Gallina Nominees, Heinz Wattie Pension Fund, and Brookside Road Residential Ltd

Fraser Thomas
ENGINEERS • RESOURCE MANAGERS • SURVEYORS

BROOKSIDE ROAD PLAN CHANGE, ROLLESTON

INFRASTRUCTURE ASSESSMENT REPORT

Gallina Nominees, Heinz Wattie Pension Fund, and Brookside Road Residential Ltd

BROOKSIDE ROAD PLAN CHANGE, ROLLESTON

INFRASTRUCTURE ASSESSMENT REPORT

Project No.	CH01082	Approved for Issue	
Version No.	1	Name	GD Maddren
Status	Final	Signature	
Authors	A McNabb M Pepper		
Reviewer	G Maddren	Date	21 October 2021

Fraser Thomas Limited
Consulting Engineers, Licensed Surveyors
Planners & Resource Managers
Unit 3A Barry Hogan Place,
Riccarton 8041
PO Box 39 154, Harewood Post Centre,8545
Christchurch, New Zealand
Tel : +64 3 358-5936
Email: mreed@ftl.co.nz

GALLINA NOMINEES, HEINZ WATTIE PENSION FUND, AND BROOKSIDE ROAD RESIDENTIAL LTD

BROOKSIDE ROAD PLAN CHANGE, ROLLESTON

INFRASTRUCTURE ASSESSMENT REPORT

CONTENTS

APPENDICES

GALLINA NOMINEES, HEINZ WATTIE PENSION FUND, AND BROOKSIDE ROAD RESIDENTIAL LTD

BROOKSIDE ROAD PLAN CHANGE, ROLLESTON

INFRASTRUCTURE ASSESSMENT REPORT

1.0 INTRODUCTION

This report sets out the investigations undertaken, assessment of site servicing constraints and site servicing engineering requirements, to support a plan change application from rural "Outer Plains" to "Living Z" residential zoning for potential future residential development of approximately 109.77ha of land comprising the following parcels:

1. Lot 1 DP 82068; approx. 44.0 ha
2. Lot 1 DP 72132; approx. 9.45 ha
3. Lot 2 DP 72132; approx. 10.0 ha
4. Lot 3 DP 20007 approx. 24.47 ha
5. Lot 4 DP 20007; approx. 21.85 ha.

Specifically, this report addresses:

- Existing civil infrastructure in proximity to the site, and additional infrastructure expected to be required for future development
- Existing electrical and telecommunications infrastructure in proximity to the site, and additional infrastructure expected to be required for future development
- Relevant performance standards and codes of practice that a future development would comply and align with.

This report is based upon the information that could be obtained in the short timeframe available to carry out this assessment prior to the close date for plan change submission; and is based on limited study, and limited capacity and servicing information received from relevant supply entities.

2.0 EXISTING SITE CHARACTERISTICS

2.1 OVERVIEW

The Brookside Road site is located between Brookside Road (to the north), Dunns Crossing Road (to the south-west) and Edwards Road (to the north-east). Existing rural properties abut the southern and south-western site boundaries.

The approximate location and extent of the site is shown on the appended Fraser Thomas Ltd drawing G01082-01.

The site has the following characteristics:

1. The land slopes typically fall towards the south east at moderately gentle gradients of approximately 0.1% - 0.25%

2. Existing land use activities predominantly include intensive poultry and cropping farming activities, with several homesteads scattered across the site

3. A water race runs through the southern end of the site from the west, at the intersection of Brookside Road, in an easterly direction before turning south east to run along the south east boundary with the neighbouring block of land

4. Scattered stands of trees and windbreaks occupy the site.

Refer to Appendix A for the site location.

3.0 EARTHWORKS

3.1 OVERVIEW AND RELEVANT STANDRDS

Extensive land modification work will be required to form residential lots, road corridors and amenities.

It is expected that land modification works will comprise topsoil stripping and stockpiling, bulk cut and fill earthworks, and topsoil respread.

It is expected that earthworks would be undertaken in accordance with:

- Consents issued by SDC
- Consents issued by ECan
- NZS 4431: 1989 Code of practice for Earth Fill for Residential Development
- Geotechnical investigation reporting recommendations.

3.2 EARTHWORKS CONSIDERATIONS

Reshaping of land, and the as-constructed gradients, would largely be dictated by lot shaping, roading networks, wastewater drainage and stormwater overland flowpath requirements. The overall finished land slope is expected to generally align with the existing landform direction.

The following criteria would generally be applied to earthworks for land shaping. Actual completed works may differ depending on design outcomes and agreement with Council:

- Lot gradient — minimum 1:400 slope to road, maximum 1:100 slope to road
- Lot levels — sufficient to raise floor levels above flood levels as per code requirements
- Road gradient — minimum slope 1:450, maximum slope 1:20 (unlikely)
- Overland flowpath — sufficient slope to convey 1 in 50-year flood flows along road networks
- Cut and fill — balancing to minimise imported or exported fill
- Wastewater — ground slope similar to pipeline slope to convey wastewater flows.

Prior to any cut to fill operation commencing, earthworks areas would be stripped of topsoil and stockpiled onsite for respread upon completion of bulk earthworks. Unsuitable topsoil materials would be removed from site and disposed of at an appropriate approved facility.

It is likely that fill will be imported to site in order to meet site filling requirements. However, it is anticipated that at least some of the additional fill required to meet the deficit, could be sourced onsite from road trims, trenching spoil, infiltration basin excavation and other excavation activities.

Fill placement should be certified by a professional engineer to confirm that it has been placed in accordance with relevant standards and engineering requirements.

4.0 EROSION AND SEDIMENT CONTROL

4.1 OVERVIEW AND RELEVANT STANDRDS

Erosion and Sediment Control (ESC) plans and accompanying erosion and sediment control drawings, detailing mitigation and prevention measures to combat the effects land disturbance activities upon surrounding and downstream areas will be required.

It is expected that ESCP preparation and implementation would be undertaken in accordance with:

- Consents issued by SDC
- Consents issued by ECan (including discharge consents)
- ECan Erosion and Sediment Control Toolbox.

4.2 EROSION AND SEDIMENT CONTROL CONSIDERATIONS

ESC plans and any amendments would be submitted to SDC and ECan for approval.

Objectives for ESC plans and potential mitigation measures would include:

- Compliance with consent conditions
- Minimise the extent and duration of works on the site, including temporary stockpiles
- Stabilise exposed areas as soon as practicable by sowing or mulching to prevent erosion
- Ensure revegetation can occur in a staged manner to reduce the risk of silt/sediment leaving the site and entering downstream receiving environments
- Installation of perimeter controls such as diversion drains, silt fences and construction entrances to prevent sediment leaving the site
- Provide sediment removal devices such as sediment retention ponds to minimise the amount of sediment laden runoff leaving the site
- Ensure control measures are inspected and repaired after storm events
- Ensure the site is rehabilitated prior to the removal of control measures
- Mitigate dust emissions from the site during earthworks and cleanfilling to minimise adverse effects on nearby properties
- Minimise potential environmental effects.

Site ESC works would be implemented prior to land disturbing activities commencing, and maintained for the duration of the infrastructure activities associated with the development, and/or until surfaces have stabilised, and in accordance with relevant issued consents.

ESC would be monitored by the construction contractor, construction monitoring engineer and ECan and SDC representatives.

5.0 STORMWATER

5.1 OVERVIEW AND RELEVANT STANDRDS

The site is on the boundary of the Rolleston Stormwater Scheme as shown on Figure 15-1 Scheme Map of the SDC Stormwater Activity Management Plan Volume 4. 2018.

Council obtained a global stormwater consent for the existing township stormwater disposal in January 2014 (CRC132527). In accordance with conditions of the consent, stormwater will be disposed of as per the details in Table CRC132527B (SDC Stormwater Management Devices: Design).

Existing site conditions allow for stormwater to sheet and flow overland across the whole of the site. During large rainfall events and flooding, as indicated by progressive yearly aerial photography, transiently forming channels convey flows in a general north west to south east direction.

The site is not currently connected to a public stormwater system, and like most of Rolleston, and recently constructed neighbouring subdivisions, site stormwater flows are proposed to be treated and released below ground on site.

Geotechnical site investigations, described in the Fraser Thomas Ltd Geotechnical Investigation Report, dated 14 October 2021, included with the Brookside Road plan change submission, have established that the underlying ground conditions comprise sandy gravel materials commencing approximately 0.2 m and 0.3 m below the existing ground surface (at the locations of test pits), with the water table in excess of 10m below ground level. These types of soils in the Rolleston area are generally relatively free-draining, and stormwater discharge to ground appears to be feasible.

Site stormwater management is therefore anticipated to encompass a network of swales, basins and soak pits to provide conveyance, a level of treatment and disposal to groundwater recharge.

It is expected that stormwater design and construction works would be undertaken in accordance with:

- SDC Engineering Code of Practice
- Christchurch City Council (CCC) Infrastructure Design Standard (IDS) and Construction Standard Specification (CSS)
- CCC Waterways, Wetlands and Drainage Guide (WWDG)
- Auckland Regional Council Technical Publication 10 (ARC TP10) Stormwater management devices design guideline
- New Zealand Building Code (NZBC) Clause E1 Surface Water
- NIWA HIRDS rainfall data and adjustment for climate change.

5.2 STORMWATER TREATMENT AND DISPOSAL

5.2.1 Individual Lots

Stormwater runoff from each lots roof and pavement areas is expected to be conveyed directly to individual lot on-site soak pits. Pre-treatment of rooftop flows is not expected to be required; however, pavement flows may be conveyed across filter strips or through swales prior to soakage to ground.

Soak pits would be designed and sized at the building consent stage for each lot, according to NZBC E1 guidelines, for the 10-year Annual Exceedance Probability (AEP) rainfall event. Likewise, requirements for treatment of pavement flows would be assessed and determined at the building consent stage.

Soak pit locations would be determined to allow overflows due to rainfall events in excess of the design storm, or blockage, to overflow away from buildings and to the road network.

It is expected that individual lot stormwater soak pit discharge to ground would be consented as a permitted activity under subdivision resource consent.

5.2.2 Overall Site and Road Network

First flush stormwater treatment is proposed for stormwater runoff from road corridors and carriageways. The exact quantum of stormwater to be treated would be determined during the subdivision consent design stage; however, general practice is to treat the first 15mm - 25mm of rainfall which is deemed to accumulate and transport the majority of surficial contaminants.

In accordance with general practice within similar subdivisions in the Rolleston area, and accepted methodologies detailed in stormwater treatment guidelines such as WWDG and ARC TP10, first flush treatment is likely to comprise roadside swales, infiltration basins, rain gardens or proprietary stormwater treatment devices installed within sumps and manholes.

Where it is not practicable to utilise continuous roadside treatment such as swales, kerbing and sump/pipe networks may incorporate proprietary stormwater treatment devices, or convey flows to infiltration basins, rain gardens or soakage basins as appropriate.

Road and site stormwater capture and discharge systems would be sized to accept 10-year AEP rainfall events, including runoff from individual sites exceeding the 10-year AEP rainfall event, with up to the 50-year AEP rainfall event being conveyed as overland flow via the road network.

Stormwater basins or wetland systems may be required to detain, attenuate and/or treat and discharge stormwater flows. Requirements for this category of infrastructure would be determined during the subdivision design stage, following detailed investigation, modelling and consultation with Council.

Discharge consent will be required from ECan for road drainage stormwater soak pit, infiltration basins and the like. These consents would be transferred to SDC upon completion of subdivision works.

Stormwater infrastructure will be vested in Council upon completion.

5.3 FLOODING AND OVERLAND FLOWPATHS

SDC has a high-quality flooding and coastal hazards modelling map available on their website. The map shows the depth and extent of surface flooding for the 1 in 200-year, and 1 in 500-year AEP events. This model has accounted for climate change effects over the next 100 years.

Figure 1 shows the site location on the 1 in 200 AEP flood model, and Figure 2 shows the site location on the 1 in 500 AEP flood model.

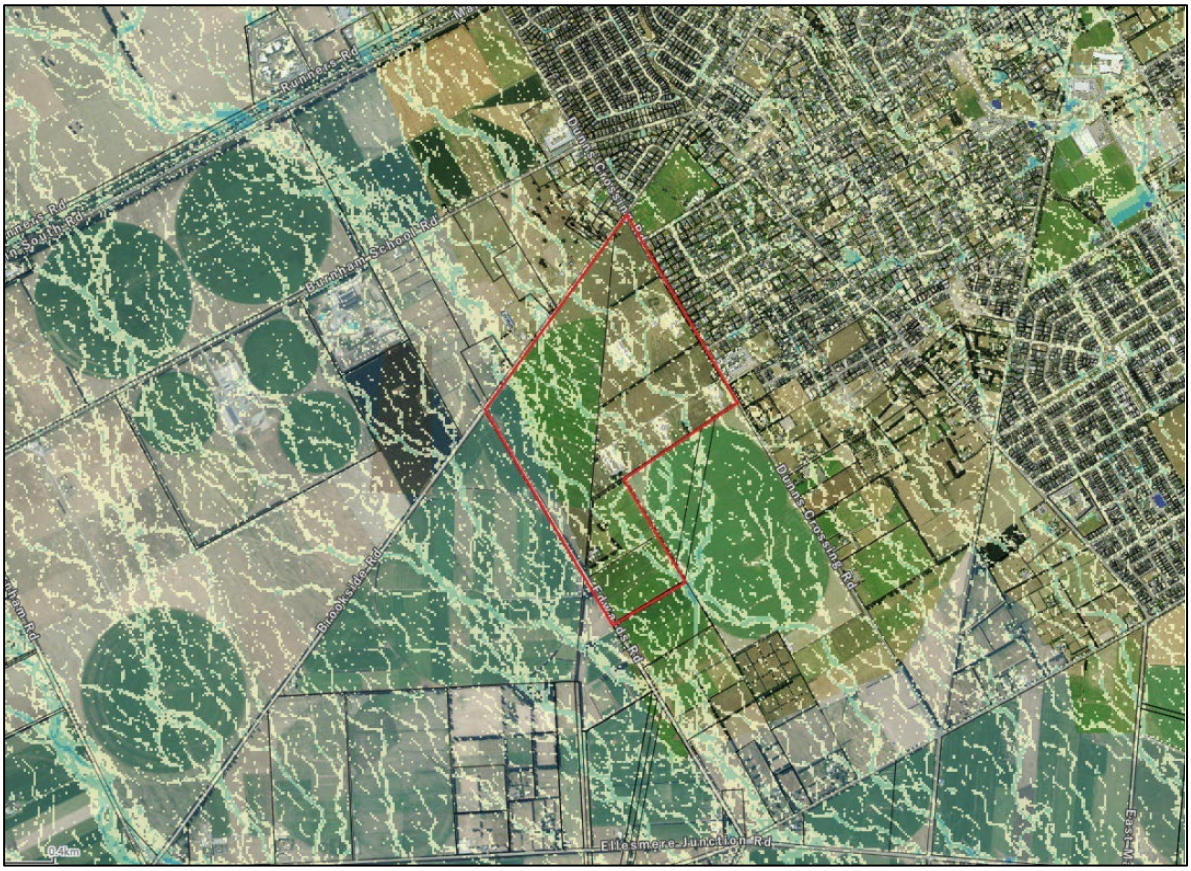


Figure 1: Output from the SDC 1 in 200 AEP event flood modelling with the site outlined

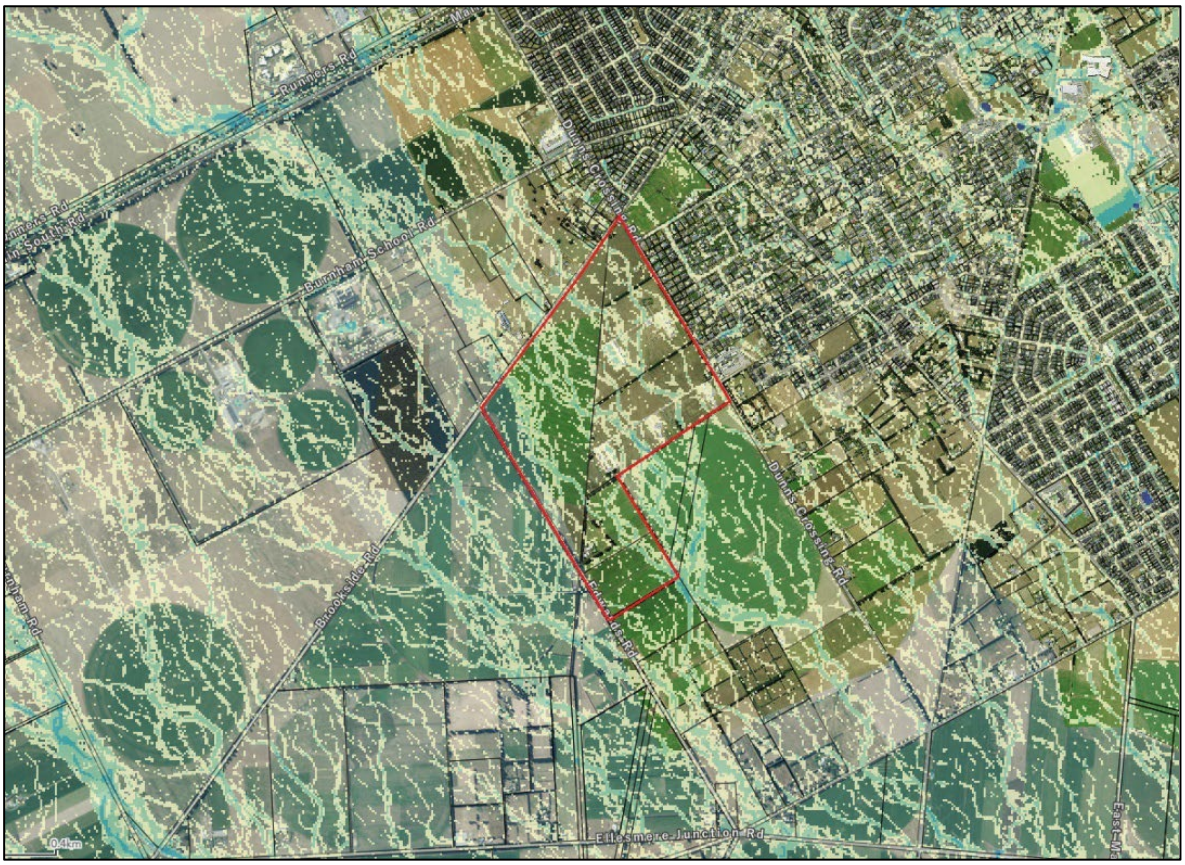


Figure 2: Output from the SDC 1 in 500 AEP event flood modelling with the site outlined

The flood model indicates that there are several overland flows that originate from outside the site and flow through the site in a southern direction. Flows from both flood models are in similar channels with marginally different flood depths; 0.5m at the deepest point for the 1 in 200 AEP model, and 0.6m at the deepest point for the 1 in 500 AEP model.

Overland flows from properties will be able to reach the roading network via runoff from lots directly to the roads. The roading network will act as an overland flow path, and divert runoff away from lots and roadways to roadside swales, infiltration basins, rain gardens, soakage basins, or wetlands that would be designed during the subdivision consent stage.

A potential upgrade to Brookside Road would capture runoff entering the site from the north, and mitigate the adverse effects of this overland flow entering the site. The development will also be designed to treat and discharge stormwater on the site reducing run off downstream of the development. This positive effect is likely to reduce the current flooding that the SDC flood maps show occurring in that area.

As required by Section 106 of the Resource Management Act, a flood risk assessment will be undertaken for this subdivision at the subdivision consent stage. Overland flow from areas upstream of the development will be taken into account and any adverse effects from flooding would be mitigated. The flood risk assessment will aid in setting appropriate floor levels at the time of subdivision.

6.0 WASTEWATER

6.1 OVERVIEW AND RELEVANT STANDRDS

The site is on the boundary of the Rolleston Wastewater Scheme as shown on Figure 11-1 Scheme Map of the SDC Wastewater Activity Management Plan Volume 3. 2018 and is within the catchment serviced by the Pines Wastewater Treatment Plant (WWTP)

Pines WWTP has a current capacity of around 45,000 Equivalent Persons (EP), and services approximately 40,000 EP. It is understood that SDC has planned upgrades in place to increase plant capacity to approximately 60,000 EP. Furthermore, plans are being prepared to increase the treatment capacity up to 120,000 EP as described in SDC Wastewater Activity Management Plan, Section 6 Eastern Selwyn Sewerage Scheme.

Existing Council wastewater pipelines nearby or adjacent to the site include:

- A 630 OD PE rising main on Edwards Road, on the west side of the site, transferring flows to the Pines WWTP
- A gravity wastewater network on Dunns Crossing Road, adjacent to the north east end of the site, draining to the Goulds Road Wastewater Pump Station (WWPS), through to the Selwyn Road WWPS, and through to the Pines WWTP.

No wastewater connections from the site to the existing wastewater network were identified.

It is expected that wastewater design and construction works would be undertaken in accordance with:

- SDC Engineering Code of Practice
- CCC IDS and CSS
- NZBC Clause G13 Foul Water.

6.2 WASTEWATER DISPOSAL

Potential options have been identified to provide wastewater servicing for the site:

1. Discharge to the existing gravity wastewater system on Dunns Crossing Road at north east corner of the site. This gravity main could be extended from the existing manhole at 232 Dunns Crossing Road south to provide additional gravity main access for the site
2. Discharge to the existing 630 OD PE rising main on Selwyn Road and/or Edwards Road
3. Construct a new rising main from the site to the Pines WWTP.

A new (or multiple) WWPS would be constructed within the site to transfer wastewater flows from the site to the existing rising main, to transfer flows via a new rising main to the WWTP, and may also be required to transfer flows into the existing gravity network.

A wastewater network capacity assessment undertaken by WSP as part of the PC73 plan change submission, for the Holmes Block and the Skellerup Block, has determined (subject to assumptions made) that:

- Capacity is available to convey flows via the 630 OD rising main from these two blocks
- The existing gravity network requires upgrade in order to convey additional flows from these two blocks.

We infer from this assessment that, pending assessment of the yield and wastewater flows generated from the subject site, that flows from this site are likely to be able to be conveyed via the existing 630 OD rising main, and that if the existing gravity network is used, it would require major upgrades to service flows from the site.

Alternatively, construction of a new dedicated rising main from the site to the Pines WWTP appears feasible. A potential alignment for this new rising main is to lay the pipeline along Dunns Crossing Road and along Brookside Road and run alongside the existing 630 OD rising main to Pines WWTP.

Gravity wastewater drainage will be used to service lots within the site, and drain to a WWPS for conveyance to the WWTP. Flush tanks may be required for low gradient pipelines if suitable self-cleansing flow gradients are unable to be achieved following overall reshaping of the land.

The current capacity of the Pines WWTP appears to be sufficient to accept an increase in flows, and future expansion of the Pines WWTP would cater for significant future growth of the Rolleston area.

7.0 RETICULATED WATER SUPPLY

7.1 OVERVIEW AND RELEVANT STANDRDS

The site is partly located within the Rolleston Water Supply Scheme boundary as shown on Figure 19-1 Scheme Map of the SDC Water Supplies Activity Management Plan Volume 2. 2018.

The SDC Water Supplies Activity Management Plan Volume 2. 2018 presents various future water supply expansion plans in the vicinity of the site.

Existing Council water pipelines adjacent to the site include:

- An existing 150 NB pipeline is located in Dunns Crossing Road on the east side of the site
- A 100 NB pipeline runs along Brookside Road, with a 63 OD and 50 NB ridermain installed adjacent to the site along the northern portion of the site
- A 75 OD pipeline runs along Edwards Road.

The site is currently serviced via a lateral connection from the Edwards Road watermain and two 150 NB connections from the Dunns Crossing Road watermain near to the north end of the site.

No other direct water connections from the existing public water supply network were identified.

It is expected that water supply design and construction works would be undertaken in accordance with:

- SDC Engineering Code of Practice
- CCC IDS and CSS.

7.2 WATER SUPPLY

Potential options have been identified to provide water supply services to the site:

1. Make use of the two existing 150 NB connections on Dunns Crossing Road, and provide additional connections
2. Connect Brookside Road fronting lots to the existing ridermain, and extend the ridermain along the entire frontage
3. Connect Edwards Road fronting lots to the existing 75 OD watermain
4. Extend a new watermain from the existing water supply network to the site as indicated in the SDC Water Supplies Activity Management Plan Volume 2. 2018
5. Connect to a new future water source as indicated in the SDC Water Supplies Activity Management Plan Volume 2. 2018.

A water supply capacity assessment undertaken by WSP as part of the PC73 plan change submission, for the Holmes Block and the Skellerup Block, has determined (subject to assumptions made) that current and planned future well capacity is available to service these two developments.

We infer from this assessment that current, and planned future water supply capacity increases and network extensions, are likely to be sufficient and available to service the site.

Service provider confirmation of availability of supply is expected to be sought as part of further due diligence study prior to commencing the subdivision design process.

Fire hydrants will be constructed on the new watermain to meet firefighting requirements. All building sites will be within 135m from a hydrant.

8.0 ROADING

8.1 OVERVIEW AND RELEVANT STANDARDS

Indicative primary and secondary road layouts providing access to and transport routes within the proposed subdivision are illustrated on the Outline Development Plan (ODP) submitted as part of the Brookside Road plan change application.

It is expected that road design and construction works would be undertaken in accordance with:

- SDC Engineering Code of Practice
- CCC CSS
- New Zealand guide to pavement structural design (NZ Transport Agency (NZTA))
- Austroads Guide to Road Design (2021)
- Austroads Guide to Pavement Technology (2017).

8.2 ROAD NETWORK

Several new primary and secondary road connections are proposed to be made to the three existing roads (Dunns Crossing Road, Brookside Road and Edwards Road) bounding the site to the north, east and west. Provision of future road connections to the adjacent block of land to the south is included.

The road network is expected to comprise two-way 13m – 23m legal width road corridors as appropriate for the class of road, shared area or cul-de-sac. Major link roads will generally include designated pedestrian and cycle ways.

Upgrade works to widen and/or rehabilitate existing bounding roads, and the site frontage, are likely to be required to accommodate increased traffic volumes; these are indicated on the ODP.

In addition to the public roading network, there is likely to be numerous shared access right of way lots forming part of the private movement network within the development.

A Traffic Impact Assessment prepared by Stantec New Zealand (October 2021) is included with the Brookside Road plan change submission.

The roading network will be vested in Council upon completion.

8.3 ROAD STRUCTURE

Asphaltic concrete will be the predominant road carriageway surfacing material. Shared zones, if any, may be paved, all or in part, with plain concrete, exposed aggregate or paving blocks to delineate shared areas from general road types, and encourage vehicle user awareness of pedestrians using these areas.

Pavement calculations would allow for projected civilian vehicle volumes and projected heavy commercial vehicle movements.

Right of Way access to lots would be surfaced with concrete pavement.

Footpaths within the roading network would be formed from concrete or asphalt concrete in consultation with Council.

Road carriageways would use SDC standard, low profile or cut-down kerb and channel, nib kerb and vee channel on both sides to counteract edge fretting and delineate the carriageway to road users.

Kerb and channel and vee channel would catch and direct stormwater flows via road sumps to stormwater treatment and disposal management systems. Nib kerbs would be used alongside roadside swales and other similar stormwater treatment systems to allow entry of overland flows.

8.4 POTENTIAL FOR GROUND REMEDIATION

Geotechnical investigation and reporting shows that the site is underlain by very dense gravels, and no issues with road formation or stability are currently anticipated.

9.0 POWER SERVICES

Power services are currently servicing the site for residential use, farming activities and well/bore operation.

Dial before you dig information shows that existing 11kV underground cables are located close to the centre of the western side of the site. Existing low voltage underground cabling and overhead low voltage and high voltage power supply is present along Dunns Crossing Road adjacent to the eastern side of the site. Overhead low voltage power supply is available along the Brookside Road frontage.

Orion has provided confirmation of availability of supply to two neighbouring proposed subdivision sites that expect to develop approximately 2,100 residential lots in total; the Holmes Block at 385 Burnham Road and the Skellerup Block located between Brookside Road and Selwyn Road assessed as part of the PC73 plan change submission.

It is considered likely, owing to the presence of nearby high voltage power supply and existing intensive farming power supply to the site, that there is sufficient power capacity available to service the subdivision.

Power supply would be provided to the site according to service provider and industry standards. Installation of cabling is expected to be underground, with small above-ground kiosks located within the development as required for power supply reticulation.

Service provider confirmation of availability of supply is expected to be sought as part of further due diligence study prior to commencing the subdivision design process, and full appraisal of the power supply requirements will be carried out by the service provider following plan change approval.

10.0 STREET LIGHTING

Street and park lighting will be provided to the subdivision in accordance with the SDC Engineering Code of Practice, in a style consistent with the Rolleston township and surrounds, and in consultation with Council.

11.0 TELECOMMUNICATIONS SERVICES

Telecommunication services are currently servicing the site for residential use and farming activities.

Dial before you dig information shows that existing underground Chorus fibre optic networks are present in all roads bounding the site, with an Enable fibre optic network close to the northern end of the site on Dunns Crossing Road.

It is considered likely, that the services provider has considered the probability of future expansion in the Rolleston area, and has made, or plans to make provision for additional capacity in the network to service future developments.

Service provider confirmation of availability of supply is expected to be sought as part of further due diligence study prior to commencing the subdivision design process, and full appraisal of the power supply requirements will be carried out by the service provider following plan change approval.

12.0 CONCLUSION

This report provides a preliminary desktop assessment of the proposed development of the site, in terms of civil infrastructure and servicing potential, to determine if this site is suitable for the proposed development.

Outcomes of the assessment, conclude, in general, that a combination of existing infrastructure, and new infrastructure development, is likely to accommodate the proposed development.

Further investigation and consultation with Council and other service providers would be undertaken to confirm specific civil design and servicing capacity required as site development progresses.

13.0 LIMITATIONS

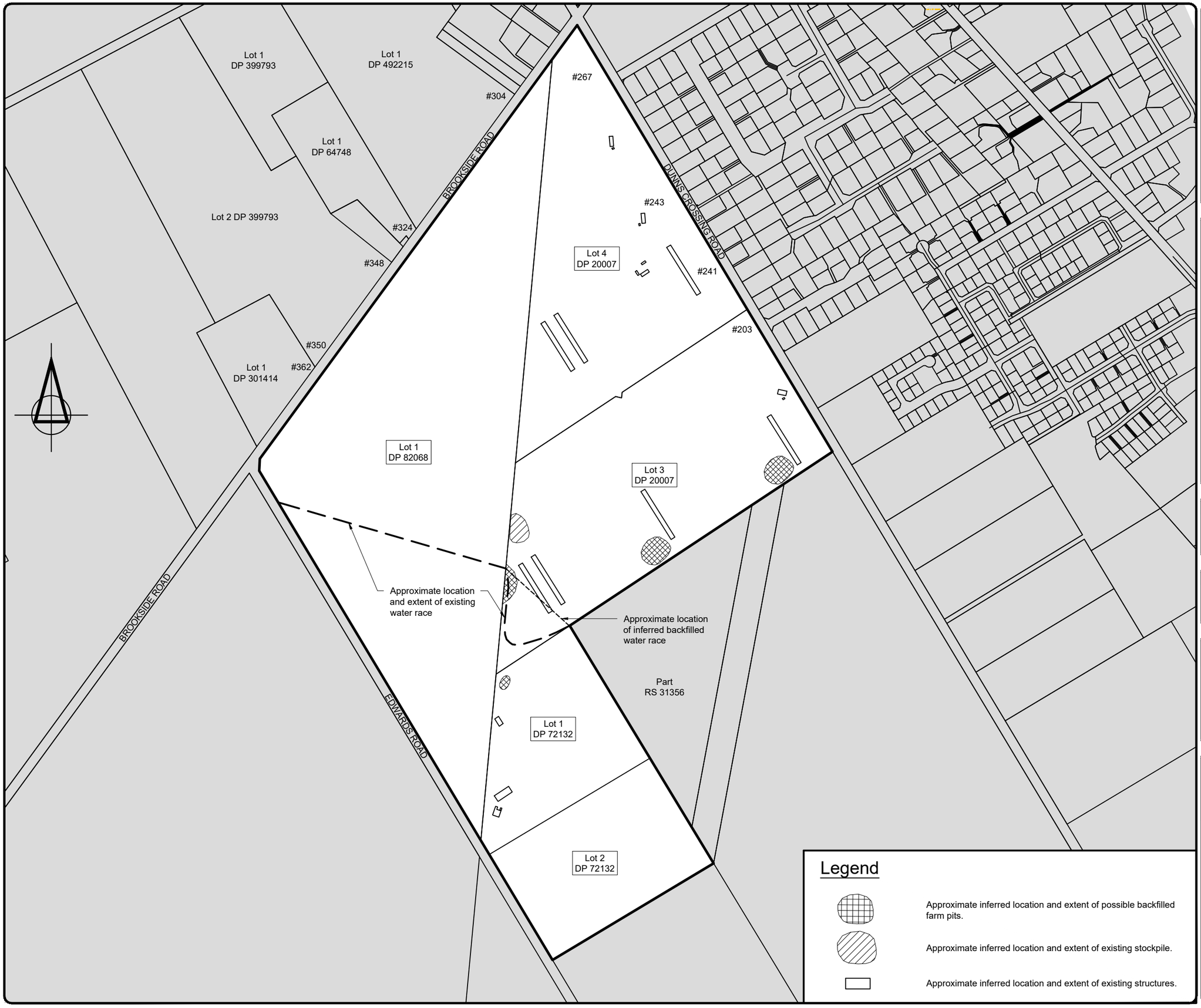
The professional opinion expressed herein has been prepared solely for, and is furnished to our client, Gallina Nominees, Heinz Wattie Pension Fund, and Brookside Road Residential Ltd, and for the information of Council, on the express condition that it will only be used for the purpose for which it is intended.

No liability is accepted by this firm or by any Principal, or Director, or any servant or agent of this firm, in respect of its use by any other person, and any other person who relies upon any matter contained in this report does so entirely at its own risk. This disclaimer shall apply notwithstanding that this report may be made available to any person by any person in connection with any application for permission or approval, or pursuant to any requirement of law.

We do not assume any liability for misrepresentation or items not visible, accessible or present at the subject site during the time of the site inspection; or for the validity or accuracy of any information provided by our client or third parties that have been utilised in the preparation of this report.

APPENDIX A

Site Location



Legend

- Approximate inferred location and extent of possible backfilled farm pits.
- Approximate inferred location and extent of existing stockpile.
- Approximate inferred location and extent of existing structures.

SURVEYED			APPROVED DATE
DESIGNED			MVR
DRAWN	GS	11/10/2021	
CAD	GS	13/10/2021	
CHECKED	AM	20/10/2021	

REVISION	CHANGES	CHECKED	DATE

NOTES

1. This plan has been adopted from Grip map. The location and extent of the site boundaries and site features are therefore considered to be approximate only.

CLIENT

GALLINA NOMINEES, HEINZ WATTIE PENSION FUND, AND BROOKSIDE ROAD RESIDENTIAL LTD

PROJECT

BROOKSIDE ROAD PLAN CHANGE, ROLLESTON

TITLE

SITE PLAN

Fraser Thomas

ENGINEERS • RESOURCE MANAGERS • SURVEYORS

HIGHBROOK, AUCKLAND 2025
TEL+64-9-278 7078

TARADALE, NAPIER 4141
TEL+64-6-211 2766

RICCARTON, CHRISTCHURCH 8041
TEL+64-3-358 5936

BLENHEIM
TEL+64-3-428 3294

SCALE 1:7500 (A3)

DRAWING No C01082-01 REVISION A

SHEET 1 of 1