Section 92 Request Tracking Table

Site / Project	Beach Haven Plan Change	Last Updated	20/2/24

	Section 92 Item	Action / Response
HW1	Flood Effects	
	A more detailed flood effects assessment including the following is required: • Investigation and description of existing downstream flooding issues • Floor level survey of downstream properties • Details of any known floors that currently flood • Assessment of whether the land use provided for in the PPC will increase the risk of floor flooding • The flood impact on downstream properties in terms of flood flows, depths, extents, duration, velocity and frequency for the pre- and post-development scenario – without the climate change factor. Given the apparent initial proposal to divert additional catchment area otherwise discharging to the open watercourse to the north, and the complexities of the downstream overland flow path drainage system, more detailed modelling (such as 2D modelling) is required in conjunction with the above, to adequately understand the difference in terms of flood flows, depths, extents, duration, velocity and frequency, appropriate to the scale and significance of the actual or potential environmental effects anticipated from the implementation of the plan change.	The applicant does not have legal access to the properties at 15 and 27 Cresta Avenue to carry out the required testing. Further, we do not consider it necessary to carry out further assessment, given we have previously provided a robust flooding assessment of effects, including mitigation of downstream flooding effects. The Overland flow path assessment undertaken by Airey's to date includes the following: • GIS supported data analysis to determine flood flows, depths, extents, duration and velocity using TP108 against rainfall data from the following conditions: • Max rainfall data analysis for 2.1° Climate Change • Max rainfall data analysis for3.8° Climate Change • Max rainfall data analysis from Auckland Anniversary Weekend Storm (worst Auckland location adopted) • HEC-HMS Data modelling • Historic and current aerial photograph analysis Refer to the typical cross section diagram detailed below.
HW2	SW General	
	Please provide a concept drawing or plan showing the proposed layout of the stormwater drainage system, including the primary and secondary systems.	Please see attached Drawing RC400 detailing the proposed Primary Stormwater Drainage system. Please see attached Drawing MS900 detailing the proposed Secondary Stormwater Drainage system through the subject Site.
HW3	SW General	

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	Is stormwater runoff from the total development area proposed to be directed to the 750mm/400mm diameter stormwater pipe downstream and the overland flow path along the drain? Has there been any consideration of discharging some flows to the stream. The overland flowpath catchment plan in Appendix C of the SMP indicates some catchment draining to the existing overland flowpath. It is not clear what is proposed for that part of the site that currently drains to the stream.	Please refer to attached drawing RC400 detailing the primary stormwater drainage system. All impervious areas are currently directed to the Detention Tanks, which in turn discharge to the existing 750/400mm stormwater line. Please refer to Drawings MS900 detailing the catchment areas of the Secondary System. Approximately 23% (1650m²) of the original site area drains to the eastern overland flow path (stream). The remaining 77% (5407m²) naturally drains to the western overland flow path through 15 Cresta Avenue to the north. Our proposal will retain approximately 14.5% of the original eastern catchment draining to the east (stream) The remainder of the eastern catchment will be diverted to the western catchment under the current proposal. This is due to the site primarily naturally sloping toward the West. As stated above, a small portion of the eastern catchment is retained, however the majority will now drain to the western overland flow path found entirely within the site boundaries. There is no defined overland flow path from the site boundaries to the eastern overland flow path (stream). Auckland Council policy typically requires the defined overland flowpaths to remain with the entry and exit points remaining as predevelopment. This is what we have adopted in our design. In short we have considered the overland flow paths and consider that sending more water to the east is more problematic and has more significant issues, than working with the existing defined overland flow paths.
HW4	Water Quantity	
	The HEC-HMS model presented previously shows that 24hrs storm was used for tank sizing. Also, it appears that attenuation of the 1% AEP storm is in the model. Please confirm that the attenuation volume will be calculated using the storm duration that requires the largest volume (i.e., using 10 minute duration	With the immediate downstream public stormwater network being less than 600mmØ diameter, the network is to be considered 100% blocked as per SWCOP. Consequently, the underground attenuation device was sized for the 10% AEP rainfall events only.

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	can lead to under sizing of the attenuation device).	Initially, spreadsheet routing model was used to size the volumes required. The HEC-HMS model was developed as a check for the spreadsheet routing model. All entries for the HEC-HMS model were as per required by TP108 (including using TP108 rainfall maps, adjusting for 2.1°C climate change and 24hr temporal rainfall normalisation…etc). HEC-HMS model outputs confirmed that 10% AEP attenuation is achieved by the detention design, which reduces the peak flow by approximately 10L/s. Out of curiosity, we ran HEC-HMS model with the climate change adjusted 1% AEP rainfall volume. HEC-HMS model output suggests that 1% AEP attenuation can be achieved by the detention design, which reduces the peak flow by approximately 40L/s. With a reduced peak flow, downstream flood depth is likely to reduce. Please note HEC-HMS model does not consider downstream stormwater system blockage and considers water is constantly draining out of the detention systems. Hence, this can be considered as the **best-case scenario**. Our overland flow path assessment considered downstream network as fully blocked. Which is the **worst-case scenario**. It was determined that there is at most a 20mm increase in flood depth for 1% AEP rainfall event. Consequently, in reality, post development downstream flooding will be somewhere between a reduction in existing flood depth and a 20mm increase. As per our report, we consider this as a minor effect.