



APPENDIX G

Three Waters Assessment

2025

Large Lot Development

4336 Ōhaupō Road

RESIDENTIAL DEVELOPMENT

THREE WATERS
ASSESSMENT

TE
MIRO.
WATER



Version Control

Version	Date	Author	Reviewer	Change Description
1.0	04/04/2025	Chris Dawson	Mike Chapman	FOR PLAN CHANGE
2.0	30/04/2025	Chris Dawson	Mike Chapman	FOR PLAN CHANGE
3.0	16/05/2025	Chris Dawson / Mike Chapman	Mike Chapman	FINAL FOR PLAN CHANGE

This report has been prepared for Honey Comb Developments for the project described to us and its extent is limited to the scope of work agreed between the client and Te Miro Water Limited and the data available for the model build. No responsibility is accepted by Te Miro Water Limited, or its directors, servants, agents, staff, employees, or subcontractors related to the inherent flood model limitations, or the accuracy of information provided by third parties and/or the use of any part of this report in any other context or for any other purpose.



SUMMARY OF THREE WATERS COMPLIANCE

GEO-TECH	CMW undertook the geotechnical assessment for the site. The site is generally suitable for sub-division subject to further details at Resource Consent stage. Including on lot soakage testing for stormwater management. This report should be read in conjunction with the CMW Assessment. In summary: • Lot soakage devices setbacks from waterways and wastewater disposal fields are to be confirmed at resource consent stage. • Landcare Research S-Maps show the site soil types are influenced by topography. Free draining soils are present at higher elevation with poorly draining soils present at low points. Reduced soakage capacity may be apparent in lower lying areas subject to on-site testing. Reduced rates may result in larger devices.
RECEIVING ENVIRONEMNT	The existing site runoff flows to an existing drain that runs adjacent the railway line via a series of private farm drains within the development area. It is proposed that most of these drains will be infilled and replaced with a new Overland Flow Path (OLFP) as the receiving environment for secondary flows, subsequently discharging to Lake Ngaroto via Lake Ngarotoiti.
WATER QUALITY	Water quality (WQ) will be managed via swales treating runoff from the road surfaces. Grassed swales have been sized to provide a residence time of greater than 9 minutes, achieving treatment requirements.
INITIAL ABSTRACTION	Initial abstraction (IA) will be managed via soakage within the roadside swales and via reuse through rainwater tanks onsite for the individual lots.
EXTENDED DETENTION VOLUME	The extended detention volume (EDV) will be managed via soakage within the roadside swales and via on lot rainwater harvesting with overflows to soakage within each lot in accordance with NZBC E1.
PRIMARY STORMWATER MANAGEMENT	Primary stormwater management, up to the 10-year ARI event, will be managed on-lot via rainwater tanks and overflow to onsite soakage system. The primary event for the road reserves will be managed via conveyance to the swale network and soakage disposal through the base of the swale.
OVERLAND FLOW PATHS AND SECONDARY STORMWATER MANAGEMENT	Overland Flow Paths (OLFP) and secondary stormwater conveyance above the 10-year ARI event will be managed by the existing OLFP and, where required, modified overland flow paths within the development as well as roadside swale. Secondary flows will be managed safely throughout the development in accordance with the Waikato Regional Infrastructure Technical Standards (RITS). A key OLFP is proposed central to the site between Lots 10/11 & Lots 12/14. A second outlet via an existing OLFP in to south of Lot 18/19 will be maintained, which eventually to the Waipa River.
100YR FLOODPLAIN	There is an indicative 100YR floodplain in the low lying area according to Waipa District Council (WDC) records. House lots and finished floor levels (FFL) will need to be set above the 100YR flood level with 500mm freeboard to finished floor level. Further assessment of flood extent is recommended at Resource Consent stage once building footprints are finalised.



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EXECUTIVE SUMMARY

Overall, the proposed site can be suitably serviced in relation to three waters solutions and as such is suitable for the proposed plan change from a three waters viewpoint. Large lot subdivisions are typically less constrained compared to smaller urban residential development. Larger rural residential lots generally have space for private services such as water supply and wastewater provided minimum lot sizes are achievable. The three solutions proposed for the site are outlined below.

The stormwater management is summarised as follows in accordance with the Waikato Regional Infrastructure Technical Specification (RITS):

- > Initial Abstraction (IA) and Extended Detention Volume (EDV) are to be provided via soakage in the swale network.
- > On-lot rainwater tanks for water supply, overflowing to soakage or dispersed on site via flow splitters, will be required to privately manage individual lot runoff up to the 10-year ARI event.
- > Roofs are to be non-contaminating materials such as colour steel.
- > Grassed swales provide water quality treatment for road runoff.
- > Roadside swales will be designed to soak the 10-year ARI primary event for the road reserve runoff and will be sufficiently sized to store and soak the primary event without reliance on gravel subsurface trenches.
- > Secondary flows up to the 100-year + climate change event will be managed within the road corridor. Existing overland flow paths within private lots shall be retained and safely managed as not to impact building sites which are to be located outside overland flow paths in accordance with NSZ 4404 and the NZBC E1. Finished floor levels shall be set above the design 100yr level with 500mm clearance to finished floor level in accordance with the RITS.

The proposed water supply is summarised as follows:

- > Enquiries with Waipa District Council (WDC) reveal that the northern side of Ryburn Road is pressure (blue) and the southern side is trickle fed (yellow) as per Figure 4.
- > Either the existing town water supply will be extended for firefighting and trickle feed to lots for domestic use.
- > Or on-site rainwater harvesting will be adopted for both firefighting and domestic use (the final decision on method would be after discussions with WDC and/or water pressure tests and modelling confirm there is sufficient pressure and capacity in the system for the existing town supply to be used).

The proposed wastewater collection and disposal is summarised as follows:

- > On-site domestic wastewater management is proposed (to meet AS/NZS 1547 requirements). Two stage engineered treatment systems are proposed with disposal fields contained in each lot, located outside of buffer margins to any watercourse and floodplains.
- > There are a range of approved systems on the market to meet council requirements.

1. WHAKATAKINGA | INTRODUCTION

Te Miro Water Consultants Limited (TMW) have been engaged by Honey Comb Developments to provide a 3-Waters Assessment and Management Approach to support the proposed Plan Change at 4336 Ōhaupō Road, Ōhaupō, shown in Figure 1. The Site falls within the “Rural Zone” under the Waipā District Plan, and is located at the southern end of Ōhaupō, as shown in Figure 2. This report outlines the proposed 3-waters solutions to support the Plan Change that proposes to re-zone the land from rural to large lot residential for a new residential development.

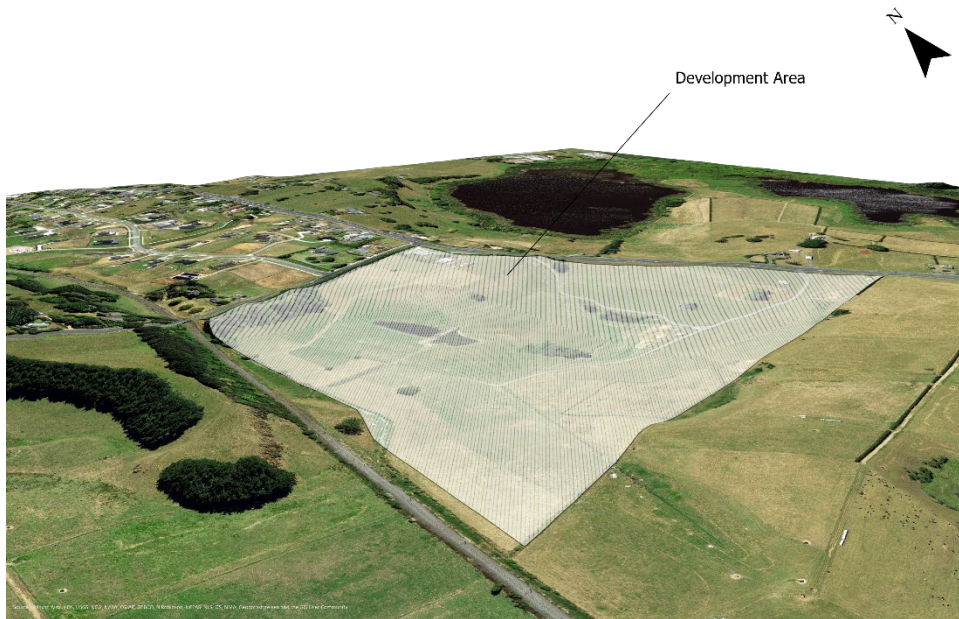


Figure 1 - 4336 Ōhaupō Road large lot residential development



Figure 2 – 4336 Ōhaupō Road proposed lot layout.

1.1. DESIGN OBJECTIVES

In undertaking the assessment of site suitability, from a 3-waters perspective, the following objectives for design and treatment have been identified.

1.1.1. STORMWATER

- > Incorporate a water sensitive design approach that manages the impacts of the rural residential subdivision with respect to Te Ture Whaimana o Te Awa o Waikato, RITS and Waikato Regional Council guidelines.
- > Provide stormwater quality treatment options for roads and hardstand surfaces.

1.1.2. WATER SUPPLY

- > Incorporate a water sensitive design utilizing harvested rainfall for use as both potable and not-potable supply, and for firefighting purposes.
- > To meet the safe drinking water standards as required by Water Services (Drinking Water Standards for New Zealand) Regulations 2022.

1.1.3. WASTEWATER

- > Propose on-site wastewater disposal for each dwellings with secondary effluent treatment in accordance with TP58 (ARC, 2004) or AS/NZS 1547 , RITS and Waikato Regional Council permitted activity standards to ensure no adverse impacts on these high value wetland lakes and water table.
- > To provide an environmentally sustainable wastewater system, which produces no objectionable odour, does not overflow or adversely affect receiving waters and is affordable.

1.2. RELEVANT PROVISIONS

This technical design document has been developed with consideration given to the relevant provisions in the following statutory and guidance documents:

- > Te Ture Whaimana o Te Awa o Waikato Vision and Strategy (Waikato River Authority)
- > Waikato Regional Infrastructure Technical Specifications (RITS Version 1, 2018)
- > Waikato Stormwater Runoff Modelling Guideline 2020
- > Waikato Stormwater Management Guideline 2020
- > Waipā District Council Operative District Plan 2025
- > The Building Act 1991/NZS 4404
- > Resource Management Act 1991
- > Water Services (Drinking Water Standards for New Zealand) Regulations 2022

2. WHAKAMĀRAMA WHĀNUI | EXISTING FEATURES

The proposed site is located between the North Island Main Trunk Railway and State Highway 3 (SH3) / Te Awamutu Road, at the southern end of the Ōhaupō. The site is currently farmland that is 21.505 ha in size and accessed from Ryburn Road. The site is bound by Ryburn Road to the North, SH3 to the east, the main trunk railway line to the west and a neighboring farm to the south, as shown in Figures 1 & 2 above. The indicative yield for development area is approximately 40 large lot residential properties (with opportunity to refine yield as part of the subdivision consenting), incorporating access ways, cul-de-sac roads, and a reserve area. Appendix A includes proposed scheme plan drawings of the development layout.

2.1. TOPOGRAPHY AND 3-WATERS

The proposed development has a mix of flatter alluvial plains (<5) and moderately graded terraces (5 – 45-degree slope). The terraces are formed on the northern and eastern edges of the site. The site falls to a low point in the southwest corner. The surrounding area is a rolling topography. Within the development site, the existing contours range from approximately 71 to 40 m RL. There is an existing drain that follows the railway line that acts as the stormwater discharge point for this site. To the north of the site is existing large lot residential developments within the Ōhaupō. The remaining edges are all farmlands (refer to CMW report 03 December 2024).

Existing overland flow paths (OLFP) are present within the development area including farm drains. OLFP mapping of the wider area shows there is one significant OLFP passing along the site on the western edge parallel to the train line and 100yr stormwater mapping provided by WDC shows that this flooding event does encroach into the development area refer Figure 3 below.



Figure 3 - 4336 Ōhaupō Road ecology layout plan

2.1.1. WATER SUPPLY

Water supply is not currently provided to majority of the Site, with the WDC high-pressure system extending only to the northern edge of Ryburn Road and subsequent trickle feeding to the three lots that are currently being developed in the northeast of the Site (refer Figure 4).



Figure 4 - 4336 Ōhaupō Road existing water supply town layout

2.1.2. WASTEWATER

There is no existing wastewater reticulation in Ōhaupō, with all properties having site specific wastewater management systems.

2.1.3. STORMWATER

Being a rural property, there is no existing stormwater reticulation within the site. The site currently has farm drains that are utilized for stormwater runoff. An existing drain which serves also as a major overland flow path is located within the southwestern corner. Refer to Figure 3 for existing drains and major overland flow paths.

2.2. WETLANDS

There is one wetland present within the Site, at the upper end of the farm drainage canal, located at the southeastern boundary of the Site. Two further wetland areas are present on the southern boundary outside of the site, but due to the proximity to the boundary, buffer zones extend into the site. Further information on the wetlands is provided within the Ecological Values and Effects Assessment (RMA Ecology, 2025). The location of the wetlands is shown in Figure 3 (above) and Appendix A.

2.3. SOILS, GROUNDWATER, AND HYDROGEOLOGY

S-MAP (Landcare Research – see Figure 5) shows the development area contains a mix of soil types that vary from poorly draining in the lower flood plain, to well drained on the upper slopes of the site. Refer to CMP Geosciences report for further details on existing soil condition, type and properties.



Figure 5 - Geology and soil drainage characteristics of the development site.

2.4. EXISTING FLOOD MODELLING

Flood modelling, sourced from WDC has been used for the existing land use scenario to understand the flows through the development site. The council modelling shows there is a flood ponding area in the southwest portion of the site. Generally, the ponding areas follow natural depressions within the site (see Figure 6). To date no design flood levels have been provided by Council.

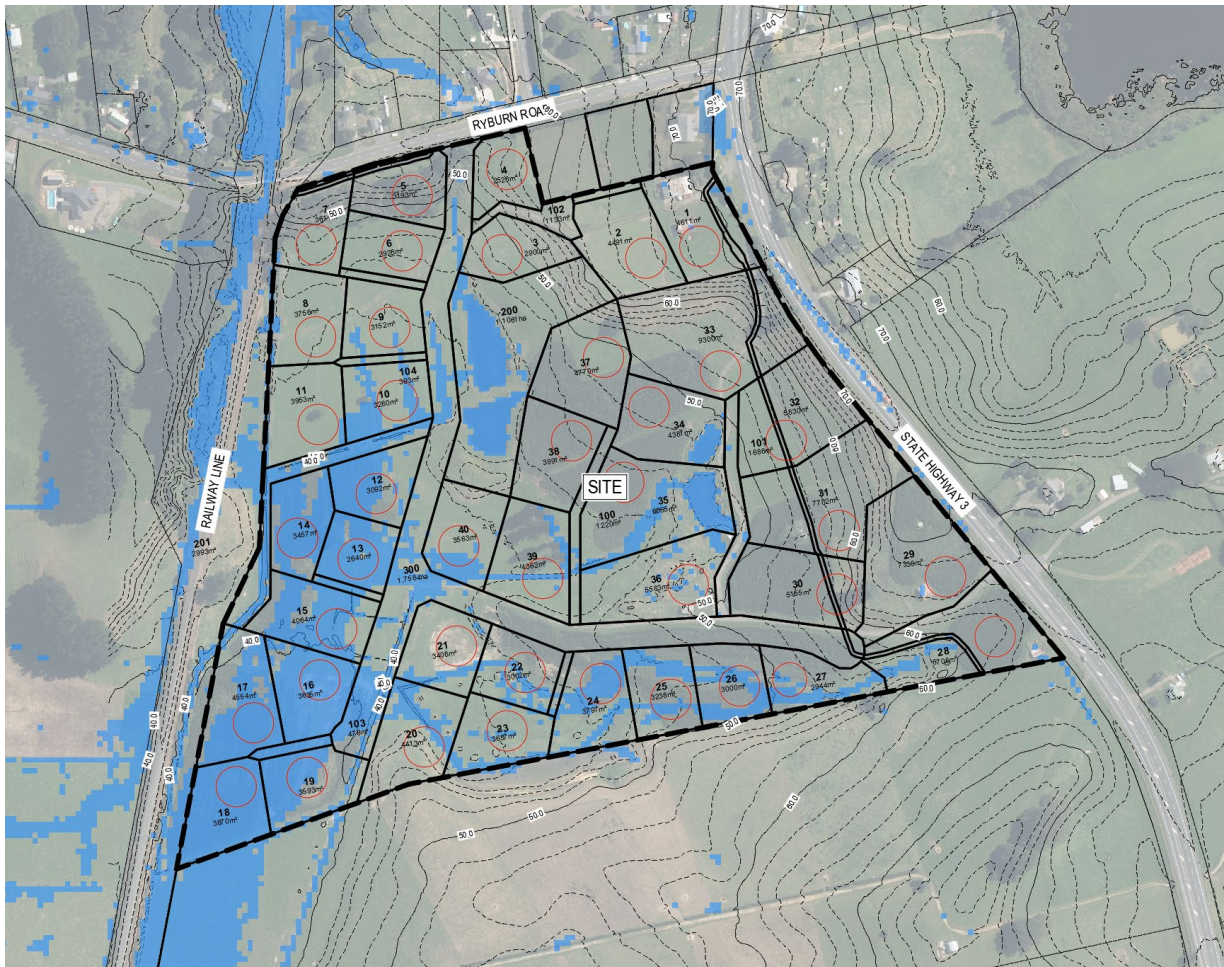


Figure 6 - 4336 Ōhaupō Road existing 100yr flood map

3. RAUTAKI | STRATEGY

3.1. STORMWATER

Stormwater will be managed through the site in line with the existing hydrological regime, providing soakage and conveyance swales through to the existing OLFP within the southern section of the Site, eventually to the existing outlet location in the southwestern corner. House lots should be located outside the 100yr floodplain shown indicatively in Figure 6.

Scour and erosion will be mitigated through lineal swale networks with underdrains and non-erosive velocities, roof runoff to tank storage, and riprap protection at overland flow path outlet locations to the receiving environment.

Preliminary roadside swale sizing has been completed to ensure the proposed layout can accommodate swale widths. As the development is in a large lot rural residential area, private properties will be required to manage stormwater onsite. The following section outlines the implementation of the stormwater solution, covering the following design elements:

- Typical sizing for on-lot rainwater detention tanks.
- Swale treatment for water quality treatment and 10-year ARI primary design event soakage.
- 100-year ARI secondary flow path conveyance.
- Building platforms will need to be raised out of the maximum 100year + climate change flood levels.

Stormwater runoff has been calculated using the SCS curve number method for runoff (as per the RITS and Waikato Regional Council Guidelines).

3.1.1. PRIVATE ON-LOT DETENTION TANKS

Private detention tanks at each lot are required to manage the 10-year ARI event. As per the RITS, detention tanks are required to be sized based on roof catchment and local rainfall runoff data.

Rainwater harvesting for water supply and/or detention shall generally be designed for:

- Roof materials made of non-contaminant leaching materials such as colour steel, concrete tiles.
- Pre-treatment of roof runoff may be provided via leaf/litter guards prior to disposal to rain tanks and soakage devices.
- Each lot could have a rain tank for household re-use, non-potable re-use and/or detention. A rain tank would reduce pressure on the overflow soakage device by limiting flow.
- All rain tank overflows, and private drainage will discharge to soakage systems on lot, designed for flows up to the 10-year event in accordance with NZBC E1. Overflow above 10-year from the soakage system will be dispersed via sheet flow within each lot. No direct connection to

gully/channels or roadside swales shall be established to avoid concentrating outflows.

- Safe passage of secondary overland flows (above the 10-year ARI) needs to be provided within each lot. The overland flow paths within private lots need to be protected.

As per the graph below in Figure 7, for a 250 m² roof area, approximately a 7,000 L detention volume is required. Additional assessment of the volume and use for water supply may be required for each lot at the building consent stage.

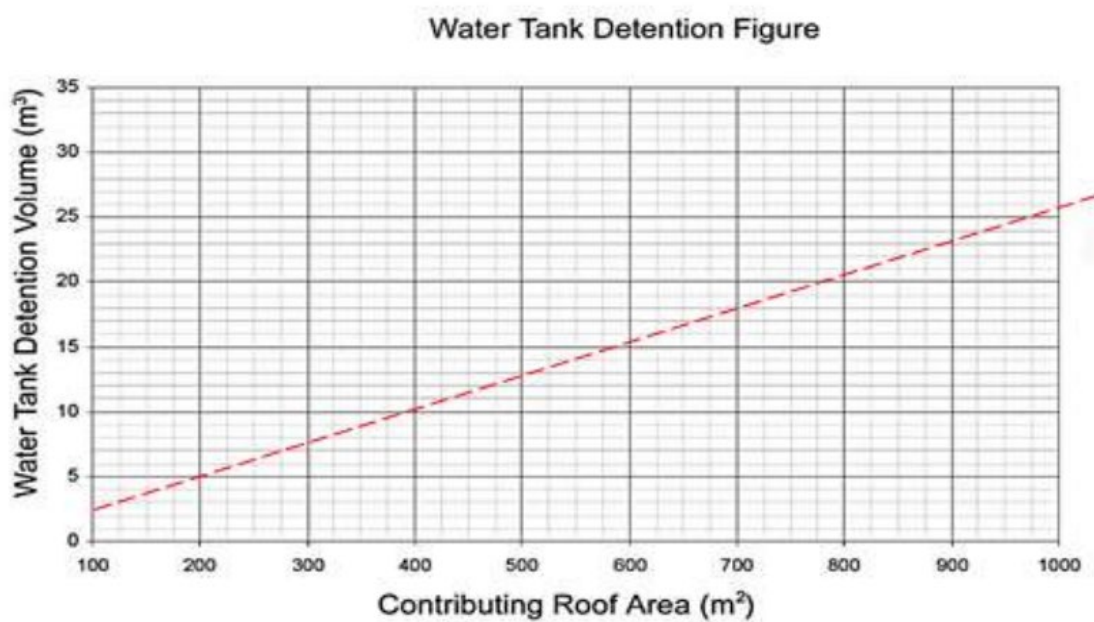


Figure 7 – Example water tank detention storage volumes.

3.1.2. ROADSIDE SWALE NETWORK

Stormwater runoff from the road carriageway and Right of Ways (ROWs) will be treated via a swale network, providing soakage up to the 10-year ARI event, and providing conveyance in larger storms through to the existing OLFP, mimicking the natural flow regime. Figure 8 below shows the proposed swale locations.



Figure 8: Indicative swale locations based off preliminary road layout.

Figure 9 provides an example of a 4.5m wide grass swale to soak runoff from an accessway serving a large lot rural residential development in Tamahere, Waikato. A similar swale system will be adopted for Ohaupo (subject to final soakage testing and conveyance sizing once final road layout is confirmed at RC).

Soakage testing has not been undertaken at this time and will be undertaken at resource consent stage to finalise roadside swale sizing. Assumptions on the permeability rate of the soils are based on the S-Maps soil classification.



Figure 9: Example of 4.5m wide grass swale in large lot rural residential development - Tamahere.

Soakage swales alongside the roads are a best practice approach, designed to treat the water quality (WQ) event, and provide for IA and EDV, through soakage of the 10-year ARI event. The swales also act as conveyance in the 100-year ARI event. Flush kerbs will be utilised to allow inflows to the swales off the road catchment.

The design of the soakage and storage requirements of the swales will be sized to receive runoff from the road reserves and ROW catchments for events up to and including the 10-year ARI event in accordance with the RITS Manual and the NZBC Clause E1: Surface Water.

Swales will be sized to capture the runoff from the road reserves and ROWs to provide pretreatment before soaking through the base and sides. The swales will also be sized to allow for sufficient capacity in larger stormwater events, conveying the 100-year from the road catchment. All swales will be designed as grassed, with an assumed average longitudinal slope of 2%, providing WQ treatment by achieving a residence time of greater than nine minutes. Due to the undulating nature of the development land, there may be sections of increased grades along the length of the swales, in this instance check dams will be required for slopes greater than 5%. The typical section of the ROW and road reserve swales is shown in Figure 10 and Figure 11 below.

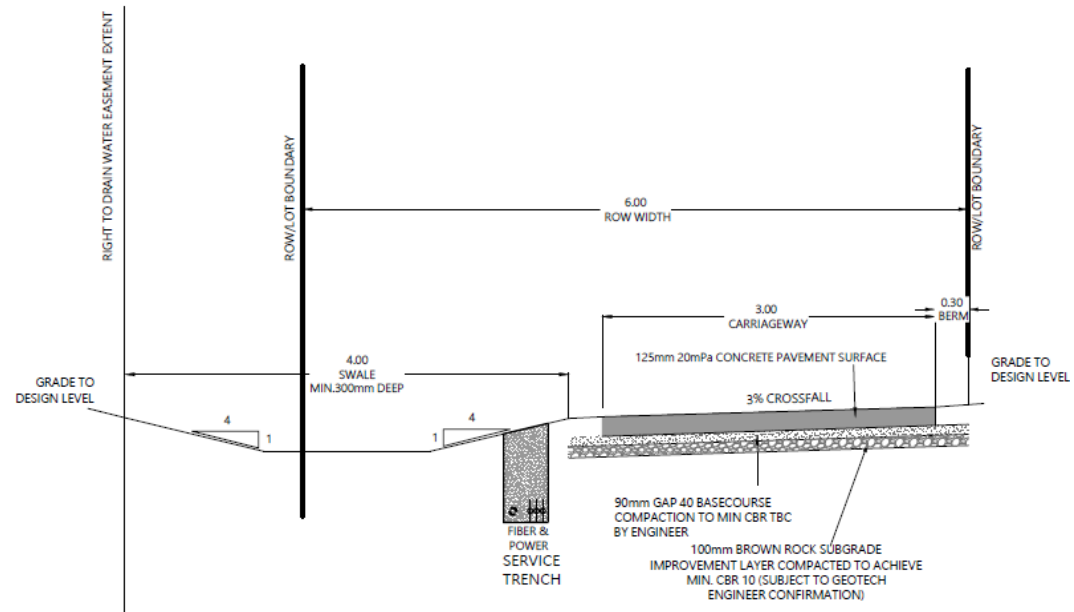


Figure 10: Typical cross section of single crossfall right of way with swale

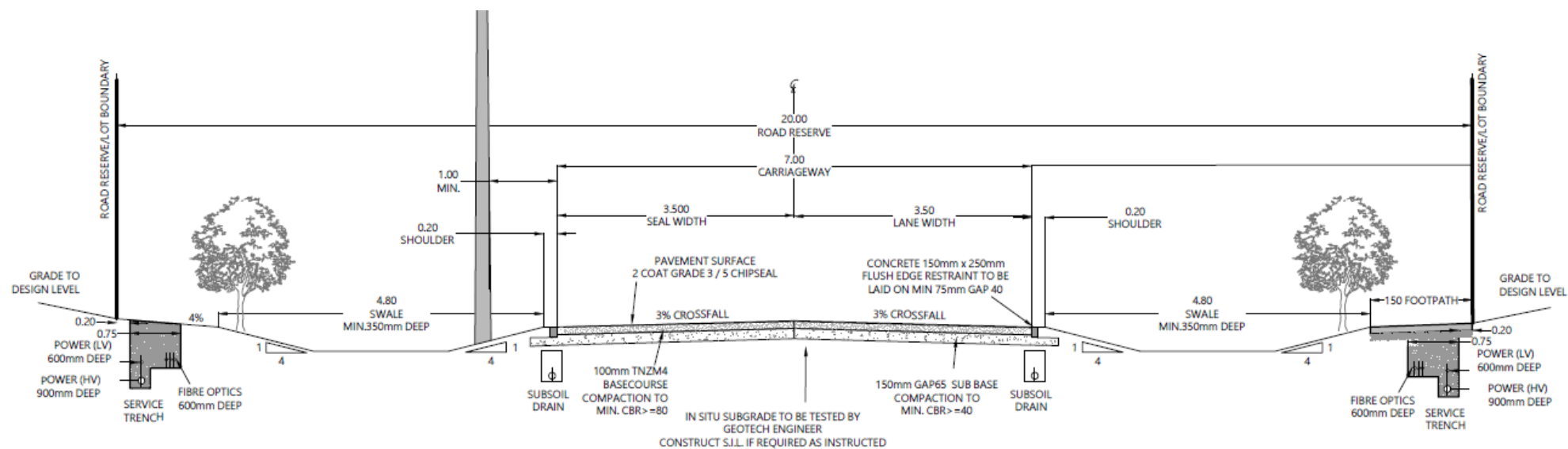


Figure 11: Typical cross section of dual crossfall road reserve

3.1.3. SECONDARY OVERLAND FLOW

Existing OLFPs - generally following the current rural drain network - are present on the site, as shown previously in Figure 3. Figure 12 shows the OLFP and direction arrows through the development, showing where stormwater runoff from the ROWs, lots and roads will flow in extreme rain events. The post development flows are designed to follow the roadside swale network.

Existing OLFPs through properties shall be protected or redirected and formalized through private property easements or similar legal mechanisms to ensure safe conveyance of stormwater in extreme rain events.

Further assessment of flood ponding is recommended at resource consent stage to inform building platform level. Access to and from each lot should also consider ponding to ensure safe access for people and vehicles for each platform. This would be undertaken at subdivision consent stage to confirm post-development flows. A proposed layout is shown in Figure 14.

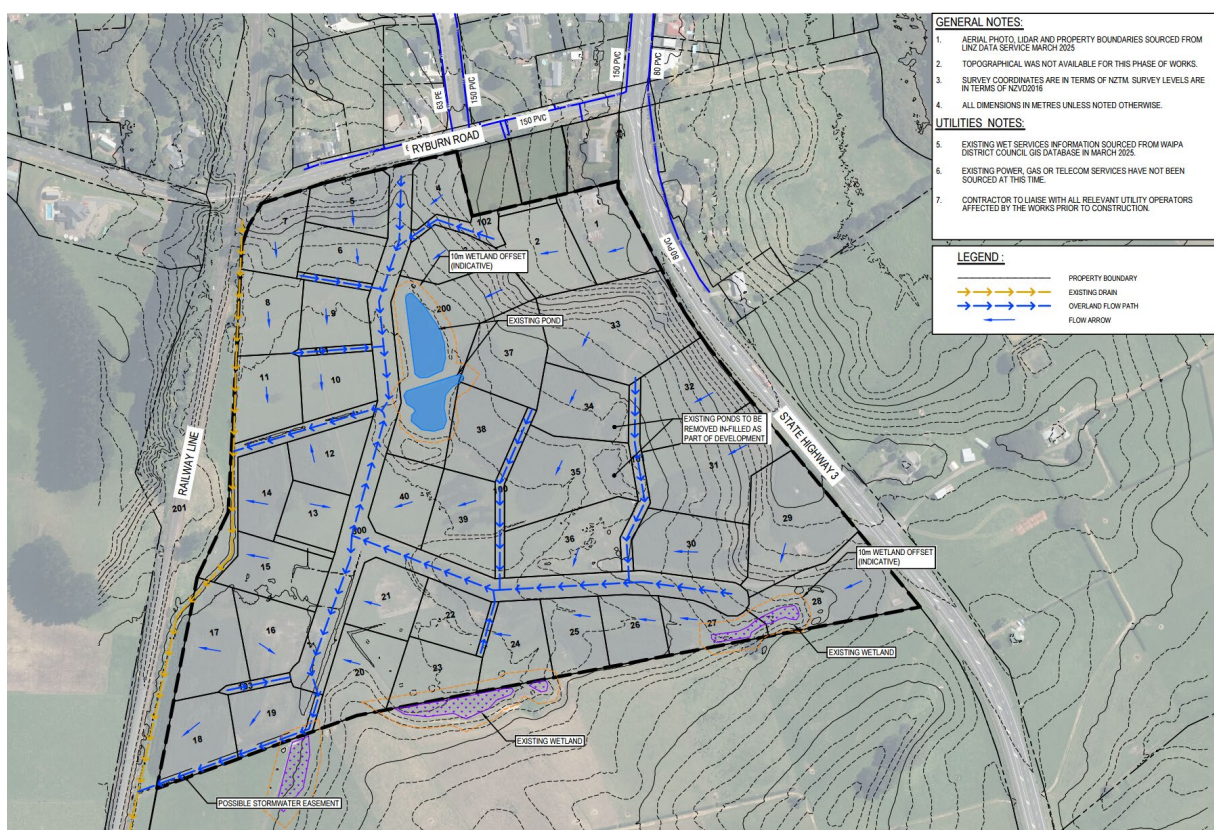


Figure 12: Typical proposed OLFP layout plan

3.2. LID SCORING MATRIX

Waikato Regional Council's LID scoring matrix is intended to encourage low impact design in the stormwater management approach for proposed developments in the Waikato Region. The minimum acceptable score is 11 due to the following requirements:

1. Water quality treatment is required.
2. Existing natural features to protect.
3. No volume or peak flow control required.

The LID scoring matrix for the development has been populated in Table 1. The development achieves a total of 14 points which is over and above the 11-point minimum, and as such, the requirements for stormwater management are met.

Table 1: Low impact design scoring matrix

IMPLEMENTATION ELEMENTS	TYPICAL COMPONENTS	COMPONENTS IMPLEMENTED
SOURCE CONTROL MAXIMISED (MIN 6 POINTS)	WATER RE-USE SITE USE FOR FULL WATER SUPPLY IS 4 POINTS.	RAIN TANK REUSE PROPOSED 4 POINTS
	USE OF BUILDING OR SITE MATERIALS THAT DO NOT CONTAMINATE RESIDENTIAL ROOFS, GUTTERS, DOWN SPOUTS MADE OF NON-CONTAMINANT LEACHING MATERIALS IS 1 POINT.	USE OF INERT ROOF MATERIALS 1 POINT
	EXISTING STREAMS AND GULLIES (INCLUDING EPHEMERAL STREAMS) ARE PROTECTED AND ENHANCED PRESERVATION AND PROTECTION OF NATURAL STREAMS AND GULLIES IS 3 POINTS.	PROTECTION OF POTENTIAL WETLAND EXTENT 1 POINT
LID DEVICE/PRACTICE USED (MIN 2 POINTS)	INFILTRATION DEVICES TO REDUCE RUNOFF VOLUME MEETING THE CAPTURE AND INFILTRATION REQUIREMENTS FOR THE 2-YEAR ARI EVENT FOR THE SITE IS GIVEN 6 POINTS.	SOAKAGE OF THE 10-YR ARI EVENT FOR THE FULL DEVELOPMENT 6 POINTS
	SWALES AND FILTER STRIPS ALL IMPERVIOUS SURFACES DRAINING TO SWALES AND FILTER STRIPS THAT HAVE CAPACITY FOR TREATING THE WATER QUALITY EVENT AND CONVEYING THE 2-YEAR ARI EVENT IS GIVEN 3 POINTS.	IMPERVIOUS SURFACES FROM THE ROAD DRAIN TOWARDS SWALES THAT HAVE THE CAPACITY FOR TREATING THE WQ EVENT AND CONVEYING THE 10-YR EVENT 2 POINTS
TOTAL POINTS		14 (11 POINTS MINIMUM)

3.3. WATER SUPPLY

An adequate supply of water for the dwelling needs/ firefighting purposes will be provided by either trickle feed from the extended public main or by roof water harvesting to each lots as per the WDC requirements for residential supply.

Water supply is proposed to be provided through on-site rainwater harvesting. It is anticipated that each lot will require 3 x 25,000L water tanks and associated pump gear and water quality filters. The Potable water requirements as per Drinking Water Standards for New Zealand will also need to be met.

The water supply required for firefighting purposes is proposed to be met by:

- Network being accessible to firefighting equipment; and
- Being positioned between 6 and 90 metres from each building; and
- Being located on the same site as the building in the case of a rainwater tank or swimming pool; and
- Each rainwater tank will need to either store 45,000L; or provide at least 25L per second for 30 minutes.

To meet firefighting requirements, water supplies - either on their own or in combination - may include rainwater tanks, ponds, dams, rivers, swimming pools or any other water supply.

3.4. WASTEWATER

Wastewater is proposed to be managed on-lot through private engineered wastewater disposal systems providing a secondary level of treatment. Such systems are to be designed at building consent stage for the individual dwellings by a suitably qualified professional, in line with any resource consent requirements. However, to ensure protection of the existing ponds and wetlands, setbacks from the wastewater disposal system will be required.

Figure 13 shows the wetland and setbacks. The yellow dashed line in the figure shows a 10m set back, providing area for wastewater disposal. Separation distances from surface water to the edge of the sub-surface land application system (dripper lines) are required. Additionally, the wastewater disposal fields must be outside or raised above the potential floodplain, which is also achieved through the setback. Mounded or evapo-transpiration beds options could be utilized, as well as more common drip line options where appropriate. This would need further investigation at the resource consent stage.

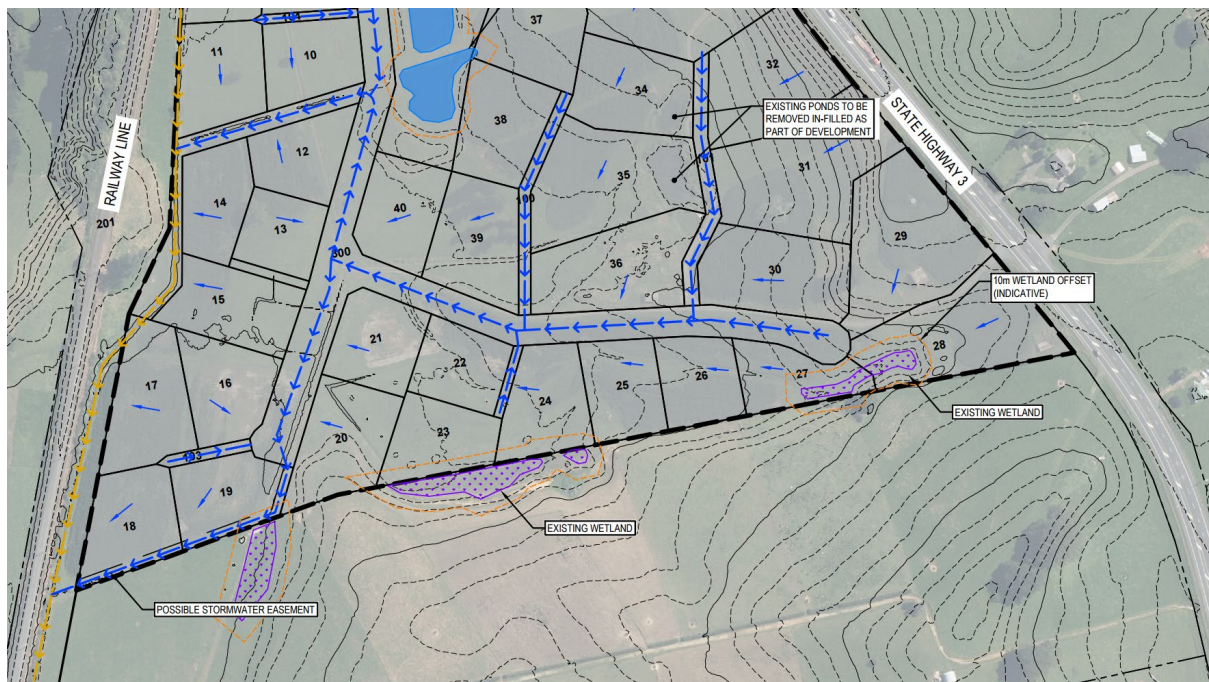


Figure 13: Wetland locations and setbacks (purple hatch)

Typically for soils of good drainage, a setback of 10m from surface water is suitable provided secondary treatment of wastewater is achieved. Secondary treatment of wastewater can be achieved through various methods and proprietary systems and should be designed site specific for each lot. Modern aerated and advanced wastewater treatment systems (AWTS) for example provide secondary treatment, producing effluent that is safer for human health and the environment. There are many systems available, with different numbers of chambers and different treatment processes. For example, an approved proprietary system can be installed on each lot in accordance with AS/NZS 1547:2012. However, a custom designed system will need to be designed by a suitability qualified wastewater engineer or technician.

Consideration of the Geotechnical Report (CMW, 2024) should also be given for the onsite wastewater disposal systems to ensure geotechnical suitability.

To summarise, safe and stable building platforms are required for each of the house sites. Favourable stability conditions will need to be verified by geotechnical engineers. Disposal fields will need to comply with RITS and NZS 1547 in terms of low slope angles, ground conditions and groundwater levels. TP58 Table 5.2 requires disposal fields to be outside the 1 in 20-year floodplain.



Figure 14: Proposed layout plan

4. OPERATION AND MAINTENANCE

It is intended that the operation and maintenance of all devices associated outlined within this Report is tied to the title of these lots. The titles will also include the requirements for stormwater, wastewater and water supply to match this report.

The Operational Maintenance & Management Plan (OMMP) will be developed at detailed design stage for engineering approval and will cover off:

1. Rain tank re-use operational purpose and maintenance.
2. Swale network operational maintenance and purpose.

5. SUMMARY

An overall summary based on the strategy outlined in section 4 is provided below:

Stormwater

- Roadside swale networks will provide treatment, soakage and conveyance for the internal roads to pass through the development.
- Retention for up to the 10-year ARI event is provided for across the development – within roadside soakage swales from the road catchments and via on lot tanks in private properties (which require their own water supply and wastewater servicing).
- The existing receiving environments remain unchanged for overland flow – eventually through to the Waikato River.
- The soakage approach reinforces the intention to recharge existing river terrace water tables and remove frequent runoff volumes from exiting the site. This approach is best practice and aligned to the RITS stormwater hierarchy which promotes on-lot tanks and disposal to soakage.
- The overall solution therefore aligns with Te Ture Whaimana through returning rainfall to ground ‘at source’ and via filtration swales thereby mimicking the natural flow path regime. In this way direct pipe outlets to the Waikato River are avoided.

Water

- An adequate water supply of water will be supplied to each lots as per the WDC requirements for residential supply, and including firefighting as stated in the district plan.
- Accessible to firefighting equipment; and
- Between 6 and 90 metres from the building; and
- On the same site as the building in the case of a rainwater tank or swimming pool; and
- Either stores 45,000 litres; or provides at least 25 litres per second for 30 minutes
- For the purposes of this rule, supplies that meet these requirements either on their own or in combination, may include rainwater tanks, ponds, dams, rivers, swimming pools or any other water supply.

Wastewater

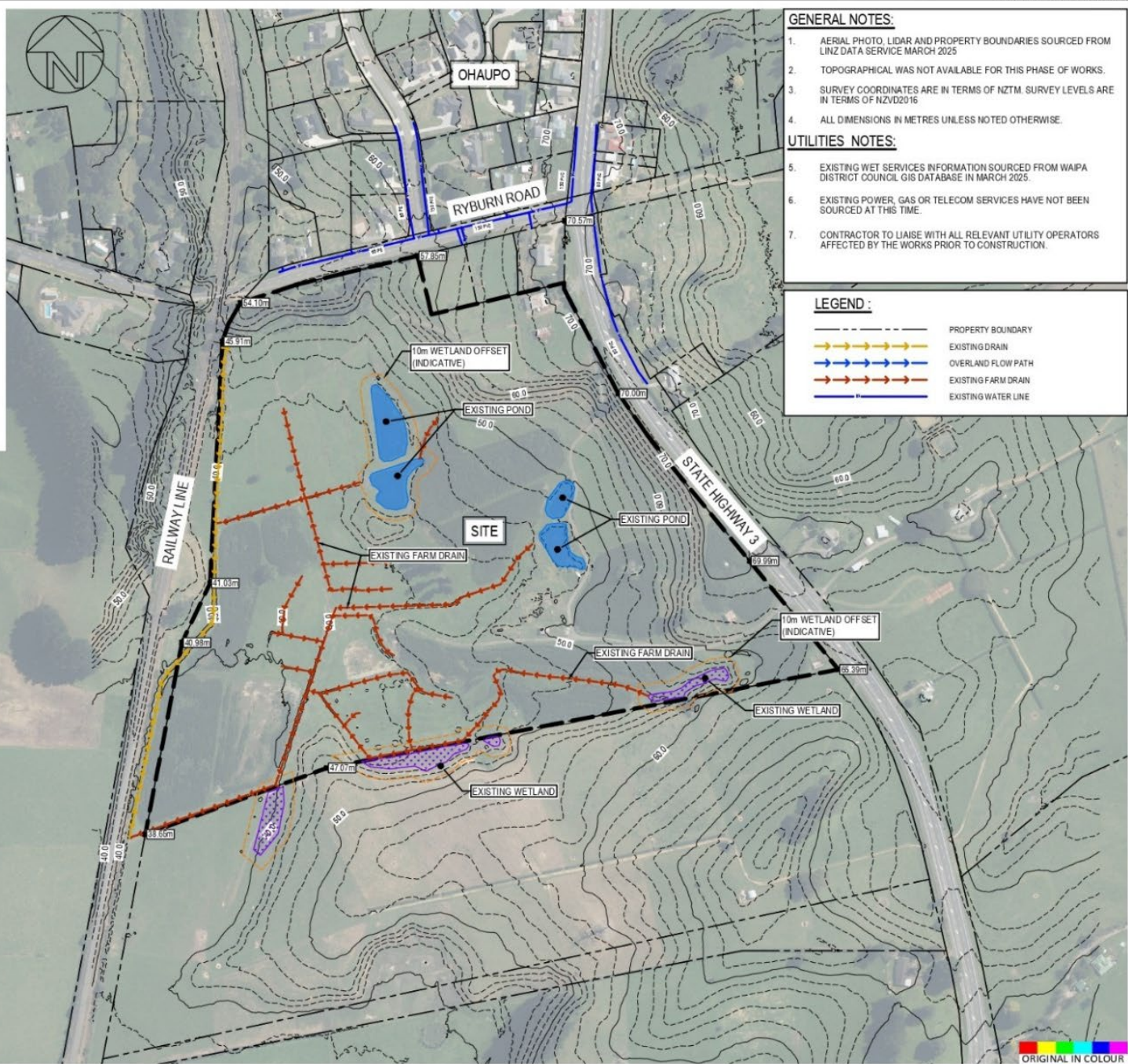
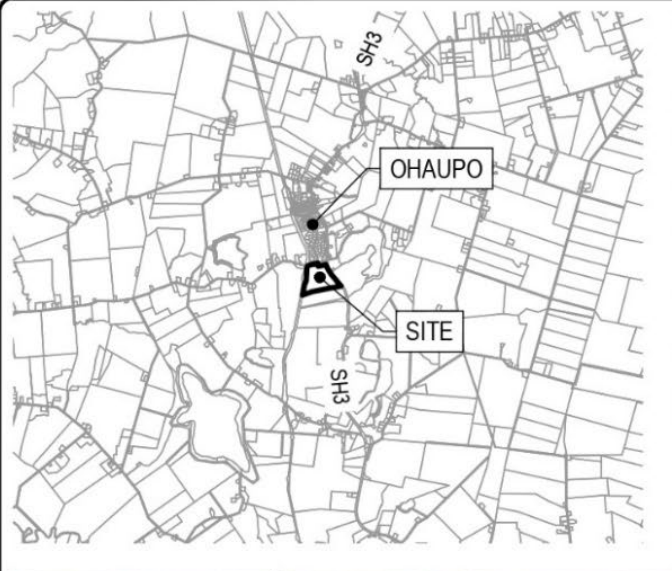
- Wastewater is proposed to be managed on-lot through private engineered wastewater disposal systems providing secondary level of treatment.

6. CONCLUSIONS

- Overall, the site is suitable for large lot rural residential development from a 3 waters viewpoint. The site area and lot sizes meet the minimum size requirements to enable private services for water supply, wastewater and stormwater. For example, there are a range of council approved engineered wastewater systems with secondary treatment with disposal fields adjusted for site specific infiltration rates that are overall suitable for lots of this size.
- Likewise, water supply can be achieved via on-lot rainwater harvesting and overflow to on-lot soakage pits or dispersed via flow splitters still within each lot boundary, or alternately the council trickle supply to each household to 'top up' rain tanks.
- Stormwater from internal road networks present the key contaminant of concern. Runoff will be treated and conveyed via grass or planted swale network and disposed via soakage to ground. Building footprints will need to be safeguarded from existing flood ponding areas in low lying areas and existing overland paths protected or modified safely in accordance with Waikato RITS, NZ4404 and NZBC E1.
- Site specific soakage testing is recommended at resource consent stage to confirm final swale sizing and final lot layout and road configuration to confirm final overland flow path provisions and easements if required.
- The titles will also include the requirements for stormwater, wastewater and water supply to match this report.

ĀPITIHANGA A | APPENDIX A –
DEVELOPMENT PLANS





GENERAL NOTES:

1. AERIAL PHOTO, LIDAR AND PROPERTY BOUNDARIES SOURCED FROM LINZ DATA SERVICE MARCH 2025
2. TOPOGRAPHICAL WAS NOT AVAILABLE FOR THIS PHASE OF WORKS.
3. SURVEY COORDINATES ARE IN TERMS OF NZTM. SURVEY LEVELS ARE IN TERMS OF NZVD2016
4. ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE.

UTILITIES NOTES:

5. EXISTING WET SERVICES INFORMATION SOURCED FROM WAIPA DISTRICT COUNCIL GIS DATABASE IN MARCH 2025.
6. EXISTING POWER, GAS OR TELECOM SERVICES HAVE NOT BEEN SOURCED AT THIS TIME.
7. CONTRACTOR TO LIAISE WITH ALL RELEVANT UTILITY OPERATORS AFFECTED BY THE WORKS PRIOR TO CONSTRUCTION.

LEGEND :

- PROPERTY BOUNDARY
- EXISTING DRAIN
- OVERLAND FLOW PATH
- EXISTING FARM DRAIN
- EXISTING WATER LINE

DRAFT

NOT FOR CONSTRUCTION

FOR INFORMATION

DESIGNED BY	C. DAWSON	DATE	04/02/25
APPROVED BY	C. DAWSON	DATE	04/02/25

CLIENT NAME
HONEY COMB DEVELOPMENTS

PROJECT NAME
PROPOSED SUBDIVISION
RYBURN & OHAUPO ROAD
OHAUPO

DRAWING TITLE
EXISTING FEATURES &
LAYOUT PLAN



DRAWING SCALE
1:4000 @ A3
DISCIPLINE
CIVIL ENGINEERING
DRAWING NO.
J378-C-005

REVISION NO.
0

REV	DESCRIPTION	BY	DATE
0	FOR INFORMATION	CJD	10/02/25



GENERAL NOTES:

1. AERIAL PHOTO, LIDAR AND PROPERTY BOUNDARIES SOURCED FROM LINZ DATA SERVICE MARCH 2025
2. TOPOGRAPHICAL WAS NOT AVAILABLE FOR THIS PHASE OF WORKS.
3. SURVEY COORDINATES ARE IN TERMS OF NZTM. SURVEY LEVELS ARE IN TERMS OF NZVD2016
4. ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE.

UTILITIES NOTES:

5. EXISTING WET SERVICES INFORMATION SOURCED FROM WAIPA DISTRICT COUNCIL GIS DATABASE IN MARCH 2025.
6. EXISTING POWER, GAS OR TELECOM SERVICES HAVE NOT BEEN SOURCED AT THIS TIME.
7. CONTRACTOR TO LIAISE WITH ALL RELEVANT UTILITY OPERATORS AFFECTED BY THE WORKS PRIOR TO CONSTRUCTION.

DRAFT

NOT FOR CONSTRUCTION

REV	DESCRIPTION	BY	DATE
0	FOR CONSENT	CJD	19/03/25

APPROVAL STATUS	FOR CONSENT
DESIGNED BY	C DAWSON
CHECKED BY	C DAWSON
DATE	04/02/25

CLIENT NAME	HONEY COMB DEVELOPMENTS
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PROJECT NAME	PROPOSED SUBDIVISION RYBURN & OHAUPO ROAD OHAUPO
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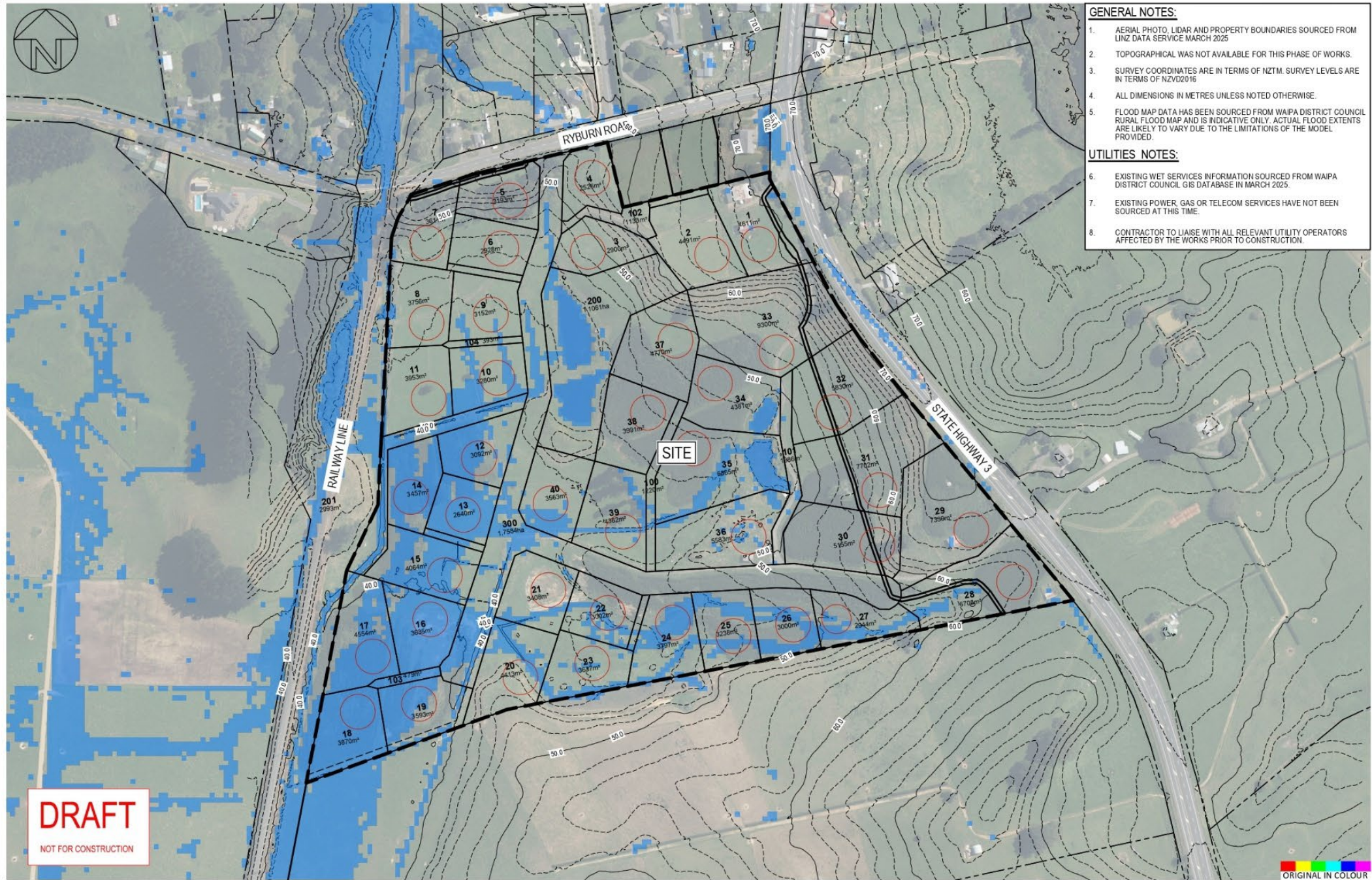
DRAWING TITLE	PROPOSED LAYOUT PLAN
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DRAWING SCALE	1:3000 @ A3
DISCIPLINE	CIVIL ENGINEERING
DRAWING No.	J378-C-020

0

ORIGINAL IN COLOUR



GENERAL NOTES:

1. AERIAL PHOTO, LIDAR AND PROPERTY BOUNDARIES SOURCED FROM LINZ DATA SERVICE MARCH 2025
2. TOPOGRAPHICAL WAS NOT AVAILABLE FOR THIS PHASE OF WORKS.
3. SURVEY COORDINATES ARE IN TERMS OF NZTM. SURVEY LEVELS ARE IN TERMS OF NZVD2016
4. ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE.
5. FLOOD MAP DATA HAS BEEN SOURCED FROM WAIAPA DISTRICT COUNCIL RURAL FLOOD MAP AND IS INDICATIVE ONLY. ACTUAL FLOOD EXTENTS ARE LIKELY TO VARY DUE TO THE LIMITATIONS OF THE MODEL PROVIDED.

UTILITIES NOTES:

6. EXISTING WET SERVICES INFORMATION SOURCED FROM WAIAPA DISTRICT COUNCIL GIS DATABASE IN MARCH 2025.
7. EXISTING POWER, GAS OR TELECOM SERVICES HAVE NOT BEEN SOURCED AT THIS TIME.
8. CONTRACTOR TO LIAISE WITH ALL RELEVANT UTILITY OPERATORS AFFECTED BY THE WORKS PRIOR TO CONSTRUCTION.

DRAFT

NOT FOR CONSTRUCTION

ORIGINAL IN COLOUR

REV	DESCRIPTION	BY	DATE
0	FOR CONSENT	CJD	19/03/25

APPROVAL STATUS	FOR CONSENT
DESIGNED BY	C DAWSON
DATE	—
DRAWN BY	C DAWSON
DATE	04/02/25
APPROVED BY	—
DATE	—

CLIENT NAME	HONEY COMB DEVELOPMENTS
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PROJECT NAME	PROPOSED SUBDIVISION RYBURN & OHAUPO ROAD OHAUPO
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DRAWING TITLE	EXISTING 100YR FLOOD LAYOUT PLAN
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PRODUCED BY	TE MIRO WATER
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DRAWING SCALE	1:4000 @ A3
DISCIPLINE	CIVIL ENGINEERING
DRAWING NO.	J378-C-030
REVISION NO.	0

DATE PRINTED: 1 APR 2025

FILE NAME: J378-1-030 PROPOSED 100YR FLOOD PLAN.dwg



GENERAL NOTES:

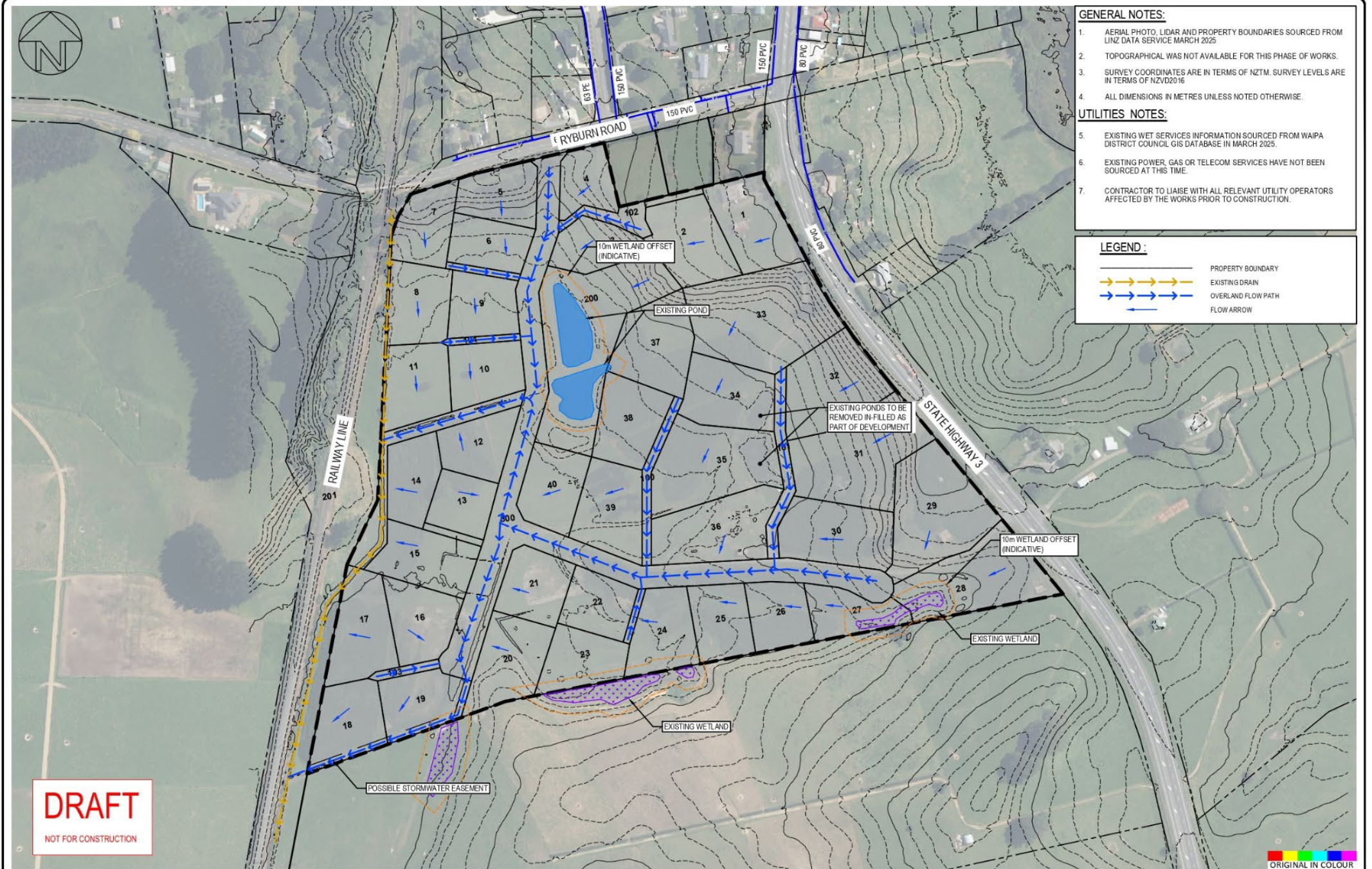
1. AERIAL PHOTO, LIDAR AND PROPERTY BOUNDARIES SOURCED FROM LINZ DATA SERVICE MARCH 2025
2. TOPOGRAPHICAL WAS NOT AVAILABLE FOR THIS PHASE OF WORKS.
3. SURVEY COORDINATES ARE IN TERMS OF NZTM. SURVEY LEVELS ARE IN TERMS OF NZVD2016
4. ALL DIMENSIONS IN METRES UNLESS NOTED OTHERWISE.

UTILITIES NOTES:

5. EXISTING WET SERVICES INFORMATION SOURCED FROM WAIAPA DISTRICT COUNCIL GIS DATABASE IN MARCH 2025.
6. EXISTING POWER, GAS OR TELECOM SERVICES HAVE NOT BEEN SOURCED AT THIS TIME.
7. CONTRACTOR TO LIAISE WITH ALL RELEVANT UTILITY OPERATORS AFFECTED BY THE WORKS PRIOR TO CONSTRUCTION.

LEGEND:

- PROPERTY BOUNDARY
- EXISTING DRAIN
- OVERLAND FLOW PATH
- FLOW ARROW



DRAFT

NOT FOR CONSTRUCTION

REV	DESCRIPTION	BY	DATE
0	FOR CONSENT	CJD	19/03/25

FOR CONSENT			
DESIGNED BY	C DAWSON	DATE	—
DRAWN BY	C DAWSON	DATE	04/02/25
APPROVED BY	—	DATE	—

CLIENT NAME	HONEY COMB DEVELOPMENTS
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PROJECT NAME	PROPOSED SUBDIVISION RYBURN & OHAUPO ROAD OHAUPO
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DRAWING TITLE	OVERLAND FLOW PATH LAYOUT PLAN
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DRAWING SCALE	1:3000 @ A3	REVISION No.	0
DRAWING DISCIPLINE	CIVIL ENGINEERING		
DRAWING No.	J378-C-040		

DWG NAME:

DATE PRINTED: 1 APR 2025

FILE NAME: J378-1-040 PROPOSED OUP LAYOUT PLAN.dwg

ORIGINAL IN COLOUR