Waters of LIFE

Scorecard Guidance

Version 1

July 2025

This document is providing guidance to advisors on how to carry out plot assessments and complete Waters of LIFE scorecards.

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An Roinn Tithíochta, Rialtais Áitiúil agus Oidhreachta
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1 Introduction

The Waters of LIFE is an EU LIFE Integrated Project (IP), which aims to help reverse the deterioration of Ireland's most pristine waters. The coordinating beneficiary is the Department of Housing, Local Government and Heritage (DHLGH).

Waters of LIFE scorecards have been developed to reward and incentivise ecosystem services delivery on farmland, specifically those associated with water quality protection or improvement. There are six scorecards available as part of the results-based payment scheme, all of which are habitat-focused (a habitat is a place where plants and animals live). The scorecards are outlined as follows:

1. **Riverside habitat on improved grassland**: This scorecard is to be used for riverside areas (the 20 m from top of bank or water's edge) in areas of improved grassland.

2. **Riverside habitat on improved tillage**: This scorecard is to be used for riverside areas in areas of tillage.

3. **Semi-Natural Grassland**: This scorecard is to be used for grassland habitats unless there is a clear reason to use another grassland scorecard.

4. **Scrub/Woodland**: The scrub and woodland scorecard is to be used in fields where scrub (shrubs, stunted trees or brambles) or woodland dominate.

5. **Peatland**: The peatland scorecard is to be used in fields where peatland habitats such as wet heath, dry heath, blanket bog, raised bog, or a mosaic of habitats such as heath, bog and or grassland are present.

6. **Grassland on Peat**: The scorecard is to be used for grassland habitats overlying peat soils. This scorecard will be restricted to the Islands demonstration catchment only.

This document contains Scorecard Guidance for the Waters of LIFE project.

1.1 Assigning Waters of LIFE Scorecards to Plots

The Waters of LIFE (WoL) team will use a range of available data sources and aerial photography to identify habitat types at plot scale. These will be developed into a digital farm plan for each property. The habitat type will determine the relevant scorecard to be used to assess each plot. Some scorecards may be changed on the day of survey if an advisor's assessment of a plot finds it has been assigned the wrong habitat type. A decision tree will be available to aid advisors in selecting the most appropriate scorecard (Figure 1).

1.2 Preparation for Scoring

A desk study of the assigned scorecards and plot layout should be undertaken before the farm visit. If the advisor thinks an incorrect scorecard has been assigned to a plot (and it cannot be changed in the plot by the advisor) the Waters of LIFE team should be contacted. It will be too late to change the scorecard after the plot has been scored. All maps will be accessible in the Waters of LIFE App, but printed maps of the plots to be scored in advance and take them to the farm may aid with the assessment (e.g. with the planned route marked).

Determine a route for walking the plot, ensuring inclusion of variations that occur within the plot. For example, in peatland plots the variation may include multiple habitats e.g. heath, bog, and grassland (different coloured areas on an aerial photograph) and different terrains (from steep to gentle slopes). On the aerial map, try to identify areas where damage is likely to occur such as at gates, other pinch-points and around any feeders, water troughs and natural water bodies, and ensure that those are included in the assessment. The route to be followed should not be confined to access tracks or regular stock paths as this is likely to give a biased view of the plot's condition. Finally, determine whether the planned route is possible and/or safe, particularly if assessing peatlands or other areas with unstable, unsafe, or impassable conditions.

Ensure the following equipment is prepared and brought for plot assessments:

- Appropriate clothing and footwear for the habitat and weather conditions.

- A fully charged mobile phone or tablet with the Waters of LIFE App installed and a power bank.
- Printed relevant documents, such as plant identification keys, scorecard guidance document, and a plot map with the planned route marked.

A pen and notebook to record notes such as discussion points for the farmer or references to the map.

During the preparation stage, also consider allocating sufficient time for carrying out plot assessments. Initial plot scoring assessments will take longer but it is anticipated that the time requirement will decrease once advisors become more familiar with the scorecards.

Advisors are responsible for ensuring their own health and safety while carrying out farm assessments. They are not covered by the Waters of LIFE Safety Statement. However, we would advise the following measures a minimum:

- Undertake a risk assessment of the areas to be visited on farm, identifying any relevant hazards and how these will be managed and/or avoided. Discuss this with the farmer before commencing a scoring survey.
- Before carrying out a plot assessment, always let someone know where you are and when you are expected to return.
- If you are working in rain, near water or on peatland, a waterproof case or pocket/bag for your phone is advisable.
- Always check the local weather forecast and river flow conditions prior to undertaking the assessment, particularly when working in riverside habitats.
- Ensure appropriate PPE is worn at all times and consider site specific requirements such as a walking stick to evaluate if the ground is solid enough to walk on if you are likely to cross unstable areas such as peatland, or wearing flotation devices around water.

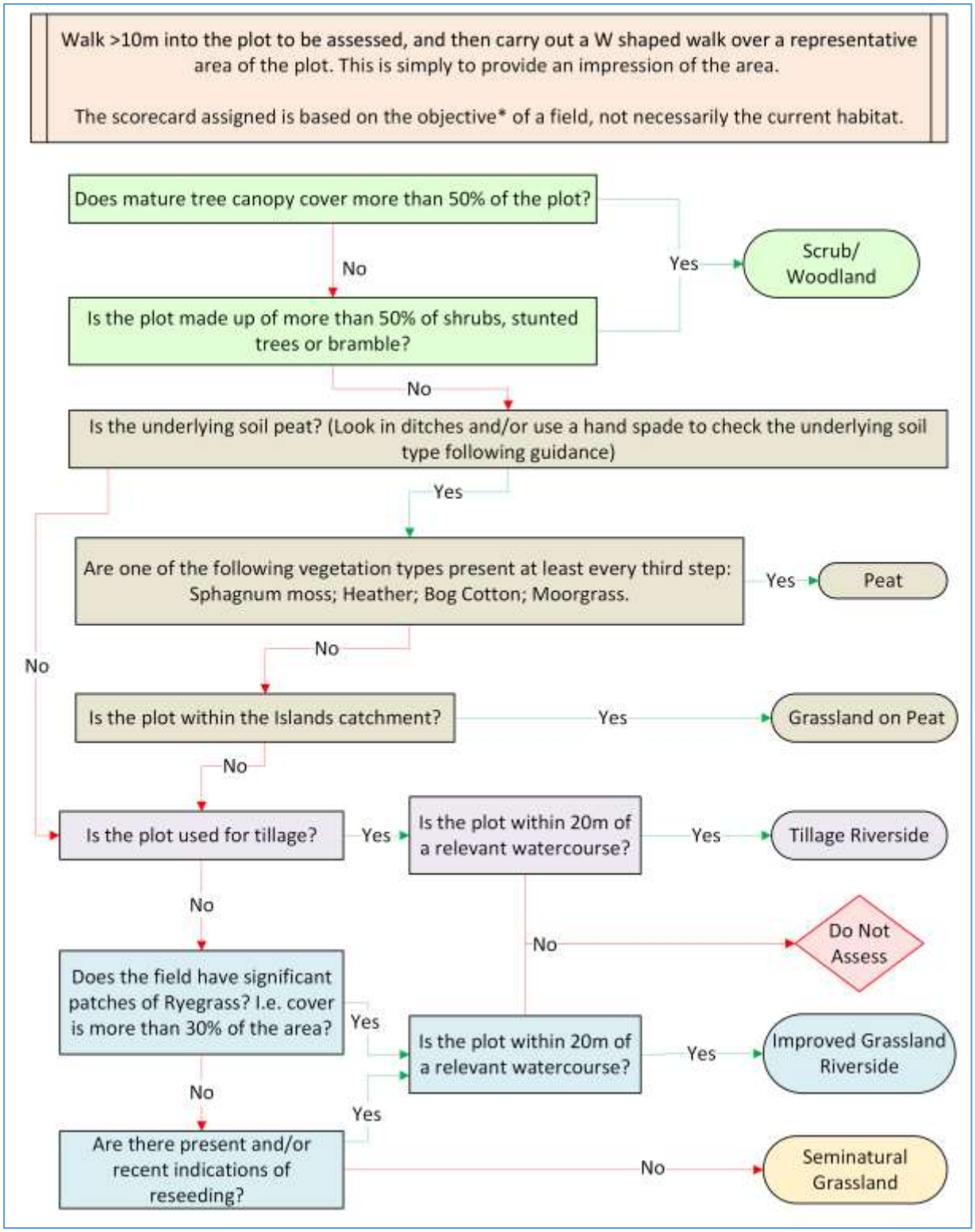

Figure 1: Waters of LIFE scorecard selection decision tree

Note: A plot may currently be classed as not a scoreable habitat, but a farmer may aspire to improve its habitat quality. For example, they may wish to manage an improved grassland field so that it converts to a semi-natural grassland. The plot may not achieve a payable score in year 1 but could achieve a payable score over the life of the project. Therefore, the semi-natural grassland scorecard should be applied.

1.3 Plot Assessment and Scoring

Plots should be scored during the summer months (June – August, inclusive), as this is the optimal time for ecological integrity assessments. All plots scoring should be completed by 31st August each year, unless otherwise agreed with the Project Team.

If possible, meet with the farmer before commencing the scorecard assessment to discuss access and the current management practices of each plot.

Scorecards must be initiated via the Waters of LIFE App. Scorecards can be saved as drafts in the App and submitted later in cases where further advice or clarification is required from the Waters of LIFE team, or the plot scoring must be continued at a later stage for other reasons.

To score the plot, initiate the scorecard via the App. Walk your predetermined route through the plot, avoiding plot margins. Each plot should be walked in a 'W' pattern. It is, however, most important to get a representative view of the plot and to cover all variations of vegetation in the plot; therefore, a 'W' pattern is not always sufficient.

Stop regularly to record detail needed for certain assessments, such as areas with potential damaging activities. It may also be necessary to part the grass at regular intervals during the walk to estimate ground cover or check the vegetation for weed species or the presence of scrub seedlings.

Generally, the scorecard assesses the main body of the plot. Features such as internal earth banks and 'grassy' slopes that are grazed and accessible by stock can be included in the assessment.

Where fields have been merged for scoring and administrative purposes, do not include the internal plot boundaries and margins as part of the plot assessment, particularly the positive indicator assessment, as these are not representative of the main body of the plot.

The scorecard should be completed considering the condition of the entire plot. If discrete areas within a plot look likely to differ by one or more score, mark these areas on the printed map for your own reference. If necessary, consider the

proportion of higher/lower scoring areas within the plot when completing the assessment.

When assessing riverside habitats, the scorecards make reference to several key areas where specific assessments are to be made. These specific areas are illustrated in Figure 2.

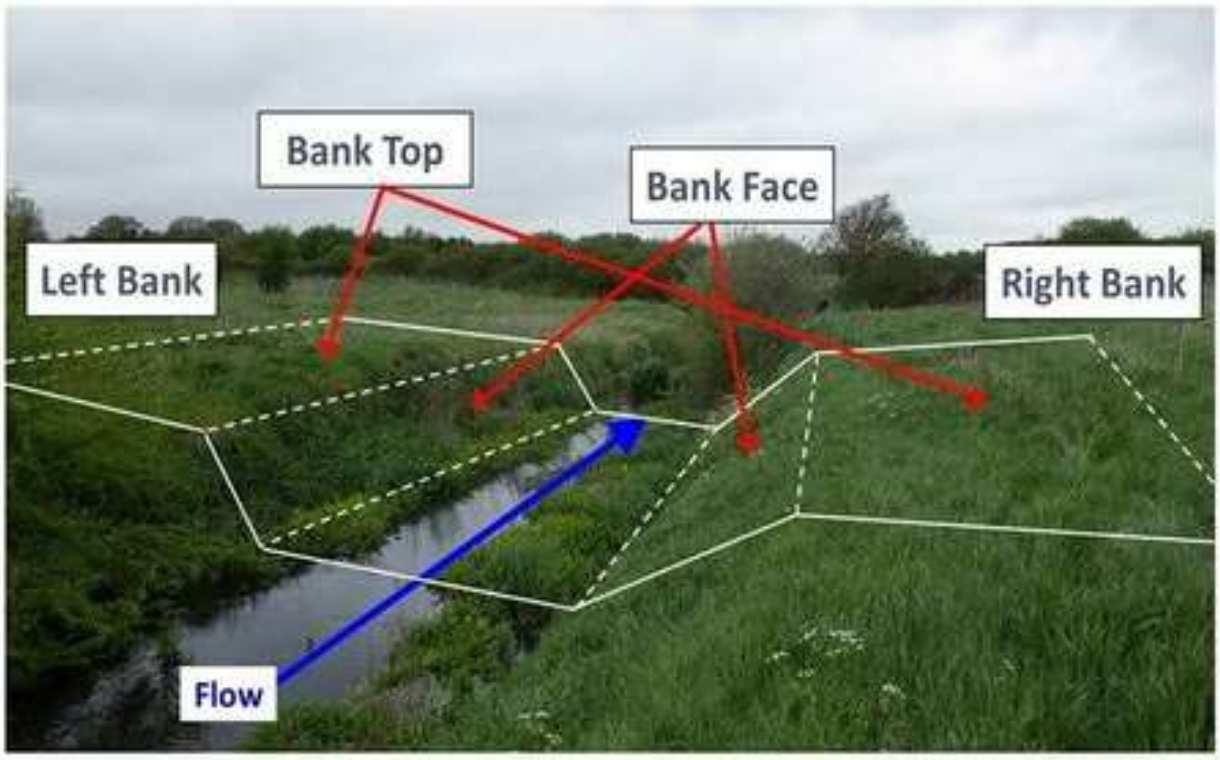

Figure 2: Schematic illustrating positions of bank face and bank top

Ensure to make detailed relevant notes in the plot. These can form the basis of the general farm management advice provided to the farmer. It is important to consider local areas that score differently due to localised conditions or pressures.

Target any obvious problem spots such as access points, roads/ tracks, watercourse crossings, areas of invasive species etc. It can be useful to take photographs of these for future reference.

Scorecards must be submitted via the Waters of LIFE App on or before the deadline set by the Waters of LIFE team to be eligible for payment. The plot scores will be available on the App once scorecards have been submitted.

Steps to remember during the plot assessment:

- Have a fully charged mobile phone a working camera and the App installed, a printed plot map, and equipment for note-taking.
- Follow the pre-determined route through the plot as marked on the printed plot map during the preparation stage to ensure adequate coverage of the plot. Any major deviations from this route should be marked on the map and retained for future reference.
- Stop regularly to record detail needed for certain assessments, such as plot boundary checks and areas with potential damaging activities. It may also be necessary to part the grass at regular intervals during the walk to estimate ground cover, or check the vegetation for weed species or the presence of scrub seedlings.
- It is essential to look around to get a feel for the wider area, for instance to estimate the overall grazing level or the proportion and type of scrub.
- Remember: the overall score should be assessed for the entire plot.
- Note any management advice, issues such as damaging activities, and other discussion points for the farmer.

1.4 Advising the Farmer

Meet with the farmer after all the plots have been scored to provide feedback on the scores and any areas where the score(s) could be improved. Discuss the potential management approaches and supporting actions that were proposed and mapped during scoring of the plots. The Waters of LIFE supporting actions are detailed in Appendix I. Further information can be found on the Waters of LIFE Project website.

Note that the supporting actions should be targeted towards remediation and/or protection of threats and pressures on the farm (and thereby increasing the results-based plot score), as well as the protection and/or enhancement of water quality.

If issues were identified on the farm that are not covered by the range of supporting actions, contact the Waters of LIFE team for further discussion.

2 Riverside Habitat Scorecard (on Improved Grassland)

This scorecard is intended to be applied in riverside areas on improved grassland. The assessment area for this scorecard is defined as the 20 m from top of bank directly out into the plot.

Riverside (i.e., riparian[1]) habitats are the strip of land that separates agricultural activity from a waterway. These riverside buffers are an important management tool for the protection of streams and rivers. Riverside vegetation intercepts surface runoff, filters pollutants, and supplies woody debris and leaf litter to the stream channel. Riverside buffers can also provide critical habitat and refuge for wildlife. The wider the riverside buffer the greater the range and quantity of benefits it will yield for the waterway. An increasing body of evidence suggests that riverside buffers of 20 m width or greater provide the greatest range of benefits to overall stream ecosystem health.

Healthy functioning riverside habitats are a key component of the hydromorphological condition required for a stream or river to meet its High Status Objective (Blue Dot).

The predominant soil type can be assessed visually. Peat-based soils are easily identifiable by the black colour and absence of mineral constituents.

Estimate river flow at the time of the assessment:

- Low: below median flow. Dried plant and algal material may be visible on substrate on the non-wetted bed.
- Normal: median (average-type) flow.
- Above normal: higher fresh/flood flows, and often murky water will obscure the bed and much of the bank face(s). Where possible, advisors should aim to avoid assessments during such periods due to health and safety concerns.

[1] **Riparian**, *adj*. relating to, or living or occurring on the bank of a natural body of water, especially a river [L. *riparius* - *ripa*, a river-bank]

River flows/levels for the nearest hydrometric site(s) are available on HydroNet (https://epawebapp.epa.ie/hydronet).

2.1 Section A: Habitat Structural Integrity

A1 – What proportion (%) of the riparian buffer zone length is stock-proof fenced?

Appropriately selected and installed fencing options helps restrict stock access to the riparian buffer zones. These fenced buffer zones protect sensitive riparian habitats, including riparian soils, vegetation and riverbanks. Protecting these zones increases their ability to buffer contaminants flowing off the land that would otherwise enter the river and helps prevent erosion of the riverbanks themselves. It also allows natural regeneration of riverside vegetation, including riparian woodland, to occur. Keeping stock out of waterways also reduces the potential for adverse effects on water quality resulting from the direct discharges of faecal matter to water, the disturbance of riverbed habitats and sediment mobilisation and deposition.

Guidance for scoring A1-A:

Walk the length of riverside habitat and determine the length of the riverside habitat that has stock-proof fencing (in metres). Use that length to calculate the proportion (%) of the overall length of riverside habitat that is appropriately fenced. To qualify as stock-proof, the fencing should be permanent and functional for the type and size of animal it is designed to contain. When walking the length of the riverside habitat record the length of unfenced sections, including features such as drinking access points, river crossings etc. If no fence exists, record the entire length of the riverside habitat as unfenced. A1-B – What is the average width of the (stock-proof) fenced riparian buffer zone identified in A1-A?

The width of the riparian buffer zones dictates the level of protection it provides to riverside habitats and water quality. Wider buffers typically provide greater levels of protection.

Guidance for scoring A1-B:

Only areas of buffer zones protected by stock-proof fencing identified in A1-A can be used in this calculation. Advisors should estimate the distance from the top of bank to the fence line:

1. Five measurements taken at equally spaced intervals should be taken for riverside areas less than or equal to 250 m in length. For example, a 90-m riverside area should be assessed at 0 m, 23 m, 45 m, 68 m, and 90 m, while a 150-m riverside area should be assessed at 0 m, 38 m, 75 m, 113 m, and 150 m. To calculate the measurement intervals, divide the total riverside length by four.
2. Measurements should be taken at equally spaced 50 m intervals for riverside areas greater than 250 m in length. For example, a 250 m riverside area should be assessed at 0 m, 50 m, 100 m, 150 m, 200 m, and 250 m.

The App will automatically calculate the number of measurements required to calculate the average width, based on the length of the riverside habitat. Individual measurements and their locations should be entered into each box provided.

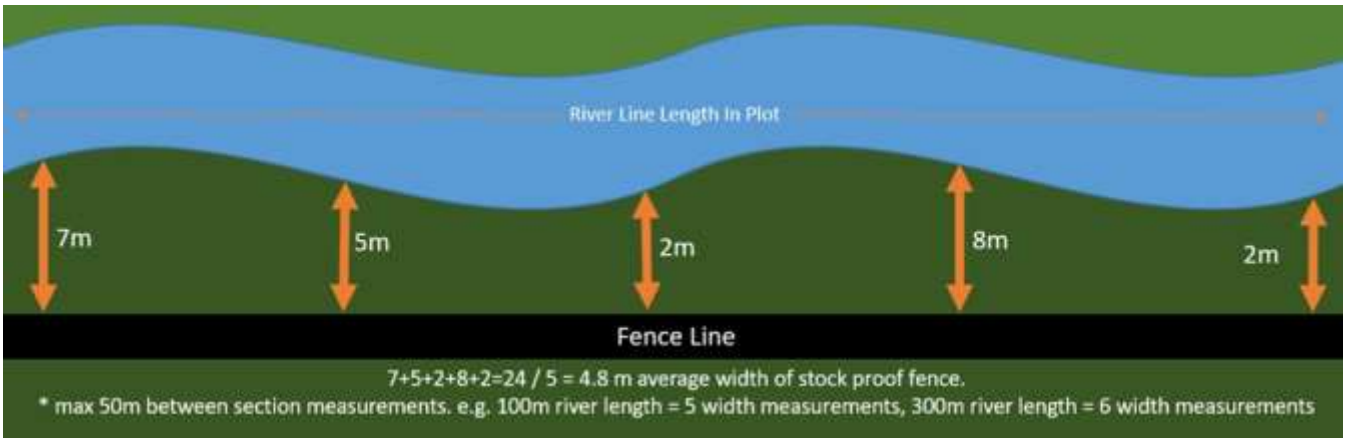

Figure 3: Example of width calculations for stock proof fenced riparian buffer zone

A2 – What is the complexity of the vegetation in the fenced buffer zone identified in A1?

The vegetation growing on the banks of a stream forms an important part of the stream habitat. All substantial vegetation (i.e., not crops or close-cropped/grazed

pasture) present in riverside habitats can help to protect streams. Riverside habitats comprising of diverse, native vegetation are most desirable.

Guidance for scoring A2:

It is recommended that the advisor walks the length of the riverside habitat assessment area contained within the fenced buffer zone and note the vegetation structure. Guidance on assessing vegetation structure is illustrated in Figure 4. The scoring is based on the relative proportions of each scoring grade contained within the area being assessed (i.e. poor, moderate, good etc.), as set out below. The figures in italics demonstrate a worked example of the scoring calculation.

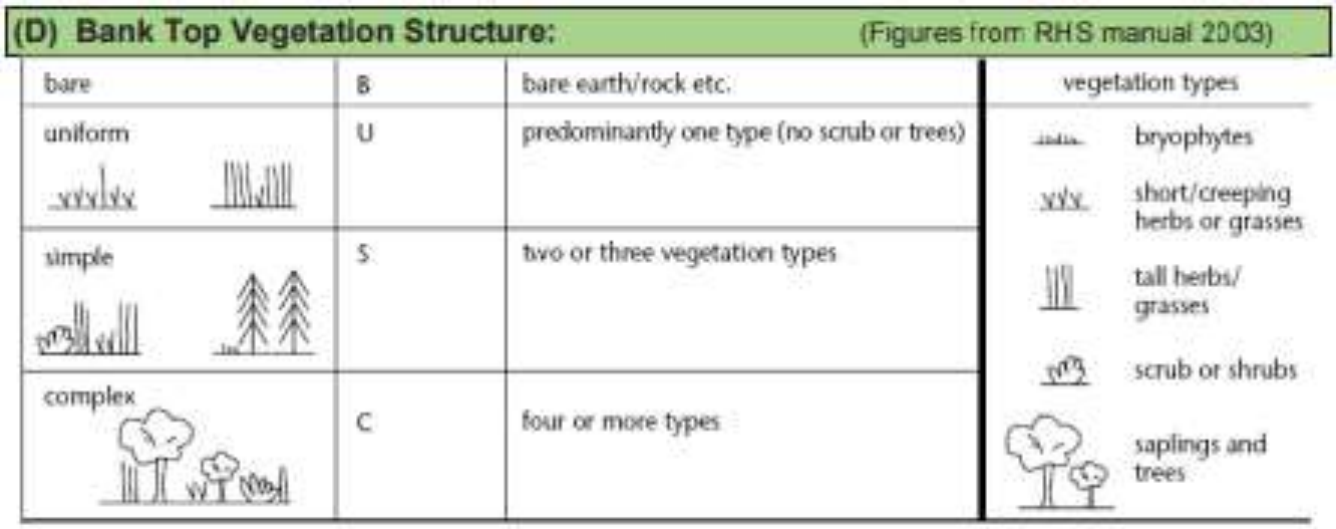

Figure 4: Vegetation structure guidance and examples

Thresholds for scoring A2:

	A = % of area	**B** = Score	**A** x **B**/100
Poor: Bare – such as earth, gravel or concrete.	*5*	-20	*-1*
Moderate: Uniform – predominantly grasses and rank vegetation.	*50*	10	*5*
Good: Simple – three vegetation types: (i) short/creeping herbs or grasses; (ii) tall herbs/grasses/rushes/sedges/ferns; (iii) scrub or shrubs; or (iv) trees/saplings.	*25*	20	*5*
Very good: Complex – four or more vegetation types: see above.	*20*	30	*6*
		Total score:	*15*

A3 – How continuous are the riverside trees?

Tress provide important ecosystem services as part of a riparian buffer. Root systems help to stabilise the stream bank and prevent erosion. Vegetation growing immediately next to the water provides shelter and refuge for fish and other wildlife. Inputs such as leaf fall add organic matter to the system and are an important food for some invertebrates.

Guidance for scoring A3:

This assessment is restricted to trees present along the bank face and bank top[2] along water's edge (Figure 2) It is recommended that the advisor walks the length of the riverside habitat assessment noting the presence and spacing between riverside tress before deciding which of the four categories set out in the scoring thresholds below best fits what is observed (Figure 5).

[2] **Bank top**: First major break in slope above which cultivation or development is possible.

Thresholds for scoring A3:

Poor: Trees absent or largely absent (occasional isolated tree).	-10
Moderate: Trees present but scattered along riverside with large gaps/breaks between either isolated trees or occasional clumps of trees.	0
Good: Trees occurring as frequent clumps with large gaps/breaks present.	10
Very good: Trees either (a) semi-continuous along riverside but some gaps/breaks OR (b) continuous along riverside with few gaps/breaks.	20

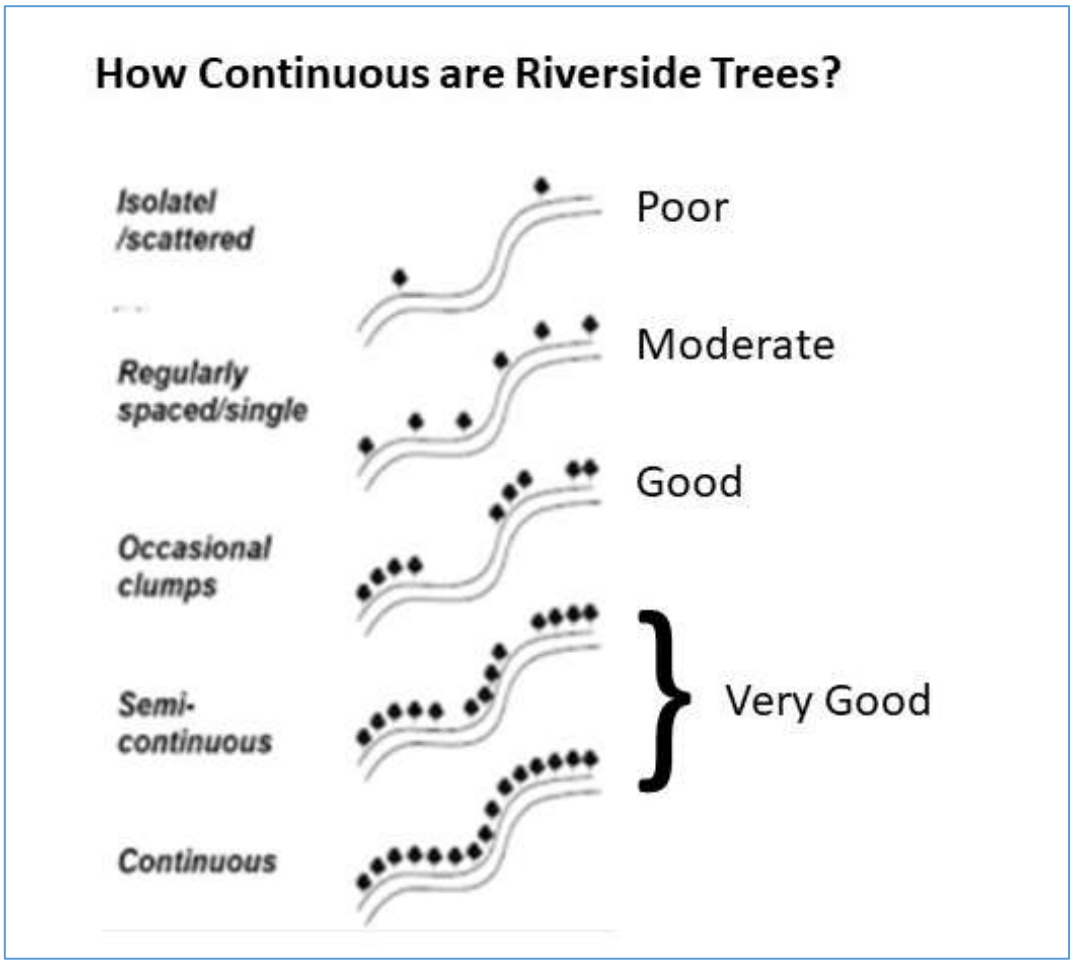

Figure 5: Examples of assessment grading for riverside tress

A4 – Is there overhanging and in-stream woody vegetation along channel margin?

Taller woody trees and shrubs comprise excellent stream bank vegetation, providing large shaded areas that providing shading and reduce the potential for adverse effects on stream health resulting from increased water temperatures. This vegetation can also be important habitat for riverine birds (e.g., kingfisher) and adult aquatic insects (e.g., caddisflies).

Guidance for scoring A4:

The assessment area is the bank face (Figure 2). The advisor should inspect the length of accessible bank faces for the presence of vegetation overhanging the river channel. The presence of any woody debris within the channel should also be noted, as should any evidence of vegetation clearance or cutting along the river bank.

Thresholds for scoring A4:

Poor: Overhanging and in-stream woody vegetation absent or largely absent along channel margin AND/OR evidence of recent cutting/removal	0
Moderate: Scattered overhanging and in-stream woody vegetation along channel margin AND/OR evidence of historic vegetation cutting/removal but now showing evidence of regrowth.	5
Good: Frequent overhanging and in-stream woody vegetation along channel margin.	10

A5 – How stable is the riverbank?

Stable riverbanks are generally well covered with vegetation, or held together with tree roots, and consequently shows little sign of erosion. Riverbank erosion can occur naturally (e.g., due to occasional large floods); however, streams in their natural state tend to have fairly stable riverbanks.

Guidance for scoring A5:

The assessment area is the bank face (Figure 2). The advisor should assess accessible bank face for erosion, as indicated by bare earth, or other evidence of bank collapse. It is important to look for areas of the riverbank showing signs of

undercutting and any cracks close to the bank edge parallel to the stream. Any evidence of erosion indicates riverbank instability.

Thresholds for scoring A5:

Poor: Bank unstable of loose soil, which is easily disturbed. Significant areas of banks cut away, undercut or showing erosion scars.	-10
Moderate: Bank moderately stable (not easily disturbed). Infrequent small areas of erosion mostly healed over.	5
Good: Bank largely stable, held firmly by grasses, shrubs and tree roots.	10

A6 – What is the cover of non-native invasive species?

Invasive species are non-native species that have a negative impact on an ecosystem when introduced. Certain species can dominate riverside areas, thereby displacing native vegetation and altering riverside habitats. Furthermore, certain species can increase the risk of streambank erosion over winter months (when they die back).

Guidance for scoring A6:

The assessment area is the 20 m from top of bank directly out into the plot. In addition to assessing the cover of non-native invasive species, advisors should also indicate the various species encountered by using the checkbox list provided on the scorecard. For assistance in identifying species, once again refer to www.invasives.ie.

Thresholds for scoring A6:

High: Abundant. Some forming dense clumps, many seedlings.	-20
Moderate: Frequent. Some flowering, many seedlings present.	-10
Low: Scattered. Plants mostly small and not flowering.	-5
None: No non-native invasive species present.	0

A7 – What is the extent of gorse along the riverside habitat?

Gorse can dominate in riverside areas under certain conditions, where it forms dense thickets that crowds out other native vegetation. In these scenarios of excessively high cover (>75% of riverbank), gorse can alter riverside habitats, and can also affect stream ecology due to excessive shading of the streambed, as well as denuding the understory vegetation along the riverbanks (riverbanks underneath gorse tend to be largely devoid of ground cover). Finally, gorse is a leguminous plant and is a nitrogen (N) fixing species; therefore, it can also act as a source of nutrients to receiving waterways.

Guidance for scoring A7:

The assessment area is inside the fenced 20 m from top of bank directly out into the plot.

This is a non-numerical attribute, with descriptive values only (see below). The advisor should refer any 'High' results directly to the project team for follow-up.

Thresholds for scoring A7:

High: Gorse dominating throughout the plot (>75% cover).	☐
Moderate: Gorse occurs frequently throughout the plot (25–50% cover).	☐
Low: Scattered presence or no gorse present (<25% cover).	☐

2.2 Section B: Hydrological Integrity

B1 – What is the extent of any surface artificial drainage features within the riverside plot?

Artificial drainage features in the plot are important as they may affect biodiversity by drying the soil. Drainage features often provide ecosystem services in their own right, but may also affect downstream habitats by providing pathways for nutrient or sediment loss to watercourses or for invasive species to spread.

Guidance for scoring B1:

The advisor should walk the length of any surface artificial drainage features within the riverside plot and, using the scoring criteria below, identify the worst 20 m of drain to carry out the scoring assessment. Faster and freely flowing drains will score lower than blocked or slow to non-flowing drains.

The EPA RiverNet features visible on the App (on which Waters of LIFE payments are calculated) should not be assessed as artificial drainage features.

Thresholds for scoring B1:

Functional: Drains predominantly free flowing (though may be dry at the time of survey), largely unvegetated and unblocked.	-30
Part functional: Drains present but flow is partially impeded (by vegetation etc.).	10
Non-functional: Drains absent or present but non-functioning. No flow, highly vegetated and/or dammed.	20

B2 – To what extent are there any subsurface drainage features within the plot?

Subsurface drainage features can reduce soil moisture levels and groundwater levels. This can result in the drying of soils, increased erosion and a reduction in biological value. Subsurface drainage can increase the movement of water-soluble nutrients, such as nitrates and phosphorus, into rivers, potentially causing eutrophication and other water quality problems.

Guidance for scoring B2:

The assessment area is the 20 m from top of bank directly out into the plot. The advisor should investigate this area for the visible presence of outflows from any subsurface drains, or evidence of any discharge from outlets observed such as vegetation changes or iron staining. The existence of sub-surface drainage features should also be discussed with the farmer, as often they may be difficult to detect within the riverside habitat, especially under dry conditions.

Thresholds for scoring B2:

Present and functional	-30
Absent/non-functioning	0

B3 – Riverside soil denitrification potential?

Denitrification is a natural process driven by bacteria whereby they convert nitrate into nitrogen gas, releasing it into the atmosphere. This process is crucial in the nitrogen cycle and can lead to reduced concentrations of nitrate in soil and water systems. Denitrification typically occurs in the absence of oxygen and thus higher rates of denitrification often occur in saturated soils.

Guidance for scoring B3:

The assessment area is the 20 m from top of bank directly out into the plot. The advisor should assess soils for water content, indicated by their firmness underfoot. Other evidence, such as visible exposures of soil and vegetation (e.g. wetland type species such as Rushes, Yellow Flag Iris) present in the area should also be considered in the assessment, particularly during dryer periods of the year.

Thresholds for scoring B3:

Low: Riverside soils dry/firm underfoot. No evidence that the soil is saturated for all/part of the year.	0
Medium: Water-logged (surface moist/fluid underfoot) riverside soils occasionally observed. Evidence that the soil is saturated for all/part of the year.	5
High: Water-logged (surface moist/fluid underfoot) riverside soils frequently observed. Evidence that the soil is saturated for all/part of the year.	10

2.3 Section C: Threats & Pressures

C1 – Is there any evidence of removal of mature shrubs/trees in the riverside habitat?

Mature scrubs/tress are an important part of the overall riverside habitat and positively contribute to the range and quality of ecosystem services provided by these habitats. The presence and density of mature scrubs/tress will also improve to the scores the landowner will obtain for numerous other measures being scored within this assessment.

Guidance for scoring C1:

The assessment area is the 20 m from top of bank directly out into the plot. The advisor should walk the length of the riverside habitat looking for evidence of any mature scrub/tree removal having been undertaken.

Thresholds for scoring C1:

Present: Evidence of removal/damage of mature shrubs/trees	-30
Absent: No evidence of removal/damage to mature shrubs/trees	0

C2 – Is there any evidence of damaging activities to the riverside habitat?

Damaging activities are those which have potential to reduce the ability of the riverside habitat to provide ecosystem services, either currently or in the future, and the resulting benefits provided to water quality and ecosystem health.

Guidance for scoring C2:

The assessment area is the 20 m from top of bank out into the plot. Consider both the extent and severity of damage to the habitat, vegetation and/or other relevant features within the riverside habitat. There may be multiple damaging activities occurring within the area being assessed. The type(s) of damaging activity identified should be indicated on the scorecard by using the checkbox list

provided. Scoring is based on both the severity of the damaging activity identified and the proportional area (%) of the overall riverside habitat impacted.

Thresholds for scoring C2:

High: Damage occurring across a large area (≥21%) or of a serious nature if confined.	-30
Moderate: Damage occurring across a moderate area (≥6-20%) or of a moderate nature if confined.	-20
Low: Damage occurring. across a small area (≤5%) or of a minor nature if confined.	-10
None: No damaging activities.	0

2.4 Management recommendation(s)

When undertaking the assessment, the advisor should be considering what management recommendations/actions might help address any issues identified and the options available for the landowner to increase their habitat scores.

A checkbox list of potential management options is included at the bottom of the scorecard. The list of options provided is not exhaustive and any management recommendations made should be noted in the text box. Consideration should be given to where Supporting Measures (Appendix I) could be implemented to improve habitat quality.

The advisor should also note any specific items requiring follow-up by the project team.

3 Riverside Habitat Scorecard (on Tillage)

This scorecard is intended to be applied in riverside areas predominantly managed for tillage. A separate scorecard is provided to assess riverside habitats on areas of improved grassland (see Section 2). The outline assessment area for this scorecard is defined as the 20 m from top of bank directly out into the plot.

Riverside (i.e., riparian[3]) habitats are the strip of land that separates agricultural activity from a waterway. These riverside buffers are an important management tool for the protection of streams and rivers. Riverside vegetation intercepts surface runoff, filters pollutants, and supplies woody debris and leaf litter to the stream channel. Riverside buffers can also provide critical habitat and refuge for wildlife. The wider the riverside buffer the greater the range and quantity of benefits it will yield for the waterway. An increasing body of evidence suggests that riverside buffers of 20 m width or greater provide the greatest range of benefits to overall stream ecosystem health.

Healthy functioning riverside habitats are a key component of the hydromorphological condition required for a stream or river to meet its High Status Objective (Blue Dot).

Select the appropriate tillage crop type (following discussion with the farmer) at the top of the scorecard. Estimate river flow at the time of the assessment:

- Low: below median flow. Dried plant and algal material may be visible on substrate on the non-wetted bed.
- Normal: median (average-type) flow.
- Above normal: higher fresh/flood flows, and often murky water will obscure the bed and much of the bank face(s). Where possible, advisors should aim to avoid assessments during such periods due to health and safety concerns.

[3] **Riparian**, *adj*. relating to, or living or occurring on the bank of a natural body of water, especially a river [L. *riparius* - *ripa*, a river-bank]

River flows/levels for the nearest hydrometric site(s) are available on HydroNet (https://epawebapp.epa.ie/hydronet).

3.1 Section A: Habitat Structural Integrity

A1 – What is the average width of the riparian buffer zone along the riverside?

Riparian buffer zones create valuable habitat buffer contaminants flowing off the land that would otherwise enter the waterway. They also help prevent erosion of the riverbanks themselves. The width of the riparian buffer zones dictates the level of protection it provides to riverside habitats and water quality. Wider buffers typically provide greater levels of protection.

Guidance for scoring A1-A:

The advisor should assess the distance from the top of the riverbank, or the water edge, to the edge of the actively farmed or managed land:

1. Five measurements taken at equally spaced intervals should be taken for riverside areas less than or equal to 250 m in length. For example, a 90-m riverside area should be assessed at 0 m, 23 m, 45 m, 68 m, and 90 m, while a 150-m riverside area should be assessed at 0 m, 38 m, 75 m, 113 m, and 150 m. To calculate the measurement intervals, divide the total riverside length by four.
2. Measurements should be taken at equally spaced 50 m intervals for riverside areas greater than 250 m in length. For example, a 250 m riverside area should be assessed at 0 m, 50 m, 100 m, 150 m, 200 m, and 250 m.

The App will automatically calculate the number of measurements required to calculate the average width, based on the length of the riverside habitat. Individual measurements and their locations should be entered into each box provided.

In general, the uncultivated margin in tillage land does not need to be fenced. The exception to this is where forage crops are grazed in-situ, in which case temporary fencing should be provided to exclude livestock.

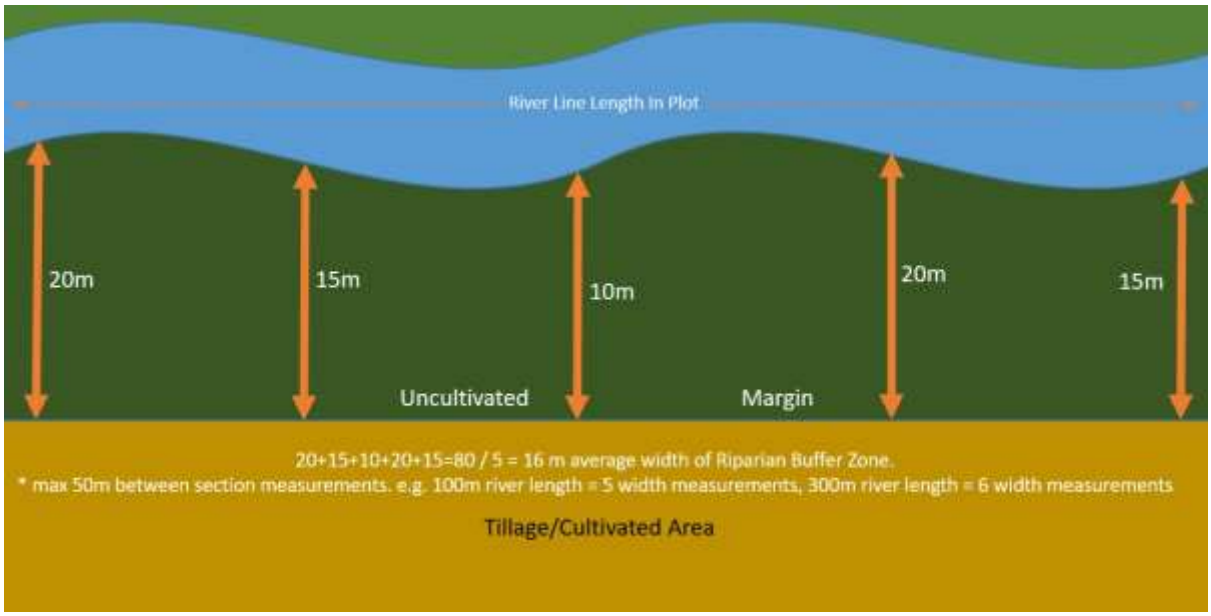

Figure 6: Example of width calculations for riparian buffer zone on tillage land

A2 – What is the complexity of the vegetation in the buffer zone identified in A1?

The vegetation growing on the banks of a stream forms an important part of the stream habitat. All substantial vegetation (i.e., not crops or close-cropped/grazed pasture) present in riverside habitats can help to protect streams. Riverside habitats comprising of diverse, native vegetation are most desirable.

Guidance for scoring A2:

It is recommended that the advisor walks the length of the riverside habitat assessment area contained within the fenced buffer zone and note the vegetation structure. Guidance on assessing vegetation structure is illustrated in Figure 4. The scoring is based on the relative proportions of each scoring grade contained within the area being assessed (i.e. poor, moderate, good etc.), as set out below. The figures in italics demonstrate a worked example of the scoring calculation.

Thresholds for scoring A2:

	A = % of area	**B** = Score	**A** x **B**/100
Poor: Bare – such as earth, gravel or concrete.	*5*	-20	*-1*
Moderate: Uniform – predominantly grasses and rank vegetation.	*50*	10	*5*
Good: Simple – three vegetation types: (i) short/creeping herbs or grasses; (ii) tall herbs/grasses/rushes/sedges/ferns; (iii) scrub or shrubs; or (iv) trees/saplings.	*25*	20	*5*
Very good: Complex – four or more vegetation types: see above.	*20*	30	*6*
		Total score:	*15*

A3 – How continuous are the riverside trees?

Tress provide important ecosystem services as part of a riparian buffer. Root systems help to stabilise the stream bank and prevent erosion. Vegetation growing immediately next to the water provides shelter and refuge for fish and other wildlife. Inputs such as leaf fall add organic matter to the system and are an important food for some invertebrates.

Guidance for scoring A3:

This assessment is restricted to trees present along the bank face and bank top[4] along the water's edge (Figure 2). It is recommended that the advisor walks the length of the riverside habitat assessment noting the presence and spacing between riverside tress before deciding which of the four categories set out in the scoring thresholds below best fits what is observed (Figure 5).

[4] **Bank top**: First major break in slope above which cultivation or development is possible.

Thresholds for scoring A3:

Poor: Trees absent or largely absent (occasional isolated tree).	-10
Moderate: Trees present but scattered along riverside with large gaps/breaks between either isolated trees or occasional clumps of trees.	0
Good: Trees occurring as frequent clumps with large gaps/breaks present.	10
Very good: Trees either (a) semi-continuous along riverside but some gaps/breaks OR (b) continuous along riverside with few gaps/breaks.	20

A4 – Is there overhanging and in-stream woody vegetation along channel margin?

Taller woody trees and shrubs comprise excellent stream bank vegetation, providing large shaded areas that providing shading and reduce the potential for adverse effects on stream health resulting from increased water temperatures. This vegetation can also be important habitat for riverine birds (e.g., kingfisher) and adult aquatic insects (e.g., caddisflies).

Guidance for scoring A4:

The assessment area is the bank face (Figure 2). The advisor should inspect the length of accessible bank faces for the presence of vegetation overhanging the river channel. The presence of any woody debris within the channel should also be noted, as should any evidence of vegetation clearance or cutting along the river bank.

Thresholds for scoring A4:

Poor: Overhanging and in-stream woody vegetation absent or largely absent along channel margin AND/OR evidence of recent cutting/removal	0
Moderate: Scattered overhanging and in-stream woody vegetation along channel margin AND/OR evidence of historic vegetation cutting/removal but now showing evidence of regrowth.	5
Good: Frequent overhanging and in-stream woody vegetation along channel margin.	10

A5 – How stable is the riverbank?

Stable riverbanks are generally well covered with vegetation, or held together with tree roots, and consequently shows little sign of erosion. Riverbank erosion can occur naturally (e.g., due to occasional large floods); however, streams in their natural state tend to have fairly stable riverbanks.

Guidance for scoring A5:

The assessment area is the bank face (Figure 2). The advisor should assess accessible bank face for erosion, as indicated by bare earth, or other evidence of bank collapse. It is important to look for areas of the riverbank showing signs of undercutting and any cracks close to the bank edge parallel to the stream. Any evidence of erosion indicates riverbank instability.

Thresholds for scoring A5:

Poor: Bank unstable of loose soil, which is easily disturbed. Significant areas of banks cut away, undercut or showing erosion scars.	-10
Moderate: Bank moderately stable (not easily disturbed). Infrequent small areas of erosion mostly healed over.	5
Good: Bank largely stable, held firmly by grasses, shrubs and tree roots.	10

A6 – What is the cover of non-native invasive species?

Invasive species are non-native species that have a negative impact on an ecosystem when introduced. Certain species can dominate riverside areas, thereby displacing native vegetation and altering riverside habitats. Furthermore, certain species can increase the risk of streambank erosion over winter months (when they die back).

Guidance for scoring A6:

The assessment area is the 20 m from top of bank directly out into the plot. In addition to assessing the cover of non-native invasive species, advisors should also indicate the various species encountered by using the checkbox list provided on the scorecard. For assistance in identifying species, once again refer to www.invasives.ie.

Thresholds for scoring A6:

High: Abundant. Some forming dense clumps, many seedlings.	-20
Moderate: Frequent. Some flowering, many seedlings present.	-10
Low: Scattered. Plants mostly small and not flowering.	-5
None: No non-native invasive species present.	0

A7 – What is the extent of gorse along the riverside habitat?

Gorse can dominate in riverside areas under certain conditions, where it forms dense thickets that crowds out other native vegetation. In these scenarios of excessively high cover (>75% of riverbank), gorse can alter riverside habitats, and can also affect stream ecology due to excessive shading of the streambed, as well as denuding the understory vegetation along the riverbanks (riverbanks underneath gorse tend to be largely devoid of ground cover). Finally, gorse is a leguminous plant and is a nitrogen (N) fixing species; therefore, it can also act as a source of nutrients to receiving waterways.

Guidance for scoring A7:

The assessment area is inside the fenced 20 m from top of bank directly out into the plot.

This is a non-numerical attribute, with descriptive values only (see below). The advisor should refer any 'High' results directly to the project team for follow-up.

Thresholds for scoring A7:

High: Gorse dominating throughout the plot (>75% cover).	☐
Moderate: Gorse occurs frequently throughout the plot (25–50% cover).	☐
Low: Scattered presence or no gorse present (<25% cover).	☐

3.2 Section B: Hydrological Integrity

B1 – What is the extent of any surface artificial drainage features within the riverside plot?

Artificial drainage features in the plot are important as they may affect biodiversity by drying the soil. Drainage features often provide ecosystem services in their own right, but may also affect downstream habitats by providing pathways for nutrient or sediment loss to watercourses or for invasive species to spread.

Guidance for scoring B1:

The advisor should walk the length of any surface artificial drainage features within the riverside plot and, using the scoring criteria below, identify the worst 20 m of drain to carry out the scoring assessment. Faster and freely flowing drains will score lower than blocked or slow to non-flowing drains.

The EPA RiverNet features visible on the App (on which Waters of LIFE payments are calculated) should not be assessed as artificial drainage features.

Thresholds for scoring B1:

Functional: Drains predominantly free flowing (though may be dry at the time of survey), largely unvegetated and unblocked.	-30
Part functional: Drains present but flow is partially impeded (by vegetation etc.).	10
Non-functional: Drains absent or present but non-functioning. No flow, highly vegetated and/or dammed.	20

B2 – To what extent are there any subsurface drainage features within the plot?

Subsurface drainage features can reduce soil moisture levels and groundwater levels. This can result in the drying of soils, increased erosion and a reduction in biological value. Subsurface drainage can increase the movement of water-soluble nutrients, such as nitrates and phosphorus, into rivers, potentially causing eutrophication and other water quality problems.

Guidance for scoring B2:

The assessment area is the 20 m from top of bank directly out into the plot. The advisor should investigate this area for the visible presence of outflows from any subsurface drains, or evidence of any discharge from outlets observed such as vegetation changes or iron staining. The existence of sub-surface drainage features should also be discussed with the farmer, as often they may be difficult to detect within the riverside habitat, especially under dry conditions.

Thresholds for scoring B2:

Present and functional	-30
Absent/non-functioning	0

B3 – Riverside soil denitrification potential?

Denitrification is a natural process driven by bacteria whereby they convert nitrate into nitrogen gas, releasing it into the atmosphere. This process is crucial in the nitrogen cycle and can lead to reduced concentrations of nitrate in soil and water systems. Denitrification typically occurs in the absence of oxygen and thus higher rates of denitrification often occur in saturated soils.

Guidance for scoring B3:

The assessment area is the 20 m from top of bank directly out into the plot. The advisor should assess soils for water content, indicated by their firmness underfoot. Other evidence, such as visible exposures of soil and vegetation (e.g. wetland type species such as Rushes, Yellow Flag Iris) present in the area should also be considered in the assessment, particularly during dryer periods of the year.

Thresholds for scoring B3:

Low: Riverside soils dry/firm underfoot. No evidence that the soil is saturated for all/part of the year.	0
Medium: Water-logged (surface moist/fluid underfoot) riverside soils occasionally observed. Evidence that the soil is saturated for all/part of the year.	5
High: Water-logged (surface moist/fluid underfoot) riverside soils frequently observed. Evidence that the soil is saturated for all/part of the year.	10

3.3 Section C: Threats & Pressures

C1 – Is there any evidence of removal of mature shrubs/trees in the riverside habitat?

Mature scrubs/tress are an important part of the overall riverside habitat and positively contribute to the range and quality of ecosystem services provided by these habitats. The presence and density of mature scrubs/tress will also improve

to the scores the landowner will obtain for numerous other measures being scored within this assessment.

Guidance for scoring C1:

The assessment area is the 20 m from top of bank directly out into the plot. The advisor should walk the length of the riverside habitat looking for evidence of any mature scrub/tree removal having been undertaken.

Thresholds for scoring C1:

Present: Evidence of removal/damage of mature shrubs/trees	-30
Absent: No evidence of removal/damage to mature shrubs/trees	0

C2 – Is there any evidence of damaging activities to the riverside habitat?

Damaging activities are those which have potential to reduce the ability of the riverside habitat to provide ecosystem services, either currently or in the future, and the resulting benefits provided to water quality and ecosystem health.

Guidance for scoring C2:

The assessment area is the 20 m from top of bank directly out into the plot. Consider both the extent and severity of damage to the habitat, vegetation and/or other relevant features within the riverside habitat. There may be multiple damaging activities occurring within the area being assessed. The type(s) of damaging activity identified should be indicated on the scorecard by using the checkbox list provided. For tillage this includes excessive vehicle movements/rutting inside the uncultivated margin. Scoring is based on both the severity of the damaging activity identified and the proportional area (%) of the overall riverside habitat impacted.

Thresholds for scoring C2:

High: Damage occurring across a large area (≥21%) or of a serious nature if confined.	-30
Moderate: Damage occurring across a moderate area (≥6-20%) or of a moderate nature if confined.	-20
Low: Damage occurring. across a small area (≤5%) or of a minor nature if confined.	-10
None: No damaging activities.	0

3.4 Management recommendation(s)

When undertaking the assessment, the advisor should be considering what management recommendations/actions might help address any issues identified and the options available for the landowner to increase their habitat scores.

A checkbox list of potential management options is included at the bottom of the scorecard. The list of options provided is not exhaustive and any management recommendations made should be noted in the text box. Consideration should be given to where Supporting Measures (Appendix I) could be implemented to improve habitat quality.

The advisor should also note any specific items requiring follow-up by the project team.

4 Semi-natural Grassland Scorecard

This is the main grassland scorecard. It should be used for permanent pasture grassland unless there is a clear reason to use another grassland scorecard (i.e. Grassland on Peat). Semi-natural grasslands are defined as areas of grassland that have been influenced by human activity, such as grazing or mowing, but have not been significantly altered by intensive management practices like fertilization or reseeding

Select the dominant grassland type and soil type at the top of the scorecard. Wet grassland is identifiable by the presence of rushes and other wetland species.

Peat based soils are easily identifiable by the black colour and absence of mineral constituents. Also, the soil type map available within the desktop and mobile Apps give a very good indication of the occurrence of peat soils if in doubt.

Estimate river flow at the time of the assessment:

- Low: below median flow. Dried plant and algal material may be visible on substrate on the non-wetted bed.
- Normal: median (average-type) flow.
- Above normal: higher fresh/flood flows, and often murky water will obscure the bed and much of the bank face(s). Where possible, advisors should aim to avoid assessments during such periods due to health and safety concerns.

River flows/levels for the nearest hydrometric site(s) are available on HydroNet (https://epawebapp.epa.ie/hydronet).

4.1 Section A: Ecological Integrity

A1 – What is the number of positive indicators in the plot?

Positive indicators have been selected as they are easy to identify when in flower and indicate semi-natural grasslands which have received limited fertiliser, herbicide, or other agricultural improvement. Plots with nine or more positive indicators may be good quality semi-natural grassland plots and therefore will score highly on A1. The most biodiverse and best quality grasslands will support more than thirteen positive indicators.

Guidance for scoring A1:

Each plot should be walked in a 'W' pattern, noting all positive indicators as you walk. Tick all species identified on the checkbox list provided on the scorecard. The score for this measure is determined by the number of species identified in the plot.

Exclude any species that occur only in the plot margin, as this may not be representative of the plot itself. The margin is defined as being 2 m for the plot boundary. If the plot you are walking has internal boundaries, then exclude any positive indicators that only occur within the margin of, and including, the internal boundary.

It is important to note that not all positive indicators will be in flower at the same time. Therefore, look for plant leaves as well as flowers when scoring the plot and also beneath plants (as leaves tend to overlap smaller indicator species (e.g. Wild Thyme). Refer to a plant identification key where necessary: (https://www.watersoflife.ie/app/uploads/2025/06/WoL-Grassland-Species-Identification.pdf).

Thresholds for scoring A1 (number of species):

Low: 0–4	0	High: 9–12	10
Moderate: 5–8	5	Very high: 13+	15

A2 – What is the cover of all positive indicators (listed in A1) throughout the entire plot?

Cover is the proportion of the plot taken up by all positive indicators present. A higher cover of positive indicators is associated with better quality semi-natural grasslands, unless one or a few species dominate, which can indicate sub-optimal quality.

Guidance for scoring A2:

During the 'W' walk of the plot, assess how frequently the positive indicator species identified in A1 are encountered with each step. The cover of a plant is

based on the visible above ground parts, i.e., leaves, flowers, and stems. Positive indicators may not be evenly distributed throughout the plot – each species has different distribution patterns and densities. Some will occur as a few throughout, others are naturally found in clumps or tussocks, while others may occur with sparse distribution (e.g., orchids). Some patches may have a higher density than others.

The combined cover of all positive indicators throughout the entire plot should be considered when scoring.

Thresholds for scoring A2:

Low: None present or you can take several steps without encountering any positive indicators at all.	0
Moderate: You encounter a positive indicator with every few steps taken.	5
High: You encounter positive indicators with every step taken.	10
Very high: You encounter multiple different positive indicators with every step taken (and in between steps).	15

A3 – What is the combined cover of negative indicator/weeds throughout the plot?

Negative indicators/weeds are those species which are indicative of either intensification or improvement i.e. Nettles or negative indicators/ weeds listed in the Noxious Weeds Act 1936 – Common Ragwort, Creeping and Spear Thistle and Broad and Curled Dock. A high occurrence of negative indicators/weeds throughout the plot can pose a threat to semi-natural habitats. Where high occurrence is noted, this should be brought to the attention of the farmer.

Guidance for scoring A3:

The advisor should carry out a visual assessment to determine the overall cover of negative indicators/weeds throughout the plot, including at entrance gates and along margins and boundaries. Use the checkbox list on the scorecard to document the negative indictor/weed species identified. Species other than

those listed may also be problematic within a plot, e.g., rank grasses such as cock's-foot, false oat-grass and purple moor-grass.

Thresholds for scoring A3:

High >25%: Occurring in dense patches or abundant throughout the field. Very visible in the sward.	-20
Moderate: 5–25%: Occurring in medium to large patches in the field. Readily visible in the sward.	-10
Low <5%: None or scattered or small clumps of negative indicators. Where present, cover should be less than 5%.	5

A4 – Vegetation structure

Assess whether the plot is primarily grazed or if the grassland is cut for hay or silage and proceed with either A4(a) or A4(b), respectively. If two (or more) fields within the plot have been merged and are of different management regimes (grazing/silage), then select the dominant habitat type of the area for scoring.

A4(a) – What is the vegetation structure in grasslands that are primarily grazed?

Sward structure is an important contributor to biodiversity and refers to vegetation height. Tussocks create habitats for small rodents, ground nesting birds and invertebrates. Sward structure responds well to management and considerable progress can be made in a single growing season. Sward structure does not refer to rush only and includes the structure of all the vegetation in the plot even negative indicators where they are present. A high-quality site will have a mix of vegetation heights throughout. This is usually delivered through a diverse sward including rushes but also low-growing grasses, sedges and herbs, medium height vegetation such as Wood Rush, Devil's Bit Scabious, Sharp-flowered Rush and Buttercups and tall vegetation such as Soft Rush, Yellow Flags, Meadow Sweet and Purple-loosestrife. Well grazed fields that receive regular chemical fertiliser are more likely to score lower, as are fields that are dominated by a dense cover of soft rush and cannot be walked through or grazed.

Guidance for scoring A4(a):

When scoring the plot make a note of the height of the vegetation and the cover of the vegetation. The key thing to note is whether all the vegetation is one uniform height and if it is, what height is it? Optimally the plot will have a mix of short, medium, and tall vegetation throughout.

Thresholds for scoring A4(a):

Over-grazed: Sward short throughout with little variation in height of vegetation. Few plants in flower.	-10
Moderate (over-grazed): Mostly short vegetation. >50% offield has short sward with occasional to frequent patches of tall vegetation.	10
Good: Plot sward medium height throughout with positive indicators flowering. Areas of taller and /or shorter sward also occur.	25
Moderate (under-grazed): Mostly tall vegetation. 50–75% of field has tall sward. Litter and dead vegetation occurring.	15
Under-grazed: Rank vegetation present throughout the field.	-10

A4(b) – What is the vegetation structure in grasslands that are primarily cut for hay or silage?

Fields that are cut for silage or hay can still provide adequate and varied structure. Hay meadows may be valuable reservoirs for plant and bird species such as the corncrake or curlew. If you think a plot may be of exceptional quality or of value to a rare species, make a note in the scorecard comments and contact the Project Team. These fields will score best if they are cut later in the season, retain wider plot margins and are grazed of new grass soon after cutting takes place.

Guidance for scoring A4(b):

Silage and hay fields provide most benefits to wildlife if they are cut late in the summer (after mid-July). The structure below refers to both fields that have not

been cut yet or have been cut. Select the most appropriate option. If they have been cut, pay particular attention to the plot margins in terms of structure. Pace out the width of the plot margins.

Thresholds for scoring A4(b):

Poor structure: No plot margins present. Plot topped right up to the plot boundary line. No grazing of after-grass. Little or no variation in sward height.	-10
Moderate structure: Narrow plot margins present (~1m). Low number of flowering plants and vegetation structure within the plot margin poor to moderate. Some grazing of after-grass providing some structural variation.	15
Good structure: Wide plot margins present (2m+) and or good headlands. Grazing of after-grass takes place providing variations in height of sward; sward does not look uniform in appearance.	25

4.2 Section B: Hydrological Integrity

B1 – What is the extent of any surface artificial drainage features within the plot?

Artificial drainage features in the plot are important as they may affect biodiversity by drying the soil. Drainage features often provide ecosystem services in their own right, but may also affect downstream habitats by providing pathways for nutrient loss to watercourses or for invasive species to spread.

Guidance for scoring B1:

The advisor should walk the length of any surface artificial drainage features present within the plot and identify the worst 30 m of drain to carry out the scoring assessment, based on the scoring criteria below. Faster and freely flowing drains will score lower than blocked or slow to non-flowing drains.

The EPA RiverNet features visible on the App (on which Waters of LIFE payments are calculated) should not be assessed as artificial drainage features.

Thresholds for scoring B1:

Functional: Drains predominantly free flowing (though may be dry at the time of survey), largely unvegetated and unblocked.	-20
Part functional: Drains present but flow is partially impeded (by vegetation etc.).	10
Non-functional: Drains absent or present but non-functioning. No flow, highly vegetated and/or dammed.	40

B2 – To what extent are there any subsurface drainage features within the plot?

Subsurface drainage features can reduce soil moisture levels and groundwater levels. This can result in the drying of soils, increased erosion and a reduction in biological value. Subsurface drainage can increase the movement of water-soluble nutrients, such as nitrates and phosphorus, into rivers, potentially causing eutrophication and other water quality problems.

Guidance for scoring B2:

The advisor should investigate plot for the visible presence of outflows from any subsurface drains, or evidence of any discharge from outlets observed such as vegetation changes or iron staining. The existence of sub-surface drainage features should also be discussed with the farmer, as often they may be difficult to detect, especially under dry conditions.

Thresholds for scoring B2:

Present and functional	-30
Absent or present but non-functioning	0

4.3 Section C: Threats & Pressures

C1 – Is there any evidence of damaging activities to the habitat or vegetation throughout the plot?

Damaging activities are those which have potential, either currently or in the future, to reduce the plot's ability to support a diversity of plant species or other beneficial features, reducing the services provided to water quality and ecosystem health.

Guidance for scoring C1:

The advisor should consider both the extent and severity of damage to the habitat, vegetation and/or other relevant features within the plot. There may be multiple damaging activities occurring within the area being assessed. The type(s) of damaging activity identified should be indicated using the checkbox list provided on the scorecard. Scoring is based on both the severity of the damaging activity identified and the proportional area (%) of the overall riverside habitat impacted.

The assessment should exclude any area within 20 m adjacent to any watercourse (the riverside habitat). This area will be assessed separately under C7.

Thresholds for scoring C1:

High: Damage occurring across a large area (≥21%) or of a serious nature if confined.	-30
Moderate: Damage occurring across a moderate area (≥6-20%) or of a moderate nature if confined.	-20
Low: Damage occurring. across a small area (≤5%) or of a minor nature if confined.	-10
None: No damaging activities.	0

C2 – What is the extent of bare soil & erosion throughout the plot?

Soil can be subject to erosion, declining soil organic carbon, declining soil biodiversity, and soil contamination (by heavy metals and pesticides, or excess nitrates and phosphates). Bare soil can also result in soil loss and be a significant source of sediment loss to waterways. Bare soil is a key issue on agricultural land and is usually most concentrated on access routes, stock paths and near supplementary feeding sites.

Guidance for scoring C2:

When walking a plot, make regular note of bare soil patches and possible causes. Bare soil outside of trackways, feed sites, water troughs, damage caused by vehicle use or excessive poaching should also be noted.

This assessment relates to the extent of bare soil across the entire plot rather than its potential as a source of risk to water quality, which may be limited to a small part of the plot and be dependent on other factors such as slope and proximity to surface waters. The presence of bare soil and erosion present within 20 m of the top of river bank is assessed separately under C7.

Do not include naturally occurring bare surfaces (such as exposed rock or scree on hilly terrain) in the assessment of bare soil.

Thresholds for scoring C2:

High: Excessive areas of bare soil within the body of the field. Bare soil may also be extending out significantly from the main feed sites and/or water troughs and/or livestock access points, where poaching evident. Significant rutting and soil disturbance caused by vehicle/tractor access.	-30
Moderate: Bare soil mainly along regularly used stock routes or congregation areas, with minor soil loss occurring at a few points. Bare soil may extend a short distance beyond the main feed site and/or water points and/or livestock access points. Minor rutting and soil disturbance caused by occasional vehicle/tractor access may be present.	-10
Low: Bare soil more or less restricted to regular stock paths, 'pinch' points & small congregation areas. No soil loss.	0

C3 – What is the cover of non-native invasive species throughout the plot?

Invasive species are non-native species that have a negative impact on an ecosystem when introduced. Certain species can dominate riverside areas, thereby displacing native vegetation and altering riverside habitats. Furthermore, certain species can increase the risk of streambank erosion over winter months (when they die back).

Guidance for scoring C3:

Advisors should assess the relative abundance of non-native invasive species across the entire plot, in the context of the thresholds outlined below. Advisors should also indicate the various species encountered using the checkbox list provided on the scorecard. For assistance in identifying species, once again refer to www.invasives.ie.

This assessment should cover the plot only. Any invasive species present with 20 m of the top of riverbank should be assessed under C6.

Thresholds for scoring C3:

High: Abundant. Some forming dense clumps, many seedlings.	-20
Moderate: Frequent. Some flowering, many seedlings present.	-10
Low: Scattered. Plants mostly small and not flowering.	-5
None: No non-native invasive species present.	0

C4 – What is the cover of bracken throughout the plot?

Bracken is a large fern which can spread quickly and persist due to underground rhizomes. Where Bracken forms dense stands, shading and litter deposition can suppress the growth of other plants, reducing the species richness of these areas. Additionally, bracken can negatively impact water quality and soil carbon stocks by altering soil chemistry and carbon turnover.

Guidance for scoring C4:

The advisor should assess the entire plot for the presence of Bracken. The extent and density of Bracken may be difficult to determine in May or June as the fronds will not have fully unfurled, although it is possible to get a good idea of its distribution from the quantity of dead Bracken litter present.

Thresholds for scoring C4:

High: Very dense stands of bracken covering over half or more of the plot, forming closed canopy.	-10
Moderate: Bracken forming dense stands covering parts of the plot, mostly forming closed canopy.	-5
Low: Bracken absent or some scattered fronds and none forming closed canopy. Can include some isolated small patches or some larger patches on steep slopes.	0

C5 – How stable is the riverbank?

Stable riverbanks are generally well covered with vegetation, or held together with tree roots, and consequently show little sign of erosion. Riverbank erosion can occur naturally (e.g., due to occasional large floods); however, streams in their natural state tend to have fairly stable riverbanks.

Guidance for scoring C5:

The assessment area is the bank face (Figure 2). The advisor should assess accessible bank face for erosion, as indicated by bare earth, or other evidence of bank collapse. It is important to look for areas of the riverbank showing signs of undercutting and any cracks close to the bank edge parallel to the stream. Any evidence of erosion indicates riverbank instability.

Thresholds for scoring C5:

Poor: Bank unstable of loose soil, which is easily disturbed. Significant areas of banks cut away, undercut or showing erosion scars.	-10
Moderate: Bank moderately stable (not easily disturbed). Infrequent small areas of erosion mostly healed over.	-5
Good: Bank largely stable, held firmly by grasses, shrubs and tree roots.	0

C6 – What is the cover of non-native invasive species within the riverside habitat?

Invasive species are non-native species that have a negative impact on an ecosystem when introduced. Certain species can dominate riverside areas, thereby displacing native vegetation and altering riverside habitats. Furthermore, certain species can increase the risk of streambank erosion over winter months (when they die back).

Guidance for scoring C6:

The assessment area is the 20 m from top of bank directly out into the plot. In addition to assessing the cover of non-native invasive species, advisors should also indicate the various species encountered by using the checkbox list provided on the scorecard. For assistance in identifying species, once again refer to www.invasives.ie.

Thresholds for scoring C6:

High: Abundant. Some forming dense clumps, many seedlings.	-30
Moderate: Frequent. Some flowering, many seedlings present.	-20
Low: Scattered. Plants mostly small and not flowering.	-10
None: No non-native invasive species present.	0

C7 – Is there any evidence of damaging activities or bare soil within the riverside habitat?

Damaging activities are those which have potential, either currently or in the future, to reduce the ability of the riverside habitat to provide its potential range of ecosystem services and the resulting benefits provided to water quality and ecosystem health.

Guidance for scoring C7:

The assessment area is the 20 m from top of bank directly out into the plot. Consider both the extent and severity of damage to the habitat, vegetation and/or other relevant features within the riverside habitat. There may be multiple damaging activities occurring within the area being assessed. The type(s) of damaging activity identified should be indicated on the scorecard by using the checkbox list provided on the scorecard. Scoring is based on both the severity of the damaging activity identified and the proportional area (%) of the overall riverside habitat impacted.

Thresholds for scoring C7:

High: Damage occurring across a large area (≥21%) or of a serious nature if confined.	-30
Moderate: Damage occurring across a moderate area (≥6-20%) or of a moderate nature if confined.	-20
Low: Damage occurring. across a small area (≤5%) or of a minor nature if confined.	-10
None: No damaging activities.	0

C8 – What is the extent of gorse along the riverside habitat?

Gorse can dominate in riverside areas under certain conditions, where it forms dense thickets that crowds out other native vegetation. In these scenarios of excessively high cover (>75% of riverbank), gorse can alter riverside habitats, and can also affect stream ecology due to excessive shading of the streambed, as well

as denuding the understory vegetation along the riverbanks (riverbanks underneath gorse tend to be largely devoid of ground cover). Finally, gorse is a leguminous plant and is a nitrogen (N) fixing species; therefore, it can also act as a source of nutrients to receiving waterways.

Guidance for scoring C8:

The assessment area is inside the fenced 20 m from top of bank directly out into the plot.

This is a non-numerical attribute, with descriptive values only (see below). The advisor should refer any 'High' results directly to the project team for follow-up.

Thresholds for scoring C8:

High: Gorse dominating throughout the plot (>75% cover).	☐
Moderate: Gorse occurs frequently throughout the plot (25–50% cover).	☐
Low: Scattered presence or no gorse present (<25% cover).	☐

4.4 Management recommendation(s)

When undertaking the assessment, the advisor should be considering what management recommendations/actions might help address any issues identified and the options available for the landowner to increase their habitat scores.

A checkbox list of potential management options is included at the bottom of the scorecard. The list of options provided is not exhaustive and any management recommendations made should be noted in the text box. Consideration should be given to where Supporting Measures (Appendix I) could be implemented to improve habitat quality.

The advisor should also note any specific items requiring follow-up by the project team.

5 Grassland on Peat Scorecard

This scorecard is to be used to score grassland habitats overlying Peat soils. This scorecard is applicable to the Islands catchment only. Peat based soils are easily identifiable by the black colour and absence of mineral constituents.

Estimate river flow at the time of the assessment:

- Low: below median flow. Dried plant and algal material may be visible on substrate on the non-wetted bed.
- Normal: median (average-type) flow.
- Above normal: higher fresh/flood flows, and often murky water will obscure the bed and much of the bank face(s). Where possible, advisors should aim to avoid assessments during such periods due to health and safety concerns.

River flows/levels for the nearest hydrometric site(s) are available on HydroNet (https://epawebapp.epa.ie/hydronet).

5.1 Section A: Ecological Integrity

A1 – What is the number of positive indicators in the plot?

Positive indicators have been selected as they are easy to identify when in flower and indicate semi-natural grasslands which have received limited fertiliser, herbicide, or other agricultural improvement. Plots with nine or more positive indicators may be good quality semi-natural grassland plots and therefore will score highly on A1. The most biodiverse and best quality grasslands will support more than thirteen positive indicators.

Guidance for scoring A1:

Each plot should be walked in a 'W' pattern, noting all positive indicators as you walk. Tick all species identified on the checkbox list provided on the scorecard. The score for this measure is determined by the number of species identified in the plot.

Exclude any species that occur only in the plot margin, as this may not be representative of the plot itself. The margin is defined as being 2 m for the plot

boundary. If the plot you are walking has internal boundaries, then exclude any positive indicators that only occur within the margin of, and including, the internal boundary.

It is important to note that not all positive indicators will be in flower at the same time. Therefore, look for plant leaves as well as flowers when scoring the plot and also beneath plants (as leaves tend to overlap smaller indicator species (e.g. Wild Thyme). Refer to a plant identification key where necessary (https://www.watersoflife.ie/app/uploads/2025/06/WoL-Peatland-Species-Identification.pdf).

Thresholds for scoring A1 (number of species):

Low: 0–4	0	High: 9–12	10
Moderate: 5–8	5	Very high: 13+	15

A2 – What is the cover of all positive indicators (listed in A1) throughout the entire plot?

Cover is the proportion of the plot taken up by all positive indicators present. A higher cover of positive indicators is associated with better quality semi-natural grasslands, unless one or a few species dominate, which can indicate sub-optimal quality.

Guidance for scoring A2:

During the 'W' walk of the plot, assess how frequently the positive indicator species identified in A1 are encountered with each step. The cover of a plant is based on the visible above ground parts, i.e., leaves, flowers, and stems. Positive indicators may not be evenly distributed throughout the plot – each species has different distribution patterns and densities. Some will occur as a few throughout, others are naturally found in clumps or tussocks, while others may occur with sparse distribution (e.g., orchids). Some patches may have a higher density than others.

The combined cover of all positive indicators throughout the entire plot should be considered when scoring.

Thresholds for scoring A2:

Low: None present or you can take several steps without encountering any positive indicators at all.	0
Moderate: You encounter a positive indicator with every few steps taken.	5
High: You encounter positive indicators with every step taken.	10
Very high: You encounter multiple different positive indicators with every step taken (and in between steps).	15

A3 – What is the combined cover of negative indicator/weeds throughout the plot?

Negative indicators/weeds are those species which are indicative of either intensification or improvement i.e. Nettles or negative indicators/ weeds listed in the Noxious Weeds Act 1936 – Common Ragwort, Creeping and Spear Thistle and Broad and Curled Dock. A high occurrence of negative indicators/weeds throughout the plot can pose a threat to semi-natural habitats. Where high occurrence is noted, this should be brought to the attention of the farmer.

Guidance for scoring A3:

The advisor should carry out a visual assessment to determine the overall cover of negative indicators/weeds throughout the plot, including at entrance gates and along margins and boundaries. Use the checkbox list on the scorecard to document the negative indictor/weed species identified. Species other than those listed may also be problematic within a plot, e.g., rank grasses such as cock's-foot, false oat-grass and purple moor-grass.

Thresholds for scoring A3:

High >25%: Occurring in dense patches or abundant throughout the field. Very visible in the sward.	-20
Moderate: 5–25%: Occurring in medium to large patches in the field. Readily visible in the sward.	-10
Low <5%: None or scattered or small clumps of negative indicators. Where present, cover should be less than 5%.	5

A4 – Vegetation structure

Assess whether the plot is primarily grazed or if the grassland is cut for hay or silage and proceed with either A4(a) or A4(b), respectively. If two (or more) fields within the plot have been merged and are of different management regimes (grazing/silage), then select the dominant habitat type of the area for scoring.

A4(a) – What is the vegetation structure in grasslands that are primarily grazed?

Sward structure is an important contributor to biodiversity and refers to vegetation height. Tussocks create habitats for small rodents, ground nesting birds and invertebrates. Sward structure responds well to management and considerable progress can be made in a single growing season. Sward structure does not refer to rush only and includes the structure of all the vegetation in the plot even negative indicators where they are present. A high-quality site will have a mix of vegetation heights throughout. This is usually delivered through a diverse sward including rushes but also low-growing grasses, sedges and herbs, medium height vegetation such as Wood Rush, Devil's Bit Scabious, Sharp-flowered Rush and Buttercups and tall vegetation such as Soft Rush, Yellow Flags, Meadow Sweet and Purple-loosestrife. Well grazed fields that receive regular chemical fertiliser are more likely to score lower, as are fields that are dominated by a dense cover of soft rush and cannot be walked through or grazed.

Guidance for scoring A4(a):

When scoring the plot make a note of the height of the vegetation and the cover of the vegetation. The key thing to note is whether all the vegetation is one

uniform height and if it is, what height is it? Optimally the plot will have a mix of short, medium, and tall vegetation throughout.

Thresholds for scoring A4(a):

Over-grazed: Sward short throughout with little variation in height of vegetation. Few plants in flower.	-10
Moderate (over-grazed): Mostly short vegetation. >50% offield has short sward with occasional to frequent patches of tall vegetation.	10
Good: Plot sward medium height throughout with positive indicators flowering. Areas of taller and /or shorter sward also occur.	25
Moderate (under-grazed): Mostly tall vegetation. 50–75% of field has tall sward. Litter and dead vegetation occurring.	15
Under-grazed: Rank vegetation present throughout the field.	-10

A4(b) – What is the vegetation structure in grasslands that are primarily cut for hay or silage?

Fields that are cut for silage or hay can still provide adequate and varied structure. Hay meadows may be valuable reservoirs for plant and bird species such as the corncrake or curlew. If you think a plot may be of exceptional quality or of value to a rare species, make a note in the scorecard comments and contact the Project Team. These fields will score best if they are cut later in the season, retain wider plot margins and are grazed of new grass soon after cutting takes place.

Guidance for scoring A4(b):

Silage and hay fields provide most benefits to wildlife if they are cut late in the summer (after mid-July). The structure below refers to both fields that have not been cut yet or have been cut. Select the most appropriate option. If they have been cut, pay particular attention to the plot margins in terms of structure. Pace out the width of the plot margins.

Thresholds for scoring A4(b):

Poor structure: No plot margins present. Plot topped right up to the plot boundary line. No grazing of after-grass. Little or no variation in sward height.	-10
Moderate structure: Narrow plot margins present (~1m). Low number of flowering plants and vegetation structure within the plot margin poor to moderate. Some grazing of after-grass providing some structural variation.	15
Good structure: Wide plot margins present (2m+) and or good headlands. Grazing of after-grass takes place providing variations in height of sward; sward does not look uniform in appearance.	25

5.2 Section B: Hydrological Integrity

B1 – What is the extent of any surface artificial drainage features within the plot?

Artificial drainage features in the plot are important as they may affect biodiversity by drying the soil. Drainage features often provide ecosystem services in their own right, but may also affect downstream habitats by providing pathways for nutrient loss to watercourses or for invasive species to spread.

Guidance for scoring B1:

The advisor should walk the length of any surface artificial drainage features present within the plot and identify the worst 30 m of drain to carry out the scoring assessment, based on the scoring criteria below. Faster and freely flowing drains will score lower than blocked or slow to non-flowing drains.

The EPA RiverNet features visible on the App (on which Waters of LIFE payments are calculated) should not be assessed as artificial drainage features.

Thresholds for scoring B1:

Functional: Drains predominantly free flowing (though may be dry at the time of survey), largely unvegetated and unblocked.	-20
Part functional: Drains present but flow is partially impeded (by vegetation etc.).	10
Non-functional: Drains absent or present but non-functioning. No flow, highly vegetated and/or dammed.	40

B2 – To what extent are there any subsurface drainage features within the plot?

Subsurface drainage features can reduce soil moisture levels and groundwater levels. This can result in the drying of soils, increased erosion and a reduction in biological value. Subsurface drainage can increase the movement of water-soluble nutrients, such as nitrates and phosphorus, into rivers, potentially causing eutrophication and other water quality problems.

Guidance for scoring B2:

The advisor should investigate plot for the visible presence of outflows from any subsurface drains, or evidence of any discharge from outlets observed such as vegetation changes or iron staining. The existence of sub-surface drainage features should also be discussed with the farmer, as often they may be difficult to detect, especially under dry conditions.

Thresholds for scoring B2:

Present and functional	-30
Absent or present but non-functioning	0

B3 – What is the water table level in the drain?

As peatlands are wetland habitats, water is the main factor influencing their health and condition. Peatlands require the water table to be close to the surface year-round. Drainage causes higher rates of water run-off and a drying out of the bog surface due to lowering of the water table. Dry peat breaks down due to interactions with oxygen in the air and is lost as carbon-dioxide emissions. Dry areas may no longer sustain sensitive peatland species.

When the water table is close to the surface, peatlands can provide important ecosystem services including: storage and accumulation of carbon (in the form of peat), water regulation (incl. lowland flood alleviation) and support of biodiversity.

Tuohy et al. (2023) suggests that maintaining the water table at a depth of between 40 to 50 cm in peat based grasslands can achieve optimal crop requirements, while maintaining peat health and minimising the loss of carbon.

Guidance for scoring B3:

The advisor should locate and assess water table levels in any open drains, including those located both within the plot and around the perimeter. The depth to the water surface in the drain should be measured from the top of bank/ground level. The advisor should also consider the overall effect of the drains on the water table beneath the plot, based on factors including the concentration and depth of drains within the assessment area and the observed water levels.

Thresholds for scoring B3:

Low: Water level typically > 1m below drain surface. Drains having significant effect on water-table of plot.	-15
Moderate: Water level typically <1m but ≥40cm below drain surface. Drains having a moderate effect on water-table of plot.	0
High: Water level typically <40cm below surface of drain. Assume highest water-table if no drains present. Drains having minor to no effect on water-table of plot.	30

5.3 Section C: Threats & Pressures

C1 – Is there any evidence of damaging activities to the habitat or vegetation throughout the plot?

Damaging activities are those which have potential, either currently or in the future, to reduce the plot's ability to support a diversity of plant species or other beneficial features, reducing the services provided to water quality and ecosystem health.

Guidance for scoring C1:

The advisor should consider both the extent and severity of damage to the habitat, vegetation and/or other relevant features within the plot. There may be multiple damaging activities occurring within the area being assessed. The type(s) of damaging activity identified should be indicated using the checkbox list provided on the scorecard. Scoring is based on both the severity of the damaging activity identified and the proportional area (%) of the overall riverside habitat impacted.

The assessment should exclude any area within 20 m adjacent to any watercourse (the riverside habitat). This area will be assessed separately under C7.

Thresholds for scoring C1:

High: Damage occurring across a large area (≥21%) or of a serious nature if confined.	-30
Moderate: Damage occurring across a moderate area (≥6-20%) or of a moderate nature if confined.	-20
Low: Damage occurring. across a small area (≤5%) or of a minor nature if confined.	-10
None: No damaging activities.	0

C2 – What is the extent of bare soil & erosion throughout the plot?

Soil can be subject to erosion, declining soil organic carbon, declining soil biodiversity, and soil contamination (by heavy metals and pesticides, or excess nitrates and phosphates). Bare soil can also result in soil loss and be a significant source of sediment loss to waterways. Bare soil is a key issue on agricultural land and is usually most concentrated on access routes, stock paths and near supplementary feeding sites.

Guidance for scoring C2:

When walking a plot, make regular note of bare soil patches and possible causes. Bare soil outside of trackways, feed sites, water troughs, damage caused by vehicle use or excessive poaching should also be noted.

This section relates to the extent of bare soil across the entire plot rather than its potential as a source of risk to water quality, which may be limited to a small part of the plot and be dependent on other factors such as slope and proximity to surface waters. The presence of bare soil and erosion present within 20 m of the top of river bank is assessed separately under C7.

Do not include naturally occurring bare surfaces (such as exposed rock or scree on hilly terrain) in the assessment of bare soil.

Thresholds for scoring C2:

High: Excessive areas of bare soil within the body of the field. Bare soil may also be extending out significantly from the main feed sites and/or water troughs and/or livestock access points, where poaching evident. Significant rutting and soil disturbance caused by vehicle/tractor access.	-30
Moderate: Bare soil mainly along regularly used stock routes or congregation areas, with minor soil loss occurring at a few points. Bare soil may extend a short distance beyond the main feed site and/or water points and/or livestock access points. Minor rutting and soil disturbance caused by occasional vehicle/tractor access may be present.	-10
Low: Bare soil more or less restricted to regular stock paths, 'pinch' points & small congregation areas. No soil loss.	0

C3 – What is the cover of non-native invasive species throughout the plot?

Invasive species are non-native species that have a negative impact on an ecosystem when introduced. Certain species can dominate riverside areas, thereby displacing native vegetation and altering riverside habitats. Furthermore, certain species can increase the risk of streambank erosion over winter months (when they die back).

Guidance for scoring C3:

Advisors should assess the relative abundance of non-native invasive species across the entire plot, in the context of the thresholds outlined below. Advisors should also indicate the various species encountered using the checkbox list provided on the scorecard. For assistance in identifying species, once again refer to www.invasives.ie.

This assessment should cover the plot only. Any invasive species present with 20 m of the top of riverbank should be assessed under C6.

Thresholds for scoring C3:

High: Abundant. Some forming dense clumps, many seedlings.	-20
Moderate: Frequent. Some flowering, many seedlings present.	-10
Low: Scattered. Plants mostly small and not flowering.	-5
None: No non-native invasive species present.	0

C4 – What is the cover of bracken throughout the plot?

Bracken is a large fern which can spread quickly and persist due to underground rhizomes. Where Bracken forms dense stands, shading and litter deposition can suppress the growth of other plants, reducing the species richness of these areas. Additionally, bracken can negatively impact water quality and soil carbon stocks by altering soil chemistry and carbon turnover.

Guidance for scoring C4:

The advisor should assess the entire plot for the presence of Bracken. The extent and density of Bracken may be difficult to determine in May or June as the fronds will not have fully unfurled, although it is possible to get a good idea of its distribution from the quantity of dead Bracken litter present.

Thresholds for scoring C4:

High: Very dense stands of bracken covering over half or more of the plot, forming closed canopy.	-10
Moderate: Bracken forming dense stands covering parts of the plot, mostly forming closed canopy.	-5
Low: Bracken absent or some scattered fronds and none forming closed canopy. Can include some isolated small patches or some larger patches on steep slopes.	0

C5 – How stable is the riverbank?

Stable riverbanks are generally well covered with vegetation, or held together with tree roots, and consequently show little sign of erosion. Riverbank erosion can occur naturally (e.g., due to occasional large floods); however, streams in their natural state tend to have fairly stable riverbanks.

Guidance for scoring C5:

The assessment area is the bank face (Figure 2). The advisor should assess accessible bank face for erosion, as indicated by bare earth, or other evidence of bank collapse. It is important to look for areas of the riverbank showing signs of undercutting and any cracks close to the bank edge parallel to the stream. Any evidence of erosion indicates riverbank instability.

Thresholds for scoring C5:

Poor: Bank unstable of loose soil, which is easily disturbed. Significant areas of banks cut away, undercut or showing erosion scars.	-10
Moderate: Bank moderately stable (not easily disturbed). Infrequent small areas of erosion mostly healed over.	-5
Good: Bank largely stable, held firmly by grasses, shrubs and tree roots.	0

C6 – What is the cover of non-native invasive species? within the riverside habitat

Invasive species are non-native species that have a negative impact on an ecosystem when introduced. Certain species can dominate riverside areas, thereby displacing native vegetation and altering riverside habitats. Furthermore, certain species can increase the risk of streambank erosion over winter months (when they die back).

Guidance for scoring C6:

The assessment area is the 20 m from top of bank directly out into the plot. In addition to assessing the cover of non-native invasive species, advisors should also indicate the various species encountered by using the checkbox list provided on the scorecard. For assistance in identifying species, once again refer to www.invasives.ie.

Thresholds for scoring C6:

High: Abundant. Some forming dense clumps, many seedlings.	-30
Moderate: Frequent. Some flowering, many seedlings present.	-20
Low: Scattered. Plants mostly small and not flowering.	-10
None: No non-native invasive species present.	0

C7 – Is there any evidence of damaging activities or bare soil within the riverside habitat?

Damaging activities are those which have potential, either currently or in the future, to reduce the ability of the riverside habitat to provide its potential range of ecosystem services and the resulting benefits provided to water quality and ecosystem health.

Guidance for scoring C7:

The assessment area is the 20 m from top of bank directly out into the plot. Consider both the extent and severity of damage to the habitat, vegetation and/or other relevant features within the riverside habitat. There may be multiple damaging activities occurring within the area being assessed. The type(s) of damaging activity identified should be indicated on the scorecard by using the checkbox list provided on the scorecard. Scoring is based on both the severity of the damaging activity identified and the proportional area (%) of the overall riverside habitat impacted.

Thresholds for scoring C7:

High: Damage occurring across a large area (≥21%) or of a serious nature if confined.	-30
Moderate: Damage occurring across a moderate area (≥6-20%) or of a moderate nature if confined.	-20
Low: Damage occurring. across a small area (≤5%) or of a minor nature if confined.	-10
None: No damaging activities.	0

C8 – What is the extent of gorse along the riverside habitat?

Gorse can dominate in riverside areas under certain conditions, where it forms dense thickets that crowds out other native vegetation. In these scenarios of excessively high cover (>75% of riverbank), gorse can alter riverside habitats, and can also affect stream ecology due to excessive shading of the streambed, as well

as denuding the understory vegetation along the riverbanks (riverbanks underneath gorse tend to be largely devoid of ground cover). Finally, gorse is a leguminous plant and is a nitrogen (N) fixing species; therefore, it can also act as a source of nutrients to receiving waterways.

Guidance for scoring C8:

The assessment area is inside the fenced 20 m from top of bank directly out into the plot.

This is a non-numerical attribute, with descriptive values only (see below). The advisor should refer any 'High' results directly to the project team for follow-up.

Thresholds for scoring C8:

High: Gorse dominating throughout the plot (>75% cover).	☐
Moderate: Gorse occurs frequently throughout the plot (25–50% cover).	☐
Low: Scattered presence or no gorse present (<25% cover).	☐

5.4 Management recommendation(s)

When undertaking the assessment, the advisor should be considering what management recommendations/actions might help address any issues identified and the options available for the landowner to increase their habitat scores.

A checkbox list of potential management options is included at the bottom of the scorecard. The list of options provided is not exhaustive and any management recommendations made should be noted in the text box. Consideration should be given to where Supporting Measures (Appendix I) could be implemented to improve habitat quality.

The advisor should also note any specific items requiring follow-up by the project team.

6 Peatland Scorecard

A description of various types and importance of peatlands and their management can be found here: Peatland Management - Farming for Nature.

The advisor should characterise the plot being assessed and indicate which category best describes it from the list provided in the scorecard (e.g. wet/dry heath, blanket/raised bog etc.).

Estimate river flow at the time of the assessment:

- Low: below median flow. Dried plant and algal material may be visible on substrate on the non-wetted bed.
- Normal: median (average-type) flow.
- Above normal: higher fresh/flood flows, and often murky water will obscure the bed and much of the bank face(s). Where possible, advisors should aim to avoid assessments during such periods due to health and safety concerns.

River flows/levels for the nearest hydrometric site(s) are available on HydroNet (https://epawebapp.epa.ie/hydronet).

6.1 Section A: Ecological Integrity

A1 – What is the number of positive indicators in the plot?

Positive indicators have been selected as they are easy to identify when in flower and that are indicative of the ecological health of the plot being assessed. The most biodiverse and best quality peatlands will support six or more positive indicators and will score highly on A1.

Guidance for scoring A1:

Each plot should be walked in a 'W' pattern, noting all positive indicators as you walk. Tick all species identified on the checkbox list provided on the scorecard, ensuring each of the moss, shrub and grass/herb layers are assessed (if present). The score for this measure is determined by the number of species identified in the plot. Refer to a plant identification key where necessary:

(https://www.watersoflife.ie/app/uploads/2025/06/WoL-Woodland-Species-Identification.pdf)

Thresholds for scoring A1 (number of species):

Low: 0–2	0	Moderate: 3–5	5	High: 6+	10

A2 – What is the combined cover of all positive mosses, liverworts & lichens (listed in A1) throughout the plot?

The proportion of a plot covered by a plant(s) is the cover. The cover of mosses and lichens is an important indicator of peatland health and disturbance. Generally, the higher the cover of these, the wetter and more stable the wetland habitat. Low moss cover is a sign of a peatland habitat in poor health and low or no lichen cover indicates disturbance though fire or grazing pressure.

Dry heath may be naturally well-drained and should score well unless new or maintained drains are evident. If dry heaths are in good condition, the cover of heather should be high and the sphagnum moss may be rare, but branched mosses will be abundant.

Non-crustose bushy lichens layer such as Cladonia lichens (if occurring frequently) are slow-growing indicators of a healthy intact peatland with little disturbance.

Guidance for scoring A2:

During the 'W' walk of the plot, assess how frequently the positive indicator species identified in A1 are encountered with each step. The cover of a plant is based on the visible above ground parts, i.e., leaves, flowers, and stems. The cover of mosses, liverworts and lichens can vary significantly within a plot and it is important to note this variation when assessing the area. It might be helpful to pick a small representative area to estimate combined cover of mosses and lichens and apply this proportionately to the entire plot if appropriate.

Thresholds for scoring A2:

Low: <10% cover across the plot.	0
Moderate: 10–30% cover across the plot.	10
High: >30% cover across the plot.	20

A3 – What is the vegetation structure?

The vegetation structure of an intact, healthy peatland should be inclusive of all three vegetation layers including the 1) moss, 2) sedge/herb, 3) shrub layer, and 4) non-crustose bushy lichens.

Mosses such as sphagnum mosses are key indicators of fields with good intact peat formation capacity and hydrological integrity. Low sphagnum cover may indicate a peatland in poor condition; however, they may be less abundant on thin peat on the slopes of hills (dry heath). Sphagnum mosses prefer waterlogged conditions, are vulnerable to fire and excessive trampling/grazing.

The Sedge/Herb layer includes sedge species that typically favour waterlogged conditions and enhance vegetation structure growing in tall dense clumps but may become dominant in fields with increased drainage. Common peatland sedges may include Deergrass, Bog cotton, Black bog rush and White-beaked sedge. The herb layer usually contains a variety of low growing flowering species and should be present throughout a peatland plot. Herb species commonly occurring within peatland fields include Sundew, Lousewort, Bog asphodel, Bog bean, Tormentil, Milkwort and Butterwort. The herb layer tends to be more palatable to livestock and is particularly vulnerable to damage from grazing.

The Shrub layer on peatland fields make an important contribution to vegetation structure. Ling heather is one of the most common shrubs found in peatland habitats. Other shrubs commonly found on peatland sites include western Gorse, Bilberry, bell heather and cross leaved heath. Shrubs should not be of uniform size and structure. A peatland plot considered to be in good condition should exhibit shrubs at various growth stages. Tall, woody and leggy (degenerate) ling heather throughout the site may be an indication of under-grazing, while ling

heather with a short, tight structure and little or no flowering indicates over-grazing.

Note: Dry heath may be naturally well-drained and should score well unless new or maintained drains are evident. If dry heaths are in good condition the cover of heather should be high and the sphagnum moss may be rare, but branched mosses will be abundant.

Non-crustose bushy lichens layer such as Cladonia lichens (if occurring frequently) are slow-growing indicators of a healthy intact peatland with little disturbance.

Guidance for scoring A3:

This is an assessment of the entire plot, all of which needs to be walked before calculating the final score. On large fields it is likely that several habitats in a range of conditions and with a variety of pressures will be present and the vegetation structure assessment assigned must take this into account (Figure 7).

Note: If a plot is incredibly wet (quaking) and comprised mostly of sedges, grasses, and mosses, it is likely to be a fen and should be scored with the peatland scorecard. Whilst these fields can be small, lowland, enclosed, and feature wooded margins, the positive indicators and structure will be more like peatland habitats than grassland habitats and should be scored accordingly.

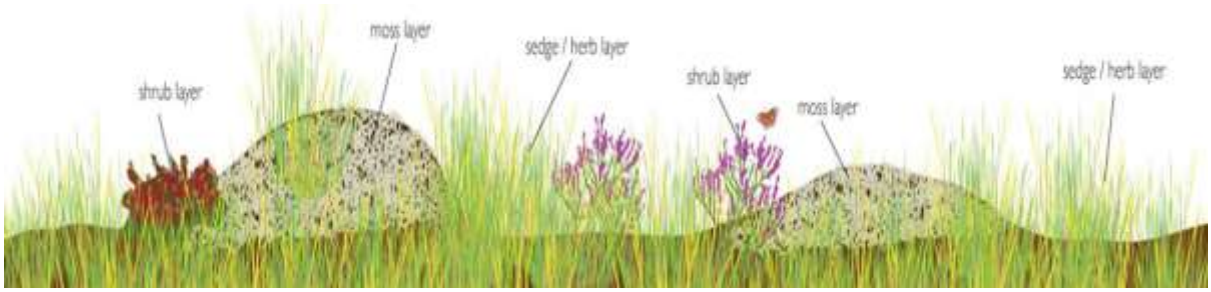

Figure 7: The composition of different layers encountered on peatland sites

Thresholds for scoring A3:

Overgrazed: Vegetation height is uniformly low. Little or no heather present on wet heaths. Often lacking moss and dwarf shrub layer.	-15
Moderate (over-grazed): Significant areas (>25%) of the plot have low uniform vegetation, although not throughout.	10
Good: Sward in good condition; abundant grass and sedge-like vegetation on blanket bog with hummock, hollow, and pool complexes. On heath, all stages of heather/shrub growth present, mostly >30cm. Mix of bog and/or heath vegetation at various heights throughout. Well-structured vegetation with all three layers (moss, sedge/herb, and shrub) well represented.	30
Moderate (under-grazed): Significant areas (>25%) of the plot have rank vegetation although not throughout.	15
Under-grazed: Rank sward. Purple moor-grass/mat-grass and rank senescent heather dominating. Litter cover high, thatch forming in large continuous patches. Poorly developed ground layer.	-10

6.2 Section B: Hydrological Integrity

B1 – Surface hydrology and artificial drainage features within the plot?

As peatlands are wetland habitats, water is the main factor influencing their health and condition. Peatlands require the water table to be close to the surface year-round. Drainage causes higher rates of water run-off and a drying out of the bog surface due to lowering of the water table. Dry peat breaks down due to interactions with oxygen in the air and is lost as carbon-dioxide emissions and biogeochemical processes can result in the loss on nutrients (in the form of ammonium) to water. Dry areas can also no longer sustain sensitive peatland species.

When the water table is close to the surface, peatlands can provide important ecosystem services including: storage and accumulation of carbon (in the form of peat), water regulation (incl. lowland flood alleviation), and support of biodiversity.

The effects of past peat cutting and artificial drainage are the most common factors to be considered when assessing hydrological integrity. However, the disturbance effects of past grazing, vehicle use, or related activities may also give rise to degraded peatland hydrology particularly in upland sites. Hydrological

effects are often long lasting and may be irreversible. The presence of other features that can cause drying out of the bog surface due to drainage effects also need to be considered such as roads, peat extraction, past quarrying and digging.

Guidance for scoring B1:

The advisor should locate and assess water table levels in any open drains, including those located both within the plot and around the perimeter. The depth to water within the drain should be measured from the top of bank/ground level.

Thresholds for scoring B1:

Significantly altered bog/heath hydrology: Frequent widespread free-flowing drains on plot with notable effect on surrounding vegetation of bog/heath. >20% of plot affected.	-30
Moderately altered bog/heath hydrology: Free flowing drains in plot with notable effect on surrounding vegetation of bog/heath. <20% of plot affected.	-15
Slightly altered bog/heath hydrology: Drains present in plot although are somewhat impeded and little effect on surrounding bog/heath.	0
Moderately intact bog/heath hydrology: Bog/heath surface largely intact, although some evidence of historic disturbance (cutting, drainage, erosion channels) across any part of plot. Vegetation and hydrology largely recovered/stabilised.	20
Intact bog/heath hydrology: Intact bog/heath surface, no evidence of past drainage or disturbance across plot.	40

* Note: A classification of 'Intact bog/heath hydrology' is only appropriate for pristine sites that have never been subject to any human modification.

6.3 Section C: Threats & Pressures

C1 – Is there any evidence of damaging activities to the habitat or vegetation throughout the plot?

Damaging activities are those which have potential to reduce the ability of the plot to provide ecosystem services, either currently or in the future, and the resulting benefits provided to water quality and ecosystem health.

Guidance for scoring C1:

The advisor should consider both the extent and severity of damage to the habitat, vegetation and/or other relevant features within the plot. There may be multiple damaging activities occurring within the area being assessed. The type(s) of damaging activity identified should be indicated on the scorecard by using the checkbox list provided. Scoring is based on both the severity of the damaging activity identified and the proportional area (%) of the overall riverside habitat impacted.

Areas of the plot within 20 m of any watercourse should be excluded from this assessment. Any damaging activities within the riverside habitat will be assessed under C9.

Thresholds for scoring C1:

High: Damage occurring across a large area (≥21%) or of a serious nature if confined.	-30
Moderate: Damage occurring across a moderate area (≥6-20%) or of a moderate nature if confined.	-20
Low: Damage occurring. across a small area (≤5%) or of a minor nature if confined.	-10
None: No damaging activities.	0

C2 – What is the extent of bare soil & erosion throughout the plot?

Peat soils are especially vulnerable to damage caused by livestock trampling, vehicle movements or other activities such as peat cutting. In estimating the extent of bare soil within a peatland, it is necessary to include bare peat from all these activities.

On peatland (and heath) habitats, the presence of bare peat is an indicator of habitat degradation. Bare peat may be widespread in areas where stocking levels are too high and in the most extreme cases can lead to sheet erosion and exposure of underlying mineral substrate. In areas of lower stocking rates, bare

peat is mostly concentrated along regularly used paths and in congregation areas.

In eroded peatland sites, only bare peat substrate that remains un-vegetated should be included (vertical faces can be excluded). The extent of exposed bedrock and clean weathered mineral substrate (loose stones, gravel etc.) occurring in these areas should not contribute to the outcome of this assessment.

Guidance for scoring C2:

When walking a plot, make regular note of bare soil patches and possible causes. Bare soil outside of trackways, feed sites, water troughs, damage caused by vehicle use or excessive poaching should also be noted.

Do not include naturally occurring bare surfaces (such as exposed rock or scree on hilly terrain) in the assessment of bare soil.

This section relates to the extent of bare soil across the entire plot rather than its potential as a source of risk to water quality, which may be limited to a small part of the plot and be dependent on other factors such as slope and proximity to surface waters. The presence of bare soil and erosion present within 20 m of the top of river bank is assessed separately under C9.

Thresholds for scoring C2:

High: Excessive areas of bare soil within the body of the field. Bare soil may also be extending out significantly from the main feed sites and/or water troughs and/or livestock access points, where poaching evident. Significant rutting and soil disturbance caused by vehicle/tractor access.	-20
Moderate: Bare soil mainly along regularly used stock routes or congregation areas, with minor soil loss occurring at a few points. Bare soil may extend a short distance beyond the main feed site and/or water points and/or livestock access points. Minor rutting and soil disturbance caused by occasional vehicle/tractor access may be present.	-10
Low: Bare soil more or less restricted to regular stock paths, 'pinch' points & small congregation areas. No soil loss.	0

C3(a) – Are non-native species present?

Non-native invasive species can have a serious impact on habitats. Invasive alien species such as Giant Hogweed, Rhododendron, Himalayan Balsam, Salmonberry and Japanese Knotweed commonly occur. Other examples that may be present include Montbretia, Gunnera, Cotoneaster etc.

Guidance for scoring C3(a):

Advisors should assess the plot for the presence of any non-native invasive species, noting the type and abundance. The advisor should note those species identified suing the checkbox list provided.

Thresholds for scoring C3(a):

Present:	-10	Absent:	0

C3(b) – What is the cover of non-native invasive species throughout the plot?

Invasive species are non-native species that have a negative impact on an ecosystem when introduced. Certain species can dominate riverside areas, thereby displacing native vegetation and altering riverside habitats. Furthermore, certain species can increase the risk of bare soils and streambank erosion over winter months (when they die back).

Guidance for scoring C3(b):

Advisors should assess the relative abundance of non-native invasive species across the entire plot in the context of the thresholds outlined below. Advisors should also indicate the various species encountered by using the checkbox list provided on the scorecard.

This assessment should cover the plot only. Any invasive species present with 20 m of the top of riverbank should be assessed under C8.

Thresholds for scoring C3(b):

High: Abundant. Some forming dense clumps, many seedlings.	-20
Moderate: Frequent. Some flowering, many seedlings present.	-10
Low: Scattered. Plants mostly small and not flowering.	-5
None: No non-native invasive species, or <5 self-sown conifers provided no other invasive species are present.	0

C4 – Is there any evidence of damage due to turbary activity

Turbary is the extraction of turf/peat from a peatland as a source of fuel. This impacts the vegetation, the level of bare soil, and hydrology of peatland habitats. It is important to note that this question only relates to whether turbary activity is occurring on site and its extent. The effects of the activity are assessed separately elsewhere on the scorecard (species occurrence, vegetation structure, structure hydrology, extent of bare soil etc.).

Guidance for scoring C4:

Note any active turf banks on the aerial photographs before you go out on site. Vertical-face cutting/hand-cutting has a much lower impact than sausage machine cutting so make note of the locations of active extractions and the mechanism of extraction. Sausage machine cutting, and high extraction levels will severely impact the site score. If the advisor is uncertain whether active peat cutting is taking place, then check with the farmer.

Thresholds for scoring C4:

High: Active peat cutting and associated works >10% of the plot affected. High proportion of bare peat due to peat extraction. Sausage machine cutting taking place in any part of the plot (regardless of the extent).	-30
Moderate: Active peat cutting (mechanical cutting from face-bank, hand cutting, milling etc.) and associated works <10% of the plot affected.	-10
Low: No evidence of peat cutting during the most recent season.	0

C5 – What is the extent of spreading immature scrub?

Scrub encroachment within a peatland plot can markedly impact the water table of the habitat, by intercepting rainfall and drying out peat soils during summer months and times of drought. This can result in a cycle of positive feedback where dried out peat is subsequently colonized by scrub species, which leads to further desiccation of surrounding peat encouraging additional scrub encroachment.

The main spreading scrub species on peatland include gorse, willow and birch. The cumulative cover of spreading scrub proportional to the plot area should be used to score the extent and severity of the issue.

Guidance for scoring C5:

The advisor should walk the plot as to identify areas of spreading immature scrub. The measure is based on the area of any spreading immature scrub as a proportion (%) of the overall plot. This is a non-numerical attribute, with descriptive thresholds only (see below). The advisor should refer any results of 'Moderate' or above directly to the project team for follow-up.

Thresholds for scoring C5:

High: Gorse-dominated scrub occurring throughout the site or concentrated in large areas.	☒
Moderate: Small areas of gorse-dominated scrub occur occasionally throughout the site.	☒
Low: Little or no scrub present.	☐

C6 – What is the cover of bracken throughout the plot?

Bracken is a large fern which can spread quickly and persist due to underground rhizomes. Where Bracken forms dense stands, shading and litter deposition can suppress the growth of other plants, reducing the species richness of these areas. Additionally, bracken can negatively impact water quality and soil carbon stocks by altering soil chemistry and carbon turnover.

Guidance for scoring C6:

The advisor should assess the entire plot for the presence of Bracken. The extent and density of Bracken may be difficult to determine in May or June as the fronds will not have fully unfurled, although it is possible to get a good idea of its distribution from the quantity of dead Bracken litter present.

This is a non-numerical attribute, with descriptive thresholds only (see below). The advisor should refer any results of 'Moderate' or above directly to the project team for follow-up.

Thresholds for scoring C6:

High: Very dense stands of bracken covering over half or more of the plot, forming closed canopy.	☒
Moderate: Bracken forming dense stands covering parts of the plot, mostly forming closed canopy.	☐
Low: Bracken absent or some scattered fronds and none forming closed canopy. Can include some isolated small patches or some larger patches on steep slopes.	☐

C7 – How stable is the riverbank?

Stable riverbanks are generally well covered with vegetation, or held together with tree roots, and consequently shows little sign of erosion. Riverbank erosion can occur naturally (e.g., due to occasional large floods); however, streams in their natural state tend to have fairly stable riverbanks.

Guidance for scoring C7:

The assessment area is the bank face (Figure 2**Error! Reference source not found.**). The advisor should assess accessible bank face for erosion, as indicated by bare earth, or other evidence of bank collapse. It is important to look for areas of the riverbank showing signs of undercutting and any cracks close to the bank edge parallel to the stream. Any evidence of erosion indicates riverbank instability.

Thresholds for scoring C7:

Poor: Bank unstable of loose soil, which is easily disturbed. Significant areas of banks cut away, undercut or showing erosion scars.	-10
Moderate: Bank moderately stable (not easily disturbed). Infrequent small areas of erosion mostly healed over.	-5
Good: Bank largely stable, held firmly by grasses, shrubs and tree roots.	0

C8 – What is the cover of non-native invasive species within the riverside habitat?

Invasive species are non-native species that have a negative impact on an ecosystem when introduced. Certain species can dominate riverside areas, thereby displacing native vegetation and altering riverside habitats. Furthermore, certain species can increase the risk of streambank erosion over winter months (when they die back).

Guidance for scoring C8:

The assessment area is the 20 m from top of bank directly out into the plot. In addition to assessing the cover of non-native invasive species, advisors should also indicate the various species encountered by using the checkbox list provided on the scorecard. For assistance in identifying species, once again refer to www.invasives.ie.

Thresholds for scoring C8:

High: Abundant. Some forming dense clumps, many seedlings.	-30
Moderate: Frequent. Some flowering, many seedlings present.	-20
Low: Scattered. Plants mostly small and not flowering.	-10

None: No non-native invasive species, or <5 self-sown conifers provided no other invasive species are present.	0

C9 – Is there any evidence of damaging activities or bare soil within the riverside habitat?

Damaging activities are those which have potential to reduce the ability of the riverside habitat to provide ecosystem services, either currently or in the future, and the resulting benefits provided to water quality and ecosystem health.

Guidance for scoring C9:

The assessment area is the 20 m from top of bank directly out into the plot. Consider both the extent and severity of damage to the habitat, vegetation and/or other relevant features within the riverside habitat. There may be multiple damaging activities occurring within the area being assessed. The type(s) of damaging activity identified should be indicated on the scorecard by using the checkbox list provided. Scoring is based on both the severity of the damaging activity identified and the proportional area (%) of the overall riverside habitat impacted.

Thresholds for scoring C9:

High: Damage occurring across a large area (≥21%) or of a serious nature if confined.	-30
Moderate: Damage occurring across a moderate area (≥6-20%) or of a moderate nature if confined.	-20
Low: Damage occurring. across a small area (≤5%) or of a minor nature if confined.	-10
None: No damaging activities.	0

C10 – What is the extent of gorse along the riverside habitat?

Gorse can dominate in riverside areas under certain conditions, where it forms dense thickets that crowds out other native vegetation. In these scenarios of excessively high cover (>75% of riverbank), gorse can alter riverside habitats, and can also affect stream ecology due to excessive shading of the streambed, as well as denuding the understory vegetation along the riverbanks (riverbanks underneath gorse tend to be largely devoid of ground cover). Finally, gorse is a leguminous plant and is a nitrogen (N) fixing species; therefore, it can also act as a source of nutrients to receiving waterways.

Guidance for scoring C10

The assessment area is inside the fenced 20 m from top of bank directly out into the plot.

This is a non-numerical attribute, with descriptive values only (see below). The advisor should refer any 'High' results directly to the project team for follow-up.

Thresholds for scoring C10:

High: Gorse dominating throughout the plot (>75% cover).	☒
Moderate: Gorse occurs frequently throughout the plot (25–50% cover).	☐
Low: Scattered presence or no gorse present (<25% cover).	☐

6.4 Management recommendation(s)

When undertaking the assessment, the advisor should be considering what management recommendations/actions might help address any issues identified and the options available for the landowner to increase their habitat scores.

A checkbox list of potential management options is included at the bottom of the scorecard. The list of options provided is not exhaustive and any management recommendations made should be noted in the text box. Consideration should

be given to where Supporting Measures (Appendix I) could be implemented to improve habitat quality.

The advisor should also note any specific items requiring follow-up by the project team.

7 Scrub/Woodland Scorecard

The scrub and woodland scorecard should be used in plots where established scrub or woodland habitats dominate. The advisor should tick the appropriate box on the scorecard to indicate the habitat type being assessed (scrub or woodland). For the purposes of the assessment the following definitions apply:

- **Scrub:** areas that are dominated by at least 50% cover of shrubs, stunted trees or brambles.
- **Woodland**: canopy generally greater than 5 m in height, or 4 m in the case of wet or bog areas.

The advisor should confirm whether the plot lies on mineral or peat soils. Peat based soils are easily identifiable by the black colour and absence of mineral constituents.

The advisor should estimate river flow at the time of the assessment:

- Low: below median flow. Dried plant and algal material may be visible on substrate on the non-wetted bed.
- Normal: median (average-type) flow.
- Above normal: higher fresh/flood flows, and often murky water will obscure the bed and much of the bank face(s). Where possible, advisors should aim to avoid assessments during such periods due to health and safety concerns.

River flows/levels for the nearest hydrometric site(s) are available on HydroNet (https://epawebapp.epa.ie/hydronet).

7.1 Section A: Ecological Integrity

Firstly, the advisor should select the relevant scoring category for A1 on the basis of the initial assessment of the habitat (i.e. is it 'scrub' or 'woodland'). For scrub habitat, the advisor should score measure A1 using the A1-S criteria, or use A1-W for woodland habitat.

A1-S – For scrub dominated plots: which description best describes the diversity and structure of the scrub present?

Identify and record each woodland/scrub species or group present, referring to a plant identification key and other training material where necessary (https://www.watersoflife.ie/app/uploads/2025/06/WoL-Woodland-Species-Identification.pdf). The variety of positive indicator species present within a plot may differ throughout the site depending on the type of habitat and soil type present. The more diverse the scrub or woodland, the higher the contribution to plant diversity.

Guidance for scoring A1-S:

The advisor should walk the plot to identify the species present and to assess the overall structure. It may not be possible to walk a 'W' in dense scrub habitat. If there are pathways through the scrub, they should also be walked to assess threats or pressures and assess the overall management of the plot.

Tick all species identified on the checkbox list provided on the scorecard. The score for this measure is determined by the number of native species identified in the plot and the variation in height/structure of the vegetation.

Thresholds for scoring A1-S:

Poor: Gorse-dominated scrub.	0
Moderate: Two native species from the table above.	30
Good: Three native species from table above common throughout plot.	50
Very good: Four or more native species from table above common throughout plot. Variation in vegetation height and structure throughout.	70

A1-W – For Woodland dominated plots

Woodlands are sub-divided into three principal vegetation layers; the canopy layer, shrub layer, and field layer (Figure 8). The structure of a woodland is a key determinant of the habitat value of the plot. Woodlands with higher structural diversity are likely to contribute to increased biodiversity. In deciduous woodland it may be difficult to identify all three woodland layers, particularly where livestock grazing reduces the structural extent of the shrub and field layers.

The advisor should walk the plot to identify the species present and to assess the overall structure. It may not be possible to walk a 'W' in dense woodland habitat. If there are pathways through the woodland, they should also be walked to assess threats or pressures and assess the overall management of the plot.

Tick all species identified on the checkbox list provided on the scorecard.

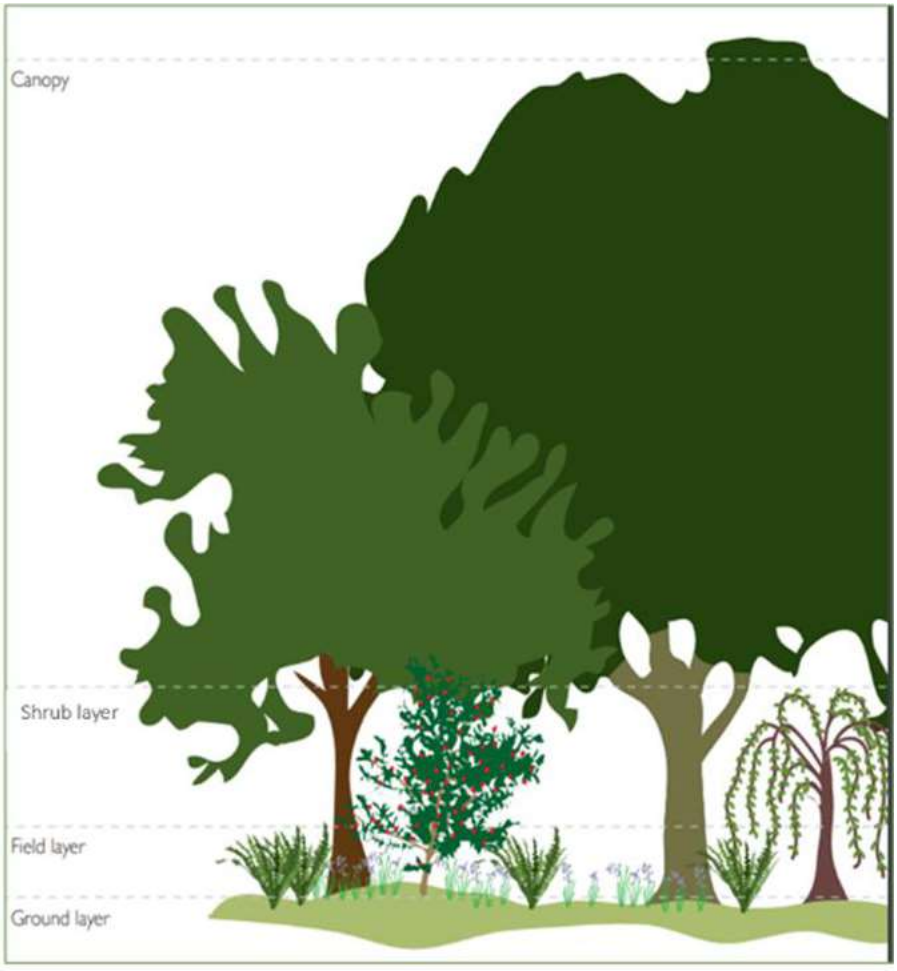

Figure 8: Typical woodland layers

Guidance for scoring A1-Wa

A1-Wa assesses the quality of the canopy layer of the woodland within the field. The canopy refers to the uppermost layer of a woodland, constituted by the leaves and branches of mature trees which interrupt incoming sunlight. There may be occasional gaps within the canopy layer due to tracks/roadways, rock outcrops, streams, ponds, etc.

Guidance for scoring A1-Wb

A1-Wb assesses the quality of the shrub layer of the woodland within the field. The shrub layer occurs below the canopy layer and above the field layer. This consists of young or low growing trees including Rowan, Holly, hawthorn, Hazel and other shrub species which can tolerate the reduced level of light penetrating the canopy layer. Shrubs such as heathers and Bilberry may occur in woodlands associated with peat soils. Rhododendron infestation may dominate the shrub layer in some woodland fields adversely impacting the shrub layer, while over grazing can result in the complete absence of the shrub layer.

Guidance for scoring A1-Wc

A1-Wc assesses the quality of the field layer of the woodland within the plot. The field layer is often well developed within deciduous woodland and is dependent on the dominant tree species occurring within a plot. Areas with greater light penetration or clearings are likely to have a more diverse layer. The field layers may include species such as woodrushes, ferns, grasses, mosses, bramble, Bracken and flowering species such as meadowsweet, wood sorrel, lesser celandine, herb-robert, bluebell and primrose.

Thresholds for scoring A1-W:

Wa – Which description best describes the woodland canopy layer		**Wb** – Which description best describes the woodland shrub layer?		**Wc** – Which description best describes the woodland field layer?	
Poor: Native woodland with frequent non-native (*conifer or deciduous*) trees present.	0	Shrub layer absent or consists of non-native species.	0	The field layer is absent or consist of non-native species.	0
Moderate: Native woodland with occasional non-native (*conifer or deciduous*) trees present.	15	Shrub layer present.	10	The field layer is present with low level of species and structural diversity	10
Good: Native woodland with no non-native (*conifer or deciduous*) trees present.	30	Well-developed shrub layer present.	20	Field layer supports good diversity of native species, with mosses, ferns and herbs present	20

7.2 Section B: Hydrological Integrity

B1 – To what extent are there any surface artificial drainage features within the plot?

Artificial drainage features in the plot are important as they may affect biodiversity by drying the soil. Drainage features often provide ecosystem services in their own right, but may also affect downstream habitats by providing pathways for nutrient and sediment loss to watercourses, or for invasive species to spread.

Guidance for scoring B1:

The advisor should walk the length of any surface artificial drainage features within the plot. Faster and freely flowing drains will score lower than blocked or slow to non-flowing drains.

The EPA RiverNet features visible on the App (on which Waters of LIFE payments are calculated) should not be assessed as artificial drainage features.

Thresholds for scoring B1:

Functional: Drains predominantly free flowing (though may be dry at the time of survey), largely unvegetated and unblocked.	-30
Part functional: Drains present but flow is partially impeded (by vegetation etc.).	10
Non-functional: Drains absent or present but non-functioning. No flow, highly vegetated and/or dammed.	30

7.3 Section C: Threats & Pressures

C1 – Is there any evidence of damaging activities to the habitat or vegetation throughout the plot?

Damaging activities are those which have potential to reduce the ability of the plot to support a diversity of plant species or other beneficial features, either currently or in the future, and the resulting benefits provided to water quality and ecosystem health.

Guidance for scoring C1:

The advisor should consider both the extent and severity of damage to the habitat, vegetation and/or other relevant features within the plot. There may be multiple damaging activities occurring within the area being assessed. The assessment should exclude any area within 20 m adjacent to any watercourse (the riverside habitat). This area will be assessed separately under C6.

The type(s) of damaging activity identified should be indicated on the scorecard by using the checkbox list provided. Scoring is based on both the severity of the damaging activity identified and the proportional area (%) of the overall habitat impacted.

Thresholds for scoring C1:

High: Damage occurring across a large area (≥21%) or of a serious nature if confined.	-30
Moderate: Damage occurring across a moderate area (≥6-20%) or of a moderate nature if confined.	-20
Low: Damage occurring. across a small area (≤5%) or of a minor nature if confined.	-10
None: No damaging activities.	0

C2 – What is the extent of bare soil & erosion throughout the plot?

Soil can be subject to erosion, declining soil organic carbon, declining soil biodiversity, and soil contamination (by heavy metals and pesticides, or excess nitrates and phosphates). Bare soil can also result in soil loss and be a significant source of sediment loss to watercourses.

Guidance for scoring C2:

When walking a plot, make regular note of bare soil patches and possible causes. Bare soil outside of trackways, feed sites, water troughs, damage caused by vehicle use or excessive poaching should also be noted.

This section relates to the extent of bare soil across the entire plot rather than its potential as a source of risk to water quality, which may be limited to a small part of the plot and be dependent on other factors such as slope and proximity to surface waters. The presence of bare soil and erosion present within 20 m of the top of river bank is assessed separately under C6.

Do not include naturally occurring bare surfaces (such as exposed rock or scree on hilly terrain) in the assessment of bare soil.

Thresholds for scoring C2:

High: Excessive areas of bare soil within the body of the field. Bare soil may also be extending out significantly from the main feed sites and/or water troughs and/or livestock access points, where poaching evident. Significant rutting and soil disturbance caused by vehicle/tractor access.	-30
Moderate: Bare soil mainly along regularly used stock routes or congregation areas, with minor soil loss occurring at a few points. Bare soil may extend a short distance beyond the main feed site and/or water points and/or livestock access points. Minor rutting and soil disturbance caused by occasional vehicle/tractor access may be present.	-10
Low: Bare soil more or less restricted to regular stock paths, 'pinch' points & small congregation areas. No soil loss.	0

C3 – What is the cover of non-native invasive species throughout the plot?

Invasive species are non-native species that have a negative impact on an ecosystem when introduced. Certain species can dominate riverside areas, thereby displacing native vegetation and altering riverside habitats. Furthermore, certain species can increase the risk of streambank erosion over winter months (when they die back).

Guidance for scoring C3:

Advisors should assess the relative abundance of non-native invasive species across the entire plot in the context of the thresholds outlined below. Advisors should also indicate the various species encountered by using the checkbox list provided on the scorecard. For assistance in identifying species, once again refer to www.invasives.ie.

This assessment should cover the plot only. Any invasive species present with 20 m of the top of riverbank should be assessed under C5.

Thresholds for scoring C3:

High: Abundant. Some forming dense clumps, many seedlings.	-20
Moderate: Frequent. Some flowering, many seedlings present.	-10
Low: Scattered. Plants mostly small and not flowering.	-5
None: No non-native invasive species present.	0

C4 – How stable is the riverbank?

Stable riverbanks are generally well covered with vegetation, or held together with tree roots, and consequently shows little sign of erosion. Riverbank erosion can occur naturally (e.g., due to occasional large floods); however, streams in their natural state tend to have fairly stable riverbanks.

Guidance for scoring C4:

The assessment area is the bank face (Figure 2). The advisor should assess accessible bank face for erosion, as indicated by bare earth, or other evidence of bank collapse. It is important to look for areas of the riverbank showing signs of undercutting and any cracks close to the bank edge parallel to the stream. Any evidence of erosion indicates riverbank instability.

Thresholds for scoring C4:

Poor: Bank unstable of loose soil, which is easily disturbed. Significant areas of banks cut away, undercut or showing erosion scars.	-10
Moderate: Bank moderately stable (not easily disturbed). Infrequent small areas of erosion mostly healed over.	-5
Good: Bank largely stable, held firmly by grasses, shrubs and tree roots.	0

C5 – What is the cover of non-native invasive species along the riverside habitat?

Invasive species are non-native species that have a negative impact on an ecosystem when introduced. Certain species can dominate riverside areas, thereby displacing native vegetation and altering riverside habitats. Furthermore, certain species can increase the risk of streambank erosion over winter months (when they die back).

Guidance for scoring C5:

The assessment area is the 20 m from top of bank directly out into the plot. In addition to assessing the cover of non-native invasive species, advisors should also indicate the various species encountered by using the checkbox list provided on the scorecard. For assistance in identifying species, once again refer to www.invasives.ie.

Thresholds for scoring C5:

High: Abundant. Some forming dense clumps, many seedlings.	-30
Moderate: Frequent. Some flowering, many seedlings present.	-20
Low: Scattered. Plants mostly small and not flowering.	-10
None: No non-native invasive species present.	0

C6 – Is there any evidence of damaging activities or bare soil within the riverside habitat?

Damaging activities are those which have potential to reduce the ability of the riverside habitat to provide ecosystem services, either currently or in the future, and the resulting benefits provided to water quality and ecosystem health.

Guidance for scoring C6:

The assessment area is the 20 m from top of bank directly out into the plot. Consider both the extent and severity of damage to the habitat, vegetation and/or other relevant features within the riverside habitat. There may be multiple

damaging activities occurring within the area being assessed. The type(s) of damaging activity identified should be indicated on the scorecard by using the checkbox list provided. Scoring is based on both the severity of the damaging activity identified and the proportional area (%) of the overall riverside habitat impacted.

Thresholds for scoring C6:

High: Damage occurring across a large area (≥21%) or of a serious nature if confined.	-30
Moderate: Damage occurring across a moderate area (≥6-20%) or of a moderate nature if confined.	-20
Low: Damage occurring. across a small area (≤5%) or of a minor nature if confined.	-10
None: No damaging activities.	0

C7 – What is the extent of gorse along the riverside habitat?

Gorse can dominate in riverside areas under certain conditions, where it forms dense thickets that crowds out other native vegetation. In these scenarios of excessively high cover (>75% of riverbank), gorse can alter riverside habitats, and can also affect stream ecology due to excessive shading of the streambed, as well as denuding the understory vegetation along the riverbanks (riverbanks underneath gorse tend to be largely devoid of ground cover). Finally, gorse is a leguminous plant and is a nitrogen (N) fixing species; therefore, it can also act as a source of nutrients to receiving waterways.

Guidance for scoring C7

The assessment area is inside the fenced 20 m from top of bank directly out into the plot.

This is a non-numerical attribute, with descriptive values only (see below). The advisor should refer any 'High' results directly to the project team for follow-up.

Thresholds for scoring C7

High: Gorse dominating throughout the plot (>75% cover).	☒
Moderate: Gorse occurs frequently throughout the plot (25–50% cover).	☐
Low: Scattered presence or no gorse present (<25% cover).	☐

7.4 Management recommendation(s)

When undertaking the assessment, the advisor should be considering what management recommendations/actions might help address any issues identified and the options available for the landowner to increase their habitat scores.

A checkbox list of potential management options is included at the bottom of the scorecard. The list of options provided is not exhaustive and any management recommendations made should be noted in the text box. Consideration should be given to where Supporting Measures (Appendix I) could be implemented to improve habitat quality.

The advisor should also note any specific items requiring follow-up by the project team.

Appendix I: Supporting Actions

Ref	Action Name	Min	Max	Unit	Payment Rate
Farm Infrastructure					
01	Permanent Single Strand Electric	5	2000	m	€2.77
02	Sheep Fence	5	2000	m	€6.75
03	Sheep Fence Mountain Rate	5	2000	m	€11.25
04	Barb Wire Fence	5	2000	m	€4.50
05	Deer Fence	5	2000	m	€22.50
06	Solar Powered Electric Fencer	1	2	unit	€634
07	Gateway Measures	1	10	unit	€360
Pathway Interception Measures					
08	Waters Bars	1	10	unit	€213
09	Vegetated Bunded Drain	1	3	unit/yr	€1000
10	Earth Bund	1	5	25mx0.5m	€300
11	Sediment Trap	1	3	unit/yr	€120
12A	Hedgerow Establishment- with earth bund	10	250	m	€24.37
12B	Hedgerow Establishment – without earth bund	10	250	m	€21.17
13	Grassland Buffer Cross-slope	10	100	m	€5.45
14A	Spatially Targeted Riparian Buffer 0.01-0.04ha	1	5	unit	€400 / €228*
14B	Spatially Targeted Riparian Buffer 0.05-0.1ha	1	5	unit	€915/€418*
14C	Spatially Targeted Riparian buffer 0.11 to 0.2ha	1	5	unit	€1,656/787*
15	Tree Planting	5	100	whip	€16
16	Willow Beds	30	200	m	€34
17	Small Scale Wetland Pond	1	3	unit	€800 / €627

Watercourse Crossing					
18	Culvert	1	5	unit	€500
19	River, Stream Crossing/Bridge	1	1	50% of cost	Max €5000
Water Provision					
20	Solar Pump	1	2	unit	€2500
21	Water Storage Tank	1	2	unit	€400
22	Pasture Pump	1	5	unit	€400
23	Water Trough	1	5	unit	€300
24	Water supply piping and fittings	1	n/a	unit	€150
Removal of Invasive Species					
25	Removal of Non Native Invasive Species	Case by case basis			
Other Supporting Actions					
26	Water Table Management on Peat soils	Direct payment by project			
27	Green Hay	1	5	ha	€250
28	Contractor Mobilisation Fee	1	1	applicant	€200
29	Bespoke Measures	Case by case basis			
30	Host Farmer Payment	1	5	event	€180