RiverLink

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Notices of Requirement for Designations and Applications for Resource Consent

Volume Two: Assessment of Effects on the Environment

Appendix B

Freshwater NES and NES Soils Assessment

Appendix B – NESFW and NES Soil Assessment

NESFW culvert requirements

Chapter 6 of the AEE includes a table showing the existing and proposed situation at each culvert affected by Project works, including urban stormwater culverts. The below table assesses only those culverts connected to a 'river'[1] that require consideration under the NES FW. In particular, the table addresses each of the permitted activity conditions specified in Regulation 70.

NES FW Regulation 70 assessment

NES FW Conditions	Outlet 27	Outlet 31	Outlet 36b	Outlet 38
(a) The culvert must provide for the same passage of fish upstream and downstream as would exist without the culvert, except as required to carry out the works to place, alter, extend, or reconstruct the culvert; and	Will comply. It is unlikely fish passage currently exists between the river and the natural stream above SH 2, which is likely ephemeral. The Project is connecting to existing stormwater infrastructure under Marsden Street. Significant lengths of pipe and manholes and drop structures exist between the connection point and upstream waterway. The use of automated backflow prevention structures will not preclude fish passage should fish	Will comply. It is unlikely fish passage currently exists between the river and the natural streams in the Western Hills. The Project is connecting to existing stormwater infrastructure which runs parallel to SH 2. Significant lengths of pipe and manholes and drop structures exist between the connection point and upstream waterways. The use of automated backflow prevention structures will not preclude fish passage should fish	Will not comply. Fish passage cannot be provided because of the following reasons: • Topography prevents reinstatement of this section of channel on the new culvert alignment. • Design grades to connect to existing infrastructure will be too steep to provide fish-passage. It is noted that existing infrastructure being retained upstream is steeper than the proposed culvert and there are existing natural barriers	Will comply Fish passage will be improved compared to the existing culvert, which is perched.

[1] means a continually or intermittently flowing body of fresh water; and includes a stream and modified watercourse; but does not include any artificial watercourse (including an irrigation canal, water supply race, canal for the supply of water for electricity power generation, and farm drainage canal)

NES FW Conditions	Outlet 27	Outlet 31	Outlet 36b	Outlet 38
	passage become possible in future.	passage become possible in future.	upstream of the culvert location. This already restricts fish passage.	
(b) The culvert must be laid parallel to the slope of the bed of the river or connected area; and	Will not comply The culvert cannot be laid parallel to the slope of the existing bed as the upstream and downstream levels are different. The design retains the existing culvert for most of its length and therefore retains the existing culvert grade. The replacement section of culvert will be installed between upstream pipe level and downstream bed level.	Will not comply. The culvert cannot be laid parallel to the slope of the existing bed as the upstream and downstream levels are different. The replacement culvert will be installed between the upstream pipe level and downstream bed level.	Will not comply The culvert cannot be laid parallel to the slope of the existing bed as the upstream and downstream levels are different. The section of channel at the outlet will be relatively flat (1 in 200), existing upstream pipe is steep at a grade of 1 in 10 and the proposed culvert will be laid at a grade of between 1 in 20/1 in 50. The replacement pipe will generally be laid between upstream bed level and downstream bed level	Will comply
(c) The mean cross-sectional water velocity in the culvert must be no greater than that in all immediately adjoining river reaches; and	Will not comply While upstream and downstream velocities have not been assessed, it is expected velocity in the pipe will be higher than the downstream channel and similar or	Will not comply While upstream and downstream velocities have not been assessed, it is expected velocity in the pipe will be higher than the downstream channel and similar or	Will not comply While upstream and downstream velocities have not been assessed, it is expected velocity in the pipe will be much higher than the downstream channel and similar or slightly lower	Will comply

NES FW Conditions	Outlet 27	Outlet 31	Outlet 36b	Outlet 38
	lower than the upstream channel.	lower than the upstream channel.	than the upstream channel.	
(d) The culvert's width where it intersects with the bed of the river or connected area (s) and the width of the bed at that location (w), both measured in metres, must compare as follows: (i) where w ≤ 3, s ≥ 1.3 × w: (ii) where w > 3, s ≥ (1.2 × w) + 0.6; and	Will not comply Culvert inverts intersect with bed level at the downstream end only. To achieve compliance with formulas below this typically requires embedment of a significant percentage of the culvert diameter and the culvert must be significantly oversized, in order to retain natural substrate to support fish passage and habitat. Because of the grade of the proposed culverts, and the constraints posed by existing infrastructure, there is no benefit in doing this as described in (e) below.	Will not comply Culvert inverts intersect with bed level at the downstream end only. To achieve compliance with formulas below this typically requires embedment of a significant percentage of the culvert diameter and the culvert must be significantly oversized, in order to retain natural substrate to support fish passage and habitat. Because of the grade of the proposed culverts, and the constraints posed by existing infrastructure, there is no benefit in doing this as described in (e) below.	Will not comply Culvert inverts intersect with bed level at the downstream end only. To achieve compliance with formulas below this typically requires embedment of significant percentage of the culvert diameter and the culvert must be significantly oversized in order to retain natural substrate to support fish passage and habitat. Because of the grade of the proposed culverts, and the constraints posed by existing infrastructure, there is no benefit in doing this as described in (e) below.	Will comply
(e) The culvert must be open-bottomed or its invert must be placed so that at least 25% of the culvert's diameter	Will not comply Backflow prevention structures are required to protect the integrity of the stopbank and avoid	Will not comply Backflow prevention structures are required to protect the integrity of the stopbank and avoid	Will not comply. The culvert will not be designed to have 25% below the bed level as this would require a culvert	Will comply

NES FW Conditions	Outlet 27	Outlet 31	Outlet 36b	Outlet 38
is below the level of the bed; and	flooding upstream properties when river levels are high. Backflow prevention structures cannot effectively seal against an open-bottom culvert. The culvert will not be designed to have 25% below the bed level as this would require a culvert size much greater than that required to convey flow and embedding the culverts is not practicable because the culvert grades are too steep to maintain substrate in the culvert base.	flooding upstream properties when river levels are high. Backflow prevention structures cannot effectively seal against an open-bottom culvert. The culvert will not be designed to have 25% below the bed level as this would require a culvert size much greater than that required to convey flow and embedding the culverts is not practicable because the culvert grades are too steep to maintain substrate in the culvert base.	size much greater than that required to convey flow and embedding the culverts is not practicable because the culvert grades are too steep to maintain substrate in the culvert base. There will also be no bed material coming down this system to establish substrate material because of the upstream environment (pond and waterfall which act as basins that will retain material).	
(f) The bed substrate must be present over the full length of the culvert and stable at the flow rate at or below which the water flows for 80% of the time; and	Will not comply. Backflow prevention structures are required to protect the integrity of the stopbank and avoid flooding upstream properties when river levels are high. Backflow prevention structures cannot effectively seal against a natural bed substrate.	Will not comply. Backflow prevention structures are required to protect the integrity of the stopbank and avoid flooding upstream properties when water levels are high. Backflow prevention structures cannot effectively seal against a natural bed substrate.	Will not comply. The replacement culvert will be laid at a grade that will not retain natural substrate because the flow velocity in the pipe will flush out any material that manages to get into the pipe.	Will comply.

NES FW Conditions	Outlet 27	Outlet 31	Outlet 36b	Outlet 38
(g) The culvert provides for continuity of geomorphic processes (such as the movement of sediment and debris).	Will comply The reconstructed culverts are not connected to natural stream, they connect to existing piped infrastructure. However, the piped infrastructure still conveys stream flow and so any flow or debris which enters the system upstream will continue to be carried through the stormwater network which includes the reconstructed culverts – the reconstructed culverts do not provide an additional barrier to movement of sediment or debris.	Will comply. The reconstructed culverts are not connected to natural stream, they connect to existing piped infrastructure. However, the piped infrastructure still conveys stream flow and so any flow or debris which enters the system upstream will continue to be carried through the stormwater network which includes the reconstructed culverts – the reconstructed culverts do not provide an additional barrier to movement of sediment or debris.	Will comply. The reconstructed culverts are not connected to natural stream, they connect to existing piped infrastructure. However, the piped infrastructure still conveys stream flow and so any flow or debris which enters the system upstream will continue to be carried through the stormwater network which includes the reconstructed culverts – the reconstructed culverts do not provide an additional barrier to movement of sediment or debris.	Will comply
Overall	Does not meet all permitted activity conditions	Does not meet all permitted activity conditions	Does not meet all permitted activity conditions	Meets all permitted activity conditions

NES Soil assessment

The table below assesses RiverLink Project activities against the permitted activity standards in the NES Soil. As the table illustrates, there are permitted activity standards that might not (or will not) be met, and a Detailed Site Investigation has not yet been prepared. Therefore, resource consent under the NES Soil is being sought on a discretionary activity basis (under Regulation 11).

Regulation 8: specific subclause / requirement	Compliance
(1) Removing or replacing a fuel storage system is a permitted activity while the following requirements are met:	
(a) the activity must be done in accordance with the current edition of *Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand*, Wellington, Ministry for the Environment:	**Will comply**
(b) the territorial authority of the district where the system is located must be notified of— i. the place where the activity is to be done: ii. the dates on which it is intended that the activity begin and end: iii. the facility at which it is intended that soil taken away in the course of the activity be disposed of:	**Will comply**
(c) notification under paragraph (b) must be done no sooner than 1 month and no later than 1 week before the activity begins:	**Will comply**
(d) the volume of soil disturbed must be no more than 30 m^3 for each tank in the system:	**May not comply** Consent is sought on a conservative basis under this standard.
(e) the volume of soil taken away in the course of the activity must be no more than 30 m^3 for each tank in the system:	**May not comply** Consent is sought on a conservative basis under this standard.

Regulation 8: specific subclause / requirement	Compliance
(f) soil taken away in the course of the activity must be disposed of at a facility authorised to receive soil of that kind:	**Will comply** Spoil will be disposed of at an offsite authorised facility.
(g) the duration of the activity must be no longer than 2 months:	**Will comply**
(h) the results of the investigation of the piece of land required by the guidelines described in paragraph (a) must be reported to the territorial authority within 3 months after the activity ends.	**Will comply**
(2) Sampling the soil of the piece of land is a permitted activity while the following requirements are met:	
(a) controls to minimise the exposure of humans to mobilised contaminants must— i. be in place when the activity begins: ii. be effective while the activity is done: iii. be effective until the soil is reinstated to an erosion-resistant state:	**Will comply** Controls to minimise the exposure of humans to mobilised contaminants are described in section 9.4 and 9.14 of the AEE.
(b) the soil must be reinstated to an erosion-resistant state within 1 month after the end of the course of sampling for which the activity was done:	**May not comply** Disturbed surfaces during sampling may not be reinstated within 1 month of completion as construction works may follow closely in some areas.
(c) soil must not be taken away in the course of the activity except as samples taken for the purpose of laboratory analysis:	**Will comply**
(d) the integrity of a structure designed to contain contaminated soil or other contaminated materials must not be compromised	**Will comply** Any existing structures designed to contain contaminated soil or materials will be maintained until the source of contaminants is removed, and

Regulation 8: specific subclause / requirement	Compliance
	any new structures will be designed in accordance with relevant standards under the supervision of a SQEP.
(3) Disturbing the soil of the piece of land is a permitted activity while the following requirements are met:	
(a) controls to minimise the exposure of humans to mobilised contaminants must- i. Be in place when the activity begins: ii. Be effective while the activity is done: iii. Be effective until the soil is reinstated to an erosion-resistant state:	**Will comply** Controls to minimise the exposure of humans to mobilised contaminants are described in section 9.4 and 9.14 of the AEE.
(b) the soil must be reinstated to an erosion-resistant state within 1 month after the serving of the purpose for which the activity was done	**May not comply** Disturbed surfaces may not be reinstated within 1 month of completion of the works
(c) the volume of the disturbance of the soil of the piece of land must be no more than 25 m^3 per 500 m^2	**Will not comply** Disturbance will exceed these thresholds in some locations.
(d) soil must not be taken away in the course of the activity, except that, - i. For the purpose of laboratory analysis, any amount of soil may be taken away as samples: ii. For all other purposes combined, a maximum of $5m^3$ per $500m^2$ of soil may be taken away per year	**Will not comply** Soil being removed from the Site during the course of the activity will exceed the permitted volume. Spoil will be respread on site if it meets relevant standards, and where it does not it will be disposed of at an offsite authorised facility.
(e) soil taken away in the course of the activity must be disposed of at a facility authorised to receive soil of that kind:	**Will comply**

Regulation 8: specific subclause / requirement	Compliance
	Any soil taken off site will be transported to a facility authorised to receive soil of that kind (Class A landfill)
(f) the duration of the activity must be no longer than 2 months:	**Will not comply** Construction will extend longer than 2 months.
(g) the integrity of a structure designed to contain contaminated soil or other contaminated materials must not be compromised.	**Will comply** Any existing structures designed to contain contaminated soil or materials will be maintained until the source of contaminants is removed, and any new structures will be designed in accordance with relevant standards under the supervision of a SQEP.
Regulation 11 Discretionary activities *(1) This regulation applies to an activity described in any of regulation 5(2) to (6) on a piece of land described in regulation 5(7) or (8) that is not a permitted activity, controlled activity, or restricted discretionary activity.* *(2) The activity is a discretionary activity*	
A DSI is yet to be prepared and the activity does not comply or may not comply with parts of regulations, 8, 9 or 10. The activity is therefore assessed as a Discretionary Activity under Regulation 11.	