	None/Basic/Intermediate/Advanced
Improved Grassland Soils	None/Basic/Intermediate/Advanced
Arable and Horticulture Land	None/Basic/Intermediate/Advanced
Arable and Horticultural Soils	None/Basic/Intermediate/Advanced
Semi-improved/unimproved Grassland	None/Basic/Intermediate/Advanced

Farm Woodland*	None/Basic
----------------	------------

*Note there is only one level for the farm woodland standard – Basic.

Q15: Do you think the farm business elements of the LMP (sections B and F) are useful, enabling you to make a better-informed decision when developing an ELM agreement? Select one option below

- a. No, I already had a good understanding of my farm business accounts and my current reliance on BPS/stewardship payments
- b. Quite useful
- c. Very useful
- d. Only useful when backed up with time for detailed discussion with a farm business adviser.

Q16. Which element was most useful? Select one option below

- a. Farm business situation report, including impact of end of BPS (Section B)
- b. The predicted total business profit/loss before and after implementing the three SFI-based scenarios (section F).
- c. Both
- d. Neither

Any comments/thoughts?

Q17: What would make the farm business elements of the LMP more useful?

Please answer here

Q18: Do you think farm business planning should be part of the ELM application process/land management plan?

Yes/No/Possibly

Please explain your answer here

Section F: Trial feedback

Q19: ELM Tests and Trials were set up by Defra to involve farmers, landowners and other stakeholders in co-design of ELM. The main element we have fed back so far is your comments on the draft versions of the SFI standards. How confident are you that your feedback was considered and valued?

<i>Not at all confident</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<i>Very confident</i>
	1	2	3	4	5	

Q20: Are you pleased that you signed up for the Trial?

<i>No, complete waste of time</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<i>Yes, very pleased</i>
	1	2	3	4	5	

Please feel free to comment on how the trial has gone so far, what you have found interesting, things you didn't like etc.

Q21: Is there anything in particular you would like to discuss in more detail with other participants at the workshop session planned for the end of April?

Many thanks for your help – we really appreciate it.

Annex 2.3: Farmer feedback

Evaluating the success of the Trial in terms of involving farmers in co-design.

The project team received over 90 enquiries from farmers interested in take part in the trial. In the end of trial feedback questionnaire (see Annex 2.2, farmers cited multiple reasons for why they originally volunteered to take part (Table 1 below).

Table 1: Result of farmer feedback questionnaire sent to 27 farmers in the Trial (23 responses)

Q1: Why did you want to take part in the ELM trial?	No of responses
Interested in making ELM work better than previous schemes	17
Interested in helping make farming more environmentally sustainable	20
Interested to find out more about ELM	19
Thought it might help me plan for the future	20
Farm Business Advice provided as part of Trial	20
To engage with other farmers	10

Asked if they were pleased that they had signed up to the trial (Q20 of farmer feedback questionnaire), the majority of farmers were pleased (score 4) or very pleased (score 5) that they took part in the trial (86%); the rest gave a score of 3 (14%).

Generally, farmers appreciated being actively involved in co-design (particularly feeding back on the draft SFI standards directly to the team drafting the standards). However, some of them found it frustrating to be involved at such an early stage, as they would have preferred to have a clearer picture of ELM as a whole in order to inform their responses. It would have been easier for the farmers if the trial had happened quicker as the intervals between visits meant that they forgot what had been explained/discussed previously. Although not mentioned in the feedback questionnaire, a number of the farmers commented directly to the team that the trial would have been a lot more enjoyable if we had been able to have face to face, round the kitchen table type, meetings rather than meeting online.

Asked how confident they were that Defra would consider and value their feedback on the SFI standards (Q19 of the farmer feedback questionnaire), 16 (76%) felt confident or very confident, while 1 farmer (5%) was not at all confident.

Comments on the trial (Q20 in the feedback questionnaire) included:

“Got me thinking about future planning of the farm. Happy to be involved but frustrated because already delivering most of what is required and SFI is very prescriptive”

“It was bity, it didn't flow very easily and when the next part needed my attention i had to refresh myself with the scheme and options. The deliverers are dealing with it every day and would have found it easier to keep track of subtle changes etc

“Helps understand terminology, helps prepare us for huge change”

“The trial has gone well. Breaking down my accounts into separate enterprises was very interesting”

“The trial was very thorough and has given us an clear insight into future schemes and policy. It has allowed us to influence and ground-truth some of the proposed standards and payment rates.”

"I really appreciated the opportunity to get involved in the scheme development and felt that we were truly being consulted. I also appreciated the one to one time provided by the advisors. I thought it was interesting to think about what a scheme may be designed to deliver in our region."

"The team has been hugely helpful."

"Feel trial has gone well. We found costings and breakdown of income very useful. A bit of an eye opener. And proof that on marginal land we cannot farm without some form of support. All involved have been very approachable, informative and generally very helpful."

"I appreciate there is a balance and this was an interesting start, but it felt a little too theoretical / early stages."

"The trial was very thorough and has given us an clear insight into future schemes and policy. It has allowed us to influence and ground-truth some of the proposed standards and payment rates."

But not everyone was pleased with what they learnt about the proposed SFI scheme (appreciating that they were involved at a very early stage when many elements were undecided).

"Trial explained very well but ELM has to be made simpler"

"More complicated to understand than I anticipated"

"it was interesting and worthwhile to have a consultant comments on the conservation measures we are undertaking and possible ways forward for which we would be paid but the payments on offer appear to unlikely to be attractive at the higher level"

"I am disappointed that Organic farming has been so clearly side-lined. The importance of a whole integrated farming system has been undermined. Also a set of standards that are evolved and inspected have been lifted and cherry picked. There seems to be scant recognition of the implications of conventional farming. Particularly the use of fertilisers and pesticides on our soil/water and wildlife eg why are farmers still able to use Ivermectin on animals grazing species rich grassland, pour ons, dips etc. Creep feeding of GMO soya and Maize from unsustainable sources.

The 'greening around the edges' approach to farming will not address the problems we have with degradation of our environment. DEFRA needs a more holistic approach where ecoservices are measured and part of a matrix of sustainability. This should include socio-economic and environmental benefits. Eg. Quantities of, Eco-services, sustainable food, and labour employed all rewarded. Conversely loss of habitat etc penalised.

ELMS continues to pay the richer farmer with more land and therefore options. What about the tenant farmers this is nigh on impossible for most young farmers on short term lets. But the perfect solution for a retiring 'would be farmer' to 'Rewild.'

Worst of all any self- respecting intensive farmer making a bit of money is going to take one look at this as confirmation of what they already do. They will carry on to produce and pollute!"



FWAG SouthWest

North Devon E.L.M Trial

Feedback from final project workshops, funded by Natural England as part of the North Devon Pioneer E.L.M Trial

Adam Lockyear and Rory Quinn^{5th} May 2021

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Introduction

FWAG SouthWest were commissioned by Natural England to facilitate a series of final workshops as part of the North Devon Pioneer Environmental Land Management scheme (E.L.M) Trial. Four workshops were held across two days, 28th and 29th April 2021, attended by 21 of the 28 businesses participating in the trial.

- Wednesday Apr 28, 2021 11:30 AM - Attended by 3 farm businesses (4 farmers in total).
- Wednesday Apr 28, 2021 19:00 PM - Attended by 8 farm businesses.
- Thursday Apr 29, 2021 11:30 AM - Attended by 6 farm businesses (8 farmers in total).
- Thursday Apr 29, 2021 19:00 PM - Attended by 4 farm businesses (7 farmers in total).

The objective of these workshops was to provide the participating farm businesses a final opportunity to come together to reflect on their experiences of the trial, to hear from each other and share any further thoughts on the development of the Environmental Land Management schemes.

Although a large proportion of the participating farm businesses were represented, the data collected does not represent a quantitative dataset, the objective of the workshops was to provide the attendees the time to develop discussions around elements of the project and policy development most relevant to them. To facilitate the discussion four core themes were introduced at the start of each session:

1. Setting local priorities
2. Farm business assessments
3. Standards and scenarios
4. Advice and support

The format resulted in four very different informed and engaging group conversations that reflected the shared and diverse interests and opinions that exist within the farming community.

Summary

Within this summary report we aim to reflect the broad range of opinions and ideas raised during the workshops and to complement the other reporting undertaken through the North Devon Pioneer trial. There were many questions raised during the workshops which we have not attempted to reply to in this report and are reflected in the notes attached. These reflect the lack of detailed information farmers need to make decisions around entering E.L.M and also the need for wide sector engagement to inform businesses and address speculation and rumour that can fill the space where there are gaps in engagement.

The Land Management Plans and Farm Business Assessments undertaken through the trial were based on actions and income published by Defra about the Sustainable Farming Incentive pilot, this is only the first component of the E.L.M. Many of the participating farmers may be able to access additional support through the Local Nature Recovery component, on which there is no detailed information currently available, to deliver more targeted outcomes that could help local priorities and generate additional income. This component of E.L.M may also address some of the comments raised by participants over communication, and level of detailed information required on incentives and actions to enable business planning. It is also acknowledged that this process is part of the “co-design” approach and therefore it is not possible to provide the full picture as the scheme is still in development.

The key messages from these workshops were:

- Providing multiple routes for farmers to engage in the setting of local priorities whether that is online or in person.
- Consulting people on priorities at a scale that is appropriate to them and that this may vary from parish to sub-catchment or entire catchment.
- Ensuring the language used is inclusive and recognises the opinions of all contributors.
- Setting appropriate levels of incentive that reflect the cost of delivery and provide a business case for change, particularly to achieve the higher levels of ambition within the scenarios set.
- Volatility in commodity markets is a concern to farm businesses and the scheme does not give sufficient detail over the security of income it may provide to offer a business case for changing farm practices. Equally farmers want flexibility to adapt and change their agreements.
- The farm business assessment method is valuable to those who are not currently actively assessing their farms business performance.
- Further work is required to refine and improve the deliverability of the standards set out within the three scenarios. However, farmers were encouraged by some of the changes already made from feedback they had provided.
- A mixture of advice and support needs to be available to meet the wide range of needs of farm businesses.
- Concern was raised over divergence in the industry with small family farms lost to greater intensification and at one extreme and pure environmental deliver at the other.
- Ensuring there is a regulatory baseline that supports good practice and holds those who choose not to engage to account.
- Ensuring environmental outcomes are considered within the wider pressure’s farmers face and the impact on their mental and physical health.

Overview of workshops

Setting local priorities

The development of the local landscape plans had been the first part of engagement within the trial and fed through to the development of the Land Management Plans. Some of the workshop participants had been involved in those initial events. Others did not recall the plans.

For some they felt the plans had been predetermined before farmer consultation was undertaken and that prior consultation with conservation organisations and others had set the priorities. There was also a feeling that comments raised during the consultation workshops were not evident in the final versions provided to participants.

The language used and routes to engagement were also important to participants. There was a feeling the plans were written in an “us and them” way. Some felt the online format (forced to be adopted due to CV-19 restrictions) was positive as it saved travelling and allowed a broader range of people to participate, others felt they would have preferred in person consultation with maps on the table (this was the original intention). It was felt both approaches were required and that in the future some events could be live streamed as a hybrid approach. Some were happy to be presented with the priorities so they could focus on deciding for themselves how best to implement these on their farm. Finally, ensuring co-ordination of engagement by a single body was felt needed so that it is clear to farmers how the wide range of activity taking place links up.

When discussing the content of the plans scale of the landscape plans was important. This was reflected in the larger scale plans where it was felt the middle reaches of the Torridge, for example, were often neglected. There was also a feeling that the plans were too vague and did not pick up enough detail on the species and habitats of the landscape. It was also felt that there was not enough focus on the wider landscape features such as hedgerows which all farmers could deliver and too much emphasis on specialist species and protected sites. Another local example highlighted was that the Hartland area which is not in an NVZ but locally water quality issues are significant, where there have been severe declines in the trout populations in the rivers.

Setting appropriate levels of incentive against the priorities was an important point for all participants and raised as part of the discussion under all the themes in each workshop. With declining farm incomes farm businesses are assessing their options; with a lack of firm information and changing payment rates businesses are not able to make firm commitments around the changes required to fully engage with E.L.M.

Farm Business Assessments

Often diversification is cited as a route to boosting farm incomes, it was emphasised that this is not appropriate for most farm businesses.

The results from the assessments (described in individual farm reports and NE project report) were alarming to some who felt it showed many family farm businesses were not viable. There was a general concern over a loss of medium size family farms with a divergence towards a smaller number of larger intensive agri-businesses and holdings specialising in environmental outcomes. The loss of these businesses would be significant to the local communities built around these farms with many employed by the farms or by contractors and other supporting businesses.

Although the assessments showed the proposed scenarios could replace BPS income, this did not reflect the Countryside Stewardship or Environmental Stewardship income the businesses were also receiving.

Some found the assessments valuable as they had not previously undertaken an assessment of their farm business, others felt that it told them nothing that they did not already know. The consideration of the cost/benefit of implementation of the scenarios was seen as a valuable element of the decision-making process when selecting scenarios. It was also highlighted that the group participating in the trial were self-selecting and generally engaged in the environment and therefore caution should be taken over the level of weight put behind the specific outputs from the surveys.

Standards and scenarios

Three scenarios, based around the three levels of ambition within the Sustainable Farming Incentive, were used as part of the Land Management Plan development and the Farm Business Assessments. The scenarios did not include the Local Nature Recovery scheme which would provide greater flexibility and diversity of options. This could address some of the concerns regarding the level of incentive and level of ambition.

The intermediate level of ambition within the three scenarios proposed was appropriate for most businesses as it fitted well with existing practices or provided sufficient incentive to adopt the actions proposed. This level of ambition was also financially more viable as the estimated cost of delivery was a smaller proportion of the incentive than the higher level. Most farms benefited from the high-risk land incentive due to the rolling landscape of North Devon, this may have skewed the results. It also raised many questions as to how this would impact arable producers.

The higher level of ambition was felt to put too many constraints on the farming business with insufficient incentive to support the actions required. Some were concerned with the additional requirements that would incur additional costs and labour alongside their existing farming activity that would not be offset by the income generated.

Participants were encouraged to see that previous feedback provided on the hedge cutting requirements and watercourse buffering payments had been reflected in updated information from Defra. There were continued concerns about the practicality of the watercourse buffering standard and whether livestock would need to be excluded from these buffers and the practicality of this in landscapes dominated by small fields and abundant watercourses.

Questions were raised over how the actions and payments within standards could be made more flexible to meet regional differences. This would however add significant complexity to the scheme.

Advice and support

Participants in the project felt that their engagement with Clare Fitzgibbon had been positive and helped them to interpret the scenarios and priorities for their farms. They also valued the process of developing a Land Management Plan and having someone walk the farm. This helped them to gain acknowledgement for existing good delivery and raised awareness of the environmental features already present that they may not have fully appreciated the value of previously.

The comments included within the attached annex, show the diversity of advice needs. There was a general preference towards being able to access E.L.M without the need for advice and avoiding the costs of agents and to retain income to the farm. However, the value of advice was recognised within the comments particularly where there was a clear business case to support maximising environmental delivery and income generation.

It was felt there was a role for state funded advice and support like that provided through the current Countryside Stewardship support or through Catchment Sensitive Farming and other funded advice services and projects.

The ability for any local state funded adviser to have the authority to make decisions for example on amendments or derogations for agreements was considered important.

Farmers also wanted the ability to work with whoever provided them with the most valuable service to meet their needs and from someone who was well informed and that they could develop a good working relationship with. Whether that was from a government department or agency, non-governmental organisation, or adviser in the private or charitable sector was not the highest priority.

Other thoughts and comments

Agreement length and flexibility was important for participants particularly regarding:

- the ability to make amendments,
- ensuring early adopters are not penalised,
- allowing progress up the levels of ambition,
- adapting to changing farm business priorities.

As reflected in earlier comments there was concern of:

- larger more intensive holdings not engaging in the process and not represented within the trial,
- smaller farmers not being able to incorporate the level of actions required to achieve the higher levels of ambition.

Ensuring there is robust enforcement of regulation as part of the baseline expectations for the environment was raised during conversation.

A final comment was ensuring that conversations about the Environmental Land Management scheme is seen within the wide range of pressures that farm businesses, the farmers and their families are under and the impact this has on physical and mental health and welfare.

Acknowledgements

We hope that this report provides a fair reflection of the comments raised during the final project workshops. We would like to thank those who participated for taking the time to attend the workshops and for providing a wide range of informed and considered opinions on the project process and outputs.

Annex 3.1: Example Landscape Plan



Torridge Culm and
River Valley Landsca

North Devon Pioneer E.L.M trial

Land Management Plan (Draft)

Section A: Farm details

Name:	Contact number:	
Postal address:	Farm Address (if different):	
Farm Area (ha): 146 ha	Farm Business Name:	
Holding no:	SBI Number:	
Main farm enterprises: Organic sheep/cattle/horticulture		
Cropping and rotation: Whole crop cereals, peas/beans		
Stock Details: 330 ewes plus lambs, 120 cattle. Cattle housed over winter.		
Tenure: Owned	Farm Assurance Schemes:	
Current Agri-environment Schemes: CS Mid Tier	Current Agent:	
Higher Risk Fields (Runoff and Soil Erosion) on holding Some parcels have slope > 12° but these are all in permanent pasture or woodland A significant number of fields have slope > 7° and are close or connected to streams (see ALERT map Annex 2)		
Key designations on holding (see Maps in Annex 2) SSSI/SAC: No AONB: No National Park: No County Wildlife Site: Yes		NVZ: Yes Scheduled Monuments: No CRoW access land and footpaths: yes Priority habitats present: Purple moor grass rush pasture and wet woodland
Area of farm on deep/shallow peat: 0ha/0ha		
Overall farm objectives/aspirations for next 5/10 years:		
<ol style="list-style-type: none"> 1. Organic mixed farm – want to keep it as such but would consider reduce g stocking intensity as move towards retirement, plus keep horticulture area for vegetables. 2. Make farm more sustainable. 3. Increase tree planting; become increasingly self-sufficient in timber, including for biomass boiler. 4. Keep flexibility so that if successor wants to change things, they can (so not keen on large areas of woodland). 5. Protect rivers/water supply but prefer to use river water through pumps etc where possible (avoid costs of mains water supply). 6. Create habitat corridor through farm, by tree planting, habitat restoration and taking out awkward corners. 7. Quite keen to ‘rewild’ quite a significant proportion of farm if payment rates right – likes idea of creating more wood pasture habitat 8. Potential would do more farm walks, but not keen on permissive access 		
	Name	Date
LMP initially completed by:		

Section B: Farm Business Finance Situation Report

To maintain anonymity the farm business situation report provided below is from a different farm

This section provides information on the current financial situation of your farm broken down by each of the enterprises. Table B2 also identifies the current agricultural payments the farm is receiving.

Table B3 shows how your current basic payment scheme (BPS) is going to be phased out from the start of 2021 and how your payments will reduce from 2021 to 2028. Finally, Table B5 shows you how the phasing out of basic payment scheme will impact on your total business profits.

Table B1: Current farm business situation before any agricultural payments (BPS and agri-environmental payments)

	Dairy	Beef	Sheep	Crops	Forestry	Environmental	Diversification
	£	£	£	£	£	£	£
Output	0	36,258	118,948	0	0	0	0
Variable cost	0	30,987	63,939	0	0	0	0
Gross Margin	0	5,271	55,009	0	0	0	0
Overheads	0	5,028	40,677	0	0	0	0
Enterprise Profit	0	243	14,332	0	0	0	0

Table B2: Total Business Profit/Loss broken down into the elements that make this total

	£
Total Business Profit/Loss	44,823
Basic Payment Scheme	30,096
Agri-environmental Payments	0
Profit from Farming	14,575
Diversification Profit	0
Other Non-farming Income	152

Table B3 shows your expected BPS reductions from 2021 to 2028. For the years 2021-2024 it is known that your BPS will reduce based on the band information in table B5 and will be phased out completely by 2028. Therefore, for the years between we have done a straight-line reduction as an estimate.

Table B3: How BPS payments are being phased out on your farm from 2021 to 2028

Current BPS (£)	£30,096
------------------------	----------------

Value in...	% Decrease*	New BPS Payment
2021	See Band Info	£28,586.40
2022	See Band Info	£24,072.00
2023	See Band Info	£19,557.60

2024	See Band Info	£15,043.20
2025	65%	£10,533.60
2026	75%	£7,524.00
2027	85%	£4,514.40
2028	100%	£0.00

Notes: * 2021-2024 as announced by Defra, 2025-2027 estimated and 2028 announced by Defra

Table B4: Band information**

Payment band	Scheme year			
	2021	2022	2023	2024
Up to £30,000	5%	20%	35%	50%
£30,000 - £50,000	10%	25%	40%	55%
£50,000 - £150,000	20%	35%	50%	65%
More than £150,000	25%	40%	55%	70%

Notes: **For example, in 2021 a claim worth £40,000, a reduction of up to 5% will be applied to the first £30,000, and up to a 10% reduction to the next £10,000.

Table B5: How the phasing out of BPS will impact on your total business profit

Current Profit including BPS	£44,823.00
-------------------------------------	-------------------

Year	New Estimated Profit Without BPS
2021	£43,313.40
2022	£38,799.00
2023	£34,284.60
2024	£29,770.20
2025	£25,260.60
2026	£22,251.00
2027	£19,241.40
2028	£14,727.00

C. Baseline Natural Capital Indicators

Whole Farm Indicators

	Average patch size	2.3 ha	-
	% habitat patches <200m apart		
	Habitat diversity	tbc	-
!	% of high risk land currently in semi-natural habitat or permanent grassland under good management	90%	
	% of high risk land in arable / cultivation	10%	
%	% of wetland habitat / peatland impacted by drainage	10%	
	% of farm in semi-natural / wildlife habitat (including woodland, priority habitat, margins & conservation crops)	7%	

Standards

●○○ Basic ●●○ Medium ●●● High

	Hedgerows	●●●
	Waterbody buffering	○○○
	Arable Land	○○○
	Arable and Horticultural Soils	●○○
	Improved Grassland	○○○
	Improved Grassland Soils	●○○
	Semi-improved/Unimproved Grassland	●○○
	Farm Woodland	●○○
	Historic Environment	●●○

Asset Indicators

	Area of deciduous / mixed woodland	6.6 ha	◆
	Area of coniferous woodland	0 ha	
	Area of high quality woodland	6.6 ha	
	% of rivers and streams shaded by trees (estimated)	90%	◆◆
	Length of hedges & hedge banks	22,441m	◆◆◆◆
	% of hedges in good condition (estimated)		
	Proportion of run-off pathways intersected by hedges	6/6	
	Length of rivers and streams	1998m	◆◆
	Length of rivers and streams with >6m wide buffer (or in woodland or semi-improved/unimproved grassland)	1450m	
	% of rivers and streams in good condition (estimated)		
	Number of ponds	4	
	Himalayan Balsam present?	Absent	
	Area of priority habitat	3.9ha	
	Area of priority habitat in good condition	3.9ha	
	Length of PRoW or permissive paths	480m	

Key - relative score (indicative based on farm size and type)

88 ◆◆◆ High provision ◆◆ Medium provision ◆ Low provision

Section D: Current good practice and key opportunities on the farm (simplified)

This table aims to summarise the current good practices in place on the farm and identify general opportunities to deliver the local priorities (see opportunities map). Details of opportunities and recommended actions for individual field parcels are provided in Annex 1. Maps used to inform the identification of opportunities are included in Annex 2.

Priority	Current good practice	Key Opportunities on farm	Implementation (TBC)	
			Sustainable Farming Incentive Standards	Potential Local Nature Recovery Actions
Healthy soil	Organic Stocking rate is appropriate for holding capacity; cattle housed over winter to reduce poaching and compaction.	Further increasing organic matter content and reducing compaction/poaching through appropriate land management – see actions in Arable and Improved grassland soils standards		
Reduce ammonia emissions	Good network of well-managed, tall hedges help trap ammonia.	Additional tree planting around yard to further trap ammonia. Use of low emission technology to spread slurry.		
Reduce phosphate, faecal indicator organisms and sediment	Organic Stock fenced out of most streams. Many of steeper slopes/ higher risk fields are already in permanent pasture or woodland, and grassland is well managed with little evidence of poaching.	Widening/extending grass margins and buffer strips would further reduce run-off into streams for fields where risk of run-off is higher. Allow scrub to develop on buffer strips as good for wildlife and water infiltration. Stock access x stream for drinking, increasing risk of FIO contamination.		
Reduce the impact of drought and excessive rainfall run-off on river flow will help restore the natural habitat of the river.	Most steep slopes are wooded or in permanent pasture, helping to increase water infiltration and 'slowing the flow'. Streams are primarily tree lined, helping to introduce woody debris into the river system and keep water cool.	Potential for further increasing soil organic matter and reducing compaction to improve water infiltration. Potential for creation of 15ha wood pasture type habitat, and 6.4ha culm grassland (including blocking drainage ditches) to improve water infiltration and 'slow the flow'. Potential for implementation of natural flood management measures (eg woody debris dams, ditch baffles) in stream X to further 'slow the flow'.		
Restore, expand and connect habitats, particularly culm	Good network of well managed woodland, hedges, rush pasture and rough grassland provide habitat corridors through farmland.	Creating woodland, wood pasture, and culm grassland (see above) would extend the existing habitat corridors through the farm and create a range of wildlife habitats.		

Priority	Current good practice	Key Opportunities on farm	Implementation (TBC)	
			Sustainable Farming Incentive Standards	Potential Local Nature Recovery Actions
grassland, hedges, and woodland Restore farm wildlife	<p>Well managed purple moor grass priority habitat in good condition.</p> <p>Well managed wet woodland priority habitat in good condition.</p> <p>Three existing ponds</p> <p>Cut hedges every 2-3 years.</p> <p>Organic</p>	<p>Potential for more use of herbal leys and other measures on cultivated fields (eg bumblebird mix, overwinter stubbles and winter bird food) to provide further resources for pollinators and farmland birds.</p> <p>Potential to diversify improved grasslands and take small areas of less productive land out of production to create patches of rough grassland/scrub mosaic for wildlife across the farm.</p> <p>Potential for an additional farm pond.</p>		
Conserving landscape character	Good network of hedges and trees/woodland along streams.	Potential for some additional small pockets of woodland and wooded buffer strips along rivers/ditches, and additional hedgerows, all of which would help enhance local landscape (see below).		
Historic environment	<p>Continued use of traditional buildings.</p> <p>An undesignated historic feature (Two enclosures of unknown date) identified</p>	Maintain in permanent grassland.		
Public access	None	Farm provides great venue for farm walks/open days.		
Mitigating climate change	<p>Good network of hedges, trees and permanent grassland helps store carbon.</p> <p>Streams are shaded by trees keeping water cooler.</p>	<p>Potential for additional woodland and wood pasture habitat.</p> <p>Potential for more use of herbal leys to increase soil organic matter (soil carbon).</p> <p>Further use of hedgerow timber to provide wood fuel.</p>		

Landscape character type: Upper farmed and wooded valley slopes (further detail at: https://www.torridge.gov.uk/article/11273/Joint-Landscape-Character-Assessment-for-North-Devon-and-Torridge-Districts)	
Summary of special qualities: <ul style="list-style-type: none"> • Open landscape with important vantage points and uninterrupted vistas. • Narrow sunken lanes and species-rich hedgebanks. • Copses, woodlands and tree clumps. • Cob, thatch and whitewashed buildings, including traditional linhays. 	Strategy objective: To protect the landscape’s strong rural character and historic sense of place. The farmed landscape comprises a rich mosaic of fields bounded by an intact network of species-rich Devon hedges. Valued farmland and woodland habitats are managed and extended, with opportunities for Green Infrastructure links to settlements pursued.

Section E: Details of three natural capital based E.L.M scenarios for the farm

This section details the three scenarios proposed for the farm. It has been based on the following assumption:

Scenario 1: Basic level of all relevant standards **Scenario 2:** Medium level of all relevant standards **Scenario 3:** High level of all relevant standards

Potential Local Nature Recover actions that could be delivered in addition to the SFI farm standards are detailed in Table E2.

Details of actions required for each level of the standards, applied to all the relevant land on the farm, are provided separately.

Table E1: Expected payments based on the draft payments for the Sustainable farming Incentive Pilot (subject to change)

The attached map shows which fields were considered to be in which asset type (improved grassland, arable etc). The fields assumed to have a high risk of soil erosion and runoff are also shown on the map (all other fields are assumed to be moderate risk).

Scenario 1							
SFI Standard	Delivery level	Length in m OR area in ha (as appropriate) of asset		Notes	Draft payment rate*	Units	Potential payment**
Hedgerows	Basic	22,441m		This assumes that you manage both sides of all the hedges (the payment is halved if you only manage one side).	£0.16	per 1m of hedgerow	£3,591
Waterbody Buffering***	Basic	1070m		6m waterbody grass buffer strips applied to a minimum of 50% of eligible waterbodies. - Total area of buffers = 0.3ha Length of stream has been doubled where both sides eligible for buffer.	£0.16	per 1m of bankside buffered	£171
Arable Land	Basic	39.5 ha		Requires 5% (2.0 ha) of arable land managed to provide year-round resources for farmland birds and pollinators (in addition to hedges, wood, scrub or tall vegetation managed under other standards).	£28.00	per hectare	£1,105
Arable and Horticulture Soils	Basic	39.5 ha		Standard requires that over winter green cover should be established on fields identified as high risk of surface runoff or soil erosion	£30.00	per hectare	£1,184
		3.3 ha	High risk land		£114.00	per hectare	£375
Improved Grassland	Basic	73.6 ha		Requires 2% (1.5ha) of grassland taken out of grazing and cutting management Example areas to take out of management Parcel XXXX 0.6ha Parcel XXXX 0.9ha	£27.00	per hectare	£1,988
	Basic	73.6 ha			£6.00	per hectare	£442

Improved Grassland Soils		0.0	High risk improved grassland	Standard requires that measures to reduce poaching and soil compaction are implemented on improved grassland identified at high risk of surface runoff or soil erosion	£88.00	per hectare	£0	
		0.0	High risk improved grassland	Standard requires that improved grassland at high risk of surface runoff or soil erosion should be maintained as permanent grassland and only reseeded by direct drilling or oversowing – note that this additional payment is very draft	£56.00	per hectare	£0	
Semi-improved Grassland	Basic	24.5ha		Eligible land includes 20.6 ha of semi-improved grassland and 3.9 ha of purple moor grass rush pasture priority habitat (culm grassland)	£22.00	per hectare	£539	
Farm Woodland	Basic	7.0ha		Only parcels of established woodland >0.5ha and 20m wide are eligible	£49.00	per hectare	£341	
Historic Environment	Basic	3.8ha		Relevant historic feature located in Parcel 6259.	£30.00	per hectare	£114	
							Total	£9,849

Scenario 2							
SFI Standard	Delivery level	Length in m OR area in ha	Notes		Draft payment rate*	Units	Potential payment**
Hedgerows	Medium	22,441			£0.21	per 1m of hedgerow	£4,713
Waterbody Buffering***	Medium	1070	6m waterbody grass buffer strips applied to a minimum of 20% of waterbodies. 10 m applied to a minimum of 30% of waterbodies - Total area of buffers = 0.4 ha .		£0.29	per 1m of bankside buffered	£310
Arable Land	Medium	39.5	Requires 8% (3.2 ha) of arable land managed to provide year-round resources for farmland birds and pollinators.		£54.00	per hectare	£2,131
Arable and Horticulture Soils	Medium	39.5	See ALERT map in Annex 2 for fields which have slope >7 degrees and therefore could not be ploughed		£47.00	per hectare	£1,855
		39.5	Total moderate/high risk land	Standard requires that over winter green cover should be established on fields identified as high or moderate risk of surface runoff or soil erosion	£114.00	per hectare	£4,499
Improved Grassland	Medium	73.6	Requires 5% (3.7ha) of grassland taken out of grazing and cutting management		£62.00	per hectare	£4,565

Improved Grassland Soils	Medium	73.6	See ALERT map in Annex 2 for fields which have slope >7 degrees and therefore could not be ploughed		£6.00	per hectare	£442
		73.6	Moderate/high risk improved grassland	Standard requires that measures to reduce poaching and soil compaction are implemented on grassland identified at high and moderate risk of surface runoff or soil erosion	£88.00	per hectare	£6,479
		73.6	Moderate/high risk improved grassland	Standard requires that improved grassland at high and moderate risk of surface runoff or soil erosion should be maintained as permanent grassland and only reseeded by direct drilling or oversowing – note that this additional payment is very draft	£56.00	per hectare	£4,123
Semi-improved	Medium	24.5	Eligible land includes 20.6 ha of semi-improved grassland and 3.9 ha of purple moor grass rush pasture priority habitat (culm grassland)		£89.00	per hectare	£2,179
Farm Woodland	Basic	7.0	Only parcels of established woodland >0.5ha and 20m wide eligible		£49.00	per hectare	£341
Historic Environment	Medium	3.8	Relevant historic feature located in Parcel XXXX.		£30.00	per hectare	£114

Scenario 3							
	Delivery level	Length in m OR area in ha	Notes		Draft proposed payment rate*	Units	Potential payment**
Hedgerows	High	22,441.0			£0.24	per 1m of hedgerow	£5,506
Waterbody Buffering	High	1070.0	6m waterbody grass buffer strips applied to a minimum of 20% of waterbodies. 10 m applied to a minimum of 30% of waterbodies - Total area of buffers = 0.4 ha .		£0.34	per 1m of bankside buffered	£364
Arable Land	High	39.5	Requires 10% (4.0 ha) of arable land managed to provide year-round resources for farmland birds and pollinators, plus create (or maintain existing) areas of tall vegetation and scrub over an additional 2% of the farm area.		£74.00	per hectare	£2,920
	High	39.5	See ALERT map in Annex 2 for fields which have slope >7 degrees and therefore could not be ploughed		£59.00	per hectare	£2,328

Arable and Horticulture Soils		39.5	Total moderate/high risk land	Standard requires that over winter green cover should be established on fields identified as high or moderate risk of surface runoff or soil erosion	£114.00	per hectare	£4,499
		1.6	50% high risk land	Standard requires 50% of arable fields identified as high risk of surface run-off or land that regularly floods, be converted to permanent grass.	£311.00	per hectare	£512
Improved Grassland	High	73.6		Requires 5% (3.7 ha) of grassland taken out of grazing and cutting management	£97.00	per hectare	£7,141
Improved Grassland Soils	High	73.6		See ALERT map in Annex 2 for fields which have slope >7 degrees and therefore could not be ploughed	£8.00	per hectare	£589
		73.6	Moderate/high risk improved grassland	Standard requires that measures to reduce poaching and soil compaction are implemented on grassland identified at high and moderate risk of surface runoff or soil erosion	£88.00	per hectare	£6,479
		73.6	Moderate/high risk improved grassland	Standard requires that improved grassland at high and moderate risk of surface runoff or soil erosion should be maintained as permanent grassland and only reseeded by direct drilling or oversowing – note that this additional payment is very draft	£56.00	per hectare	£4,123
Semi-improved/ Unimproved Grassland	High	24.5		Eligible land includes 20.6 ha of semi-improved grassland and 3.9 ha of purple moor grass rush pasture priority habitat (culm grassland). Note that there may be additional payments available for management/restoration of priority habitats through the Local Nature Recovery component of ELM (see below)	£110.00	per hectare	£2,693
		3.1	Area of land eligible for additional payment for blocking drains on wetlands. Parcel XXXX		£127.00	per hectare	£392
			Area of land eligible for floodplain grassland management additional payment. Parcels XXXX and XXXX				
		0.0	Enhance the semi-improved grassland area by introducing locally occurring wildflowers on land that is not priority habitat or SSSI, and where there is currently a low diversity or cover of wildflowers		£145.00	per hectare	£0
Farm Woodland	Basic	7.0			£49.00	per hectare	£341
		4.9 ha woodland <15 years old		Maintenance of new tree planting payment: Assumes 4.9ha of new woodland created in total, which will then be eligible for maintenance of new tree planting payment under this standard.	£200	per hectare	£980

			Areas of woodland <0.5ha and adjacent to other woodland can be created under this standard (eg 0.5 ha in parcel XXXX, 0.4 ha in XXXX, 0.5ha in XXXX & 0.5ha in XXXX). Larger areas/areas not adjacent to existing woodland would have to be created through other components of ELM (see below)			
Historic Environment	High	3.8	Relevant historic feature located in Parcel XXXX.	£30.00	per hectare	£114
					Total	£38,981

**Note - These payments rates are proposed so are likely to change. The historic environment standard payment is very draft, and the payment rate is based on our best judgement*

***Note – figures may be slightly out due to rounding in the table*

****Note – The area of waterbody buffering will need to be taken away from your area in either the arable or grassland standard depending on where the waterbody buffering takes place.*

Table E2: Additional potential land management actions not covered by SFI standards

THESE ARE NOT INCLUDED IN SCENARIO PAYMENTS CURRENTLY AS NO POTENTIAL E.L.M PAYMENTS AVAILABLE YET (relevant Countryside Stewardship payment rates included for information only). This table details additional land management actions, not covered by the current draft/proposed SFI standards, for Scenario 3 that could potentially be delivered through the Local Nature Recovery component of ELM (details of which have yet to be confirmed).

Action	Desired Outcome (Indicator of success)	Locations	Current most relevant Countryside Stewardship Payment rate	Total annual payment
Manage and/or restore 6.4ha wet rush pasture /culm grassland mosaic with scrub etc	Create mosaic of scrub and species-rich culm grassland, comprising a mix of typical wildflowers, lightly grazed by cattle and with <20% scrub. To: <ul style="list-style-type: none"> • Provide wildlife habitat • 'Slow the flow' • Store carbon 	0.5 ha (XXXX) 2.0 ha (XXXX) 3.9 ha (XXXX)	GS7 Restoration towards species rich grassland £145 ha	£925
Create 11.7ha of grazed species-rich wood pasture type habitat	Create a mix of trees, scrub and species-rich grassland, lightly grazed with cattle in the late summer/autumn, to: <ul style="list-style-type: none"> • provide habitat for wildlife • store carbon • 'slow the flow' of water. 	2.8 ha XXXX 1.4 ha (XXXX) 1.6 ha (XXXX part parcel) 3.6 ha (XXXX) 2.3 ha XXXX	WD6 Creation of wood pasture £409 ha	£4785
Create 3ha of woodland (Cant be delivered under farm woodland standard as not adjacent to existing woodland or areas >0.5ha (max area of new woodland allowed under FW standard)	Create species rich deciduous woodland to: <ul style="list-style-type: none"> • Create wildlife habitat • Slow the flow of water • Store carbon • Capture ammonia • Shelter stock 	0.3 ha (XXXX) but only if not species rich grassland/subject to survey 0.5 ha (XXXX) 0.6 ha (XXXX) 0.7ha (XXXX) 0.3ha (XXXX) but only if not species rich grassland/subject to survey 0.6ha (XXXX)	To be confirmed – see above for maintenance of new woodland planting payments under SFI farm woodland standard	
Create 1 pond and manage 3 existing ponds	4 x ponds 10x 10m	XXXX XXXX	Capital payment only	
			Total	£5710

Table E3: Potential Landscape Recovery Projects (not costed)

Action	Desired Outcome (Indicator of success)
Work with other land owners in catchment to explore feasibility of reintroducing beavers	Introduce beavers to: <ul style="list-style-type: none"> • Restore the natural hydrology of the stream • Create mosaic of open space and woodland up stream (by coppicing riverside trees) • Improve water quality by trapping nutrient rich sediment.

Table E4: Baseline Standards delivery

Standards	Baseline delivery level (approximately)	Notes/Likely standard level could envisage signing up for/Any blocks to delivery of high standard?
Hedgerows	High?	High
Waterbody buffering	<Basic?	None (payment rate too low)
Arable Soils	<Basic?	Basic. No ploughing on slopes greater than 7% slope would be difficult as organic so cant direct drill and fields are only moderate risk so actual risk of runoff is low. Also cover crop – cost of organic seed is too high to make worthwhile
Arable Land	<Basic?	High
Improved Grassland Soils	<Basic?	Medium
Improved Grassland	<Basic?	Medium
Semi-improved/Unimproved Grassland	<Basic?	Medium. The difference between the payment rates for the high and medium semi improved grassland don't appear to be enough
Farm Woodland	Basic	Basic

Section F: Potential impact of the SFI scenarios on total business profit/loss (excluding existing BPS payments) (DRAFT – based on SFI National Pilot draft payment rates which are subject to change)

The table below compares your total business profit/loss before and after implementing the scenarios. We have taken out BPS so the total business profit/loss is your 2028 figure from table B5 assuming your current income doesn't change.

The total business profit/loss includes all income earned through farming, diversification, any agri-environment payments or any other non-farming income.

The total business profit/loss **after implementing the scenario** is all the above without any payments from agri-environment schemes. The Sustainable Farming Incentive will eventually replace existing agri-environment schemes (such as Countryside Stewardship) so we have not included any payments you receive from current schemes. This also excludes any BPS.

NOTE: This does not factor in all the potential Sustainable Farming Incentive standards (additional standards are under development) or any other E.L.M schemes (eg Local Nature Recovery).

Table F1: Total business profit/loss before and estimation of total business profit/loss after implementation of the three scenarios

Three scenarios	Total business profit/loss (not including basic payment scheme payments (2028 figure))*	Total business profit/loss after implementing the scenario (2028 figure)**
Scenario 1: Basic	£XXXX	£XXXX
Scenario 2: Medium	£XXXX	£XXXX
Scenario 3: High***	£XXXX	£XXXX

*this figure is from table B5

**this figure is calculated in the partial budget workbooks and is the 2028 figure in the profit impact tabs

***doesn't include any potential LNR payments in table E2

Annex 1: Field level opportunities

This table aims to identify where there are particular opportunities or constraints, or issues requiring action by field parcel. PG = permanent grassland (SI=semi-improved; I=improved) TG = temporary grassland

Field parcel	Asset type	Runoff and soil erosion risk assessment	Baseline situation	Opportunity
	PG (I) with occasional trees/parkland	Higher	Managed as open grazed parkland	Could improve wildlife value by reducing stocking density/keeping low inputs and reduce topping of rushes and allowing more scrub/trees to develop and flowers to flower/set seed etc Reduce run-off down ditch by NFM measures and more scrub along ditch
	PG (I)	Moderate	Woodland edge/steep in parts	Create woodland edge habitat in strip around northern boundary More infield trees
	PG/SI/rush pasture	Lower	Ridge and furrow Used to have curlews nesting Currently cut rushes	Assess feasibility of restoring to culm grassland. Manage with low inputs/reduce intensity grazing. New hedge along xxx to replace fence along road Potential for habitat corridor of trees/rough grass along western edge of xxx
	PG (I)	Moderate	Main water pipe runs through	Potential for habitat corridor of trees/rough grass along western edge – want to be able to manage hedge though so rough grass might be better.
	PG (I)	Moderate		Potential for new hedge along southern edge
	PG (SI)	Lower	Rush pasture, very wet, difficult to manage	Potential to restore to culm grassland

ANNEX 2: Maps (examples of these maps have been provided previously to T&T so most not included here again)

Statutory and non-statutory designations

Natural Capital baseline

Opportunity map (attached separately)

ALERT map (see below for example)

Combined Habitat Network

Working with Natural Processes Woodland Potential

Flood risk

Fine Sediment and Erosion Risk

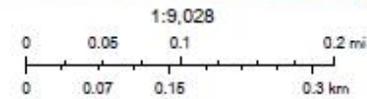
Landscape Character

A.L.E.R.T - Agricultural Land Environmental Risk Tool



30/10/2020 11:52:47

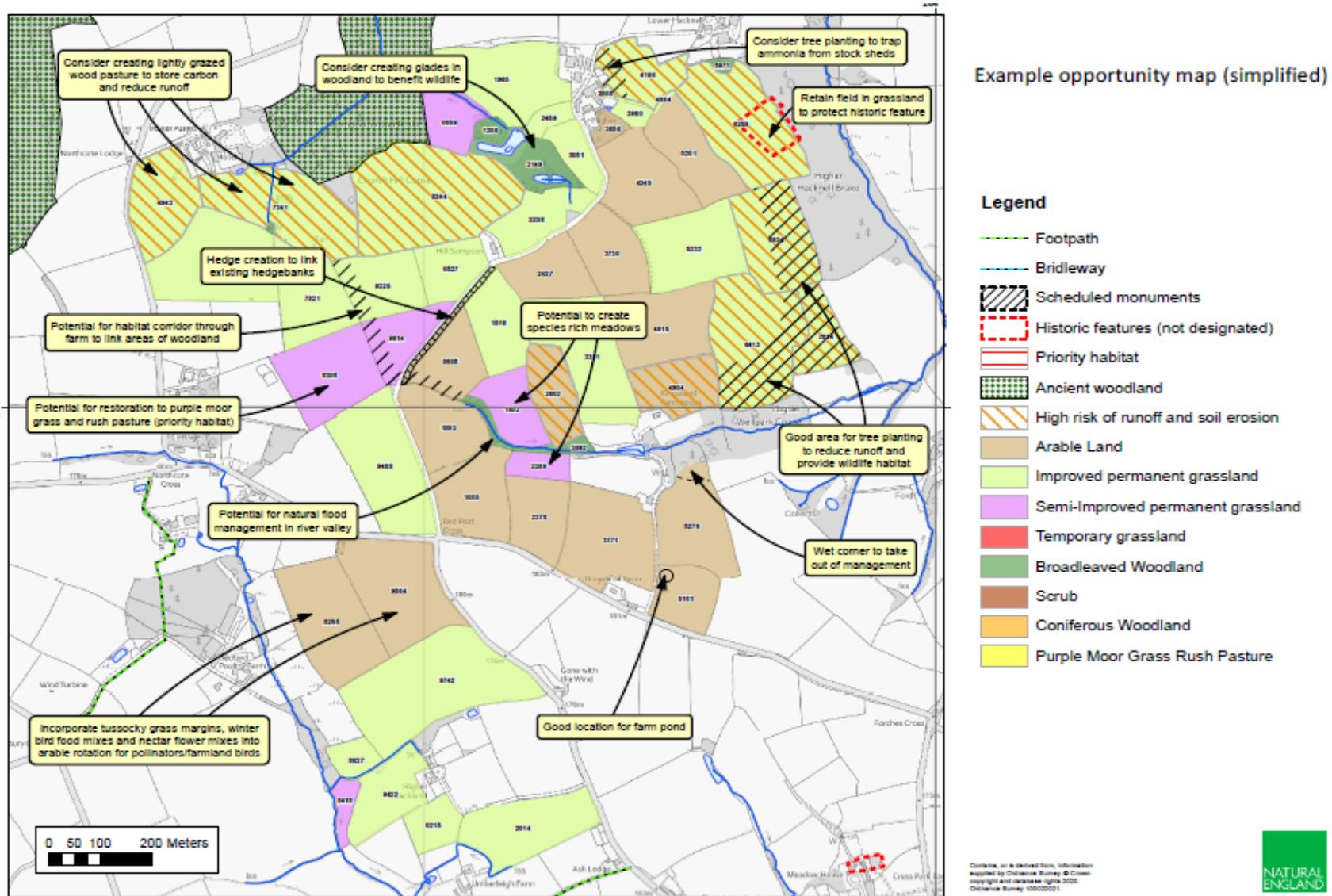
- Possible Bare Soil 27Oct2019
- Slope Greater than 7 Degrees
- Overland Flow With Slope > 10.0 Degrees
- Overland Flow With Slope 5.0 - 10.0 Degrees
- Overland Flow With Slope < 5.0 Degrees
- OS Open Permanent Water



Mapbox, Microsoft, EA, OS, Environment Agency Geomatics

Environment Agency Geomatics | Source: Esri, European Commission, European Space Agency, Amazon Web Services | EA, OS | Mapbox, Microsoft | Environment Agency

Annex 4.2: Example LMP Opportunity Map



Annex 4.3. Potential Local Nature Recovery actions and Landscape Recovery projects on Trial farms – all subject to detailed survey

Farm ID	Local Nature Recovery actions identified	Landscape Recovery type actions identified
1	Restore 9.7ha rush pasture/culm grassland/ scrub mosaic	Introduction of beavers
	Create 3.9 ha of grazed species-rich wood pasture	Restoration and reintroduction of curlew
	Create 5ha upland wader habitat	Large scale Natural Flood Management
	Implementation of Natural Flood Management measures	
	Create 2 ponds	
2	Create 1.7 ha broadleaved woodland	Large scale Natural Flood Management
	Create 1.1 ha scrub/tall vegetation through natural regeneration	
3	Restore 6.4ha wet rush pasture /culm grassland mosaic with scrub	Large scale Natural Flood Management
	Create 11.7ha of grazed species-rich wood pasture	Introduction of beavers
	Create 3ha of broadleaved woodland	
	Create 1 pond	
4	Woodland management and harvesting	Large scale river restoration project
5	Restore 3.7 ha of species-rich grassland	Large scale river restoration project
	Manage 7.3 ha species rich floodplain meadow priority habitat	
6	Create 3 ponds	Introduction of beavers
	Restore/manage approximately 12.9ha rush pasture /culm grassland/ scrub	Large scale Natural Flood Management
7	Create 0.6ha of broadleaved woodland	Introduction of beavers
	Create 1880m new tree lines	Woodland management and harvesting (including deer control)
	Create 1 pond	
8	Restore 7.2 ha wet rush pasture /culm grassland mosaic with scrub	
	Create 5.4 ha of grazed species-rich wood pasture	
	Create 0.2 ha of broadleaved woodland	
	Restore 2 ponds	
9	Restoring 23.8 ha wet rush pasture /culm grassland mosaic with scrub	
	Create 9.6 ha of very lightly grazed scrub/wood pasture	
	Create 1.4ha of broadleaved woodland	
10		Large scale Natural Flood Management Large scale river restoration project
11	Manage 3ha existing culm grassland	
	Restore 3.6 ha rush pasture to culm grassland/ scrub mosaic	

	Install and maintain 'Slow the flow' measures in c 500m of ditch	
	Create and maintain 1 x ponds	
12	Restore 7.2 ha of culm grassland	Large scale culm grassland restoration project
	Create 1 ha of broadleaved woodland	
	Create pond 20m x 10m	
13	Manage 3.6 ha existing culm grassland	
	Restore 15.6ha rush pasture to culm grassland/ scrub mosaic	
	Create 2.5ha of grazed wood pasture	
	Create 2500m tree lines to divide fields	
	Install and maintain 'Slow the flow' measures in 1700m of ditch	
	Create and maintain 2 ponds	
	Create and maintain 700m of new footpath	
14	Manage 16.2ha existing culm grassland (enabling more complex bespoke management than available through semi-improved grassland standard)	Large scale culm grassland restoration project
	Restore 10.5ha rush pasture to culm grassland/ scrub mosaic (enabling more complex bespoke restoration than available through SIG standard)	
	Manage 4.3ha broadleaved woodland to enhance habitat for existing willow tits	
	Install and maintain 'Slow the flow' measures in 260m of ditch	
	Restore large scale historic leat feature (non-designated)	
15	None	
16	Restoration of 17.3ha of Plantation on Ancient Woodland site	
	Create 3.6ha native broadleaf woodland/scrub mix	
	New length of permissive access off Tarka Trail and car parking	
	Install and maintain 'Slow the flow' measures in 260m of ditch	
17	Create 0.5ha of broadleaved woodland	Woodland management and harvesting cooperative
	Create 3 ha of grazed species-rich wood pasture	
	Restore 11 ha rush pasture /culm grassland/ scrub mosaic	
	Create 2 ponds	
	Restore 2 existing ponds	
	Natural flood management/install additional woody debris into streams and ditches	
18	Restore 0.5ha existing culm grassland	Woodland management and harvesting (including deer control)

	Restore 17ha rush pasture to mix of more species-rich rush pasture/ scrub /tree mosaic to enhance habitat corridor along river	
	Create 0.4ha woodland	
	Install and maintain 'Slow the flow' measures in 960m of ditch	
19	Maintenance of species-rich, semi-natural grassland 15.1 ha (complex management, over and above SFI management actions)	Peatland restoration – blocking of erosion channels in valley mire habitat
	Maintenance of grassland for target features 5.2ha (complex management, over and above SFI management actions)	
	Permissive access route across farm	
20	Removal of conifers (planted under EWGS scheme) from deep peat – to be replaced with woodland planting elsewhere on holding.	Peatland restoration – blocking of drainage channels in valley mire habitat
21	Create c 9.6ha of a mosaic of wet woodland, species-rich rush pasture and scrub (subject to detailed survey to assess suitability)	
	Create 2.0 ha of woodland/scrub habitat (subject to detailed survey)	
22	Restore 17.1ha wet rush pasture/marsh/scrub mosaic	
	Restore 18.6 ha of species-rich grassland/scrub/woodland	
	Natural flood management measures in c 1km of ditch	
	Permissive access route across farm	
23	Create 4.9 ha of woodland/scrub/tussocky grassland mosaic habitat	
	Natural flood management measures in c 1km of ditch	
24	Restoration of 11.3ha of species-rich grassland within SSSI	Introduction of beavers
	Restoration of 4.9ha of existing parkland	Introduction of Large Blue Butterfly
	Restore 29.7 ha of existing heathland within SSSI	
	Restore 11.8ha species-rich grassland and manage coastal edge	
	Create c 2km new permissive path	
25	Restore 28.7ha improved rush pasture to culm grassland and scrub,	Linking culm grassland habitats
	Create 15.6 ha of grazed species-rich wood pasture	Woodland management and harvesting (including deer control)
	Install and maintain 'Slow the flow' measures in 3km of ditch	
26	Create 1600m tree lines to divide fields	
27	Restore 17.4ha rush pasture to culm grassland/ scrub mosaic	Linking culm grassland habitats
	Install and maintain 'Slow the flow' measures in 500m of ditch	

Annex 5.1: Long list of potential farm scale natural capital indicators (see Objective 2 Farm Scale Indicators report for more detail)

Indicator	Units	Measure	Notes	Priority
Asset: Woodlands (W)				
W1: Extent	Ha	Area of woodland by type (e.g. broadleaved, coniferous, wood pasture)	Linear woodland – especially along riparian corridors often missing from data	High
W2: Quality	Ha	Area of woodland good quality or condition		High
W3: Location in relation to sources of ammonia	Score H/M/L	Level of natural ammonia point source-mitigation in place (i.e. with appropriate tree planting within <20 m downwind)	May need to consider receptor – i.e. proximity of habitats vulnerable to N deposition, and potential health impacts on local residents	Medium <i>but may not be feasible</i>
W4: Location in relation to shading watercourses	m	Length of watercourses (rivers and streams) shaded and not shaded	Highly site-specific and technically challenging to assess – recommend that assessment only made if pre-existing data exists or if very simple assessment of woodland in riparian corridor is made	Medium <i>but may not be feasible</i>
Asset: Waterbodies (WB)				
WB1: Extent and density (including ponds)	m, #No.	Length of river/stream crossing or adjacent to farm area and Number of ponds	Recommend ditches excluded for simplicity – can be mapped using DRN / LIDAR.	High
WB2: Quality/ condition of ponds	#No.	Number of ponds in good condition/well managed		High
WB3: Extent of riparian vegetation	m	Length of river with/without riparian zone of >3/6m.		High
WB4: Quality of riparian vegetation	Score	Ecological richness/health of riparian corridor vegetation		Low
WB5: Naturalness of water bodies	Score	Length of watercourse in/not in good hydro-morphological condition	Uses the concept of river corridor ‘naturalness’ as could be influenced by on farm management practices	High
WB6. Absence of invasive species (Him balsam)	+/-, Extent	Presence/ absence of invasive species and/or Extent of invasive species	Timing of survey (i.e. re. flowering) and technical challenges may prevent this indicator being effectively assessed	Medium <i>but may not be feasible</i>
Asset: Hedgerows (H)				
H1: Hedgerow and hedge bank extent	m	Length of hedgerows, other linear vegetated features and hedge banks		High

Indicator	Units	Measure	Notes	Priority
H2: Hedgerow quality (Vegetation)	m	Length of hedgerows in/not in good condition/ management (vegetation)	This indicator focuses on the vegetated part of the hedgerows as a contributor to biodiversity/nature conservation value	High but need method to be simple
H3: Location with respect to run-off/flood mitigation	%	Proportion of run-off pathways intersected by hedgerows/ hedge-banks		High but need method to be simple
Asset: Other Semi-natural habitats (SNH)				
SNH1: Extent of each priority habitat type and Proportion of 'priority habitat potential' area that is priority habitat	Ha	Area of farm comprising priority habitat and Area of 'priority habitat potential' area that is/not currently managed as priority habitat	Identifying potential priority habitat requires specialist skills	High <i>but may not be feasible</i>
SNH2: Condition/ quality of priority habitat	Ha	Area of priority habitat in good condition	Few farm advisors felt confident assessing the condition of priority habitat (see Section 7)	High <i>but may not be feasible</i>
SNH3: Area of other semi-natural habitats	Ha	Farm area covered by other habitat types (not already assessed)	Covering any semi-natural habitats not covered by other indicators - but tall vegetation, scrub, infield trees and tree lines covered by SD1 in this trial.	Medium
Asset: Grassland (Pasture)				
G1: Grassland (pasture) quantity	Ha	Area of farm in permanent/ temporary grassland And/or Area of farm grassland improved/not improved	G2 is more related to biodiversity value and natural capital value of intensively farmed grassland (i.e. not a semi-natural habitat)	High
G2: Grassland (pasture) quality	Ha	Area of grassland well managed – ref. age (since cultivation), intensity of grazing, etc or Area of flower rich grassland <i>*not soil – dealt with separately</i>	If soil dealt with separately, then this indicator more closely related to Standards. NC value is function of 'permanence', soil condition, ecological richness, how improved it is etc.	Medium
Asset: Cultivated Land (CL)				
CL1: Cultivated land quantity	Ha	Area of farm area cultivated		High
CL2: Cultivated land quality	Ha, %	Area of cultivated land well managed* <i>*not soil – dealt with separately</i>	This could be measured as the area of arable land managed for wildlife (eg buffer strips, wildflower and nectar strips), if	High

Indicator	Units	Measure	Notes	Priority
			restoring farm wildlife populations is a key local priority outcome, but this was incorporated into SD1 in this trial.	
Asset: All farm				
A1: Access land extent	Ha	Area of open access land		High
A2: Length of PROW and permissive footpaths	m	Length of PROW or permissive paths (m) Density of PROW or permissive paths within farm area (m/Ha)	.	High
HE1: Retention & management of traditional farm buildings	+/-, #No	Presence and number of traditional buildings retained and managed for farm use		Medium
HE2: Designated historic environment quality	Ha	Area of designated sites where principal land management vulnerabilities are/are not addressed over whole feature		Medium
HE3: Non-designated historic environment Quality	Ha	Area of non-designated sites where principal land management vulnerabilities are/are not addressed and majority of feature in condition A.		Medium
S1: Soil health / condition	Ha	Area of each major soil type in/not in good condition/ health	Hugely important indicator but challenging to assess with limited time/ resources available	High
S2: Area of peat	Ha	Area of farm on deep/shallow peat		High
S3: Area of drained/cultivated peat	%	% of peat soils drained or cultivated	Ideally this would be % of peat that is functioning naturally – ie not drained or heavily grazed and vegetated with vegetation contributing to ongoing peat accumulation?	High
SD1: Structural diversity of vegetation on farmed land	Ha, Score	Area of farmed land (pasture & cultivated land) comprising tussocky grassland (eg field corners fenced out and river buffer strips), scrub, grass margins, beetle banks, wildlife plots, mature infield trees, tree lines, conservation crops, etc	This has to be kept as a simple spatial data method – it is possible to assess these features in the field, but could be time-consuming and technically challenging. <i>* potential for overlap with SNH3 Area of other semi-natural habitats (eg scrub and field corners), and with CL2 Quality of cultivated</i>	High

Indicator	Units	Measure	Notes	Priority
			<i>land (which could be measured as the area of cultivated land managed for wildlife). But both aspects included here under SD1 to help keep the number of key indicators manageable.</i>	
EN1: Ecological Network – Patch size	Ha	Area of each patch of each type or Average patch size for each habitat type	Informs the assessment of the ecological network on the farm (and potentially in the wider landscape)	High
EN2: Ecological Network – Connectivity/ Fragmentation	Score	Average patch distance (or % <200m/<1000m apart) or Index of fragmentation - FragStats	Ideally these need to be applied to the entire network of assets on the farm (and potentially the surrounding landscape)	High
EN3: Ecological Network – Habitat diversity	Score	Habitat diversity as measured by Shannon diversity index		High
RO1: Asset location in relation to runoff mitigation	Ha	Area of water run-off risk areas (flooding and erosion risk areas) with/ without semi-natural habitat or excellent land management practice	Incorporates several indicators relating to flooding and erosion risk	High but may be difficult to assess.
CR1: Resilience to climate change	Score	Farm Resilience Score	If a GIS method can be found to assess this, it should be included both as farm resilience and the resilience of the agricultural landscape more widely, as it is a key element of the natural capital approach	Medium

Annex 5.2: Table linking assets, indicators and SFI standards to landscape priorities

This table identifies the assets and pressure mitigation underpinning delivery of N. Devon landscape priorities, together with relevant farm scale indicators. The standards relevant to each of the indicators (ie. where the actions in the standard are predicted to deliver direct changes in the indicator value) and to each of the desired outcomes for the agricultural pressures are also identified. Hedges refer to both hedgerows and hedgebanks. In relation to priority habitats, we have focused on culm grassland as this was the main priority habitat (other than woodland) on the Trial farms.

Landscape priority (all four areas combined)	Key relevant farm assets Pressures from agriculture	Relevant Outcomes	Relevant North Devon ELM trial NC indicators	Relevant standards							Notes	
				Hedgerow	Waterbody Buffering	Improved Grassland	Grassland Soil	Arable Land	Arable Soils	Low/no input Grassland		Woodland
Healthy soil	Soil	Improved soil health	S1: Soil health (not measured) S3: Area of drained peat				Y		Y			
	Agricultural practices	Improved soil management				Y	Y	Y	Y			
Reduce ammonia emissions	Mitigating habitats, particularly woods	Improved air quality. Woods around pollution source	W3: Location of woodland in relation to sources of ammonia								?	Standard ineffective without guidance to locate woodland in appropriate locations
	Ammonia emissions	Infrastructure and farming practices to reduce emissions				Y		Y				
Reduce impact of phosphate, faecal indicator organisms and sediment on the river system	Freshwaters Pollution mitigating habitats (eg riparian vegetation)	Improved water quality Habitats/buffers in relation to source-pathway-receptor Increased surface roughness	WB3/4: Extent and quality of riparian vegetation		Y							
			H3: Location of hedges with respect to run-off/flood mitigation	?								Standard ineffective without guidance to locate hedges in appropriate locations
	Agricultural practices	Soil management; Livestock management; Nutrient/ Agrochemical management	RO1: Asset location in relation to run-off mitigation			Y	Y	Y	Y		?	

Landscape priority (all four areas combined)	Key relevant farm assets Pressures from agriculture	Relevant Outcomes	Relevant North Devon ELM trial NC indicators	Relevant standards							Notes	
				Hedgerow	Waterbody Buffering	Improved Grassland	Grassland Soil	Arable Land	Arable Soils	Low/no input Grassland		Woodland
Restore farm wildlife populations through provision of insect rich summer habitats, winter food and nesting and shelter using margins, hedgerows, semi-improved grasslands and arable habitats	Semi-natural habitats Grasslands Hedges Margins/pollinator resources In-field trees and scrub	Increased extent of semi-natural habitats; Enhanced quality of improved and semi-improved grassland Increased extent and quality of hedges; Increased extent (spatial and temporal) and quality of wildlife resources (nectar sources, seeds, nest sites etc.); Increased structural diversity including scrub and in-field trees Increased habitat diversity	SNH1/2: Extent and quality of priority habitats									No increase in SIG extent predicted
			G1: Area of semi-improved grassland									
			G2: Quality of grasslands (flower rich)			Y	Y			Y		
			H1/2: Extent and quality of hedges	Y								
			W2: Area of broadleaved woodland in good condition									
			WB2: No of high quality ponds									
			SD1: Structural diversity of vegetation on farmed land		Y	Y		Y				
	EN3: Habitat diversity		Y	Y		Y						
	Pesticide use	Reduced use of pesticides/more IPC										
Restore, expand and connect habitats, particularly culm grassland, hedges, and woodland	Priority habitats	Increased extent, connectivity, and quality of SN habitats Increased habitat diversity Good network of well managed hedges cut on rotation/allowed to flower and bear fruit Well managed broadleaved woodland Reduce Himalayan Balsam	SNH1/2: Extent and of culm grassland									
			SDA: Structural diversity of vegetation		Y	Y		Y				Includes scrub and semi-natural habitats which help link key habitats
			EN1/2: Habitat patch size and connectivity		Y	Y		Y		Y		SN habitats help link priority habitats
			W2: Extent of broadleaved woodland of high quality									
			H1/2: Extent and quality of hedges	Y								
		Reduce Himalayan Balsam	WB6: Absence of invasive species (Himalayan Balsam)		?						Standard likely to increase Balsam	

Landscape priority (all four areas combined)	Key relevant farm assets Pressures from agriculture	Relevant Outcomes	Relevant North Devon ELM trial NC indicators	Relevant standards							Notes		
				Hedgerow	Waterbody Buffering	Improved Grassland	Grassland Soil	Arable Land	Arable Soils	Low/no input Grassland		Woodland	
	Agricultural practices	Farming practices to reduce nutrient and sediment run-off and pollution of semi-natural habitats					Y	Y	Y				
Species – pearl mussel, salmon, birds, butterflies, dormouse, lichen assemblages	Semi-natural habitats	Varies according to species Improved water quality Naturalness of watercourses Increased extent, connectivity and quality of habitats, Improved air quality	Dependent on species (not completed)										
	Agricultural practices	Varies according to species											
Reduce the impact of drought and excessive rainfall run-off on river flow, to help restore river habitat/ Encourage land use that reduces water runoff rates and stores water, releasing it slowly to help	All assets likely to contribute to this priority	Increased water infiltration & reduced run-off More natural watercourses More semi-natural habitat and woodland, particularly in the right places (areas at high risk of run-off) and managed to increase surface-roughness More hedges and other SN habitats intercepting run-off Less drainage, particularly of culm grassland and peatlands. More water storage	S1: Soil health				Y		Y				
			S3: Area of drained peat							Y			
			WB3/4: Extent and quality of riparian vegetation		Y								
			H3: Location of hedges with respect to run-off/flood mitigation	?									Standard ineffective without guidance to locate new hedges/woods in appropriate places
			RO1: Asset location in relation to run-off mitigation			Y		Y			?		
			W1: Extent of woodland									?	
			SNH1/2: Extent and condition of culm grassland (purple moor grass rush pasture)										
SD1: Structural diversity of vegetation on farmed land		Y	Y		Y					Includes scrub and semi-natural habitats which help slow runoff			

Landscape priority (all four areas combined)	Key relevant farm assets Pressures from agriculture	Relevant Outcomes	Relevant North Devon ELM trial NC indicators	Relevant standards								Notes		
				Hedgerow	Waterbody Buffering	Improved Grassland	Grassland Soil	Arable Land	Arable Soils	Low/no input Grassland	Woodland			
reduce flooding and the impact of drought on drinking water supply	Agricultural practices	Improved soil health, reduced compaction, etc	WB4: Naturalness of water course											
			WB1: Number of ponds											
Increase carbon storage	Soils, semi-natural habitats	Increased carbon capture (more woodland, wood pasture, treelines, hedges, permanent pasture, organic matter in soil) Restoration of peatlands	S1: Soil health				Y		Y					
			S3: Area of drained peat							Y				
			H1: Extent of hedges	Y										
			G1: Extent of permanent pasture			Y		Y						
			W1: Extent of woodland									Y		
Increase resilience of landscape to climate change through improving habitat connectivity, natural flood management etc.	Soils, semi-natural habitats	Naturally functioning river systems Large areas of well-connected semi-natural habitats Shaded rivers (depending on location)	SNH1: Extent of priority habitats											
			CR1: Resilience to climate change	Y	Y	Y	Y	Y	Y	Y	Y			
			WB5: Naturalness of water bodies										?	Woodland standard ineffective without guidance/requirement to locate new woods in appropriate locations
			W4: Location of woodland with respect to shading watercourses										?	
			SD1: Structural diversity of vegetation on farmed land		Y	Y		Y						Includes scrub and semi-natural habitats which provides NFM and improves habitat connectivity.
			EN1/2/3: Ecological network – patch size, connectivity and habitat diversity											

Landscape priority (all four areas combined)	Key relevant farm assets Pressures from agriculture	Relevant Outcomes	Relevant North Devon ELM trial NC indicators	Relevant standards							Notes	
				Hedgerow	Waterbody Buffering	Improved Grassland	Grassland Soil	Arable Land	Arable Soils	Low/no input Grassland		Woodland
Protect archaeological features	All farm assets	Increased positive management of HE sites	HE2/3: Quality of designated and non-designated historic environment									
Create new public access routes	All farm habitats	Increased public access, in the right places	A1: Open access areas A2: Length of PROW or permissive paths									
Enhance landscape character	All assets potentially	Desired outcome (based on special quality descriptions of each landscape character type (LCT) in the North Devon and Torridge Landscape Character Assessment) is dependent on the LCT. We can identify which assets are likely to contribute to enhancing the landscape across all 4 of our landscape areas but not the desired outcome.	SNH1/2: Extent and condition of priority habitats									As an example, for farms in the estate wooded LCT, large specimen trees are key features but in the sparsely settled valley LCT, riparian habitats and woodlands tracing watercourses are important.
			W1: Extent of woodland by type								Y	
			H1/2: Extent of hedges	Y								
			EN1/2: Ecological network - Patch size and connectivity of culm grassland	Y	Y	Y		Y			Y	

Annex 5.3: Measurement methodologies for North Devon farm scale indicators

Measurement methodologies for farm scale natural capital indicators used in the trial. Key indicators are highlighted in bold.

North Devon Farm scale NC indicator	Measure	Measurement methodology	Notes on measurement	Notes on value of indicator & ease of use etc
Woodland				
W1: Extent of woodlands	Area broadleaved /conifer woodland	RPA data on land use type of field parcels, checked on farm visit. Woods were assigned to broadleaved/conifer based on their main species type.	GIS measurement. This methodology omitted narrow tree lines along field boundaries. Some small patches of woodland within parcels which had not been allocated a separate field parcel were found to be missing.	Easily mapped from RPA field parcel data, sensitive to change
	Area wood pasture and parkland	Parcels identified as wood pasture during farm visit	We defined wood pasture as open, low intensity livestock-grazed woodlands with grassland. The JNCC definition of Wood pasture and Parkland priority habitat is 'areas that have been managed by a long established tradition of grazing, allowing, where the site is in good condition, the survival of multiple generations of trees, characteristically with at least some veteran trees and scrub'. Our definition therefore included priority habitat but also included more recently lightly grazed fields comprising a mix of scrub, trees and grassland. Fields with just occasional scattered infield trees were not considered to comprise wood pasture or parkland.	Not identified as an RPA land use type but could be potentially. Results suggest that it is important to include wood pasture as farmers were keen to create this type of habitat (as compared to woodland), appearing to like the option of a land use that was flexible – ie could be used for grazing land (and provided shelter/shade for stock) but also delivered high environmental outcomes (biodiversity, carbon capture, water storage).
W2: Quality of broadleaved woodland	Area high quality broadleaved woodland	Using England Woodland Biodiversity Group and Forest Research Woodland Condition Survey - good as defined by the survey methodology (score of greater than 35).	Comprises 15 indicators, each scored 1-3. We aimed to do the initial baseline farm visit in one day and the prescribed methodology was too time consuming so the adviser tried to walk a rough W walk through the wood and then score each indicator based on what they had noted. A score was assigned to an RPA field parcel. Large woods may comprise a number of field parcels and we	Straightforward woodland quality measure, particularly when adapted to just use W walk – but repeatability/reliability of simplified method needs assessing.

North Devon Farm scale NC indicator	Measure	Measurement methodology	Notes on measurement	Notes on value of indicator & ease of use etc
			combined field parcels where the woods seemed to be of the same type/age/management, to save time.	
W3: Location in relation to sources of ammonia	Ammonia sources buffered by downwind woodland Y/N	Presence/absence of woodland 20-100m downwind of slurry store/FWM store or stock barns.	Ideally this would be measured as number of ammonia sources on farm which are buffered/not buffered by woodland but this was simplified in our trial to 'is the main ammonia source (slurry pit or yard) buffered?' ie Y/N	Based on CEH planting guidance . Straightforward to measure, although efficacy of woodland in capturing ammonia is influenced by structure. Relatively ineffective in comparison to other ammonia mitigation methodologies.
W4: Location in relation to shading watercourses	% watercourse shaded	Farm map annotated during farm visit to show which sections of streams and rivers (as shown on the Ordnance Survey Mastermap water network layer) were shaded (roughly defined as trees shading at least 50% of the river).	Roughly annotated during farm visit and any uncertainties clarified with the aid of aerial photographs. If sections of streams/rivers were not visited, the extent of shading was roughly estimated from aerial photographs.	Baseline data available from EA Keeping Rivers Cool data but target/threshold specific to waterbody and would need tailoring to location.
Waterbodies				
WB1: Extent and density (including ponds)	Length of river (m)	As shown on the Ordnance Survey Mastermap water network layer		
	Number of ponds	As shown on OS maps, checked during farm visit.	Three ponds shown on OS maps out of 46 were not found on the ground, when the farm was visited.	Easy to record, but needs farm visit to confirm existing data as ponds easily filled in/scrubbed over.
WB3: Extent of riparian vegetation	Length of river with riparian vegetation >6m wide (or in semi-improved grassland or woodland)	Adviser recorded during farm visit – sections of river/streams with riparian vegetation (tussocky grassland with stock fenced out, woodland or	Streams/rivers running through semi-improved grassland or woodland were assumed to have riparian vegetation/be buffered already as this tied in with the SFI waterbody buffering standard. However, some semi-improved grassland was heavily grazed and therefore probably not functioning well as riparian vegetation. Should only include SI grassland where ungrazed or lightly grazed.	Easy and quick to record on farm.

North Devon Farm scale NC indicator	Measure	Measurement methodology	Notes on measurement	Notes on value of indicator & ease of use etc
		semi-improved grassland) adjacent to river.		
WB5: Naturalness of water bodies	Length of river of high quality (naturalness)	River naturalness assessment as developed by Natural England and Rivers Stakeholder Group. Good = average score of < or = 2.	Comprises 'entry-level' assessment of naturalness/natural function that can be used by a wide range of individuals with little experience and expertise in freshwater habitats. The assessment is geared towards headwater streams. The system divides naturalness into four components: physical, hydrological, chemical and biological. For each component there are descriptions of five different levels (classes) of naturalness.	Focusing on naturalness is more relevant than river ecology condition assessment (eg WFD category) as more likely to be influenced by factors under farmer/land owner control (eg extent of human physical modifications within the reach – channel straightening/deepening/ widening, bank 116eprofiling or reinforcement).
WB6. Absence of invasive species (Himalayan balsam)	P/A of invasive species (Himalayan Balsam)	Presence of Himalayan Balsam along the river/streams	The farm visits were carried out in late summer when Himalayan Balsam was flowering so easy to spot.	Ideally this would be measured as length of stream edge with Himalayan Balsam (and/or other relevant invasive species) and without. This indicator may not be so easy to measure at other times of year or for a less experienced adviser.
Asset: Hedgerows				
H1: Hedgerow and Hedge Bank Extent	Length of hedges (including hedgebanks)	OS hedgerow data/RPA		
H2: Hedgerow Quality (Vegetation)	Length of hedges in good condition	Hedges categorised as in good condition if meet CS Behta manual good condition criteria and farmers reports that doesn't cut them every year (ie hedge standard = basic or above at baseline).	Time consuming to record, given length of hedges on farms (only estimated from farm visit for this trial) – but farmers could do this easily themselves. The current Behta condition assessment doesn't evaluate the value of the hedgerow as foraging habitat for birds/invertebrates as doesn't have any measure of cutting regime.	Current Behta condition assessment (which focuses on height, width, gappiness and extent of livestock damage) for hedgerows not sensitive to SFI hedgerow standard actions and not a good measure of the ecosystem services the hedge is delivering. Other existing methodologies tend to be too complicated for this purpose eg Hedgerow Survey Handbook . Including requirement for good quality hedge to be cut minimum once every other year remedies this but is only sensitive to basic SFI hedgerow standard.

North Devon Farm scale NC indicator	Measure	Measurement methodology	Notes on measurement	Notes on value of indicator & ease of use etc
H3: Location with respect to run-off/flood mitigation	% of runoff pathways intercepted by hedges	Run-off pathways as shown on the ALERT maps intersected by hedges/field boundaries which are not hedgerows.	This was not a straightforward indicator to measure. Gaps in hedgerows, for example at gateways, can provide a route for run-off even when a hedgerow is present so requires checking against aerial photographs.	Farmers rarely want to place hedgerows in ideal locations to block run-off pathways so, although farmers did include additional hedgerows in their high scenarios, they rarely blocked specific run-off pathways. The effectiveness of hedges in blocking run-off will be influenced by the nature of the hedgerow (eg a hedge bank will be more effective than one without a bank).
Other semi-natural habitats				
SNH1: Extent of priority habitat	Area of farm comprising culm grassland /lowland meadow/lowland heathland/blanket bog	Priority Habitat Inventory and Devon Biological Records Center data confirmed by farm visit		
SNH2: Condition/ Quality of Priority Habitat	Area of each priority habitat in good condition	Good condition based on BEHTA manual categories (good condition defined as Condition Assessment Category A), assigned to the whole field parcel with that priority habitat type.	Field parcels of priority habitat were assigned a condition category based on recent FEP data if available. Ideally would present this independently for each habitat type but for simplicity we have lumped this (as majority of priority habitat on Trial farms was PMGRP).	
Asset: Grassland (Pasture)				
G1: Grassland (Pasture) Quantity	Area permanent improved / temporary grassland	RPA data, confirmed by farm visit		
G2a: Grassland (Pasture) Quality	Area of flower rich grassland providing food resource for farmland wildlife	As recorded on farm visit	Flower rich included low input, permanent semi-improved grassland) (excluded priority grasslands to avoid overlap with SNH1/2)	This was selected as the relevant quality measure in the Trial because one of the key local priorities was farm wildlife and enhancing the quality of grassland to provide nectar/food for wildlife.

North Devon Farm scale NC indicator	Measure	Measurement methodology	Notes on measurement	Notes on value of indicator & ease of use etc
Asset: Cultivated Land (CL)				
CL1: Cultivated Land Quantity	Area cultivated land	RPA data, confirmed by farm visit		
All farm indicators				
A2: Length of PROW and permissive footpaths	Length of PROW or permissive access (linear routes only)	Measured from OS maps		
HE2/3: Designated /Non-designated historic environment Quality	Area of sites where principal land management vulnerabilities are/are not addressed over whole feature		Not measured due to lack of time but straightforward to measure – although some historic environment sites were identified which were not on the SHINE database. Not clear what criteria should be used to decide what qualifies. Not sensitive to ELM	
S1: Soil Health / Condition	Area of each major soil type in/not in good condition		Not measured due to lack of time on farm. Method not confirmed – ideally would use whatever soil condition assessment methodology selected for SFI (yet to be decided)	
S2: Area of peat	Area of farm on deep/shallow peat	Area of shallow and deep peat as shown on webmap	GIS measurement	Not always found to be accurate on ground (principally land identified as being deep peat found to only comprise shallow peat/other soils)
S3: Area of drained/cultivated peat	% of peat soils drained (none cultivated on Trial farms)	Peat was considered drained if within 30m of drain (or cultivated but there was no cultivated peat on the trial farms)-	see https://www.iucn-uk-peatlandprogramme.org/sites/www.iucn-uk-peatlandprogramme.org/files/PC_Field_Protocol_v1.1.pdf	
SD1: Structural diversity of vegetation on farmed land	Area of farmed land comprising structurally diverse grass margins, buffer strips, tussocky field corners, wildlife plots, mature infield	Features mapped on farm visit		This is designed to capture all the structurally diverse elements of the farmed land (ie pasture & cultivated land) that are not captured elsewhere (including what we call the ‘scruffy bits’) and which are often of significant value to wildlife. We have

North Devon Farm scale NC indicator	Measure	Measurement methodology	Notes on measurement	Notes on value of indicator & ease of use etc
	trees, conservation crops, etc			included arable habitats for wildlife in this measure.
EN1: Ecological Network –Patch Size	Patch size – purple moor grass and rush pasture/broadleaved woodland	Area of PMGRP /broadleaved woodland, including areas on neighbouring farms (even if separated by hedgerow).	GIS measurement using Priority Habitat Inventory ground-truthed on farm. Relies on existing data but still requires bespoke analysis.	
EN2: Ecological Network – Connectivity/ Fragmentation	Average interpatch distance - purple moor grass and rush pasture	Average distance to the next nearest patch of habitat, on trial farm or in surrounding countryside	GIS measurement using Priority Habitat Inventory ground-truthed on farm. Relies on existing data but still requires bespoke analysis.	Ideally this would measure the patch size of all semi-natural habitats combined but mapping all the small patches of semi-natural habitat on the farm is very time consuming.
EN3: Ecological Network – Habitat diversity	Habitat diversity as measured by Shannon diversity index	Measured using Shannon diversity index - using all main habitat types and including arable habitat managed for wildlife as a separate habitat type.	This is measured as minus the sum, across all habitat types, of the proportional abundance of each habitat type multiplied by that proportion. It is a measure of the diversity of habitats available on the farm, including linear habitats, taking into account both the number of habitat types and their relative proportions of the total farm area. The Shannon Index will have a value of zero if there is only one habitat on the farm (no diversity) and will increase with increasing habitat richness, in particular if their share of farm area is similar.	The indicator does not measure the quality of the habitats in terms of supporting species diversity as similar values can be reached by either intensively managed fields or semi-natural habitats. See http://www.biobio-indicator.org/habitat-indicators.php for more info. A decision is required as to whether this measure includes crop diversity. Firbank (2008) for example showed that species richness of plants was better accounted for by the diversity of broad habitats alone, than by also including the crops as additional habitat types. One option may be to weight the crops so that particularly less beneficial crops for biodiversity either don't score or only low.
RO1: Asset Location in Relation to Run-Off Mitigation	% of high risk land in semi-natural habitat or well managed	Potential high risk land identified from mixture of ALERT/SCIMAP (eg	Includes semi-natural habitat (broadleaved woodland, priority habitat, semi-improved grassland and improved grassland managed under at least the basic standard at baseline.	Would need to develop more rigorous method for identifying high risk land if going to develop this indicator further, eg identify soils that have a high propensity to generate

North Devon Farm scale NC indicator	Measure	Measurement methodology	Notes on measurement	Notes on value of indicator & ease of use etc
	permanent grassland	parcels containing steep slopes >7°, floodplains).		rapid runoff. Interpretation is complicated by fact that location of woodland and other semi-natural habitat has the potential to increase, as well as decrease, flood risk. For example, it could have a negative effect if slowing the flow synchronises downstream flood flows.

Annex 5.4. Preliminary results of modelling the impact of implementing the SFI Waterbody Buffering standard

As part of this Trial, Rothamsted Research (Prof. Adrian Collins) modelled the predicted impact of farmers in three of the Trial landscape areas (Wistlandpound was too small an area for the modelling to be meaningful) implementing the SFI Waterbody Buffering standard on water quality. Preliminary results suggest that, on average, the implementation of the Waterbody Buffering standard resulted in a c. 40% drop in the P, nitrates and sediment loads from runoff pathways into the main rivers, while FIO (Table 1 and 2) was reduced by 24-40% depending on the catchment.

Table 1: Landscape scale impacts of implementing the SFI Waterbody Buffering standard on losses of P to water from agricultural land (targeted pollutant in reasons for failure). Note that predicted impacts in reducing P loads to water will be affected by P contributions from - agricultural sources but this has not been evaluated in this study. BAU=business as usual

	P loads from runoff pathway			P loads from all pathways		
	BAU (kg)	With WB buffering (Kg)	Reduction (%)	BAU (kg)	With WB buffering (kg)	Reduction (%)
Hartland	105	61	42	138	94	32
Taw	889	535	40	3679	3325	10
Torrige	1285	772	40	3543	3031	14

Table 2: Landscape scale impacts of implementing the SFI Waterbody Buffering standard on losses of nitrates, FIOs and sediment to water from agricultural land.

	BAU (kg)	Post (kg)	Reduction (kg)	Reduction in losses for runoff pathway (%)	Reduction in losses for all pathways (%)
Hartland					
Nitrate	879	529	350	40	4
FIOs	14605	11100	3505	24	21
Sediment	95415	48547	46868	49	48

Taw	BAU (kg)	Post (kg)	Reduction (kg)	Reduction in losses for runoff pathway (%)	Reduction in losses for all pathways (%)
Nitrate	10283	5482	4800	47	3
FIOs	221517.9	143634.4	77883.5	35	12
Sediment	688851	354511	334340	49	18

Torrige	BAU (kg)	Post (kg)	Reduction (kg)	Reduction in losses for runoff pathway (%)	Reduction in losses for all pathways (%)
Nitrate	14552	7830	6723	46	4
FIOs	242287	144408	97878	40	24
Sediment	962535	492401	470133	49	26

Annex 6.1: Partial budget template used to calculate the impact of the scenarios on the farmers current profit/loss from farming

Current profit/loss from Farming	
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PARTIAL BUDGET	£		£
EXTRA INCOME GENERATED		SAVINGS IN EXPENDITURE	
Total Extra Income (A)		Total Savings in Expenditure (C)	
INCOME LOST		EXTRA EXPENDITURE INCURRED	
Total income lost (B)		Total Extra Expenditure (D)	
Net Impact on Income (E)	= (A-B)	Net Impact on Expenditure (F)	= (C-D)
Overall Impact on Cash (Income foregone) (G)	= (E+F)	Profit After Change = current profit/loss from farming + (G)	

North Devon E.L.M Trial Adviser questionnaire

Please note all responses are confidential and your details will not be shared with Defra.

There is a box for comments at the end if required.

Name:	You can leave this blank if you prefer
Organisation:	You can leave this blank if you prefer
Position:	
Relevant qualifications (including BASIS and FACTS registration):	
Years of experience as a farm adviser/land agent:	
Previous agri-environment schemes you have helped farmers to apply for	Mid-Tier Countryside Stewardship Y/N Higher Level Stewardship Y/N Entry Level Stewardship Y/N Catchment Sensitive Farming Y/N Woodland grant schemes Y/N
Are you hoping to support farmers applying for:	(a) Sustainable Farming Incentive ? Y/N (b) Local Nature Recovery Scheme? Y/N

Section B: Assessing the farm baseline

In this section we consider some of the skills that advisers might need/find useful when evaluating the baseline situation on the farm.

- Soil Assessment:** It is likely that the Sustainable Farming Incentive (SFI) will require farmers to carry out a soil assessment including: soil texture, drainage, slope and connectivity to a waterbody, soil structure, biological indicators (e.g. earthworm count) and soil organic matter analysis.

How confident are you carrying out a farm soil assessment?	Answer here using scoring system as detailed below
--	--

Very confident/experienced/do it regularly	1
Fairly confident/competent	2
Able	3
Unsure – would need some training/refresher	4
Never done it/ don't think I currently have the necessary skills	5

2. **Runoff and soil erosion risk assessment:** It is likely that the Sustainable Farming Incentive will require farmers to carry out a [runoff and soil erosion risk assessment](#) for their farm.

How confident are you carrying out a runoff and soil erosion risk assessment?	Answer here – using scoring system as detailed above
---	--

3. **Woodland Condition Survey.** Applying for the Farm Woodland standard (part of the SFI) will probably require each woodland to be condition assessed, possibly using the Woodland Condition Survey methodology developed by the Woodland Biodiversity Group and Forest Research (see Annex 1 for outline of methodology).

How confident are you carrying out a woodland condition survey?	Answer here – using scoring system as detailed above
---	--

4. **Priority Habitats**

Can you identify the following priority habitats (including identifying the relevant indicator species, see Annex 2) and assess the quality/condition of that habitat (as per the Countryside Stewardship BEHTA manual – see Annex 2 for details):

	Habitat identification	Habitat quality/condition
Purple Moor Grass Rush Pasture	Y/N	Y/N
Lowland meadow	Y/N	Y/N
Lowland dry acid grassland	Y/N	Y/N
Blanket bog	Y/N	Y/N

5. **Assessment of existing compliance with relevant regulations**

Are you able to assess whether the farm infrastructure meets the required standards for SSAFO regulations ?	Answer here – using scoring system as detailed above
Are you able to assess whether the farm is compliant with the Farming Rules for Water ?	Answer here – using scoring system as detailed above
Any other comments here	

Section C: Assessment of on-farm opportunities to deliver public goods

Please answer the questions below, giving yourself a score as before:

Very confident/experienced/do it regularly	1
Fairly confident/competent	2
Able	3
Unsure – would need some training/refresher	4
Never done it/ don't think I currently have the necessary skills	5

1. Can you identify opportunities to improve soil health on farm?	Answer here
2. Could you advise on ways the farm could reduce its ammonia emissions (eg slurry spreading techniques and yard management)?	Answer here
3. Can you identify opportunities on farm to help improve water quality in the local catchment?	Answer here
4. Could you identify sections of streams/ditches which are a high priority for creating riparian buffers (due to high risk of soil/fertiliser etc run-off)?	Answer here
5. Can you identify opportunities on farm to help reduce flood risk in the local catchment?	Answer here
6. Can you identify areas which would be suitable for the implementation of instream natural flood management measures (eg introduction of baffles, woody dams etc)?	Answer here
7. Can you identify areas which have the potential to be restored to priority habitats, eg culm grassland?	Answer here
8. Are you able to advise farmers how to manage their priority habitats?	Answer here
9. Would you be able to discuss the benefits/drawbacks of beaver reintroduction to the local catchment?	Answer here
10. Are you able to identify areas that could potentially be planted with woodland, without impacting on valuable existing habitats – eg avoiding species-rich grassland, habitat for wax cap fungi, deep peat, valuable habitat for breeding waders etc?	Answer here
11. Are you able to advise farmers how to reduce their carbon emissions/how to increase the carbon stored on farm?	Answer here
12. Can you identify opportunities to increase public access and required infrastructure?	Answer here
13. Can you recognise and provide advice on the management of historic environment features?	Answer here
Any general comments/thoughts here	

Section D: Creation of a Land Management Plan

1. **Natural Capital Approach:** Defra have said that ELM will use a Natural Capital approach.

What do you understand is meant by this?
--

Answer here

2. **Land Management Plans** are intended to be a major feature of the future E.L.M. schemes. There is no agreed template for the Plan at present but it is assumed it will need to record the starting/baseline condition of the farmed land, identify opportunities to deliver public goods (eg clean and plentiful water, clean air, thriving plants and wildlife, protection from environmental hazards, reduction of and adaptation to climate change and beauty, heritage and engagement with the environment) and plan future land management activities.

Do you feel you have the necessary skills to support farmers in developing a Land Management Plan for their farm?

Answer here

What do you think the ELM Land Management Plan should cover? We have included some initial suggestions but feel free to add others
--

Baseline environmental asset assessment (quantity and quality) Y/N
--

Soil assessment Y/N

Run-off and soil erosion risk assessment Y/N
--

Nutrient Management Plan Y/N

Soil Management Plan Y/N

Stocking rates Y/N

Opportunities to deliver public goods Y/N

Plan of what land management measures will be delivered where and when Y/N
--

Other elements/suggestions:

Section E: Adviser Training and Accreditation

1. **Training.**

What sort of training do you think would be beneficial to help you deliver E.L.M. and ensure that it delivers the right public goods in the right places?

Answer here

Who do you think should deliver that training?
--

Answer here

What form should the training take – eg on-line, in the field etc?
--

Answer here

Any other comments/thoughts

2. Adviser accreditation

Do you think there should be a system of adviser accreditation for advisers preparing Land Management Plans / advising farmers applying for E.L.M.?	Y/N
Any other comments	

Section F: Any other comments/thoughts?

Answer here

END OF SURVEY

THANK YOU FOR TAKING PART

Annex 1: The England Woodland Biodiversity Group and Forest Research Woodland Condition Survey

No.	Indicator	Definition	Assessment Method
1	Age distribution of trees	Trees are grouped into classes of young, intermediate and old according to their age.	On <u>woodland walk</u> record the number of different tree age classes found across the whole woodland.
2	Herbivore impact	Key to identification of browsing pressure provided.	Note evidence of significant browsing
3	Invasive non-native plant species		Record the presence of invasive non-native plant species
4	Number of native tree species	The number of different native tree/ shrub species including young trees and shrubs	Record the main tree and shrub species present in the upper canopy (>5m)
5	Occupancy of native trees	The abundance of native tree species in upper (>5m) and understorey (up to 5m) layers including young trees and shrubs.	Record percentage cover in the upper and understorey canopies of native tree and shrub species
6	Open space within woodland	This is temporary open space in which trees can be expected to regenerate (e.g. glades, rides, footpaths, areas of clear-fell).	Note areas of open habitat on map of woodland
7	Favourable land cover	Identify 'supportive' habitats for woodland.	Record percentage cover of favourable land cover within a 5.6 km radius (100 km ² circle) of woodland
8	Woodland Regeneration	Record % cover of native and non-native trees 4-7cm dbh, saplings and seedlings or advanced coppice regrowth.	Record the % cover of native/non-native regeneration
9	Tree health	Tree health indicators include: rapid rate of tree mortality above natural or background levels; large proportion of crown dieback across a stand of trees; presence of significant tree diseases.	Estimate percentage of dead canopy trees and/or trees showing crown die-back across woodland (if present) and presence of pest/diseases.
10	Vegetation and ground flora	NVC key provided.	Establish whether there is a recognisable NVC community or not and presence of ancient woodland indicators.
11	Woodland vertical structure	Vertical structure is defined as the number of canopy storeys present.	Record the number of different canopy storeys present
12	Veteran trees	Definition of veteran trees is provided	On a map of the woodland, note the location of veteran trees encountered.
13	Amount of deadwood	Includes logs, large dead branches on the forest floor and stumps and standing dead trees.	Record presence of standing deadwood
14	Size of woodlands		Record total area of woodland
15	Woodland disturbance	Significant patches of nettle and/or goose grass/cleavers can indicate nutrient enrichment.	Record evidence of nutrient enrichment and/or damaged ground.

Annex 2: Condition assessment for priority habitats: examples extracted from the Countryside Stewardship Baseline Evaluation of Higher Tier Agreements (BEHTA) manual

Purple Moor Grass Rush Pasture: Condition assessment

1. Cover of undesirable species (creeping thistle, spear thistle, curled dock, broad-leaved dock, common ragwort, common nettle, cow parsley, marsh thistle and marsh ragwort) <10%.
2. Cover of large sedge species no more than 25%, and cover of large grasses such as tufted hair-grass and common reed, no more than 20%.
3. Cover of trees and shrubs between 1% and 5%.
4. Cover of non-jointed rushes (soft, hard and compact) no more than 50%.
5. At least two indicator species are frequent and two occasional (see list below).
6. There is no active artificial drainage designed to dry out the wetland.

Purple Moor Grass Rush Pasture Indicator species		
bog asphodel	bog bean	bog-mosses
bog pimpernel	bugle	common valerian
cross-leaved heath	devil's-bit scabious	globeflower
greater burnet	greater bird's-foot-trefoil	hemp agrimony
jointed rushes	ivy-leaved bellflower	lesser scullcap
lesser spearwort	lesser water-parsnip	lousewort
marsh/fen bedstraw	marsh cinquefoil	marsh hawk's-beard
marsh marigold	marsh pennywort	marsh speedwell
marsh valerian	marsh violet	meadow rue
meadow thistle	meadowsweet	orchids
purple loosestrife	ragged robin	rough hawkbit
scullcap	saw-wort	sneezewort
tormentil	water avens	water mint
whorled caraway	wild angelica	small blue-green sedges

Lowland Meadow: Condition assessment

1. Cover of undesirable species (creeping thistle, spear thistle, curled dock, broad-leaved dock, common ragwort, common nettle, marsh ragwort, cow parsley and bracken) no more than 5%.
2. Cover of wildflowers and sedges throughout the sward 30% or more (excluding the undesirable species listed above and creeping buttercup and white clover).
3. Cover of bare ground (including localised areas, for example, rabbit warrens) between 1% and 10%.
4. Cover of trees and shrubs up to 5%, and indicators of water logging (such as large sedges, rushes, reeds) no more than 20%.
5. At least two indicator species are frequent and two occasional (see list below).

Lowland meadow indicator species		
agrimony	autumn hawkbit	betony
bird's-foot-trefoil	bitter-vetch	black knapweed
bugle	burnet saxifrage	common bistort
common meadow-rue	corky-fruited water-dropwort	cowslip
devil's-bit scabious	dropwort	Dyer's greenweed
eyebright	field scabious	goat's-beard
great burnet	greater bird's-foot-trefoil	lady's bedstraw
lady's-mantles	marsh/fen bedstraw	marsh marigold
marsh speedwell	marsh valerian	meadow vetchling
meadowsweet	milkworts	narrow-leaved water-dropwort
orchids	ox-eye daisy	pepper-saxifrage
pignut	ragged robin	rough hawkbit
salad burnet	saw-wort	sneezewort
tormentil	water avens	water mint
wood anemone	yellow rattle	small blue-green sedges

Lowland dry acid grassland: Condition assessment

1. Cover of undesirable species (creeping thistle, spear thistle, curled dock, broad-leaved dock, common ragwort, common nettle, rosebay willowherb, marsh thistle, musk thistle and greater plantain) no more than 5%.
2. Cover of bare ground (including localised areas, for example, rabbit warrens) between 1% and 10%.
3. Cover of bracken no more than 20% and cover of scrub and bramble between 1 and 5%.
4. Cover of coarse grass species, such as Yorkshire-fog and cock's-foot, no more than 20%.
5. At least one indicator species is frequent and three are occasional

Dry acid grassland indicator species		
bell heather	betony	bilberry
bird's-foot	bird's-foot-trefoil	biting stonecrop
bitter-vetch	blue fleabane	buck's-horn plantain
common centaury	common rock-rose	common stork's-bill
devil's-bit scabious	harebell	heath bedstraw
heath speedwell	heather	lady's bedstraw
lichens	lousewort	maiden pink
milkworts	mouse-ear hawkweed	parsley pierts
pignut	purple milk-vetch	rough/lesser hawkbit
saw-wort	sheep's-bit	sheep's sorrel
shepherd's-cress	thymes	tormentil
violets	wild strawberry	wood anemone
wood sage		

Blanket bog: Condition assessment

1. Bog-mosses (Sphagnum) at least frequent, with less than 10% damaged (dead/bleached or crushed/broken/pulled).
2. Cover of dwarf shrubs between 20% and 75% (except when bog-mosses (Sphagnum) or other wetland indicators are dominant), with at least two dwarf shrub species frequent.
3. Flowering cottongrass plants frequent in spring (where present), or flowering heather plants at least frequent in late summer-autumn (where present).
4. Cover of cottongrass, deergrass and purple moor-grass individually less than 75%.