Technical Memo

BEACHLANDS SOUTH - GENERAL ADVICE

Fast Track Application Specialist Memo – Stormwater and Earthworks

Harrison Grierson Consultants Limited

TO:	Beachlands South LP	**HG PROJECT NO:**	A2001228.00
FROM:	Campbell McGregor – National Land Development Manager Khairullah Azizi – Senior Civil Engineer	**DATE:**	24 Apr 2024

1.0 INTRODUCTION

This memorandum has been prepared by Harrison Grierson Consultants Limited (HGCL) on behalf of Beachlands South LP (BSLP), to support Schedule 2A of the Fast Track Application for the Beachlands South Development, being undertaken at 110 Jack Lachlan Drive, Beachlands. This memo will address the proposed methodology to deal with issues related to Earthworks and Stormwater. This memo will also address the measures that will be taken to mitigate adverse effects on the environment due to Earthworks and Stormwater. We record that this methodology and the proposed mitigation measures have been approved by Independent Heading Commissioners in their decision granting Plan Change 88 (**PC88**). We record that regardless of the status of the plan change however, the standards discussed in this memo could be achieved through the conditions of consent.

2.0 METHODOLOGY

2.1 EARTHWORKS

Earthworks are required to enable the development to be shaped. It is the cutting and filling of the existing levels to achieve the proposed levels on the roading, lot areas, and green spaces. To deal with issues related to earthworks activities, reference has been made to Auckland Council Guidance Document 05 (GD05) "Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region", to determine the appropriate measures required. The following are some of the measures proposed for the site, to avoid and minimise sediment discharge effects on the environment:

- Staged Earthworks
- Reduced Earthworks Area Being Opened
- Sediment Retention Ponds with Chemical Treatment Devices
- Decanting Earth Bunds
- Stabilised Entranceways
- Diversion Channels (Clean and Dirty Water)
- Silt Fencing

To mitigate the adverse effects of the earthwork activities, Sediment Retention Ponds will be implemented, given their effectiveness at removing sediment runoff, especially when combined with chemical treatment to assist with sediment particle coagulation. Both Gleams modelling and Universal Soil Loss Equation calculations were provided for PC88, to assess the quantum of sediment discharge that may potentially occur from the earthwork activities in any given earthworks season. Rather than solely rely on the suggested design performance from the

Gleams modelling and Universal Soil Loss Equation calculations. An analysis of stormwater runoff flows from the site utilising historic rainfall data was also provided. This approach resulted in modifying the maximum catchment and relative pond size criteria to provide a greater level of stormwater capture within active catchments, thereby reducing the likely volume of sediment discharge from the development.

As a result of the assessments undertaken, Sediment Retention Ponds were recommended to be sized for 3.75% of the catchment area with a maximum contributing catchment of 4ha, as opposed to 2 or 3% and 5ha catchments as prescribed by GD05. Utilising this approach in combination with other best practice strategies such as catchment stabilisation, minimising exposed catchment areas, and works staging, the adverse impacts of the earthworks' activities during construction on the receiving environment can be mitigated. Refer to **Appendix 1** for the Draft Stage 1 Area Plan, which indicates the area over which earthworks will be undertaken, for stage 1. This supports the proposal to sequence and stage earthworks, to manage sediment runoff.

2.2 STORMWATER

The Beachlands South development is classified as a large greenfield site under Schedule 4 of the Regional Network Discharge Consent (NDC). A Stormwater Management Plan (SMP) was prepared for PC88, which addressed the proposed developments on the site and the proposed management of stormwater runoff.

The existing site area is characterised by a ridgeline running adjacent to Whitford-Maraetai Road along the eastern boundary, forming a sub-catchment boundary and restricting the contributing catchment to the site itself. The site drains five significant sub-catchments, two of which discharge to an existing & heavily modified watercourse via culverts beneath Jack Lachlan Drive. The remaining three sub-catchments discharge directly to the estuarine environment of the Waikopua Creek, within the development boundary.

The proposed development layout has been established using a Water Sensitive Design (WSD) approach that looked to closely mimic existing sub-catchment boundaries and preserves all valuable existing surface water features. A range of stormwater management devices including small-scale bioretention devices and communal scale detention features are proposed to provide a treatment train approach including hydrological mitigation, treatment, and peak flow attenuation for runoff generated within developed areas of the site.

The proposed stormwater management systems will manage overland flow paths within the road reserves, engineered flow paths, and streams to mitigate the flood hazard presented to people and property both on-site and downstream. This approach carefully manages discharges to the existing watercourse north of the site to avoid creating new flood hazards or increasing existing flood hazards. The proposed approach supports the use of treatment and attenuation devices including living roofs, rainwater tanks, treatment swales, wetlands, wet ponds, dry ponds, and infiltration trenches. The use of on-site, small-scale devices throughout the catchment area are a part of the WSD approach that protects and incorporates natural site features into the development. These devices better reflect the sustainability goals outlined for this project.

3.0 COMPLAINCE WITH PC88

The following section discusses the proposed works and how they align with the PC88 approval granted in April 2024.

3.1 EARTHWORKS

To minimise sediment runoff and manage discharge effects on the receiving environment, PC88 approval has been approved and includes the following provisions relating to earthworks. Future development of the land will be undertaken in accordance with these provisions (which are reflected in the precinct provisions for Beachlands South):

- The maximum disturbed area for all catchments must not exceed 20 hectares cumulatively across all catchments at any one time.
- Up to 15 hectares of earthworks (disturbed and stabilised areas) may be undertaken within each catchment over any single earthworks season 1 October – 30 April).
- The maximum disturbed area for each catchment must not exceed 5 hectares exposed at any one time.

- Sediment retention pond volumes must be sized for a minimum 3.75% of the disturbed area that discharges to the sediment retention pond, up to a maximum catchment size of 4 hectares.

As noted in section 2.1, the earthworks area will be undertaken in stages to minimise the extent of exposed area. A sediment retention pond sized for a minimum of 3.75% of the disturbed area, that will service a maximum catchment size of 4ha, will be utilised along with a range of other measures to manage run off from stabilised catchment areas.

3.2 STORMWATER

To ensure the development is undertaken while ensuring management of stormwater flows and flooding, PC88 has been generally granted and includes the following precinct provisions:

<u>Stormwater Quantity/Management:</u>

- Require subdivision and development to achieve stormwater quality treatment of stormwater runoff from all impervious areas within the precinct through inert building materials and devices designed in accordance with GD01 for other impervious surfaces.

- Require subdivision and development to be consistent with any approved network discharge consent and the treatment train approach outlined in the supporting stormwater management plan for the precinct including:

    - Application of water sensitive design to achieve water quality and hydrology mitigation.
    - Requiring the use of inert building materials to eliminate or minimise the generation and discharge of contaminants.
    - Requiring treatment of runoff from public road carriageways and publicly accessible carparks at or near source by a water quality device designed in accordance with GD01 and/or the Auckland Transport 'Transport Design Manual.
    - Requiring runoff from other trafficked impervious surfaces to apply a treatment train approach to treat contaminant generating surfaces, including cumulative effects of lower contaminant generating.
    - Providing planting on the riparian margins of permanent or intermittent streams.

- Ensure development manages flooding effects upstream and downstream of the site and in the Beachlands South Precinct so that the risks to people and property (including infrastructure) are not increased for flood events, up to a 1% AEP flood event.

<u>Stormwater Quality:</u>

- Stormwater runoff from all impervious areas other than roofs must be either:

    - Treated at source by a stormwater management device or system that is sized and designed in accordance with 'Guidance Document 2017/001 Stormwater Management Devices in the Auckland Region (GD01)'; or
    - Treated by a communal stormwater management device or system that is sized and designed in accordance with 'Guidance Document 2017/001 Stormwater Management Devices in the Auckland Region (GD01)' that is designed and authorised to accommodate and treat stormwater from the site; or
    - Where alternative devices are proposed, the device must demonstrate it is designed to achieve an equivalent level of contaminant or sediment removal performance to that of 'Guidance Document 2017/001 Stormwater Management Devices in the Auckland Region (GD01).
    - For all roads proposed to be vested in Auckland Transport, the Auckland Transport 'Transport Design Manual' and design requirements shall apply.
    - New buildings, and additions to buildings must be constructed using inert cladding, roofing and spouting building materials that do not have an exposed surface made from contaminants of concern to water quality (i.e. zinc, copper, and lead).

As noted in section 2.2, a stormwater management plan has been prepared, which utilises a Water Sensitive Design approach, to achieve water quality and hydrology mitigation. At source treatment will be implemented,

with a treatment train approach to manage stormwater flows at source. The development will manage the flooding effects upstream and downstream to ensure there is no risk to people and property for up to 1% AEP events.

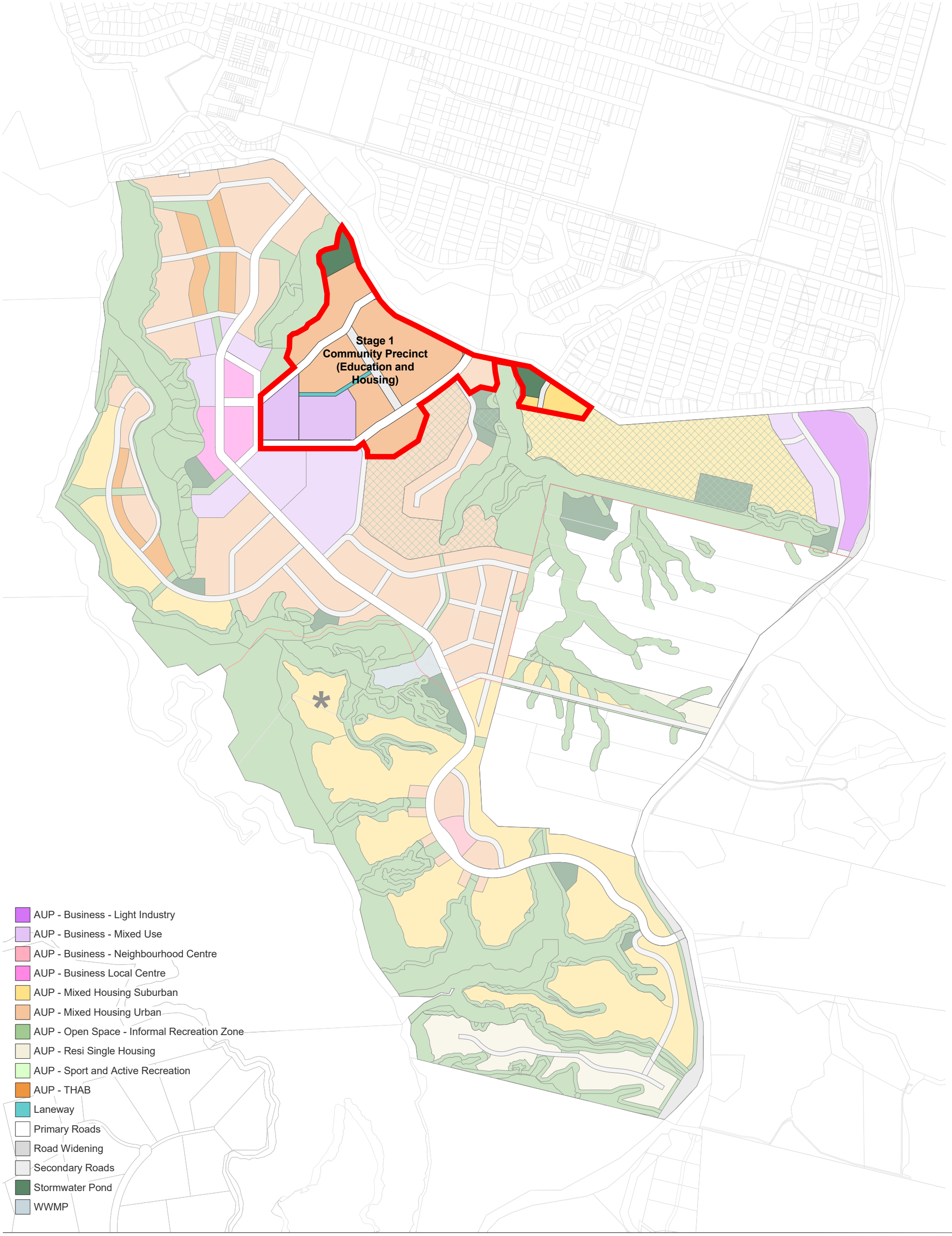
The design of stormwater management devices will be in accordance with 'Guidance Document 2017/001 Stormwater Management Devices in the Auckland Region (GD01)' and or the Auckland Transport 'Transport Design Manual. The proposed approach provides a suitable framework and strategy will ensure adherence to PC88 and any further conditions that will be imposed as part of future detailed application. The framework and strategy will also contribute to the sustainability goals.

4.0 CONCLUSION

It is considered the measures and methods outlined in this memo and approved under PC88, provide a suitable framework under which earthworks activities can be undertaken, which can be further developed as part of future individual consenting processes. The measures are both practical and achievable in the management of the earthwork's activities. Adverse activities relating to the undertaking of earthworks activities are also mitigated as a result of the framework approved under PC88.

APPENDIX 1: DRAFT STAGE 1 PLAN

Draft Proposed Stage 1 Plan



JASMAX

Client	Discipline	Project Number:	Scale @ A3
Russell Property Group	Urban Design	220103	1 : 10000
Project	Date	Revision	Sheet
Beachlands South	2024/05/02		1