1.1 *RIVER CROSSINGS* (REGULATIONS 36-49)

1.1.1 Overview of plantation forestry activity

River crossings are a regulated activity under Regulation 5(1)(d) of the NES-PF. The NES-PF regulations for three ancillary activities (Part 2, subpart 9) and the general provisions (Part 2, subpart 10) must also be complied with as relevant when constructing, using, maintaining or removing *river crossings*.

River crossings are defined in the NES-PF as:

> *(a) a structure that is required for the operation of a plantation forest and provide for vehicles or machinery to cross over a water body; and*
>
> *(b) includes an apron and other structures and materials necessary to complete a river crossing; but*
>
> *(c) does not include a storm water culvert or a culvert under a forestry road or forestry track.*

Existing river crossings are defined in the NES-PF as follows:

> *(a) a river crossing that was operational and able to be used at the commencement of these regulations; and*
>
> *(b) includes a river crossing described in paragraph (a) that is used and maintained; but*
>
> *(c) does not include a river crossing—*
>
> *(i) that is described in paragraph (a) that is upgraded, removed, or replaced in accordance with these regulations; or*
>
> *(ii) that is a ford or a temporary river crossing*

The distinction between *existing river crossings* and new or upgraded *river crossings* is important as they are subject to different requirements under the NESPF.

1.1.2 Potential adverse environmental effects

River crossings are commonly required in *plantation forests* to provide access. *River crossings* require good design, installation and on-going maintenance to minimise potential adverse environmental effects. The main potential adverse environmental effects associated with the construction, use, maintenance and removal of *river crossings* are:

- Sedimentation (i.e. suspended *sediment* and bed sedimentation) of the river during construction and use *of river crossings*
- Restricting or preventing fish passage
- Activating or accelerating bed erosion by concentrating water flows
- Accumulating debris around culvert openings and bridge abutments, which can result in scour and flooding
- Erosion, sedimentation or damming if structures are displaced or destroyed during floods.

1.1.3 Permitted activities and conditions

River crossings fall within **regional council functions** under section 30 of the RMA. **Territorial authorities** do not have functions in relation to the *river crossings* regulations in the NES-PF. The NES-PF includes both generic *river crossing* conditions and conditions targeted to different types of *river crossings,* refer to Table 1.

Table 1: NES-PF conditions for different types of river crossings.

Type of river crossing	Permitted activity conditions to comply with
Existing river crossings	Regulations 39-42
Single culvert	Regulations 38-45, Regulation 46(1)
Battery culvert	Regulations 38-45, Regulation 46(2)
Drift deck	Regulations 38-45, Regulation 46(3)
Ford	Regulations 38-45, Regulation 46(4)
Single span bridge	Regulations 38-45, Regulation 46(5)
Temporary river crossing	Regulations 38-41, regulations 43-45, Regulation 46(6)
Temporary single span bridge	Regulations 38-45, Regulation 46(5)(b), (c), (d) and 46(7)

Existing river crossings are not subject to certain requirements in the NES-PF relating to notice (Regulation 38), location (Regulation 43), conditions relating to construction, maintenance or removal (Regulation 44), or the specific flow design and engineering requirements for different types of *river crossings* (Regulations 45 and 46). This recognises that there are many *existing river crossings* in place that are functional but may not meet the new design and engineering standards in the NES-PF. *Existing river crossings* still need to meet the performance standards in Regulations 39-42 and will need to comply with all the relevant *river crossing* regulations when they are upgraded, replaced or removed.

A summary of the general permitted conditions for *river crossings* is provided in Table 2. Sections 1.1.5 to 1.1.15 provide more detailed guidance on these to assist with interpretation and implementation. Guidance on specific types of *river crossings* is provided in Section 5.4.9 of the NES-PF User Guide. For the exact wording of the conditions, refer to the NES-PF which can also be accessed through the hyperlinks below.

Table 2: Summary of general permitted activity conditions for river crossings.

Condition	Regional Council Function
Notice (Regulation 38)	• Council must be given written notice of the proposed *river crossing* location, and planned start date for construction or removal (other than for a *temporary river crossing*). • Notice must be provided to the council at least 20 and no more than 60 working days before the planned start date. This condition does not apply to the maintenance of a *river crossing*.
Effects on other structures and users (Regulation 39)	A *river crossing* must not: • Alter the natural alignment or gradient of the river; or • Compromise the structural integrity or use of any other lawfully established structure or activity in the bed of the river or lake; or • Dam or divert water causing flooding or ponding on any property owned or occupied by a person other than the owner of the *plantation forest.*

Condition	Regional Council Function
Passage of fish (Regulation 40)	• *River crossings* must provide for upstream and downstream fish passage in rivers (except where the relevant statutory manager advises this would have an adverse effect on the upstream fish population); and • River bed material in the *river crossing* structure which is in place of the river bed must be maintained to provide for fish passage.
Erosion and sediment discharge from use (Regulation 41)	• *River crossings* must not cause or induce erosion of the bed or banks, instability of the banks of the water body, or create sedimentation; • Approaches and abutments must be stabilised to avoid erosion and sedimentation; and • Surface road run-off must be diverted away from water bodies within 10 m of the *river crossing*.
Maintenance (Regulation 42)	*River crossings* must be maintained to avoid aggradation or erosion of the bed of the *water body*.
Location (Regulation 43)	*River crossings* must not be constructed: • In a *wetland* larger than 0.25ha; or • In a *wetland* 0.25ha or less where crossing extends more than 20m in length within the *wetland*; or • Within an *outstanding freshwater body*; or • Within a *water body* subject to a water conservation order; or • Within a *significant natural area*; or • Less than 500m upstream of a dwelling that is within 15m of a river bed that is 3m wide or wider; or • Downstream of a dwelling with a ground-floor level that is less than 1m above the highest part of the *river crossing*.
Contaminant discharges (Regulation 44)	If a *river crossing* is being constructed, maintained, or removed: • No contaminants must be discharged into water, other than *sediment*; and • Practical steps must be taken to: o Avoid depositing organic material or *sediment* into water bodies; and o Minimise disturbance of the bed of a river and *wetlands*; • Practicable steps must be taken to avoid wet concrete or concrete ingredients coming into contact with water; • Elevated *sediment* levels resulting from the construction, maintenance and removal of a river crossing must not occur for longer than 8 consecutive hours; • Machinery must be kept out of water, except where it must cross the bed of a water body for the purposes of construction, maintenance or removal; and • Excess materials and equipment must be removed from the bed of the *water body* within 5 working days of completion of the activity.
Flow calculations (Regulation 45)	• Flood flow estimations must be calculated for all *river crossings*, except *fords,* using relevant documents in items 3, 4 and 5 of Schedule 2; and • Upon council's request, records of the calculations must be made available within 20 working days.

1.1.4 Determining whether a resource consent is required

The flow chart in Figure 1 below shows the process for determining whether a *river crossing* needs consent and the activity status when resource consent is required. *River crossings* are

also required to comply with the ancillary activity regulations (Part 2, subpart 9) and general provisions (Part 2, subpart 10).

Note that Figure 1 does not cover *existing river crossings*, which are a permitted activity under Regulation 37(3), provided Regulations 39-42 are complied with. If Regulations 39-42 cannot be complied with, a resource consent will be required for a restricted discretionary activity under Regulation 48(1A). If an *existing river crossing* requires upgrading or replacement as opposed to just use and maintenance, it will be treated as a new *river crossing* and will need to be assessed in accordance with Figure 1 below.

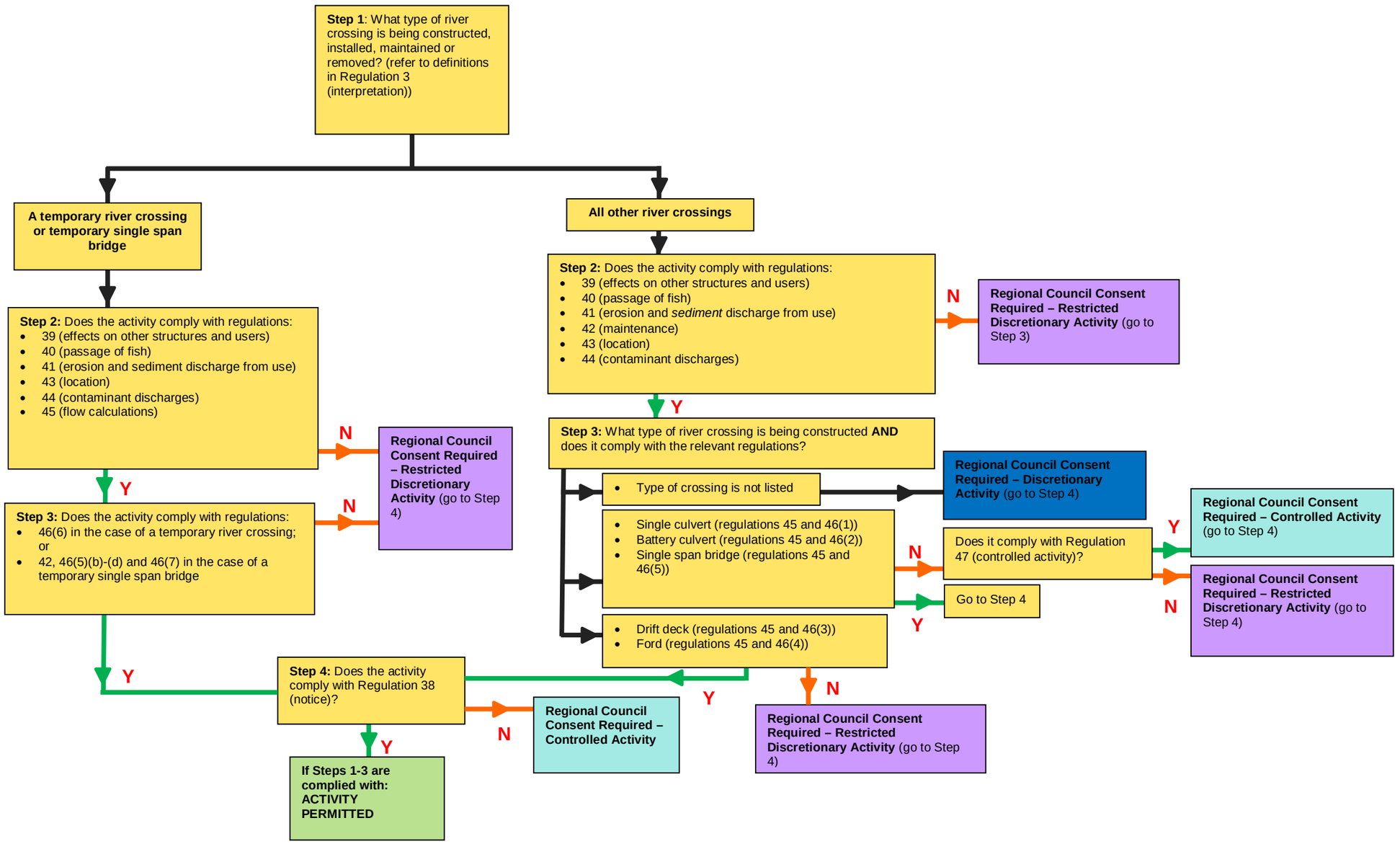

Figure 1: Flow chart to determine whether resource consent is required for river crossings.

1.1.5 Regulation 39 – Effects on other structures and users

Regulation 39 states that:

> *'A river crossing must not -*
>
> *(a) alter the natural alignment or gradient of the river; or*
>
> *(b) compromise the structural integrity or use of any other lawfully established structure or activity in the bed of the river or lake; or*
>
> *(c) dam or divert water in a way that causes flooding or ponding on any property owned or occupied by a person other than the owner of the plantation forest.'*

Alignment is the position of the *river crossing* relative to the horizontal orientation of the bed. For structures that cross the *water body* (e.g. bridge, *drift deck*), aligning the structure to be as perpendicular as possible reduces the chance that the structure redirects water away from its normal flow, which can cause scouring at the immediate site and have downstream scouring effects. For structures that carry the water through them (e.g. *culverts*), aligning the *river crossing* with the *water body* will avoid redirecting water and creating scour problems. Scouring of river beds and banks creates *sediment.* It can also affect the integrity of the structure so that the downstream side becomes 'perched' (no longer sits on the bed), affecting fish passage.

Gradient is the vertical fall of the *water body*. All structures need to match this as closely as possible to retain fish passage capability. Increasing the fall above the natural grade can cause scouring of the downstream edge of the *river crossing.* Decreasing the grade can result in the *river crossing* becoming clogged with bed material.

Regulations 39(b) and (c) protect other structures and other properties from being affected by a *river crossing*. It should generally be obvious where a *river crossing* is causing the adverse effects referred to in these regulations.

1.1.6 Regulation 40 – Passage of fish

Regulation 40 requires that all '*river crossings must provide for the upstream and downstream passage of fish in rivers'.* This mainly affects structures such as *culverts*, where the water speed inside a *culvert* with no bed material can be considerably higher. A *river crossing* can be exempt from this requirement if '*the relevant statutory fisheries manager advises the relevant regional council in writing that to provide for the passage of fish would have an adverse effect on the fish population upstream of the river crossing*'.

In a situation where providing fish passage would have an adverse effect on the upstream fish population (i.e. the test of Regulation 40(1) is considered to be met), foresters need to request confirmation of this from the relevant statutory fisheries manager. This is most likely to occur where there are populations of native fish that are cut off from other parts of the *water body*, and this absence of fish passage is protecting them from certain species such as trout.

The relevant statutory fisheries manager is employed by either the Department of Conservation (if the affected fish species is indigenous) or by Fish and Game (if the affected fish species is a sports fish). The correct Fish and Game staff can be contacted at the relevant regional office, which can be found on the Fish and Game website: https://fishandgame.org.nz/about/about-fish-and-game-council/council-staff/. The most appropriate way to reach the correct Department of Conservation staff member is to contact the relevant local office and speak with a ranger, who will then pass the request for information onto the Department of Conservation technical team. Contact details for regional officers can be found on the Department of Conservation website: http://www.doc.govt.nz/footer-links/contact-us/office-by-name/

1.1.7 Regulation 43 – Location

Regulation 43 specifies locations where *river crossings* should not be constructed. It should be relatively straightforward to identify the water bodies and *significant natural areas* referred to in sub-clauses (a)-(e)[1] and general guidance on how to identify the location and boundaries of these water bodies is provided in section 4.3.1 of the NES-PF User Guide.

Regulation 43 (f) and (g) control the proximity of *river crossings* upstream and downstream of dwellings by requiring that they are not constructed:

> *(f) less than 500m upstream of a dwelling that is within 15 m of a river bed that is 3 m or more wide.*
>
> *(g) downstream of a dwelling with a ground-floor level that is less than 1 m above the highest part of the river crossing*.

The purpose of Regulation 43(f) is to reduce the likelihood of damage to a downstream *dwelling*, in the case of blockage or structural failure of an upstream crossing. This upstream buffer distance of 500m means that any crossing failure or debris caught up in a *river crossing* will have lost energy and will have reduced the ability to cause damage by the time it reaches the dwelling. This condition only applies where the *dwelling* is reasonably close to a river (within 15m) so that the construction of *river crossings* is not unnecessarily constrained where the risk of such damage is low. The 500m buffer distance should be measured from the downstream side of the *river crossing* and measure the shortest distance to the upstream facing side of the house (see Figure 10 below).

The purpose of Regulation 43 (g) is to avoid flooding of a *dwelling* should the water pond behind the *river crossing* (e.g. the *culvert* becomes blocked with debris during a storm event). There is no maximum distance between the *river crossing* and dwelling specified in (g) because any upstream dwellings that have a ground floor elevation less than 1m higher than the *river crossing* have the potential to be flooded. Naturally, the elevation of the dwelling above the river crossing will increase the further upstream the dwelling is.

Figures 2 and 3 show situations under Regulation 43 (f) and (g) where *river crossings* are not to be constructed to assist in understanding these locational limits on *river crossings*.

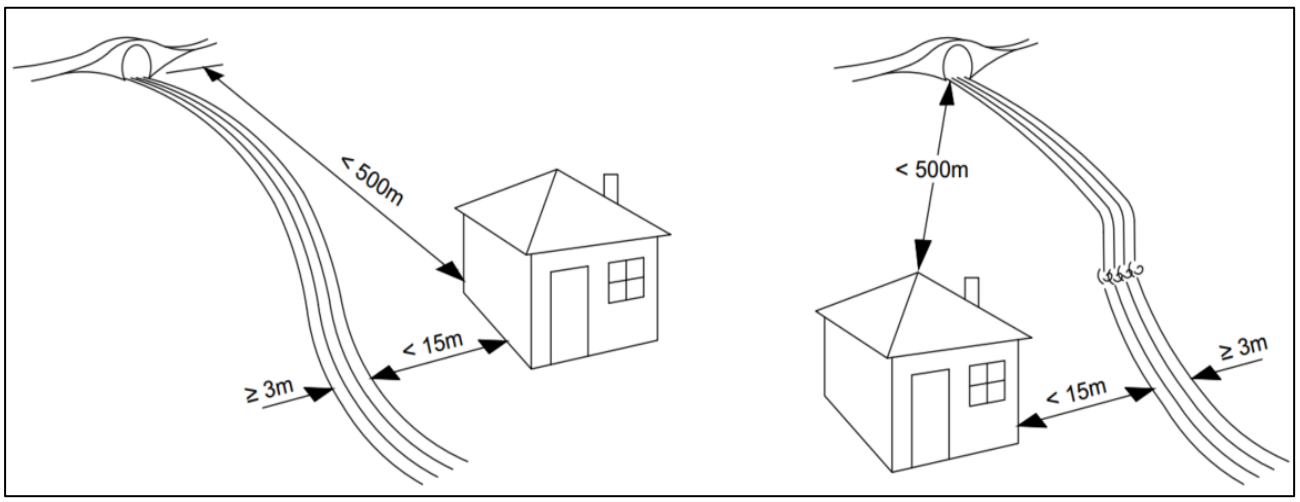

Figure 2: Diagram of river crossing upstream of dwelling that is within 15m from river bed.

[1] Different sized *wetlands*, outstanding freshwater bodies and waterbodies subject to a conservation order, and *significant natural areas.*

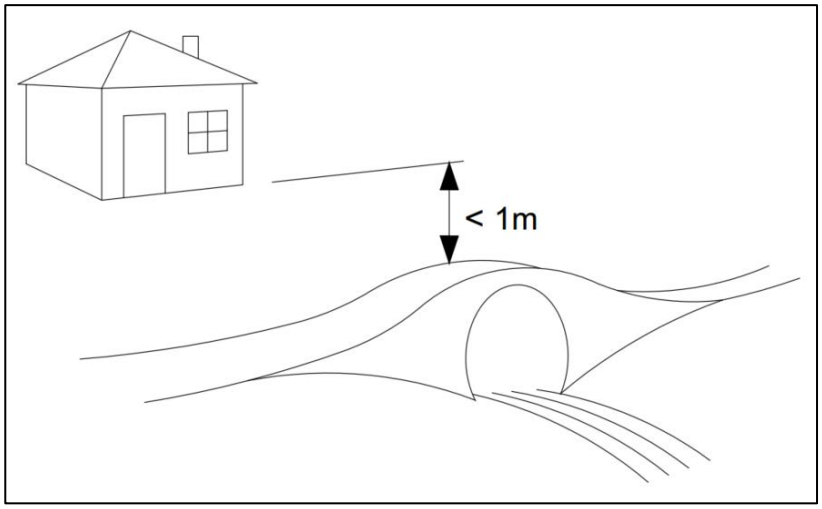

Figure 3: Diagram of dwelling with ground level less than 1m above river crossing

1.1.8 Guidance on specific types of *river crossings*

The *river crossing* regulations in subpart 4 of the NES-PF require that to be a permitted activity:

- The general regulations for *river crossings* (Regulations 38-45) [2] are complied with; **and**
- Regulations specific to the type of *river crossing* are complied with (Regulation 46) [3].

Regulation 46 sets out the permitted activity conditions specific to various types of *river crossings*. In all cases there is an upper limit to the size of the *river crossing* and resource consent is required for any *river crossing* larger than the specified limit.

Note that these regulations do not apply to *existing river crossings* but will apply when an *existing river crossing* is upgraded or replaced.

1.1.9 Single culverts

Culvert and *single culvert* are defined in the NES-PF as:

> ***culvert** means—-*
>
> *(a) a pipe or box structure that conveys a storm water flow under a forestry road or forestry track; or*
>
> *(b) the entire structure used to channel a water body under a forestry road or forestry track*
>
> ***single culvert** means – a river crossing structure made by using one culvert to carry the water flow and creating a surface on top of the culvert to cross a water body.*

*Single culvert*s are the most common *river crossing* used to cross small to medium sized streams. *Culverts* can be smooth or corrugated and made from a wide range of materials - plastic, concrete, galvanised steel or aluminium. *Culverts* are easy to install and relatively low cost, compared to other types of *river crossings*. When they are designed, constructed and maintained correctly, culverts will effectively function for many years. However, they still require careful planning and installation to prevent failure.

[2] Except for a *temporary river crossing* which does not need to comply with Regulation 42.

[3] In the case of temporary single span bridges these must also meet 46(5)(b), (c) and (d).

The focus of the permitted activity conditions for *single culverts* in Regulations 46(1)(a)-(i) is to manage environmental and natural hazard risks. The specific conditions for *single culverts* are:

- **Regulation 46(1)(a)** – the calculated 5% *AEP* storm flow from the catchment above the river crossing point must be less than or equal to 5.5m³ per second. This condition manages flood risk by ensuring the *single culvert* is designed to cope with an acceptable amount of storm flow to mitigate downstream flooding effects. Storm flows above this threshold will be subject to engineering peer review via a resource consent process. This will ensure that engineering design is appropriate in terms of the potential adverse effects on the environment.

  Regulation 45 sets out the three approved methodologies for flood flow estimations, which can be used with local rainfall data. NIWA's online tool 'stream explorer' can also be used to obtain estimates of flood peak discharges across New Zealand using these methods: https://stream-explorer.niwa.co.nz/. Note however that stream explorer does have limitations in that it only calculates flows for each stream section between junctions. It can therefore be very conservative for the upper part of a stream section if there are long stretches between junctions.

- **Regulation 46(1)(b)** – *single culverts* must be designed to pass a 5% *AEP* flood event without *'heading up'*. *Heading up* is defined in the NES-PF as *'hydraulic head of water above the culvert inlet at times when a culverts nominal capacity is exceeded*'. It occurs when the capacity of the pipe cannot handle the full flow of water reaching it and water starts to build up on the upstream side of the *culvert*. This can create dam-like conditions and, in the event of structural failure, this will result in a higher volume of stream flow being released downstream.
- **Regulation 46(1)(c)** – the *culvert* diameter must be at least 450mm. This is to provide sufficient internal diameter to allow for maintenance.
- **Regulation 46(1)(d)** – the highest point (inlet end) of the *river crossing* must be no greater than 3.5m above the river bed. This is in case of blockage and structural failure. This height limit ensures that if the *culvert* is completely blocked, the height of the dam created by the culvert will be no more than 3.5m.
- **Regulation 46(1)(e)** – *fill* depth and construction must comply with *culvert* manufacturer's specifications. This is to avoid *culverts* being crushed or cracked because the *fill* has not been placed in a way that the road load bears evenly on the *culvert* pipe.
- **Regulation 46(1)(f)** – the *culvert* invert must be located so that at least 20% of the *culvert's* diameter is below the river bed level. This is to provide for fish passage.
- **Regulation 46(1)(g)** – where the *bankfull channel width* is 3m or more, the bed invert gradient must be no greater than six, measured 50m upstream and downstream of the *single culvert*.
- **Regulation 46(1)(h)** – the inlet and outlet must be protected from erosion. Protection options when designing and constructing *single culverts* include armouring the headwall and *culvert* outlet, rip rap, reno mattress, durable logs, gabions, wing walls or energy dissipating structures.
- **Regulation 46(1)(i)** - approaches and *fill* must be constructed using successively compacted layers of clean *fill* that is free of organic matter. This is to ensure the *fill* is stable.

1.1.10 Battery culverts

Battery culverts are defined in the NES-PF as:

> *a river crossing structure made by using multiple culverts that allows the free flow of water in low flow conditions and high flows and debris to flow over the top of the entire structure.*

Battery culverts are a series of pipe or box *culverts* installed alongside each other to form a low-profile crossing. The normal stream flow passes through the *culverts*, but during flood events, water flows over the top of the crossing. This allows the dry passage of vehicles in normal conditions but may result in the road occasionally being closed to vehicles for short periods during storm events.

The permitted activity conditions for *battery culverts* in Regulations 46(2)(a)-(h) are to manage environmental and natural hazard risks. The specific conditions for *battery culverts* are:

- **Regulation 46(2)(a)** – the contributing catchment must be less than 500ha. Catchments larger than this can generate significant flows and the engineering design of *battery culverts* within these catchments needs to be carefully assessed. The engineering peer review that happens via a resource consent process for catchments over 500ha is an important part of confirming that the engineering design of the *battery culvert* is appropriate for larger catchments.
- **Regulation 46(2)(b)** – maximum height of *battery culvert* (measured from the river bed) must be less than or equal to 800mm. This is to avoid creating a significant dam structure, which could have substantial downstream effects if it failed and have a substantial erosive force on the river bed if it overtopped.
- **Regulation 46(2)(c)** – *culvert* diameter must be at least 450mm but not exceed 800mm, except that the *culvert* that carries base flow must be at least 450mm in diameter but not exceed 1.2m. This allows for the central *culvert* that carries base flow to be a bit larger and set a bit deeper than the other *culverts*.
- **Regulation 46(2)(d)** – the invert of at least 1 *culvert* pipe must be at least 100mm below the river bed level and positioned to carry base flow. This is to ensure that at least one pipe provides fish passage at the lowest flow level.
- **Regulation 46(2)(e) and (f)** – inlets, outlets and approaches must be protected from erosion – protection options when designing and constructing *battery culverts* include armouring the *culvert* outlet with a concrete apron, rip rap, reno mattress, or other energy dissipating structures. Inlets can also be protected by deflectors that force most woody debris up and over the structure.
- **Regulation 46(2)(g)** – if the *bankfull channel width* is 3m or more, the bed invert gradient must be no greater than 6% measured 50m upstream and downstream of the *river crossing*.
- **Regulation 46(2)(h)** – the *culvert* must be sized to pass annual average flow and constructed to allow greater flows to pass over it without structural failure.

1.1.11 Drift decks

Drift deck is defined in the NES-PF as:

> *a river crossing structure composed of a series of inverted U-shaped precast concrete elements that is designed to pass low flows through the structure and allow high flows and debris to flow over the top of the entire structure.*

Drift decks can be a series of open bottomed inverted "U" precast concrete components, or a series of rectangular concrete box segments. Each segment is secured to each other for the length of the structure. Those with an open bottom typically need a concrete base or piers for support as an anchor. Alternatively, they may use piers cast in-situ with precast concrete bridging slabs. The open bottom and concrete bridging slabs can be removed for use at a different site. Often the slabs are lifted off and re-used elsewhere once *harvesting* within an area is complete, leaving the piers in place for the next harvest rotation.

Drift decks cause less damage if they fail compared to *culvert* crossings so there are fewer specific conditions in the NES-PF for *drift decks*. The specific conditions that apply to *drift decks* are:

- **Regulation 46(3)(a)** – contributing catchment must be less than 500ha. Catchments larger than this can generate significant flows. A resource consent process for contributing catchments over 500ha is important to provide some regulatory oversight and confirm that engineering design of the *drift deck* is appropriate for larger catchments;
- **Regulation 46(3)(b)** – approaches and outlets must be protected from erosion. Inlets from *drift decks* are more challenging to protect from large woody debris because debris cannot be deflected as easily as from a *battery culvert*. Using a debris fence upstream and armour outlets with rip rap, reno mattress, or other energy dissipating structures may help to protect *drift decks* from erosion; and
- **Regulation 46(3)(c)** – if the *bankfull channel width* is 3m or more and the *bed invert gradient* is greater than 6% measured 50m upstream and downstream of the *river crossing*, two discrete footings must be used to embed the *drift deck* into the substrate. This is to maintain the natural bed material under the structure.

1.1.12 Fords

Ford is defined in the NES-PF as:

> *a hard surface on the bed of a river (that is permanently or frequently overtopped by water) that allows the crossing of a river by machinery or vehicles*

Fords are generally used on low volume roads to cross broad, shallow, low to medium flow streams. This makes it easy for the road grade to be brought down to the level of the channel bottom. *Fords* can be just a graded river bed, a naturally rocky bed or can have a concrete pad to assist with vehicle traction and to reduce sedimentation from vehicle passes.

Fords differ from other *river crossings* in that they can also create *sediment* problems when they are being used, not just while they are being constructed. The specific conditions that apply to *fords* are:

- **Regulation 46(4)(a)** – water from the surface of *forestry roads or forestry tracks* must be intercepted and passed through a *sediment* treatment structure, such as a *sediment* trap, positioned as close as practicable to the water body above the annual flood flow level. The purpose is to minimise the release of *sediment* to the water body.
- **Regulation 46(4)(b)** – use of the *ford* must not cause a conspicuous change in colour or visual clarity beyond a 100m mixing zone downstream for more than 30 consecutive minutes after use of the *ford.* It is expected that councils will apply their own guidelines and procedures to assess what is a conspicuous change in colour or visual clarity (as discussed in section 4.9 of the NES-PF User Guide).
- **Regulation 46(4)(c)** – new *fords* are not permitted where a regional plan or Water Conservation Order has identified the river as a habitat for threatened indigenous fish or as a fish spawning area. The relevant regional council will be able to confirm whether the river is a habitat for threatened indigenous fish or is a *fish spawning* area and a list

of Water Conservation Orders can be found on the Ministry for the Environment's website[4].

1.1.13 Single-span bridges

Single-span bridges are the most common type of bridge used for *plantation forestry* and are typically beam and deck construction. Beams are usually steel "I", stressed concrete or steel truss, while decks are pre-stressed concrete or timber. Shorter crossings may be made from concrete slabs. Bridges typically cost more to construct than *culverts* or low-level *river crossings* such as *fords*.

Single-span bridges require thorough engineering design input. The specific conditions in the NES-PF for single-span bridges are:

- **Regulation 46(5)(a)** – there must be at least 1m clearance of the bridge soffit (bottom part of bridge) above the design flood level, from a 2% AEP event.
- **Regulation 46(5)(b)** – bridges must not decrease the *bankfull channel width* or top flow width by more than 10%. This is so that the water profile is not impeded in high flow conditions. This could occur if, for example, the piers had supporting struts attached to the bridge deck.
- **Regulation 46(5)(c)** – abutments or foundations must be constructed parallel to the channel. This is to reduce the likelihood of scouring, and to retain the maximum river channel width.
- **Regulation 46(5)(d)** – a bridge on a navigable *water body* must permit continued navigability.

1.1.14 Temporary river crossings

Temporary river crossings are defined in the NES-PF as:

> ***temporary river crossing***—
>
> *(a) means a river crossing that is in place for up to two months; and*
>
> *(b) includes a corduroy, which is a structure made by laying a culvert in the bed of a river to carry the water flow and creating a running surface approach using logs placed parallel to the culvert; but*
>
> *(c) does not include a bridge or ford*

Temporary river crossings are generally used during *harvesting* to cross very small or intermittently flowing streams, to avoid the machinery getting bogged in wet ground and the associated damage to the streambed. The definition in the NES-PF effectively limits *temporary river crossings* to being in place for two months otherwise *river crossing* conditions apply.

The specific conditions in the NES-PF for *temporary river crossings* are:

- **Regulation 46(6)(a)** – excavation of the banks or bed of a river must not be greater than 200m^2.
- **Regulation 46(6)(b)** – if logs are placed in the bed of a river, a *culvert* of 300mm diameter or greater must be placed in the bed first
- **Regulation 46(6)(c)** – all *river crossing* materials must be removed from the bed of the river within 1 week of completion of construction or removal. This condition relates to

[4] http://www.mfe.govt.nz/fresh-water/water-conservation-orders/existing-water-conservation-orders

excess construction materials at the time of construction, not the materials associated with the *temporary river crossing* being in place, which can be for up to two months.

1.1.15 Temporary single-span bridges

Temporary single-span bridges are defined in the NES-PF as:

> ***temporary single-span bridge*** *means a single-span bridge that is in place for up to 2 years*

In some instances, temporary portable bridges are used for short-term *harvesting* and transport access. These are designed for rapid construction and dismantling. Most consist of prefabricated beams and decking. The NES-PF includes the following specific conditions for *temporary single span bridges*:

- **Regulation 46(6)(a)** – bridges must be constructed to pass the flood flow from a 5% *AEP* event under the bridge *soffit*.

Regulation 46(6)(b) – bridges must be constructed to enable the passage of bed material.