

## Restoring In-Stream Structures to Facilitate Fish Passage in Tasman

### April 2021 – June 2026

<p><b>Project purpose</b></p>	<p>This project will improve fish diversity and abundance throughout Tasman District by restoring fish passage at in-stream structures.</p> <p>Many streams throughout Tasman have very high native fish diversity, and 80% of these fish species are migratory, requiring uninterrupted passage to access habitat. Without this access, increased competition within reaches for food and resources limits populations.</p> <p>However, fish passage in many streams is limited by in-stream structures (e.g. culverts, weirs, fords, dams, tidegates). Of an estimated 10,000 such structures, approximately 40% pose a barrier to fish passage.</p> <p>TDC has proven that remediating these structures in-situ is feasible, using cost-effective and innovative solutions.</p>
<p><b>Project summary</b></p>	<p>Our freshwater fish species are in trouble. Eleven of the twenty species in Tasman are classified at “in decline”. Several bird species that mainly eat freshwater fish are also threatened.</p> <p>Structures in streams (e.g. culverts, dams and weirs) often block fish migration. 80% of these fish species are migratory and require uninterrupted passage to access their “homes”.</p> <p>This project aims to assess all these structures and to remediate them to ensure fish passage. By offering assistance to and working with iwi and landowners we will greatly increase the abundance and diversity of fish in our streams.</p>

## 1 Project objectives

<b>Objective</b>  <i>Describe the tangible results your project is trying to achieve.</i>	<b>Key performance indicators (KPIs)</b>  <i>KPIs are a measurable value that demonstrates progress towards objectives.</i>	<b>How will you monitor and evaluate the achievement of this objective?</b>  <i>How will you measure your progress and demonstrate that the objective has been achieved?</i>	<b>Baseline information</b>  <i>Describe the current situation, using the data you have available.</i>	<b>Expected outcome</b>  <i>What will change as a result of the objective being met? What will be the benefit?</i>
<p>1. By June 2026, fish passage at 4,350 in-stream structures across Tasman District will be <b>assessed</b>.</p>	<p>Maps of all potential in-stream structures within each freshwater management unit (FMU) produced (using GIS/LiDAR) a year in advance of the fieldwork occurring, to assist work planning (4,350 structures in total).</p> <p>100% of contractors involved in assessments trained to assess and remediate in-stream structures to ensure appropriate levels of fish passage.</p> <p>At least 10 days of training provided to field contractors, of which 9 days will be on-the-job field training.</p> <p>At least 4,350 in-stream structures assessed.</p> <p>Audits of at least 100 assessments performed.</p>	<p>Regional maps of potential in-stream structures produced annually.</p> <p>All data from the assessments entered into a device (e.g. tablet or phone app) which will facilitate efficient uploading to the database.</p> <p>A database developed to record all site visits with landowner details, site locations, results of assessments, remediation actions undertaken and remediation actions still required, such as culvert or structure replacement.</p> <p>A map of the completed assessments produced annually from Year 2. In Year 5 such a map will be produced for all assessments.</p> <p>Assessments of contractor trainees recorded.</p> <p>Audit results used to initiate extra training, if required.</p>	<p>Over 2,500 in-stream structures have been assessed to date by Tasman District Council staff, and it is estimated that there are another 7,000 – 8,000 structures on private land yet to be assessed.</p> <p>This project will focus on these previously unassessed structures, but will also reassess structures which have already been assessed if they are co-located, to ensure they are continuing to provide effective fish passage.</p>	<p>The proportion of in-stream structures providing for fish passage in the Tasman District will be known.</p> <p>This assessment information will be used to determine and prioritise which in-stream structures require remediation.</p> <p>Contractors trained to assess and remediate in-stream structures have the skills to possibly continue this work in Tasman or other areas and increase their employment opportunities.</p>

<p>2. Of those in-stream structures assessed as impeding fish passage, up to 1,566 will be <b>remediated</b> to provide appropriate levels of fish passage, by June 2026.</p>	<p>Up to 1,566 in-stream structures assessed and classed as needing remediation, effectively remediated, unless not practical or safe to do so.</p> <p>Audits of at least 40 remediated in-stream structures undertaken.</p>	<p>Details of the remediation actions taken at each site recorded in the database.</p> <p>Copies of audit records kept.</p> <p>In Year 5, number of kilometres of stream opened up fish to access calculated.</p>	<p>Of the structures that have been assessed to date, almost 40% were classed as restricting fish passage and almost 10% formed a complete barrier to fish passage.</p>	<p>Unimpeded fish passage will be provided through in-stream structures which previously impeded passage.</p> <p>Native fish populations will flourish.</p>
<p>3. By June 2026, the effectiveness of new and innovative fish passage remediation methods will be monitored at 6 in-stream structures, selected as representative examples of these new techniques.</p>	<p>Fish surveys undertaken to evaluate fish passage at a minimum of 6 in-stream structures to be remediated using different remediation methods, before and after remediation (2 surveys upstream and 2 downstream of each structure once before remediation and twice after, for a total of 72 surveys).</p> <p>One report produced, analysing all the data from fish surveys.</p>	<p>Fish surveys completed upstream and downstream of each of the 6 selected in-stream structures remediated using different techniques, once before the remediation and twice after remediation.</p> <p>Fish survey data analysed and reported.</p>	<p>Fish surveys have been completed at at least 12 sites since 2005 in Tasman District. Most demonstrate graphically the success of various remediation methods, even for sites that are in very steep country with remediation that involves vertical flexible aprons over 8m high.</p>	<p>A suite of fit-for-purpose remediation techniques will be available to ensure in-stream structures do not impede fish passage.</p>

## 2 Activity table and estimated budget for the life of the project

*For each objective, list the main tasks/activities that will be undertaken and total estimated costs for the year. All figures should exclude GST.*

Objective	Activity				
	Year 1	Year 2	Year 3	Year 4	Year 5
1. By June 2026, fish passage at 4,350 in-stream structures across Tasman District will be <b>assessed</b> .	1.1 Maps of all potential in-stream structures within each freshwater management unit (FMU) to be assessed in Years 1 and 2 will be produced (using GIS/LiDAR), to assist work planning	1.1 Maps of potential in-stream structures within each FMU to be assessed in Year 3 will be produced (using GIS/LiDAR), to assist work planning	1.1 Maps of potential in-stream structures within each FMU to be assessed in Year 4 will be produced (using GIS/LiDAR), to assist work planning	1.1 Maps of potential in-stream structures within each FMU to be assessed in Year 5 will be produced (using GIS/LiDAR), to assist work planning	
	1.2 Contractors will be trained to assess and remediate in-stream structures to ensure appropriate levels of fish passage	1.2 Training of any new staff, and retraining if audit results indicate it is required	1.2 Training of any new staff, and retraining if audit results indicate it is required	1.2 Training of any new staff, and retraining if audit results indicate it is required	
	1.3 At least 400 in-stream structures will be assessed	1.3 At least 1,400 in-streams structures will be assessed	1.3 At least 1,400 in-streams structures will be assessed	1.3 At least 800 in-streams structures will be assessed	1.1 At least 350 in-streams structures will be assessed
	1.4 Audits of at least 25 assessments will be undertaken	1.4 Audits of at least 25 assessments will be undertaken	1.4 Audits of at least 25 assessments will be undertaken	1.4 Audits of at least 25 assessments will be undertaken	
	1.5 Develop database to record all assessment and remediation data	1.5 In-stream structure assessment data from Years 1 and 2 will be uploaded to database, including locations of	1.5 In-stream structure assessment data from Year 3 will be uploaded to database, including locations of	1.5 In-stream structure assessment data from Year 4 will be uploaded to database, including locations of	1.2 In-stream structure assessment data from Year 5 will be uploaded to database, including locations of

		culverts or structures still requiring replacement	culverts or structures still requiring replacement	culverts or structures still requiring replacement	culverts or structures still requiring replacement
		1.6 Map will be produced of sites assessed and remediated in Year 1	1.6 Map will be produced of sites assessed and remediated in Year 2	1.6 Map will be produced of sites assessed and remediated in Year 3	1.3 Map will be produced of all sites assessed and remediated in Years 1 – 5
2. Of those in-stream structures assessed as impeding fish passage, up to 1,566 will be <b>remediated</b> to provide appropriate levels of fish passage, by June 2026.	2.1 Approximately 144 sites assessed and classed as needing remediation will be remediated, unless not practical or safe to do so	2.1 Approximately 504 sites assessed and classed as needing remediation will be remediated, unless not practical or safe to do so	2.1 Approximately 504 sites assessed and classed as needing remediation will be remediated, unless not practical or safe to do so	2.1 Approximately 288 sites assessed and classed as needing remediation will be remediated, unless not practical or safe to do so	2.1 Approximately 126 sites assessed and classed as needing remediation will be remediated, unless not practical or safe to do so
	2.2 Contractors trained to remediate in-stream structures to ensure appropriate levels of fish passage, as per Activity 1.2 above	2.2 Training of any new staff, and retraining if audit results indicate it is required	2.2 Training of any new staff, and retraining if audit results indicate it is required	2.2 Training of any new staff, and retraining if audit results indicate it is required	
	2.3 Audits of up to 10 remediations will be undertaken	2.3 Audits of up to 12 remediations will be undertaken	2.3 Audits of up to 12 remediations will be undertaken	2.3 Audits of up to 6 remediations will be undertaken	
		2.4 Map will be produced of sites remediated in Year 1, as per 1.6 above	2.4 Map will be produced of sites remediated in Year 2, as per 1.6 above	2.4 Map will be produced of sites remediated in Year 3, as per 1.6 above	2.2 Map will be produced of all sites assessed and remediated in Years 1 – 5, as per 1.6 above
3. By June 2026, the effectiveness of new and innovative fish passage remediation methods will be monitored at 6 in-	3.1 Fish surveys will be completed upstream and downstream of at least two structures undertaken <b>prior to remediation</b> , with remediation of the	3.1 Fish survey will be completed upstream and downstream of at least two structures undertaken <b>prior to remediation</b> , with remediation of the	3.1 Fish survey will be completed upstream and downstream of at least two structures undertaken <b>prior to remediation</b> , with remediation of the		

stream structures, selected as representative examples of these new techniques.	two structures to be completed within a month after fish surveys	two structures to be completed within a month after fish surveys	two structures to be completed within a month after fish surveys		
		3.2 Fish surveys will be completed upstream and downstream of the two structures surveyed in Year 1 but undertaken <b>after the remediation</b> (and following a spring recruitment period)	3.2 Fish surveys will be completed upstream and downstream of the 4 structures surveyed in Year 1 and 2 undertaken <b>after the remediation</b> (and following a spring recruitment period)	3.1 Fish surveys will be completed upstream and downstream of the 4 structures surveyed in Year 2 and 3 undertaken <b>after the remediation</b> (and following a spring recruitment period)	3.1 Fish surveys will be completed upstream and downstream of the two structures surveyed in Year 3 undertaken <b>after the remediation</b> (and following a spring recruitment period)
					3.2 One report produced, analysing all the data from fish surveys