

Duck Creek Hearing

GOPI Proposals

We are neutral to the application and ask that the following points be taken into account and made conditions of approval in any direction to allow the proposal:

In general we expect that the Greater Wellington Regional Council (GWRC) will assess the detail of the application and impose any conditions that are needed to achieve environmentally improved outcomes.

Specific matters we ask GWRC to consider are:

- The stream realignment and stream edges, water course and bed condition be managed to ensure the viability of and increase in extent, health and quality of a range of stream and stream edge species, especially native species. This condition would cover everything from invertebrates, through to fish, eels and birds;
- Existing vegetation that shades and protects the stream be preserved and enhanced;
- Where the stream flows through remnant bush, all of this be incorporated into the relevant esplanade reserve;
- Where stream side shade vegetation is needed to preserve and enhance stream related species, this be planted/protected;
- Sediment, especially fine sediments, and contaminants from both construction and subsequent development, be managed to avoid deposition in the stream and harbour in, say, 95% of rain event situations;
- Restrictions be imposed on residents appropriating reserve areas as an extended part of their properties and a prohibition be placed on mowing into reserve vegetation and on dumping grass, weeds and rubbish into or adjacent to reserve areas;
- Restrictions be imposed to ensure that construction and occupation effects (sediment and contaminants) on the DoC reserve and related salt marsh are zero;
- Stormwater be managed through low impact urban design features such as vegetated swales to ensure all storm water is retained and filtered before entering the stream.

- There be restrictions on the percentage of hard covered areas (concrete drives etc) on all sections to reduce storm water run off.

Duck Creek Scenic Reserve Issues

Values

DCSR is one of only four salt marsh/wetland habitats in the Pauatahanui Inlet (Others are Kakaho and Horokiri stream mouth areas and the Pauatahanui Wildlife Reserve).

DCSR has the following values as set out in Schedule F of the Proposed Natural Resources Plan

Schedule F - Ecosystems and Habitats with significant indigenous biodiversity values in Te Awarua o Porirua.

*F1 - Rivers and Lakes with significant indigenous ecosystems
- Duck Creek and all tributaries

*F1(b) - Known rivers and parts of the coastal marine area with Inanga spawning habitat
- Duck Creek

*F3 - Significant Wetlands in Te Awarua o Porirua
- Duck Creek Salt Marsh

*F4 - Sites with significant biodiversity values in the Coastal Marine area.
- Duck Creek Estuary
- Duck Creek Scenic Reserve.

Tonkin and Taylor note that 'Under the Wellington Regional Council Regional Freshwater Plan (updated July 2014) Duck Creek and its tributaries are identified as 'a Water Body with Nationally Threatened Indigenous Fish Recorded in the catchment'

Three key issues:

1 Salt Marsh Ecosystem

Tonkin and Taylor note that 'Under the Wellington Regional Council Regional Freshwater Plan (updated July 2014) Duck Creek and its tributaries are identified as 'a Water Body with Nationally Threatened Indigenous Fish Recorded in the catchment'

- GWRC have gone to considerable trouble to put measures in place to mitigate any adverse effects on the fish habitat and provide unimpeded

access for fish. But there is a whole ecosystem of salt marsh below the proposed road that is habitat crucial to the well being of Pauatahanui Inlet – as are the salt marshes around Pauatahanui Wildlife Reserve. This must be maintained in a condition that enhances the habitat in Pauatahanui Inlet for the good of the benthic invertebrate community of this marine environment.

2 The Road against the Reserve Boundary

Concerns are the pollutants that will be washed down into the DCSR from construction machinery during development and later its use as an urban road; and the possibility of impeded drainage from the swale being obstructed by the northern most road - south of DCSR.

If the drainage into DCSR is changed in any way, it will affect the salt marsh and wetland habitats in DCSR that are of significant environmental value.

3 Climate Change Effects

Are those lower sections of the development in a position where they and the stormwater/waste water/sewage systems will not be impacted by higher than MHS in the foreseeable future?

We note there are proposed measures in place that take into account the fact that building on land that may be affected by storm surges, higher precipitation levels and wind events (especially all at one time – which does happen in the Inlet).

There need to be conditions ensuring the development is not at risk, and its effects do not put the reserve salt marsh at risk, especially if narrowing the entry via the entry road creates conditions for higher storm surges or limits water exit from Duck Creek

Relevant Submissions

Lou Sanson, Director- General of Conservation (DOC)	Neutral	No	Support the use of best practice erosion and sediment control measures to minimise discharge of sediment laden water into receiving environment and inclusion of 3.4ha of reserve area with opportunities to enhance biodiversity values. Concerns with discharge of sediment laden water, diversion of Duck Creek and instream works. Seeking conditions on adaptive management framework including triggers and requirements for action to diminish adverse effects if sedimentation occurs during construction.
Forest and Bird	Oppose	Yes	Key matters of concern relate to protection of ecological values, particularly those associated with freshwater, wetlands and coastal environment. Concerned the indigenous ecosystems could be impacted by loss of habitat through sediment deposition. Requests

		clearer environmental triggers strengthened Adaptive Management framework, particularly in regard to sedimentation.
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Applicant's Evidence: Dean Miller

Para 15 - Terrestrial and Wetland Values: "The key terrestrial and wetland values on and adjacent to the site are located within areas classified as Ecosites in the Porirua City District Plan or as Significant Urban Vegetation. Two forest patches are located adjacent to and slightly encroach into the site. Small parts of those forest patches would be cleared as part of the proposed works. Based on high ecological value and low to moderate magnitude, the level of effect without mitigation is considered to be moderate (more than minor adverse effects but able to be mitigated). I recommend that clearance is minimised by only clearing vegetation necessary to form building platforms and for the cut batters and by minimising edge effects through a programme of infill planting and weed control adjacent to the reserves. Infill planting would comprise variable density planting in areas where weed clearance resulted in significant canopy openings and low density planting where native species dominate. Lizard salvage should also be undertaken. If those measures are implemented then I consider that the level of effect would be no more than minor."

Para 16 - Vegetation Clearance and Reserve Ecosite: "A third area of vegetation clearance impacts on wetland buffer vegetation within the Porirua City Council paper road and Ecosite bordering the Duck Creek Scenic Reserve. This area triggers most of the significance criteria. The Scenic Reserve and Duck Creek (which supports At Risk fish species). The magnitude of the effect of this vegetation clearance without mitigation is considered to be moderate on the basis that there will be a loss relative to the baseline condition although only a moderate proportion of higher value vegetation will be impacted. In combination with the high ecological value of the site, the level of effect without mitigation is also high (significant adverse effect that can potentially be mitigated or remedied). To address this vegetation loss I have recommended buffer planting as mitigation, ideally within the remaining paper road area and at a loss-to-gain ratio of be 1 to 1.5. In my view this level of mitigation is sufficient to ensure effects on the Ecosite are no more than minor."

Para 17 – 19 Instream works and sediment management. Mr Miller considers riparian enhancement work will provide no net loss of ecological value and function.

Para 20 Contaminant Discharges. Mr Miller says "My assessment suggests that adverse sedimentation effects in Pauatahanui Inlet as a result of the Brookside Project are not expected, although some sedimentation risks still remain when large events coincide with northerly winds. Minimising the potential for sedimentation as a result of the Brookside Project relies on robust erosion and sediment control practices, surveillance, monitoring and feedback. For this reason I have recommended an increase in rainfall event triggered monitoring as part of the adaptive management framework."

Conditions:

Porirua City:

78 Prior to approval under Section 224 of the Resource Management Act 1991, all stormwater outlets to Duck Creek shall be constructed in accordance with the approved plans under conditions 53 & 55 so as to prevent long term erosion and scour.

90 Prior to approval under Section 224 of the Resource Management Act 1991, the consent holder shall enter into a legal agreement with Council to monitor the streams banks of Duck Creek (including any tributaries) and outlets to Duck Creek for potential scour/erosion for three years following approval under Section 224 of the Resource Management 1991. The agreement shall include the provision that if areas of scour/erosion are found then the consent holder shall take appropriate measures to minimise further scour/erosion of Duck Creek. All costs associated with the preparation of the agreement shall be met by the consent holder.

93. Prior to the issue of a Section 224(c) certificate, all street berms and lots are to be topsoiled to a minimum depth of 100mm and grassed/planted as soon as practicable after completion of topsoil laying and trimming. All road metal and other foreign material shall be removed from the berms prior to the final topsoil layer being laid. Soil shall be free draining and free of stones rocks or other foreign material and of a quality to ensure good grass growth. All swales are to be topsoiled to a minimum depth of 300mm and grassed/planted as soon as practicable after completion of topsoil laying and trimming.

94. Prior to approval under Section 224 of the Resource Management Act 1991, all areas exposed by earthworks, trenching or subdivision construction activities are to be re- grassed/hydro-seeded.

110 The consent holder or future owners of Lots 1-99 and 101-149 shall comply with the following:

“All residential lots shall contain a dwelling with a roof cladding painted in a recessive colour, with the paint having a reflective percentage less than or equal to 30%. Colour confirmation with its relative reflective percentage shall be forwarded to Porirua City Council with a Building Consent Application.”

"Bare galvanised, zinc alum or unpainted metal that would lead to contamination of stormwater runoff upon corrosion shall not be used for roofing or building materials".

118 The consent holder or future owners of Lots identified under condition 55 shall comply with the following:

"This subdivision includes the use of Low Impact Urban Design and Development principles for collection, treatment and disposal of stormwater. In particular, the public road design includes the use of rain gardens and drainage swales beside the road carriageway in front of these lots. In this respect, the developer has constructed a vehicle crossing in a nominated

location and in a specific manner for each lot that accords with and maintains the functions of the stormwater system. Consequently, the owner of each lot must maintain the vehicle crossing.

120 The consent holder or future owners of Lots 70-72, 74, 75 and 149 shall be aware of and comply with the following:

“The areas shown on the Land Transfer Plans **** as N, O, P, Q, R, and S (flood management areas) [as required to be identified by condition 63] are below the 2090 100 year flood level and the following shall be complied with at all times:

(1) No buildings, structures, fences, or earthworks shall be located within the flood management areas.

(2) The flood management areas shall be managed so as to allow free passage of floodwaters and to preserve the riparian environment.

(3) No person shall:

1. (i) remove, prune or destroy any vegetation, except that minor trimming or pruning may be undertaken for maintenance.
2. (ii) undertake any activity that may reduce or impede the ability of the area to convey floodwaters.
3. (iii) dump, pile or store any rubbish or waste materials, including but not limited to grass clippings, prunings, logs and household waste.
4. (iv) allow animal pests or pest plants to take residence or grow, as identified in the Regional Pest Management Strategy for Wellington Region.
5. (v) mark, paint, deface, blast or remove any stone or rock in a way that would disturb the ground unless for the purpose of ecological restoration.”

124 The consent holder or future owners of Lots 6 and 147-149 shall comply with the following:

“The native vegetation identified as areas ... on plan Drawing No.....[as required under condition 55] shall not be damaged or removed by the owner except for such pruning and removal of parts of the protected native plants as is required for their continued health. The owner shall not construct, erect or allow to be erected any new buildings within this area”

Greater Wellington Conditions:

Inspection of Stream Channel

18. Between 12 and 24 months following the diversion of water through each new section of stream channel, the consent holder shall carry out an inspection of the runs, riffle and cascades, and meanders and rip rap within the new section of stream channel to determine whether these elements are reducing the velocity of flow as proposed in the application and whether any bed level adjustment has occurred during flood flows. The inspection shall be carried out by a suitably qualified and experienced environmental engineer.

Undertaking diversion works

20. The consent holder shall take all practicable steps to minimise sedimentation and increased turbidity of Duck Creek during the works, including:

1. a) Completing each stage of the works in the minimum time practicable
2. b) Avoiding placement of construction material or excavated matter in the flowing channel, with the exception of transferring bed material to aid recolonisation of the new stream channel, in accordance with condition 15 of Land Use Consent [33624]
3. c) Separating construction activities from flowing water; and
4. d) Installing appropriate erosion control and sediment treatment measures.

Fish passage and relocation

21. No in-stream works shall be carried out in the active channel (i.e. flowing water in the stream bed) during the key recruitment migration period for native fish species of 1 September to 30 November inclusive, unless otherwise approved in writing by the Manager, Environmental Regulation, Wellington Regional Council.

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22. During the diversion of water into a temporary channel or new channel, or following diversion of the stream back to its original course, the consent holder shall take all practicable steps to find, capture and relocate fish from the affected reach. This shall include checking the affected stream channel, wetted banks and vegetation during dewatering and then regular checks for a period of 2 hours following diversion of the stream. The consent holder shall ensure that any fish found stranded as a result of the works are collected with a soft meshed net or wet hands, and placed in a bucket before being transferred at least two hundred metres upstream of the works site into a clear flowing section of Duck Creek.
23. The consent holder shall undertake the construction works in a manner that ensures that fish passage in Duck Creek, and through any temporary diversions pipes or channels, is maintained at all times. Immediately following formation of the new stream channel and prior to water being diverted into the new stream channel, an inspection of all structures or deposits within the diversion channel shall be undertaken to assess if they will provide fish passage for all native species currently known to occur or reasonably likely to occur within the stream. The consent holder shall submit an advisory note to confirm fish passage, or recommend work to ensure fish passage, to the

Manager, Environmental Regulation, Wellington Regional Council, at least 5 working days prior to water being diverted into the new stream channel.

Baseline Monitoring Report

24. The consent holder shall provide a baseline monitoring report for Duck Creek at least 20 working days prior to any works commencing under this consent, to the Manager, Environmental Regulation, Wellington Regional Council. The Baseline Monitoring Report shall include:

1. a) Historic data measurements of deposited sediment, invertebrates, fish and surface water quality parameters (turbidity and total suspended solids) for Duck Creek; and
2. b) The number of measurements taken, the monitoring locations, and the sampling dates sampling and analysis methodologies used for the baseline data.

Environmental Monitoring and Adaptive Management Plan

29. The consent holder shall submit an Environmental Monitoring and Adaptive Management Plan (EMAMP) to the Manager, Environmental Regulation, Wellington Regional Council at least 20 working days prior to the commencement date of any earthworks.

Each section of the EMAMP shall be prepared by a person suitably qualified and experienced in the subject addressed in that section.

The purpose of the EMAMP is to establish and implement a scientifically robust monitoring plan to monitor the health of Duck Creek in terms of water quality, and aquatic habitat and fish passage, as it is realigned and collects treated discharges from the surrounding earthworks activities.

The EMAMP shall detail the methods for monitoring stream water quality, the health of the aquatic environment, and fish passage, and provide an adaptive management framework whereby the results of water quality monitoring trigger appropriate responses.

Water Quality Monitoring

34. Water quality monitoring of Duck Creek shall be undertaken following the exceedence of a rainfall event trigger for the following water quality parameters:

1. a) pH
2. b) Temperature

3. c) Dissolved oxygen
4. d) Turbidity; and
5. e) Total Suspended Solids.

35. **The trigger levels** for water quality monitoring shall be as follows:

- a) pH – An exceedence is deemed to have occurred if the pH is less than 5.5 or greater than 7.5
- b) Turbidity – An exceedence is deemed to have occurred if the difference in NTU levels between the control site and the monitoring location is greater than 20%
- c) Total Suspended Solids – An exceedence is deemed to have occurred if the difference in TSS concentrations between the control site and the monitoring location is greater than 20%, or a level of more than 150g/ recorded.

Event triggered monitoring

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37. A complete site audit shall be undertaken each time water quality monitoring indicates an exceedence of the water quality trigger levels.
38. Deposited sediment monitoring, using the method of visually estimating the percentage cover of fine sediments, shall be undertaken each time water quality monitoring indicates an exceedence of turbidity and/or total suspended solids trigger levels and the source of the exceedence is likely to be due to the on-site construction works. Deposited sediment monitoring will be undertaken at the control site (located at the southern site boundary), and all sites identified in the EMAMP downstream of any works authorised by this consent.
39. Invertebrate sampling shall be undertaken if:
 1. a) water quality monitoring; and/or
 2. b) deposited sediment monitoring; and/or
 3. c) other sources of information,

indicate a major sediment discharge has occurred that may have resulted in adverse effects on stream ecology.

Diversion monitoring – Design guidelines, fish passage and fish relocation

41. Prior to the diversion of water into each stage of the new stream channel, and within 5 working days following the diversion of water for each stage, an inspection of the new stream channel shall be undertaken of the design principles set out in condition 15 of this consent for:

1. a) Width of wet bed;
2. b) Water depth;

3. c) Velocity of runs, pools, riffles and cascades;
4. d) Bed material; and
5. e) Channel complexity.

The consent holder shall provide recommendations, where necessary, on any work to be undertaken to ensure compliance with the design principles set out in condition 15, and timeframes for implementing these recommendations, in the Diversion Monitoring Report required under condition 51.

Twice yearly monitoring – Water Quality and Deposited Sediment

42. Water quality and deposited sediment sampling shall be undertaken twice a year, in autumn (1 March – 31 May) and spring (1 September – 30 November), following a minimum of two weeks of no rainfall, while the works authorised by this consent are being undertaken, and for two occasions following the completion of the earthworks and stabilisation of the entire site. The monitoring shall be undertaken at the control site (located at the southern site boundary) and downstream of the site (at monitoring locations ###). The results of this monitoring shall be provided in the Progress Monitoring Reports due by 15 July (for the autumn monitoring) and 15 January (for the spring monitoring) following each monitoring occasion, as required by condition 51 of this consent.

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Annual Monitoring – Fish passage

43. Following the diversion of water through the first new stream channel, fish passage monitoring of all of the sites upstream of, and including, site DCN-05 shall be undertaken between 1 September and 1 December. The fish passage monitoring shall include but not be limited to:

1. a) a survey of the number of all fish species present upstream and downstream of the new channel diversion at monitoring sites DCN-03B including specific reference to the location of whitebait, elver, and inanga, and the size class distribution of banded kokopu, koura, and giant kokopu;
2. b) identification of any actual or potential impediments to fish passage.

This monitoring shall continue for five years following the livening of the stream diversion.

Annual Monitoring – Invertebrates

45. Following the diversion of water into new stream channel, invertebrate monitoring shall be undertaken at all monitoring sites within the new stream reaches between 1 September and 1 December, each year. This monitoring shall continue for five years following the livening of the last stream diversion, unless a shorter time period is agreed, to the satisfaction of the Manager, Environmental Regulation. The results of the invertebrate monitoring shall be provided in the Progress Monitoring Report.

Annual monitoring - Riparian Restoration Monitoring (SEV)

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46. The consent holder shall record all riparian planting, monitoring and maintenance undertaken and submit this in the Progress Monitoring Report due on the 15 July.

The report shall include, but not be limited to, the following:

1. a) A map showing the areas which have been planted compared to the agreed mitigation areas
2. b) Details of plants, including species, number and date planted
3. c) An assessment of overall plant success rates
4. d) A representative measure of canopy cover at least every year until 80% canopy cover has been reached
5. e) Photo points of representative planted areas, taken annually
6. f) Details of any maintenance work undertaken
7. g) Details of any further works required to be undertaken
8. h) Recommendations for any on-going maintenance works.

Winter works restrictions

11. No works authorised by this consent shall take place on site during the period of 1 June to 30 September unless otherwise approved by the Manager, Environmental Regulation, Wellington Regional Council in writing.
12. All earthworked areas shall be stabilised during the period between 1 June to 30 September inclusive each year unless a later date is approved in writing by the Manager, Environmental Regulation, Wellington Regional Council. The stabilised surface shall be maintained to the satisfaction of the Manager, Environmental Regulation.

Permanent reclamation of Duck Creek

17. Sediment control and treatment measures shall be installed and maintained around the perimeter of the reclaimed area, to prevent the runoff of sediment

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laden water into the remaining stream channel. These measures shall remain in place, and shall be maintained until the reclaimed area is stabilised and re-vegetated to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

Erosion and sediment control treatment requirements

18. The consent holder shall ensure that all stormwater contaminated with sediment from the site is treated by erosion and sediment control measures as detailed in the approved ESCP. The consent holder shall install, operate and maintain all erosion and sediment control measures to ensure that they operate and perform as intended in accordance with the approved ESCP and as a

minimum the Erosion and Sediment Control Guidelines for the Wellington Region (2002).

19. The consent holder shall ensure that the maximum exposed area within the site is 3 hectares.
20. The consent holder shall ensure that prior to the completion of operations each working day that all necessary erosion and sediment control measures are reinstated.
21. All erosion and sediment control measures shall remain the responsibility of the consent holder and no erosion or sediment control measures shall be removed prior to receiving written confirmation that the relevant stage is stabilised to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

Progressive stabilisation

33. The consent holder shall progressively stabilise any disturbed areas as they complete each earthworks stage to minimise sediment runoff. Road surfaces shall be covered with rotor millings or road metal. The progressive stabilisation shall be to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.
34. The consent holder shall ensure that a method of stabilisation (eg, hydroseeding) is applied to each open area within 2 weeks of completion of the cut or fill works for the stage. All stabilisation methods shall be effective within two months of being applied or after a longer period if approved in writing by the Manager, Environmental Regulation, Wellington Regional Council.

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35. Each stage of works shall be stabilised before any further stages are undertaken, unless otherwise authorised in writing by the Manager, Environmental Regulation, Wellington Regional Council.

Freshwater fish

23. The consent holder shall ensure that fish passage is maintained at all times during and after construction.
24. No in stream works shall be carried out in the active channel (ie, flowing water in the stream bed) during the key recruitment migration period for native fish species between 1 September to 30 November inclusive.

Riparian Mitigation Planting Plan

19. The consent holder shall submit a final Planting Plan to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council at least 20 working days prior to the works commencing.

The planting plan shall be in general accordance with the Urban Design and Landscape Plan submitted as Appendix 2 (Vol 2) of the application and shall include, but not be limited to:

1. a) Plan(s) to scale showing the location of all proposed areas to be planted and proposed species mix
 2. b) The native species that are proposed to be planted, the size of the plants and the density of planting
 3. c) All plant species shall be eco-sourced and appropriate to the locality
 4. d) A detailed timeline for proposed planting
 5. e) Details of pre-planting site preparation (clearing, mulching, fertilising)
 6. f) Details of the on-going maintenance of the planting including, but not limited to, the replacement of plants, future management, and eradication of pest plants
 7. g) Details of enrichment and replacement planting, including timeframes to ensure a plant success rate of at least 80% canopy cover defined in condition 23 is achieved within 5 years
 8. h) Details of how plants will be protected from pest animals
 9. i) Details of the proposed monitoring regime
20. The final Planting Plan shall be developed in accordance with Wellington Regional Council's 'Restoration Planting: A guide to restoration planting projects in the Wellington Region, 2004' All planting shall be undertaken in accordance with the approved planting plan.
21. Any proposed amendments made to the approved Planting Plan shall be submitted in writing and be to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council prior to the implementation of those amendments.
22. The consent holder shall complete the planting as required in the approved Planting Plan as soon as practicable, and within 18 months of commencement of the reclamation works approved by this consent, or other timeframe approved by the Manager, Environmental Regulation, Wellington Regional Council.

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23. All on-site restoration planting must be maintained for 5 years, or until canopy 80% canopy cover over the entire mitigation area is achieved to the satisfaction of the Manager, Environmental Regulation.

Note: Canopy cover is defined as the percentage of ground area covered by native vegetation as viewed from vertically above the planted area. It includes all plant tiers (that is, it may be a mix of low growing species plus tree and shrub species).

24. The consent holder shall notify the Manager, Environmental Regulation, Wellington Regional Council, when the planting as required by the approved Planting Plan in condition 19 is complete.
25. The consent holder shall provide, within 1 month on completing the planting required by the approved planting plan, the Manager, Environmental Regulation, Wellington Regional Council with the geographic location coordinates of the boundary of the planting areas

