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## VILLA MARIA – FRESHWATER CLASSIFICATIONS

### Background

Goodman Nominee (NZ) Limited (Goodman) engaged Viridis Limited (Viridis) to undertake an ecological assessment to classify the freshwater features within the site at Villa Maria Estate (118 Montgomerie Road, and 350, 400, 470 Oruarangi Road) in Māngere (“the site”; Figure 1). The site is zoned Business – Light Industry Zone under the Auckland Unitary Plan (Operative in Part 2016; AUP).

Ecological assessments have previously been undertaken within the site by Freshwater Solutions Limited<sup>1</sup> (FSL) in 2019 and Bioresearches Group Limited<sup>2</sup> (Bioresearches) in 2021 and initial input was provided by an Auckland Council stream specialist in 2018<sup>3</sup>.

This assessment may be used to inform resource consent requirements in accordance with the AUP, the National Policy Statement for Freshwater Management 2020 (NPS-FM) and the National Environmental Standards for Freshwater (NES-F).



**Figure 1. The site at Villa Maria Estate (yellow polygon) and Auckland Council's predicted overland flow paths overlay (blue lines), sourced from Geomaps.**

<sup>1</sup> Freshwater Solutions Limited. (2019). *Villa Maria Estate Ecological Assessment*. Dated 28 March 2019.

<sup>2</sup> Bioresearches Group Limited. (2021). *Freshwater Ecological Constraints Analysis – Villa Maria Winery Estate*. Dated 16 February 2021.

<sup>3</sup> Pre-application meeting minutes provided in the appendix of the FSL assessment.

## Ecological context

The site is located on the western outskirts of the industrial part of Māngere. It is within the Oruarangi Creek catchment that feeds into the Mānuka Harbour to the northwest of the site.

The site is located within a broad caldera, a depression in the land which formed historically due to the eruption of Waitomokia Volcano. The perimeter of the site partly follows the shallow tuff crater, but the general topography of the site within the caldera is flat. Due to the flat nature of the site, it is expected that the crater contained a freshwater wetland ecosystem prior to human colonisation. The historical wetlands have been subsequently drained for horticultural and viticultural land uses.

## Methodology

The site was visited in March 2023 by a suitably qualified and experienced freshwater ecologist. Prior to visiting the site, a desktop review was carried out which included a review of current and historic site aerial imagery, as well as available data on Auckland Council's Geomaps regarding topography, hydrology, and mapped ecosystem types. Any clear changes in vegetation and presence of surface water were noted.

During the site assessment, the presence and extent of streams within the site were noted. Watercourses were classified in accordance with the AUP definitions to determine ephemeral, intermittent, or permanent status. Modifications to natural flow paths or the presence of artificial drainage channels were noted, and riparian and catchment information was also reviewed. In addition, this assessment draws on the information presented in the previous ecological assessment prepared for the site.

Ministry for the Environment's (MfE) wetland delineation protocols<sup>4</sup> and pasture exclusion assessment methodology<sup>5</sup> were used where required to determine whether an area met the definition of a 'natural inland wetland' under the NPS-FM.

## Watercourses

Freshwater features within the site have been identified as per Figure 2. Three watercourses, labelled A-C, have been assessed to meet the definition of 'artificial watercourses' as per the AUP definition<sup>6</sup>. This assessment is consistent with previous classifications undertaken by FSL and Bioreserches, and agreed upon by Auckland Council's specialist.

Upon visual inspection, watercourses A-C had artificial straightened alignments, had been widened/deepened, and contained no natural portions from headwaters to confluence. Given the naturally high water table within the site and the land use, it is clear that the watercourses have been constructed for drainage purposes. The flat nature of the caldera and the lack of a natural outlet would not have historically supported the formation of natural streams. In the eastern corner of the site, an artificially created opening in the tuff crater allows for watercourse C to drain to the Oruarangi Creek (Figure 2). A constructed pond is located roughly in the middle of the site which is piped to the upper portion of watercourse C (Figure 2).

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<sup>4</sup> Ministry for the Environment. (2020). *Wetland delineation protocols*. Wellington: Ministry for the Environment.

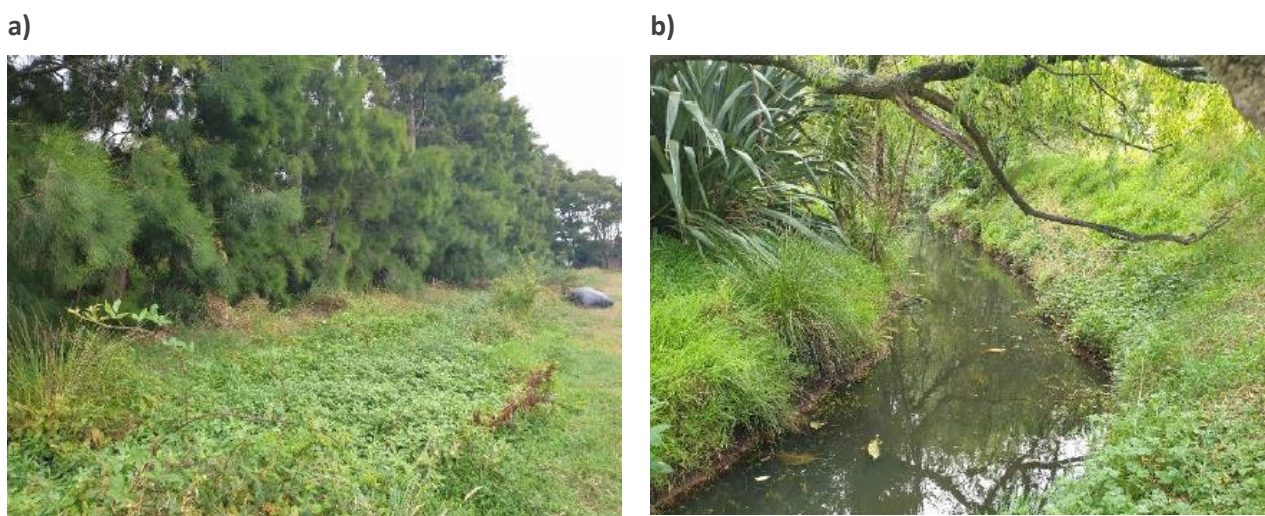
<sup>5</sup> Ministry for the Environment. (2022). *Pasture exclusion assessment methodology*. Wellington: Ministry for the Environment.

<sup>6</sup> Artificial watercourse under the AUP: "Constructed watercourses that contain no natural portions from their confluence with a river or stream to their headwaters"

Descriptions of the channel environments and habitat values have previously been detailed by Bioresarches and FSL<sup>1,2</sup>. Ecological values of the artificial channels were assessed as ‘low’ in both reports. We agree with this assessment, largely due to the modified nature of the channels for their intended drainage purposes, which provide poor quality aquatic habitat, limited flow, and are overgrown with exotic macrophytes (Figure 3).



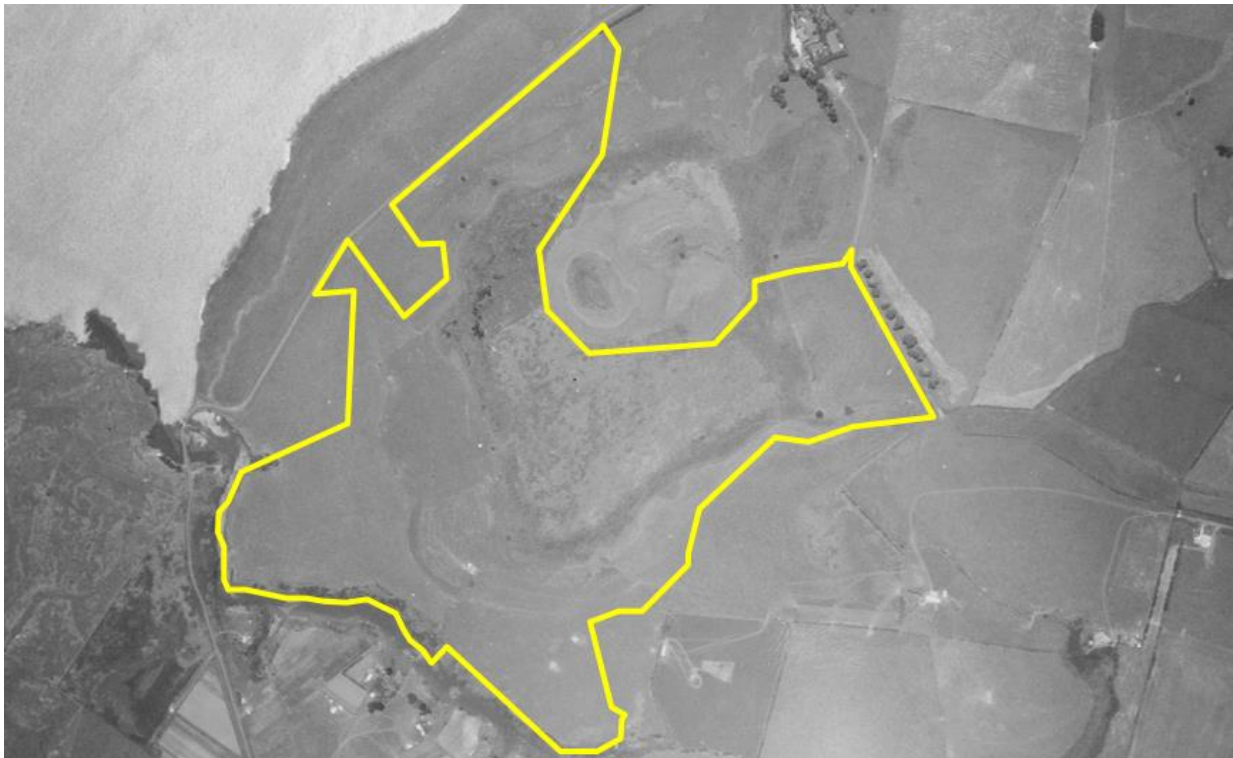
**Figure 2. Freshwater features identified within the Villa Maria site.**



**Figure 3. a) Example of Watercourse A channel showing a lack of water and overgrowth of macrophytes, and b) Example of Watercourse C showing artificially aligned and deepened channel (images sourced from Bioresarches).**

A review of historic aerial imagery shows no evidence of natural streams present within the site (Figure 3). The oldest aerial that could be sourced was from 1939 (Figure 3). This aerial shows that the site has been used for horticultural/agricultural purposes for more than 80 years, and artificially constructed watercourses B and C are visible. Darker areas of vegetation within the site indicate the presence of poorly drained soils within the caldera in 1939. As mentioned previously, the environment within the site and caldera was expected to be present historically (at least prior to 1939). The drainage channels, including the artificially cut outlet in the tuff ring that drains the site, effectively reclaimed this freshwater wetland environment.

FSL reported the presence of 'At-Risk' species īnanga (*Galaxias maculatus*) and longfin eel (*Anguilla dieffenbachia*) in the lower reach of watercourse C that flows to the Oruarangi Creek. Due to a lack of regular flow and poor water and habitat quality upstream of this section, it is highly unlikely that At-Risk species are found outside this channel section within the site. Watercourses B and the upper portion of C have previously been found to contain common, pollutant-tolerant species such as short-fin eel (*Anguilla australis*) and pest species gambusia (*Gambusia affinis*)<sup>1</sup>.



**Figure 4. Historic aerial of the site (yellow polygon), Waitomokia volcanic crater and general surrounding environment. Drainage channels are present (image sourced from Retrolens).**

### NES-F regulations

Artificially constructed ponds and artificial drainage channels are excluded from the definition of 'natural inland wetlands' as they meet the definition of a 'constructed wetland' under the NPS-FM definitions. Therefore, the pond and artificial drainage channels within the site are not subject to the National Environmental Standards for Freshwater 2020 (NES-F).

Waterbodies may develop associated wetland habitat as a direct or unintentional result of being built and maintained, and the definition of a constructed feature also extends to these 'incidental' wetlands. Although hydrophytic vegetation was present within the channels and along the channel edges in some

areas, these areas are considered to be 'incidental' wetlands that have formed in association with the artificial drainage channels, and are therefore excluded from the definition of a 'natural inland wetland' under the NPS-FM.

No other natural wetland features or indicators were observed during the site visit.

## **Summary and Recommendations**

The freshwater classifications assessment undertaken within the Villa Maria Estate in Māngere has identified the presence of three artificially constructed drainage channels which all meet the definition of 'artificial watercourse' under the AUP. The findings within this memorandum are consistent with the ecological assessments previously undertaken within the site by FSL and Bioreserches. No stream protection rules under the AUP are relevant to these watercourses, and the NES-F is not considered to apply to the potential future development of this site.

The drainage channels have been assessed to have a generally low ecological value, aside from the lower portion of watercourse C which At-Risk fish species may intermittently utilise. Therefore, despite the drainage channels having no protection under the AUP, it is recommended that a fish management plan be prepared and implemented to relocate native fish from the site prior to any in-stream works.