greater WELLINGTON
REGIONAL COUNCIL
Te Pane Matua Taiao

142 Wakefield Street
PO Box 11646
Manners Street
Wellington 6142
T 04 384 5708
F 04 385 6960
www.gw.govt.nz

By email

20 November 2015

FMGT-8-256

Michelle Conland
Environmental Regulation
Greater Wellington
[Internal]

Dear Michelle

Response to further information request under section 92(1) of the RMA 91 - WGN140054 [32483], [32484], [32485], [32486], [32487] and [32488] – Otaki River and specified tributaries Resource Consent Application

I wrote to you on the 17 June 2015 setting out a timetable to meet the further information request.

Table 1 outlines the further information that has been provided. Most of the information is contained in the updated report for the Otaki River provided to you in October 2015.

The following outstanding matters are addressed below:

- Comparing river communities in the 'application area' and in 'unaffected reference areas
- Proposed NCI and
- The use of willows

Comparing areas

A comparison between river communities in the 'application area' and in 'unaffected reference areas' has not been undertaken in any detail as in our view it will not provide information specifically relating to the effects of flood protection activities.

Flood Protection activities are undertaken in parts of the catchment which have been impacted by agricultural and/or urban development. The 'unaffected reference areas' referred to by EOS are almost invariably located in undeveloped parts of the catchment. The comparison requested would be between the urbanised main stem of the Hutt River and the relatively pristine upper reaches which is a smaller watercourse and mostly in forested

catchments. There will certainly be differences in the aquatic ecology, but these will be primarily related to deforestation, loss of riparian vegetation, agricultural land use, urban development, inputs of nutrients and other contaminants, introduced pest species, as well as flood protection activities.

The approach taken, as described in the AEE, is to undertake a series of targeted before-after-upstream and downstream investigations of flood protection activities which are specifically designed to separate out the effects of those activities. These studies have been undertaken on the Hutt River for fish and invertebrate re-colonisation (Perrie, 2013) habitat quality (Cameron, 2013), and in northern Wairarapa Rivers for sediment deposition, periphyton, invertebrates and fish (Death and Death, 2013). A further study is currently underway on the Hutt River in relation to habitat quality, water quality and fish re-colonisation (Cameron 2015, in progress).

NCI

A paper on the NCI has been submitted to Environmental Regulation for peer review. Additional work on developing this approach will continue.

Options for integration of native trees with willows for bank edge protection

Native species will continue to be used for planting in river corridors where it is appropriate and any planting undertaken will be consistent with the agreed environment strategies (which are outcomes of the Floodplain Management Plans). Where undertaken, the purpose of this planting is primarily for ecological purposes and/or for the aesthetic enhancement of the river berm environment.

It is important to note that it is not proposed to use native species as an alternative to willows for bank edge protection purposes. Willows are one of the key tools currently available nation-wide for river bank protection and river form management. They are a 'softer' and more natural alternative to hard-rock and other structural forms of bank control. A change from this methodology would require a major change in the Council's riverbank management policy, which would need first to undergo significant risk assessment and cost: benefit analysis, and then explanation and discussion through the Floodplain Management Plan public consultation process. It would also need to be supported by scientific research into identification of suitable alternative methodologies and the results of trials of these – no feasible alternative have yet been found. Such work is beyond the scope of these applications.

It is worth noting, by way of background, that willows have been used for riverbank protection in New Zealand from the earliest days of European agriculture and settlement, and have continued to be used for this work by local authorities - initially River Boards, then Catchment Boards and more recently Regional Councils and Unitary Authorities – to the present day. Willows have the advantage of being able to establish quickly and develop a dense root system that has excellent properties for binding and holding bank edges. Willows also have the advantage of being able to be cut and layered to control their size to maintain bank stability and allow regeneration, without disturbance or loss of their bank-binding

properties. This is especially useful as a management tool on the edges of large rivers which are subject to large and frequent floods that subject the bank edges to regular powerful erosive forces. Significant research has been undertaken over the years into selection of the most suitable willow species for this work – this has been carried out by agencies such as the former National Plant Materials Centre, DSIR Fruit and Trees, HortResearch and more latterly, the NZ Poplar & Willow Research Trust.

Although there are many native species that are suitable for soil conservation purposes, there is no particular native species that offers the equivalent benefits of willows at the river bank edge where protection of the bank edge and maintenance of a design channel alignment in a confined flood fairway is a key priority. Thus mere substitution of willows by natives for river edge protection would be both impractical and highly risky as it would threaten the integrity of the current flood management systems, and significantly increase the flood hazard to the surrounding communities.

Native species can, however, be used for restoration or soil conservation purposes in more stable riparian environments (i.e. those which are not likely to be under frequent and direct attack from river flows). For the large rivers managed by the GWRC, this means that the use of native species is more suited to planting in the river corridors away from the bank edges. As noted above, this will be done in accordance with the community's wishes, which are expressed through the ecological strategies within the FMPs. There is also some opportunity to integrate natives at the landward sides of willow bank protection plantings, although the effectiveness and relative benefits of this have yet to be fully tested, and thus it needs to be undertaken with caution in a controlled manner. More work on the latter approach is to be undertaken in future, where it can be monitored through the EMP.

Notification of application

Flood Protection now believes it has satisfied all requests for further information and that the Otaki application can now be notified.

Having said this Flood Protection notes your request for us to provide an Executive Summary for each application. This will be provided by mid-December and we will take this opportunity to make some minor updates to the applications to reflect the changes arising from the further information requests and subsequent consultation. An updated Code of Practice will also be provided.

As discussed if you can provide me with a notification timetable that would be appreciated.

Please feel free to contact me on 04 830 4045 if you have any questions or concerns

Yours sincerely

Tracy Berghan
Principal Planning Advisor

DD: 04 934 1484
tracy.berghan@gw.govt.nz

Table 1: Otaki Further Information Request – WGN140054 [32483], [32484], [32485], [32486], [32487] and [32488]	Date provided
3. Maps *- Please provide an overview map or maps at a suitable scale, showing the areas covered by the application, the affected tributaries, the main existing flood protection features (e.g. willow plantings, rip-rap rock linings, groynes), and any ecological site survey locations referred to in the application (please refer to Fish at point 5 below).*	Mapping of flood protection structures and other features - July 2015
Estuary *– Please provide full details and a description of the Otaki River estuary and the potential effects of flood protection activities may have on it. Given the proposed works include activities in the estuary and coastal marine area, a more thorough description of the receiving environment is required. This must be based on actual data or recently cited information of the Otaki River estuary.* *Please include a full description and data in relation to the composition of fish, resident and migratory shorebirds, invertebrate (marine and freshwater) communities, plant species, and any associated biodiversity values of the estuary. Please also state when resident and migratory shorebird species make use of the estuary.* *Please confirm if salt marsh habitat remains, and if so, the location in relation to flood protection activities. Please note whether it may be adversely affected by these activities. If flood protection activities are proposed within salt marsh habitat please provide a detailed description of the potential adverse effects and how it will be avoided, remedied and mitigated.* *With regard to section 3.1.7 of the AEE report, please provide the reference for the recreational fisheries details provided which refer to kahawai, snapper, dogfish, red cod, gurnard and yellow eyed mullet.* *With regard to section 3.1.1 of the AEE report, please clarify what is meant by low productivity and biodiversity values. Please provide references and data to support this statement, and provide comment with regard to the rearing and habitat spawning for a range fish noted in section 3.1.7.* ***Aquatic Plants/Macrophytes*** *– Please provide full details and a description of the macrophyte communities that are present where mechanical instream vegetation removal is proposed, or where macrophyte communities will be affected by other flood protection activities.* *Please provide full details if there are native species or noxious exotic species present, and the location of any significant patches (in terms of areal extent) of these species.* ***Macroinvertebrates*** *– Please provide full details and a description of the invertebrate communities, including habitats affected by new structures, gravel extraction and bed/beach recontouring, the hyporheic zone and deeper, non-wadeable habitats.* *Please provide information on macroinvertebrates within the tributary waterways. If*	October 2015 Note comments above October 2015 Additional information to be provided on Fish, Macroinvertebrates and Birds, noting comments above.

MCI surveys of the affected tributaries are not possible, please provide prediction data from the Freshwater Ecosystems of New Zealand (Leathwick et al, 2010)[1] Please provide details of whether any crayfish/koura are present in the tributary waterways. *What are the most common species/taxa in the sections to undergo gravel extraction/bed contouring? How does the community composition compare to that found outside of the area? Are there threatened or at risk invertebrates present according to the listing of Grainger et al (2014)[2]? Which EPT taxa are present in the river?* *In the AEE report, it is stated in the text that the lower river site is rated 'good' however, Table 3-3 indicates all sites are rate 'excellent' according to the QMCI. Table 11 (application) and Table 3-3 (AEE report) present means. Please provide some measure of variability e.g. ranges, standard errors.* *SOE invertebrate monitoring data has been presented only for the period 2009-2011. Please provide data for the full period for which data is available and an analysis of the trends.* ***Fish** – Please provide further information on fish species that are of most concern, such as those that are most abundant and spawn in the area covered by the application, and especially in habitats that are affected by gravel extraction and beach contouring. Please compare data for impacted and reference reaches of the Otaki River.* *Please provide full details and a description of the fish fauna of tributary waterways in the area covered by the application and compare this information with tributaries outside of the subject area.* *Tables of NZFFD records provided in the application and the AEE report give no indication of where each species has been found in relation to the area covered by the consent application. Please split the records into those from within the application area and those outside. Please provide a map of site locations.* *While distribution maps of five fish species are provided in the AEE report (figs 3.1 - 3.5) the consent application area has not been included on the maps. This information would be useful to determine those species most likely to be affected by the works.* *Please provide abundance data (relative abundance, rank abundance) rather than just presence/absence, so that which species are more abundant and the general community composition can be determined.* *There is very limited information on fish fauna of the lower Otaki River and the 2001 Boffa Miskell study is based on limited fish trapping which is unlikely to adequately sample the fish community, and would not capture small cryptic species such as bluegill bully. Please provide additional information on fish fauna including that from FENZ (Leathwick et al 2010).* *Please provide the source of the data in Table 3-6 of the AEE report.*	Refer to the COP

[1] Leathwick, J.R., West, D., Gerbeaux, P., Kelly, D., Robertson, H., Brown, D., Chaddertson, W.L., and Ausseil, A.-G. 2010. Freshwater Ecosystems of New Zealand (FENZ) Geodatabase Version One – August 2010 – User Guide. Department of Conservation. 57 p.
[2] Grainger, N., Collier, K., Hitchmough, R., Harding, J., Smith, B., Sutherland, D. 2014. Conservation status of New Zealand freshwater invertebrates, 2013. New Zealand Threat Classification Series 8. Department of Conservation, Wellington. 28pp.

Please provide a map of the inanga spawning locations, and information on any other species that may spawn in the reaches affected by gravel extraction and bed recontouring (e.g. torrentfish or bully species). *At Section 8, Monitoring, of the AEE report, it is implied that annual drift dive monitoring of trout abundance is undertaken at two sites in the Otaki River. Please confirm if this is the case and provide the data from this monitoring.* *Please provide details of the level of customary, recreational and commercial fishing for eels in the Otaki River and affected tributaries.* ***Water quality** – Please provide the water quality data that exists from 2004 and an analysis of the trends.* ***Gravel bar and beach flora and fauna** - Please provide additional information on the flora and fauna of gravel bars and beaches that might be affected by gravel extraction and beach recontouring. **Riparian vegetation** – Please provide additional information on riparian vegetation in the application area, including the tributary waterways. Please describe in detail and shown on maps any remnant native vegetation in the area or significant areas of native vegetation.* ***Birds** – Please provide more detailed information on the bird species of most concern, such as those native or endemic species that roost, feed, nest or rest in the area covered by the application. Please provide details of which species feed and rest on gravel bars and which species may be nesting and roosting among the riparian vegetation (including willows) and when. Please include information for the tributary waterways also.* *From the 2012 survey it appears that there is higher resolution bird distribution data available than what has been presented in the AEE report. Please provide this data.* ***Herpetofauna** – Please provide full details in relation to herpetofauna that could be present in the areas potentially affected by flood protection works.*	section 3.2.4, Currently, it is intended that Flood Protection (FP) undertake an Inanga Spawning habitat survey in the affected watercourses within 3 years of the consents being granted. However, given the scale of this exercise, further discussions are required with Environmental Science GWRC, as we believe it is more appropriate to replicate the work undertaken by Niwa in 2001 and Environmental Science are best placed to co-ordinate and progress this. Refer to the COP timetable at section 3.2.1. It is intended that these surveys will be completed within three years of the consents being granted
Code of Practice *Please provide comment on whether a free-draining bucket is the most appropriate method for removing silt from the Otaki River.*	October 2015 - with information also to be included in an updated COP.

Environmental Monitoring Plan • *Please provide further details in relation to the proposed bird monitoring and its workability including details of the justification for the proposed percentage triggers.* • *Please provide further details on the proposed pool and riffle counts using aerial photography. Please discuss how features obscured by vegetation are accounted for, and discuss whether the variability of habitats (depth, area, ecological value) would be noted or whether the proposed methodology simply counts features.* • *Please provide further justification on how the Natural Character Index (NCI) will be useful in the context of ecological monitoring.* • *Please provide any information available on the optimal width of willow plantings to achieve the objective of vegetative bank protection. Please identify any areas where willow planting can be retired over time and natives planted instead*	October 2015 - with information also to be included in an updated EMP Outside the scope of the application