Engineering Infrastructure Report to Support Plan Change – 100 & 110 Te Moana Road, Waikanae

Ref: 30602

3rd April 2025

Prepared for:

Eric, Vince and Raechel Osborne
100 – 110 Te Moana Road, Waikanae
Waikanae

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INFRASTRUCTURE REPORT TO SUPPORT PLAN CHANGE – 100 & 110 TE MOANA ROAD, WAIKANAE

Cuttriss Consultants Ltd. (Cuttriss) have been engaged by Eric, Vince and Raechel Osborne to investigate and report on the existing and proposed infrastructure required to support a plan change for their Waikanae property. The plan change seeks to re-zone 100 & 110 Te Moana Road, Waikanae (the Site), which is bordered by Te Moana Road, Fairway Oak Drive and the Kapiti Expressway. This plan change is being split into two stages, to be processed concurrently. We detail our findings and report below.

The proposal involves the re-zoning of approximately 5.5 hectares of land located near Waikanae Beach. The Site is currently zoned as General Rural Zone and this report supports rezoning the land to General Residential Zone to enable future residential development. Future development will likely consist of 40 – 50 new allotments, however higher dwelling densities may also be achieved due to the permitted Residential Zone standards allowing up to three dwellings to be constructed on each lot.

Future development of this area will involve earthworks, construction of roads, the installation of services and the construction of stormwater infrastructure including soakage and attenuation devices.

1. PREAMBLE

This report has been prepared to accompany a plan change application to the Kapiti Coast District Council (KCDC), which seeks a change in zoning from General Rural Zone to General Residential Zone.

This report includes a high-level assessment of the existing infrastructure located in the vicinity of the Site as well as the possible infrastructure solutions for the future residential development. Future development will be subject to the resource consent and engineering approval processes, at which time further detail will be provided to support the proposed solutions.

This report provides:

- An assessment of available Council infrastructure; and
- A description of how residential development may be serviced.

As per the Kāpiti Coast District Plan, the basis for future land development design within the Kapiti Coast District is the KCDC's "Land Development Minimum Requirements 2022" (LDMR). This adopts NZS4404:2010 (New Zealand Standard for Land Development and Subdivision Engineering) with some local amendments.

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Furthermore, the basis for the control of erosion and sediment from earthworks is the GWRC's Best Practice Guidelines *'Erosion and Sediment Control Guide for Land Disturbing Activities in the Wellington Region'* (ESCG).

As the future development layout is not yet known, this report will only provide a high-level description of potential works that may take place on the Site.

2. DOCUMENTS

The following documents and plans have been referenced or observed in the preparation of this report:

- KCDC Land Development Minimum Requirements 2022 (LDMR);
- KCDC GIS information available from the KCDC website;
- KCDC Standard Drawings;
- NZS4404:2010 - 'Land Development and Subdivision Infrastructure';
- Compliance Document for New Zealand Building Code – Clause E1: Surface Water;
- Greater Wellington Regional Council Te Pane Matua Taiao - Erosion and Sediment Control Guide for Land Disturbing Activities in the Wellington Region;
- The New Zealand Geotechnical Database (NZGD) website;
- Geotechnical Investigation Report by CGW Consulting Engineers;
- Flood Assessment & Stormwater Management Concept Memo prepared by AWA;
- Transport Assessment prepared by LBC Traffic Engineers;
- Ecological Values Assessment prepared by RMA Ecology; and
- Kāpiti Coast Model Update and Zone Management Plan prepared by Stantec.

3. LOCATION AND SITE DESCRIPTION

The Site is bordered by residential properties off Fairway Oak Drive to the west, Te Moana Road to the north and the Kāpiti Expressway to the east. The land to the south of the Site was acquired by the Crown to facilitate the construction of the Kāpiti Expressway, and now sits vacant. Residential dwellings are located to the north and west, and the Waikanae golf club is located further north of the Site on the opposite side of Te Moana Road. 100 – 110 Te Moana Road has direct access off Te Moana Road. 110 Te Moana Road has a gravel right of way travelling along most of its eastern boundary providing access to a number of properties held by the Crown as well as a block of privately held land to the south.

The lower portion of 100 Te Moana Road is largely flat and is predominantly covered in pasture grasses. As noted above a private right of way runs along the eastern boundary of 110 Te

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Moana Road. As per the Ecological Values Assessment completed by RMA Ecology, 110 Te Moana Road contains a natural wetland as well as a constructed pond which are both protected by a QE II covenant. This wetland has two outlets. The first, a northern outlet, travels through 100 Te Moana Road along its western boundary via a constructed drain, through to a 450mm culvert passing underneath Te Moana Road, and out to Waimeha Stream bordering the Waikanae golf course. The second outlet travels east via a constructed drain, however this drain terminates at the right of way along the eastern boundary. Hand investigations have been completed to locate a culvert beneath the right of way, however this is either covered up with sediment, or was not constructed. The culvert drains east to a flood storage pond located directly adjacent to the Kapiti Expressway offramp onto Te Moana Road. This then discharges via a 1350mm concrete culvert through to the same Waimeha Stream.

The Site also contains an area of recently harvested pine trees and several heavily vegetated areas to the north-west of the Site. This vegetation is further described in the Ecological Values Assessment but contains a mixture of exotic and native species. Photos of the Site are attached at **Appendix A**.

4. TOPOGRAPHY

The topography of the Site is variable across both properties. 100 Te Moana Road predominantly consists of flat pastureland with the most predominant feature being the stormwater drain travelling along the western boundary which flows south to north. The height varies from approximately RL 3.0 to RL 2.5, falling from east to west across the Site. 110 Te Moana Road consists of a large sand dune bordering the entire southern boundary and most of the western boundary, along with a low-lying wetland and pond which encapsulates the majority of the northern portion of the property. The height varies from approximately RL 21.0 to RL 2.0, falling from south to north across the Site.

The low lying areas of both properties are subject to localised ponding and flooding as defined on the District Plan maps, noting the Site contains stream corridor, ponding, residual ponding and residual overflow overlays. This is further discussed in the Flood Hazard Assessment completed by Awa Environmental.

5. EARTHWORKS

5.1. EXISTING GROUND CONDITIONS

According to hand augur tests completed on the Site, as well as local knowledge, the soil profile has been identified as sandy/silty topsoil (up to 0.5m deep), with saturated loose to dense sand and silty sand from a depth of 0.5m to 1.0m. Aeolian and marine sand deposits will likely exist across the Site with shallow peat deposits located within 100 Te Moana Road and inter-dune gullies within 110 Te Moana Road. More extensive peat deposits may exist to the north of the Site.

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Soil conditions in the lower portions of the Site are likely unfavourable for natural infiltration due to the presence of peat and a relatively high-water table, which was observed approximately 0.6m below the surface. Ground water levels will need to be carefully considered throughout the design process due to the likelihood of high ground water levels across the Site.

The elevated areas within the Site comprise predominantly dune sands, and it is anticipated these areas will have higher infiltration properties, although no site-specific testing has been completed at this stage.

5.2. FUTURE EARTHWORKS

A detailed earthworks design will be developed as part of future resource consent applications. The design will need to comply with the LDMR and NZS 4404:2010 as well as any other relevant engineering standards. The earthworks will be required to create roading and building platforms as well as other features such as constructed wetlands, attenuation ponds, pathways, stream corridors and general landscaping.

Future earthworks on this Site will likely consist of the following general works:

- Establishment of erosion and sediment control measures (sediment retention ponds, bunds, swales, silt fences etc.);
- Stripping of vegetation and topsoil;
- Removal of peaty soils within development areas;
- Lowering the higher portions of the Site and using this material to fill the lower areas;
- Compaction of sand to raise lot platforms and road corridors;
- Roading construction;
- Placement of topsoil and planting on completed berms and surfaces;
- Possible geotechnical engineered ground improvement solutions (undercutting, pre-loading, stone columns etc.);
- Excavation and construction of attenuation ponds and constructed wetlands; and
- Realignment of existing drains.

Greater Wellington Regional Council consent will need to be obtained to carry out earthworks on the Site due to the scale of the works and proximity to waterways and wetlands.

Collaboration with iwi will need to be considered throughout the planning, design and construction process. Development of the Site has been discussed with Liam McAuliffe, Kairuruku Taiao for the Ātiawa ki Whakarongotai Charitable Trust. Liam has advised that the Trust is happy to work with the applicant through this process. We understand the Trust has provided a letter supporting the proposed Plan Change.

Archaeological investigations have been completed by Heritage Solutions, who have recommended an archaeological authority is obtained prior to the commencement of works. This will likely mean that further investigation works are completed prior to the commencement of earthworks, in conjunction with iwi.

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The Selected Land Use Register (SLUR) database has been reviewed and no contaminated land has been identified within the Site. Historical aerial imagery indicates that the adjacent site (to the south east) was previously used for market gardens, and that a small portion of the Site (to the south eastern side of the existing access, where landscaping will occur) may have included market gardens. Anecdotal evidence from the Applicant suggests that the gardens did not cross into the boundaries of the Site. Compliance with the regulations of the NESCSHH will be considered further at the time of subdivision and land use consenting. In our experience should a Detailed Site Investigation (DSI) be required at this later stage, and contaminated land above the minimum levels be detected, there is sufficient space within the Site to enable the remediation of any contaminated soils.

The removal of peat soils is commonplace for land development projects on the Kāpiti Coast. It is anticipated that a geotechnical report will detail the specifications for the peat removal and engineered fill to be placed within the excavated areas. Further, the proposed ground surface shall be modelled to confirm the works do not increase the flood hazard risk for neighbouring properties. It is anticipated that these assessments will be completed at the resource consent stage, once the layout and site levels have been confirmed.

It is anticipated that the future earthworks to facilitate the residential development of the Site can comply with the requirements of the LDMR and the effects generated by the works will be acceptable.

6. WASTEWATER

6.1. EXISTING WASTEWATER INFRASTRUCTURE

KCDC GIS records (attached at **Appendix B**) show a combination of gravity and rising mains adjacent to the Site within the Te Moana Road and Te Ara Kawakahia Road corridors.

A 450mm AC gravity main is located within the Te Moana Road corridor and conveys sewage to pump stations WSP00017 & WSP00009 located approximately 250m west of 100 – 110 Te Moana Road.

The western pump stations located between the intersections of Lavinia Grove, Rauparaha Street and Te Moana Road (WSP00017 & WSP00009) accepts gravity wastewater from the surrounding suburb and pumps to the Paraparaumu Wastewater Treatment Plant via a 350mm to 450mm HDPE rising main.

The existing gravity system located on Te Moana Road consists of a series of manholes connected with a combination of 150mm and 450mm AC pipe. The pipe takes wastewater from Te Moana Road which flows west to pump stations WSP00017 & WSP00009 and was installed in the late 1970's and early 1980's.

Depths of the manholes located along Te Moana Road, in close proximity to 100 -110 Te Moana Road vary from 3.3m to 3.4m. Depths of the manholes located along Te Ara Kawakahia vary from 1.3m to 1.9m.

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There is an abandoned portion of 400mm HDPE rising main which travels within the northeastern corner of 110 Te Moana Road.

At this stage, there has been no quantitative analysis carried out to determine the condition or capacity of the existing wastewater network. As per the meeting notes attached at **Appendix C** however, preliminary discussions with KCDC's infrastructure team indicate that the Rauparaha Street pump station is currently at capacity.

KCDC have also confirmed that they are in the planning stages of a capital works programme to install a duplicate rising main through to the Paraparaumu wastewater treatment plant. This rising main could run through the Site, and once installed will ensure there is capacity in the existing network to accommodate future flows from the development. KCDC have indicated that these upgrades will be completed within the next two years, meaning this line will be commissioned prior to the completion of future development within the Site.

6.2. RESIDENTIAL DEMAND ON WASTEWATER RETICULATION

Future development on the Site will likely consist of a 40 – 50 new allotments, which will yield a combination of stand-alone and medium density residential housing. The current Waikanae North catchment and additional catchment from Te Ara Kawakahia has put both pump stations WSP00009 & WSP00017 near capacity. Wastewater modelling will be required to assess the effects of development of the Site which will help determine future wastewater design proposals.

Future resource consent application for development will provide a detailed scheme plan which will enable population and flow demand calculations to be undertaken.

6.3. WASTEWATER OPTION EVALUATION

Several wastewater disposal options are outlined below. Further detailed analysis of each option will be carried out as part of future resource consent applications and will consider factors including existing network constraints, mana whenua values, topography, geology, cost, groundwater, ecological sensitivities and infiltration.

(i) Gravity Network

The topography of the Site is such that residential development could be serviced for wastewater reticulation by way of new gravity main connecting to the existing gravity infrastructure. This option relies on the upgrades noted in Section 6.1 being completed prior to the development connecting to the Council network. It is noted that this option is Council's preferred option.

(ii) Centralised Pump Station & Storage

If quantitative modelling completed to support a future resource consent application determines that there is inadequate capacity in the network to accommodate the development flows, storage can be provided on site to attenuate flows to mitigate the peak demand pressure on the network. This will require a pump station to be installed and configured to discharge

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during off peak times. The pump station design should consider groundwater levels and be designed with anti-floatation measures designed as necessary once the final levels are known. It is not anticipated this option will be required however, due to the planned network upgrades.

(iii) Low-Pressure Sewer Network

A further option to mitigate the capacity constraints in the Council network would be to service the future development via a new low pressure sewer network. A low-pressure sewer pump chamber provides temporary 24-hour on-site storage and can be calibrated to pump during off-peak hours to remediate capacity restraints of the existing network. Although we understand this option is not Council's preference, low pressure sewer is supported by the LDMR and will reduce the environmental impact of future developments.

A further option evaluation can be completed once the design for the development has been completed, however it is anticipated that all of the options described above can comply with the requirements of the LDMR and the wastewater infrastructure effects due to the residential development of the Site will be acceptable.

7. WATER SUPPLY

7.1. EXISTING WATER INFRASTRUCTURE

KCDC GIS records show a section of existing 200mm diameter PVC-U Series 1 watermain connected between an existing 200mm AC watermain on the southern side of Te Moana Road with no specified installation date. There is also a 250mm PVC watermain on the northern side of Te Moana Road with no specified installation date. A 200mm PE 100 (HDPE) watermain was installed on Te Ara Kawakahia as part of the development in this area.

The Waikanae network is supplied by the Waikanae Water Treatment Plant and is serviced by the Kakariki Reservoir. Council have recently commissioned Stantec to report on the capacity of the wider network. This modelling shows that the current day pressures are above the minimum pressures required for residential supply and firefighting flows. Storage in the network is currently nearing available capacity in the Kakariki reservoir. Modelling has however identified that future upgrades will be necessary to the network to meet the anticipated growth across the District.

7.2. RESIDENTIAL DEMAND ON WATER RETICULATION

The likely demand for any new water infrastructure will be residential demand and fire-fighting demand, in accordance SNZ PAS 4509:2008 – the New Zealand Fire Service Fire Fighting Water Supplies Code of Practice.

Further site-specific modelling will be required to assess the effect of development of the Site once the number of lots, and elevation of the proposed building platforms are known.

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7.3. PROPOSED WATER RETICULATION INFRASTRUCTURE

As above, modelling of the existing and proposed networks will be required to determine if network upgrades are needed to support the proposed residential development. It is noted that the Site is within KCDC's Development Contributions Policy maps, and as such the supply to the Site has been considered in the Long-Term Plan (LTP) funding decisions. The Stantec modelling has recommended that the reservoir identified in the LTP for construction in 2049 is completed sooner than this date, noting this reservoir is the second highest priority in their recommendations to improve network performance. KCDC have confirmed that planning for this reservoir is currently underway.

New pipework will be installed within the road corridor and will likely provide a connection from the new development main to the Te Moana Road watermain. Smaller branch mains and rider mains will be used to service lots within the development.

As required by the LDMR, all new lots will be serviced with individual 20mmØ MDPE connections and a dual connection manifold box containing a water meter and backflow preventer. Proposed new valves and connections will be installed in accordance with KCDC standard details. Fire hydrants will be located to comply with SNZ PAS 4509:2008.

It is also anticipated that the sites will be able to accommodate water re-use tanks, which will capture rainwater and be topped up by the restricted supply from the Council main.

On the above basis it is anticipated that the proposed residential development can comply with the requirements of the LDMR and the water infrastructure effects due to the residential development of the Site will be acceptable.

8. STORMWATER

8.1. EXISTING STORMWATER INFRASTRUCTURE

KCDC GIS records show an existing 300mm diameter concrete stormwater main located on the northwestern side of 100 Te Moana Road which flows from Fairway Oaks Drive, connecting to an existing 450mm stormwater culvert draining to Waimeha Stream. The main accepts stormwater runoff from the carriageway sumps within Fairway Oaks Drive. As described in Section 3, 110 Te Moana Road contains a large natural wetland with two outlets.

The Waimeha Stream flows east to west across the northern side of Te Moana Road, adjacent to the Site. The stream accepts runoff from a significant urban catchment that extends through the majority of the Te Moana Road and Park Avenue between the Waikanae town centre and Waikanae Beach.

Existing contours taken from the KCDC GIS suggest the majority of the Site runoff falls back into 110 Te Moana Road and is contained within the pond and natural wetland.

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8.2. STORMWATER DISPOSAL AND ATTENUATION

Whilst hand augers were undertaken to confirm the soil profile on the lower areas of the Site, and depth to groundwater, no infiltration testing has been carried out. However, having undertaken a range of projects in this area, we can conclude that Site conditions are favourable for the use of low impact stormwater solutions, particularly in elevated areas. It is anticipated that these solutions will utilise the filtering properties of the in-situ material to treat contaminants. Discharging water to ground as close to source as possible (not via an outlet to the wetland) will mimic the natural hydrology of the pre-developed site. This approach will ensure the quality and quantity of stormwater from the development will not cause adverse effects on the natural wetland. Detailed testing should be undertaken to confirm the design infiltration rates for any proposed infiltration devices.

As shown in the site photos attached at **Appendix A**, ground water was encountered approximately 600mm beneath the existing ground level within 100 Te Moana Road. Infiltration devices may therefore not be suitable in the lower parts of the Site, however this is to be further investigated once site levels are confirmed and groundwater levels have been monitored. If infiltration devices are not suitable, an attenuated area or constructed wetland will likely be required to achieve hydraulic neutrality as well as providing compensatory storage to offset flood storage losses. The outlet for any attenuation area/wetland will discharge downstream of the natural wetland. Due to the system being hydraulically neutral there will be no adverse impact on the hydrology of the natural wetland.

It is noted that groundwater levels vary across the Site, and can also vary seasonally, as well as following large storm events and maintenance of local drainage networks. We therefore recommend that piezometers or other suitable groundwater measurement instruments are installed within the Site to confirm the depth of groundwater prior to the design of the stormwater solution for the Site.

A number of stormwater treatment methods can be adopted to provide assurance that quality and quantity of discharge to wetlands and existing stream corridors will not be adversely affected as a result of this development, in particular when treating run-off from the proposed roading network.

These measures include, but are not limited to:

- Enviropods, which are designed to trap large contaminants before entering the network;
- Infiltration systems, which allow for treatment via natural processes in the in-situ soils which are considered an appropriate media for filtration treatment;
- Rain gardens, which are a combination of an infiltration and filtration device. Rain gardens allow for stormwater to be directed into the device, where it soaks into an organic filter medium such as topsoil or compost;

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- Hynds Up-Flo® Filter, which combines a patented upwards flow path with a unique drain-down system to achieve proven removal efficiency of fine sediment, nutrients, metals, oils, organics, and organic trapped bacteria;
- Biofiltration and attenuation basins to treat and attenuate flows; and
- Constructed wetlands which allow for sediment to drop out of stormwater and utilise the natural filtration properties of wetland plants to filter contaminants from the water before being discharged downstream.

It is therefore anticipated that the proposed residential development can comply with the requirements of the LDMR and the stormwater infrastructure effects due to the residential development of the Site will be acceptable.

9. TRANSPORTATION

9.1. EXISTING NETWORK

As described in Section 3 of the Transport Assessment completed by LBC Traffic Engineers, Te Moana Road is categorised as a Major Community Connector Route, and as an arterial road serves as the primary link between Waikanae town centre and Waikanae Beach. Fairway Oaks Drive is categorised as a low volume road servicing 17 dwellings (at the time of producing this report) and Te Ara Kawakahia is categorised as an access road.

Te Moana Road adjacent to 100 – 110 Te Moana Road consists of a 50km/hr two-lane carriageway with a standard shoulder on the west bound lane, and berm alongside a footpath on the east bound lane. The northbound Kapiti Expressway intersection with Te Moana Road is a four-way intersection which services vehicles exiting the expressway travelling north, and vehicles exiting Te Moana Road onto the expressway travelling north.

9.2. PROPOSED NETWORK

No detailed design of future proposed roading network has been carried out, although Figure 10 of the LBC's Traffic Assessment shows the likely location of the future intersection and pedestrian linkages. The road network for future development will likely fit the Suburban or Urban Live and Play land use types described within Table 3.2 of NZS 4404:2010. This type of road can have multi-use corridors that range in legal widths of 15 – 20m with speed limits up to 50km/hr.

The road layout will be designed to suit access to residential lots and will likely consist of a main local road between Te Moana Road and 110 Te Moana Road with side road cul-de-sacs and pedestrian connections. A standard tee give way intersection will likely be used at the connection to Te Moana Road and the Site.

Future designs will comply with the LDMR, and any finalised layouts will need to be reviewed through detailed design and post construction road safety audits.

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While the intersection detail will be confirmed during the resource consent stage of the project, it is anticipated that sight lines for any proposed intersection will be able to meet all applicable standards and that the roading network can comply with the LDMR.

As noted in the LBC's Transport Assessment, the traffic from future development of the Site can be accommodated within the existing road network.

On this basis we conclude that the effects on the roading network due to the residential development of the Site will be acceptable.

10. FLOOD HAZARD

KCDC GIS records indicate that 100 Te Moana Road is subject to ponding along with being encompassed within a stream corridor and residual overflow hazard area. Furthermore, KCDC GIS records indicate that 110 Te Moana Road is subject to ponding along with being encompassed by a stream corridor hazard area. It is noted that the District Plan maps do not currently incorporate changes to the flood hazards due to the construction of the Kāpiti Expressway, which has altered the overflow path which no longer runs through the Site as shown.

It is anticipated that any resource consent seeking approval for earthworks to construct flood free building pads and road connections will be required to undertake flood modelling. The flood modelling will be required to confirm the proposed works do not result in unacceptable adverse environmental effects and risks due to natural hazards. This will include confirmation that the works do not divert water onto neighbouring sites, such as those in Fairway Oaks Drive. It is noted these neighbouring properties are higher than the Site, and modelling will be completed to ensure there is no increase in inundation beyond the Site boundaries. Compensatory storage will likely be required to offset the storage losses due to filling the Site. These details are to be confirmed during the resource consent stage, once the site layout and levels are known. Groundwater levels should be monitored when confirming the available storage.

It is noted in Awa's memo submitted with the Plan Change Application that the development can be designed to maintain the effective functioning of the residual overflow paths by moving them through the Site into the QE II wetland and Waimeha Stream.

11. POWER & TELECOMMUNICATIONS

Chorus have assessed the local telecommunication network and confirmed 100 - 110 Te Moana Road falls within the Chorus UFB area. The network has capacity to service 50 possible future lots (3 dwellings per lot) and can be extended within the Site, via the road corridors. See confirmation email attached at **Appendix D**.

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Electra have assessed the local power network capacity and has confirmed that the network has capacity to service 50 possible future lots (3 dwellings per lot) and can be extended within the Site, via the road corridors. See confirmation email attached at **Appendix E**.

The existing overhead power lines within Te Moana Road will likely be undergrounded to service this development, depending on the requirements of Electra. It is likely that an appropriately sized transformer will be required within the future development.

On this basis any effects on network utilities due to the residential development of the Site will be acceptable.

12. DISTRICT PLAN OBJECTIVES & POLICIES

Table 1 below identifies the relevant District Plan Objectives and Policies relating to Infrastructure:

DO-013 Infrastructure	To recognise the importance and national, regional and local benefits of infrastructure and ensure the efficient development, maintenance and operation of an adequate level of social and physical infrastructure and services throughout the District that: 1. meets the needs of the community and the region; and 2. builds stronger community resilience, while avoiding, remedying or mitigating adverse effects on the environment.
The infrastructure required to service the development can be designed to suit the needs of the future residents, and the wider District. Development of the Site will more readily enable a strategic duplicate wastewater main to be installed to provide network resilience for the wastewater network.	
INF-GEN-P1 Recognition	The national, regional or local importance and benefits of sustainable, secure and efficient provision of the following infrastructure will be recognised: … 6. public or community infrastructure associated with water supply, sanitation and waste facilities, the stormwater network and drainage, provided these services are developed within a water conservation framework and minimise environmental impacts.
Development of the Site will more readily enable a strategic duplicate wastewater main to be installed to provide network resilience for the wastewater network.	
INF-GEN-P3 Protecting the Mauri of Natural Systems	Natural systems are recognised as taonga and will be protected from any adverse environmental effects arising from the establishment, operation, maintenance and upgrading of infrastructure that affect the mauri of these systems in accordance with local tikanga.

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The design of the proposed servicing solutions will ensure the protection of natural systems, such as wetlands, by ensuring the hydrological systems are not adversely impacted by the proposed development. The Applicant will also work with iwi to identify the appropriate tikanga in relation to earthworks within the Site.	
INF-GEN-P4 Managing Adverse Effects	Any adverse environmental effects arising from the establishment, operation, maintenance and upgrading of infrastructure will be avoided, remedied or mitigated as far as reasonably practicable by: 1. ensuring significant adverse effects are avoided, remedied or mitigated through route, subject site and method selection; 2. minimising the effects of infrastructure on the amenity values of the surrounding area and areas of outstanding or high natural character, in particular visual effects with respect to scale, and the sensitivity of the environment in which they are located; 3. considering all water bodies to be valued assets and protecting the mauri of fresh and coastal water resources; 4. where appropriate, ensuring opportunities to enhance indigenous biodiversity as part of infrastructure design are identified and implemented; 5. requiring adaptive management measures (including monitoring and remediation) where uncertainty may exist around impacts over time; 6. considering the use of offsetting measures or environmental compensation (including measures or compensation which benefit the local environment and community affected) where a 'residual effect' cannot be avoided, remedied or mitigated; and 7. ensuring the above considerations are provided to accomplish best practice at the time of application and construction
The detailed design during the resource consent shall be in accordance with the LDMR which requires applicants to address any possible adverse effects in the consent application. As above, the freshwater bodies shall be protected to ensure their mauri is not diminished. Further enhancement is also possible through constructed wetlands which can treat water and also provide enhanced indigenous biodiversity outcomes.	
INF-GEN-P5 Infrastructure in Road Corridors	The use of roads as infrastructure corridors will be encouraged.
The scheme plans for any future development shall utilise roads as infrastructure corridors, as is common practice.	

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INF-GEN-P7 Infrastructure and Growth Management	Subdivision, use and development of land for urban growth and intensification will be focused on certain areas (i.e. in existing urban areas). Subdivision, use and development will be avoided in areas where it: 1. is unable to be efficiently integrated with existing infrastructure, or be serviced by new infrastructure in an efficient and cost-effective manner; 2. does not promote the efficient end use of energy, including energy use associated with private vehicular transport, and efficient use of water; 3. does not align with Council's infrastructure asset management planning; 4. would lead to inefficient or unduly high operation and maintenance costs for public infrastructure; 5. is unable to make the most efficient use of the transport network; and 6. would lead to further growth pressures and demand for infrastructure investment ahead of the community's or infrastructure provider's ability to fund, or its desired funding programme.
As per Sections 6.1 & 7.3, development of the Site is aligned with Council's planned infrastructure works. The Site is within KCDC's Development Contributions Policy maps, and as such the supply to the Site has been considered in the Long-Term Plan (LTP) funding decisions.	
INF-GEN-P8 Development Staging	Where subdivision or development is proposed that requires additional or earlier community investment in infrastructure than is set out in the Council's Long Term Plan, Infrastructure Strategy and Annual Plan, the Council will either: 1. require the staging of the proposal to fit with existing capacity through any consent application process; or 2. provide the opportunity for the 'forward' provision of an agreed proportion of the infrastructure upgrade works by a developer, provided that: a. those works do not trigger additional community and network utility operator investment demands; and b. those works are consistent with the Council's Asset Management Plan; or 3. for additional unplanned works that are not set out in the Council's Long Term Plan and Infrastructure Strategy, require the payment of a financial contribution in accordance with the Financial Contributions chapter of this Plan.
Council have confirmed the necessary upgrade works to supply the development are already provided for in the long term plan.	

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INF-GEN-P9 Proximity to Planning Features (Excluding the National Grid)	New network infrastructure will be managed to: 1. avoid inappropriate new works in areas of hazard risk as identified on District Plan maps: a- well defined fault avoidance area; b- well defined extension fault avoidance area; and c- river corridor, stream corridor and overflow path; 2. avoid inappropriate aboveground new works on outstanding natural features and landscapes and areas of outstanding or high natural character as identified on District Plan maps; and 3. avoid, remedy or mitigate adverse effects on the following features and areas identified on District Plan Maps: a- Natural Open Space Zone; b- special amenity landscapes; c- ecological sites; d- geological features; and e- historic heritage features.
Consideration shall be given to the alignment of network infrastructure (e.g. possible duplicate wastewater main) to ensure this is not impacted by natural hazards and avoids adverse effects on ecological sites. No other planning features are relevant.	
INF-GEN-P11 Quality of Infrastructure Design and Service	Development and subdivision, and the provision of associated Infrastructure in accordance with the Council's Land Development Minimum Requirements.
The subdivision, including the infrastructure design, shall be in accordance with the LDMR.	
INF-MENU-P17 Hydraulic Neutrality – Stormwater	Subdivision and development will be designed to ensure that the stormwater runoff from all new impermeable surfaces will be disposed of or stored on-site and released at a rate that does not exceed the peak stormwater runoff when compared to the pre-development situation.
The development shall be designed to be hydraulically neutral through the use of infiltration or attenuation devices.	
INF-MENU-P18 Stormwater Quantity and Quality	The adverse effects of stormwater runoff from subdivision and development, in particular cumulative effects, will be minimised. The following assessment criteria will be applied when considering resource consent applications for subdivision and development: 1. whether there is capacity in Council's existing infrastructure; 2. the extent to which the capacity and environmental values of watercourses or drains and the associated catchment areas will be compromised;

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	3. the extent to which development styles and stormwater management methods mimic natural, pre-development runoff patterns; 4. the extent to which riparian vegetation is protected and enhanced; 5. whether minimal vegetation loss in riparian areas associated with development is achieved; 6. the extent to which water quality is ensured to enhance and maintain aquatic ecosystem health; 7. the extent to which a healthy aquatic system is maintained, including maintenance of sufficient flows and avoidance of unnatural fluctuations in flows; 8. the extent to which degraded, piped or channelled streams are restored and realigned into a more natural pattern; 9. where practicable, the extent to which low impact design, including on-site disposal of stormwater, soft engineering or bioengineering solutions and swales within the legal road are used; 10. the extent to which straightening and piping of streams is avoided; and 11. the extent to which the adverse effects of stormwater runoff, in particular cumulative effects, from subdivision and development will be minimised.
The design of the proposed stormwater solution shall mimic the natural hydrology by returning water to ground as close as possible to the source, or by providing attenuation where this is not possible. The design shall also consider treatment options to ensure the health of the aquatic ecosystems are maintained, and ideally enhanced.	
INF-MENU-P19 Water Demand Management	New residential development connected to the public potable water supply and reticulation network will be required to provide rainwater storage tanks, water re-use systems or other water demand management systems to supply water for toilets and all outdoor non-potable uses.
Any new residential sites shall be of a size that water demand management tanks can be provided for each new dwelling.	
INF-MENU-P20 Water Supply	All new subdivision, land use or development will have an adequate supply of water in terms of volume and quality for the anticipated end uses, including fire fighting supply. Where a new connection to the reticulated network is proposed, evidence may be required to support its viability.
Council have confirmed there is an adequate supply of water to the Site currently, and that further network upgrades are planned to accommodate modelled long-term shortages. Any resource consent application shall include a modelling report confirming the connection to the reticulated network is viable.	
INF-MENU-P21 Wastewater	Subdivision, land use and development will ensure that the treatment and disposal of wastewater will be adequate for the anticipated end uses appropriate to the location. The treatment and disposal of wastewater will be undertaken in a manner that avoids, remedies or mitigates

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	adverse effects on the environment and maintains public health and safety. Where a new connection to the reticulated network is proposed, evidence may be required to support its viability.
The development shall be connected to the Council wastewater network, to ensure it is appropriately treated at the wastewater treatment plant.	

TABLE 1 – RELEVANT DISTRICT PLAN OBJECTIVES & POLICIES

Overall, it can be concluded that the infrastructure required to service the residential development of the Site aligns with the District Plan Objectives and Policies.

13. RECOMMENDATIONS

Prior to submitting any resource consent application for a residential development of the Site, the applicant shall ensure the following:

- Any scheme design for earthworks, wastewater, water, stormwater and roading shall be carried out in accordance with KCDC LDMR and the requirements of NZS4404:2010, to a level of detail necessary to confirm the proposed servicing arrangement;
- Any erosion and sediment control measures will be in accordance with the requirements of the GWRC ESCG;
- An archaeological authority should be obtained prior to the commencement of earthworks;
- Organic materials and peat are to be removed from the road corridor to allow for road construction and services trenches to be founded on good ground.
- An option evaluation should be completed to determine the most appropriate wastewater network design;
- Wastewater and Water supply modelling should be completed to determine capacity constraints on those networks at the resource consent stage;
- Particular consideration should be given during the stormwater and earthworks design to the hydrological functioning of the existing natural inland wetland;
- Infiltration testing should be completed in the areas of proposed infiltration devices to confirm the design infiltration rates, and most appropriate method of achieving hydraulic neutrality, as well as water quality outcomes;
- Roads shall be used as infrastructure corridors;
- Dewatering requirements are considered due to the possibility of services being laid beneath the water table;
- Groundwater monitoring to confirm the volume of available compensatory storage; and
- Consideration will need to be given during the detailed design process to safety in design principles.

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14. CONCLUSION

This report has been prepared to provide a summary of the existing infrastructure and identify possible solutions for the future residential development that may eventuate following the re-zoning of the block of land at 100-110 Te Moana Road, Waikanae.

Based on our investigation and options analysis, we believe that the infrastructure effects generated by the residential development of the Site can be managed to avoid adverse effects on the infrastructure networks and wider environment. For the avoidance of doubt, if only Stage 1 were to proceed, the infrastructure effects would be less than what has been assessed for the Site as a whole.

The final design of the engineering elements for any future residential development will be subject to KCDC review and approval and will require site specific modelling to confirm any capacity constraints that may arise prior to the implementation of a residential subdivision once the Site is rezoned.

We are satisfied that there is sufficient infrastructure within close proximity of the Site to support future residential development.

Prepared by:	Reviewed & approved for release by:
Josh Goodman Civil Designer **CUTTRISS CONSULTANTS LTD**	Nick Taylor Certified Land Development Engineer **CUTTRISS CONSULTANTS LTD**

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APPENDIX A

SITE PHOTOS

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Photo 1 – Looking south-west toward sand dunes & harvested pine area, from Te-Moana Road boundary

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Photo 2 – Looking west toward Waikanae Beach

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Photo 3 – Augered hole approximately 0.85m below GL showing saturated loose to dense sand with dark waterlogged clay found at the base

Photo 4 – Augered hole depth approximately 0.70m below GL showing saturated loose to dense sand

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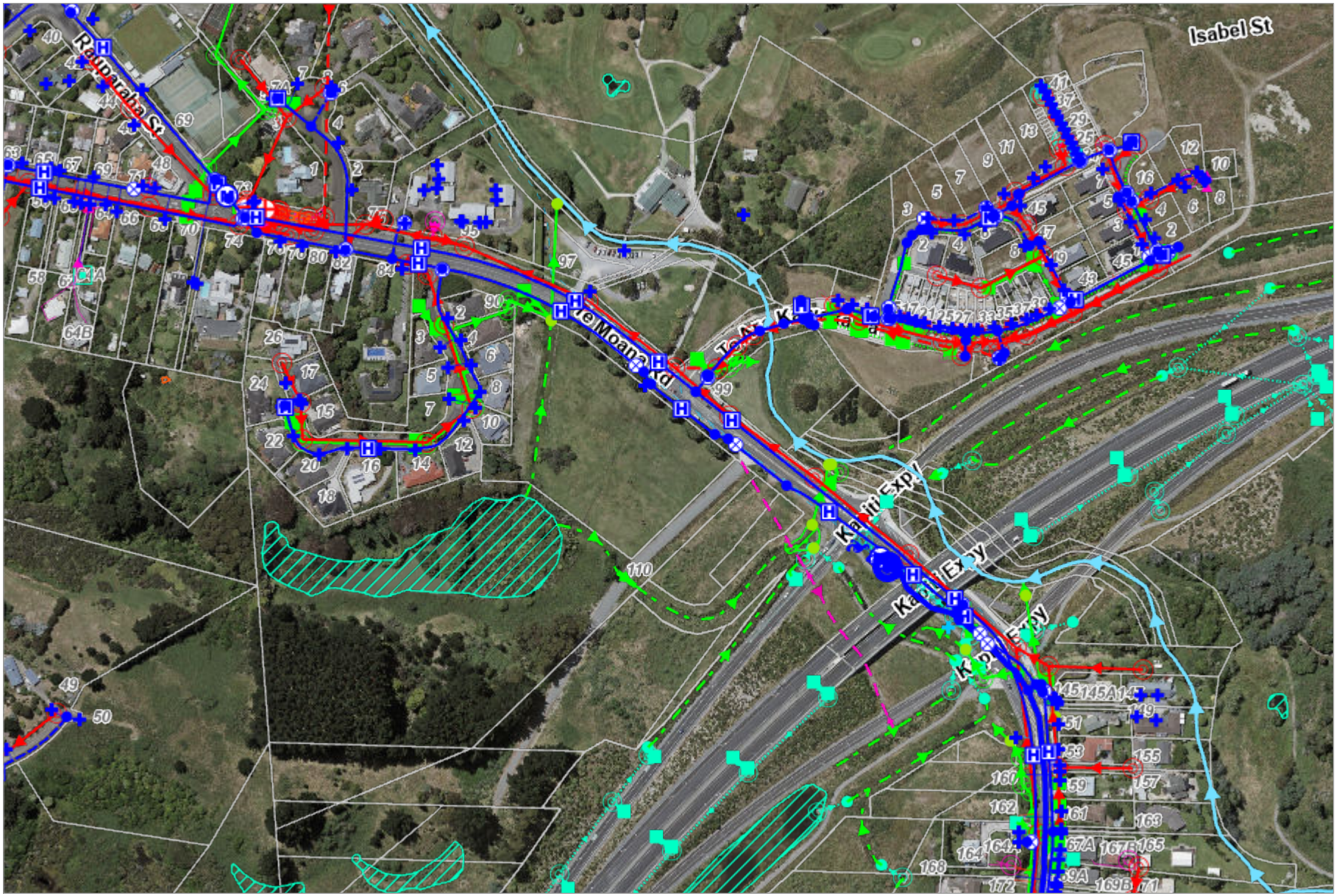
APPENDIX B

KAPITI COAST DISTRICT COUNCIL GIS SERVICE RECORDS

Kapiti Coast District Council



Key to map symbols

- Valve
- Manifold
- Hydrant
- Bulk Meter
- Fitting
- Borehole
- Tank
- Service
- Rider Main
- Reticulation Main
- Trunk Main
- Other
- WS Plant
- Manifold
- Fitting
- Service
- Rider Main
- Abandoned
- Cleaning eye
- Manhole
- Valve
- Other
- WW Service
- Main
- Rising main
- Other
- Pump Station
- Other
- Cleaning eye
- Manhole
- Other
- Non-KCDC WW Service
- Main
- Rising main
- Other
- Manhole
- Sump
- Inlet/Outlet
- Other
- Service
- Gravity main
- Other
- Culvert
- Open channel
- Stream
- Other
- Manhole
- Sump
- Soakpit
- Inlet/Outlet
- Other
- Non-KCDC SW Service
- Non-KCDC SW Pipe
- Other
- Parcel Boundaries

N

0 90 180 Metres

Scale 1:3,837 at A4

Date Printed: October 9, 2024

Map credits:

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APPENDIX C

KAPITI COAST DISTRICT COUNCIL INFRASTRUCTURE TEAM - MEETING NOTES

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Meeting Notes

Project:	**30602 – 100-110 Te Moana Road, Waikanae**
Meeting date/time:	**11 October 2024 at 14:00 hrs**
Location:	**KCDC Offices & Online via MS Teams**
Attendees:	**Hemraj Kunwar, Nick Urlich, Eric Osborne, Nick Taylor**
Apologies:	**N/A**

INTROS

1. Nick T discussed high level nature of proposal at this stage, noting infrastructure report for plan change will not have the level of detail expected at the resource consent stage.
2. Nick T noted that no plans have been completed at this point so we can't do water modelling etc but will provide a general overview of proposal in infrastructure report. Hemraj happy with this approach.

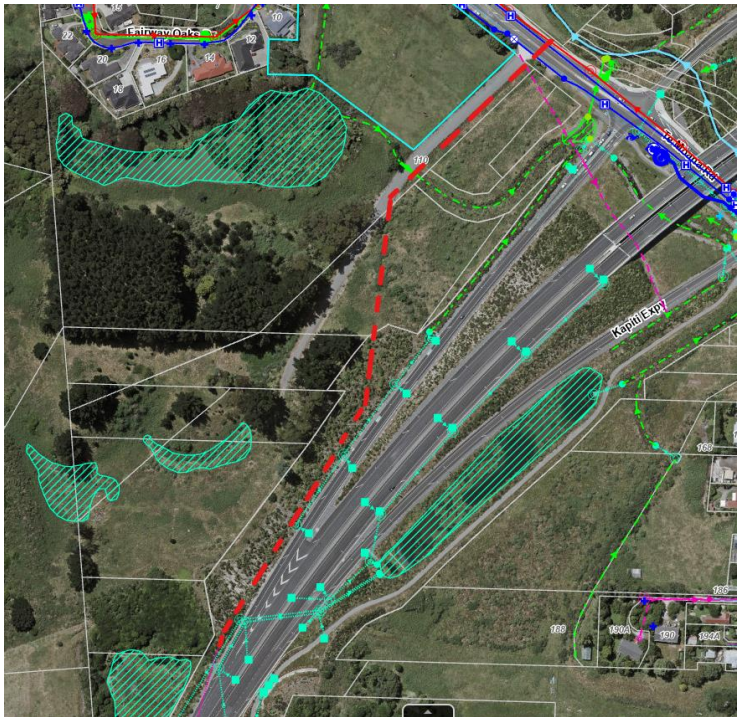
WATER SUPPLY

3. Nick U confirmed that water modelling has recently been completed by Stantec for the District, who have identified upgrades are required including a new reservoir. Nick U will send this through.
4. Nick U advised costs of the upgrades have already included in LTP funding – but currently modelled to occur at the end of the 10-year block.
5. Hemraj and Nick U noted the challenge relating to timing of the proposed developments, e.g. Manu Park, Peka Peka farms. This is uncertain so makes planning difficult.
6. There are planned network upgrades, including a new reservoir, but the timing is still unknown due to constraints relating to the ownership of land, and timing for development.
7. Nick U noted that currently supply is available, however the storage is nearing capacity. 7,000m³ current storage capacity in the current network, with a further 5,500m³ to be provided with Waikanae North reservoir.
8. Hemraj noted that storage should be OK for the proposed development, depending on timing.
9. Nick T noted that the site is now included in the LTP maps for development contributions, so it is anticipated that the site will be serviced in the current LTP funding model, noting also that other larger developments are not included in these maps and therefore the associated funding calculations.
10. Hemraj noted that modelling will be required at the RC stage to confirm capacity to supply the network.
11. All reviewed the GIS information and noted the abandoned pipe is likely a pipe for a future connection.

WASTEWATER

12. Hemraj noted the Rauparaha pump station is at capacity and that there are peak flow issues.

13. Hemraj advised that a duplicate rising main through to the Paraparaumu wastewater treatment plant will need to be commissioned before any spare capacity is available.
14. All reviewed the proposed alignment of the duplicate rising main, noting this will need to go through adjacent land before connecting to the main within the expressway land.
15. Nick U noted that the option to buy the land is now back with the original land owner, who used to be a market gardener (Des Yee?). Nick T to investigate and pass on any relevant information to assist with discussions re ownership. Alignment roughly shown below:



16. Alignment through the Osborne land should be achievable, however will need to be investigated for loss of yield etc (and a developer agreement entered into).
17. KCDC hope to have the duplicate rising main up and running within two years.
18. Hemraj noted that modelling at RC stage will show if there are any constraints in the network at that time.
19. Nick T suggested that there are several mitigation options which can be put forward including Council owned attenuation tank or low pressure sewer (LPS), as is commonplace in developments in other parts of the wider Wellington region.
20. Nick U noted LPS is not a preferred option as Council do not want to own the on-site pumps so can't control these.
21. Nick T noted these requirements can be included in consent notices registered on the titles. LPS system also adds attenuation by default in the system design i.e. reduces peak load from development.
22. Hemraj noted that another option could be to stage the development such that the initial lots could discharge to network, with subsequent lots connecting at a later date once the upgrades have been completed.
23. Hemraj also noted that the wastewater network model is currently being validated and the results of this would be available at the end of 2025.

STORMWATER

24. Nick T noted that anticipated high groundwater in the lower portion of the site will likely mean attenuation will be required. Further to the west it is anticipated that soakage will be achieved, so low impact design is appropriate which will mimic natural hydrology.
25. There is some uncertainty relating to the culvert beneath the driveway – was this installed? Cuttriss to investigate.
26. Stormwater will be modelled and Awa currently looking into flooding.

27. Nick U commented on KCDC clearing out a drain just north of Waikanae, which seems to have played a significant role in lowering the groundwater levels in the District.

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APPENDIX D

CHORUS CONFIRMATION EMAIL

Nick Taylor

From: Margaret Singh <Margaret.Singh@chorus.co.nz>
Sent: Thursday, 3 October 2024 10:41 am
To: Nick Taylor
Subject: RE: [#CCL30602] 100-110 Te Moana Road, Waikanae - Capacity Advice

Good morning Nick,

I've had a network scoper check this address and I can confirm capacity to this address to service possible proposed lots.
This falls inside the Chorus UFB area.

Do you require a confirmation letter?

Thanks,

Margaret Singh | Group Account Manager

CHORUS | **T** | **M** +6421560418

From: Nick Taylor <Nick@cuttriss.co.nz>
Sent: Thursday, October 3, 2024 10:30 AM
To: Margaret Singh <Margaret.Singh@chorus.co.nz>
Subject: [#CCL30602] 100-110 Te Moana Road, Waikanae - Capacity Advice

Kia ora Margaret,

We are working with the Osborne family with respect to a proposed plan change of their Waikanae Beach property at the above address. Due to the high level nature of the plan change process we don't have a design for the development, however we anticipate the site will yield 40-50 lots. It should also be noted that with the proposed residential zoning, it will be possible to construct up to three dwellings on each lot. Can you please advise if there is capacity in the chorus network to accommodate this level of development?

Ngā mihi nui | Thank you

Nick Taylor (he/him) | Director | RPSurv | CPLDEng | BSurv (Dist) | MS+SNZ |
Cuttriss Consultants Limited
| e. nick@cuttriss.co.nz | m. +64 20 460 8006
| http://www.cuttriss.co.nz

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APPENDIX E

ELECTRA CONFIRMATION EMAIL

Josh Goodman

From: $technician <planning@electra.co.nz>
Sent: Thursday, 10 October 2024 11:52 am
To: gary.mccormick@electra.co.nz; Nick Taylor
Cc: dave.rogan@electra.co.nz
Subject: RE: [#CCL30602] [Request ID :##779##] : FW: 100-110 Te Moana Road - Capacity Advice

Morning Team

Nick- As no specific power demand/ plan is provided for new Development. however, i have just done desktop calculation for 50 lots with 3 Dwellings on each lot.

According to my calculations demand will be around 600kVA. So as per my assumption we do have Capacity on our network right now however we cannot book this capacity for you.

Please do let me know if you need any information.

Regards,
Aamir

Good afternoon,

Please see e mail below, can a member of your team assist Nick?

Thanks Gary

Gary McCormick
Project Manager/Estimator
+64272023219
Registered Office:
Cnr Bristol and Exeter Streets, Levin www.electra.co.nz

From: Nick Taylor <Nick@cuttriss.co.nz>
Sent: Thursday, October 3, 2024 10:23 AM
To: Gary McCormick <gary.mccormick@electra.co.nz>
Subject: [#CCL30602] 100-110 Te Moana Road - Capacity Advice

Kia ora Gary,

We are working with the Osborne family with respect to a proposed plan change of their Waikanae Beach property. Due to the high level nature of the plan change process we don't have a design for the development, however we anticipate the site will yield 40-50 lots. It should also be noted that with the proposed residential zoning, it will be possible to

construct up to three dwellings on each lot. Can you please advise if there is capacity in the electricity network to accommodate this level of development?

Ngā mihi nui | Thank you

Nick Taylor (he/him) | Director | RPSurv | CPLDEng | BSurv (Dist) | MS+SNZ |
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