

Te Kowhai East Limited Partnership

Te Kowhai East Industrial Development

Substantive Application for Approvals

**Volume D – Complex Freshwater Fisheries
Approval**

August 2026



Document control

Project identification	
Client	Te Kowhai East Limited Partnership
BBO details	Bloxam Burnett & Olliver Ltd (BBO) Level 5, Building E, Union Square, 192 Anglesea St, Hamilton
BBO representative	Emily Patterson, Senior Planner
BBO rep. contact details	██████████ ██████████
Job number/s	149220
Job name	Te Kowhai East – Industrial Development
Report name and number	Substantive Application for Approvals Volume D – Complex Freshwater Fisheries Approvals
File path	C:\12dS\data\10.7.120.14\149220 - Te Kowhai East_5617\05 Planning - Consent Applications\Substantive Application\Consent Application Template\03 Final Application\Volume D - Freshwater Fisheries .docx

Report status			
Status	Name	Signature	Date
Prepared by	Emily Patterson & Kathryn Drew		31/8/2026
Checked by	Kathryn Drew		31/8/2026
Approved by	Stephen Bigwood		31/8/2026



Acronyms and Abbreviations

The glossary of acronyms and abbreviations in **Volumes A and B** of the Substantive Application also applies to this Volume and should be read together with the additional acronyms and abbreviations set out below.

Acronym/Abbreviation	Term
CFFA	Complex Freshwater Fisheries Approval
FFR	Freshwater Fisheries Regulations 1983



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Appendix A – Complex Freshwater Fisheries Conditions

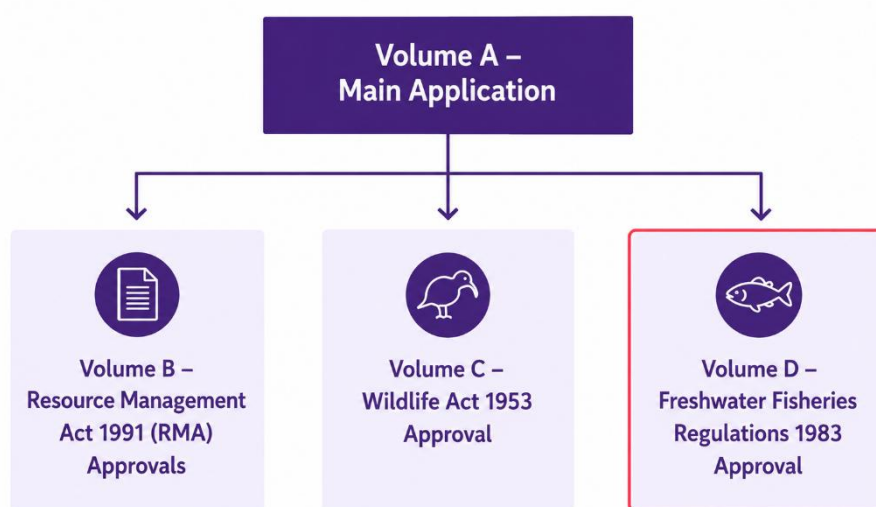


1. COMPLEX FRESHWATER FISHERIES APPROVALS

1.1 Overview

Volume D of the Application has been prepared on behalf of Te Kowhai East Limited Partnership (TKELP) in support of the Complex Freshwater Fisheries Approval sought under Schedule 9 of the Fast-track Approvals Act 2024 (FTAA) in relation to activities regulated by the Freshwater Fisheries Regulations 1983 (FFR) for the Te Kowhai East Project (TKE or the Project).

Volume D describes the freshwater fisheries approval sought, the activities to which that approval relates, and the relevant statutory and effects assessment supporting the application. It should be read in conjunction with **Volume A**, which is the main overarching report for the Application and contains general information relevant to all approvals. Further detail on the relevant resource management approvals, statutory assessment and effects of the Project is provided in **Volume B – Resource Management Act Approvals**.



The Fast-track Approvals Act 2024 (FTAA) distinguishes between *standard freshwater fisheries activities* and *complex freshwater fisheries activities*.

A *standard freshwater fisheries activity* includes works such as culverts or fords that may impede, but do not permanently block, fish passage; specified weirs; and works involving disturbance of a water body where that disturbance is temporary or undertaken outside specified fish spawning or whitebaiting periods.

A *complex freshwater fisheries activity*¹ includes works involving a greater degree or duration of disturbance, including a culvert or ford that permanently blocks fish passage, a permanent dam or diversion structure, or

¹ **complex freshwater fisheries activity** means an activity that includes construction of any of the following:

- (a) a culvert or ford that permanently blocks fish passage;
- (b) a permanent dam or diversion structure;
- (c) works—
 - (i) that require disturbance to a water body, including diversions, in-stream operations, and removal of gravel, that persists for more than 3 months; or
 - (ii) that require disturbance of any duration during the whitebaiting season to a water body within 500 m of the coast; or
 - (iii) that require disturbance of any duration during the relevant spawning season to a water body that is known for the spawning of trout, salmon, or native fish; or



works involving disturbance of a water body that persists for more than three months or occurs during specified spawning or whitebaiting periods.

The FTAA definition of a *complex freshwater fisheries activity* extends to a broader range of activities than those expressly regulated under Part 6 of the FFR. Part 6 of the FFR is directed to fish passage. Regulation 42 applies to the construction of a culvert or ford in a natural river, stream or water where the manner of construction would impede fish passage, while regulation 43 applies to the construction of a dam or diversion structure and provides for approval of, or dispensation from, the relevant fish facility requirements.

Accordingly, although a Project activity may meet the FTAA definition of a *complex freshwater fisheries activity*, the approval sought under Schedule 9 must also be considered in the context of the relevant underlying FFR provision.

For this Project, TKELP seeks a complex freshwater fisheries approval in relation to the dam and diversion structures required to facilitate the staged reconstruction and realignment of the Mangaheka Stream. The Project has been designed so that fish passage and stream connectivity are maintained during construction through the temporary dam and diversion arrangements and through the reconstructed Mangaheka Stream once the works are complete.

No approval is sought in relation to the Project culverts under regulation 42 of the FFR. Although the Project includes permanent culverts, those culverts will be designed and constructed so that fish passage is not impeded in accordance with the National Environmental Standard for Freshwater (NES-F) and applicable fish passage requirements.

This Volume describes the activities for which the complex freshwater fisheries activity approval is sought, explains why no approval is required under regulation 42, identifies the relevant freshwater fisheries values and assesses the potential effects of the activities and the measures proposed to manage those effects. It also addresses the information requirements in Schedule 9 of the FTAA, including the design, placement, operation and fish passage arrangements for the relevant dam and diversion structures.

This Volume should also be read in conjunction with the Ecological Impact Assessment (EclA) in **Volume B – Appendix M**, which assesses the related freshwater ecological effects, the Stream Works Management Plan (STMP) in **Volume B – Appendix O** (Appendix F), which sets out the indicative construction methodology and management requirements for the stream works, and the proposed regional resource consent conditions in **Volume B – Appendix G**.

1.2 Approval sought

This Volume of the Application has been prepared to support the CFFA sought for the Project under section 42(4)(j) and Schedule 9 of the FTAA. The following sections identify the activities for which approval is sought under regulation 43 of the FFR, explain why no approval is required under regulation 42, and address the requirements of section 26ZM of the Conservation Act 1987 in relation to fish salvage and relocation.

As outlined in Section 1.1, the definition of *complex freshwater fisheries activity* under the FTAA is broader than the specific activities regulated under regulations 42 and 43 of the FFR. Accordingly, the fact that an activity falls within the FTAA definition does not, of itself, mean that an approval or dispensation is required under those regulations.

(iv) *that require repeated disturbance to a water body and are temporary works for which there is a period of 6 months or less between each period of work*



For this Project:

- No approval is sought under regulation 42; and
- Approval is sought under regulation 43 in relation to the dam and diversion structures required to facilitate the staged reconstruction and realignment of the Mangaheka Stream; and
- Any approval required under section 262M of the Conservation Act 1987 will be obtained separately prior to the relevant transfer or release of aquatic life.

The basis for those conclusions is set out below.

1.2.1 Regulation 42

Regulation 42 of the FFR applies to the construction of a culvert or ford in a natural river, stream or water where the manner of construction would impede the passage of fish.

The Project includes permanent bridge–culvert crossings of the Mangaheka Stream, together with a culvert crossing of the Te Otamanui Stream and other culverts associated with the wider stormwater network. The culvert components will be designed and constructed to maintain fish passage in accordance with the NES-F and applicable fish passage requirements.

Accordingly, the permanent culverts are addressed through the resource consent approvals sought in **Volume B** and are described further in Section 1.6 of this Volume. The indicative culvert design and installation requirements are also set out in the STMP in **Volume B – Appendix O (Appendix F)** and the associated engineering plans. No approval is therefore sought under regulation 42.

1.2.2 Regulation 43

Regulation 43 of the FFR applies to the construction of a dam or diversion structure and requires the provision of a fish facility unless a dispensation is granted.

TKELP seeks approval under regulation 43 in relation to the dam and diversion structures required to facilitate the staged reconstruction and realignment of the Mangaheka Stream.

The FFR define a “diversion structure” as a structure designed to divert or abstract natural water from its natural channel or bed, whether permanently or temporarily.

During staged construction, active work reaches will be isolated and stream flows maintained through a functioning bypass arrangement. The preferred approach is a gravity-fed temporary diversion channel constructed parallel to the active work reach. Pumped bypass systems may be used as a contingency, while pipe diversions may be used where a gravity diversion is not practicable. Temporary earth bunds, sandbags, cofferdams or equivalent damming measures may be used to isolate the working reach. The STMP requires continuous flow through the Mangaheka Stream to be maintained during construction and fish recovery to be completed before dewatering of an isolated reach.

The bypass arrangement will be designed to convey the 5-year ARI flow applicable at the time of works, with the preferred gravity-fed diversion channel providing 300 mm freeboard. The bypass will be inspected daily during operation and maintained in working condition. If flows exceed the capacity of the bypass, in-channel works will cease until the bypass arrangement has been reassessed and any additional mitigation implemented.

The temporary structures may be required to:

- (a) Isolate active work areas from flowing water;
- (b) Divert or convey water around or through active work areas;



- (c) Facilitate construction and connection of the reconstructed Mangaheka Stream;
- (d) Facilitate culvert and bridge installation, stream-bank stabilisation or other works within or adjacent to watercourses; and
- (e) Provide temporary construction access across a watercourse.

The indicative construction methodology and management requirements for these works are set out in the STMP in **Volume B – Appendix O (Appendix F)**, with the indicative layout and design of the stream modification and diversion works shown on the associated Engineering Plans in Appendices A.1 and A.2 to the STMP.

A separate permanent fish facility is not considered necessary because fish passage and stream connectivity will be maintained through the temporary diversion arrangements during construction and through the reconstructed Mangaheka Stream once the works are complete.

1.2.3 Conservation Act 1987 – transfer or release of aquatic life

Section 26ZM of the Conservation Act 1987 regulates the transfer and release of live aquatic life. The particular approval requirement depends on the nature of the transfer and whether the relevant species already occurs at the receiving location.

Fish salvage and relocation will be undertaken as part of the Project where required before isolation, dewatering or other works that may strand or harm aquatic fauna. Fish recovered from affected work areas will be relocated to suitable receiving habitat in accordance with the FMP in **Volume B – Appendix V**.

Black mudfish will also be captured from confirmed or potential habitat affected by the Project and relocated to suitable replacement habitat established in accordance with the BMHCP.

The final receiving locations for relocated aquatic life will be confirmed by a suitably qualified and experienced freshwater ecologist having regard to the species involved, habitat suitability and connectivity. Once those locations are confirmed, the need for any approval under section 26ZM will be determined and any approval required will be obtained before the relevant transfer or release occurs.

On the basis of the proposed salvage and relocation approach, approval under section 26ZM(3)(a) is not presently expected to be required, as relocation is anticipated to occur within suitable habitat associated with existing local populations (i.e. within the same Site). However, if the final receiving location constitutes a new location where the relevant species does not already occur, any approval required under section 26ZM(3)(a) will be obtained separately before relocation occurs.

1.3 Existing freshwater environment

The freshwater environment associated with the Project is described in **Section 2.11.5 of Volume A** and assessed in detail in Section 6 of the EclA (**Volume B – Appendix M**). That assessment provides the principal baseline information relevant to the Schedule 9 requirements, including the freshwater species and values present and the water quality and habitat characteristics of the affected watercourses.

Watercourses within the Project site have been classified in accordance with the Waikato Regional Plan (WRP) definitions. These comprise the Mangaheka Stream, the Te Otamanui Stream, the highly modified unnamed watercourse (referred to as M13), and an extensive network of artificial farm drains. The Mangaheka and Te Otamanui Streams are highly modified aquatic environments that have been historically straightened and deepened for drainage purposes. The artificial farm drains are man-made drainage canals with no natural portions from their headwaters and are classified as artificial watercourses under the WRP.



The Mangaheka Stream flows through the Project site from Koura Drive on the eastern boundary to the western boundary, before ultimately discharging to the Waipā River. Although highly modified, the Mangaheka Stream provides habitat and connectivity for indigenous freshwater species and has been assessed in the EclA as having **high ecological value**.

The Te Otamanui Stream crosses the southern part of the Project site within the headwaters of the Te Otamanui catchment. It has also been substantially modified through historic straightening and deepening and has been assessed as having **moderate ecological value**. Watercourse M13 is similarly highly modified and has **low ecological value**.

The ecological values assigned to the Mangaheka Stream, Te Otamanui Stream and artificial drains are summarised in **Section 6.6 of the EclA**.

Aquatic habitat within the Mangaheka Stream, Te Otamanui Stream and M13 is generally characterised by incised and channelised reaches, deep silt deposits, limited habitat diversity and poor riparian vegetation and shading. Stream Ecological Valuation surveys undertaken for the EclA returned low overall scores, reflecting the modified condition and limited ecological function of these watercourses (refer Section 6.4 of the EclA).

Despite these modified conditions, indigenous freshwater fish are present within the Project site and wider catchment as described in Section 6.5 of the EclA. Species identified within the Project area through project-specific surveys include shortfin eel, longfin eel, giant kōkopu and black mudfish, with banded kōkopu also recorded historically within the wider Mangaheka Stream catchment. Longfin eel, giant kōkopu and black mudfish are identified in the EclA as *At Risk – Declining*. The presence of these species, together with the role of the Mangaheka Stream as a migratory connection between the Waipā River and the upper catchment, contributes to the ecological importance of the freshwater environment.

The EclA records that the artificial farm drains are generally of poor habitat quality due to their straight alignments, lack of riparian vegetation and shading, low habitat diversity and, in some cases, intermittent or stagnant flow conditions. However, black mudfish have been recorded in a number of these drains. The EclA therefore assesses drains supporting black mudfish as having **moderate ecological value**, while other artificial drains have low ecological value.

Water quality within the Mangaheka catchment reflects its highly modified rural setting. Historic monitoring identified elevated nutrients and some total metal concentrations, while project-specific physicochemical monitoring in May 2026 recorded generally low dissolved oxygen within the artificial drains and Te Otamanui Stream, with higher dissolved oxygen in the Mangaheka Stream. These conditions are consistent with the generally degraded freshwater habitat described above.

The water quality and quantity characteristics relevant to the temporary dam and diversion structures will vary by construction reach. The affected reaches, indicative stream works staging and flow-management requirements are identified in the **STMP in Volume B – Appendix O (Appendix F)**. The STMP requires continuous flow through the Mangaheka Stream to be maintained during construction and temporary bypass arrangements to be designed for the applicable 5-year ARI flow.

Further information on baseline water quality, aquatic habitat and freshwater values upstream and downstream of the affected works is provided in the EclA in **Volume B – Appendix M**.

1.4 Purpose of the proposed activity

The purpose of the proposed activity is to enable the construction of the Project, including the permanent reconstruction and realignment of the Mangaheka Stream and the temporary damming and diversion works required to facilitate its staged construction.



As described in Section 3.2.3 and 3.6 of Volume A, the Project includes an integrated stormwater and flood-management system within which the Mangaheka Stream corridor performs a stormwater conveyance, flood-management and ecological function. The relevant works include:

- Lowering and reconstructing the existing Mangaheka Stream and creating a meandering baseflow channel with dimensions generally similar to the existing channel;
- Creating an approximately 17 m wide flood conveyance corridor along the Mangaheka Stream to accommodate the 2-year, 10-year and 100-year flood events, operating in conjunction with attenuation provided by the stormwater wetlands;
- Downstream transition works involving lowering of the Mangaheka Stream for approximately 400 m downstream of the Project site through 302 and 360 Te Kowhai Road and 196 Onion Road;
- Construction of stormwater conveyance channels beyond the outer edge of the Mangaheka Stream flood conveyance corridor;
- Creating a longer meandering stream alignment through the Site; and
- Instream and riparian habitat enhancement in accordance with the Mangaheka Stream Enhancement Plan (MSEP), including woody debris, native planting and gravel riffles.

The Mangaheka Stream works will be undertaken progressively in three principal reaches alongside the wider earthworks programme. The indicative staging comprises approximately CH400–CH1500, CH1500–CH2250 and CH2250–CH2660, as set out in the STMP in **Volume B – Appendix O (Appendix F)**. Each stage will comprise discrete working reaches that can be isolated, dewatered, reconstructed and reinstated before works progress to the next reach.

Active work reaches will be isolated from stream flows, with temporary damming and diversion arrangements used to maintain continuous flow around or through the work area. Fish capture and relocation will be undertaken before dewatering, following which the relevant reach will be excavated and reconstructed. Flow will then be transferred into the completed and stabilised channel before works progress to the next reach. The indicative diversion, isolation, dewatering and reinstatement methodology is set out in the STMP, with the associated stream modification and diversion layouts shown on the Engineering Plans in Appendices A.1 and A.2 to the STMP.

The regulation 43 approval is therefore sought in relation to the dam and diversion structures required to facilitate the staged reconstruction and realignment of the Mangaheka Stream. The Project has been designed so that stream connectivity and fish passage are maintained during construction and through the reconstructed Mangaheka Stream once the works are complete.

1.5 Temporary dams and diversion structures

Temporary dam and diversion structures will be required from time to time to isolate active work areas and convey watercourse flows around or through those areas while stream realignment, bridge construction, stream stabilisation and other Project works within or adjacent to watercourses are undertaken. These temporary dams and diversion structures will be undertaken progressively across the three Mangaheka Stream construction phases, with each phase comprising a number of discrete working reaches, as described in **Section 3.2.3 of Volume A** and the STMP in **Volume B – Appendix O (Appendix F)**.

The Mangaheka Stream corridor forms a key hydraulic and ecological component of the proposed stormwater system. The proposed works involve widening, regrading and reconstruction of the existing stream corridor to improve conveyance capacity and reduce erosion risk under post-development conditions. The reconstructed corridor will function as both a stormwater conveyance system and a controlled overflow pathway and will include:

- Enhanced channel geometry and conveyance capacity;
- Integration of restricted culverts and overflow spillways;



- Erosion management for frequent storm events (2-year ARI); and
- Staged construction aligned with development sequencing.

The reconstructed corridor will include a meandering low-flow channel within a wider flood conveyance corridor, connected to newly created permanent pools to provide refuge for native freshwater fauna. The wider corridor will incorporate stormwater reserves, ecological planting, maintenance access and erosion protection. Batters will form the margins of the reconstructed stream corridor, with maintenance access provided at the top of those batters. The stream corridor will ultimately be vested in Council as a stormwater drainage reserve.

The typical details for the proposed reconstruction of the Mangaheka Stream are shown in **Figures 1 and 2** below.

Figure No. 1: Proposed Mangaheka Stream Corridor (Cross-Section)

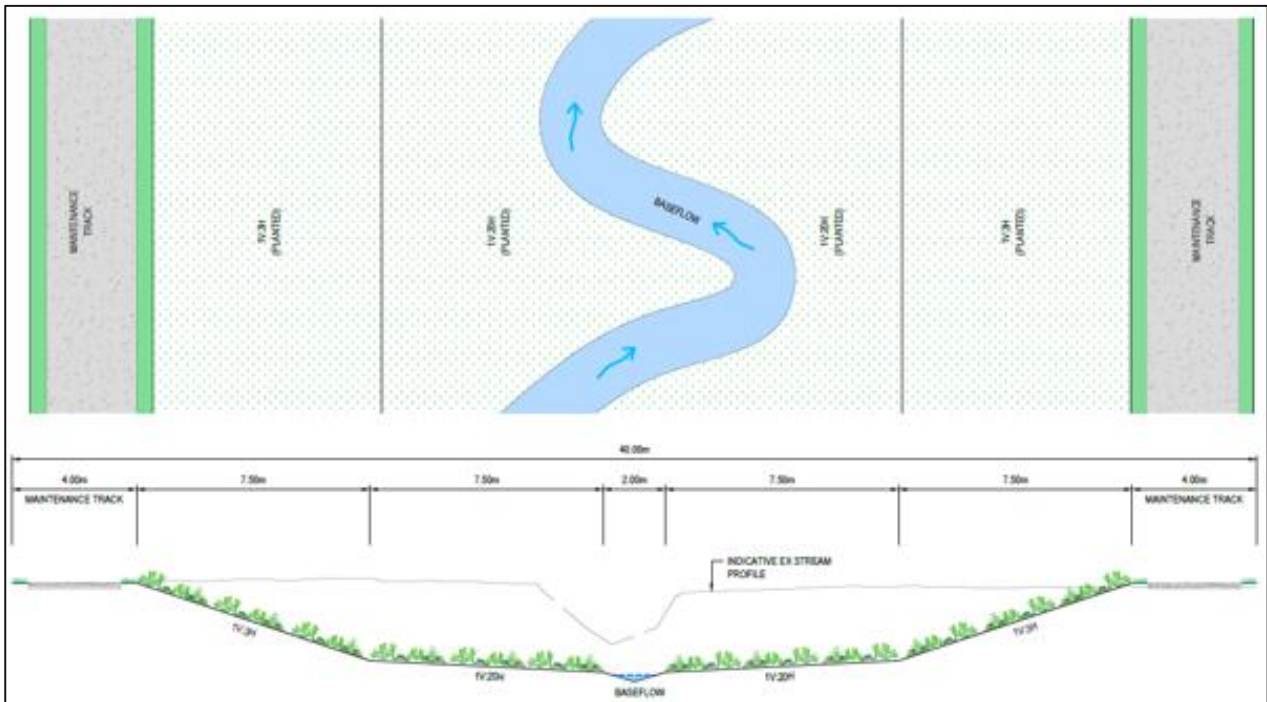
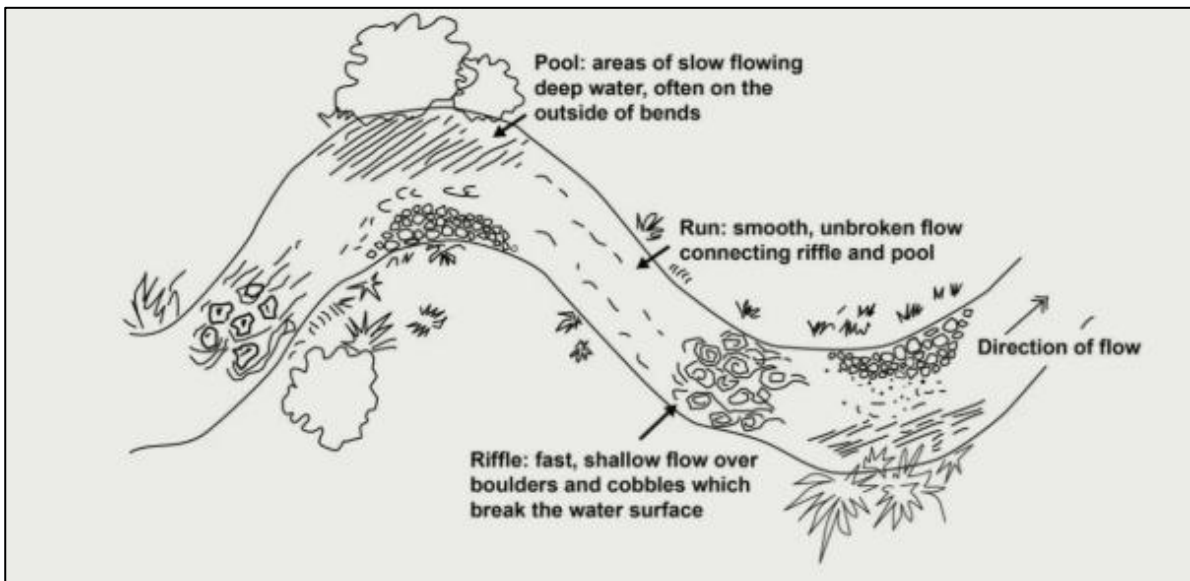


Figure No. 2: Reconstructed Mangaheka Stream Corridor



Depending on the location and construction methodology, the temporary works may include temporary dams or bunds used in conjunction with pipes, flumes, pump-around systems or temporary diversion channels, together with temporary culverts used to convey watercourse flows beneath construction access routes.

The preferred diversion methodology for the Mangaheka Stream is a gravity-fed temporary diversion channel constructed parallel to the active work reach. Where a gravity-fed diversion is not practicable, a pumped bypass may be used, with pipe diversion available as a further alternative where required by site conditions. Active work reaches may be isolated at their upstream and downstream extents using temporary earth bunds, sandbags, cofferdams or equivalent damming measures.

Temporary diversion channels will be formed in accordance with the approved temporary diversion design and lined with geotextile where required to manage erosion and sediment mobilisation. The integrity of the diversion will be confirmed by the Project engineer and freshwater ecologist before flows are diverted into it. Isolation bunds will be constructed using clean clay or imported clay and may incorporate a geotextile membrane on the upstream face to provide an effective seal.

The temporary bypass arrangement will be designed to maintain continuous flow through the Mangaheka Stream and to convey the 5-year ARI flow applicable at the time of the works without causing upstream flooding. The preferred gravity-fed diversion channel will provide 300 mm of freeboard. Pumped bypass systems may be used as a contingency for high-flow events.

The Mangaheka Stream works will be undertaken progressively through the principal construction reaches identified in the STMP, being approximately CH400–CH1500, CH1500–CH2250 and CH2250–CH2660. Each phase will comprise discrete working reaches of a length that can be effectively isolated, dewatered, reconstructed and reinstated before the next reach commences.

The temporary dams and diversion structures will be located within or immediately adjacent to the relevant active work reach. The indicative location and extent of the stream modification works and associated diversion arrangements are shown on the Engineering Plans in Appendices A.1 and A.2 to the STMP.

The precise location, dimensions, form, design, operating period and flow management methodology for each temporary structure will be confirmed through detailed design and construction planning. The particular method used at each location will be selected by a suitably qualified person having regard to:

- (a) The nature and scale of the works;
- (b) The characteristics of the affected watercourse and aquatic habitat;
- (c) Anticipated flow conditions;
- (d) The duration and sequencing of the works;
- (e) Fish passage and aquatic fauna requirements; and
- (f) The need to minimise disturbance to the bed and banks of the watercourse.

The detailed design will identify the type, dimensions, placement and operating regime of each temporary dam or diversion structure and will be consistent with the design envelope and construction methodology described in the STMP and associated Engineering Plans.

The temporary structures will be limited to the extent and duration reasonably necessary to undertake the relevant works. Watercourse flows will be maintained or conveyed around or through the active work area during construction, as appropriate to the particular construction methodology.

The bypass will be inspected daily while in operation and following rainfall events and maintained in an operational condition. If flows exceed the capacity of the bypass, in-channel works will cease and the bypass arrangement will be reassessed by the Project engineer before works recommence.



Fish recovery will be completed before dewatering of an isolated working reach. Residual water will be pumped to an appropriate sediment-retention structure before discharge, and no untreated dewatering discharge will be made directly to the active downstream Mangaheka Stream.

Once the relevant works are complete, watercourse flows will be transferred to the permanent channel, the temporary structures will be removed, and the affected bed and banks will be stabilised or reinstated. The STMP requires temporary bunds and bypass structures to be removed within five working days of completion of the works in the relevant reach.

The detailed design and construction methodology for the temporary structures will be documented through the information and management measures required under the proposed regional resource consent conditions and any conditions of the regulation 43 approval. Further construction and operational requirements are set out in the STMP in **Volume B – Appendix O (Appendix F)**, with the indicative stream diversion and modification layouts shown on the Engineering Plans in Appendices A.1 and A.2 to that Plan. The information currently available in relation to the relevant Schedule 9 matters is summarised in **Table 1.1** below.

Table 1.1: Schedule 9 information table

Schedule 9 matter	Information
Type	Temporary diversion channels, temporary bunds, sandbags/cofferdams, pumped bypasses, pipe diversions and temporary culverts.
Dimensions	To be confirmed through detailed design. Gravity-fed temporary diversion channels will provide 300 mm freeboard and sufficient capacity to convey the applicable 5-year ARI flow.
Design	A gravity-fed diversion is the preferred methodology, with pumped or pipe bypass arrangements used where necessary. Temporary isolation structures and associated erosion and sediment controls will be designed and implemented in accordance with the STMP.
Placement	The temporary structures will be located within the identified Mangaheka Stream work reaches shown on the Engineering Plans. Their precise coordinates will depend on the detailed construction methodology for each working reach and will be confirmed on the detailed stream works plans prior to construction.
Water flows	Continuous flow through the Mangaheka Stream will be maintained. Temporary bypass arrangements will be sized to convey the applicable 5-year ARI flow.
Operating regime	Temporary structures will operate only for the duration necessary to complete the relevant work reach. They will be inspected daily while in operation, subject to high-flow contingency measures, and removed following completion of the relevant works. Fish recovery will occur before dewatering.
Fish passage	Fish passage and hydraulic connectivity will be maintained through functioning bypass arrangements during construction, with fish recovery undertaken where necessary before isolation and dewatering.

1.6 Permanent Culverts

The Project requires a number of permanent culverts to maintain connectivity of streams and proposed conveyance channels beneath the proposed roading network. The only culverts located within existing natural watercourses are the two Mangaheka Stream bridge–culvert crossings and the Te Otamanui Stream culvert. All other permanent culverts are associated with the proposed stormwater conveyance network and do not sit within existing natural channels. The location and indicative form of these structures are described



in the Civil Infrastructure Report in **Volume B – Appendix O**, the **STMP in Volume B – Appendix O (Appendix F)**, and the associated Engineering Plans, and are shown in **Figure 3** below.

Figure No. 3: Location of permanent culverts within the site

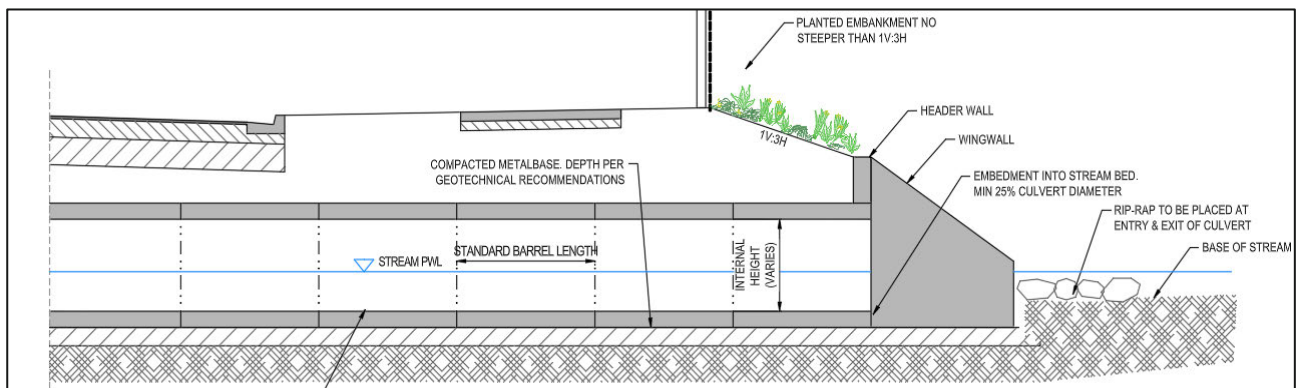
Alongside the Mangaheka Stream modification works, two crossings (M.1 and M.2) are required to provide crossing points for the main collector roads proposed within the development. The box culverts are indicatively sized at 3,000 mm × 1,500 mm for the western crossing and 2,000 mm × 1,500 mm for the eastern crossing, subject to confirmation through detailed design.

The permanent culverts will be further refined through detailed design and Engineering Approval, including hydraulic modelling using HY-8 or equivalent modelling software. The design will ensure that the structures provide the required hydraulic capacity and comply with the applicable fish passage requirements.

The Mangaheka and Te Otamanui Stream culverts will be designed in accordance with the applicable requirements of the NES-F to provide for fish passage, including appropriate culvert widths and 25% embedment below the stream bed, with further details to be confirmed through detailed design in coordination with a suitably qualified ecologist. The STMP also requires culvert installation to be integrated with the approved stream alignment, culvert invert levels to be confirmed at or below channel bed level, and no drop to be created at the culvert outlet.

A typical culvert long-section providing for fish passage is shown in **Figure 4** below.

Figure No. 4: Typical Culvert Long-Section with Fish Passage



The design will ensure that the culverts are able to convey the 5-year ARI event without surcharge and that the associated crossing arrangements provide for conveyance of the 100-year ARI event without unacceptable overtopping or flooding effects.

The reconstruction of the Mangaheka Stream improves downstream tailwater conditions and increases the conveyance capacity of the channel. This correspondingly increases peak flows within the stream under the post-development scenario. Restricted culverts are therefore proposed within the two Mangaheka Stream road crossings to attenuate peak flows to the required downstream targets for the 2-year, 10-year and 100-year ARI storm events. The restricted culverts provide a degree of online attenuation, making use of the additional storage capacity created by the widened and lowered stream corridor.

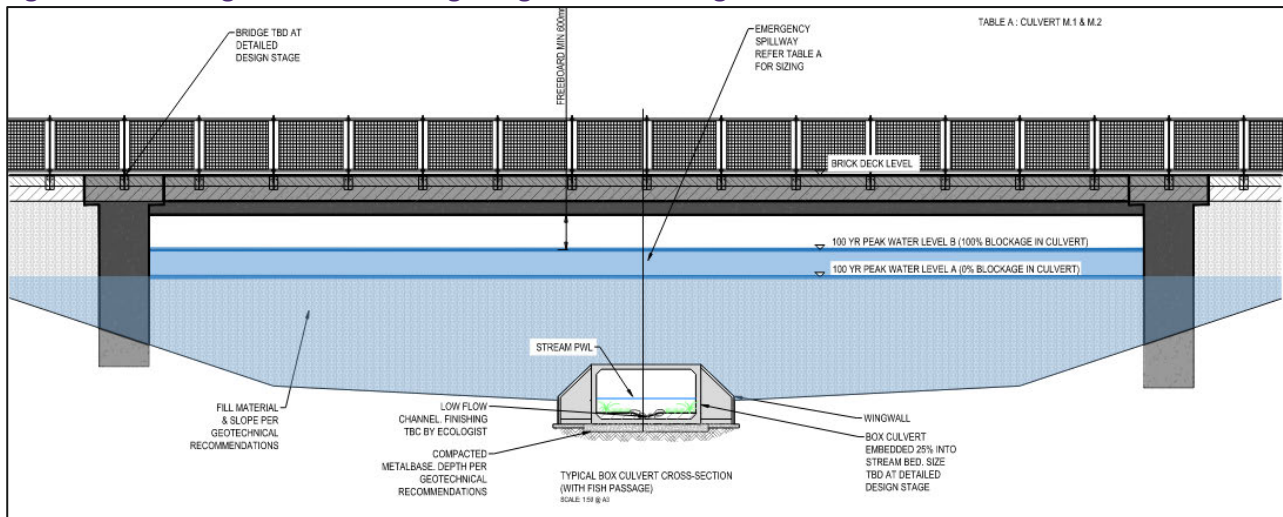
The attenuation culverts within the two road crossings manage this effect by temporarily storing and gradually releasing flood flows. They have been designed so that the combined flows from the TKE development and the upstream HCC catchment are attenuated to the required pre-development flow targets downstream.

Together with the attenuation provided by the stormwater wetlands, the restricted culverts assist in managing peak flows within the Mangaheka Stream. The box culverts convey normal and more frequent flows and provide for fish passage through the attenuation embankments. The embankment crests correspond approximately with the 100-year ARI water level, with bridge structures spanning above the embankments to provide additional flood conveyance and an emergency spillway in the event of blockage. This provides resilience within the overall hydraulic design and avoids unacceptable backing-up of floodwaters within the development.

A typical attenuation bridge–culvert arrangement is shown in **Figure 5** below.



Figure No. 5: Mangaheka Attenuating Bridge-Culvert Configuration



No approval is sought under regulation 42 of the FFR for these permanent culverts. Regulation 42 applies where a culvert or ford is constructed in a manner that impedes fish passage. The Project culverts will instead be designed and constructed so that fish passage is maintained, including through compliance with the applicable requirements of the NES-F and the fish passage design and installation requirements set out in the STMP. The remaining Project culverts form part of the proposed stormwater conveyance network and are not located within existing natural rivers, streams or waters. Accordingly, no approval is required under regulation 42 for the permanent culverts proposed as part of the Project.

1.7 Reclamation

The Project will result in the reclamation of approximately 212 m of Watercourse M13, which comprises highly modified stream habitat of low ecological value. The loss cannot be remedied or mitigated at the point of impact and is therefore addressed through offsetting, as assessed in the EclA in **Volume B – Appendix M**. The offsetting is provided through enhancement of the Mangaheka Stream.

The reclamation of Watercourse M13 is addressed through the regional resource consents sought for the Project, including the applicable requirements of the NES-F (refer Volume B). M13 does not contain any permanent dam, diversion structure, culvert or ford for which approval is sought under regulations 42 or 43 of the FFR. Accordingly, the reclamation does not form part of the CFFA sought in this Volume.

Any fish salvage required prior to reclamation of M13 will be undertaken in accordance with the FMP and the relevant requirements applying to the capture, handling and relocation of aquatic fauna.

1.8 Fish passage

Fish passage has been an important consideration in the design of the Project's stream reconstruction, permanent crossings and stormwater conveyance infrastructure. The design approach has been informed by the New Zealand Fish Passage Guidelines and the applicable requirements of the NES-F, with the objective of maintaining fish passage and aquatic connectivity through affected watercourses. The EclA identifies that replacement of existing culverts with structures designed to meet these requirements is expected to improve fish passage relative to the existing situation.

As described in **Section 1.6**, the Project does not include any permanent culvert or ford that will be constructed in a manner that impedes fish passage. The permanent Mangaheka Stream bridge-culvert crossings and the Te Otamanui Stream culvert will be designed to maintain fish passage, including through



appropriate culvert width, embedment, stream-bed continuity and hydraulic conditions. The STMP also requires culvert invert levels to be at or below the channel bed and no drop to occur at the culvert outlet.

The reconstructed Mangaheka Stream will also maintain upstream and downstream connectivity and provide suitable low-flow conditions for fish passage. The permanent fish passage outcomes are assessed in the EclA in **Volume B – Appendix M** and are not repeated in detail in this Volume.

The general fish passage approach is to:

- (a) Maintain fish passage through permanent stream crossings where fish passage is required;
- (b) Provide fish passage that is at least equivalent to existing conditions where natural or existing gradient constraints limit passage for some species; and
- (c) Not provide fish passage through ephemeral drainage paths that do not provide, or connect to, viable fish habitat.

During construction, temporary damming and diversion works will be managed to maintain stream connectivity and minimise effects on fish passage. Depending on the construction methodology, these works may include temporary diversions, bunding, over-pumping, isolation of active work areas and staged transfer of flows into reconstructed channels.

Continuous flow through the Mangaheka Stream will be maintained at all times during construction. No full channel blockage will occur unless a functioning bypass is in place. The bypass will be designed and operated so that fish are not stranded or entrapped, unless an alternative fish recovery methodology has been agreed with the freshwater ecologist.

The temporary works will be managed to:

- (a) Maintain watercourse flow and upstream and downstream hydraulic connectivity around or through the active work area, with continuous flow maintained through the Mangaheka Stream at all times;
- (b) Minimise the extent and duration of any temporary restriction on fish passage;
- (c) Provide fish passage through temporary structures where appropriate, having regard to the duration and timing of the works and the habitat available upstream and downstream;
- (d) Avoid or minimise fish stranding, injury or mortality;
- (e) Provide for fish recovery and relocation where required; and
- (f) Remove temporary structures as soon as practicable once the relevant works are complete.

Fish recovery will be completed before dewatering of an isolated working reach. Temporary bypass structures will be inspected during operation and maintained so that flow continuity and fish passage are provided. Where bypass capacity is exceeded or fish stranding or entrapment occurs, works will cease and the relevant contingency and adaptive management measures in the STMP will be implemented.

The STMP specifically requires continuous flow to be maintained through the Mangaheka Stream during staged works, with fish recovery undertaken before isolation and dewatering. Accordingly, the temporary damming and diversion works will not result in a permanent loss of fish passage, and a separate permanent fish facility is not considered necessary.

1.9 Effects on freshwater fisheries values

The effects of the Project on freshwater ecology are assessed in **Section 1.6.10 of Volume B** and in the EclA in **Volume B – Appendix M**. This section focuses on the freshwater fisheries matters relevant to the CFFA.

The main potential effects on freshwater fisheries values include:

- (a) Temporary disturbance to waterbodies during construction, including stream diversion, damming, over-pumping, isolation of works areas and staged diversion of flows;



- (b) Temporary disruption to fish passage during construction;
- (c) Potential injury, mortality or stranding of fish during instream works;
- (d) Entrainment of fish in pumps or diversion systems;
- (e) Sediment discharge and associated temporary effects on water quality and aquatic habitat;
- (f) Disturbance to the bed, banks and aquatic habitat used, or potentially used, by indigenous freshwater fish, including shortfin eel, longfin eel, giant kōkopu, black mudfish and other species known from the wider Mangaheka Stream catchment;
- (g) Temporary changes in flow depth, velocity or hydraulic connectivity; and
- (h) Temporary disturbance of habitat used for fish movement and migration.

The Project area supports a range of indigenous freshwater fish. The EclA identifies shortfin eel, longfin eel, giant kōkopu and black mudfish within the Project area, with banded kōkopu also recorded historically within the wider Mangaheka Stream catchment. Longfin eel, giant kōkopu and black mudfish are identified in the EclA as *At Risk – Declining*.

The magnitude of the potential effects will depend on the location, timing and duration of the temporary works, the construction methodology used, flow conditions and the aquatic values present at the particular works location.

The temporary damming and diversion works will be undertaken within discrete working reaches and will be limited to the duration necessary to complete the relevant works. Continuous flow will be maintained through the Mangaheka Stream using functioning bypass arrangements, with the preferred gravity-fed diversion designed to convey the applicable 5-year ARI flow.

Construction effects will be managed through the construction methodology, erosion and sediment controls, staged transfer of flows and implementation of the FMP and STMP. The FMP will manage the salvage, handling, relocation and monitoring of fish and other aquatic fauna, including aquatic fauna recovery and relocation before isolation or dewatering of work areas where fauna may be stranded or harmed. The STMP will manage the design and operation of temporary diversions, isolation and dewatering of work reaches, maintenance of flow continuity, sediment control and reinstatement.

Water quality effects associated with dewatering and instream works will be managed through treatment of dewatering discharges, turbidity monitoring and stop-work triggers. The STMP requires dewatering discharge to pass through an appropriate sediment retention structure before discharge and provides for cessation of works where specified turbidity thresholds are exceeded.

These measures will reduce the risk of injury, mortality and stranding and minimise temporary disturbance to freshwater fisheries values. Some temporary disturbance and displacement of fish may nevertheless occur while instream works are undertaken.

The temporary works will also be subject to contingency and adaptive management measures. If bypass capacity is exceeded, fish stranding or entrapment occurs, or water quality triggers are exceeded, works will cease and the relevant corrective measures in the STMP will be implemented before works recommence.

The temporary works will not result in a permanent loss of fish passage or access to upstream or downstream habitat. Watercourse flows and connectivity will be maintained through the staged construction methodology, and temporary structures will be removed once they are no longer required, with affected beds and banks stabilised or reinstated.

Overall, the effects associated with the temporary damming and diversion structures are expected to be temporary and localised and can be appropriately managed through the Project design, staged construction methodology, FMP, STMP and proposed conditions.



1.10 Measures to manage effects

Effects on freshwater fisheries values will be managed through the Project design, construction methodology and proposed regional resource consent conditions, together with implementation of the FMP and STMP.

The relevant management measures will include, as appropriate:

- (a) Ecological input into the design and sequencing of temporary works;
- (b) Undertaking works offline from flowing water where practicable;
- (c) Limiting the extent and duration of temporary damming, diversion and dewatering;
- (d) Maintaining or conveying watercourse flows around or through active work areas;
- (e) Avoiding unnecessary obstruction of fish passage;
- (f) Designing temporary structures to provide for fish passage where appropriate;
- (g) Screening pump intakes where required to avoid fish entrainment;
- (h) Isolating the active work area before dewatering;
- (i) Recovering and relocating fish before works that may strand or harm aquatic fauna;
- (j) Selecting suitable release locations with appropriate habitat and connectivity, having regard to the requirements of section 26ZM of the Conservation Act 1987;
- (k) Inspecting temporary structures and remedying any blockage, scour or fish passage impediment;
- (l) Implementing erosion and sediment controls to minimise sediment discharge and deposition; and
- (m) Implementing machinery and equipment hygiene requirements to reduce the risk of transferring freshwater pest organisms between waterbodies and work areas; and
- (n) Stabilising or reinstating affected beds and banks following removal of the temporary works.

The method used for fish and aquatic fauna recovery and relocation will be determined by a suitably qualified and experienced freshwater ecologist having regard to the affected watercourse, habitat, flow conditions and species potentially present. Fish recovery will be completed before dewatering of isolated work reaches in accordance with the FMP and STMP.

Any transfer or release of aquatic life will be undertaken in accordance with the applicable requirements of section 26ZM of the Conservation Act 1987. The need for any approval under that section will be confirmed once the relevant receiving location is finalised, and any approval required will be obtained before the transfer or release occurs.

Any pest or noxious fish encountered during fish salvage will be managed in accordance with the FMP and the applicable requirements of the FFR. In particular, noxious fish will be handled in accordance with regulation 65, including any authorisation required from the Director-General, and fish or fish remains will be disposed of in accordance with regulation 66.

The STMP also requires plant and equipment to be Check Clean Dry compliant before first entry to the Site and before transfer between Mangaheka Stream and farm drain works. Inspection records will be maintained, and equipment arriving from sites with known freshwater pest organisms will be subject to additional decontamination requirements.

These measures will be implemented through the FMP and STMP required by the proposed regional resource consent conditions. The FMP will manage the salvage, handling, relocation and monitoring of fish and other aquatic fauna, while the STMP will manage the implementation of stream works, including temporary diversion and dewatering methodologies, continuity of flow, fish passage requirements, biosecurity, sediment control, monitoring and reinstatement measures to avoid, remedy or mitigate effects on stream habitat, ecological values, water quality and stream function.



The STMP also establishes monitoring and contingency requirements for the temporary works, including daily inspection of bypass arrangements, turbidity monitoring, fish stranding response and high-flow contingency procedures.

The approach to conditions for the CFFA is addressed in Section 1.13.

1.11 Consultation

Section 4 of **Volume A** of this SAR sets out the details of the consultation that has been undertaken in relation to the Project.

Pre-lodgement consultation has been undertaken with the Department of Conservation (DOC) in relation to the FFR. As part of that engagement, the Project team met with DOC and subsequently provided draft technical material for review, including the EclA, FMP, Black Mudfish Habitat Creation Plan (BMHCP), Mangaheka Stream Enhancement Plan (MSEP) and supporting Project plans. Draft regional resource consent conditions and draft conditions for the CFFA were also provided to DOC in August 2026.

DOC's pre-lodgement feedback confirms that it understands the CFFA sought to comprise approval under regulation 43 in relation to the dam and diversion structures required to facilitate the staged reconstruction and realignment of the Mangaheka Stream. DOC also records the Applicant's position that no approval is sought under regulation 42 for the permanent culverts because those structures will be designed and constructed to maintain fish passage in accordance with the NES-F and applicable fish passage requirements.

DOC identified several matters for further consideration in relation to the CFFA, including:

- (a) Providing the information required by Schedule 9 of the FTAA for the relevant structures, including their location and coordinates;
- (b) Confirming whether temporary culverts may be required for construction access and whether any further fisheries approvals are required for those structures;
- (c) Providing a sufficiently detailed description of the freshwater fish fauna present within the Project area and wider catchment;
- (d) Addressing fish salvage, including the management and disposal of pest fish;
- (e) Providing appropriate fish passage design information, monitoring and contingency measures;
- (f) Confirming whether the proposed fish salvage and relocation activities require approval under section 26ZM(3)(a) of the Conservation Act 1987; and
- (g) Ensuring that the proposed conditions provide an appropriate mechanism for DOC to enforce matters relevant to the regulation 43 approval.

The application material has been updated in response to that feedback. The application material in this Volume includes the following:

- Section 1.5 provides further information on the type, design, placement, water flows and operating regime of the temporary dam and diversion structures, with further construction and operational detail provided in the STMP in Volume B – Appendix O (Appendix F) and its associated Engineering Plans;
- Sections 1.3 and 1.9 provide further information on freshwater fish species, values and potential effects;
- Sections 1.8 and 1.10 address fish passage, monitoring, contingency and biosecurity measures;
- Section 1.10 addresses the management and disposal of pest and noxious fish under regulations 65 and 66 of the FFR; and
- Section 1.2.3 addresses the requirements of section 26ZM of the Conservation Act 1987 and confirms that the need for any approval will be determined once receiving locations are finalised. Approval under section 26ZM(3)(a) is not presently expected to be required, but will be obtained separately if ultimately necessary.



The Applicant has also proposed a short standalone set of conditions for the CFFA which cross-reference the relevant regional resource consent conditions. This approach responds to DOC's role in administering and enforcing the FFR while avoiding unnecessary duplication of the detailed construction and ecological management requirements contained in the regional resource consent conditions.

1.12 Assessment criteria

Schedule 9, clause 5 of the FTAA sets out the matters the Panel must take into account when considering an application for a Complex Freshwater Fisheries Approval. Those matters are assessed in Table 1.2 below:

Table 1.2: Assessment against Schedule 9 matters

FTAA Requirement	Response
Purpose of the FTAA	- Granting the CFFA will support the delivery of the Project, which is a referred project under the FTAA and will provide significant national and regional benefits, as described in Section 1.7 of Volume A. - The approval is required for the dam and diversion structures required to facilitate the staged reconstruction and realignment of the Mangaheka Stream and associated Project works.
Alignments with best practice and the New Zealand Fish Passage Guidelines	- The Project seeks to maintain fish passage through affected watercourses. - The permanent stream crossings and realignments have been designed having regard to the New Zealand Fish Passage Guidelines. - Temporary works will be designed and undertaken with ecological input and in accordance with the proposed construction controls, FMP and STMP. Continuous flow and hydraulic connectivity will be maintained through the Mangaheka Stream during staged construction using functioning bypass arrangements, and aquatic fauna recovery and relocation will be undertaken before isolation and dewatering or other works that may strand or harm aquatic fauna. Temporary bypass arrangements will be inspected and maintained throughout their operation, with contingency measures implemented where flow capacity is exceeded or fish passage is compromised.
Management of risks to freshwater values or habitat, including invasive species	- Risks to freshwater values and habitat will be managed through the construction methodology, FMP, STMP, erosion and sediment controls and proposed regional resource consent conditions. - The measures include undertaking works offline from flowing water where practicable, limiting the extent and duration of temporary works, maintaining or diverting flows, screening pump intakes where required, aquatic fauna recovery and relocation, and stabilisation or reinstatement of affected stream beds and banks. - The potential for the works to facilitate the movement or establishment of invasive species will be managed through the proposed construction practices and biosecurity requirements. Plant and equipment will be Check Clean Dry compliant before first entry to the Site and before transfer between Mangaheka Stream and farm drain works, with inspection records maintained. Equipment arriving from sites where freshwater pest organisms are known to occur will be subject to additional decontamination requirements in accordance with the STMP. - Pest or noxious fish encountered during fish salvage will not be released into the receiving environment. They will be managed in accordance with the FMP and the applicable requirements of regulations 65 and 66



	of the FFR, including any authorisation required under regulation 65 and appropriate handling and disposal requirements under regulation 66.
Availability and quality of upstream and downstream habitat	- The affected watercourses are connected to the wider freshwater receiving environment, including the Mangaheka Stream and Te Otamanui Stream and, downstream, the Waipā River catchment. Habitat quality varies across the Project area. The Mangaheka Stream has high ecological value and the Te Otamanui Stream moderate ecological value, while many of the modified drainage channels have lower habitat values. - The temporary works will not result in a permanent loss of access to upstream or downstream habitat. Connectivity through the Mangaheka Stream will be maintained during construction through temporary bypass arrangements and through the reconstructed stream corridor following completion of the works.
Presence of threatened, data-deficient or at-risk species.	- The Project area supports indigenous freshwater fish including shortfin eel, longfin eel, giant kōkopu and black mudfish, with banded kōkopu also recorded within the wider Mangaheka Stream catchment. Longfin eel, giant kōkopu and black mudfish are identified in the EclA as At Risk – Declining. Their conservation status and likely distribution are described in Section 1.3 and assessed in detail in the EclA. - Potential effects on those species will be managed through maintenance of stream connectivity and fish passage, implementation of the FMP and STMP, aquatic fauna recovery and relocation before isolation and dewatering, and the other measures secured through the proposed regional resource consent conditions and CFFA conditions.
Advantages and disadvantages of providing fish passage upstream or downstream	- Maintaining fish passage will preserve ecological connectivity for resident and migratory fish species and enable continued access to suitable upstream and downstream habitat. - Fish passage through temporary structures will be provided where appropriate, having regard to the duration and timing of the works, the species potentially present and the availability and quality of habitat upstream and downstream. - A potential disadvantage of unrestricted fish passage is that it may facilitate the movement of pest or predatory fish into habitat intended for indigenous species, including habitat created for black mudfish. The design and management of created black mudfish habitat will therefore have regard to the need to avoid facilitating access by pest or predatory fish, as addressed in the BMHCP and FMP. - A permanent fish facility is not considered necessary because connectivity will be maintained through the staged temporary diversion arrangements during construction and through the reconstructed Mangaheka Stream once the permanent works are complete.

Overall, the proposed activity appropriately addresses the relevant Schedule 9 assessment criteria. The CFFA will enable the temporary damming and diversion structures required to facilitate the staged reconstruction and realignment of the Mangaheka Stream, while maintaining stream connectivity and appropriately managing effects on freshwater fisheries values.



1.13 Proposed Conditions

The freshwater fisheries matters relevant to this approval will be managed through the proposed regional resource consent conditions for works in waterbodies, together with the broader construction and environmental management conditions for the Project.

Those conditions address the activities relevant to the CFFA, including temporary damming and diversion, works within waterbodies, erosion and sediment control, maintenance of stream flows and connectivity, stabilisation and reinstatement of affected stream beds and banks, and implementation of the FMP and STMP. The FMP will manage the salvage, handling, relocation and monitoring of fish and other aquatic fauna, while the STMP will manage the implementation and sequencing of stream works, including temporary diversion and dewatering methodologies, maintenance of flow and fish passage, monitoring, contingency measures and reinstatement requirements.

The proposed regional resource consent conditions also require relevant design information and construction methodologies to be prepared by suitably qualified persons and, where applicable, submitted to WRC before the relevant works commence.

As DOC is responsible for administering and enforcing the FFR, TKELP proposes a short standalone set of conditions for the CFFA which cross-reference the relevant regional resource consent conditions, rather than duplicating the detailed construction and ecological management requirements contained in those conditions. This provides a direct mechanism for ensuring compliance with the matters relevant to the regulation 43 approval, including maintenance of stream flow and fish passage during temporary damming and diversion works, implementation of the FMP and STMP, and removal and reinstatement of temporary structures following completion of the relevant works.

Those conditions are contained in **Volume D – Appendix A**.

1.14 Conclusion

TKELP seeks that the Panel grant the CFFA sought under section 42(4)(j) and Schedule 9 of the FTAA.

The approval under regulation 43 of the FFR is sought in relation to the dam and diversion structures required to facilitate the staged reconstruction and realignment of the Mangaheka Stream and associated Project works.

No approval is sought under regulation 42 of the FFR. The permanent Mangaheka Stream bridge–culvert crossings and Te Otamanui Stream culvert will be designed and constructed to maintain fish passage in accordance with the applicable NES-F requirements and the fish passage requirements set out in the STMP. Accordingly, the Project does not propose to construct a culvert or ford in a manner that impedes fish passage.

Fish salvage and relocation will be undertaken in accordance with the applicable requirements of section 262M of the Conservation Act 1987. The need for any approval under that section will be confirmed once receiving locations are finalised, and any approval required will be obtained before the relevant transfer or release occurs. Approval under section 262M(3)(a) is not presently expected to be required.

The assessment in this Volume demonstrates that the proposed activities appropriately address the relevant Schedule 9 assessment criteria. Effects on freshwater fisheries values will be managed through the Project design, staged construction methodology, implementation of the FMP and STMP, and the proposed regional resource consent and CFFA conditions.



Stream flows and connectivity through the Mangaheka Stream will be maintained during staged construction through functioning temporary bypass arrangements, and the completed reconstructed stream will provide continuous upstream and downstream connectivity. Temporary structures will be removed once they are no longer required, with affected beds and banks stabilised or reinstated.

A separate fish facility is therefore not considered necessary, and the regulation 43 approval is appropriate and should be granted.

