

8. PRINCIPAL ISSUES AND ASSESSMENT OF ENVIRONMENTAL EFFECTS

The following section addresses the principal issues associated with the suitability of the site for residential development, the opportunities arising, the design concept and the positive and adverse effects on the environment.

The section draws on the technical reports prepared by a range of experts which are included in the Appendices to this request.

8.1 IS THE LOCATION APPROPRIATE FOR THE SCALE OF DEVELOPMENT PROPOSED?

The site is located 3 kilometres northeast of the centre of Palmerston North and forms a logical extension to the Parklands residential neighbourhood. It connects to a main east west arterial state highway (SH 3) connecting Palmerston North with Ashhurst.

The site is accessible to the City by road and public transport and there is a significant area of industrial activity to the immediate north. The site is also served by the east west cycleway connecting to the City Centre.

Parklands Primary School is within walking distance and there is a childcare on Ruamahanga Crescent. Countdown Broadway is only 2.2 km from the site and the Palmerston north Community Leisure Centre is a similar distance. The site has excellent walking connection with the Manawatu River and has walking and cycleway links as well as the nearby Palmerston North Golf Club.

The location, therefore, provides a high degree of accessibility to employment, services, community facilities and recreation and is considered to be a highly appropriate location for additional residential development.

8.2 ARE THE GROUND CONDITIONS SUITABLE FOR THE NATURE OF THE PROPOSED DEVELOPMENT?

Specific investigations have been undertaken to determine if there are any geotechnical hazards that may have an impact on residential development. Resource Development Consultants Ltd was commissioned to undertake a geotechnical assessment and this is detailed in their report in Appendix E.

The investigation focussed on assessment of liquefaction potential to identify risk prone areas and inform risk management strategies as appropriate.

Site investigations included information from previous investigations in 2013 and also additional bore holes, test pits and cone penetration tests.

The soils are a silty clay topsoil over firmer silty clay to 1.2 to 2m below ground level over loose sand and soft silt and then sandy gravels. Groundwater levels were measured at depths of 4.2 m and 4.9 m which in winter may reach 2.5m to 3m.

The liquefaction assessment found that under SLS conditions ground damage from liquefaction is not expected and under ULS conditions settlement would be less than 25 mm and lateral displacement of the order of 300mm.

The assessment concludes that the site is suitable for residential development using shallow foundations. A limited area in the south of the site is susceptible to liquefaction and lateral

spread which can be mitigated using well proven solutions including ground reinforcement for houses or an inground piled wall 6m deep along 150m of the southeast boundary on the side of the Gasworks Drain. An alternative to this approach is pavement reinforcement of the road and TC 2/3 hybrid dwelling foundations in this part of the site.

This report was then peer reviewed by geotechnical engineers from Tonkin and Taylor Ltd. This raised some issues regarding recent changes to investigation standards and assessment of liquefaction risk.

RDCL then updated their report and issued the report titled Stage 2 Detailed Investigation which is attached as Appendix E.

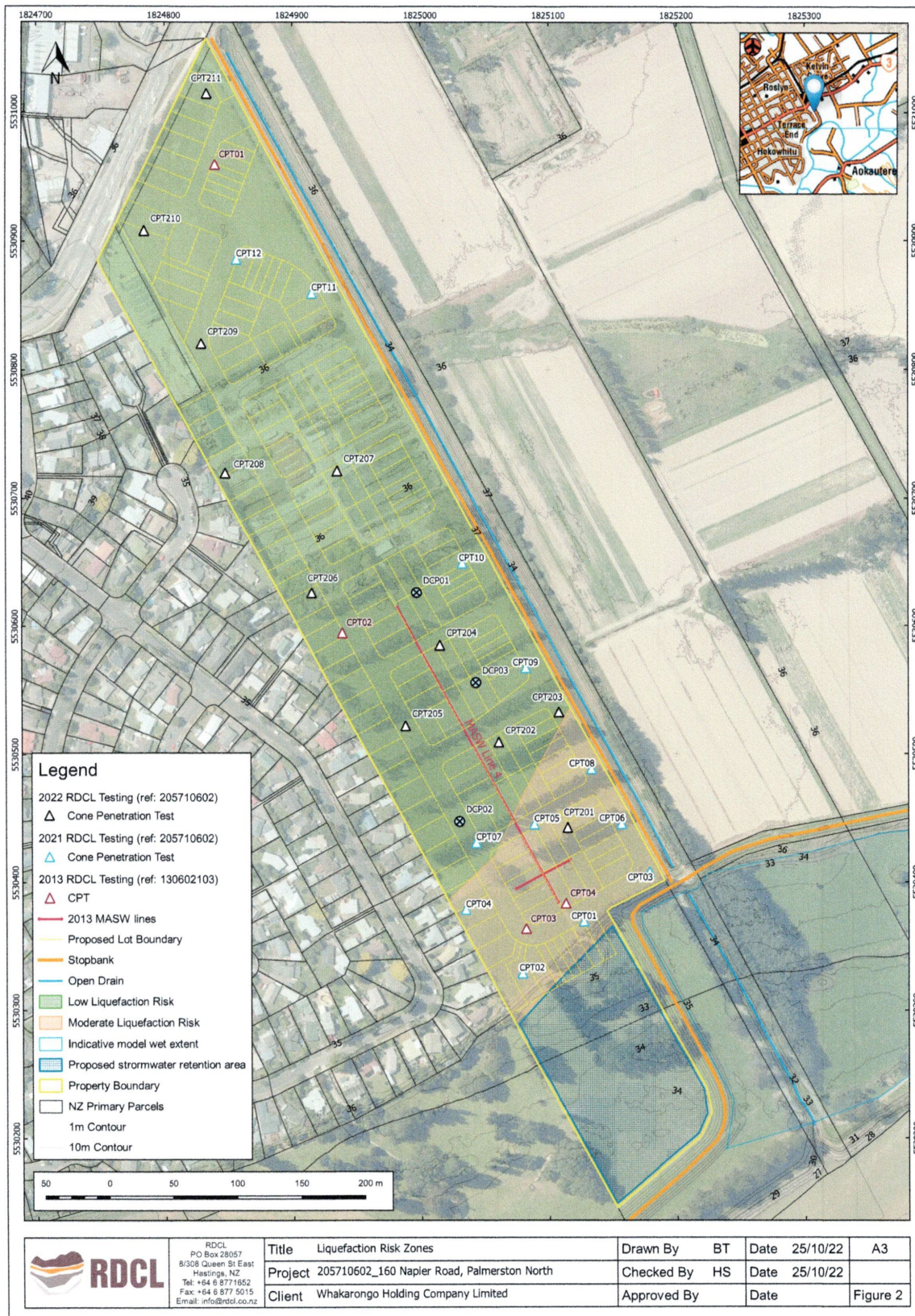


Figure 5: Liquefaction Risk.

The further liquefaction assessment found that the site is underlain by two zones of liquefaction risk which are shown on Figure 5 below. The first is termed the Green Zone with low risk of liquefaction and secondly an Orange Zone which has moderate risk of liquefaction due to lateral spreading.

This confirmed that In the Green Zone pile foundation or waffle slab is recommended. In the orange area at the southern end of the site driven or bored timber piles or enhanced concrete foundation will be required.

The assessment concludes that with these measures in place the site is suitable for residential development.

8.3 ARE THERE ANY CULTURAL ISSUES THAT MAKE THE AREA INAPPROPRIATE?

In order to understand any cultural issues associated with the proposal, Rangitane o Manawatu, who are mana whenua, was commissioned to undertake a cultural impact assessment. This is included at Appendix C.

Rangitane o Manawatu deliver a maori model of environmental management through the Te Ao Turoa Environmental Centre. The Centre undertakes ecological and cultural monitoring projects, restoration of waterways through planting and plastic reduction, weed and pest control, and engagement in planning processes.

The Cultural Impact Assessment was undertaken by Siobhan Karaitiana and reviewed by Danielle Harris. The assessment used a Whanua Ora Outcomes Framework with the three key outcomes tested being:

Rangatiratanga

- Exercising rangatiratanga by collaboration in planning.
- Identifying and providing for cultural landscape values.
- Iwi awareness of assets held in common.

Healthy Lifestyles

- Participation in a sustainable economy
- Whanau physical well being
- Access to a healthy environment
- Affordable housing

Te ao Maori

- Language is visible and celebrated
- Street and place names adopt Rangitane names

The assessment found no fatal flaws from a cultural / whanau ora perspective but did request further information on a number of aspects. Further information on those aspects that can be addressed at this stage in the process has been provided and there has been further engagement on the Structure Plan.

Of particular concern is that the mauri of the Manawatu River and its tributaries is not compromised by the development. With this in mind the priority issues raised were:

- *Construction and residential activities do not disrupt the Gasworks Drain stream, and indeed facilitate its natural enhancement, as it is an aspiration of Rangitāne o Manawatū to restore this water source;*
- *During construction the Manawatū River is undisturbed, and furthermore stormwater management is improved to the extent that stormwater discharge from residential activities do not enter the River untreated; and*
- *Emphasis is placed upon restoring the Reserve to address food security through planting fruit trees, and the planting of native trees and bush is implemented to encourage native bird life to flourish.*

These matters are responded to in detail in subsequent sections.

8.4 IS THERE ANY CONTAMINATED LAND?

EAM Consultants Ltd was commissioned to undertake a Detailed Site Investigation to determine the suitability of the site in terms of any risk of land contaminated. This report is attached at Appendix D.

The initial desktop investigation identified that a HAIL activity is present, being the existing nursery and has been operating since the 1950's. Potential hazardous substances include heavy metals organic compounds from horticultural sprays.

Twenty-two soil samples were taken for testing at locations spread across the whole site. Laboratory soil analysis was carried out for metals, OCPs, cyanide and PAHs.

The results recorded a single arsenic concentration (sample site #1) above the NES soil contaminant standard of 20 mg/kg for the land use scenario of Residential.

OCP, cyanide and PAH results were well below the NES soil contaminant standards for the land use scenario of Residential.

The assessment has identified that only the soils at the sample site #1, which is located at the southern end of the site, are highly likely to represent a risk to human health.

As a result, a follow up assessment of soils at this location was undertaken in July 2023. This used an X-Ray Fluorescence analyser to measure metal concentration at this location. Twenty readings were taken within 10m radius of the location. All readings reported concentrations of arsenic well below the NES of 20mg/kg. Further details are available in Appendix L.

As a result, it can be concluded that the site is suitable for residential development under the NES without remediation.

8.5 IS THE SITE IMPORTANT FOR FOOD PRODUCTION?

The site is currently used for a garden centre on part of the site with the rest being in pasture.

The Land Use Capability is recorded as Class 2 soils. As a result, Perrin Ag Consultancy Ltd was commissioned to advise on the productivity of the soils. This report is attached as Appendix G.

This report identifies the soils as Manawatu mottled silt loam which has a brown and grey mottled subsoil and poorer drainage than the Manawatu silt loam. In all the sites inspected there was distinct mottling in the top 20 cm whereas the Manawatu mottled silt loam typically does not have mottling until below 40 cm. It appears that on this property the seasonal water table sits higher than is typically the case. This may be influenced by water running down from the high terraces in the past and also the stop bank which runs the entire length of the property. Originally, water from the soils on the property would have drained into the depression which is now the Gasworks stormwater drain with stop banks on both sides.

The land is currently being used for grazing livestock and approx. three hectares (30% of the area sought to be re-zoned) has a metalised base for a plant nursery.

The land proposed for use as housing development borders the existing urban area. The assessment considers that the close proximity of housing currently precludes this land from intensive horticultural production due to the negative reactions of some urban dwellers to chemical and fertiliser use and other reverse sensitivity effects.

The property is separated from other productive land by the stormwater drain with stop banks and public access. The assessment concludes that the drain will provide a better barrier between housing and productive land partly due to distance and partly due to the existing amenity planting that provides a visual screen.

The productive potential of this property is less than others in the Te Matai Road area due to the seasonal high-water table and mottling within the top 20 cm of soil which severely limits its use for market gardening and horticultural purposes. The net productive loss of this area to urban development would be 7.5 ha of pastoral farming.

The larger blocks in this locality support market gardening, nurseries, sheep and cattle finishing, horse agistment, maize and cereal cropping and dairy support. The smaller lifestyle blocks include dairy support; cropping, horse grazing and agistment and prime livestock production.

Overall, the assessment concludes that the soil capability limitation did not preclude development for urban land uses. However, the specific tests now required by the NPS-HPL are considered further below.

8.6 ARE THERE ANY FLOOD RISK ISSUES?

The site is bordered by the Gasworks Drain to the east and Manawatu River to the south. The site is not shown as being exposed to any flood risk in the existing operative District Plan.

The existing river stopbanks provide protection of this area from flood risk from the river and this includes flap gates to stop river water flowing back up the Drain. Importantly the lower part of the drain stopbank on the eastern side is lower than the western side. This means that flow down the drain exceeds its capacity in part overflows onto farmland to the east as opposed to flooding the site.

There are, however, records of ponding of water south of the Napier road frontage and extending into the site. This is confirmed by local residents during consultation and by the Council and N.Z.T.A.

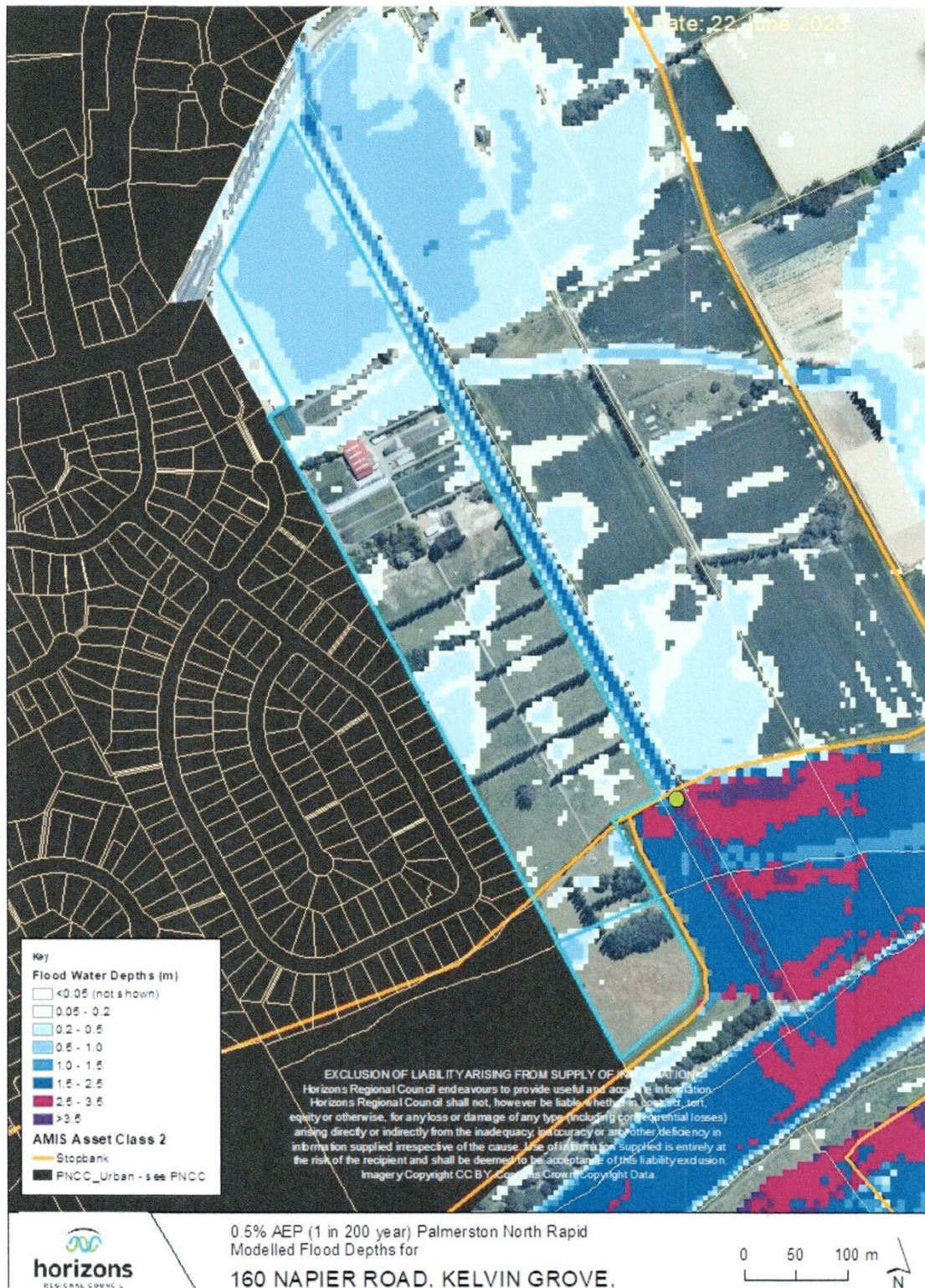


Figure 6: Modelled Flood Depths.

The earthworks and stormwater design concept for the development will resolve this issue. This is detailed in a later section but will essentially involve up to 1m of fill over the front one third of the site to raise the level with a batter down to Napier Road. In addition, there will be additional stormwater drainage through the site providing sufficient capacity to accommodate drainage from Napier Road in this vicinity.

Effectively the proposed development is capable of remedying this existing problem. Further detail can be found in Appendices I and K.

8.7 IS THE DEVELOPMENT INFRASTRUCTURE READY?

In order to assist with short term housing supply it is important that there is existing capacity within the water supply and wastewater systems to service the development.

In terms of water supply there is an existing 300mm diameter main across the frontage of the site on Napier Road and a 100mm diameter main in Ruamahanga Crescent. It is proposed to construct a 200mm diameter main through the development linking the Napier Road main with the existing network in Ruamahanga Crescent.

PNCC has run this proposal through their water supply model and found that the summer peak pressure is almost achieving the minimum level of service. Firefighting pressure is also acceptable.

PNCC is satisfied that this will enable the development to proceed without delay. Notwithstanding this, pressure will be improved when a planned new bore and reservoir to the east of the development is completed.

In regard to wastewater a pressure wastewater system is proposed consistent with other greenfield residential areas. It is proposed that the pressure system discharge to the existing Terminal located at the Napier Road / Limbrick Street intersection.

Council officers have also modelled this additional wastewater and confirmed that a pressure system is the preferred option. Further information is available in the Water and Wastewater Servicing Assessment prepared by Resonant Ltd at Appendix I.

The proposal can therefore be assessed as infrastructure ready.