

Taking an Integrated Approach to Farm Planning:

Module 8: Intensive Winter Grazing

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1.0 Overview

Purpose

This updated Intensive Winter Grazing Module will help you plan, do, check and review your intensive winter grazing management. Importantly, it outlines your requirements under the regulations. There are helpful templates, flowcharts and links at the back of the document. If you have any questions, please contact your farm adviser, regional council officer, or MPI's On Farm Support team.

What is Intensive Winter Grazing (IWG)? IWG is a farming practice where livestock (cattle, sheep, and deer) are confined to paddocks between 1 May and 30 September that are planted in annual forage crops¹. It includes preparation of land for cultivation and the grazing of crops. If done poorly, the practice can have serious negative effects on water quality and animal welfare.

IWG has the potential to release high levels of nutrients, sediment and microbial pathogens into waterways. To help manage the risks, the Government introduced the National Environmental Standards for Freshwater 2020 (NES-F) as part of its Essential Freshwater package. Intensive winter grazing regulations apply from 1 November 2022. Details of these regulations and how to meet them are provided in section 2.0.

Why is good IWG management important?

As a farmer, you have a vital role to play in protecting the health of our catchments through what you do on the land. The health of your catchment is important to your community for many reasons. Rivers are places people fish and gather food, and swim. Rivers and groundwater are also sources of drinking water for communities.

Your regional council may already have some controls on IWG practices that go beyond the requirements of the national IWG regulations. Some farms may already have resource consents in place. Please contact your regional council for further information and update your farm plan to incorporate your regional plan rules and any consent conditions.

Support is available through your regional council, industry bodies, and farm advisory professionals, including MPI's On Farm Support team. We encourage you to get in touch with the organisation you know best. Links can be found at the end of this document.

¹ A crop, other than pasture, that is grazed in the place where it is grown. Examples include swedes, kale and fodder beet. It excludes annual ryegrass as this is considered pasture.

We must all manage land in a way that gives effect to Te Mana o te Wai locally. Te Mana o te Wai is the fundamental concept that underpins freshwater management in New Zealand and gives priority to achieving freshwater outcomes (refer to the National Policy Statement for Freshwater Management 2020; NPS-FM for further information). The top priority is the health and wellbeing of water bodies and freshwater ecosystems. This must be assured before enabling human use for (second priority) human health needs (e.g. drinking) or (third priority) economic, cultural, social, and recreational needs.

To give effect to Te Mana o te Wai, regional councils will set limits on contaminants and develop rules for the use of land and freshwater in their new Land and Water Regional Plans. These plans need to be completed by regional councils by 31 December 2024 (Otago by December 2023). Throughout this process councils will be working with tangata whenua and communities to set catchment objectives and values.

This will have important implications for how land and resources are managed within your catchment.

Improving IWG practices on your farm:

1. Plan early before planting your winter forage crop
2. Will intensive winter grazing on your farm meet the permitted activity conditions?
3. If you can't meet the permitted activity conditions, can you change your farm management practices so you do?
4. Do you require a resource consent?
5. How will you mitigate adverse effects?

Key considerations:

1. Landscape vulnerability
2. Slope
3. Critical source areas – identify and protect
4. Farm management practices – grazing intensity, stock density, stock type, etc.

2.0 What do the regulations require?

The Resource Management (National Environmental Standards for Freshwater) Regulations 2020 (NES-F) include regulations which manage intensive winter grazing (NES-F IWG regulations 26–31). The below section covers the permitted activity conditions and specific obligations for pugging and ground cover.

For a full overview of IWG regulations, including intensification rules and existing use rights, check out the IWG Factsheet on the Ministry for the Environment website www.environment.govt.nz/publications/intensivewinter-grazing-factsheet/

The regulations apply to the following activities and associated discharges:

- the use of land on a farm for IWG; and
- the discharge of a contaminant into or onto land, including in circumstances that may result in the contaminant entering water, if the discharge is associated with the use of land on a farm for IWG.

The regulations apply to farms comprising 20 hectares or more of pastoral or arable land use.

If you are using land for IWG, please be prepared to provide any information reasonably required by a regional council enforcement officer for the purpose of monitoring compliance with the pugging and ground cover standards and the permitted activity conditions (below). A winter grazing plan will help with this and may mean you have information at hand, if requested.

2.1 Will I need a resource consent for Intensive Winter Grazing?

Many farmers are already well prepared with existing plans that go beyond what is included in this module and required by the regulations. This includes identifying risks and options to manage and mitigate them. The best time to think about your IWG practices is prior to sowing and before winter grazing begins. Ensure you have the right management and mitigation options planned and ready to use.

Before you consider what is permitted under the regulations for your intensive winter grazing activity, you must consider the temporary intensification regulations for IWG. That is, do you want to increase the area used for IWG when compared to the maximum land area that was used for IWG between 1 July 2014 and 30 June 2019 (the reference period)?

Temporary intensification standards (NES-F, regulations 29 and 30)

If you are looking to do more grazing than what you did in the reference period or start up a new grazing operation you will need resource consent. This is because the regulations limit the expansion of land for IWG. This requirement came into force on 1 July 2021. You do not need a resource consent for intensification of IWG if:

- land on the farm has been used for IWG between 1 July 2014 and 30 June 2019 (the reference period), and
- land used for IWG is no greater than the maximum area of land (in terms of hectares) used for IWG between 1 July 2014 and 30 June 2019 (the reference period).

The IWG intensification standards are temporary and last until notification of the relevant regional plan or regional policy statement giving effect to the NES-F, or 1 January 2025, whichever is sooner.

Permitted activity conditions

Table 1 sets out the conditions to undertake IWG as a permitted activity (without a resource consent, as long as the above temporary intensification conditions have been met). Read on to find out more about each of the permitted activity conditions.

Table 1: The NES-F permitted activity conditions

<p>NES-F Permitted Activity conditions</p> <p>Resource consent or certified freshwater farm plan (when available in your region) will be required if you <i>can't comply with all permitted activity conditions</i></p>	<p>Comply</p> <p>Yes/No</p>
<p>1. The area of the farm that is used for IWG must be no greater than 50 hectares or 10 percent of the area of the farm, whichever is greater.</p>	
<p>2. The slope of any land under an annual forage crop that is used for intensive winter grazing must be 10 degrees or less, determined by measuring the slope over any 20 m distance of the land.</p>	
<p>3. Livestock must be kept at least 5 metres away from the bed of any river, lake, wetland or drain, regardless of whether there is any water in it at the time.</p>	
<p>4. Between 1 May and 30 September of any year, in relation to any critical source area that is within, or adjacent to, any area of land that is used for intensive winter grazing on a farm:</p> <ul style="list-style-type: none"> (i) the critical source area must not be grazed; and (ii) vegetation must be maintained as ground cover across the entire critical source area; and (iii) maintaining that vegetation must not include any cultivation or harvesting of annual forage crops. 	

If you can comply with all four permitted activity conditions, and the temporary intensification conditions, IWG can be undertaken without a resource consent. But note that regional plan rules may be more stringent than national regulations. It's important to check with your regional council. Most regional councils have information on both regional and national rules for IWG on their website.

Freshwater Farm Plans have not yet been rolled out at the time of writing this module. Once available in your region they will provide an alternate pathway to a consent, provided that any adverse effects in relation to IWG are no greater than those allowed for under permitted activity conditions.

Area

Permitted Activity Condition (regulation 26(4)(a))

The area of the farm that is used for IWG **must be no greater than 50 hectares or 10 percent of the area of the farm**, whichever is greater.

- The area limit is intended to restrict the total area of a farm being used for IWG.
- If IWG is done in part of a paddock, only the area used for IWG (where livestock graze the annual forage crop, not the entire paddock) is included. For example, if you do IWG in a 5-hectare section of a 15-hectare paddock, only 5-hectares would be counted.
- The area condition applies to the total farm landholding (see definition of farm below). It includes ineffective areas within the farm not used for agricultural purposes, including forestry.

Farm means a landholding where activities include agriculture.

Landholding means 1 or more parcels of land (whether they are contiguous or not) that are managed as a single operation



Slope

Permitted Activity Condition (regulation 26(4)(b))

The slope of any land under an annual forage crop that is used for intensive winter **grazing must be 10 degrees or less**. This is determined by measuring the slope over any 20-metre distance of the land.

- Undertaking IWG on steeper slopes increases the risk of runoff into waterbodies. The risk rises significantly on slopes greater than 10 degrees, therefore a resource consent or certified Freshwater Farm Plan (once available) will be required. These will ensure a council can assess if impacts can be mitigated and managed and include conditions to address impacts if they can be.
- The area you choose for IWG must have a **maximum** slope of 10 degrees to meet the permitted activity condition. You cannot use the average slope across a paddock.
- The slope condition applies only to areas **where annual forage crop is being grazed**.² E.g. if you do not plant the IWG crop in areas of the paddock over 10 degrees, you will be within the permitted activity condition. Areas with a slope above 10 degrees fall outside the permitted activity conditions, and you will need to obtain a resource consent or a certified Freshwater Farm Plan to undertake IWG in these areas.

How to measure slope

- Slope is defined as the **maximum** slope (i.e. the elevation difference across any 20-metre distance) for any area being used for intensive winter grazing.
- You can measure the slope of a section of paddock using a clinometer smart phone app or similar tool.
- Check out Environment Southland's handy video on measuring slope here: **Tips on how to measure the slope of your paddocks – YouTube**
- **Note:** Slope is measured in different ways for the IWG and stock exclusion regulations (at paddock scale for IWG, at land parcel scale for stock exclusion). The IWG slope requirements are separate from the stock exclusion low slope map. The map can't be used to determine slope for IWG. Further information on the stock exclusion regulations can be found at **Stock exclusion regulations | Ministry for the Environment**.

² An annual forage crop under these regulations is any crop that is grazed in the place that it is grown but does not include pasture or crops grown for an arable or horticultural use.

Setbacks

Permitted Activity Condition (regulation 26(4)(d))

Livestock must be kept at least **5 metres away from the bed of any river, lake, wetland or drain (but does not include sub-surface drains)**, regardless of whether there is any water in it at the time.

- Keeping livestock out of waterways is required to meet IWG permitted activity conditions, this includes surface drains **but excludes sub-surface drains**, for IWG specifically. Sub-surface drains may need to be considered for certified Freshwater Farm Plans (once available in your region). Drains are defined in the regulations as below.

Drain in the NES-F for IWG means any artificial watercourse designed, constructed, or used for the drainage of surface water, but excludes artificial watercourses used for the conveyance of water for electricity generation, irrigation, or water supply purposes.

- The IWG setback rule is separate to the stock exclusion regulations, with different setbacks required for each (5 metres in the IWG regulations and a 3-metre setback in the stock exclusion regulations). Further information on the stock exclusion regulations can be found at [Stock exclusion regulations | Ministry for the Environment](#).

Critical Source Areas (CSAs)

Permitted Activity Condition (regulation 26(4)(e))

Between 1 May and 30 September of any year, in relation to any critical source area that is within, or adjacent to, any area of land that is used for intensive winter grazing on a farm:

- (i) the critical source area **must not be grazed**; and
- (ii) **vegetation must be maintained as ground cover** across the entire critical source area; and
- (iii) maintaining that vegetation **must not include any cultivation or harvesting** of annual forage crops.

- This means any critical source areas within your IWG paddocks must be left uncultivated and un-grazed over the winter period between 1 May – 30 September.

The regulations define CSAs as:

A landscape feature such as a gully, swale, or depression that:

- (a) accumulates runoff from adjacent land; and
- (b) delivers, or has the potential to deliver, 1 or more contaminants to 1 or more rivers, lakes, wetlands, or drains, or their beds (regardless of whether there is any water in them at the time)

- Refer to [section 4.0](#) for more information on how to identify and manage CSAs on your farm.

2.2 Specific obligations for pugging and ground cover

In addition to meeting the permitted activity standards or obtaining a resource consent to undertake IWG, there are specific obligations applying to pugging and ground cover. These duties require you to take measures to minimise the effects of pugging and bare ground, based on your farm operation. These duties do not influence your ability to apply for resource consent, but they do mean:

- A failure to meet the pugging and ground cover standards allows councils to issue abatement notices and enforcement orders, or undertake prosecution based on non-compliance with regulations.
- A person using land for IWG must provide any information required by a regional council enforcement officer for the purpose of monitoring compliance with pugging and ground cover regulations. This might include a record of the steps you have undertaken to manage where soil is likely to become pugged or a record of when you can resow based on climate and soil temperature. Consider taking photographs before and after you have grazed your winter crop.

Pugging standard (regulation 26A)

1. A person using land on a farm for intensive winter grazing in accordance with regulation 26 **must take all reasonably practicable steps to minimise adverse effects on freshwater of any pugging** that occurs on that land.
2. A person using land under this regulation **must provide any information reasonably required by a regional council enforcement officer** for the purpose of monitoring compliance with this regulation.

- As the land manager responsible for the IWG areas of the farm, you must ensure all reasonably practicable steps are taken to minimise pugging.
- Check out [Consideration 4: soil type in section 4.0](#) for some information on how soil types can impact contamination of waterways and some suggestions for management practices that can help reduce both the contaminant sources (pugged, muddy soils) and transport pathways (connections to waterbodies).
- Document your plans, what you have done and consider taking photos at the start, throughout and the end.

Ground cover standard (regulation 26B)

1. A person using land on a farm for intensive winter grazing in accordance with **regulation 26** must ensure that **vegetation is established as ground cover over the whole area of that land as soon as practicable** after livestock have finished grazing the land.
2. A person using land under this regulation **must provide any information reasonably required by a regional council enforcement officer** for the purpose of monitoring compliance with this regulation.

- This means no ground should be left bare unnecessarily following grazing. A new crop, or pasture, should be sown as soon as possible, when weather conditions and the availability of machinery/contractors allow.
- Check out *Consideration 5: vegetative cover in section 4.0* for information on how ground cover can help reduce contamination of waterways and suggestions for sowing after winter grazing.
- Again, document your plans, what you have done and consider taking photos at the start, throughout and the end.

In Step 2: Do, there is a checklist to help with the actions you may need to take, to comply.

The flowchart below in Figure 1 can help you determine whether you need a resource consent or not. Refer to [IWG-Factsheet-INFO1067-Update-August-22-FINAL.pdf](#) (environment.govt.nz) for more information.



Figure 1: Flowchart for determining if a consent may be required



Note: Freshwater Farm Plans have not yet been rolled out at the time of writing this module so have not been included in this flowchart. **More information on FW-FPs** can be found on MfE's website.

3.0 Plan, Do, Check, Review to manage Intensive Winter Grazing

There are four important steps to make sure your farm system is well prepared. These are plan, do, check and review. By using these four steps, you can continue to manage and improve practices to contribute to restoring and protecting waterways, wetlands and estuaries.

It is important to note that if you have a resource consent for IWG, and you want to change what you had planned, you will need to check your consent conditions and ensure you continue to operate within these.

In practical terms, a well-planned wintering system will:

- Minimise soil and nutrient loss to the environment, especially your local waterways and wetlands, which are part of a wider catchment.
- Protect valuable topsoil by minimising or having no pugging.
- Plan for adverse weather events.
- Make it easier for your farming team to do the right thing.
- Follow your local regional council rules. Remember, not every regional council has the same rules on IWG. You must check with your regional council to see if there are extra things you need to do under your local regional plan.
- Promote good animal health and welfare. There is a practice guideline developed by the Pan-Industry Winter Grazing Action Group which provides helpful information. For more information go to: www.mpi.govt.nz/dmsdocument/41683-Short-term-expected-outcomes-for-animal-welfare
- Minimum requirements under animal welfare codes can be found here: www.mpi.govt.nz/welfarecodes Contact the Ministry for Primary Industries on 0800 00 83 33 for any animal welfare concerns.
- Talk to your veterinarian for advice on animal health and nutrition.

3.1 Step One: Plan

Plan your winter management and identify risks for your paddocks being grazed.

You need to have a simple and clear plan that is easily accessed, read and updated by your farm team. Very rarely do we get a 'normal' year in farming, so make sure you plan ahead for weather events, feed shortages and other adverse events. Check out the intensive winter grazing plan template in the Appendix.

Planning helps you to identify the risk factors for your farm and to identify actions to mitigate these. Contingency planning is important and will reduce stress on you, your farm team and your animals. Some key considerations are provided below, in no specific order, and there may be others you identify that are not in this list.

Consideration 1: Slope

Slope is a key vulnerability. Research shows that it is difficult to manage adverse effects to freshwater when IWG activity is on slopes greater than 10 degrees. Steeper slopes, particularly over greater distances, increase erosive energy and erodibility of exposed soil. This increases the speed of overland flow pathways which impacts contamination risks for P, sediment and E.coli losses from your winter forage crops.³

Note that from 1 November 2022 IWG on slopes above 10 degrees will require either a resource consent or a certified Freshwater Farm Plan. More information on the regulatory requirements can be found in section 2.0.

Ensure your farm maps include paddock slope. As a first step, you can start building up information by mapping the classes your paddock/s fall into:

- Class A-B Flat (0-7 degrees)
- Class C Rolling (8-15 degrees)
- Class D-E Easy Hill (16-25 degrees)
- Class F-G Steep Hill (26-35 degrees)

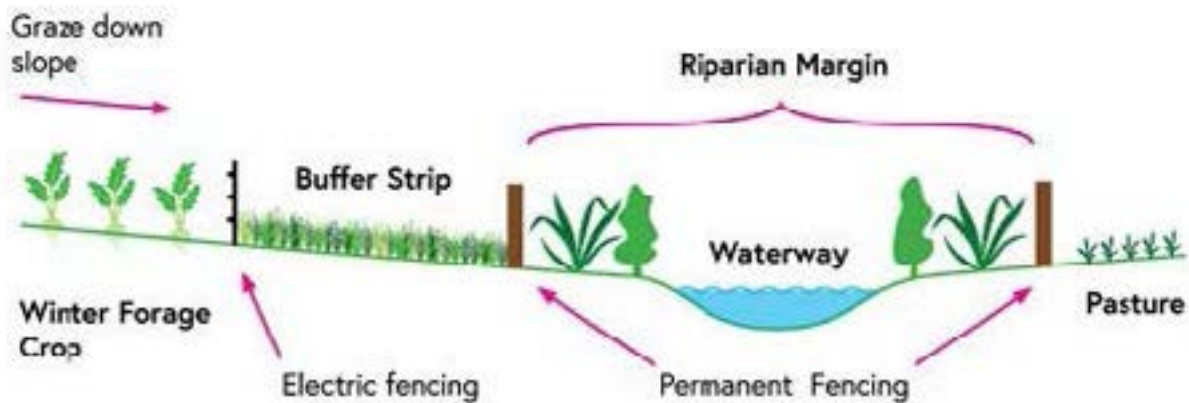
This will help you identify paddocks that could be considered for IWG to fit within the slope PA condition. However, further work is needed to identify suitable Class C land for IWG that is less than 10 degrees. Here are some useful links:

- <https://soils.landcareresearch.co.nz>
- <https://digitallibrary.landcareresearch.co.nz/digital/collection/p20022coll14/id/73>
- **MPI Erosion Susceptibility Classification**
- **Soil drainage map**

³ The rate of N loss is not as affected by slope because the predominant pathway for N loss is leaching, not overland flow. The risk of N loss is more likely to be impacted by soil type than slope.

The steeper the slope the greater the need for management and mitigation actions to manage the increased risk of contaminant loss. Steeper slopes are not as suitable for intensive winter grazing as lower slopes. It is also important when managing the risks associated with steeper slopes to remember that having a riparian margin is not the same as a buffer strip. See *Figure 2*.

Figure 2: Example of buffer strip and riparian margin



Source: Amuri Irrigation Company, 2021

Consideration 2: Critical Source Areas (CSAs)

CSAs are areas in your paddock/s or on your farm that can contribute disproportionately large amounts of nutrient and sediment loss to waterways. They are often wet areas such as gullies and swales, where overland surface runoff meets and can transport sediment and nutrients to ephemeral/intermittent water channels and waterways.

CSAs occur where there is a combination of a contaminant source and a surface transport pathway to a waterbody.

- IWG generates a contaminant source through the deposition of dung and urine in a concentrated area and by trampling of soil.
- Winter conditions (high rainfall, high levels of soil saturation) and landscape vulnerabilities (gullies, swales, depressions, etc) result in more frequent activation of surface transport pathways.

How to identify a CSA?

- The simplest way to identify CSAs is to undertake a walkover survey on your farm alongside aerial imagery. Consider reviewing the aerial imagery of your farm to identify CSAs then confirm these areas during your walkover. It is important to identify the full CSA landscape feature, not just part of it.
- This method involves walking around a paddock or farm, usually during wet weather, looking for runoff-generating areas and their connectivity to waterways, and marking this information on a map. Some signs to look for in your walkover survey are:
 - landscape features such as gullies, swales, depressions, or generally low points in the landscape where water collects. Compare your walkover map with aerial images to check any areas you may have missed. Any photos and aerial images can be added to your winter management plan.
 - Soils in these areas often stay wet for prolonged periods after heavy rain. There are two ways you can check soil moisture:
 1. A soil moisture probe can be used to determine differences in soil across the CSA, or
 2. Gumboots could be used to check if depressions made in the soil fill up with water.
 - In regularly saturated swales and depressions, a dark brown or black layer of material may be visible near the soil surface due to the slow breakdown of organic matter when soils are wet.
 - A lack of oxygen in frequently waterlogged soils may produce the smell of rotten eggs.

A closer look at managing CSAs:

These areas need to be identified on your map and fenced off (either using temporary fencing or permanent) between 1 May and 30 September. See section 4.0 for tips on identifying CSAs.

Protecting CSAs from contaminant sources (e.g. pugging, bare ground following grazing) is a key aspect of reducing their impact on waterways. Buffers can be used to help separate connections between CSAs and contaminant sources as well as help trap contaminants before they reach CSAs. The size of your buffer zone needs to reflect the degree of risk. The greater the risk the greater the buffer zone required.

However, it is important to note that with very high risk IWG even large buffer areas may be ineffective and overwhelmed in extreme weather events. In such cases, these locations are unlikely to be suitable for IWG.

Reducing contamination sources in general (minimising pugging and sediment loss) is always preferable rather than relying on buffers.

Figure 3 demonstrates how CSAs should be protected.

Figure 3: Example of critical source area protection



Source: DairyNZ, 2019

Possible management actions include, but are not limited to:

Pre-grazing

- **Appropriate paddock selection:** Heavy or poorly drained soils within CSAs are at greater risk of pugging and increased surface runoff due to winter grazing.
- **Establishing winter forage crops** with reduced tillage (e.g. no tillage, shallow non-inversion tillage, strip tillage) can reduce the risk of pugging and compaction during winter grazing. It would be good to note whether compaction may have already occurred if grazed prior to crop establishment using no-till systems.
- CSAs in winter crop paddocks should be left intact and **not sprayed, cultivated, or sown in crop.**
- **Establish buffer areas** around CSAs to capture and slowdown the contaminants (soil and faecal matter) to avoid or minimise its entry into the landscape feature. Note that the size of the buffer will depend on the level of risk posed by the IWG catchment area and if this has or can be mitigated. Refer to Consideration 2: waterways, groundwater and wetlands for further tips on effective buffer zones.

During grazing

- Livestock exclusion: to be a permitted activity livestock must be excluded from CSAs from 1 May to 30 September.
- Ground cover: the vegetation covering the critical source area during the winter grazing period **must not be** cultivated, harvested, or grazed.
- Consideration of **grazing direction** can minimise the risk of contaminant loss from non-CSA areas. Grazing towards the CSA location will maximise the buffering opportunity of the un-grazed crop still standing between the IWG activity and CSA.
- **Machinery and stock access points** should be located safely away from CSAs. These areas can become very muddy if frequently trafficked by vehicles or animals.
- **Grazing intensity:** in general, heavy soils are at greater risk of pugging, compaction, and structural damage. Consider only grazing lighter classes of stock on heavy soils during winter.
- **Back fence** to confine areas of damaged soil as much as possible. A back fence will reduce animal walking and therefore limit soil damage through unnecessary stock movement.

CASE STUDY: Unprotected CSA on (mostly) flat slope

Observe: In this example, surface runoff has accumulated in the compacted margins of the paddock, and surface flow runs through the paddock connecting the contaminants with a waterway (indicated by the blue arrow).

It is also recommended that vehicles are kept out of CSAs while they are wet to further prevent sediment runoff.

Review: Future winter grazing plans should exclude livestock from the paddock margins, preserving ground cover over winter. The area where the surface runoff enters a waterway should also be protected from grazing.



Photo: A grazed swale with bare soil and erodible sediment. (Note this photo was taken before IWG regulations came into effect).

Example of a CSA: swale

Swales are found in lightly sloping to rolling paddocks and concentrate water flows from the surrounding area into a shallow channel. The blue arrow highlights the pathway that water may travel within a swale.



Photo 1: Sheep grazing a winter forage crop, with an unprotected, grazed swale CSA. (Note this photo was taken before IWG regulations came into effect).

Example of a CSA: depression

A depression is a low, possibly marshy area in the landscape that becomes saturated periodically. During and after rainfall events, depressions may become hydrologically connected to waterways via ephemeral flow paths and can be significant contributors of nonpoint source pollution to downstream waters. Depressions vary in both size and depth and are most easily identified by the presence of temporary standing water (or ponding) during wetter months.



Photo 2: A grazed depression with bare soil and erodible sediment. (Note this photo was taken before IWG regulations came into effect.)

Example of a CSA: Gully

In contrast to a shallow swale, a gully is deep trench, or channel, where the soil has been carried away, exposing bare ground.



Photo 3: Post winter grazing of an unprotected gully. (Note this photo was taken before IWG regulations came into effect).

Consideration 3: Waterways, groundwater, and wetlands

Your farm is part of an environmental system within and beyond your farm boundaries. Wintering your stock near a waterway, wetland, CSA, and/or drains can have significant environmental risk of direct and transportable contamination to those features with runoff of sediment, P, and faecal material.

IWG has the potential to contaminate the groundwater, especially if you have lighter soils with a high water table or paddocks with extensive artificial drainage. Therefore, care needs to be taken if you are in a community groundwater protection zone or near any drinking water bores. Ensure bores are fenced.

Waterbodies including rivers, lakes, wetlands and drains must be protected with a minimum buffer distance of at least 5 metres from any IWG activity, from contaminants entering. Identifying these features will help when planning out activities such as selecting appropriate paddocks for IWG so you can avoid connecting contamination source from IWG with transport pathways to waterbodies (critical source areas (CSAs)). Firstly, through planning and paddock selection and lastly mitigation.

Photos on pages 19-21 were sourced from CSAs – Technical Guidance for Intensive Winter Grazing, Lucci et al, 2022.

For Example:

Scenario one: Your animals are being wintered on flat paddocks on light soils with no waterways present. Stock are grazed on and off kale with a sacrifice paddock where they are fed silage.

Risk Assessment: Medium risk situation: There is a lower risk of P, sediment, and faecal runoff but the risk of N leaching remains high because of the free draining soil. Note: nitrogen leaching for deer could be lower if grazing large multi-day breaks.

Potential mitigations:

- Use of portable water troughs to reduce stock movements.
- Early establishment of a catch crop following kale to 'mop up' surplus N.
- Various contingency options likely to be available for severe weather events, such as keeping stock off kale crop and feeding additional silage on a stock holding area when soils become saturated.
- Catch crop provides silage crop before re-grassing or establishment of next fodder crop and stock holding areas planned for.
- For more information on stock holding areas please refer to this guidance material: [Stockholding-definitionguidance-v2.pdf](#) (environment.govt.nz)

Scenario two: Your animals are wintered on rolling country with deep patic soils prone to pugging, with numerous waterways and gullies on 70 percent fodder beet with 30 percent silage fed in-situ.

Risk Assessment: This is a multiple high-risk situation presenting significant catchment risks. There are likely to be few contingency options available in severe weather, which will increase environmental and animal welfare risks.

Possible mitigations:

- Use of portable water troughs to reduce stock movements.
- For deer, sediment traps and runoff paddocks could be considered.
- Access by machinery to feed roughage will be difficult in very wet or snowy conditions and will likely exacerbate soil damage and pugging. Baleage may need to be stockpiled in paddocks for extreme events.
- Consider temporary or permanent fencing at the break of slopes in any gullies with rough vegetation established throughout sides and length of gullies.
- Establish or maintain temporary buffer strips of rough grass adjacent to any waterways when crops are sown. These should be fenced off temporarily while crops are being grazed. They should not be grazed until the end of winter to ensure the buffer strips prevent sediment loss when rainfall is highest.
- The width of buffer strips may need to be larger and will need to consider slope angle and length. More than 5 metres may be required to be effective in slowing overland flows to filter sediment.
 - Where water is concentrated into channels along tracks, use permanent culverts to intercept flows and direct water onto grass paddocks to disperse flow and filter sediment.
 - Consider sediment traps along the edge of drains and/or waterways at strategic points to slow flows and enable sediment to settle. These traps should not impede fish passage or the natural waterbody. Check with your regional council if you require a resource consent to install sediment traps.
 - Any CSAs that are connected to lakes, rivers and wetlands will need to be protected (un-grazed and uncultivated) between 1 May and 30 September.
 - Stock should be grazed strategically to reduce sediment loss: ensure the riskiest areas are grazed last, allowing un-grazed crop to act as a buffer strip. If this can't be done, then grass buffer strips should be proportionately wider and can be determined based on the slope length and angle.
 - During rain events, adverse effects on animal welfare are likely to be a significant risk as it may be difficult to provide adequate shelter, lying areas, and sufficient volume of feed.

Consideration 4: Soil type

Generally, soils will have two types of risk:

1. Heavy soils, which are poor draining (such as deep silty (palcic) or clay soils), will have higher risks in wet weather. For example: waterlogging, pugging, deep mud, and surface runoff which all exacerbate sediment, phosphorus (P) loss and faecal contamination of your local waterways, wetlands, and catchment.
2. Lighter soils which are freely drained (i.e. stony, shallow, silty or sandy soils), will have lower risks from pugging and runoff of sediment, faecal material and P, but will have risks of high nitrate (N) leaching. This is where post grazing management, such as the use of a catch crop, is recommended to take up the extra nitrogen left in the soil. However, this is only effective when soil temperature is sufficient.

Your plan should consider the range of soil types on your farm, where they are and the advantages and disadvantages for your winter grazing management. For example, heavy soils which are adjacent to a CSA or waterbody have a much higher risk of contamination than lighter soils with appropriate buffers and setbacks from any CSA or waterbody.

Reducing, or avoiding entirely, the connection between contaminant sources and transport pathways is a key factor in minimising impacts on water quality. See *Figure 4*.

Figure 4: Example of what you could consider to reduce impacts on freshwater

Consider how the combination of:

Contaminant sources - pugged areas, deep mud, faecal matter, urinary N, bare ground

+

Transport pathways - CSAs, proximity to waterbodies, stock treading, movement/access

can be managed through a combination of:

Management practices and mitigations – avoid cropping very high-risk areas, appropriate paddock selection, strategic grazing practices, trough and feed placement, buffer areas

See more practical management suggestions in *section 5.0 (Step 2: Do)*.

Consideration 5: Vegetative cover

Having vegetation established (as ground cover) has significant environmental benefits, such as reduced soil, nutrient and contaminant runoff, as well as reducing the risk of nitrate leaching. IWG of forage crops during winter, when soils are usually wet, often results in the removal of this protective ground cover.

Keep a plant present for as long as you can. This protects the soil from rain splash impact, increases soil structural stability through plant roots, and dries out the soil profile to increase soil infiltration capacity.

Following winter-grazed forage crops, re-establishing ground cover most often involves the sowing of a new crop (e.g. catch crop), a crop for the following winter or pasture. This may include short-rotation catch crops (e.g. forage oats, rye corn, triticale), early season main crops (e.g. wheat, barley) and pasture (e.g. annual or perennial ryegrass).

If vegetative cover is not present following IWG (across the entire IWG area) the regulations require that you resow as soon as it is practicable to do so. There are several variables that can factor in to when sowing is practicable after IWG. A list of some of the key variables and management considerations is provided in Appendix 3.

Sometimes the need to resow following IWG can be mitigated through establishing an understory crop with the main winter forage crop (sometimes referred to as companion planting, under sowing or intercropping).

For example, a mix of forage oats and Italian (annual) ryegrass is a relatively common winter grazing option, particularly for sheep or other lighter stock classes.

This combination of species has the added benefit of regrowth from the Italian ryegrass after grazing, acting as ground cover and taking up vital nutrients, reducing the risk of leaching and surface runoff. Refer to the ground cover standard.

Consideration 6: Stock class and stocking density

Different stock classes pose different risks to the environment. Generally, the heavier the stock the greater the environmental risk, especially pugging risk. Cattle may be associated with higher N and sediment loss when stocked at higher densities, whereas other stock such as deer may be associated with lower N losses but are likely to present other risks, such as sediment loss due to wallowing. This means not all mitigations will be appropriate for all stock types. For example, back fencing would not be a mitigation option for deer and would likely exacerbate environmental risk and compromise animal welfare.

Consideration 7: Catchment and cultural values

Wherever these have been identified by local hapū/iwi and community catchment groups, it is important to respect these values and protect them. Your regional council will be able to tell you about the values in your catchment that need to be protected and managed.

Identification of cultural values and sites could include: mahinga kai (an area that used to be/is cultivated for food production) and/or a wāhi tapu (sacred/burial) sites. Excessive nutrient loss, sediment loss and faecal contamination are all likely to negatively impact these values.

Check out this 5-minute video produced by Environment Canterbury in partnership with Ngāi Tahu about how they are helping farmers on land near Te Waihora/Lake Ellesmere to understand and comply with new rules designed to protect mahinga kai – traditional Ngāi Tahu food resources and their ecosystems.

Protecting Mahinga kai - Mananui Ramsden - YouTube

Consideration 8: Weather

It is important to plan for an adverse weather event. In times of high rainfall identify the CSAs on your farm and take note of how wide they are. Identify and write down the location of an alternative grazing or stock holding area and ensure this complies with the stockholding regulations. Also, identify when stock should be moved.

You will need to have a plan that will provide for:

- What shelter, fresh clean water, and feed is available in your alternative grazing or holding area?
- What potential is there for soil damage, runoff to surface water and groundwater and overwhelming CSAs?
- What is the flood risk?
- In high rainfall, are appropriate buffers in place to reduce overland nutrient flow to waterways? And are your CSAs fully protected?
- Can you set up the grazing breaks in your paddock so that that animals are grazing into the prevailing weather? This will protect the drier area closest to the feed face from trampling during periods of inclement weather.

Consideration 9: Animal Welfare

Animal care is an important part of any winter grazing system. All of the considerations above, if managed appropriately, will help improve animal welfare on your farm.

MPI's Winter Grazing Action Group has produced helpful guidance for animal managers and highlights seven expected outcomes which farmers should aim to achieve:

1. Ensure animals give birth in the right environment.
2. Be prepared for all weather conditions.
3. Make sure animals can easily access acceptable drinking water.
4. Plan for successful winter feeding.
5. Ensure animals can lie down comfortably. Cattle find hard surfaces such as concrete and laneways as uncomfortable as wet areas. Standing off on these surface types will not compensate for lying in the paddock. Please check the stockholding area information before you undertake this activity, as you may require a resource consent.
6. Work together to care for animals during winter.
7. Find opportunities to improve.

Remember that stock need time to transition from pasture to fodder crop. Refer to NAWAC welfare codes for further guidance.

More helpful information can be found here: Expected outcomes for animal welfare (mpi.govt.nz)

3.2 Step Two: Do

Check the risk table and key considerations in Appendix 2 to see where the highest risks are on your farm and within your catchment. This will help inform the key actions you need to take to meet requirements and have the greatest impact in improving environmental and animal welfare outcomes.

Create and share your winter grazing plan with your farm team so everyone knows what they need to do during winter to care for animals, the environment and to understand why this is important.

Actions you must take (to meet permitted activity conditions):

1. Check the total area of IWG on your farm is either less than 50 hectares or 10 percent of total farm area.
2. Not graze any annual forage crops in areas above 10 degrees slope between 1 May and 30 September.
3. Leave an un-grazed buffer from waterways of not less than 5 metres at any point.
4. Fence off, or otherwise restrict stock access to, CSAs so they cannot be grazed during the winter season. See further advice on managing CSAs.

Other potential actions and mitigations (which will contribute to meeting obligations for pugging and ground cover):

5. The winter grazing area is checked at least once daily during grazing to ensure all animal and environmental needs are being met.
6. Portable troughs and supplementary feed sites are located away from waterways and CSAs because that is where stock tend to congregate.
7. Strategically graze your paddock and work down the paddock.
8. Monitor feed wastage and the residual feed and adjust the amount being offered accordingly.
9. Be careful about grazing towards CSAs and waterways. Leave the crop closest to these areas for as long as possible.
10. Sow your crops across, rather than up and down, the slope of a paddock.
11. Use back fencing to minimise animal movement but do not restrict access to shelter or drier lying areas where possible. Back fencing is not appropriate for deer.
12. Consider the use of different nutrient modelling tools to check and manage nitrogen losses occurring onfarm over winter and spring. Soil testing for N and P is critical to ensure they are at the optimal level for the crop being planted.
13. If possible, use on-off grazing to distribute urine patches more widely.
14. Consider sediment traps to minimise soil runoff from the cropped area into waterways and CSAs. Sediment traps are not to be installed in natural water courses.
15. If possible, paddocks have multiple exit and entry points to avoid congregation of stock at one point.
16. If possible, match your stock class to the land class in the paddock so the risk can be mitigated.

Step 2: Do

This section should be used while implementing your winter grazing activities. Keep your management plan on hand for yourself as well as others in your team who are supporting you. It will also help you answer any questions from your regional council.

Action	
Check the winter grazing area at least once daily during grazing to ensure all animal and environmental needs are being met.	
Leave an un-grazed buffer from waterways of not less than 5 metres at any point. (Regulation requirement to meet PA conditions).	
Do not graze CSAs during the winter season. Fence off if required to prevent stock access. (Regulation requirement).	
Steps are in place to minimise pugging.	
Steps are in place to resow as soon as possible after grazing.	
Portable troughs and supplementary feed sites are located away from waterways and CSAs.	
Strategically graze. Be careful about grazing towards CSAs and waterways. (Good practice) Stock are likely to waste more feed if grazed downhill – monitor the residual feed and adjust the amount being offered accordingly.	
Crops have been sown along, rather than up and down the slope of a paddock.	
Back fencing is used to minimise animal movement but does not restrict access to shelter or drier lying areas where possible. Note: Back fencing is not appropriate for deer.	
Soil test for N and P.	
On and off grazing has been used to distribute urine patches more widely.	
Sediment traps have been used to minimise soil runoff from the cropped area into waterways and CSAs (if required).	
Sediment traps have not been installed in natural water courses. You may need a resource consent to install a sediment trap – check with your regional council.	
Paddocks have multiple exit and entry points to avoid congregation of stock at one point.	
Stock class is matched to the land class in the paddock so the risk can be mitigated.	

17. Keep to your plan, for further information visit:

- beeflambnz.com/wintergrazing
- www.dairynz.co.nz/feed/crops/wintering
- www.deernz.org/deer-hub/farm-and-environment/wintering-feed-systems

3.3 Step 3: Check

It is important to note down this season's actions:

1. As mentioned previously, it is important to take photos before, during and after winter paddocks are grazed. These photos are useful for monitoring and providing proof of actions.
 - What went well and why? Take a photo and date it.
 - What did not go well and why? Take a photo and date it.
2. Did you graze the number of animals and type that you had planned for?
3. Did your mitigation practices, such as alternative grazing paddocks/holding areas in an adverse event, portable troughs, back fencing, and enough supplementary feed to prevent excessive pugging and runoff, work as planned?
4. What will you change in your farming system next season to manage your environmental risks and improve animal welfare?

Step 3: Check

It is important to note down this season's actions, especially things that did not go as planned and how you managed this.

1. Record any areas used for winter grazing that were not part of your original plan.

2. Record any major changes to the management actions you identified at the beginning of the season.

3. Keep records of your practice and photographic proof somewhere easily accessible to ensure they are available if you are required to be audited.

Action	Dates Taken	Stored/Saved In:
Photos of wintering paddocks prior to stock grazing		
Photos taken during winter		
Photos taken at end of the winter season		

3.4 Step 4: Review and Reflect

How did it go?

Next season – what will change?

Post Grazing Management

1. Would a catch crop be a good option to take up some of the urinary N left from this year's winter grazing?
2. Did your management during winter allow you to resow or re-grass as soon as practical (based on weather and soil moisture levels) and minimise the time that the land was bare?
3. What would or should you change in identifying and managing IWG risks?
4. Remember the four stages of winter management:
 - **Stage 1:** Paddocks selection, planning and assessing impact on cultural values – 6-12 months prior to starting crop establishment
 - **Stage 2:** Block set up – early summer to pre grazing
 - **Stage 3:** Crop grazing – May to September
 - **Stage 4:** Post grazing management – August to November

Mitigating your wintering practice risks can help reduce runoff, maintain soil productivity and protect our waterways. Strategic winter grazing is a low-cost good management practice that must be part of your overall farm planning system.

Step 4: Reflect and Review

Once you have gone through a winter grazing season, it is important to reflect on what worked well and what didn't. Did your management activities effectively manage the risks present?

This should be done at the end of every winter grazing season. Some questions have been provided below to help get your thoughts flowing:

Questions	Yes/No	Comments
Did you graze the number and type of animals you were intending?		
Do you have photos of the paddocks grazed?		
How long were the stock on the grazing block for?		
Was the location of water troughs and supplementary feed suitable to prevent pugging damage?		
Was the paddock sown and grazed to plan?		
Did you identify the size of your CSAs sufficiently?		
Did you implement your adverse weather management plan?		
How are you planning your adverse weather event management plan?		
How are you planning to manage your block/s post grazing?		
Based on your reflections, what will you change next season?		

4.0 Tips from farmers

"My farm is relatively flat. Each winter, after some heavy rain, I look at the paddocks I am hoping to crop next year.

I mark out the CSAs then set up a semi-permanent fence because it is harder to see them in spring."

"If placing bales out, do so away from waterways and CSAs. Use bale rings to improve utilisation."

"It is important to understand that risk factors are cumulative and will influence the size and nature of your mitigations needed to avoid any environmental degradation."

"Use a portable trough to give cows easy access to fresh clean water. Place the portable trough at the side of the break for ease of shifting."

"When I plan how much feed I need for winter, I add an extra 10 percent to cover extreme weather events."

"We lift enough fodder beet to feed our herd for five days. This way, if the cows are taken off the crop in bad weather, we can maintain their diet and will not have to retransition them."



5.0 Useful links

Examples of mitigation and tools:

- AIC Environmental Collective – Winter Management Good Management Practice (GMP)
www.amuriirrigation.co.nz/sustainability
- Winter-Management-Plan-Interactive-1
www.amuriirrigation.co.nz
- Farm Plan – Environment Module
www.beeflambnz.com
- Break Fed Wintering
www.dairynz.co.nz/wintering

Regional council resources:

- Winter forage crop grazing and wet weather management – Guidelines for FEP Auditors www.ecan.govt.nz
- Otago Regional Council – information regarding resource consent applications
<https://www.orc.govt.nz/consents-and-compliance/apply-for-a-consent>
- Environment Southland – Intensive winter grazing 2023
<https://www.es.govt.nz/environment/land-and-soil/land-management/intensive-winter-grazing>
- A guide to intensive winter grazing without a consent
<https://www.es.govt.nz/environment/water/essential-freshwater-package>
- A guide to preparing resource consent applications for intensive farming activities in the Horizons Region
www.horizons.govt.nz

Industry resources

- <https://beeflambnz.com/wintergrazing>
- <https://www.dairynz.co.nz/feed/crops/wintering>
- <https://www.dairynz.co.nz/environment/winter-grazing>
- <https://www.deernz.org/deer-facts>

MPI Support services

- MPI On Farm Support: a service for farmers and growers
<https://www.mpi.govt.nz/agriculture/farm-management-the-environment-and-land-use/on-farm-support/about-on-farm-support-a-service-for-farmers-and-growers/>