Technical Memo

To:	AW Holdings Limited		
From:	Derek Kong		
Cc:	Scott Lamason		
Date:	Tuesday, 24 February 2026		
Job:	Auckland Surf Park	Ref:	3325
Location:	1350 Dairy Flat Highway		

Subject: Secondary Flows Assessment for Auckland Surf Park Community

1. Statement of Qualifications and Experience

Derek Kong

I am a Senior Design Engineer at McKenzie & Co and specialist in stormwater and Water Sensitive Design. Graduated with a Bachelor of Spatial Science from University of Queensland, I have 10 years of professional experience delivering civil and stormwater design across the Auckland region and throughout New Zealand, including work within multiple local authority jurisdictions and consenting frameworks.

I have led and contributed to numerous high-profile projects ranging from urban residential developments to large-scale industrial and commercial developments. My responsibilities have included stormwater design from concept through to detailed design, hydrological and hydraulic assessment, stormwater treatment and attenuation design, overland flow path and conveyance design, and preparation of technical documentation to support consenting and engineering approvals.

Scott Lamason

I am a Senior Civil Engineer and Design Lead at McKenzie & Co, with a Bachelor of Engineering from Unitec Institute of Technology and more than 20 years of experience in land development and subdivision engineering. My background includes senior roles in both consultancy and local government, where I have led multidisciplinary teams and provided direction on complex development projects across Auckland. My work covers detailed design, regulatory strategy, and project governance from concept through to approval.

My previous experience as Development Engineering Team Leader at Auckland Council has given me a clear understanding of local authority processes and engineering requirements. I have since managed civil inputs for residential, mixed-use, and infrastructure projects, supporting technical design, stakeholder engagement, and coordinated delivery. I bring structured judgement and practical insight to engineering assessment for the Auckland Surf Park project.

I confirm that, in my capacity as author and reviewer of parts of the substantive application, I have read and abide by the Environment Court of New Zealand's Code of Conduct for Expert Witnesses Practice Note 2023.

2. Introduction

McKenzie & Co. Consultants have been engaged by AW Holdings 2021 Limited to provide a Flood Risk Assessment for the proposed Auckland Surf Park Community (ASPC) in Dairy Flat. This assessment investigates the existing overland flows and floodplain hazards as key components supporting the substantive fast-track Resource Consent application for the proposed stage 2 development of the ASPC. The proposed development aims to introduce a unique recreational, residential and commercial community, integrating with the local landscape while prioritising flood resilience and environmental stewardship. This report shall be read in conjunction with the application drawings, design plan and other supporting documents related to the site development.

3. Site Description

The property is located between Dairy Flat Highway and Postman Road, at the lower end of a rural catchment. The North Shore Airport is located at the catchment's upper reaches. The catchment flows to the west towards Dairy Flat Highway, where it flows through three 900 diameter culverts under the Highway, to the Angiotonin stream.

The site area is approximately 54ha and is comprised of multiple parcels being Lots 3 and 4 DP 607404, Lots 1 and 2 DP 151504, Lot 4 DP 66181 and Lot 1 DP 605825. The property is zoned as Future Urban Zone under the Auckland Unitary Plan - Operative in Part (AUP OP).

The topography of the site is predominantly flat, apart from some slopes to the north, and to west adjacent to Postman Rd. Three watercourses occur within the site being a southern stream within 105 Dairy Flat Highway, a central stream, and a northern stream within 105 Lascelles Drive. According to the Auckland Council

GeoMaps, a number a of Overland Flow Paths (OLFPs) traverse the site. The Council GeoMaps shows the 1% AEP (Annual Exceedance Probability) floodplain (3.8-degree, Maximum Probable Development (MPD)) is largely contained within the central watercourse, with some shallow sheet flow across the middle of the site, as shown in Figure 1 below.

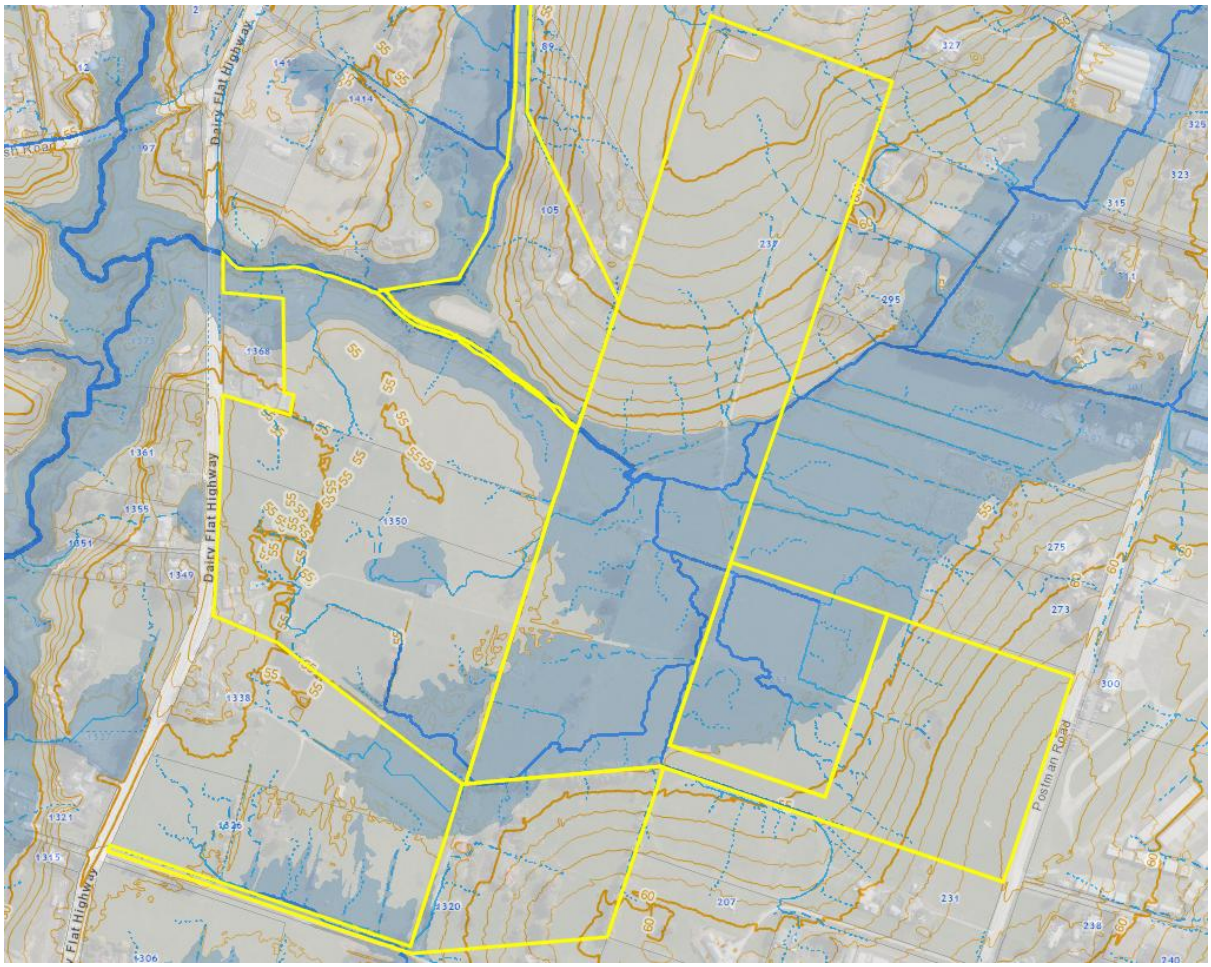

Figure 1 Site Location with Flood Plain – Auckland Council GIS, with 3.8-degree climate change, December 2025

Three 900mmØ concrete culverts (side by side) are located at the bottom of the Catchment, and convey stormwater from east to west, under Dairy Flat Highway, and discharge into the Rangitopuni Stream, which in turn discharges to the Waitemata Harbour.

4. Terrain Surface

Topographical features within the site were surveyed and used to prepare an existing ground surface model. This survey included 3 culverts under the Dairy Flat Highway and banks of watercourse. This data is in New Zealand Geodetic 2000

coordinates, local circuit – Mt Eden 2000, vertical datum is AKL MSL 1946. The topographic survey is included in the Appendix A.

LiDAR data 2016 provided by LINZ Data services, were used to prepare an existing ground surface model for the wider catchment area outside the project boundary. The LiDAR data was provided in New Zealand Vertical Datum 2016, and this was transformed from New Zealand Vertical Datum 2016 to AKL MSL 1946, by applying a vertical offset of +286mm. to align it to the Topographic ground surface model.

4.1. Pre-development Existing Surface

The relatively flat portion of the development site is located within an existing gully, with ground levels generally higher along the northern and south-eastern boundaries. This topography forms a natural drainage depression that accommodates an existing stream traversing the middle of the site.

Runoff from the upstream catchment is conveyed via the low-lying floodplain and the stream and ultimately discharges through culverts under Dairy Flat Highway.

For the purposes of this technical memo, the upstream catchment inflows entering the site are considered into two groups:

1) Flows that directly contribute to the existing stream and riparian corridor
2) Flows that are intercepted or modified by the proposed road geometry

The objective of this technical memo is to assess localised flood hazards and secondary flow paths generated on site as a result of the proposed mixed land use development. Assessment of the effects on the wider stream system and changes to global peak flood levels is outside the scope of this memo and has been assessed by Woods' Report Auckland Surf Park Community Stage 2 – Flood assessment Dated 2 Feb 2026. Further details on assessment limitations are provided in Section 14 Limitations.

4.2. Post-development Design Surace

The site grading and finished ground levels adopt a minimum-earthworks approach, maintaining the existing OLFP entry and exit points at the property boundaries.

Some recontouring of the land is proposed within the floodplain to widen the channel in constrained areas, provide additional flood storage, create building platforms above the floodplain, and form contouring for landscape features.

5. Overland Flow Paths

Several overland flow paths (OLFPs) within the site are accommodated by the contouring of the design surface. Where practicable, these OLFPs are retained and integrated into the landscaping and recontouring of the site. Where this is not feasible, overland flows will be redirected along road alignments and dedicated channels to the existing stream.

A major OLFP of 1.68 m^3/s comprises multiple entries into the Data centre precint. These OLFP's are to be collected into a perimeter drain, to safely convey the OLFP around the site, via a channel along adjoining boundaries to 263 Postman Road. Where these flows are generated from within the site, these will be transferred to the drain from contouring within the site. These measures will safely convey OLFPs around and through the site, without risk to property. Figure 2 shows the route of OLFPs.

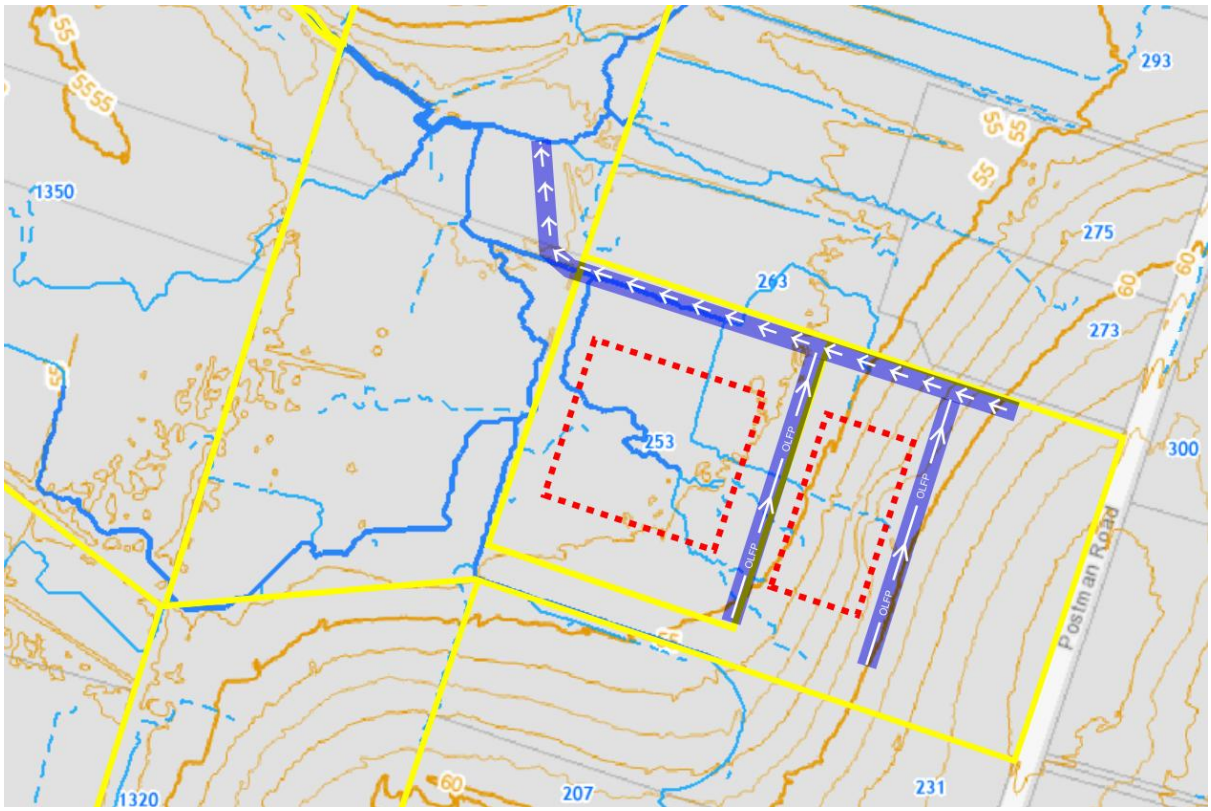

Figure 2 OLFPs intercept into a channel at north boundaries

On the south side of the Collector Rd, the existing farm drains which run along the property boundary, will be retained and upgraded where appropriate to contain the 1% AEP event, and transfer to a new low point, where it will discharge through a culvert to the new open drain on the northern side of the collector rd. This open drain also conveys the treated water from the Collector Road.

Two major OLFPs from the northeast (25.91 m^3/s) and south (5.67 m^3/s) , discharge freely across the central solar farm, where the surface is to remain as grass and unstripped. Within this central array, two engineered grass channels will be formed to convey primary and secondary flows from the south and from the Collector Road. During the 1% AEP storm event, the central array is anticipated to experience shallow sheet flow and temporary inundation, providing additional on-site flood storage.

Secondary flow conveyance was designed as follows:

- Kerb and channel along the Spine Road and other local roads
- Roadside swale – Collector Road
- Central dish channel within Private Right of way/ JOALs

6. Post-development Catchments

1% AEP stormwater catchment design refers to appended Drawing 3725-2-4610.

Residential neighbourhoods (excluding open space) – 70% imperviousness

- Northwest Precinct
- Northeast Precinct
- South Precinct
- Accommodation Precinct

Light industry – 100% imperviousness

- Light Industry East Precinct
- Live/Work Precinct

Recreation and Commercial – 100% imperviousness

- Surf lagoon and Amenity Precinct
- Village Centre Precinct
- Data Centre Precinct

Open space – 5% imperviousness

- 1 Reserve Park within Northwest Precinct
- 1 Raingarden within Northwest Precinct
- Stream Park Precinct

Solar farm precinct[1] – 5% imperviousness

- Solar Farm North Precinct (Lot 1002)
- Solar Farm Centre Precinct (Lot 1003)
- Solar Farm South Precinct (Lot 1004)

Upstream contributing rural catchment – 15% imperviousness

- Country living lifestyle

Pavement corridors

- Public Road - 70% imperviousness
- Private RoWs / JOALs - 95% imperviousness

7. Rainfall Data

The design rainfall of 265 mm for a 24-hour storm is based on Auckland Council's TP108 graphs for 100-year ARI daily rainfall depths. A 32.7% increase has been applied to account for future climate change, as outlined in the Stormwater Code of Practice, reflecting a projected 3.8°C temperature rise for the 100-year event.

8. Hydraulic structures and stormwater devices

A road bridge is proposed on the Spine Road between CH 370 and CH 400 as part of the residential development to the North-East and North-West Precincts. The bridge is designed to convey OLFPs generated within the Northern Precincts to the south, without overtopping the pedestrian footpath. The hydraulic effects of stream flows passing through this bridge are not included in this nested flood study; the hydraulic performance of the bridge (including abutments) shall be assessed under the overarching flood study prepared by Woods.

A runoff diversion channel has been provided along the northern boundary of the Northwest Precinct to intercept upstream sheet flows and bypass the raingarden, discharging toward the existing outlet to the west. As a result, the Northwest Precinct is not expected to receive inflows from upstream catchments.

Three major culvert structures are proposed along the Collector Road corridor and have been designed to avoid overtopping of the road surface during 1% AEP storm event. For the purposes of this assessment, a 100% blockage scenario has been assumed for the following culverts:

[1] Rapid Transit Corridor (Albany – Milldale NoR 1), Feb 2025

1) Box culvert 3m x 1m @ Intersection of Collector Road and Industry South
2) Box culvert 3m x 1m @ Collector Road CH460 - 470
3) Box culvert 3m x 1.5m @ Collector Road CH560 – 570

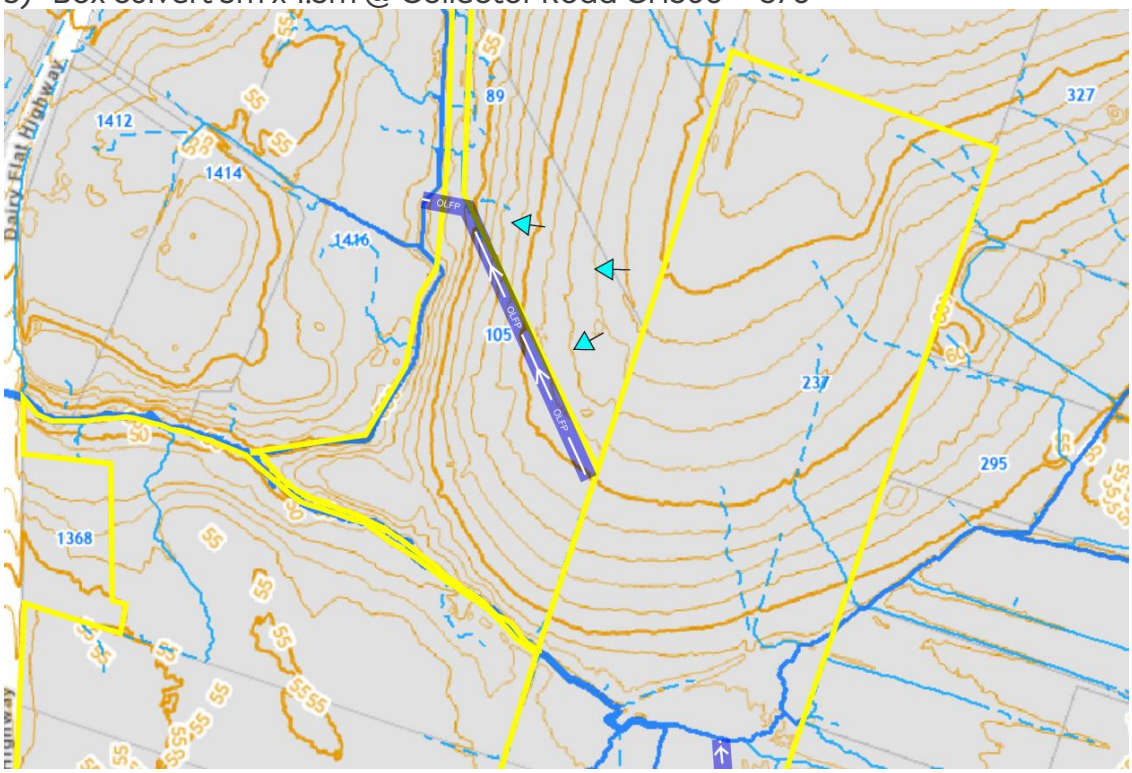

Figure 3 Runoff diversion channel at Northwest neighbourhood

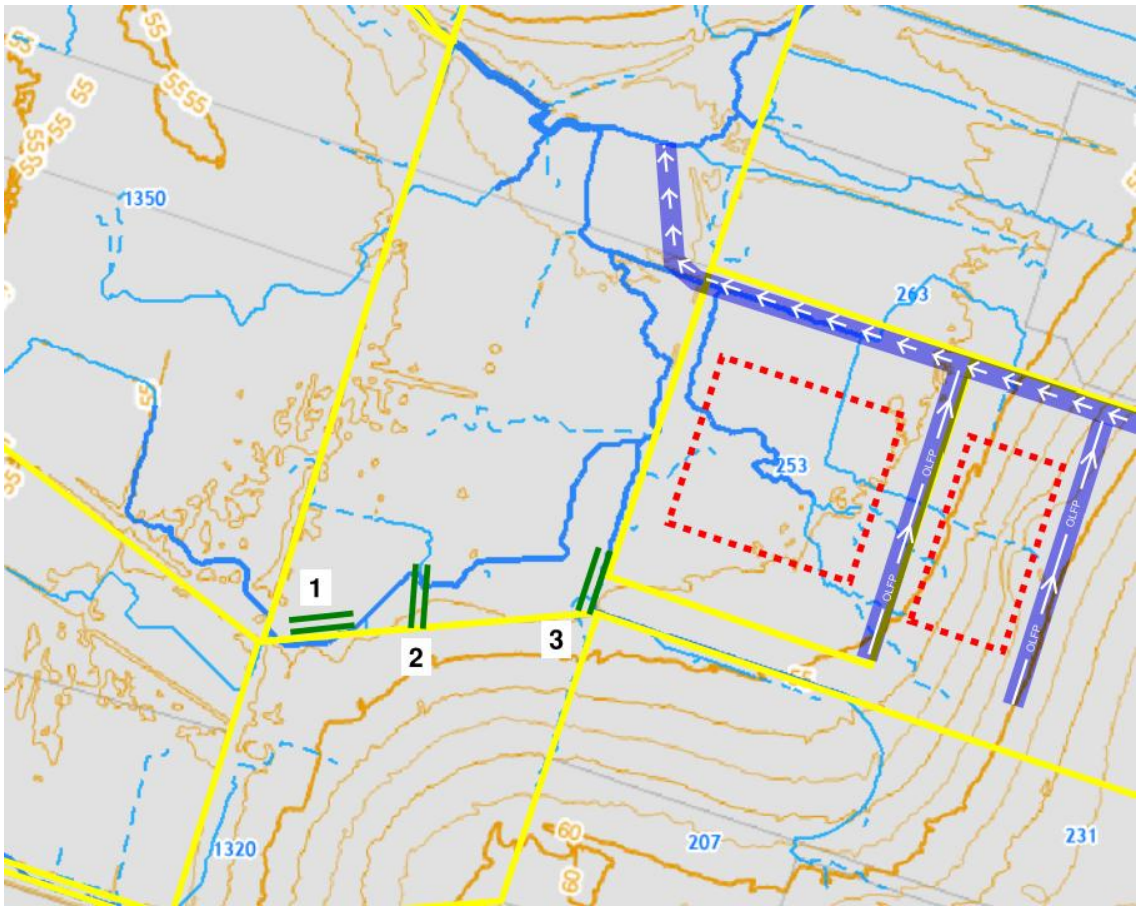

Figure 4 Box culverts at Collector Road

Three wetland basins are located along the existing central stream and have been designed to provide water quality treatment and flow attenuation for both minor and major stormwater runoff. Details of the design mechanisms are provided in the project Stormwater Management Plan[2]. Wetlands 2 and 3 are located at a sag on the Spine Road and receive runoff from the Village Centre and the North and South Precincts. The emergency spillways of both wetlands are located on the stream bank side and are approximately 2.5 m below the building platform levels within the Village Centre and South Precincts. Therefore, surrounding buildings are not considered vulnerable to flooding from overtopping of these wetlands.

9. Cross Section Hydraulic Results

Mannings's equation was used to compute cross section of open channel flows. 1% AEP flood extent analysis refers to Drawings 4610 – 4619.

[2] Stormwater Management Plan – Auckland Surf Park Community

10. Proposed Road Bridge – Spine Road

The proposed bridge on the Spine Road between Chainage 370 and 390 shall be designed to convey the 1% AEP MPD event, including a 3.8°C climate change allowance, without overtopping the road and while maintaining a minimum freeboard of 500 mm. Final bridge soffit levels and road levels shall be confirmed during detailed design, taking into account the structural design, foundation requirements, and deck thickness.

As the structural design is not yet available, Woods Consultants have modelled the finished ground surface, including the proposed bridge abutments (assumed to be solid earth and/or concrete). These abutments create a local narrowing of the stream cross-section, enabling a realistic representation of flow conveyance beneath the bridge. Woods Consultants have confirmed that the 1% AEP MPD event with a 3.8°C climate change allowance results in a maximum flood level of RL 53.76 (AUK1946) at this location.

The proposed bridge level has been set at RL 55.80, providing approximately 1.0 m of freeboard above the modelled peak flood level. This exceeds the minimum freeboard requirement and provides sufficient allowance for structural depth and final design tolerances.

11. Recommendation Freeboard

To mitigate potential flood risks, all proposed buildings within 1% AEP flood hazard area should incorporate a minimum 500mm freeboard from flooded water level to finished floor level, in accordance with New Zealand Building Code[3] compliance. For properties situated outside the 1% AEP flood hazard and classified as non-vulnerable, a reduced freeboard of 150 mm may be applied.

The full list of sections and corresponding Minimum Floor Level's will be confirmed as part of the detail design stage.

[3] NZBC Clause E1, s4.3.1

12. Plan Change 120 (PC 120) As Notified – Relevant Rules and Standards

Rule/ Standard	Compliance	Non-Compliance
E12 Land Disturbance – District		
E12.6.2 General Standards		
Standard E12.6.2(11) – Earthworks (including filling) within the 1 per cent AEP floodplain and/or flood prone areas: • Must not raise ground levels more than 300mm, to a max fill volume of $10m^3$, which must not be exceeded through multiple filling operations; and • Must not result in any adverse changes in flood hazard beyond the site	Restricted Discretionary	Earthworks within the flood plain have been carefully designed to result in a net cut. Significant flood storage cuts have been designed to significantly increase 100-year attenuation onsite. There may be isolated spot areas where fill depths exceed 300mm or $10m^2$

Standard E12.6.2(13) – Temporary land disturbance and stockpiling of soil and other materials **in flood hazard areas** for up to a maximum of 28 days in any calendar year may occur as part of construction or maintenance activities.	Restricted Discretionary	Temporary stockpiling of materials (typically stripped topsoil) may exceed 28 days. Where possible all stockpiles are to be located outside of the flood hazard areas and any storage within the flood hazard areas shall be temporary in nature and reduced to the most practical amount possible. The Proposed earthworks significantly improve flood storage onsite, and any temporary stockpile will be offset by the proposed cut.
E36 Natural Hazard[4]		
E36.4.1A Activity Table – Development – 1% AEP Floodplain and Flood Prone Areas		
E36.4.1A(A78) – Activities where natural hazard risk is significant in accordance with Table E36.3.1B.2 in flood hazard areas	Non Complying,	The Stream Park Villa accommodation Cabins north of the lagoon area are located within a significant flood hazard, however they have raised floor levels with open timber foundations which will be designed to withstand the flood hazard. All other residential activities have been located outside the flood plain.

[4] Note: Given the extensive changes proposed to this chapter, the provisions have not been tracked changed, and instead rules are summarised afresh.

E36.4.1A(A79) - Activities where natural hazard risk is potentially tolerable in accordance with Table E36.3.1B.1 in flood hazard areas	Restricted Discretionary.	Medium flood hazard areas are managed within park reserve and solar farm NOR, away from sensitive activities. The solar farm and public amenities are activities categorised as less sensitive to natural hazards due to the minimal presence of people and buildings, and the will not cause public health or pollution issues in a natural hazard effect. Adjacent residential building platforms are shaped to prevent flood water ingress and provide freeboards.
E36.4.1A(A81) - Surface parking (including vehicle entry and exit points) in flood hazard areas	Permitted activity, that proposed carpark aeras are outside medium flood hazard area.	
E36.4.1A Activity Table - Development - Flood Hazard Areas		
E36.4.1A(A87) - Fences, earth bunds, and walls in flood hazard areas	Permitted activity, no obstruction within flood area.	
E36.4.1A(A88) - Construction of private roads, roads intended to be vested, and accessways in flood hazard areas	Permitted activity - Public collector road proposed outside flooded area, low flood hazard category. Proposed private roads and JOALs	

	are outside the flood hazard areas.	
E36.4.1A Activity Table - Development - 1% AEP Floodplain and Flood Prone Areas		
E36.4.1A(A89) - On-site septic tanks, onsite wastewater treatment and disposal systems and effluent disposal fields in the 1% AEP floodplain and flood prone areas		RD, the disposal fields will be managed progressively in accordance with Dairy Flat Highway Designation 1497. The Designation will be utilised for disposal fields. Any reduction in disposal footprint within the Designation will be offset by suitable areas elsewhere within the overall development. The disposal will be treated to near drinking-water standard and will result in no more than minor effects on the floodplain area.

E36.4.1A(A98) - All other structures and buildings (including retaining walls) in the 1% AEP floodplain and flood prone areas	Not-applicable to A98, as no other buildings within floodplain, as the flood extent is reduced as the result of the earthwork development.	
E36.4.1A Activity Table - Development - Overland flow paths		
E36.4.1A(A102) - Diverting the entry or exit point, piping or reducing the capacity of any part of an overland flow path	Not applicable Existing OLFP entry and exit point remains and flow path capacity increased by the development.	
E36.6.1 Permitted Activity Standards		
Activities in Flood Hazard Areas		
Standard E36.6.1.5 - Fences, Earth Bunds, and Walls in Flood Hazard Areas:		
(1) Fences, earth bunds and walls in the 1% AEP floodplain and in flood prone areas must be designed to allow for passage of flood waters	Complies	
(2) Fences, earth bunds and walls within an overland flow path must not obstruct it	Complies	
(3) Fences, earth bunds and walls must not exacerbate the depth, velocity or extent of flow of	Complies	

surface water beyond the subject site		

AUP Chapter 36 Natural Hazards – Flooding		Risk
E36.3(3) Where a resource consent is necessary, require proposals to subdivide, use or develop land that is subject to natural hazards to prepare a risk assessment that considers all of the following, taking into account the potential effects of climate change and adopting a precautionary approach where information is uncertain or incomplete:		
(aa) the type, frequency, range and scale of the natural hazard(s), including: (i) Where there may be coinciding, compounding and/or cascading hazards: (ii) Whether the hazard risks will be temporary or permanent; (iii) Whether natural hazard events of lower intensity and higher frequency than the 1 per cent AEP event will impact the property and proposed activity	Flood hazard across the site has been assessed through 2D hydraulic modelling for the 2-, 10- and 100-year ARI events, including climate change allowances of +2.1°C (2090) and +3.8°C (2110). The 100-year ARI +3.8°C scenario has been adopted as the primary hazard benchmark. The site is not subject to coinciding, compounding or cascading natural hazards. Flood risk within the identified floodplain areas is considered permanent in nature. The site receives stormwater runoff during all rainfall events. Modelling confirms that post-development flood extents remain generally consistent with pre-development conditions, and no new flood pathways are created. Lower intensity and more frequent storm events do not result in adverse effects beyond existing conditions.	LOW
(c) the consequences of a natural hazard event in relation to the proposed activity; (l) existing and proposed mitigation measures; (m) residual risk; (n) any relevant management plan, strategy	The consequences of a natural hazard event are considered low. The proposed development avoids locating vulnerable buildings within unmanaged Moderate, High or Very High hazard areas. Where hazard areas are present within the wider site, these areas are retained for flood conveyance and are not intensified. Mitigation is achieved through site layout, vertical separation of finished floor levels, and retention of overland flow paths. No reduction in	

or hazard risk assessment relating to the area	flood storage or conveyance capacity occurs as a result of the development. Residual risk remains unchanged beyond the site boundaries. Comparative modelling demonstrates that afflux effects are minor (generally ≤30mm), localised, and contained within existing flood extents. The assessment has been undertaken in accordance with the PC120 hazard classification framework and the Auckland Council Code of Practice (Version 4, March 2024).	

E36.3 (4A) Require all of the following matters to be considered when assessing consequences of natural hazards as part of a risk assessment:		
(a) accelerating or exacerbating the natural hazard and/or its potential impacts; (b) creating natural hazard risks that previously were not present at the location; (c) the type of activity being undertaken and its sensitivity to natural hazard events; (d) creating or increasing the natural hazard risk(s) to people and communities including long-term impacts from more frequent hazard events; (e) creating or increasing the natural hazard risk(s) to other properties,	The proposed development does not accelerate or exacerbate the existing flood hazard. Post-development modelling confirms no material change to flood levels upstream or downstream of the site. No new natural hazard risks are created. The development is sensitive to flood risk; however, building platforms are located outside unmanaged flood hazard areas or incorporate vertical separation above modelled flood levels. There is no increase in flood risk to people, neighbouring properties, infrastructure, or the environment. Flood conveyance and storage functions are maintained. There are no identified cultural impacts associated with flood hazard as a result of the proposed development.	LOW

infrastructure and the environment; and (f) cultural impacts, including consequences for Maori land, Treaty Settlement Land, marae, urupa, mana whenua cultural heritage and values.		

E36.3 (4b)

Require all of the following matters to be considered as part of a risk assessment of existing and further mitigation measures and residual risk:

(a) whether any building, structure or activity located on land subject to natural hazards can be relocated within the site or removed; (b) whether the use, design and construction of buildings and structures can mitigate risks associated with natural hazards; (c) the extent to which methods for long term maintenance of areas affected by natural hazards, such as easements, are provided; (d) the ability for site layout and management to limit exposure of people and property to natural hazards, including safe	Buildings and sensitive activities are located outside unmanaged flood hazard areas where practicable. Where floodplain areas exist within the site, they are retained for conveyance and not developed. Design measures, including finished floor level setting and overland flow path retention, mitigate flood risk. No structural flood mitigation works are required beyond the proposed stormwater and flood management design. Therefore, long-term maintenance obligations beyond standard infrastructure management are not required. Site layout limits exposure to flood hazard, and safe access provisions are maintained. No mitigation structures are proposed that would adversely affect landscape values or public access. The development does not rely on engineered flood protection structures; therefore, failure scenarios do not introduce additional risk.	LOW

egress during a natural hazard event;

(e) the effect of structures to mitigate hazards on landscape values and public access;

(f) the robustness of the mitigation measures, their enforceability and the ability to carry out repairs and maintenance;

(g) the potential consequences of events that exceed the design parameters of mitigation measures;

(h) the potential effects resulting from failure of structural and nature-based mitigation measures over a 100-year timeframe;

(i) the impacts of the mitigation on other people, properties, infrastructure and the environment;

(j) whether natural hazard risks can be reduced for Māori Land, Treaty Settlement Land, marae, urupā, mana whenua cultural heritage and values;

Residual risk remains comparable to existing conditions, and no increased hazard is imposed on neighbouring land.

Earthworks associated with the proposed development have been designed to increase available flood storage within the site. The refined landform lowers selected areas within the floodplain and formalises overland flow paths, resulting in a net increase in flood storage volume compared to the existing ground surface. As confirmed through comparative modelling, these changes do not reduce flood conveyance capacity and do not increase flood levels upstream or downstream of the site. Afflux effects remain minor and localised.

The proposed bridge structure is located within the primary flood hazard area and has been designed with soffit levels set well above the modelled 100-year ARI +3.8°C flood level. The bridge span maintains existing flood conveyance and does not obstruct overland flow paths. Hydraulic modelling confirms no flow constriction effects associated with the bridge.

Given the vertical clearance provided and its position outside the main hazard corridor, the likelihood of structural damage from flood events is considered low. Residual risk to the structure from extreme flood events exceeding the design scenario is considered low and consistent with standard infrastructure resilience expectations.

Overall, the proposed earthworks and bridge design improve floodplain functionality while maintaining or increasing flood storage capacity, and do not create new or increased flood risk within or beyond the site.

(k) the use of conditions of consent, including the duration of consent, to monitor changes in risk and to limit the exposure of people and property to natural hazards; and

(l) the extent to which it is practicable to mitigate residual risk where infrastructure has a functional or operational need to locate in a natural hazard area

13. Conclusions

The Flood Assessment Report for the Auckland Surf Park Community provides a thorough analysis of flood risks associated with the proposed Stage 2 development. Utilising a combination of local topographical surveys, LiDAR data, and climate change projections, the study uses 1D hydraulic modelling techniques to evaluate the potential impacts of the development.

The analysis demonstrates that the planned development incorporates effective flood resilience measures, which are expected to manage and mitigate flood risks adequately. Contouring of the landscape and the implementation of overland flow paths are designed to maintain the current catchments where possible, while ensuring flood resilient infrastructure.

In summary, this flood assessment provides a comprehensive evaluation of the flood risks associated with the proposed Surf Park Community development. The findings indicate that, with the planned measures and considerations, the development is well-equipped to manage and mitigate flood risks, ensuring the safety and resilience of the community in the face of both current and future flooding challenges. Further investigations, as highlighted in the limitations section, will refine these strategies and confirm their effectiveness as the project progresses.

14. Limitations

We have undertaken this flood risk assessment based on a review of the information available to us. The intent of this study is to assess the secondary flows generated on site and receiving upstream catchment flows into proposed road network. Other upstream inflows to existing stream were excluded from this flood assessment.

This site-specific assessment is subject to a range of assumption and simplification. Various uncertainties of rainfall data, LiDAR data accuracy, uniform surface roughness and other hydraulic parameters may deviate the level result of inundation mapping.

Further study will be required for design ground level modification, rainfall data justification, any change to the hydraulic assumption and parameters as the project moves into more detailed design phases.

Appendix A – Drawings

Attached separately

Table B – Minimum Floor Level

Stage	Allotment	Minimum Freeboard (m)	1% AEP Flood Level	Minimum FFL (mRL)
Stage 2	507	0.5		0.5
	508	0.5		0.5
	509	0.5		0.5
	510	0.5		0.5
	511	0.5		0.5
	512	0.5		0.5
	513	0.5		0.5
	514	0.5		0.5
	515	0.5		0.5
	516	0.5		0.5
	522	0.5		0.5
	523	0.5		0.5
	524	0.5		0.5
	525	0.5		0.5
Stage 4	604-622	0.5		0.5