


Appendix 6

Council Development Engineering Report

PART 1: INTERNAL REFERRAL INFORMATION			
Comments due by:	2 APRIL 2021	Processing Planner:	Mark Batchelor – CKL, mark.batchelor@ckl.co.nz
Consent number:	SP/0179/20		
Address:	1881 CAMBRIDGE ROAD, CAMBRIDGE		
Applicant:	3Ms of Cambridge Limited Partnership		
Agent:	Abbie Fowler – Mitchell Daysh		
Allocated to:	Richard Bax/Tony Coutts		
Date of site visit:	Latest site visit, 26/02/2021		
Assessment undertaken by Development Engineer:-			
<p>Name: Richard Bax and Tony Coutts</p> <div style="text-align: center;">  </div> <p>Signed:</p> <p>Date: 15/04/2021 16/04/2021</p>			

Overview of application relevance to development engineering

This proposed application seeks to subdivide existing Lots equalling 40Ha into 242 Lots, that will be utilised as residential properties and their relevant amenities. The application has broken the works into 2 stages of development:

Stage 1 consists of:

- Lots 1 – 46 (562m² – 787m²), General Residential;
- Lots 47 – 54 (490m² – 494m²), General Residential;
- Lots 55 – 60 (336m² – 354m²), Residential, Compact Housing;
- Lots 61 – 81 (561m² – 642m²), General Residential;
- Lots 82 – 87 (326m² – 336m²), Residential, Compact Housing;
- Lots 88 – 93 (409m² – 495m²), General Residential;
- Lots 94 – 101 (315m² – 321m²), Residential, Compact Housing;
- Lots 102 – 113 (420m² each), General Residential;
- Lots 114 – 121 (315m² each), Residential, Compact Housing;
- Lots 122 – 134 (411m² - 822m²), General Residential;
- Lots 224 – 242 (522m² - 745m²) General Residential;
- Lot 300 (8.5976ha), Super Lot that is a third party future development likely to be a retirement village;
- Lot 301 (3,294m²), Lot for a future Local Centre;
- 303 (1892m²), Super Lot – Likely to provide for future high density residential development;
- 310 (3.9907ha), Proposed School Site - to be sold to the Ministry of Education and designated via a separate application;
- Lot 403 (240m²), Access Lot – Access lot for Lots 98 – 101;
- Lot 404 (240 m²), Access Lot – Access lot for Lots 118 – 121;
- Lot 500 (390m²), Local Purpose Reserve (Drainage) to Vest – to provide public reserve / stormwater land within the C2 Growth Cell.

- Lot 501 (5,151m²), Stage 1 Recreation Reserve to Vest
- Lot 502 (2.3117ha), Local Purpose Reserve (Drainage) to Vest – to provide public reserve/stormwater land within the C2 Growth Cell;
- Lot 503 (1.2593ha), Local Purpose Reserve (Drainage) to Vest – to provide public reserve/stormwater land within the C2 Growth Cell;
- Lot 504 (238m²), Local Purpose Reserve (Accessway) to Vest;
- Lot 508 (360m²), Local Purpose Reserve (Utility) to Vest – wastewater pump station location;
- Lot 510 (3,286m²), Road to Vest; and
- Lot 511 (5.9952ha), Road to Vest.

Stage 2 consists of:

- Lots 135 – 142 (516 m² – 843 m²), General Residential;
- Lots 143 – 152 (300 m² – 396 m²), Residential – Compact Housing;
- Lots 153 – 160 (634 m² – 754 m²), General Residential;
- Lots 161 – 170 (284 m² – 402 m²), Residential – Compact Housing;
- Lots 171 – 174 (732 m² – 809 m²), General Residential;
- Lots 175 – 180 (326m² – 354m²), Residential – Compact Housing;
- Lots 181 – 197 (528m² – 713m²), General Residential;
- Lots 198 & 199 (345m² & 347m²), Residential – Compact Housing;
- Lots 200 – 223 (522m² - 718m²), General Residential;
- Lot 304 (1,980m²), Super Lot – Likely to provide for future high density residential development;
- Lot 306 (1.4133ha), Balance Lot – Future residential development;
- Lot 402 (134m²), Access Lot – Access lot for Lots 136 – 138;
- Lot 405 (146m²), Access Lot – Access lot for Lots 140 – 142;
- Lot 406 (346m²), Access Lot – Access lot for Lots 143 – 147;
- Lot 407 (145 m²), Access Lot – Access lot for Lots 154 – 156.
- Lot 408 (146m²), Access Lot – Access lot for Lots 158 – 160;
- Lot 409 (330m²), Access Lot – Access lot for Lots 161 – 165;
- Lot 410 (152 m²), Access Lot – Access lot for Lots 172 – 174;
- Lot 505 (1.0010ha), Local Purpose Reserve (Drainage) to Vest – to provide public reserve / stormwater land within the C2 Growth Cell;
- Lot 506 (420m²), Local Purpose Reserve (Drainage) to Vest – to provide public reserve / stormwater land within the C2 Growth Cell;
- Lot 512 (1438 m²), Road to Vest;
- Lot 513 (1387 m²), Road to Vest;
- Lot 514 (992 m²), Road to Vest; and
- Lot 515 (1.1433ha), Road to Vest.

Development engineering has reviewed the Engineering report prepared by McCaffery Engineering (Council Reference: 10531300, appendix D, Pages 157 – 250 of 250, 10531298 Pages 1 – 250 of 250 and 105531299, pages 1 to 59 of 229) and the ITA prepared by Stantec (Council reference: 10531299 Appendix G pages 81 – 137 of 229) against the scheme plans prepared by Cogswell dated December 2020 (Council reference: 10531299 Appendix F, Pages 74 - 80 of 229). The Initial commentary was provided by council within the pre app notes (PG/0178/19) and responded to accordingly in the table provided by the applicant (council reference: 10531299 appendix I Pages 212 – 223 of 229) excluding comments from the Transportation manager which added later.

The applicant's submission has been reviewed and broken into each engineering component in the below infrastructure assessment, and commentary on from the initial subsequent section 92 requests.

Infrastructure Assessment:

Earthworks

As previously stated within the Pre application notes of PG/0178/19, The earthworks for the site are appropriately conditioned under LU/0166/20. The scale of development is almost identical, and the initial conditions/consent covers the same footprint as this development. The MoE sites sub-catchment construction management plan has now been approved (Council reference: 10524323) to allow site stripping and sediment erosion controls to begin operation. This was to lock in their sales and purchase agreement with the MoE, but also set up the appropriate sediment and erosion controls.

Since this initial pre app commentary, 3Ms have requested the south-eastern portion of the secondary catchment be approved with site stripping and stock piling of material within this location, at risk of the subdivision in question may not being approved. As the level difference is not too dissimilar in either scenario, development engineering finds this arrangement acceptable, and the approved CMP can be located on councils file system (Council References: 10578748 and 10524323).

No further conditions or effects are expected given the existing conditions of the stated consent. No further commentary on this component of infrastructure is required.

Foundations

Assessing initial Geotech information provided by BTW (Council Reference: 10531300, appendix D, sub appendix Pages 157 – 250 of 250, 10531298 Pages 1 – 250 of 250 and 10531299, pages 1 to 59 of 229) and further geotechnical testing done, along with the condition of the mention bulk earthworks consent, Lot 303 and 304 have been identified for specific foundation design when assessing their soil strata, and proximity to steep slopes and unknown nature of the developments. Consent notice relating to the relevant hazards have been imposed.

As identified in the initial liquefaction assessment diagram provided by Beca dated: 06/07/2020 (Council reference: 10588755, pages 9 of 98), there is potential for some lots to be identified as potentially at risk from lateral spread movement. Additional consent notices have been imposed relevant to these “more than 100mm lateral movement area identified which covered stages 2 Lots 190 – 197.

Transportation

The development seeks to shift the location of the collector road infrastructure planned and shown in the C1 C2 C3 Structure Plan in this area, off the site. The suggested relocation has a number of consequences and these are discussed below. The recommended conditions are caveated on this suggestion being accepted by the Hearing Panel and those relevant conditions of consent are adhered to.

Technically the suggestion is feasible, subject to council being able to acquire the land and there being no significant geo-technical issues. There is significant risk to council of acquiring the land for the north/south collector road on land not owned by the applicant. The applicant suggests council can acquire the land via the Public Works Act 1981 Section 23 process (compulsory acquisition), however there is no certainty - the Environment Court could determine that there are other options for its location. The land is likely to be an increased cost over those budgeted, and reflected in the Development Contributions Policy and subsequent DC calculations. The delay in constructing the collector road will potentially mean that not all of the 3Ms land can be developed as the local roads will not have the capacity that the collector provides this leads to potential safety issues for users.

The relocation of the collector road also requires the relocation of the C2/C3 intersection on Cambridge Road. This would affect the Te Awa Lifecare Retirement Village new entrance way which is required when the intersection is created. Their existing one would be too close to the new intersection and was required by their consent to be relocated. It would be further away and be also required to traverse across more on the St Peters School land. It is acknowledged that St Peters School have indicated support for the relocation of the intersection, however it is not clear who will pay for the crossing of their land.

The infrastructure internal to the subdivision is a combination of multi modal infrastructure ranging from collector level to low pedestrian shared spaces.

Lots 403 and 404 of stage one, and Lots 402 and 405 – 410 are all private ways servicing multiple dwellings. Relevant private way conditions have been imposed on each stage ensure their design and construction are meeting relevant standards, as well as the stormwater disposal.

Design, construct, QA, and as-built conditions have been imposed to ensure future growth cell is appropriately catered for, and effects related to construction are appropriately mitigated at the relevant stages. Additional items such as Pedestrian calming facilities and maintenance access tracks have been added for the safety of the shared environment road corridor users, and safety of our maintenance operators, respectively.

Advice notes surrounding safety in design workshop to be undertaken has been added with relevant council staff to ensure safe principles are identified in each stage of the civil works.

Reviewing the reports provided by Stantec Dated: 02/12/2021 and 06/04/2021 (Council reference: 10531299 Appendix G pages 81 – 137 of 229 and 10588755, Pages 77 – 98 of 98 respectively) on the operation effectiveness of the proposed intersections into the development, it has been identified that the C2 traffic right turning out onto Cambridge Road will be a problem in future if the C2/C3 roundabout is not built in a specific time and wider growth of traffic on Cambridge Road eventuates as expected. Meaning if the RAB is not built when needed there will be an intractable problem at the two intersections of road 8 and 10. To mitigate and control the effects of this, a condition has been formulated that locks the development from occurring in stage 2 and/or the retirement village development on Lot 300 until the internal north-eastern collector has an established connection to receiving council's external collector road infrastructure.

Water supply

As previous stated within the Pre application notes of PG/0178/19, The bulk main design approach has not changed from the initial design. The design works in terms of sizing, connections, and fittings all can remain the same, albeit the layout of the reticulation is slightly different.

Reviewing the initial information supplied in the Water supply layout sheets supplied by Harrison Grierson (Council Reference: 10531298, appendix D, Sub appendix C, Pages 48 – 51 of 250), 100mm pipes should be removed, Minimum pipe size shall be 150mm in all circumstances, but this can fall into the relevant design condition applied under both stages.

Design, construct, QA, and as-built conditions have been imposed to ensure future growth cell is appropriately catered for, and effects related to construction are appropriately mitigated at the relevant stage.

Reviewing the initial information supplied in the Water supply layout sheets supplied by Harrison Grierson (Council Reference: 10531298, appendix D, Sub appendix C, Pages 48 – 51 of 250), 100mm pipes should be removed, Minimum pipe size shall be 150mm in all circumstances, but this can fall into the relevant design condition applied under both stages.

Wastewater

As previous stated within the Pre application notes of PG/0178/19, Only one pump station now feeds proposed in this area. Shifting the secondary pump station off the initial site is not necessarily an issue, as their development can also gravity provide conveyances to the central terminal pump station, which is currently 95% designed.

Richard Bax - Consultant Engineer, will provide comment on the DA that will involve the primary gravity servicing the broader development, and split cost involved with that (assumed 150mm main costs of their development vs any pipe size increase to service broader development). The applicant and council have agreed that a Development Agreement (DA) and an Infrastructure Works Agreement (IWA) are required for this development. These agreements will be firstly for the Development Contributions payable, and secondly, via the IWA, for works council wants the applicant to undertake on their site. These include a terminal wastewater pump station, associated rising main to Cambridge Road; playground and sportsfield development with associated facilities; and development of a stormwater swale.

Design, Construct, Quality Assurance and As Built conditions have been imposed to mitigate the effects related to construction, future occupants/wider growth cell and ensure on going safety of operators is considered at each phase. Given the pump station proposed is to be a primary terminal pump station, the foundations need to meet an Importance Level 3 (IL3) definition, this has been added to the item list of the design condition and will flow through the rest of the Wastewater condition requirements.

Given stage 2 only have gravity reticulation to be constructed, relevant gravity design/construct conditions have been imposed for this stage of development.

Stormwater

The development seeks to shift the location of the stormwater swale and pipes, planned and shown in the C1 C2 C3 Structure Plan for this area, off the site. The suggested relocation has a number of consequences and these are discussed below.

Technically the suggestion is feasible, subject to council being able to acquire the land and there being no significant geo-technical issues. There is significant risk to council of acquiring the land for the north/south swale and pipes on land not owned by the applicant. The applicant suggests council can acquire the land via the Public Works Act 1981 Section 23 process (compulsory acquisition), however there is no certainty - the Environment Court could determine that there are other options for its location. The land is likely to be an increased cost over those budgeted, and reflected in the Development Contributions Policy and subsequent DC calculations. These potential DC increases impact the applicant but also many other landowners and developers within the DC catchment.

The proposed stormwater management system relies on a philosophies of the Waikato regionals Low impact design criteria. The stormwater report prepared by Harrison Grierson Dated: 03/12/2021 (Council reference: 10531298: Appendix D - Engineering Report continued (Pages 1 - 250), demonstrates the strategy to comply with the relevant Cambridge discharge consent currently held by council for the overarching C2 growth cell (AUTH141099.01.01). The proposed subdivision will redirect existing rural culverts running through the property, collect via primary infrastructure and over land flows to combination retention/soakage basins that will ensure the 1% AEP does not affect the proposed development and wider catchment.

Further investigations have determined the iron pan layer is not present. Beca have provided this assessment post initial application submission in response to our initial request for information Dated: 01/12/2020 (Council reference: 10588755, pages 10 – 75 of 98). The information provided outlines a soakage rate of 74mm/hr (unfactored), this soakage rate is not considered to be a high or good soakage rate by any means of comparable soakage benchmarks (Building Act Clause E: E1 surface drainage or RITS). No exemption will be allowed of a less stringent design factor (halving the soakage rate) when undertaken detailed design review stage. Also identified in the section 92 information received was the meeting notes from WRC /3Ms meeting dated 24/03/2021. Within the notes the following item was identified:

“As the WDC stormwater discharge permit lists all the key stormwater assets within a consent condition (see sketch below), WRC would like an application under s127 of the RMA to be lodged along with the detailed design approval so this list of key assets can be updated to include the stormwater basin within the 3Ms development. 3Ms understands they will need to pay for the costs associated with the s127 process, but WRC noted that the change would be straightforward.”

Design, Construct, Quality Assurance, As Built and maintenance/operation plan conditions have been imposed to mitigate the effects related to construction, future occupants/wider growth cell and ensure on going safety of operators is considered at each stage. An extended duration of 24 months operation has been included to ensure well established plant management and cycling have occurred. Specific items have been added to ensure the effect of this proposal align with Councils discharge requirements and relevant safety in design is applied.

With provision that the conditions below are imposed, referencing the relevant reasons of the infrastructure assessment above, the effects of the subdivision can be considered less than minor.

Conditions to be imposed:

Stage 1:

Transportation

Submit Rooding Design Drawings

The consent holder shall submit Design/construction plans for the roads to vest Lots 510 and 511 as shown on the SP/0179/20. The Design/Construction plans shall be submitted to Council for acceptance prior to carrying out any construction work required by this consent. All work associated with the roads vested to council shall be designed to the satisfaction of the Council's Team Leader – Development Engineering, and at the consent holders expense. The submitted plans shall include, but is not limited to:

- a) Pavement design;
- b) Connection to existing infrastructure;
- c) Fixed entrance locations;
- d) Maintenance access tracks;
- e) Tracking curve analysis;
- f) Line marking and signage;
- g) Longitudinal sections;
- h) Common services trench;
- i) Surface treatments;
- j) Streetscape & berm planting; and
- k) Pedestrian calming measures.

Construct Roads to Vest

The consent holder shall construct roads to vest as shown in Lots 510 and 511 within the scheme plan of subdivision SP/0179/20 as per the approved design/construction approved submitted under **Submit Rooding Design Drawings** condition above and to the satisfaction of Council's Team Leader – Development Engineering at the consent holder's expense.

Quality assurance certificates

Following completion of the road areas required under Condition **Construct Roads to Vest** above, Quality Assurance Certificates from a suitably qualified and experienced professional shall be completed, signed, and submitted to Council's Team Leader – Development Engineering for acceptance.

Rooding as-built plans

The consent holder shall provide as-built plans of the proposed road to vest, relevant quality assurance, and the structures located within the proposed road to vest prior to the issuing of the section 224 certificate, to the satisfaction of Council's Team Leader – Development Engineering.

Advice Notes: Road Corridor

Road Design

The Council's standards are set out in the Regional Infrastructure and Technical Specification (RITS) and provide a means of compliance for approval.

Safety in Design Workshop

Given nature of the shared facility identified along Road 20, relevant staff should be consulted regarding a safety in design workshop to ensure the best outcome going forward for the road corridor users is obtained. Development engineering can facilitate the appropriate WDC staff.

Streetscape design

Streetscape design shall follow relevant standards set out in the Regional Infrastructure and Technical Specification (RITS) and follow the councils Tree Policy circa 2019. Streetscape design shall include, but not be limited to, the following the species, locations, expected heights of any proposed plants and reason for any deviation from the above.

Streetscape As-builts

As-built plans and 'Parks Asset Recognition Form' (provided by council) of landscaping works that are to be owned/managed by Council shall be submitted as part of the overall roading As-built submission. The Streetscape As-built plans shall include the following:

- a) Location and extent, types of materials*
- b) Botanical and Common name and location (measured position in the berm) of street trees*
- c) Names, grades, number, planting density of traffic island planting*
- d) Installation date.*

Property Numbering

Once the section 224C completion certificate has been issued by Council for this subdivision, Council will advise the consent holder of property number(s).

Reasons: *Entrances are required to be accurately numbered in accordance with the Rural and urban addressing standard, AS/NZS4819:2011. To conform to the above standard, the existing property numbering may need to change.*

Water Supply

Submit water reticulation design

The consent holder shall submit Design/construction plans for the water reticulation system to supply the proposed lots and connect existing reticulated network shown on scheme plan SP/0179/20. The Design/Construction plans shall be submitted to Council for acceptance prior to carrying out any construction work required by this consent. This system shall be designed to the satisfaction of Council's Team Leader – Development Engineering, and shall be at the consent holder's expense. The submitted plans shall include, but is not limited to:

- a) Reticulation layout;
- b) Pipe size, material, and pressure ratings;
- c) Hydrant Locations;
- d) Valves and fittings details;
- e) Connection locations to service lots;
- f) Bedding/service trench details; and
- g) Thrust Block details.

Construct water reticulation

The consent holder shall construct water reticulation as per the approved design/construction approved submitted under **Submit water reticulation design** condition above and to the satisfaction of Council's Team Leader – Development Engineering at the consent holder's expense.

Quality assurance certificates

Following completion of the water reticulation required under Condition **Construct water reticulation** above, Quality Assurance Certificates from a suitably qualified and experienced professional shall be completed, signed, and submitted to Council's Team Leader – Development Engineering for acceptance.

Submit as-built plans

The consent holder shall submit an as-built plan of all water infrastructure including connections to relevant Lots within stage 1. All work shall be to the satisfaction of Council's Team Leader – Development Engineering and be at the consent holder's expense.

Advice Notes:**Water Design**

The Regional Infrastructure and Technical Specification (RITS) sets out a means of compliance for the design and construction of all Water infrastructure assets.

Location of new water connections

The location of the water connection shall comply with all aspects of Waipa District Council Water Supply Bylaw 2013.

Connection to Council's main procedure

To ensure the new infrastructure constructed can connect to council infrastructure safely and comply to the New Zealand Drinking Water Standards 2005 (Revised 2018), the consent holder shall complete a network shutdown request and submit to development engineering, councils shut down applications forms:

Shutdown request: WS-WSU-07 a(F) – APPENDIX A

Shutdown methodology: WS-WSU-07 b(F) – APPENDIX B

(These forms can be provided upon request)

As part of these applications requirements, the consent holder will need to provide the compliant pressure and water quality tests 3 days before the selected date. This is to ensure correct notifications to affected parties can be undertaken. The consent holder shall also identify any potential high-risk water users and undertake direct liaison with them.

As-built plans to be submitted

As-built plans and information of all infrastructure assets, which are to be vested in Council, shall be provided prior to the final inspection. This information is a statutory requirement. The Regional Infrastructure and Technical Specification (RITS) has an acceptable standard for the recording of all council assets.

Wastewater**Submit wastewater pump station and reticulation design**

The consent holder shall submit Design/construction plans for the Pump station and gravity wastewater reticulation system to supply the proposed lots and existing receiving network shown on scheme plan SP/0179/20. The Design/Construction plans shall be submitted to Council for acceptance prior to carrying out any construction work required by this consent. This system shall be designed to the satisfaction of Council's Team Leader – Development Engineering, and shall be at the consent holder's expense. The submitted plans shall include, but is not limited to:

- a) Flow direction and grades;
- b) Pipe sizing and material;
- c) Bedding details;
- d) Manhole sizing and details;
- e) Longitudinal sections;
- f) Connections to service Lots;
- g) Pump sizing details;

- h) Telemetry and electrical schematic details;
- i) Scour/air valve locations and details;
- j) Screen planting or amenity other requirements;
- k) Gantry design;
- l) Odor control details; and
- m) Seismic Resiliency details.

Construct wastewater pump station and reticulation

The consent holder shall construct wastewater gravity reticulation as per the approved design/construction approved submitted under **Submit wastewater pump station and reticulation design** condition above and to the satisfaction of Council's Team Leader – Development Engineering at the consent holder's expense.

Quality assurance certificates

Following completion of the wastewater gravity reticulation required under Condition **Construct wastewater pump station and reticulation** above, Quality Assurance Certificates from a suitably qualified and experienced professional shall be completed, signed, and submitted to Council's Team Leader – Development Engineering for acceptance.

Submit As-built plans

As-built plans and information of all Wastewater infrastructure assets, which are to be vested in Council, shall be provided to the satisfaction of Council's Team Leader – Development Engineering and shall be at the consent holder's expense.

Advice Notes:

Wastewater Design

The Regional Infrastructure and Technical Specification (RITS) sets out a means of compliance for the design and construction of all Wastewater infrastructure assets.

As-built plans to be submitted

Draft As-built plans and information of all infrastructure assets, which are to be vested in Council, shall be provided prior to the final inspection followed by a final set for 224 sign off. This information is a statutory requirement. The Regional Infrastructure and Technical Specification (RITS) has an acceptable standard for the recording of all council assets.

Stormwater

Submit Stormwater Management Plan (If not submitted with application)

The consent holder shall provide a Stormwater Management Plan, from a suitably qualified professional to Council's Team Leader – Development Engineering and shall be at the consent holder's expense. The submitted plan shall include, but is not limited to:

- a) Compliance with Stormwater Discharge consent (AUTH141099.01.01);
- b) Compliance Specific catchment C1 -3 requirements;
- c) Geotechnical investigations;
- d) Catchment analysis;
- e) Flood management;
- f) Water sensitivity design; and
- g) Ecological requirements.

Stormwater – Design

The consent holder shall submit Design/construction plans for the stormwater reticulation system to supply the proposed lots and existing receiving network shown on scheme plan SP/0179/20. The Design/Construction plans shall be based on the approved Stormwater Management Plan under **Condition x – Stormwater Management Plan** above and shall be submitted to Council for acceptance prior to carrying out any construction work required by this consent. This system shall be designed to the satisfaction of Council’s Team Leader – Development Engineering, and shall be at the consent holder’s expense. The submitted plans shall include:

- a) Flow direction and grades;
- b) Pipe sizing and material;
- c) Longitudinal sections;
- d) Overland flow paths;
- e) Receiving network outlet details;
- f) Bedding details;
- g) Manhole sizing and details;
- h) Green Infrastructure details; and
- i) Connections locations, including rodding eyes.

Stormwater – Construct

The consent holder shall construct the stormwater reticulation as per the approved design/construction under **Condition X – Stormwater - Design** above and to the satisfaction of Council’s Team Leader – Development Engineering at the consent holder’s expense.

Stormwater - Quality assurance certificates

Following completion of the stormwater reticulation required under Condition X -**Stormwater - Construct** above, Quality Assurance Certificates from a suitably qualified and experienced professional shall be completed, signed, and submitted to Council’s Team Leader – Development Engineering for acceptance.

Stormwater - As-built Plans

As-built plans and information of all stormwater infrastructure assets provided under Conditions X to Y (**Design/Construct/QA**), which are to be vested in Council, shall be provided to the satisfaction of Council’s Team Leader – Development Engineering and shall be at the consent holder’s expense.

Stormwater - Wetlands Planting Management Plan

The Consent Holder shall provide a detailed Planting Management Plan prepared for the design and implementation of the stormwater treatment pond/wetland plantings. This plan shall include but not be limited to:

- a) Site plantings including species to be planted, size of plants, and where they are to be planted, density of planting, sourcing of plants and fertilising;
- b) Site preparation for planting including weed and pest control;
- c) Timeline for planting;
- d) Ongoing weed and pest control;
- e) Ongoing mowing requirements;
- f) Ongoing watering requirements;
- g) Supplementary/replacement planting plans specifications; and
- h) Timing of monitoring maintenance inspections.

The Planting Management Plan shall be submitted to Council's Team Leader – Development for approval within one month of the commencement of stormwater treatment device construction on site and shall be implemented on site within the first planting season following completion of these devices unless otherwise agreed with the Council's Team Leader – Development. The implementation of the approved plan shall be for a minimum of 24 months and be at the consent holders expense.

Stormwater - Wetlands Operations and Maintenance

The Consent Holder shall provide a Stormwater Operation and Maintenance Plan ('SOMP') for the stormwater management system. The objective of the SOMP shall be to outline specific operation and maintenance procedures to be implemented to ensure the long-term effectiveness of the stormwater system in achieving the design stormwater management treatment and attenuation functions. The SOMP shall provide for all operational, maintenance, planting and monitoring measures associated with the stormwater discharge activity authorised and may include but not be limited to:

- a) A programme for regular monitoring and inspection of the stormwater management system including details of monitoring and inspection frequency;
- b) A programme for the regular collection and disposal of debris, sediment *and litter* collected by the stormwater management devices to ensure that attenuation volumes are not compromised and that appropriate contaminant removal procedures are established;
- c) Inspection checklists for all aspects of the stormwater management system including monitoring and maintenance of water quality and vegetation;
- d) Details of who will be responsible for the operation and maintenance works; and
- e) Details of recording and reporting of operation and maintenance activities.

The SOMP shall be submitted to the Council's Team Leader – Development Engineering for approval within 1 month of the commencement of the subdivision construction activities at the site and shall be implemented on site for the duration of the stormwater diversion and discharge activities. Any changes to the approved SOMP shall be confirmed in writing by the consent holder and approved in writing by the Council's Team Leader – Development Engineering prior to the implementation of any changes proposed. The implementation of the approved plan shall be for a minimum of 24 months and be at the consent holder's expense.

Advice Notes:

Stormwater Management Guidelines

Waikato stormwater management guideline (TR2020/07) and Waikato stormwater runoff modelling guideline (TR2020/06), set out an appropriate means of compliance.

C1 – 3 specific requirements

Stormwater management plan: Cambridge C1 and C2/C3 infrastructure Cambridge West Pukeroro and Waikato River catchments, sets out an appropriate means of compliance with the specific C1 -3 specific catchment requirements.

Stormwater Design

The Regional Infrastructure and Technical Specification (RITS) sets out a means of compliance for the design and construction of all stormwater infrastructure assets.

Council inspections

Confirmation of Council's inspections shall be made at the Pre-Construction Meetings. Council's Engineers require a minimum of 48 hours' notice prior to an inspection.

Stormwater Bylaw

All private stormwater infrastructure shall comply with Waipa District Council's Stormwater Bylaw 2019; Section 7: Protection of Land Drainage Systems – Item 7.5; and Section 9: Private Stormwater Systems - All items.

As-builts

Draft As-built Plans and information of all infrastructure assets, which are to be vested in Council, shall be provided prior to the final inspection followed by a final set for Section 224 sign off. This information is a statutory requirement.

Future building site

The following conditions shall be complied with on a continuing basis by the subdividing owner and subsequent owners:

Stormwater design

That for subsequent development of Lots 1 – 134 and 224 - 242 a suitably qualified and experienced Engineer will be required to inspect the site and submit to Council for approval, at the time of building consent, design details on the proposed on-site stormwater disposal system.

Reasons: The above condition is required to ensure that stormwater generated from the development on Lots 1 – 134 and 224 - 242 is wholly disposed of on site and in compliance with their requirements of the overarching Stormwater management plan: Cambridge C1 and C2/C3 infrastructure Cambridge West Pukeroro and Waikato River catchments. The design should reflect the outcomes of the Stormwater management plan accepted.

Advice Note:

Stormwater Bylaw

All private stormwater infrastructure shall comply with Waipa District Council's Stormwater Bylaw 2019; Section 7: Protection of Land Drainage Systems – Item 7.5 Section 9: Private Stormwater Systems - All items

C1 – 3 specific requirements

Stormwater management plan: Cambridge C1 and C2/C3 infrastructure Cambridge West Pukeroro and Waikato River catchments, sets out an appropriate means of compliance with the specific C1 -3 specific catchment requirements.

Before the deposit of the survey plan the Council shall issue a consent notice pursuant to Section 221 of the Resource Management Act 1991 specifying the above condition.

Foundation

That for subsequent development of Lot 303 a suitably qualified and experienced Engineer will be required to inspect the site and submit to Council for approval, at the time of building consent, design details on the foundations of the buildings.

Reasons: The above condition is required as the is subject to direct frontage to Local purpose reserve bank slopes as identified in the application scheme plans and designs.

Before the deposit of the survey plan the Council shall issue a consent notice pursuant to Section 221 of the Resource Management Act 1991 specifying the above condition.

Such consent notice shall be either prepared or checked at the cost of the subdividing owner by the Council's solicitors and shall be registered against the title to Lot 303.

Stage 2:

Transportation

Collector connection

The consent holder shall not be permitted to undertake any civil construction works associated with **Stage 2 (or limit as defined by the council i.e. Lot 300)** development. Until such time, the consent holder can make an established connection of the internal collector road to an external collector road.

Submit Roading Design Drawings

The consent holder shall submit Design/construction plans for the roads to vest Lots 512, 513, 514 and 515 as shown on the SP/0179/20. The Design/Construction plans shall be submitted to Council for acceptance prior to carrying out any construction work required by this consent. All work associated with the roads vested to council shall be designed to the satisfaction of the Council's Team Leader – Development Engineering, and at the consent holders expense. The submitted plans shall include, but is not limited to:

- a) Pavement design;
- b) Fixed entrance locations;
- c) Maintenance access tracks;
- d) Tracking curve analysis;
- e) Line marking and signage;
- f) Longitudinal sections;
- g) Common services trench;
- h) Surface treatments;
- i) Streetscape & berm planting; and
- j) Pedestrian calming measures.

Construct Roads to Vest

The consent holder shall construct roads to vest as shown in Lots 512, 513, 514 and 515 within the scheme plan of subdivision SP/0179/20 as per the approved design/construction approved submitted under **Submit Roading Design Drawings** condition above and to the satisfaction of Council's Team Leader – Development Engineering at the consent holder's expense.

Quality assurance certificates

Following completion of the road areas required under Condition **Construct Roads to Vest** above, Quality Assurance Certificates from a suitably qualified and experienced professional shall be completed, signed, and submitted to Council's Team Leader – Development Engineering for acceptance.

Roading as-built plans

The consent holder shall provide as-built plans of the proposed road to vest, relevant quality assurance, and the structures located within the proposed road to vest prior to the issuing of the section 224 certificate, to the satisfaction of Council's Team Leader – Development Engineering.

Advice Notes: Road Corridor

Road Design

The Council's standards are set out in the Regional Infrastructure and Technical Specification (RITS) and provide a means of compliance for approval.

Streetscape design

Streetscape design shall follow relevant standards set out in the Regional Infrastructure and Technical Specification (RITS) and follow the councils Tree Policy circa 2019. Streetscape design shall include, but not be limited to, the following the species, locations, expected heights of any proposed plants and reason for any deviation from the above.

Streetscape As-builts

As-built plans and 'Parks Asset Recognition Form' (provided by council) of landscaping works that are to be owned/managed by Council shall be submitted as part of the overall roading As-built submission. The Streetscape As-built plans shall include the following:

- a) Location and extent, types of materials*
- b) Botanical and Common name and location (measured position in the berm) of street trees*
- c) Names, grades, number, planting density of traffic island planting*
- d) Installation date.*

Property Numbering

Once the section 224C completion certificate has been issued by Council for this subdivision, Council will advise the consent holder of property number(s).

Reasons: *Entrances are required to be accurately numbered in accordance with the Rural and urban addressing standard, AS/NZS4819:2011. To conform to the above standard, the existing property numbering may need to change*

Water Supply

Submit water reticulation design

The consent holder shall submit Design/construction plans for the water reticulation system to supply the proposed lots and connect existing reticulated network shown on scheme plan SP/0179/20. The Design/Construction plans shall be submitted to Council for acceptance prior to carrying out any construction work required by this consent. This system shall be designed to the satisfaction of Council's Team Leader – Development Engineering and shall be at the consent holder's expense. The submitted plans shall include, but is not limited to:

- a) Reticulation layout;
- b) Pipe size, material, and pressure ratings;
- c) Hydrant Locations;
- d) Valves and fittings details;
- e) Connection locations to service lots;
- f) Bedding/service trench details; and
- g) Thrust Block details.

Construct water reticulation

The consent holder shall construct water reticulation as per the approved design/construction approved submitted under **Submit water reticulation design** condition above and to the satisfaction of Council's Team Leader – Development Engineering at the consent holder's expense.

Quality assurance certificates

Following completion of the water reticulation required under Condition **Construct water reticulation** above, Quality Assurance Certificates from a suitably qualified and experienced professional shall be completed, signed, and submitted to Council's Team Leader – Development Engineering for acceptance.

Submit as-built plans

The consent holder shall submit an as-built plan of all water infrastructure including connections to relevant Lots within stage 1. All work shall be to the satisfaction of Council's Team Leader – Development Engineering and be at the consent holder's expense.

Advice Notes:**Water Design**

The Regional Infrastructure and Technical Specification (RITS) sets out a means of compliance for the design and construction of all Water infrastructure assets.

Location of new water connections

The location of the water connection shall comply with all aspects of Waipa District Council Water Supply Bylaw 2013.

Connection to Council's main procedure

To ensure the new infrastructure constructed can connect to council infrastructure safely and comply to the New Zealand Drinking Water Standards 2005 (Revised 2018), the consent holder shall complete a network shutdown request and submit to development engineering, councils shut down applications forms:

Shutdown request: WS-WSU-07 a(F) – APPENDIX A

Shutdown methodology: WS-WSU-07 b(F) – APPENDIX B

(These forms can be provided upon request)

As part of these applications requirements, the consent holder will need to provide the compliant pressure and water quality tests 3 days before the selected date. This is to ensure correct notifications to affected parties can be undertaken. The consent holder shall also identify any potential high-risk water users and undertake direct liaison with them.

As-built plans to be submitted

As-built plans and information of all infrastructure assets, which are to be vested in Council, shall be provided prior to the final inspection. This information is a statutory requirement. The Regional Infrastructure and Technical Specification (RITS) has an acceptable standard for the recording of all council assets.

Submit gravity wastewater reticulation design

The consent holder shall submit Design/construction plans for the gravity wastewater reticulation system to supply the proposed lots and existing receiving network shown on scheme plan SP/0179/20. The Design/Construction plans shall be submitted to Council for acceptance prior to carrying out any construction work required by this consent. This system shall be designed to the satisfaction of Council's Team Leader – Development Engineering and shall be at the consent holder's expense. The submitted plans shall include, but is not limited to:

- a) Flow direction and grades;
- b) Pipe sizing and material;
- c) Bedding details;
- d) Manhole sizing and details;
- e) Longitudinal sections;
- f) Connections to service Lots.

Construct gravity reticulation

The consent holder shall construct wastewater gravity reticulation as per the approved design/construction approved submitted under **Submit gravity wastewater reticulation design condition** above and to the satisfaction of Council's Team Leader – Development Engineering at the consent holder's expense.

Quality assurance certificates

Following completion of the wastewater gravity reticulation required under Condition **Construct gravity reticulation** above, Quality Assurance Certificates from a suitably qualified and experienced professional shall be completed, signed, and submitted to Council's Team Leader – Development Engineering for acceptance.

Submit As-built plans

As-built plans and information of all Wastewater infrastructure assets, which are to be vested in Council, shall be provided to the satisfaction of Council's Team Leader – Development Engineering and shall be at the consent holder's expense.

Advice Notes:

Wastewater Design

The Regional Infrastructure and Technical Specification (RITS) sets out a means of compliance for the design and construction of all Wastewater infrastructure assets.

As-built plans to be submitted

Draft As-built plans and information of all infrastructure assets, which are to be vested in Council, shall be provided prior to the final inspection followed by a final set for 224 sign off. This information is a statutory requirement. The Regional Infrastructure and Technical Specification (RITS) has an acceptable standard for the recording of all council assets.

Stormwater

Stormwater - Design

The consent holder shall submit Design/construction plans for the stormwater reticulation system to supply the proposed lots and existing receiving network shown on scheme plan SP/0179/20. The Design/Construction plans shall be based on the approved Stormwater Management Plan and Stormwater Management Report prepared for the previous stage. The Design/Construction Plans shall be submitted to Council for acceptance prior to carrying out any construction work required by this consent. This system shall be designed to the satisfaction of Council's Team Leader – Development Engineering, and shall be at the consent holder's expense. The submitted plans shall include:

- a) Flow direction and grades;
- b) Pipe sizing and material;
- c) Longitudinal sections;
- d) Overland flow paths;
- e) Receiving network outlet details;
- f) Bedding details;
- g) Manhole sizing and details;
- h) Green Infrastructure details; and
- i) Connections, including rodding eyes, to service all new lots.

Stormwater – Construct

The consent holder shall construct the stormwater reticulation as per the approved design/construction under Condition X – Stormwater - Construct above and to the satisfaction of Council’s Team Leader – Development Engineering at the consent holder’s expense.

Stormwater - Quality assurance certificates

Following completion of the stormwater reticulation required under Condition X -Stormwater - **Construct** above, Quality Assurance Certificates from a suitably qualified and experienced professional shall be completed, signed, and submitted to Council’s Team Leader – Development Engineering for acceptance.

Stormwater - As-built Plans

As-built plans and information of all stormwater infrastructure assets provided under Conditions X to Y (Design/Construct/QA), which are to be vested in Council, shall be provided to the satisfaction of Council’s Team Leader – Development Engineering and shall be at the consent holder’s expense.

Advice Notes:

Stormwater Management Guidelines

Waikato stormwater management guideline (TR2020/07) and Waikato stormwater runoff modelling guideline (TR2020/06), set out an appropriate means of compliance.

C1 – 3 specific requirements

Stormwater management plan: Cambridge C1 and C2/C3 infrastructure Cambridge West Pukeroro and Waikato River catchments, sets out an appropriate means of compliance with the specific C1 -3 specific catchment requirements.

Stormwater Design

The Regional Infrastructure and Technical Specification (RITS) sets out a means of compliance for the design and construction of all stormwater infrastructure assets.

Council inspections

Confirmation of Council’s inspections shall be made at the Pre-Construction Meetings. Council’s Engineers require a minimum of 48 hours’ notice prior to an inspection.

Stormwater Bylaw

All private stormwater infrastructure shall comply with Waipa District Council’s Stormwater Bylaw 2019; Section 7: Protection of Land Drainage Systems – Item 7.5; and Section 9: Private Stormwater Systems - All items.

As-builts

Draft As-built Plans and information of all infrastructure assets, which are to be vested in Council, shall be provided prior to the final inspection followed by a final set for Section 224 sign off. This information is a statutory requirement.

Future building site

The following conditions shall be complied with on a continuing basis by the subdividing owner and subsequent owners:

Stormwater design

That for subsequent development of Lots 135 - 223 a suitably qualified and experienced Engineer will be required to inspect the site and submit to Council for approval, at the time of building consent, design details on the proposed on-site stormwater disposal system.

Reasons: The above condition is required to ensure that stormwater generated from the development on Lots 135 - 223 is wholly disposed of on site and in compliance with their requirements of the overarching Stormwater management plan: Cambridge C1 and C2/C3 infrastructure Cambridge West Pukeroro and Waikato River catchments. The design should reflect the outcomes of the Stormwater manage plan accepted.

Advice Note:

Stormwater Bylaw

*All private stormwater infrastructure shall comply with Waipa District Council's Stormwater Bylaw 2019;
Section 7: Protection of Land Drainage Systems – Item 7.5
Section 9: Private Stormwater Systems - All items*

C1 – 3 specific requirements

Stormwater management plan: Cambridge C1 and C2/C3 infrastructure Cambridge West Pukeroro and Waikato River catchments, sets out an appropriate means of compliance with the specific C1 -3 specific catchment requirements.

Before the deposit of the survey plan the Council shall issue a consent notice pursuant to Section 221 of the Resource Management Act 1991 specifying the above condition.

Foundations

That for subsequent development of Lots 304 and 190 - 197 a suitably qualified and experienced Engineer will be required to inspect the site and submit to Council for approval, at the time of building consent, design details on the foundations of the buildings.

Reasons: The above condition is required as the is subject to direct frontage to Local purpose reserve bank slopes as identified in the application scheme plans and designs and Lots are identified in potential lateral spread area, respectively.

Before the deposit of the survey plan the Council shall issue a consent notice pursuant to Section 221 of the Resource Management Act 1991 specifying the above condition.

Such consent notice shall be either prepared or checked at the cost of the subdividing owner by the Council's solicitors and shall be registered against the title to Lot 304.

SECTION 106 – CONSENT AUTHORITY MAY REFUSE SUBDIVISION CONSENT UNDER CERTAIN CIRCUMSTANCES

Section 106 of the Act sets out additional circumstances when a consent authority may refuse to grant subdivision consent or impose conditions in the grant of a subdivision consent, if it considers that there is significant risk from natural hazards or sufficient provision has not been made for access.

In the course of considering whether there is significant risk from natural hazards, the Council has assessed the following matters:

o The likelihood of natural hazards occurring;

The effects of natural hazards are embedded within the infrastructure assessment and feed into the overall conditions. Earthquake risk is quantified into earthworks and foundation assessment as well as wastewater core infrastructure requirements. Tornado or wind risks are embedded into bracing requirements of NZBC and is considered minor. Due topography, location and elevation, geothermal and tsunami risks are not considered appropriate for assessment. Flooding risk is captured in volumetric design requirements of the consent conditions imposed.

o The material damage to the land, other land, or structures;

The land, other land, or structures on the land may be subject to material damage by natural hazards such as erosion, falling debris, subsidence, slippage, or inundation. Conditions are therefore recommended to address this.

o Any likely subsequent use of the land that would accelerate, worsen, or result in material damage to the land, other land, or structures resulting from natural hazards.

The likely subsequent use of the land may accelerate, worsen, or result in material damage to the land, other land, or structures resulting from natural hazards. Conditions are therefore recommended to address this.

Council considers that:

Sufficient provision has not been made for legal and physical access to each allotment to be created for the subdivision. Conditions are therefore recommended to address this.

The land containing the proposed subdivision was inspected by Council's Development Engineer prior to the approval of this consent. At the time of approval the consent authority had reason to set conditions for natural hazards relating to the land as prescribed by Section 106 (1A) of the Act.

S106 – NATURAL HAZARD IDENTIFICATION & RISK MANAGEMENT ASSESSMENT

Natural Hazard <i>means any atmospheric or earth or water related occurrence (including earthquake, tsunami, erosion, volcanic and geothermal activity, landslip, subsidence, sedimentation, wind, drought, fire, or flooding) the action of which adversely affects or may adversely affect human life, property, or other aspects of the environment</i>	<i>(1A)(a) the likelihood of natural hazards occurring (ie – low, med, high)</i>	<i>(1A)(b) the material damage to land in respect of which the consent is sought, other land, or structures that would result from natural hazards</i>	<i>(1A)(c) any likely subsequent use of the land in respect of which the consent is sought that would accelerate, worsen, or result in material damage of the kind referred to in (b).</i>	<i>(2)(a) Proposed conditions for the purposes of avoiding, remedying, or mitigating the effects</i>
Earthquake	Low	<i>Earth Movement and Structural damage</i>	Mod	Relevant conditions for foundations and IL3 requirements
Tsunami	Low	<i>Structural damage</i>	Low	Nil
Erosion	Low	<i>Minor earth movement</i>	Mod	Earthworks covers
Volcanic and geothermal activity	Low	<i>Structural damage</i>	Low	Nil
Landslip	Low	<i>Earth movement</i>	Mod	Earthworks, foundations, and SW conditions
subsidence	Low	<i>Earth movement</i>	Low/mod	Earthworks, foundations, and SW conditions
sedimentation	Low	<i>Deposition of soil</i>	Low/mod	Earthworks, foundations, and SW conditions
wind	Low	<i>Structural damage</i>	Low	NZBC bracing requirements
drought	Low	<i>Soil Shrinkage</i>	Low	Nil, but in part EW and foundation conditions

S106 – NATURAL HAZARD IDENTIFICATION & RISK MANAGEMENT ASSESSMENT

fire	Low	<i>Structural damage</i>	Low	Nil
flooding	Low	<i>Water damage</i>	Mod	SW conditions
Other Hazards		Comment:		
Stormwater: <ul style="list-style-type: none"> - Overland flow path identified & contained with subject lot? - Potential for impact on neighbouring property? 		Overland flow runs through middle of site, conditions accordingly imposed to mitigate effects. This is to mitigate any effects on neighbouring properties.		
Roading: <ul style="list-style-type: none"> - Access onto property – grade or location difficulty? - Sightlines – visibility, foliage clearance, embankment cutting? - Separation and location issues? - Trees in road reserve/on site – safety issues for road users? - Any national gas/electricity/communications trunk mains within road reserve or development? 		Separation issues when referencing a fully developed site. No control to mitigate this risk without condition added on controlling a portion of development release until such time that collector infrastructure is available.		
Stock crossing: <ul style="list-style-type: none"> - Stock crossing over road? - Check – signs, hard stand holding, gates, effluent disposal, damage to roads, use of road mat, visibility - Stock underpass – is the effluent disposal/drainage operational?, any other issues? 		N/a		
Other comments:				