ecoLogical solutions ltd
115 the strand, Tauranga 3141
e: s 9(2)(a)
w: www.ecoogicalsolutions.co.nz

ecoLogical Solutions
Environmental Consultants

6 November 2023

Kilroy Group Ltd

Attention: GD Jones

30 Mathers Road – Black Mudfish Survey

Introduction

In November 2021, Ecological Solutions (formally Freshwater Solutions) established the presence of black mudfish at the Site using environmental DNA (eDNA) sampling (Attachment 1). There were positive detections at two locations in two of the drains, but there was no indication of the population size or distribution within the Site. A comprehensive trapping survey was undertaken over one night during 12 – 13 October 2023 in order to address these knowledge gaps, which will inform the likely ecological offsetting required after considering the effects management hierarchy (i.e. avoid, remedy and mitigate).

The following letter presents black mudfish survey results at 30 Mathers Road, Horotiu (the Site) as part of an ongoing site assessment for Kilroy Group Ltd and presents an assessment of the predicted length of drain within the Site that provides potential habitat for black mudfish.

Survey Methodology

In areas of shallow standing water, 10 fine wire mesh (3 mm) un-baited minnow traps per 100 m lineal or 100 m^2 were set overnight. The section of the drains that were surveyed and the number of traps is shown on (Attachment 2). Traps were cleared on 13 October 2023 and trapped mudfish were measured and released into the drain of origin.

Survey Results

The trapping survey included surveying 2,833 m of drain within the Site, noting that within some of the drains there were sections that were dry. Eleven black mudfish ranging in length from 55 mm to 115 mm. The section of the drains that contained black mudfish is shown in Figure 2. Two mudfish were found in each of drains 8, 13 and 58 and five were captured in the northern boundary drain (NBD). The length of drain in which black mudfish were captured was 1,080 m while no black mudfish were captured in 1,753 m of the drains that were surveyed.

Predicted Habitat for Black Mudfish

The following presents an assessment of the predicted length of drain within the Site that provides habitat for black mudfish. The assessment is based on the methodology outlined in the Mudfish Management Plan (MMP) prepared for Hamilton City Council for the Rotokauri Greenway Project (Beca and Tonkin and Taylor 2022)[1]. Determining the amount of potential

[1] Beca Limited and Tonkin & Taylor Ltd 2022. Rotokauri Mudfish Management Plan. Report prepared for Prepared for Hamilton City Council, December 2022.

black mudfish habitat was undertaken by calculating a ratio (or %) of the 'length of drain where black mudfish were captured' relative to the 'total length of drain fished' and based on available data as follows:

- Approximately 2,833 m of artificial drain has been trapped for black mudfish within the Mathers Road site (excludes eDNA data).
- Where mudfish have been identified within a 100 m survey reach (even if only one trap over 100 m has resulted in one mudfish) the entire sample reach was considered black mudfish habitat (i.e., adding a level of conservatism).
- Black mudfish have been recorded from 1,080 m of drain (node to node) within the Mathers Road site (i.e., a reach was counted if one black mudfish was recorded across traps in that reach).
- A total of 38.1% of drains that have been trapped had black mudfish ((1,080 m / 2,833 m) x 100 = 38.1%). Given the amount of trapping that has occurred within the catchment, this 38.1% can be used as a preliminary estimate the length of un-trapped drain within the footprint that may support black mudfish.
- There is a total length of 13,215 m of drain (excluding modified watercourses and piped sections of drain) within the Site, of which 2,833 m has been trapped. A total of 10,381 m of drain within the footprint has not been trapped, some of which, may support black mudfish.
- Applying the 'hit rate' of 38.1% of trapped drains that have black mudfish to the length of un-trapped drains within the footprint (10,381 m) results in an estimated 3,958 m of additional drain that may provide habitat for black mudfish.

Summary

Based on this first trapping survey at the Mathers Road Site, the amount of unfished (trapped) drain habitat within the Mather Road Site predicted to provide habitat for black mudfish is 3,958 m or 38.1% of the remaining drains within the Site.

This indicates that without further trapping effort, 3,958 m of the drains on site would be subject to offsetting, after applying the effects manangement hierarchy. In the nearby Onion Road site, the ratio of suitable habitat is approximately 60% and within the Rotokauri catchment, approximately 15% of drains support black mudfish, noting that the amount of trapping in the Rotokauri Catchment is significant with over 10 km of the artificial drains being trapped over the past 7 years.

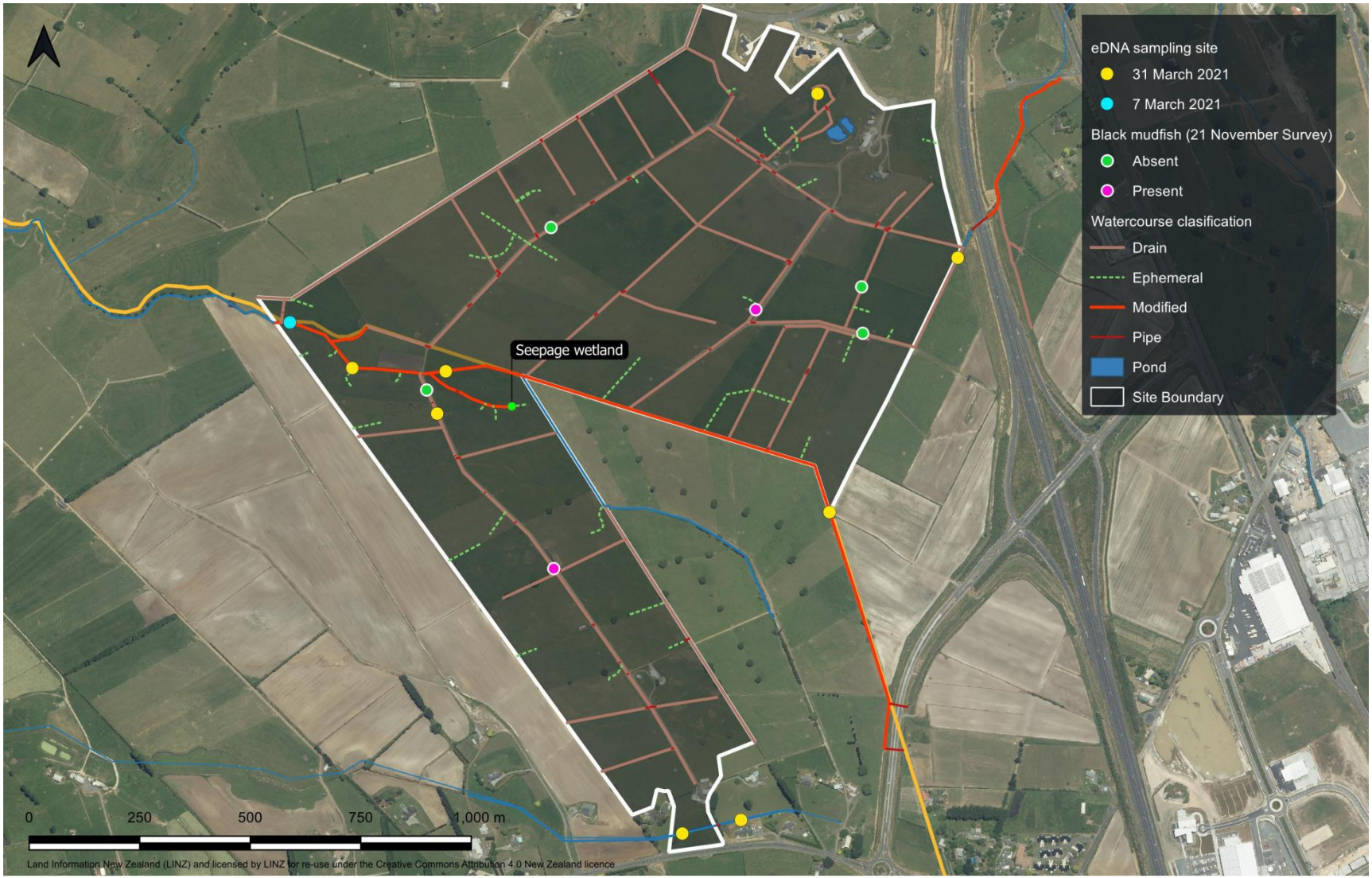
The amount of drain subject to offsetting will depend on the development footprint and the extent of the drain network loss and will likely vary from this initial estimate.

We trust that this letter satisfies your processing requirements. Should you require any further information, please do not hesitate to contact us.

Yours Sincerely,

Phil Taylor

Freshwater Ecologist


eDNA sampling site
31 March 2021
7 March 2021
Black mudfish (21 November Survey)
Absent
Present
Watercourse clasification
Drain
Ephemeral
Modified
Pipe
Pond
Site Boundary
Seepage wetland
0
250
500
750
1,000 m
Land Information New Zealand (LINZ) and licensed by LINZ for re-use under the Creative Commons Attribution 4.0 New Zealand licence

Attachment 2: Black mudfish trapping results within the Site – November 2023.