

Wellington Water Limited

NAENAE RESERVOIR PRELIMINARY SITE INVESTIGATION

27 OCTOBER 2022

CONFIDENTIAL



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NAENAE RESERVOIR PRELIMINARY SITE INVESTIGATION

Lower Hutt City Council

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REV	DATE	DETAILS
A	27/10/2022	Final

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Reviewed by:	Ben Gentile	27/10/2022	PP
Approved by:	Stephen Thomson	27/10/2022	

This report ('Report') has been prepared by WSP exclusively for Wellington Water Limited ('Client') in relation to Preliminary Site Investigation for Naenae Reserve ('Purpose') and in accordance with the Project Management Plan (Major Project), dated 21 June 2021 (Doc ID: ACT70-1446531832-5150). The findings in this Report are based on and are subject to the assumptions specified in the Report. WSP accepts no liability whatsoever for any reliance on or use of this Report, in whole or in part, for any use or purpose other than the Purpose or any use or reliance on the Report by any third party.

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EXECUTIVE SUMMARY

WSP New Zealand Limited (WSP) has been commissioned by Wellington Water Limited (Wellington Water) to undertake a Preliminary Site Investigation (PSI) for the Naenae Reservoir development project.

Wellington Water propose to develop the Naenae reservoir, with development comprising:

- the building of a larger reservoir adjacent to the existing reservoir
- trenching and installation of a pipeline leading towards Balgownie Grove and along Waddington Drive and Naenae Road.

The new reservoir will create an increased capacity to service the water supply demands of the Greater Wellington Region. WSP understand that the current reservoir will remain in place until a later date. The proposed earthworks to construct this reservoir extends beyond the property boundary of 37 Summit Road, where the existing reservoir is located into 5A Balgownie Grove.

This PSI focuses on the proposed development area of the new reservoir (the 'site') and proposed pipeline (the 'proposed pipeline'), as indicated on Figure 1 in Appendix A.

The PSI was undertaken to assist with:

- Determine the consenting status under the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NESCS, 2011). This was undertaken by
 - assessing whether it is more likely than not that activities or industries described on the (MfE) Hazardous Activities and Industries List (HAIL) (MfE, 2011) have been, or currently are, undertaken at the site.
 - Identify if the areas of soil disturbance consistent a 'pieces of land'¹ to which the NESCS applies.
- assessing if further investigations are required to assess soil management and disposal requirements.

This PSI comprised of

- A review of:
 - environmental setting from publicly available maps and databases
 - historical aerial photography (where available via Hutt City Council [HCC] Historic Aerial Maps and Retrolens)
 - information relating to resource consents and the Selected Land Use Register (SLUR) through the Greater Wellington Regional Council (GWRC).
- Preparation of this report outlining the findings in relation to the objectives and purpose above.

¹ A 'piece of land' refers to land on which hazardous activities are being, have been or are more likely than not to have been undertaken, rather than the whole property parcel (NESCS, 2011).

FINDINGS

Based on the review of findings of the desktop review, little development appears to have taken place at the site between the years of 1941-2022, with the exception of the establishment of the reservoir and the continuation of Summit Road through the site. Most of the development during this time comprised the development occurring across the wider surrounding area.

The first section of the proposed pipeline, from the bottom of the hill until Naenae Road, proceeded through rural properties that appear to have been used for market gardens after 1941 and prior to 1977, with Naenae Road having been established since prior to 1941. Since 1977, the area adjacent to and along the pipeline was developed into road and residential property. As part of the development of the roads and residential properties it is likely that the soil that was used as part of the market garden activities would have been stripped back.

A review of the GWRC SLUR mapping resource it is understood that:

- the site and proposed pipeline route are not listed as a HAIL
- no properties immediately adjacent to the site and the proposed pipeline were listed as a HAIL.

CONCLUSIONS

Based on the findings of this PSI it is not considered 'more likely than not' that an activity on the HAIL has historically been, or is currently being undertaken on the site. While it is noted that part of the proposed pipeline historically was subject to market gardening activities, it is considered likely that the topsoil would have been stripped back during the development of the residential properties and roads.

Therefore, the site and the proposed pipeline are not considered as pieces of land covered by the NESCS as defined by clause 5 (7) of the NESCS. For this reason, the NESCS does not apply to the development covered by the PSI.

RECOMMENDATIONS

While it is considered that the NESCS does not apply for the development covered by this PSI, WSP understand that there will be extensive earthworks associated with the development, which will likely require soil disposal. WSP recommends that soils sampling be undertaken where earthworks are proposed to inform disposal options during development.

1 INTRODUCTION

1.1 BACKGROUND

WSP New Zealand Limited (WSP) has been commissioned by Wellington Water Limited (Wellington Water) to undertake a Preliminary Site Investigation (PSI) for the Naenae Reservoir development project.

Wellington Water propose to develop the Naenae reservoir, with development comprising:

- the building of a larger reservoir adjacent to the existing reservoir
- trenching and installation of a pipeline leading towards Balgownie Grove and along Waddington Drive and Naenae Road.

The new reservoir will create an increased capacity to service the water supply demands of the Greater Wellington Region. WSP understand that the current reservoir will remain in place until a later date. The proposed earthworks to construct this reservoir extends beyond the property boundary of 37 Summit Road, where the existing reservoir is located into 5A Balgownie Grove.

This PSI focuses on the proposed development area of the new reservoir (the 'site') and proposed pipeline (the 'proposed pipeline'), as indicated on Figure 1 in Appendix A.

1.2 CERTIFYING STATEMENT

This PSI was undertaken and reported in general accordance with the Ministry for the Environment Contaminated Land Management Guidelines No. 1: Reporting on Contaminated Sites in New Zealand (Revised 2021) (CLMG No. 1) (MfE, 2021a).

This report has been reviewed and signed by a Suitably Qualified Environmental Practitioner (SQEP), in accordance with the requirements of the NESCS (2011). The investigation manager and principal certifier details are provided in Table 1-1 below.

Table 1-1 Suitably Qualified and Experience Practitioners

Item	Details
Investigation Manager	
Name	Ben Gentile
Job title	Environmental Scientist
Years' industry experience	6
Certifier	
Name	Stephen Thomson
Job title	Principal Environmental Scientist
Years' industry experience	26

1.3 PURPOSE AND OBJECTIVES

The PSI was undertaken to assist with:

- Determine the consenting status under the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NESCS, 2011). This was undertaken by
 - assessing whether it is more likely than not that activities or industries described on the (MfE) Hazardous Activities and Industries List (HAIL) (MfE, 2011) have been, or currently are, undertaken at the site.
 - Identify if the areas of soil disturbance consistent a 'pieces of land'² to which the NESCS applies.
- assessing if further investigations are required to assess soil management and disposal requirements.

1.4 SCOPE OF WORK

The PSI comprised the following:

- A review of:
 - environmental setting from publicly available maps and databases
 - historical aerial photography (where available via Hutt City Council [HCC] Historic Aerial Maps and Retrolens)
 - information relating to resource consents and the Selected Land Use Register (SLUR) through the Greater Wellington Regional Council (GWRC).
- Preparation of this report outlining the findings in relation to the objectives and purpose above.

² A 'piece of land' refers to land on which hazardous activities are being, have been or are more likely than not to have been undertaken, rather than the whole property parcel (NESCS, 2011).

2 SITE LOCATION AND SETTING

2.1 SITE IDENTIFICATION

The site is located at 37 Summit Road, Fairfield and 5A Balgownie Grove, Naenae, Lower Hutt and is approximately 2.5km north-east of Hutt City Centre (Appendix A, Figure 1). The existing reservoir is on one property title. However, the proposed earthworks extent for the new reservoir extends beyond the property boundary of 37 Summit Road, Fairfield to 5A Balgownie Grove, Naenae. It is understood that the current reservoir feed supply water via gravity to a pump station or system off-site and that there is no pumpstation existing at the current reservoir location.

Site details are summarised in the following tables of Table 2-1.

The proposed pipeline will head down the hill, north-east of the site, towards Balgownie Grove and then along Waddington Drive and Naenae Road, with most of the proposed pipeline being installed beneath the road corridor.

Table 2-1 Summary of site details

Site Address	The site sits across the following addresses: <ul style="list-style-type: none">— 37 Summit Road, Fairfield, Lower Hutt 5011— 5A Balgownie Grove, Naenae, Lower Hutt 5011
Legal Description	The site sits across the following legal descriptions: <ul style="list-style-type: none">— LOT 35 DP 31233— LOT 14 DP 59678 OFFWADDINGTON DVE EASTERN HILLS
Titles	The site sits across the following titles: <ul style="list-style-type: none">— WN8B/1388— WN28C/614
Approximate site area	11,200 m ² (1.12 Hectares)
Territorial authority	Lower Hutt City Council
Current site use	Current reservoir, undeveloped bushland, unsealed road
Proposed site use	Naenae reservoir

2.2 GEOLOGY AND HYDROGEOLOGY

The GNS Geology Map scale 1:250,000³ indicates that the site is underlain by undifferentiated Rakaia terrane from the Triassic period, consisting of alternating sandstone and mudstone.

³ GNS Science (2022). *New Zealand Geology Web Map*. Accessed 10 September 2022 from [GNS Science - Geology Web Map Client](#)

A review of GWRC River Flow and Rainfall in the Wellington Region Map⁴ indicates that the nearest surface water body is the Waiwhetu Stream. At its closest proximity, the stream is approximately 105 metres from the site, to the north-east. The proposed pipeline intersects the Waiwhetu Stream approximately 15 m south-west of Balgownie Grove.

A review of information on the WSP Spatial Database⁵ indicates that Naenae is located within the unconfined aquifer zone of the Lower Hutt Groundwater Zone (LHGZ). There is no recorded groundwater depth in the area however, the groundwater table in the LHGZ is expected to be approximately 8-9 m below ground level (bgl). Based on the GWRC Open Data GIS map⁶ the site is located approximately 100 m from the LHGZ, however the location of the proposed pipeline is within this zone.

2.3 TOPOGRAPHY

The HCC Geographic Information System (GIS) Map⁵ indicates that the new reservoir site is located between 70 to 86 metres above sea level. The topography of the site is mixed, with the existing reservoir being at a relatively flat elevation of approximately 70 metres while Summit Road runs along the ridge of the hill as the site's elevation increases to approximately 86 metres. There are notable downhill gradients to west and east of the site.

2.4 SURROUNDING LAND USE

The immediate land use surrounding the site is combination of residential land use to the north, west and south-west, and undeveloped bushland to the south and east of the site. The underdeveloped bushland is designated as Passive Recreation under the HCC District Plan GIS Map⁷.

⁴ Greater Wellington Regional Council (2022). *River Flow and Rainfall in the Wellington Region Map*. Accessed 10 September 2022 from [River Flows and Rainfall in the Wellington Region \(gw.govt.nz\)](https://www.gw.govt.nz/river-flows-and-rainfall-in-the-wellington-region/)

⁵ WSP New Zealand Limited (2022). *Technical Reports Spatial Database*. Accessed 22 September 2022 from [Home - Spatial DB \(wspanz.com\)](https://www.wspanz.com/spatial-db/)

⁶ GWRC (2019). Greater Wellington Regional Council Open Data. Accessed 10 October 2022 from [Groundwater Zones for Lower Hutt \(Tables 8.2, 8.3\) | Groundwater Zones for Lower Hutt \(Tables 8.2, 8.3\) | GWRC Open Data \(arcgis.com\)](https://www.gw.govt.nz/groundwater-zones-for-lower-hutt/)

⁷ Hutt City Council (2022). *HCC GIS Viewer*. Accessed 22 September 2022 from [HCC GIS Viewer \(huttcity.govt.nz\)](https://www.huttcity.govt.nz/hcc-gis-viewer/)

3 INFORMATION REVIEW

3.1 SITE HISTORY

Details of the site history has been gained through the review of historical aerial photographs sourced from the HCC Historic Aerial Maps⁸ and Retrolens⁹. Table 3-1 presents the observations of the historical aerial photographs. The historical aerial photographs are included in Appendix B.

Table 3-1 Historical Aerial Photograph Review

Photograph Year (Source)	Site Observations	Surrounding Environment
1941 (HCCHAM)	<p>The site is undeveloped bushland. An area of the site appears to have cleared area that resembles the current property at 37 Summit Road, Naenae.</p> <p>Balgownie Grove and Waddington Drive, where the first half of the proposed pipeline is proposed, have not been developed and mostly comprises undeveloped bushland and rural/agricultural properties, with three large building, intersecting a section of the proposed pipeline along what later would become Waddington Drive. The use of these building cannot be determined</p> <p>Naenae Road, where the second half of the proposed pipeline is already established.</p>	<p>The general surround area comprises a combination of undeveloped bush and rural/agricultural land.</p> <p>The area immediately surrounding the site and proposed pipeline is a combination of undeveloped bushland with some well-established tree clusters to the north and northwest.</p>
1958 (HCCHAM)	<p>A road/track along the ridge line leading through the reservoir site has been cleared/established to the site and the cleared area noted from the 1941 photo appears to have grown over.</p> <p>No further material changes are noted.</p>	<p>There are no notable changes to the land immediately adjacent to the east, west and south of the site.</p> <p>With the exception of a road (likely Summit Road) leading up towards the northern border of the site, the land to the north is still mostly undeveloped.</p> <p>Some residential and commercial development has started to occur in the wider area to the west and south-west (around Tilbury and Parnell Streets).</p>

⁸ HCC Historic Aerial Maps (2022). *Historic Aerials* accessed 10 September 2022 from [Historic Aerials \(huttcity.govt.nz\)](https://www.huttcity.govt.nz/historical-aerials)

⁹ Local Government Geospatial Alliance (2022). *Retrolens – Historical Image Resource* accessed 10 September 2022 from [Retrolens - Historical Imagery Resource](https://www.retrolens.govt.nz/)

Photograph Year (Source)	Site Observations	Surrounding Environment
1969 (Retrolens)	<p>Most of the site remains unchanged besides vegetation growth and some clearing of land on the northern border.</p> <p>The properties that the first half of the proposed pipeline proceed to are now being used for market gardening. The large buildings previous present have been removed and three smaller buildings are now present.</p> <p>There are no further discernible changes.</p>	<p>Continued residential development has occurred to the west and land to the north and north-west has begun to be cleared.</p> <p>The area adjacent to the first half of the proposed pipeline now appears to be used for market garden activity.</p>
1977 (HCCHAM)	<p>The road/track through the site has been widened and it appears the area of the current reservoir has been cleared.</p> <p>Waddington Drive has been established and leads up to Naenae Road. Balgownie Grove has not been developed however there appears to be earthworks undertaken across the property that includes this land.</p>	<p>Residential development to the west and north-west has continued and Summit Road has been established.</p> <p>Residential development has begun either side of Waddington Drive.</p>
1988 (HCCHAM)	<p>No discernible changes to the site.</p> <p>Balgownie Grove is now established. No further discernible changes along the proposed pipeline.</p>	<p>No discernible changes immediately adjacent to the site.</p> <p>The properties either side of Waddington Drive, and now Balgownie Grove, continues to be developed as residential properties.</p>
1995-2008 (HCCHAM)	<p>No discernible changes to the site or along the proposed pipeline.</p>	<p>A few remaining residential properties adjacent to the proposed pipeline at Balgownie Grove have been developed.</p>
2013 (HCCHAM)	<p>Reservoir is now concreted.</p> <p>No further discernible changes at the site or along the proposed pipeline.</p>	<p>No discernible changes.</p>
2021 (HCCHAM)	<p>No discernible changes since 2013</p>	

3.2 COUNCIL RECORDS

A review of the GWRC Selected Land Use Register (SLUR) mapping resource¹⁰ was undertaken on 10 September 2022. Based on the review it is understood that the site is not listed as a HAIL and there are no registers HAIL sites within 50 m of the proposed pipeline. A copy of the GWRC SLUR figure in relation to the site and pipeline is included in Appendix C.

¹⁰ Greater Wellington Regional Council (2022). *GWRC Web Map Viewer* accessed 10 September 2022 from [GWRC Web Map Viewer](#)

4 DISCUSSION

4.1 RESERVOIR SITE

Based on the review of findings of the desktop review, little development appears to have taken place at the site between the years of 1941-2022, with the exception of the establishment of the reservoir and the continuation of Summit Road through the site. Most of the development during this time comprised the development occurring across the wider surrounding area.

4.2 PROPOSED PIPELINE

The first section of the proposed pipeline, from the bottom of the hill until Naenae Road, proceeded through rural properties that appear to have been used for market gardens after 1941 and prior to 1977, with Naenae Road having been established since prior to 1941. Since 1977, the area adjacent to and along the pipeline was developed into road and residential property. As part of the development of the roads and residential properties it is likely that the soil that was used as part of the market garden activities would have been stripped back.

4.3 SUMMARY

After completion of the desktop review it is understood that:

- the site and proposed pipeline route are not listed as a HAIL
- no properties immediately adjacent to the site and the proposed pipeline were listed as a HAIL.

5 CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

WSP undertook a PSI on a section of land, including on Summit Road, Fairfield, Lower Hutt, where Wellington Water propose to develop the existing reservoir (Naenae reservoir) comprising the building of a larger reservoir adjacent to the existing reservoir. The new reservoir will create an increased capacity to service the water supply demands of the Greater Wellington Region. WSP understand that the current reservoir will remain in place until a later date. The PSI also covered the land covered by the proposed pipeline route.

Based on the findings of this PSI it is not considered 'more likely than not' that an activity on the HAIL has historically been, or is currently being undertaken on the site. While it is noted that part of the proposed pipeline historically was subject to market gardening activities, it is considered likely that the topsoil would have been stripped back during the development of the residential properties and roads.

Therefore, the site and the proposed pipeline are not considered as pieces of land covered by the NESCS as defined by clause 5 (7) of the NESCS. For this reason, the NESCS does not apply to the development covered by the PSI.

5.2 RECOMMENDATIONS

While it is considered that the NESCS does not apply for the development covered by this PSI, WSP understand that there will be extensive earthworks associated with the development, which will likely require soil disposal. WSP recommends that soils sampling be undertaken where earthworks are proposed to inform disposal options during development.

LIMITATIONS

This report ('**Report**') has been prepared by WSP New Zealand Limited ('**WSP**') exclusively for Wellington Water Limited ('**Client**') in accordance with the Project Management Plan (Major Project), dated 21 June 2021 (Doc ID: ACT70-1446531832-5150) ('**Agreement**').

In preparing this Report, WSP has relied upon data, surveys, analyses, designs, plans and other information ('**Client Data**') provided by or on behalf of the Client. Except as otherwise stated in this Report, WSP has not verified the accuracy or completeness of the Client Data. To the extent that the statements, opinions, information, conclusions and/or recommendations in this Report are based in whole or part on the Client Data, those conclusions are contingent upon the accuracy and completeness of the Client Data. WSP will not be liable for any incorrect conclusions or findings in the Report should any Client Data be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to WSP.

PERMITTED PURPOSE

This Report has been prepared expressly for the purpose of undertaking a preliminary site investigation for the proposed development of the Naenae reservoir ('**Permitted Purpose**'). WSP accepts no liability whatsoever for the use of the Report, in whole or in part, for any purpose other than the Permitted Purpose. Unless expressly stated otherwise, this Report has been prepared without regard to any special interest of any party other than the Client.

WSP accepts no liability whatsoever for any use of this Report, in whole or in part, by any party other than the Client. Unless WSP agrees otherwise in writing, any use or any reliance on this Report by a third party is at its sole risk without recourse to WSP. Third parties must make their own enquiries and obtain independent advice in relation to any matter dealt with or any conclusion expressed in this Report.

ENVIRONMENTAL CONCLUSIONS

In accordance with the scope of services, WSP has relied upon the data and has conducted environmental field monitoring and/or testing in the preparation of the report. The nature and extent of monitoring and/or testing conducted is described in the report.

On all sites, varying degrees of non-uniformity of the vertical and horizontal soil or groundwater conditions are encountered. Hence no monitoring, common testing or sampling technique can eliminate the possibility that monitoring or testing results/samples are not totally representative of soil and/or groundwater conditions encountered. The conclusions are based upon the data and the environmental field monitoring and/or testing and are therefore merely indicative of the environmental condition of the Site at the time of preparing the report, including the presence or otherwise of contaminants or emissions.

Also, it should be recognised that site conditions, including the extent and concentration of contaminants, can change with time.

Within the limitations imposed by the scope of services, preparation of this report has been undertaken and performed in a professional manner, in accordance with generally accepted practices and using a degree of skill and care ordinarily exercised by reputable environmental consultants under similar circumstances. No other warranty, expressed or implied, is made.

QUALIFICATIONS AND ASSUMPTIONS

The services undertaken by WSP in preparing this Report were limited to those specifically detailed in the Agreement and the Report and are subject to the scope, qualifications, assumptions and limitations set out in the Report and/or otherwise communicated to the Client. Except as otherwise stated in the Report and to the extent that statements, opinions, facts, conclusion and/or recommendations in the Report ('Conclusions') are based in whole or in part on information provided by the Client and other parties ('Information'). The Information has not been and have not been verified by WSP and WSP accepts no liability for the reliability, adequacy, accuracy and completeness of the Information.

The data reported and Conclusions drawn by WSP in this Report are based solely on information made available to WSP at the time of preparing the Report. The passage of time; unexpected variations in ground conditions; manifestations of latent conditions; or the impact of future events (including (without limitation) changes in policy, legislation, guidelines, scientific knowledge; and changes in interpretation of policy by statutory authorities); may require further investigation or subsequent re-evaluation of the Conclusions.

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No warranty, undertaking or guarantee whether expressed or implied, is made with respect to the data reported or the Conclusions drawn. To the fullest extent permitted at law, WSP, its related bodies corporate and its officers, employees and agents assumes no liability and will not be liable to any third party for, or in relation to any losses, damages or expenses (including any indirect, consequential losses or damages or any amounts for loss of profit, loss of revenue, loss of opportunity to earn profit, loss of production, loss of contract, increased operational costs, loss of business opportunity, site depredation costs, business interruption or economic loss) of any kind whatsoever, suffered on incurred by a third party.

REFERENCES

MfE. (2021). Contaminated Land Management Guidelines No. 1: Reporting on Contaminated Sites in New Zealand (Revised 2021).

MfE, 2011. Hazardous Activities and Industries List (HAIL).

MfE, 2011: Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011.

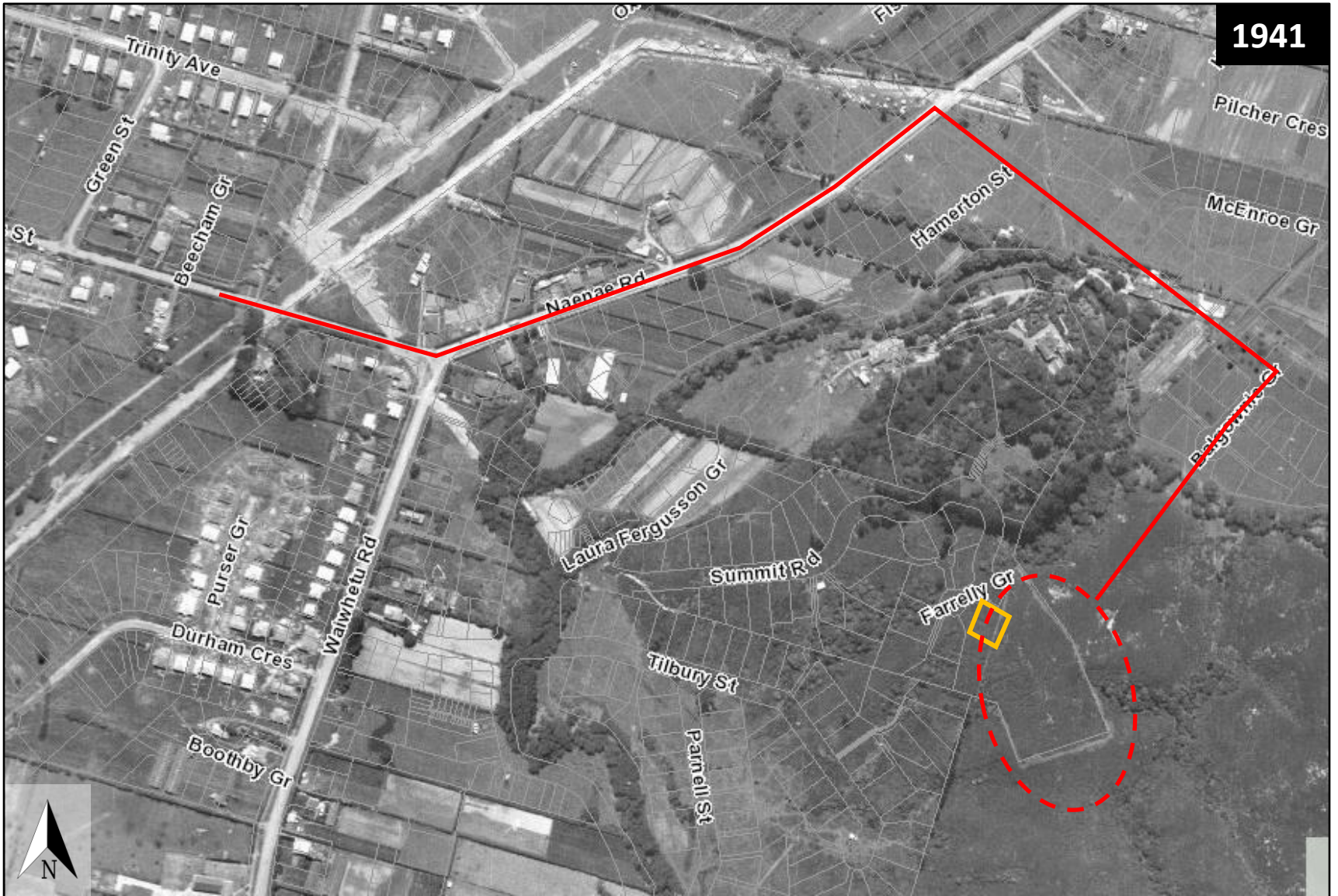
Appendix A

Figures



Appendix B

Historical Aerial Photographs



Legend:

Approximate Site Location

Existing Reservoir

Base map sourced from Hutt City Council Historic Aerial Maps (accessed September 2022)



Legend:

Approximate Site Location


Existing Reservoir


Base map sourced from Hutt City Council Historic Aerial Maps (accessed September 2022)

1969



Legend:

 Approximate Site Location

 Existing Reservoir

Base map sourced from Hutt City Council Historic Aerial Maps (accessed September 2022)



1977

Legend:

Approximate Site Location

Existing Reservoir

Base map sourced from Hutt City Council Historic Aerial Maps (accessed September 2022)



1988

Legend:

Approximate Site Location

Existing Reservoir

Base map sourced from Hutt City Council Historic Aerial Maps (accessed September 2022)



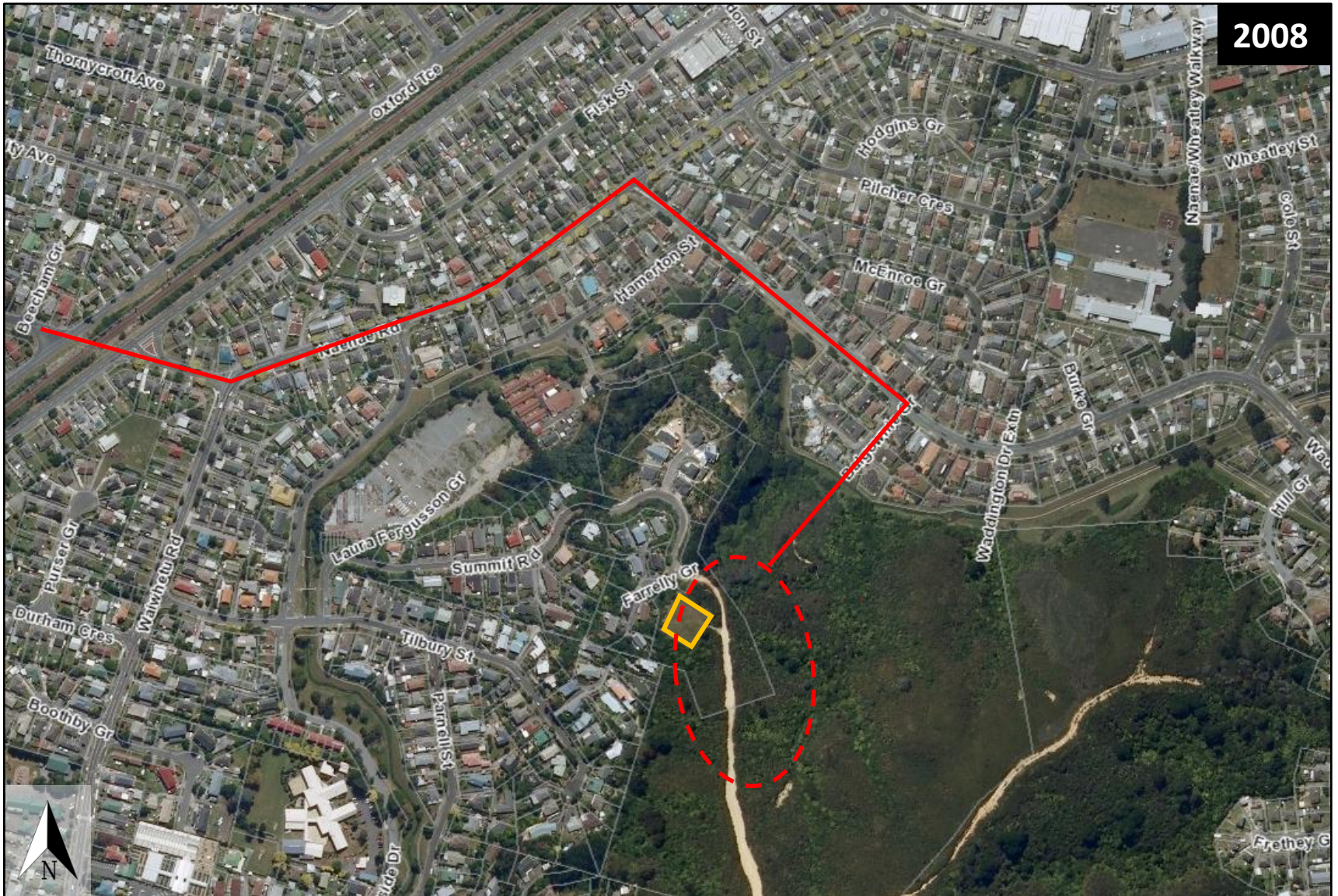
Legend:

Approximate Site Location

Existing Reservoir

Base map sourced from Hutt City Council Historic Aerial Maps (accessed September 2022)

2008

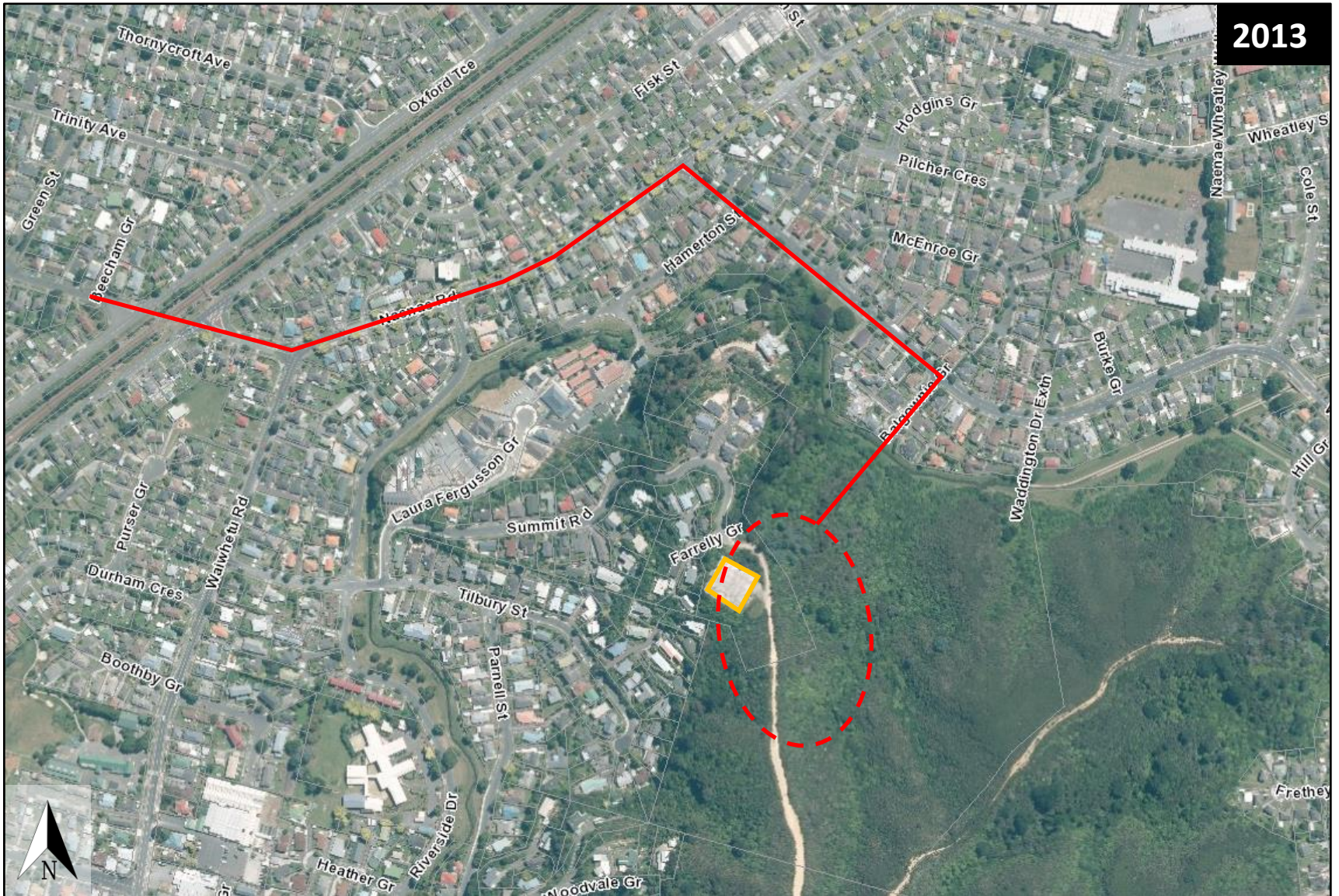


Legend:

Approximate Site Location

Existing Reservoir

Base map sourced from Hutt City Council Historic Aerial Maps (accessed September 2022)

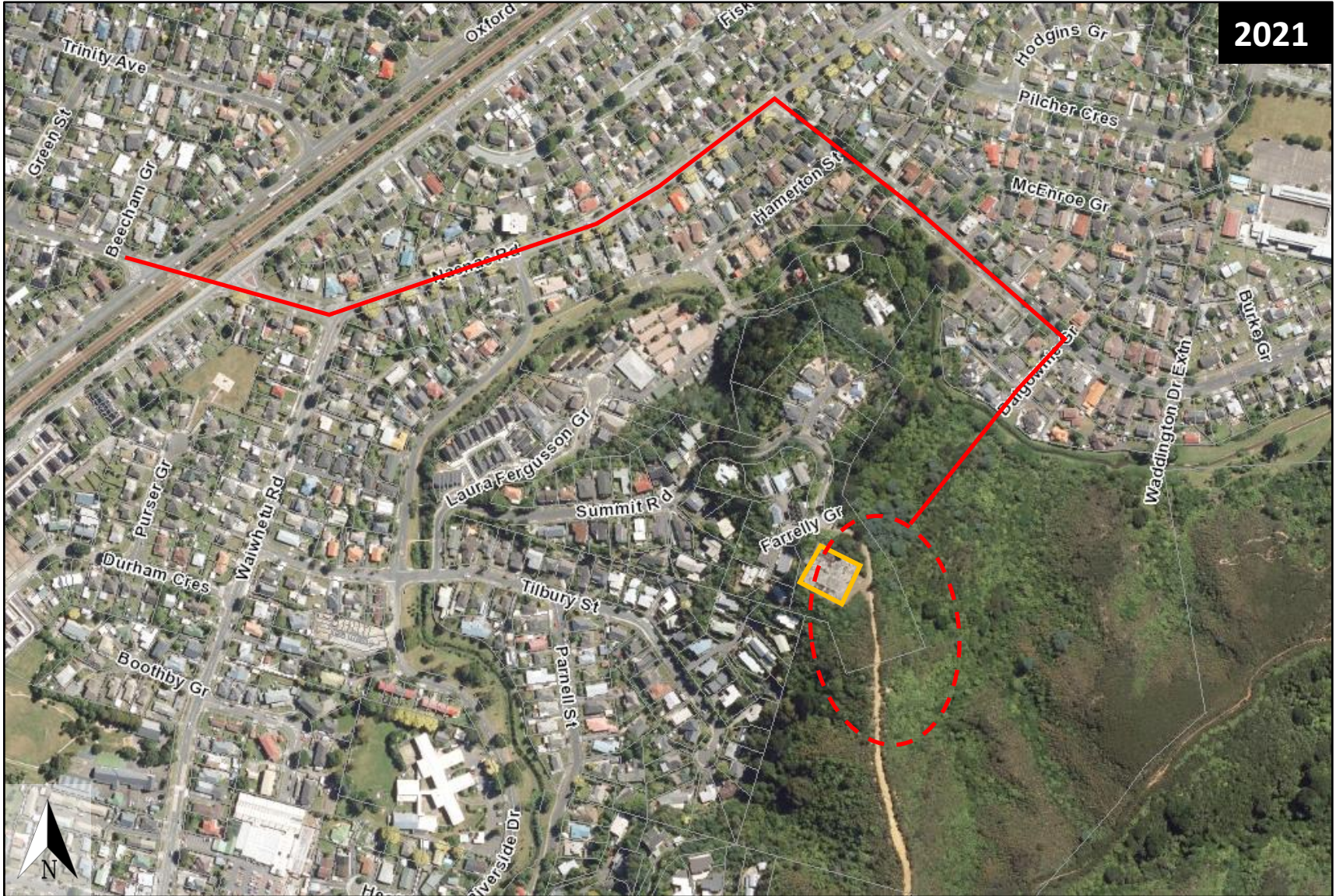


Legend:

Approximate Site Location

Existing Reservoir

Base map sourced from Hutt City Council Historic Aerial Maps (accessed September 2022)



Legend:

Approximate Site Location

Existing Reservoir

Base map sourced from Hutt City Council Historic Aerial Maps (accessed September 2022)



Appendix C

Greater Wellington Regional Council –
Selected Land Use Register

Greater Wellington Regional Council - Selected Land Use Register



10/27/2022, 12:07:41 AM

-  Selected Land Use Register
-  Approximate Site Location and Proposed Pipeline

