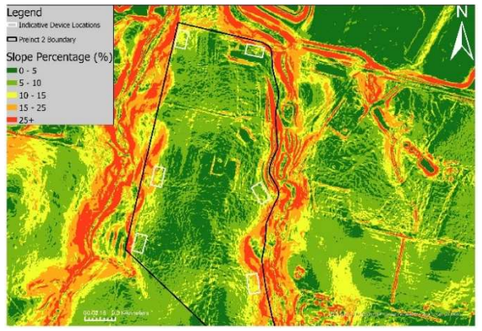
Austino PC Hobsonville Grove: Cl 23 Response (2)

#	Specific Request – Healthy Waters	HG Response	Clause 23 (2) Additional Information Required – Healthy Waters	HG Response to Second Clause 23 Request
HW1	The SMP is titled "Austino Draft Stormwater Management Plan Austino Block 2 Investigation". The SMP is referred to as a draft SMP. Please clarify why a proposed final version SMP is not submitted for the proposed plan change. And when a final version SMP will be submitted *Includes edits for SMP*	The updated Stormwater Management Plan (SMP) submitted with this response is the final version. Mana whenua engagement for the Hobsonville Grove Precinct PPC application has occurred please refer to Section 4 of the updated SMP.	No additional information requested.	
HW2	The SMP refers to possibility of consultation with Healthy Waters. Please advise when this will occur	A meeting with Healthy Waters for the Hobsonville Grove PPC application occurred on the 11th of July. Continued consultation has taken place subsequent to this meeting.	No additional information requested.	
HW3	Section 1.1 of the SMP states that the SMP was prepared to support soft lodgement of the Westpoint Drive Plan Change. Appendix 6 of the submitted documents (Austino PPC Response to Auckland Councils Healthy Waters Queries, by Dipal Harrat, dated 12 April 2024) states that the preferred stormwater management approach is outlined in Section 7.2 of the SMP. Further detail of the feasibility and implementation will be provided in the lodgement process. Please clarify which lodgement process you mean. The feasibility and implementation details need to be included in the SMP for the plan change to ensure the proposed stormwater management is appropriate and any stormwater and flooding effects are managed for the plan change area, please update the SMP with the feasibility and implementation details	The updated SMP includes the feasibility and implementation details (outlined in Section 7).	Please include information about water quality for Precinct 1 in Table 12 of the SMP (pg 52)	Water quality information for Precinct 1 has been added to Table 12.
HW4	In the SMP Section 4.0 Mana whenua: Te Ao ~~Maori~~Māori and Matauranga it is noted 'To be completed'. Please complete this section in the SMP and outlined the consultation details, including outcomes and how mana whenua values and aspirations are addressed in the SMP, as required under Schedule 2 of the NDC	Austino Property Group engaged Te Kawerau to provide a Cultural Impact Assessment of the PPC application. Section 4 outlines how the values held, and recommendations made by Te Kawerau have been addressed in the SMP. A copy of the updated SMP has been provided to Te Kawerau for comment. Consultation is planned to continue throughout the PPC application.	No additional information requested.	
HW5	In Appendix 6 – Austino PPC Response to Auckland Councils Healthy Waters	Initial consultation has been undertaken with Waka Kotahi (meeting on 26 September). Waka Kotahi agreed to provide information	No additional information requested.	

	Queries, by Dipal Harrat, dated 12 April 2024, it was stated that discussions with Waka Kotahi are planned as part of the SMP stakeholder liaison. What consultation has taken place and what are the outcomes, the information needs to be included in the SMP, please update Section 5.0 Stakeholder engagement and consultation in the SMP	regarding the culvert sizing underneath SH18 to confirm the SW modelling accuracy. This information exchange has just begun. The summary and outcomes of these discussion will be added to the SMP once this information is made available. This is summarised in Section 5 of the SMP.		
HW6	Watercare is the listed owner of 27 Trig Road. In the event of blockage or partial of the culverts under Upper Harbour Highway this is likely to result in increased water levels on 27 Trig Road. Has there been any consultation with Watercare in relation to this matter? In Appendix 6 – Austino PPC Response to Auckland Councils Healthy Waters Queries, by Dipal Harrat, dated 12 April 2024, consultation with Watercare for this matter was proposed post lodgement of the PPC, please justify why this is not occurring during the plan change process Please include details of the consultation with Watercare, please update Section 5.0 Stakeholder engagement and consultation in the SMP	Preliminarily discussions with Watercare have taken place. The outcomes of the discussion to date are summarised in Section 5 of the updated SMP.	No additional information requested.	
HW7	In the SMP Section 5.0 Stakeholder engagement and consultation it is noted 'To be completed'. Please include information on all stakeholders, with details on the reasons why they are affected, what engagement occur and what the feedback and the SMP response is	Section 5.0 has been updated to include the engagement and consultation done to date as part of the PPC application.	Please clarify whether the consultation undertaken with Auckland Transport, as noted in Section 5.3 of the SMP, included discussion about stormwater management measures, such as: • the use of communal bioretention devices for SMAF and water quality treatment and/or; • the use of roads reserve for overland flow paths? Please clarify what 'integrated in the public open spaces' means. Does this include the road corridor?	As evidenced by the PPC documentation, the project team have consulted Auckland Transport. However, these discussions have been focused on transportation issues and the design of the stormwater network, including stormwater infrastructure within the road network, have not been discussed. Neither has the project team discussed whether any overland flow paths should be located within the road corridor. The SMP states that the preferred stormwater management method are larger scale communal devices on public land and a piped network within the legal road corridor. These details can be worked through the resource consent and engineering approval processes. The existing tools within the AUP(OP) that provide for such matters to be considered during the resource consent process will not be affected by the PPC.
HW8	In the SMP, Appendix 1 of the HG SMP contains the Rawiri North Addendum to Waiarohia Integrated Catchment Management Plan (ICMP). This ICMP identifies sub-catchment D1 as a stream management area, promoting retention and stream flows post development. Will Precinct 1 of the proposed development maintain this approach?	At this stage, the preferred stormwater management approach for Precinct 1 is private bioretention devices. To conservatively size the communal bioretention devices, retention through infiltration was not considered. At the resource consent stage, detailed geotechnical infiltration testing will inform the appropriateness of this assumption. If retention through infiltration for Precinct 1 is a feasible option, the approach outlined in the Rawiri North Addendum to the Waiarohia ICMP for the Stream Management Area D1 will be maintained. Once finalised earthworks plans have been produced at resource consent, the opportunity to convey 29% of Precinct 1 secondary runoff to Wetland 5 will be investigated. At this stage, this is not the preferred stormwater management approach for Precinct 1.	Please include the response for HW8 in the SMP and clearly state what is Option 1 and the other possible options. Please include details of what needs to be considered when deciding between the options.	The preferred option for Precinct 1 was outlined in Section 7.1 of the submitted SMP. Table 12 has been updated to include the options for the PPC and the preferred approach.
HW9	The SMP states that Wetland 5 located on Rawiri Place	Please refer to Section 7 of the updated SMP and to comment HW8.	Please incorporate the response for HW8 into the SMP and clearly state what is Option 1 and the	Refer to the response to HW8.

	was constructed to provide stormwater management for approximately 29% of Precinct 1 and that the Addendum to Waiarohia ICMP a portion of Precinct 1 can convey its secondary systems runoff to Wetland 5. ~~However~~However, the viability of conveying this will be reviewed during the design process. Please clarify why this cannot be reviewed during the plan change, if this is not a viable option and other methods are needed, this needs to be outlined in the SMP. Austino PPC Response to Auckland Councils Healthy Waters Queries, by Dipal Harrat, dated 12 April 2024, stated that the topography of Precinct 1 may mean it is not practical to use Wetland 5 to manage secondary flow, please provide further information in the SMP		alternative options considered in the assessment. Please include details of why this was the preferred option.	
HW10	The Assessment of Ecological Effects: 84, 90 & 100 Hobsonville Road, West Harbour, Auckland. March 2024 stated that the Rawiri Stream has "a significant portion of the banks of the stream sections were incised (notably that of the upstream reach), and active erosion on the banks was observed." However, Section 6.2 states that "The proposed plan change will not affect stream protection measures required by the AUP's objectives, policies and rules. The PPC will not require any stream works. Any future stream works undertaken as part of future development will be subject to resource consenting at a later stage." Please justify why no stream works are required. What stream assessments were carried out to support this? Was a geomorphic assessment of the current state of Rawiri Stream (within the zone of influence - this may include streams outside the development area i.e. The whole catchment)? Was a pre and post development flow/shear stress to show potential future erosion risks resulting from land use change activities on natural stream receiving environments carried out?	An ecological assessment of the Trig Stream and its associated wetland have been included in the ecological assessment report. The assessment comments on the current sediment load and erosion within the assessed stream/wetland reach. A high-level stream erosion of the Trig and Rawiri Streams has been conducted using a tool provided by Healthy Waters. The methodology used for this assessment was agreed upon with Healthy Waters. This is summarised in the SMP (section 2.6.1). The analysis shows that generally, the existing erosion in the Trig and Rawiri streams at the modelled cross sections is low. Development of the PPC minorly increases the erosion risk at the modelled cross sections. After the finalisation of the discharge points (at resource consent), further geomorphic assessments would be undertaken to support this high-level erosion risk assessment.	Please see the following questions regarding the EST assessment and update the SMP where appropriate: • In section 2.6.1 under key assumptions. It was stated that "A critical shear stress of 20 (N/m2) was used. This is a conservative value..." Please clarify what is meant by 'conservative value'? • Figure 16: How was the post development SMAF-1 hydrograph generated? Please provide calculations for review. • Figure 17: Please discuss why the excess shear stress for the pre and post mitigation cases appears to be the same? Please comment on what this means for the proposed mitigation. • Page 24: In the final paragraph please include an overall conclusion regarding the assessment. • Please provide the corresponding line graphs for the peak flow excess shear related to Figure 15 and Figure 17. • Please provide the calculation spreadsheets used in the EST assessment. Please provide the calculation spreadsheets used in the EST assessment. Please clarify why the information in the EST assessment was not included in the Ecological Effects report. Please note the Ecological Effects included in the SMP is dated March 2024, please include the latest version.	All the data requested in this comment has been sent to Healthy Waters on the 25/11/2024. Without site-specific geotechnical parameters, a critical shear stress of 20 (N/m^2) was recommended by Healthy Waters. Auckland Council's Technical Report for Cohesive Sediment in Auckland Streams TR 2009/038 suggests "using the medium critical shear stress (approximately 33 Pa)" if specific parameters are not developed for a stream. The critical shear stress of 20 N/m^2 is assumed to be conservative at this stage of design. Further erosion assessments in the resource consent stage will confirm the validity of this assumption. As outlined in Section 2.6.1 of the SMP a modified 2.3-year ARI runoff hydrograph was used in the erosion assessment to simulate SMAF 1 hydrology mitigation. The hydrograph was created by subtracting the difference in the 95th percentile 24-hour storm volume between the pre and post development scenarios in the PPC area. This difference hydrograph was then subtracted from the post development 2.3-year ARI runoff hydrograph to form the modified post development 2.3-year ARI hydrograph. A cross-section example calculation has been submitted for review. Further discussion on the proposed mitigation and overall conclusion has been included in Section 2.6.1 of the updated SMP. SMAF 1 mitigation aims to manage runoff concentrated at the discharge points (for the 95th percentile rainfall event and below). The effectiveness of SMAF 1 hydrology mitigation on larger events (e.g. 2.3-year ARI MAF flow) was shown in the assessment to be limited. However, the assessment has shown that the increased risk of stream erosion due to development on the Trig and Rawiri (located outside of the PPC extent) is minimal and the existing erosion potential is small. The ecology report has been revised to reference the most recent version of the SMP that incorporates the findings of the EST assessment. The ecologist agrees with these findings, which are summarised in Section 2.6.1 of SMP. The EST found that the existing erosion in the Trig and Rawiri streams at the modelled cross sections is low. Development of the PPC minorly increases the erosion risk at the modelled cross sections. Table 5 of the Ecology Report has been amended and, with the. The amended Ecology Report details that should appropriate erosion and sediment control plans be designed and maintained in accordance with GD05, related adverse effects on the wetland and stream are expected the be "very low" (Table 5 – ecology report). Accordingly, the existing region-wide provisions of the AUP(OP) can be relied upon without modification to avoid and mitigate adverse effects on freshwater resources that may result from stormwater discharges. The ecologist notes (in Sections 2.1.3, 6.2.1.1, and 6.2.2 in the ecology report) that at resource consent stage, further geomorphic assessments can be undertaken when more is known about the stormwater management system and the point of discharge to support the high-level erosion risk assessment.

HW11	The Assessment of Ecological Effects: 84, 90 & 100 Hobsonville Road, West Harbour, Auckland. March 2024 does not discuss the Trig Stream. Please provide an assessment of the Trig Stream including a stream erosion assessment	An ecological assessment of the Trig Stream and its associated wetland have been included in the ecological assessment report. The assessment comments on the current sediment load and erosion within the assessed stream/wetland reach. See comment HW10 for the response to the stream erosion assessment.	Please clarify why the information in the EST assessment was not included in the Ecological Effects report.	We refer to the latest version of the Ecology Assessment, dated September 2024. An assessment of the Trig Stream and its associated wetland have been included in the ecological assessment report. The assessment comments on the current sediment load and erosion within the assessed stream/wetland reach. The EST was undertaken independently of the ecology report. The outcome of the visual assessment of the Trig and Rawiri Stream is included within the ecology report. See comment SW10 for the response to the stream erosion assessment.
HW12	Section 6.2 in The Assessment of Ecological Effects states that "Rural waterways tend to be affected by high sediment loads, nutrients and stock faecal contamination, while urban waterways tend to be affected by altered hydrological regimes, heavy metals and hydrocarbons. During development there will be the opportunity for riparian margin restoration and protection, and treatment of contaminants as part of the wider development." How will opportunity for riparian margin restoration and protection, and treatment of contaminants be achieved for Precinct 1 and Precinct 2.	Refer to the Updated Ecologist report (updated **Appendix 10**). The proposal is set back beyond the riparian margin and esplanade reserve depth from adjacent streams (being 20m or further). The SMP provides a stream erosion assessment and discusses stormwater treatment.	Please ensure that the Assessment of Ecological Effects refers to the correct version of the SMP (noting that it currently refers to the SMP dated 2023). and comment on the proposed mitigation in the SMP and the effects on the streams. Please update accordingly. The Trig Stream and Rawiri Stream will be used as part of the stormwater network for the plan change, please update section 4.5.3 Freshwater habitats outside the site boundaries. Table 5 in the Ecological Effects report outline three potential effects, however the report also talks about the effects from increase in impervious area, increase in pollutant runoff, structures in the stream, please advise why this was not included in Table 5. Please advised whether the SMP has taken into account what is recommend for stormwater management in section 6.2.4 Stormwater management in the Ecological Effects report.	Table 5 of the ecology report has been amended to include all types of stormwater effects identified in Section 6.2.4. This will ensure that the SMP addresses all adverse effects identified in the ecology report, and the ecology report assesses the capacity of the measures described within the SMP to mitigate adverse effects. Section 6.2.4 of the ecological report discusses the potential adverse effects from stormwater (in the absence of a site-specific design) on the receiving freshwater environment and makes recommendations on what needs to be considered in the design of the future stormwater system. These recommendations have been adopted in the approach outlined in the SMP. Table 5 assesses the effects of the stormwater on these downstream environments if managed in accordance with the SMP measures, but notes that specific design measures will need to be assessed at resource consent stage. Table 5 concludes that the effects of stormwater on streams and wetlands will be "very low" if managed in accordance with the SMP, which endeavours to maintain predevelopment catchment flows.
HW13	In The Assessment of Ecological Effects why was the Auckland Water Strategy 2022-2050 not included in Section 6.4 Relevant Policy Documents?	The PPC has been assessed against the Auckland Water Strategy 2022-2050 in Section 6.4.5 of the updated Assessment of Ecological Effects prepared by Bioresearches Ltd.	No additional information requested.	
HW14	In The Assessment of Ecological Effects Section 6.2.4 Stormwater management discuss Water Sensitive Design and outlines that the proposed SMP adopts a communal management device approach, is this suitable for both Rawiri and Trig Stream, please provide reasoning.	Please refer to sections 7.1 & 7.2 of the updated SMP for comment on why this approach is suitable for the Trig and Rawiri streams The SMP states communal or end of pipe, stormwater management devices are preferred. This approach will minimise the number of public devices to be constructed and vested and still provide protection of the Trig Stream, while maintaining baseline flows to the watercourses and protecting the downstream environment from long-term erosion effects. These devices will need to be designed and constructed as per the SMP (once adopted) and designed and built to Council engineering standards before they are vested. This includes any stormwater outlets that are intended to throttle discharge. The erosion-related effects of flow from the outlet can be assessed can be assessed during the Engineering Approval and Resource Consent processes. The detention function of the communal devices will also be supplemented by a requirement for onsite detention measures, as required by the SMAF1 provisions (such as detention tanks). This will maintain flow to the communal devices. Table 5 of the Assessment of Ecological Effects concludes that the 'level of effect' on the Rawiri Stream will be 'very low' if	Please include the information provided in the response to HW14 in the SMP, baseflow, throttle discharge, assessment that is needed at Engineering Plan Approval / Resource Consent etc. Does the effects identified in Table 5 in the Ecological Effects report cover all of the effects from the plan change on both streams? How was the number of bioretention devices decided for Precinct 1 (2 devices) and Precinct 2 (6 devices)? i.e. please discuss the possibility of less devices? How as the location of the proposed bioretention devices determined. Please include information outlined in table 13, page 57 for Precinct 1/Stage 1 to be included in the initial paragraph of section 7.2.2. Thank you for showing the communal devices on a plan. Section 7.2.2 of the SMP mentions an assumed depth of 1.5m of water within the devices for understanding surface area of the device. However, bioretention devices have a max depth of water of about 200mm. Why was 1.5m used? Figure 6 of the SMP shows site slope gradients. Figure 32 of the SMP shows indicative stormwater device locations and sizes. Some of the devices are located in quite steep areas (25+% slope gradient). How will this affect the feasibility of	The information provided in the first Clause 23 response is found in Section 7.2.1 and Table 12 of the updated SMP. The number of devices was selected so that the implementation of communal devices within the PPC area will coincide with the proposed staging of development while maintaining flows to the Trig and Rawiri streams. Conveying runoff to fewer devices in Precinct 2 is a possibility however, this would require extensive earthworks and would not maintain base flows to the Trig and Rawiri stream. The device locations shown in the SMP are indicative only. In the absence of earthwork plans that will be provided at resource consent the device location are subject to change. The device locations in the SMP have been changed to reflect a feasible location given the **existing** topography. The updated device locations are shown in Figure 32 of the SMP. The effective water depth of the bioretention devices has been changed to 0.7 m. This accounts for the maximum ponding depth and recommended void space for the media outlined in GD01.

		stormwater management devices are installed to maintain predevelopment catchments, as proposed by the SMP.	using bioretention devices? if bioretention devices are not feasible because of the gradient what other options can be used, please clarify and provide guidance in the SMP.	The image below shows the updated indicative location of the Precinct 2 devices underlaid with the existing site's slope. The slope analysis was conducted with 2016 LiDAR data. It should be noted that there is dense vegetation surrounding the Trig and Rawiri stream which can misrepresent the area's topography. The image below illustrates that there are feasible bioretention device locations in Precinct 2. In the absence of earthwork plans the device locations are indicative only. The devices in Precinct 1 are proposed to be private and are not shown device plan.  Alternative options for the PPC are outlined in Table 12 of the updated SMP. The ecology report was revised and provided to Council in September 2024. The amendments included an assessment of ecological adverse effects of the two streams and associated wetlands, inclusive of potential stormwater discharge related effects from development enabled by the PPC (in the absence of a site-specific design). As detailed in Table 5 of the ecology report, potential changes to the catchment yield due to stormwater management is expected to be very low, should suitable stormwater management devices be installed to maintain predevelopment catchments. These streams are located outside of the PPC area, and they are not identified in the AUP(OP) or by the ecologist as being of high having any values of significance or being unusually sensitive to stormwater discharges from an Auckland-region perspective. Therefore, we maintain that the existing Auckland-wide stormwater and urban subdivision provisions provide Council with sufficient regulatory teeth to ensure that stormwater is managed and that any discharge to these streams responds to the conditions of the receiving environment. We note that the preferred stormwater approach involves creating communal devices in public ownership, and this will provide HW with the opportunity to ensure that the discharge is appropriate for the receiving stream environment.
HW15	In The Assessment of Ecological Effects, Table 5: Summary of effects, management measures and expected level of effects on native terrestrial and freshwater values includes a column that "summarises recommended effects management measures" how will these recommendations be achieved for Precinct 1 and Precinct 2. What is meant by "Ensure suitable stormwater management devices are installed to maintain predevelopment catchments." and is this consistent with what is in the SMP?	Refer to the Updated Ecologist report and Stream erosion assessment in the SMP.	No additional information requested.	
HW16	In the SMP Section 2.5 Existing Drainage Features outlined that Precinct 1 discharges its runoff to the Rawiri Stream and Precinct 2 discharges its runoff to both Rawiri and Trig Stream, and that Figure 9 shows the existing contours. How will the proposed plan change ensure this? What are the effects on discharge runoff	Please refer to Section 6.2 of the updated SMP for the earthwork principles. Please refer to Section 7, which outlines that the preferred approach discharges runoff via communal bioretention devices both to the Trig and Rawiri streams.	Section 2.7.2 states that Precinct 2 has one overland flow path, there is also another overland flow path on the southwestern corner, please clarify.	Section 2.7.2 of the SMP has been updated.

	from past earthworks in the area and future earthworks in the area, please discuss and update the SMP			
HW17	In the SMP Section 2.6 The Receiving Environment, please include further information of Rawiri Stream and Trig Stream, such as what are the condition of both streams, what are the opportunities and constraints that may impact on the stormwater development for the site (possible erosion risk and riparian planting), details of the SEA Overlay Terrestrial downstream in the Waiarohia Stream Section 2.6 outline that "It is not anticipated that stormwater discharge from the Plan change area will have an impact on this SEA." Please provide further information why the SEA Overlay Terrestrial downstream in the Waiarohia Stream is not impacted. Do the reports referenced in Section 2.6 reflect the existing stream conditions? Please also refer to more recent assessment of the Rawiri Stream and Trig Stream. The Bioresearches (March 2024) was not referenced	Based on the outcome of the ecological assessment, both the Rawiri and Trig Streams have been subjected to historical and ongoing agricultural and urban developments. This has altered the streams' hydrological functionality and habitat provisioning characteristics. Despite this, both streams are considered of moderate ecological value (with the exception of the upper reach of the Trig Stream, being of low ecological value, due to the presence of fish barriers). Please refer to Section 2.6 of the updated SMP.	No additional information requested.	
HW18	Table 7 Summary of Stormwater Principles Options and Design Guides in the SMP proposes SMAF 1 as hydrology mitigation. Please discuss how the use of SMAF 1 will be sufficient to mitigate effects on the streams caused by the change in land use. Please demonstrate how SMAF 1 is the BPO accounting for the existing state of the stream and its vulnerability to erosion	Section 2.6.1 of the updated SMP summarises the high-level stream assessment of the Trig and Rawiri streams. Healthy Waters provided HG with a stream erosion tool. Section 2.6.1 outlines that at this stage, accounting for the existing state of the streams, SMAF 1 hydrology mitigation is appropriate.	Please see the following questions regarding the EST assessment and update the SMP where appropriate: • In section 2.6.1 under key assumptions. It was stated that "A critical shear stress of 20 (N/m2) was used. This is a conservative value..." Please clarify what is meant by 'conservative value'? • Figure 16: How was the post development SMAF-1 hydrograph generated? Please provide calculations for review. • Figure 17: Please discuss why the excess shear stress for the pre and post mitigation cases appears to be the same? Please comment on what this means for the proposed mitigation. • Page 24: In the final paragraph please include an overall conclusion regarding the assessment. • Please provide the corresponding line graphs for the peak flow excess shear related to Figure 15 and Figure 17. Please provide the calculation spreadsheets used in the EST assessment. Please clarify why the information in the EST assessment was not included in the Ecological Effects report. Please note the Ecological Effects included in the SMP is dated March 2024, please include the latest version.	Refer to HW10. The ecology report has been revised to reference the most recent version of the SMP that incorporates the findings of the EST assessment. The ecologist agrees with these findings, which are summarised in Section 2.6.1 of SMP.
HW19	In the SMP, Table 7 Summary of Stormwater Principles Options and Design Guides includes potential stormwater management options. What are the communal management options for Flooding management for the 10% and	Please refer to Section 7 of the updated SMP.	No additional information requested.	

	1% AEP event? Wetland 5 is ~~discussed~~discussed; however this may not be a viable option. Only options that are appropriate for the plan change should be included in Table 7. Please include a column in Table 7 that states the BPO for the plan change			
HW20	In the SMP, Section 7.2 Preferred Stormwater Management Approach – it is unclear what specifically is recommended, the communal device can be either a communal rain gardens or wetlands, please clarify what is BPO for the plan change area, what are the location, design and size guidance for the communal devices and outfalls. Please include a plan of potential location of the communal devices and outfalls, including catchment area. Please provide guidance for safe access for operations and maintenance. Are there any downstream constraints that need to be resolved for each stage? Please clarify. Table 10 Necessary Volumes and Potential Surface Areas of Communal Devices is included in Section ~~7.2~~7.2; ~~however~~however, it is not discussed in Section 7.2, please discussed Table 10. Please also include further information in Table 10 about the number of communal devices for each stage	Please refer to Section 7 of the updated SMP.	Please clarify if there is safe access for operations and maintenance for the proposed location of the communal bioretention devices/stormwater infrastructure. How will safe access for operations and maintenance be included when designing the communal bioretention devices or any assets that will be vested in Council? Please clarify the location of the bioretention devices, will they be in the esplanade reserve? Riparian margin? if they are adjacent to the stream what are the effects on the stream with the lost in riparian margin and stream erosion risk? See also response to HW13 and HW14. Please provide further information on how the flows from all the bioretention devices will be conveyed into the stream, as the proposed location and distance away from the stream differ. Please comment further on what needs to be considered for the outfall design, energy dissipation and stream erosion effects, and if any adverse effects are identified, how will they be managed? It is understood that flows from some of the bioretention devices and proposed pipe network will discharge into Trig Stream, given Trig Stream is located outside the plan change area, how will this be implemented. Please provide details in the SMP. Are GPTs (such as downstream defenders or approved alternatives) provided upstream of the communal bioretention devices? Please discuss. Additionally, Te Kawerau ā Maki noted that treatment devices are GD01 compliant devices, please confirm if this is the case, and clarify in the SMP.	At this stage, an allowance of 15% of the total device area has been included in the device sizing to allow space for safe operation and maintenance of the proposed assets (see section 7.2.4 of the updated SMP). As outlined in Section 7.4 of the SMP, all public stormwater management devices proposed within the Precinct 2 of the PPC area will be designed in line with the Auckland Council guidelines and be vested to Council upon completion. The operation and maintenance activities will be set out in an operation and maintenance plan. This will be provided to Council in draft format at the consent stage and progressively updated following commissioning and approval of As-built drawings. The devices are not located in the riparian margin or esplanade reserve. The effect on stream erosion will not be completely understood until the resource consent stage when the device locations and associated outfalls are known. - Please see Table 12 of the updated SMP. All erosion protection at stormwater outfalls into streams will be designed in accordance with Auckland Council Technical Report 2013/018 – Hydraulic Energy Management Inlet and Outlet Design for Treatment Devices (TR18). The Trig and Rawiri Stream are outside of the PPC extent. If erosion is observed at the outlets of the bioretention devices the effects can be managed by: • Installing geotextile cloth to stabilise any observed eroding banks, • Rock armouring of banks within the PPC where there may be potential for future erosion As outlined in Section 10.2 of the SMP, through the development process, the potential to provide additional at source stormwater management will be considered to optimise the final stormwater solution, based on the current design information. The principles of stormwater management of the PPC area and compliance with Schedule 4 of the NDC will remain unchanged. All impervious areas of the PPC will be captured and treated by a GD01 compliant device. This is noted in the performance standards in Table 12.
HW21	Schedule 2 of the NDC requires that new urban development and intensification avoids the increase of existing flooding or creation of new flooding of habitable floors. How is this being addressed? Please comment for the 10% and 1% AEP event. In the SMP Table 4 Requirements for Schedule 4 of the NDC, under the column Design approach, attenuation is proposed attenuation, however this is not reflected in Table 7 Summary of Stormwater Principles Options and Design Guides or Section 7.2 Preferred stormwater management approach, please ensure the information is consistent in the SMP.	Attenuation of the 10% and 1% AEP event is not proposed. Please refer to Section 2.7.3 for hydraulic modelling of the PPC. Modelling of the Hobsonville Grove PPC area in isolation indicates that development of the PPC area without mitigation can occur without any negative impacts on the floodplain extents downstream for the 10% and 1% AEP events.	Regarding Appendix 6: Stormwater Modelling Flood Assessment. • Please discuss why an increased 2D mesh size at the culvert inlet and outlet is used? It would be expected that there would be a higher resolution near culverts, not a lower resolution. This approach may have been used for model stability purposes (which is fine). However, such modifications are not "real" and it may cause some issues. Has the culvert performance been checked using manual checks or HY8 (for example) to make sure that the culvert flows are reasonable? • The flood depth maps (Figure 13 and 14) show flat, "dug out" sections near the culverts. It is recommended that the mesh size near the culvert is close to the culvert dimension and represents the channel near the culvert as best as possible (conveyance and storage). The current representation could be misrepresenting water levels upstream and downstream of the culvert, please clarify. As per the previous comment this approach may have been used for model stability reasons. Please confirm. • The model results show that the culvert doesn't overtop, however there is some	Please refer to the Stormwater Modelling and Flood Risk Report RFI Response 2 attached.

			ponding on the road, likely caused by the overland flow paths along the road (see Figure 14), please clarify. • Why was the Brigham Creek road bridge not modelled?	
HW22	What are the stormwater and flooding effects of the development for the proposed plan change on 162 Brigham Creek Road and how will the effects be managed. Please include information in the SMP.	Please refer to Section 2.7.3 of the updated SMP.	No additional information requested.	
HW23	Please provide further information on the stormwater and flooding effects on the culverts under Upper Harbour Motorway, and how these effects will be mitigated. Modelling carried out by the applicant indicates that the culverts under Upper Harbour Motorway do not have capacity in the 1% AEP event including 3.8 degrees of climate change. What are the effects of this lack of capacity?	Please refer to Section 2.7.3 of the updated SMP.	Please discuss why blockage scenarios do not seem to have been considered as part of the culvert capacity analyses, and what would be the effects of this on upstream properties and the motorway?	Blockage scenarios are outlined in Stormwater Modelling and Flood Risk Report RFI Response 2 attached. In these scenarios, the risk from development to the motorway and properties was found to be minimal.
HW24	Healthy Waters previously requested the applicant to comment on effects on the Watercare Services property at 161 Brigham Creek Road. This property is a wastewater pump station. What impacts/effects will the development of the plan change area have on the existing development floodplain in the vicinity of the pump station? Please discuss how increasing the flood risk to the pump station at 161 Brigham Creek Road is consistent with the requirements of the Regional Policy Statement, B10.2.1 Objectives.	Please refer to Section 2.7.3 of the updated SMP.	No additional information requested.	
HW25	In the SMP Section 7.3 Infrastructure Ownership outlines the stormwater management devices that are proposed to be vested in council, does this include wetlands? Please clarify if agreement for these assets to be vested in council have been obtained. Please clarify how the private assets will be maintained to ensure their ongoing operation and maintenance.	Please refer to Section 7.3 of the updated SMP.	No additional information requested.	
HW26	In the SMP Section 8.0 Project risks, please include further information on when the risk needs to be addressed	Please refer to Section 8.0 of the updated SMP.	No additional information requested.	
HW27	Appendices 1, 3, 4, 5, 6, 7, 8, 9 and 13 were discussed in the SMP. Please review the other appendices to see if they need to be included in	The appendices have been amended to only include relevant information in the updated SMP.	Please check the date/version of the appendices attached in the SMP, as they are not the latest. Please include the latest appendices, such as all geotechnical information (including report by Geotechnical Completion Report by Geotek	The SMP appendices have been amended.

	the SMP and reference them in the SMP if they are relevant		Solutions Ltd), Ecological Effects, Cultural Impact Assessment. Please include information from the Geotek Solutions Ltd where relevant.	
HW28	The precinct provisions, the objectives, policies, activities, and standards do not refer to stormwater management devices or the SMP, how will the SMP be implemented for subdivision and development for the plan change?	The existing PPC can be relied upon to implement the SMP, and no stormwater management standards need to be included in the Hobsonville Grove Precinct, for the following reasons: a) Stormwater quality standards do not typically apply to medium density residential areas and low volume local roads. The matters over which Council has restricted its discretion and supporting assessment criteria would typically apply for *'high risk'* developments such as *'high use roads'* and *'high contaminant generating car parking areas.'* b) SMAF1 controls that require hydrological mitigation measures and resource consent application assessment for roads that involve 1,000m^2 of impervious surfaces, and 50m^2 of other impervious surfaces (such as paved parking areas and roofs). c) Listed matters for discretion and supporting assessment criteria that are applicable to resource consent applications for subdivision and land use consent applications for four or more dwellings and subdivision. d) The stormwater diversion and discharge provisions of Part E8 (e.g., E8.4.1(A5) and E8.4.1(A9)). e) The general standards that apply to urban subdivision in E38.3.3(1)(a) that requires all lots capable of containing a building to provide connection to collection, treatment, and disposal of stormwater. f) Restricted discretionary matter H5.8.1(1)(2)(c) and related assessment criteria H5.8.2(2)(i) requires consideration of how proposals for four or more dwellings would be serviced. g) Maximum impervious surface standard that applies to all development in the MHU zone and the THAB zone. h) Objectives and policies of Part E1. In addition to the existing AUP(OP) provisions, there are Council engineering standards and technical guidelines that would apply to the design and construction of stormwater management devices. Any development will need to be undertaken in accordance with the Precinct provisions.	No additional information requested.	

		This will necessitate access to the site from the public road network, and the formation of public roads that will require vesting through a subdivision process. Any subdivision proposal involving the vesting of a drainage reserve (to accommodate communal stormwater devices), would be comprehensively assessed by Council before it is inherited as a public asset. The rigour applies across the region, including areas that are not subject to location-specific precinct controls, and acts as a significant incentive to comply with Council engineering requirements. Overall, it is considered that there are more than enough tools available to Council in the existing AUP(OP) provisions and those proposed as part of this PPC to manage stormwater quality and quantity, regardless of whether the site is developed in stages, ad hoc by multiple parties, or comprehensively through a masterplan approach.		
HW29	The precinct provisions do not make any references to the adjacent streams, the streams are the receiving environment for this plan change, consideration needs to be given to the streams in the precinct provision to ensure the stream will be able to support the plan change.	The attached Assessment of Ecological Effects confirms that there are no watercourses within the site. This means that the issues relate to the control of run-off and ensuring that there is an adequate buffer between urban development enabled by the PPC and the receiving watercourse. A minimum riparian yard setback applies to any development within the MHU and THAB zone. This is considered adequate manage the potential effects of development on freshwater values without requiring a specific precinct standard. The Assessment of Ecological Effects confirms that PPC enabled development will have 'low level' effects on the watercourse if implemented in accordance with the SMP. As stated in our response to HW28, the existing provisions of the AUP(OP) provide sufficient tools to ensure that the development gives effect to the SMP.		