# 1.1 *HARVESTING* (REGULATIONS 62-71)

## 1.1.1 Overview of plantation forestry activity

*Harvesting* is a regulated activity under Regulation 5(1)(f) of the NES-PF. The NES-PF ancillary activity regulations (Part 2, subpart 9) and general provisions (Part 2, subpart 10) must be complied with as relevant for *harvesting*.

*Harvesting* is defined in the NES-PF as:

> *(a) felling trees, extracting trees, thinning tree stems and extraction for sale or use (production thinning), processing trees into logs, or loading logs onto trucks for delivery to processing plants; but*
>
> *(b) does not include -*
>
> *(i) milling activities or processing of timber; or*
>
> *(ii) clearance of vegetation that is not plantation forest trees.*

Clear felling is the most common type of *harvesting* in New Zealand and involves cutting down an entire stand of trees. Trees are extracted using methods suited to the land, access, forest size and the surrounding environment. Many clear-fell operations take place on steep terrain, where cable hauling is the most common extraction method used.

*Harvesting* also includes 'production thinning' and 'low-intensity *harvesting*'. Production thinning is a way of extracting an intermediate crop before final *harvesting*. The number of logs extracted during production thinning is significantly less than those from the final crop. Low intensity *harvesting* encompasses selective logging regimes.

The activity of *harvesting* in the NES-PF finishes at the point where the logs are loaded onto trucks for delivery to processing plants. The NES-PF does not cover any further activities, such as transporting the logs, unloading them at any destination or the processing of timber.

## 1.1.2 Potential adverse environmental effects

*Harvesting* has the potential for adverse environmental effects if not properly managed, particularly in difficult terrain and when it takes place near sensitive receiving environments. Potential adverse effects from *harvesting* include:

- *Slash* from *harvesting* reaching water leading to changes in water chemistry or the damming and diverting of water, possibly damaging downstream *forestry infrastructure* (e.g. bridges and *culverts*).
- Soil disturbance from *harvesting* including by *harvesting* machinery leading to sedimentation in waterbodies and adversely affecting water quality and instream habitats.
- Riparian vegetation disturbance and potential effects on indigenous flora and fauna.
- Soil erosion post-harvest, as the harvested tree roots rot and the slope loses stability.

### 1.1.3 Permitted activity and conditions

*Harvesting* is a permitted activity in relation to **territorial authority** functions if notice is provided in accordance with Regulations 64(1) and (2). All other *harvesting* regulations in the NES-PF relate to **regional council** functions. *Harvesting* is a permitted activity in relation to regional council functions if:

- Regulations 64 to 69 are complied with.
- It is located in the:
    - *Green*, *yellow*, or *orange zone*.
    - *Red zone* that is not of Land Use Capability Class 8e, where it involves no more than 2 ha of *harvesting* in any 3-month period.
- A minimum of 75% canopy cover is maintained at all times for any given hectare of *plantation forest* land (low-intensity *harvesting*) in all ESC zones.

A summary of the permitted conditions for *harvesting* in relation to regional council functions is provided in Table 1. Sections 1.1.5 to 1.1.12 provide more detailed guidance on these conditions to assist with interpretation and implementation. For exact wording of the conditions, refer to the NES-PF which can be accessed through the hyperlinks below.

*Table 1: Summary of permitted activity conditions for harvesting.*

| Condition | Regional Council |
|---|---|
| **Sediment (Regulation 65)** | *Sediment* originating from *harvesting* must be managed to ensure that, after reasonable mixing, it does not give rise to any of the following effects in receiving waters:<br>• A conspicuous change in colour or visual clarity; or<br>• Rendering fresh water unsuitable for consumption by farm animals; or<br>• Significant adverse effect on aquatic life. |
| **Harvest plan (Regulation 66)** | • A harvest plan is required for *harvesting* in all ESC zones;<br>• The harvest plan must identify environmental risks and responses and contain details required in Schedule 3;<br>• The harvest plan must be in place 20 working days before *harvesting* begins except for salvage operations where it must be in place before *harvesting* begins;<br>• Where located in *orange zone* or *red zone*, the harvest plan must be accompanied by forestry earthworks management plan or a combined plan must be prepared;<br>• The harvest plan must be provided to the relevant council on request, and the council may request that it is provided annually;<br>• The relevant council must be advised of *material amendments* to the harvest plan and the amended plan must be provided on request; and<br>• All *harvesting* must be undertaken in accordance with the harvest plan. |
| **Ground disturbance (Regulation 67)** | • Harvest systems must be planned and located to achieve *butt suspension* wherever practicable;<br>• Disturbed soil must be stabilised or contained to minimise *sediment* entering water and resulting in:<br>o Diversion or damming of any *water body*; or |

<table>
<tr><th>Condition</th><th>Regional Council</th></tr>
<tr><td></td><td>o Degradation of the aquatic habitat, riparian zone, freshwater body, or coastal environment; or<br>o Damage to downstream infrastructure and properties.</td></tr>
<tr><td>Disturbance of margins of waterbodies and coastal marine area (Regulation 68)</td><td>
• Trees must be felled away from any water body or riparian zone during harvesting, except where it is unsafe to do so.<br>
• If unsafe to do so, trees must be felled directly across the water body for full-length extraction before de-limbing or heading.<br>
• Full suspension tree harvesting in a manner that lifts the entire tree above the ground must be achieved across rivers of 3m or more in width;<br>
• Harvesting machinery must not be operated within the following setbacks.
<table>
<tr><th>5m</th><th>10m</th><th>30m</th></tr>
<tr><td>• A perennial river with a bankfull channel width less than 3m; or<br>• Wetland larger than 0.25ha</td><td>• Perennial river with a bankfull channel width 3m or more; or<br>• Lake larger than 0.25ha; or<br>• Outstanding freshwater body; or<br>• Water body subject to a Water Conservation Order</td><td>Coastal marine area</td></tr>
</table>
• Harvesting machinery may be operated in the above setbacks if:<br>
o Any disturbance to the water body from the machinery is minimised; and<br>
o The harvest machinery is being operated—<br>
▪ At water body crossing points; or<br>
▪ Where slash removal is necessary; or<br>
▪ Where essential for directional felling in a chosen direction or extraction of trees from within the setbacks above.<br>
• When harvesting occurs within or across a riparian zone, all disturbed vegetation, soil, or debris must be deposited to avoid it entering into water in order to avoid specified adverse effects.
</td></tr>
<tr><td>Slash and debris management (Regulation 69)</td><td>
• Slash from harvesting must be placed onto stable ground.<br>
• Slash from harvesting that is on the edge of landing sites must be managed to avoid the collapse of slash piles.<br>
• Slash from harvesting must not be deposited into a water body or onto the land that would be covered by water during a 5% AEP event. If this is not complied with, slash from harvesting must be removed from a water body and the land that would be covered by water during a 5% AEP flood event, unless it is unsafe to do so, to avoid specified adverse effects.
</td></tr>
</table>

### 1.1.4 Determining whether a resource consent is required

The flow chart in Figure 1 shows the process to determine whether *harvesting* requires resource consent, the activity status when consent is required, and whether consent is required from the regional council and/or territorial authority. *Harvesting* is also required to

comply with the ancillary activity regulations (Part 2, subpart 9) and general provisions (Part 2, subpart 10) as relevant to be a permitted activity.

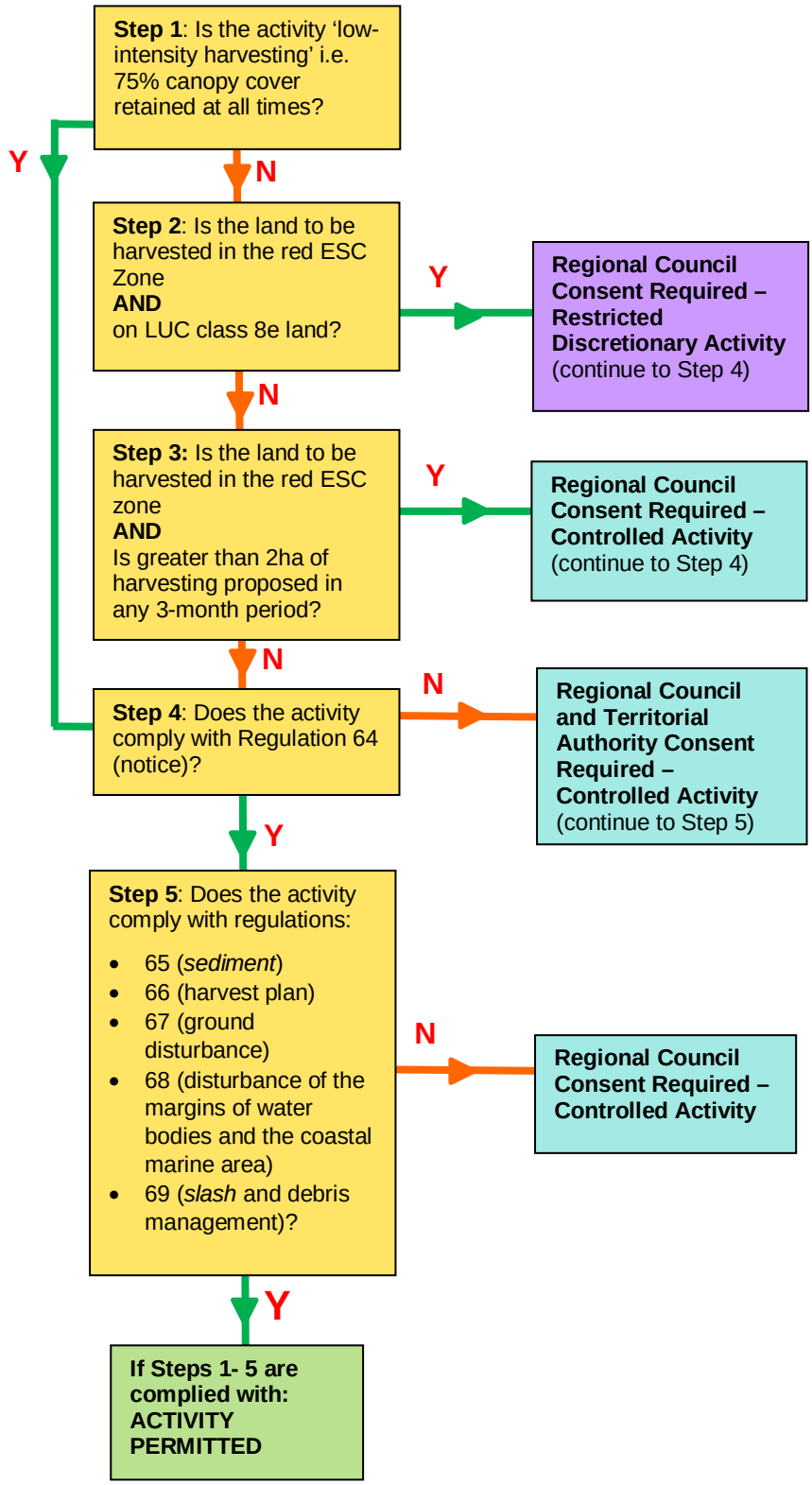


*Figure 1: Flow chart to determine whether resource consent is required for harvesting.*

### 1.1.5 Regulation 63(3) – Low intensity *harvesting*

Regulation 63(3) provides for low intensity harvesting as a permitted activity, regardless of which ESC zone it is located in. *Low intensity harvesting* is explained in Regulation 63(3) as:

> *'Harvesting where a minimum of 75% canopy cover is maintained at all times for any given hectare of plantation forest land'*

*Low intensity harvesting* involves removing far fewer trees from any given hectare of forest than standard short rotation *harvesting* regimes. As such, the potential adverse environmental effects associated with *low intensity harvesting* are considerably less than *harvesting* that removes all trees. Regulation 63(3) enables *low intensity harvesting* to be carried out as a permitted activity regardless of the ESC zone, recognising that leaving at least 75% of the canopy cover intact (per hectare) will avoid most of the potential adverse effects associated with *harvesting*. *Low intensity harvesting* is still required to comply with regulations 64 to 69.

There are no specific methods in the NES-PF for estimating the percentage of canopy cover retained after *harvesting*. Both councils and foresters will need to take a pragmatic approach to determine whether *harvesting* will retain 75% of the canopy cover. Foresters should not be expected to provide the relevant council with detailed calculations as to how their estimates were achieved. However, the relevant regional council may ask that foresters explain their calculations/methods to demonstrate compliance with Regulation 63(3).

### 1.1.6 Regulation 64 – Notice

Regulation 64 requires foresters to provide written notice of *harvesting* to the relevant regional council and territorial authority at least 20 and no more than 60 working days before the date *harvesting* is planned to begin. Although territorial authorities are not responsible for managing the adverse effects of *harvesting*, *harvesting* often constitutes a very visible land use change in a district. Territorial authorities are generally most interested in knowing the timing of *harvesting* because of the effect of logging traffic on the district roading network. Advanced knowledge about the location and planned timing of *harvesting* is helpful to allow the district council to programme in any necessary road work.

The notice of *harvesting* needs to include:

- ***Details on the place the harvesting will be carried out*** – this should provide an accurate description of the location of the area with supporting maps where appropriate.
- ***Details on the planned start and end date for harvesting*** – this should be as accurate as possible while recognising that in many cases the exact end date for *harvesting* will not be known prior to the activity commencing.

After receiving notice, the regional council may request a copy of the harvest plan and, if requested, this must be provided within five working days from when the harvest plan must be in place (20 working days before *harvesting* begins). The NES-PF conditions do not include provision for territorial authorities to request the harvest plan.

Section 5.2 of the NES-PF Consenting and Compliance Guide provides more information on notice of forestry activities, including timeframes and receipt and acknowledgement of notice.

### 1.1.7 Regulation 65 – Sediment

Regulation 65 sets water quality standards for *sediment* discharges in receiving waters after reasonable mixing consistent with section 70 of the RMA. These water quality standards are discussed generally in section 4.9 of the NES-PF User Guide. For *harvesting* operations, compliance with this condition will generally be achieved through compliance with other permitted activity conditions that require appropriate operational responses and

management practices to be followed (e.g. preparation and compliance with harvest plan, minimising ground disturbance and disturbance of water bodies).

### 1.1.8 Regulation 66 – Harvest plan

Regulation 66 requires the preparation of a harvest plan for all *harvesting* operations. The purpose of the harvest plan is to ensure environmental and site-specific risks associated with *harvesting* are identified and managed up-front.

The harvest plan must be prepared in accordance with the information requirements in Schedule 3 and all *harvesting* must be undertaken in accordance with the harvest plan. Key requirements of the harvest plan include:

- Identifying on-site environmental risks on a map and setting out the management practices to respond to those risks to avoid, remedy or mitigate adverse effects on the environment.
- *Slash* management procedures.
- Operational restrictions to minimise damage to *indigenous vegetation* and avoid damage to downstream infrastructure and properties.

When *harvesting* involves earthworks and is located in an *orange or red zone*, the harvest plan must be accompanied by a forestry earthworks management plan. Alternatively, a combined harvest plan and forestry earthworks management plan can be prepared.

The harvest plan must be provided to the relevant council on written request and must be in place at least 20 working days before harvesting begins, except where the *harvesting* is a *salvage operation* (in which case, the plan must be in place when *harvesting* begins). For sustained yield forests, where *harvesting* is ongoing in different parts of the *plantation forest,* the council may request that the plan be provided annually.

Section 5.2 of the NES-PF - Consenting and Compliance Guide provides more information on management plan preparation, receipt and review, and *material amendments* to management plans.

### 1.1.9 Regulation 67 – Ground disturbance

*Butt suspension*

Regulation 67(1) requires that harvest systems be planned and located to achieve *butt suspension* wherever practicable. *Butt suspension* is defined in NES-PF as *'suspending the sawn base of the tree being harvested above the ground or surface of a water body while pulling it to a landing'. Butt suspension* involves tree extraction techniques that achieve suspension of the butt end[1] of the logs.

*Butt suspension* will generally be achievable for *harvesting* but there may be circumstances where topography and operational factors mean that not all parts of all sites can practicably achieve this (e.g. very broken topography, where there are areas blind to the hauler). The harvest plan is required to include detailed information on the *harvesting* methods and this plan should outline any areas where *butt suspension* may not be practicable. This will help confirm compliance with Regulation 67 if, for example, a site audit was undertaken.

*Stabilisation and containment of disturbed soil*

Regulation 67(2) requires the stabilisation and containment of disturbed soil to minimise *sediment* entering water where it may result in certain adverse effects. Appropriate methods to stabilise and contain disturbed soil during *harvesting* will need to be determined on a case- by-case basis. Examples of common methods to contain and stabilise soil are discussed in section 4.8 and section 5.3.10 of the NES-PF User Guide in relation to

[1] The end closest to the base of the tree.

*earthworks*. Foresters can draw on techniques to stabilise disturbed soil from existing council and/or industry guidance. They can also draw on the Forestry Practice Guides that have been developed by MPI and the forestry industry, which will be available on the Forest Owners Association website: https://www.nzfoa.org.nz/ .

### 1.1.10 Regulations 67 and 68 – Use of the term 'degradation'

Regulations 67(2)(b) and 68(6)(b) both use the term 'degradation' to define an adverse effect on aquatic habitat, *riparian zone*, the coastal environment or freshwater body that must be avoided. Regulation 67(2) relates to *sediment* entering water from disturbed soil and Regulation 68(6) relates to the deposition of disturbed vegetation, soil or debris where *harvesting* occurs within or across a *riparian zone*. Where *harvesting* would result in a particular freshwater body, the coastal environment, aquatic habitat or *riparian zone* being degraded, a restricted discretionary consent would be required due to non-compliance with Regulations 67(2)(b) and 68(6)(b).

Whether or not there has been degradation due to *harvesting* will need to be considered on a case-by-case basis. Degradation of a *water body* can generally be considered as a situation where *harvesting* leads to significant adverse effects on the values of that freshwater body, aquatic habitat, coastal environment or *riparian zone*.

In assessing compliance with these conditions, comparison of the quality of the freshwater body, aquatic habitat, coastal environment or *riparian zone* pre and post *harvesting* is required to determine whether *harvesting* has caused the degradation. Consideration should also be given to what methods have been used to stabilise or contain soil (Regulation 67) and how disturbed vegetation, soil or debris has been deposited (Regulation 68) to avoid it entering water (i.e. what efforts have been made to avoid or mitigate adverse effects).

### 1.1.11 Regulation 68 – Disturbance of margins of water bodies and the coastal marine area

*Tree felling and suspension*

Regulations 68(1)-(3) outline requirements for *harvesting* to minimise disturbance of waterbodies and the *riparian zone.* It requires trees to be felled away from any water body or *riparian zone* – except where it is 'unsafe' to do so. It is expected that foresters and councils will take a pragmatic approach to determine when it is 'unsafe' to fell trees away from waterbodies and *riparian zones*, taking into account health and safety requirements in other legislation.

Trees are either manually felled by a chainsaw operator, or mechanically felled, using a tracked vehicle with a felling head. In both situations, the feller has some control over which way the tree will fall. However, there will be situations where the location and growth pattern of the tree makes it very difficult to ensure it falls away from sensitive areas. In those situations, the least damaging way to harvest is to fell the tree directly perpendicular to the *riparian zone* or waterbody – which may be completely across some smaller waterbodies. This allows for the tree to be hauled straight back, leaving the smallest area of damage.

Regulation 68(3) requires that full suspension is achieved when hauling trees across rivers that are 3m or more in width.

*Setbacks*

Regulation 68(4) requires that *harvesting* machinery must not operate in specified *setbacks* to *water bodies* and the coastal marine area, unless the exceptions in Regulation 68(5) apply. General guidance on the regional *setbacks* referred to in Regulation 68(4) is provided in section 4.3 of the NES-PF User Guide.

Regulation 68(5) provides for *harvesting* machinery to operate in the *setbacks* in three specific circumstances provided that *'any disturbance to the water body from the machinery*

*is minimised*'. In order to comply with this condition, operators of mechanical *harvesting* machines should minimise their tracking and avoid slewing and turning the vehicle's tracks in a way that causes significant ground disturbance.

The three circumstances when *harvesting* machinery may operate in the *setbacks* are:

- When the machinery is operating at *water body* crossing points.
- Where *slash* removal is necessary.
- Where essential for directional felling in a chosen direction or extraction of trees from within the *setbacks*.

The last exception recognises that when mechanical felling, the machine has much greater control of the direction of fall if it is close to the tree. This better enables the feller to direct the tree away from sensitive areas and this level of control would be absent if the machine was required to avoid the *setback* area.

*Harvesting within or across a riparian zone*

Regulation 68(6) places additional controls on *harvesting* within or across *riparian zones,* recognising that these areas play an important ecological function (i.e. providing shade, moderating stream temperature and litter inputs to a stream) and can be sensitive to adverse effects from *harvesting*.

*Riparian zone* is defined in the NES-PF as *'that margin and bank of a water body, including the area where direct interaction occurs between land and water systems, that is important for the management of water quality and ecological values'*.

Regulation 68(6) requires disturbed vegetation, soil and debris to be deposited in a way that it would negate the adverse effects referred to in clauses (a)-(c). The most appropriate methods to ensure that any disturbed vegetation, soil or debris are deposited in such a way that it avoids the adverse effects referred to in Regulation 68(6) will need to be determined on a case-by-case basis. Section 4.8 of the NES-PF User Guide provides examples of *sediment control measures* that can be used to reduce sedimentation. Foresters can also draw on techniques to manage disturbed vegetation, soil or debris during *harvesting* from the Forestry Practice Guides (which will be available shortly on the Foresters Owners Association website) and existing council and industry guidance.

### 1.1.12 Regulation 69 – *Slash* and debris management

Regulation 69 sets out a number of requirements relating to *slash* management during *harvesting*. Regulation 69(1) applies to *slash* that is being placed (i.e. moved or deposited) - it does not apply to *slash* that breaks off trees during *harvesting.* It requires that *slash* is deposited onto stable ground, which will generally be achieved through avoiding steep areas and areas prone to slips/flows. This reduces the likelihood of large volumes of the *slash* moving downhill because it has become unstable as it rots.

Regulation 69(2) relates to placement of *slash* on the edge of *landing* sites. *'Landing'* is defined in the NES-PF as *'an area of land where logs or tree lengths extracted from a plantation forest are accumulated, processed and loaded for removal'.* Foresters need to ensure that *slash* deposited around *landing* sites (also known as 'birds' nests') is managed to ensure *slash* piles do not collapse. Best practice *slash* management at skids and *landings* involves deciding at the start where to put *slash*, ensuring that *slash* piles are put on stable ground, and deciding on an appropriate methodology for containing the piles. Foresters must include procedures to manage slash as part of the harvest plan (Schedule 3 Clause 5(c)).

A thorough approach to *slash* planning and management will generally involve consideration of the following matters:

- Estimate the quantity of *slash*.

- Identify where there is risk of slope failure. *Slash* areas should be on stable land, and well away from waterways, steep slopes, *fill,* slips, gully heads and *riparian zones*.
- Sites or zones around a *landing* for safe *slash* disposal.
- "No-Go" zones where *slash* is not to be deposited.
- If off-site *slash* disposal sites are required and where they will be located.
- The potential for storing *slash* on *landings* once harvesting has been completed.

Regulations 69(3) and 69(4) are consistent with the *slash* management conditions for *pruning and thinning to waste* (Regulation 20) and require that *slash* not be deposited in water bodies or land that would be covered by water during a 5% *AEP* event (section 4.10 of the NES-PF User Guide provides general guidance on how to calculate *AEP*). Where this occurs, *slash* must be removed from the water body or land prone to flooding unless it is unsafe to do so.

Regulation 69(4) does not specify how soon after *slash* is deposited that it must be removed. It is expected that foresters will remove *slash* **as soon as practicable** in order to avoid the adverse effects listed in clauses (a)-(d). This will generally be as soon as it is safe (e.g. a storm event has passed or equipment to remove *slash* has arrived on site). It is also expected that foresters and councils will take a pragmatic approach to determine when it is 'unsafe' to remove *slash* from these areas, taking into account health and safety requirements in other legislation.