

Before the Waimakariri District Council

under: the Resource Management Act 1991

in the matter of Submissions and further submissions on the Proposed
Waimakariri District Plan and Variation 1 and

Hearing Stream 12: Rezoning requests (larger scale)

and: **Domett Properties Limited**
Applicant

Statement of Evidence of Helen Eleanor Pickles (Planning) on
behalf of Domett Properties Limited in relation to 12 & 20 Neeves
Road Kaiapoi rezoning request

Dated: 5 March 2024

STATEMENT OF EVIDENCE OF HELEN ELEANOR PICKLES

INTRODUCTION

- 1 My full name is Helen Eleanor Pickles. I am a senior planner practising with Novo Group Limited in Christchurch. Novo Group is a resource management planning and traffic engineering consulting company that provides resource management related advice to local authorities and private clients.
- 2 I hold the qualifications of a Master of Arts (MA) Town Planning from the Heriot Watt University, Edinburgh attained in 2001. I am an associate member of the New Zealand Planning Institute. I have 15 years of experience as a resource management planner, working within and for territorial authorities, as a consultant.
- 3 I am familiar with the site having been involved with the recent Resource Consent

CODE OF CONDUCT

- 4 Although this is not an Environment Court hearing, I note that in preparing my evidence I have reviewed the Code of Conduct for Expert Witnesses contained in Part 7 of the Environment Court Practice Note 2014. I have complied with it in preparing my evidence. I confirm that the issues addressed in this statement of evidence are within my area of expertise, except were relying on the opinion or evidence of other witnesses. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

SCOPE OF EVIDENCE

- 5 I have been engaged by Domett Properties Limited to provide evidence in relation to their property at located at 12 and 20 Neeves Road, Kaiapoi. The subject site is proposed to be zoned Rural Lifestyle Zone (RLZ) zoning in the Proposed Waimakariri District Plan and Domett Properties Limited seek that this is zoned General Industrial Zone (GIZ).
- 6 In preparing my evidence I have reviewed the following documents:
 - 6.1 The submissions filed by Domett Properties Limited referred to hereafter as 'the submitters';
 - 6.2 The Transport evidence of Nick Fuller on behalf of the submitters;
 - 6.3 The engineering-related correspondence of Tim McLeod, Senior Civil Engineer on behalf of the submitters;

- 6.4 The geotechnical-related correspondence of Chris Thompson, Geotechnical Leader on behalf of the submitters; and
 - 6.5 The resource consent application (including Geotechnical Assessment Report, and Transport Review (refer to Appendix 4 of Resource Consent Package in **Attachment 1**) and approval obtained to date for development of the subject land for industrial purposes (refer to **Attachment 1**).
- 7 I have also considered:
- 7.1 The National Policy Statement Urban Development (**'NPS: UD'**);
 - 7.2 The National Policy Statement on Highly Productive Soil (**'NPS: HPL'**);
 - 7.3 The Canterbury Regional Policy Statement (**'CRPS'**) and
 - 7.4 The Proposed Waimakariri District Plan (**'PDP'**).
- 8 My evidence is structured as follows:
- 8.1 The proposal and site description;
 - 8.2 Assessment of the relevant objectives and policies of the Proposed District Plan;
 - 8.3 Consideration of alternatives, costs and benefits; and
 - 8.4 Response to WDC Hearing Stream 12 Memo to rezoning submitters (via hearing panel) dated 12 December 2023, (including statutory analysis of the NPS UD and NPS-HPL).

SUMMARY OF EVIDENCE

- 9 Accounting for the following matters associated with the rezoning of the subject site to GIZ:
- 9.1 the evidence of Mr Nick Fuller, Principal Transport Engineer, Novo Group –Transport effects;
 - 9.2 the resource consent held by the submitters for industrial activities on the subject land at 12 and 20 Neeves Road (**Attachment 1**);
 - 9.3 The proposed District Plan's stated intention for RLZ to adjoin an established industrial area at the Hellers Meat Factory at at 67 Main North Road, 9 Neeves Road and 15 Neeves Road, Kaiapoi;

9.4 Correspondence of Tim McLeod, Senior Civil Engineer, Inovo Projects – Engineering Effects;

9.5 Correspondence of Chris Thompson, Geotechnics Leader Tetra Tech Coffey – Geotechnical Matters;

I conclude that any potential adverse environmental effects of the requested rezoning to GIZ can be avoided, remedied or mitigated such that they are acceptable.

10 The proposal will give effect to and achieve consistency with the relevant planning framework, including relevant higher order documents and the PDP objectives and policies. I do not consider the proposal will result in any conflict with other relevant statutory or non-statutory documents or plans.

11 Overall, I consider, the requested rezoning of the land from RLZ to GIZ is the most appropriate, efficient and effective means of achieving the purpose of the Resource Management Act.

SITE DESCRIPTION AND SUBMISSION

Site and Surrounding Environment

12 The subject site is located at 12 and 20 Neeves Road, Kaiapoi, and contains two titles which are legally described as Lot 1 DP 44992 BLK XV RANGIORA SD and Lot 2 DP 44992. The site is 4.98 hectares in area and is predominantly flat. The location of the subject site is shown in **Figure 1** below.

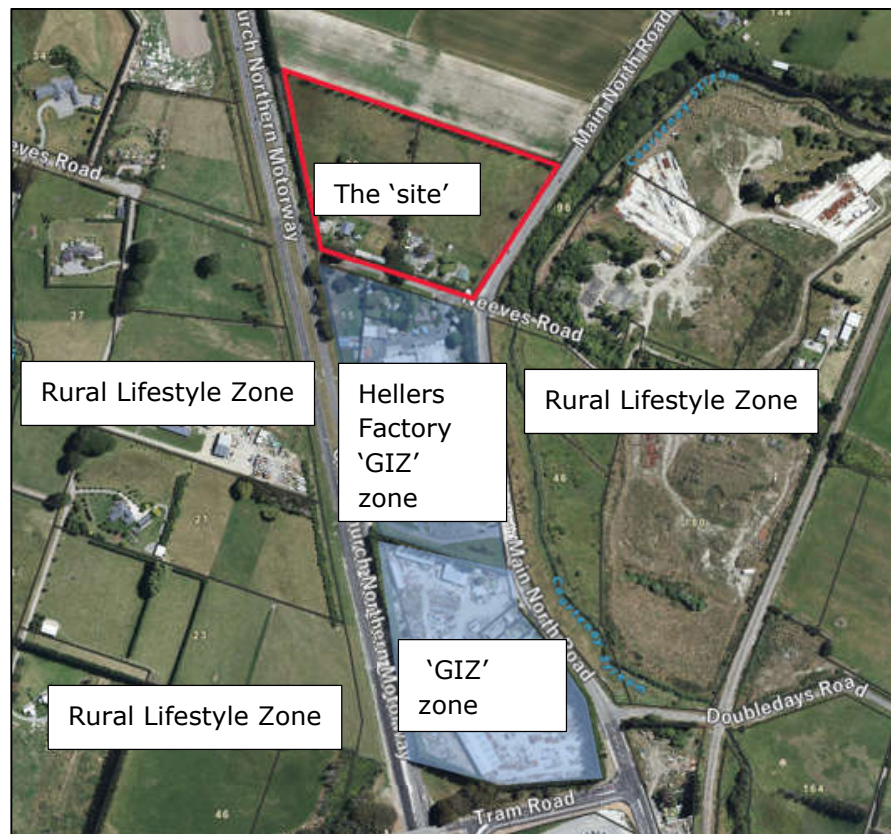


Figure 1: Aerial photograph of subject site, and surrounding zoning (Source: Canterbury Maps)

- 13 The site is zoned Rural (RU) zone under the Operative Waimakariri District Plan. Under the Proposed District Plan (PDP) the site is zoned RLZ.
- 14 Rural and rural residential activity is located on sites to the north. Hellers Meat Factory is a dominant land use in the vicinity of the site and on Neeves Road and is situated to the south of the site. Christchurch Northern Motorway (SH1) is to the west, and a landfill is located to the east (across Main North Road), with industrial and service activities and the Waimakariri River further to the south. Kaiapoi Town Centre is located approximately 4.5km northeast of the site.
- 15 Resource consent (Ref:RC215602) to establish an industrial development with associated access, loading and parking areas, was granted in October 2022 (**Attachment 1**). Conditions of consent associated with the industrial activity relate to matters of earthworks, servicing, access/roading/parking, geotechnical and landscaping.

Description of the Proposal

- 16 The submitter opposes the proposed RLZ and seeks rezoning of the land to GIZ to reflect the recently granted resource consent. The submitters seek to rezone the entirety of their property to GIZ.
- 17 The extent of the submitters' property and the proposed RLZ zoning is shown in **Figure 2** below:

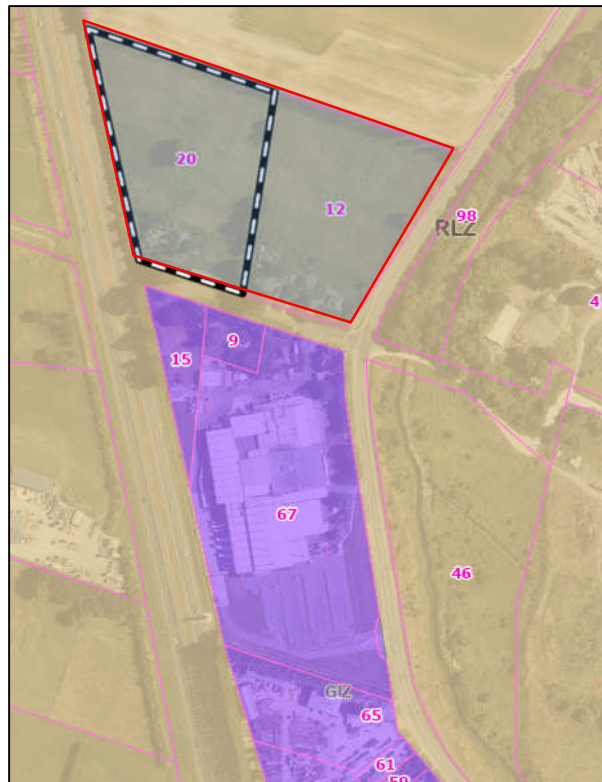


Figure 2: Proposed Waimakariri District Plan planning map extract (extent of subject site highlighted in red and the proposed RLZ zoning in grey) (Source: PWDP)

- 18 The rezoning would adopt, without amendment, the proposed Waimakariri District Plan (PDP) provisions for GIZ, however an ODP and area-specific rule for the subject site which would specify the key matters to be delivered as part of any development is proposed to address the relevant CRPS and PDP Urban Form and Development Directions. Matters that could be addressed include (but not limited to) vehicle and pedestrian circulation routes, parking areas, built form, frontages and setbacks, and a landscaping strategy.
- 19 More specifically, the ODP includes a single plan illustrating key development feature and accompanying text/narrative which describes these features and the development requirements in further detail. I recommend the ODP is inserted into the Plan as a new

schedule of the Industrial chapter of the Proposed District Plan. I have turned my mind to whether the ODP could be inserted into Part 3 of the PDP where the other ODPS are located, however those rules are triggered by subdivision consent which is not the case in this instance.

- 20 I note that there are no existing rules in the GIZ zone pertaining to ODP's. Further, Council may have a number of rezoning requests resulting in some additional rules. In this instance, I would recommend a new rule relating to the implementation of the ODP is required is added to the Industrial chapter as GIZ-R2 with RD status and assessment matters relating to vehicle crossing design. The ODP and proposed amendments to the PDP are set out in **Attachment 2** of this evidence.
- 21 Given the small area of the site and the consented environment an alternative to proposing an ODP in the PDP (which is only required to satisfy CPRS Objective 5.2.1 and PDP policy UFD-P8 and which seem to relate to larger scale rezonings), development of the site could rely upon accordance with the PDP GIZ zone rules and the Transport Rules. As such, these provisions would be sufficient to support the future industrial development of the subject site.

ASSESSMENT OF ENVIRONMENTAL EFFECTS OF THE PROPOSED ZONING

- 22 Any matters relating to environmental effects are already addressed through the approved resource consent RC215602 for industrial activities at the subject site (refer to **Attachment 1**).

Transport

- 23 The transport related effects of the proposed rezoning have been addressed by Mr Nick Fuller in his evidence.
- 24 Mr Fuller considers that:
- 24.1 GIZ zoning for site is acceptable, given the transport effects of this would be similar to (or less than) the effects associated with the Resource Consent.

I accept and rely upon Mr Fuller's assessment and consider that the proposal will have or acceptable adverse effects on the surrounding environment.

Proposed Waimakariri District Plan Objectives and Policies

- 25 **Attachment 3** of this evidence provides an assessment of the requested rezoning against the relevant objectives and policies in the PDP. It is noted that the approved resource consent to provide for

industrial activities on the subject site, is relied upon for my evidence. Based on that assessment, I conclude that the request is consistent with these provisions.

Section 32 Assessment

- 26 Section 32 of the RMA requires consideration of:
- The extent to which the objectives of the rezoning proposal are the most appropriate way to achieve the purpose of the Act; and
 - Whether the provisions of the rezoning proposal are the most appropriate way to achieve the objectives by identifying other reasonably practicable options for achieving the objectives; and assessing the efficiency and effectiveness of the provisions in achieving the objectives.
- 27 The section 32 evaluation is required to take into account:
- The benefits and costs of policies, rules, or other methods; and
 - The risk of acting or not acting if there is uncertain or insufficient information about the subject matter of the policies, rules, or other methods.
- 28 The following is an assessment of the proposal in accordance with s32 of the Act.

Whether objectives of the proposal are the most appropriate way to achieve the purpose of the Act.

- 29 The proposal does not involve any new, or the alteration of any existing, objectives of the proposed District Plan. The objective of the proposal is to rezone the subject site to GIZ to reflect the consented receiving environment to provide for future industrial uses. This will link to the existing key industrial activities on the adjoining site to the south, Hellers Factory at 67 Main North Road, 9 Neeves Road and 15 Neeves Road, Kaiapoi.
- 30 Provision for the GIZ zoning to assist with consolidating the consented activities for the subject site and the Hellers Factory to the south, is considered appropriate to enable persons and the community to provide for their health and wellbeing, while avoiding, remedying or mitigating potential effects on neighbouring rural residential areas.

Whether the provisions in the proposal are the most appropriate way to achieve the objectives

- 31 Section 32(1)(b) requires an assessment of whether proposed amendments to provisions in the Plan are the most appropriate way to achieve the objectives (of both the proposal and the existing proposed District Plan objectives), having regard to the efficiency and effectiveness of the provisions and having considered other reasonably practicable options (s32(1)(b) and s32(3)).
- 32 As noted above, the request is assessed against the relevant provisions of the proposed District Plan in **Attachment 3**. An assessment of the efficiency and effectiveness of the proposal is contained in **Attachment 4** of my evidence.
- 33 Based on these assessments, I consider that the rezoning proposal is the most appropriate means of achieving the objective.

RESPONSE TO WDC HEARING STREAM 12 MEMO

- 34 I have taken each of the relevant points in the WDC Hearing Stream 12 Memo¹ to rezoning submitters (via hearing panel) dated 12 December 2023 from the 'Information and matters to consider' section on page 3 onwards, as discussed briefly below:

Rural Character

- 35 The surrounding area to the north of the subject site will remain dominated by paddocks, trees and agricultural/horticultural activities and the existing site which is influenced by three residential dwellings will not experience a material loss of open space character. The consented structure is not considered to alter the pattern of structures and buildings in the area, noting the range of the number and scale of buildings at the Hellers Meat Factory, opposite the subject site to the south. In conclusion, the rural character of the underlying zone is unlikely to be undermined by the proposed rezoning.

National Policy Statements

- 36 The following National Policy Statement/National Environment Standard are of relevance to the proposed rezoning to GIZ, including NPS for Highly Productive Land, NPS for Urban Development and NES for Assessing and Managing Contaminants in Soil to Protect Human Health.

¹ WDC Hearing Stream 12 s42A Reporting Officers: Memo to rezoning submitters (via hearing panel) dated 12/12/23.

NPS for Highly Productive Land

- 37 The subject site is proposed to be zoned RLZ in the PDP, it is understood to be excluded from the NPS-HPL as the 'rural lifestyle' zone is not considered a general rural zone and the PDP was notified before the NPS-HPL became operative. Therefore the NPS-HPL is not of relevance to the proposed rezoning to GIZ.

NES for Assessing and Managing Contaminants in Soil to Protect Human Health

- 38 Based on a review of the Listed Land Use Register held by Environment Canterbury, there is no evidence of ground contamination or of activities described on the Hazardous Substances and Industries List occurring or having occurred on the site. Accordingly, the NES for Assessing and Managing Contaminants in Soil to Protect Human Health is not of relevance to the proposed rezoning to GIZ.
- 39 The other NPS and NES standards listed in the Memo² are not of relevance to this rezoning request.

National Policy Statement Urban Development 2022

- 40 The NPS:UD applies to this proposal as it is directed to Tier 1 urban environments, which includes the Waimakariri District as a tier 1 local authority of Christchurch.
- 41 The NPS:UD sets the direction for growth and development within the country with an overall objective¹ of achieving a well-functioning urban environment that enables all people and communities to provide for their social, economic and cultural wellbeing now and into the future.
- 42 The NPS: UD requires local authorities to provide at least sufficient development capacity to meet the expected demand for business activities over the short, medium and long term.
- 43 Planning decisions on urban development are required to contribute to well-functioning urban environments, which have or enable a variety of sites that are suitable for different business sectors in terms of location and site size responsive to proposals, including plan changes that are proposing significant development capacity. This responsiveness is required even if the development capacity is

² WDC Hearing Stream 12 s42A Reporting Officers: Memo to rezoning submitters (via hearing panel) dated 12/12/23.

unanticipated by RMA planning documents (such as the CRPS) or out of sequence with planned land release.

- 44 In turn, the requirement to provide sufficient development capacity and to be responsive to proposals that add significant capacity is considered to assist in supporting competitive land and development markets, which is another objective of the NPS: UD³.
- 45 The NPS:UD has immediate effect and is a higher order document, such that it must be considered above lower order documents which may be outdated and where there is conflict. This includes Regional and District Plans.
- 46 In summary the proposed rezoning is considered consistent with the objectives and policies of the NPS:UD as it will:
- 41.1 have or enable a variety of sites that are suitable for different business sectors in terms of location and site size as required by Policy 1(b); and
- 41.2 Tier 1, 2, and 3 local authorities, at all times, provide at least sufficient development capacity to meet expected demand for housing and for business land over the short term, medium term, and long term.
- 41.3 The Greater Christchurch Spatial Plan⁴ predicts that the surplus industrial land in Waimakariri for the medium term (i.e. 1-10 years) is 1 ha of land. The subject site of 4.98 ha will provide additional industrial land and given the consented activity, its development for industrial purposes is realizable within the 1-10 year timeframe outlined in the Spatial Plan.

Canterbury Regional Policy Statement

- 47 The Canterbury Regional Policy Statement (CRPS) is of relevance to the proposal as the document of which the District Plan must give effect to. The current CRPS was made operative in 2013, and was republished in October 2020, including an update to Map 1 in July 2021. In 2022 the CRPS was amended again to incorporate housing bottom lines in accordance with the NPS: UD. However, the CRPS has not yet been fully amended to give effect to the higher order document, NPS:UD.

³ Objective 2

⁴ Table 3 'Sufficiency of industrial land to meet projected demand (2022 – 2052)', Greater Christchurch Spatial Plan, Hearing Panel, Mark Up Version

- 48 Aside from the matters outlined in para 48 below, no other matters raised in the Regional Policy Statement are of relevance to this body of evidence.

Outline Development Plans (ODPs)

- 49 Objective 5.2.1 of the RPS states territorial authorities will set out objectives and policies that an Outline Development Plan (ODP) is included within the district plan at the time of any rezoning of land which enable substantial developments. Para 24 of the memo⁵ states that if there is no ODP for land sought to be rezoned, submitters should prepare an ODP.
- 50 Accordingly, I propose an outline development plan (ODP) relating to the application site. I recommend the ODP is inserted into the Plan as a new schedule of the Industrial Chapter of the Proposed District Plan. Refer to **Attachment 2** for the ODP.
- 51 I note that there are no existing rules in the GIZ zone pertaining to ODP's. A new rule relating to the implementation of the ODP is required. Refer to **Attachment 2** for the proposed rule.

Iwi Management Plan (IMP)

- 52 As the subject site is not classified in the PDP with any cultural value, the IWP is not relevant to the proposed rezoning.

Infrastructure related information

- 53 Correspondence from Tim McLeod, Senior Civil Engineer, Inovo Projects, has prepared an infrastructure assessment (Refer to **Attachment 5**) in response to the Memo⁶.
- 54 Mr McLeod states:
- 54.1 From an infrastructure perspective, the plan change can be supported by either the extension of existing infrastructure from neighbouring subdivisions or the provision of new water supply and wastewater infrastructure to service the development area. The infrastructure has also been approved already as part of the consent.
- 55 I rely upon the expert advice of Mr McLeod and on this basis consider that the rezoning is appropriate from an engineering perspective. Any potential effects can be appropriately mitigated and managed such

⁶ WDC Hearing Stream 12 s42A Reporting Officers: Memo to rezoning submitters (via hearing panel) dated 12/12/23.

that they are acceptable (or already have been through the consent approval).

Geotechnical related information

- 56 Correspondence from Chris Thompson⁷, Geotechnical Leader at Tetra Tech Coffey. Mr Thompson considers that the report⁸ he prepared for the resource consent application (Ref. RC215602) can be relied upon in terms of s106 Hazards, MBIE Guidance and NZS4431 standards. The approved resource consent accepts the report and identifies work required to occur once development of the subject site commences.
- 57 I rely upon the expert advice of Mr Thompson and on this basis consider that the rezoning is appropriate from a geotechnical perspective. Any potential effects can be appropriately mitigated and managed such that they are acceptable.

Archaeological sites

- 58 The subject site is not of archaeological significance nor is it listed on the Archsite database. Therefore it is not relevant to the proposed rezoning.

PART 2 OF THE RM

- 59 Section 74 of the act requires the rezoning request to be assessed under the provisions of Part 2 of the Act. Part 2 is the overarching purpose and principles of the Act.
- 60 Section 5 sets out the purpose of the RMA, that being to promote sustainable management of natural and physical resources.
- 61 As set out within the above assessment the proposal will provide for people and communities social, economic wellbeing by providing an efficient and consolidated development. The site is seen as a natural extension to the adjoining GIZ. It is considered that any adverse effects can be avoided, remedied or mitigated.
- 62 Section 6 requires matters of national importance which must be recognised and provided for. In respect of the proposal, there are no matters of national importance to consider.
- 63 Section 7 sets out the other matters which regard must be given towards. The proposal has considered these 'other matters' as set out within the above assessment of effects, this includes the fact

⁷ Email to Helen Pickles @ Novo Group on 16/02/24.

⁸ Proposed Industrial Development at Neeves Road, Kaiapoi, Geotechnical Assessment Report, Reference: 773-CHCGE303819, prepared by Tetra Tech Coffey, dated 22 September 2022.

that the proposal is an efficient use of the natural resource, will maintain and enhance amenity values and maintain the quality of the surrounding environment.

- 64 Section 8 requires all persons exercising functions and powers under the Act to take into account the principles of the Treaty of Waitangi. The proposal is considered consistent with the principles of the Treaty.
- 65 Overall, it is considered that the proposal will achieve the purpose and principles of the Act.

CONCLUSION

- 66 Accounting for the following matters associated with the rezoning of the subject site to GIZ:
- 66.1 the evidence of Mr Nick Fuller;
- 66.2 the resource consents held by the submitters for industrial activities on the subject land at 12 and 20 Neeves Road;
- 66.3 The proposed District Plan's stated intention for RLZ to adjoin an established industrial area at the Hellers Meat Factory (south of the subject site) at 67 Main North Road, 9 Neeves Road and 15 Neeves Road Kaiapoi;
- 66.4 Correspondence of Tim McLeod; and
- 66.5 Correspondence of Chris Thompson.
- 67 I consider that the potential adverse effects of the requested rezoning of the land (to GIZ) can or will be avoided, remedied or mitigated to an acceptable standard.
- 68 In terms of section 32, the requested zoning of the land is the most appropriate method for achieving the objective of the proposal and the corresponding benefits will outweigh any potential costs.
- 69 In conclusion, the requested rezoning is considered to be an appropriate, efficient and effective means of achieving the purpose of the Resource Management Act.

Dated: 5 March 2024

A handwritten signature in blue ink, appearing to read 'Helen', written in a cursive style.

Helen Eleanor Pickles

ATTACHMENT 1: RESOURCE CONSENT APPROVAL PACKAGE RC215602

Our Reference: RC215602 / 221017180111

Valuation Reference: 2173006300

17 October 2022

Domett Properties Limited
C/- Byrne & Wauty Consultants Limited
PO Box 39094
CHRISTCHURCH 8140

Dear Sir

**DECISION ON RESOURCE CONSENT APPLICATION
DOMETT PROPERTIES LIMITED - 12 & 20 NEEVES ROAD, KAIAPOI**

Please find enclosed a copy of the decision reached by the Officer under delegated authority from the Council on the above application.

Yours faithfully



Emma Frazer
RESOURCE MANAGEMENT PLANNER

Encl

WAIMAKARIRI DISTRICT COUNCIL

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of an application lodged by **Domett Properties Limited** for a resource consent under Section 88 of the aforementioned Act.

APPLICATION

The applicants sought a resource consent to It is proposed to establish an industrial development with associated access, loading and parking areas. The proposed structure/building will have a total gross floor area of 9657m², and the proposed industrial activity will generate more than 250 vehicle movements per day, utilise 138 on-site car parks, 10 loading spaces and 9 cycle parks and include earthworks relating to foundations, access, hardstand development, bunding, landscaping and storm water treatment.

The application sought consent for industrial activity which they defined as ‘... *an activity that manufactures, fabricates, processes, packages, distributes, repairs, stores, or disposes of materials (including raw, processed, or partly processed materials) or goods. It includes any ancillary activity to the industrial activity.*

(National Planning Standard definition)

The definition is different to that contained within the Operative District Plan.

The proposed building will be constructed of concrete tilt panels, with a metal roof, and loading dock on the south/western elevation of the building. No other details of windows or access were included in the application.

No signs are proposed with the application, and the applicant has stated that any signs will comply with the maximum permitted district plan standards or be the subject of a separate resource consent.

External down lighting is proposed to ensure the safety of the site’s users. All lighting will comply with Council’s standard lux levels.

It is proposed to establish a new vehicle access and crossing mid-way along the southern boundary of the site to/from Neeves Road. This access will be lined with earthen bunds and associated landscaping. Further landscaping is proposed along the periphery of the site including bunding at the northwest corner of the site to screen views of the site from the Northern Motorway and from the adjoining site to the north.

In terms of car parking provision 138 spaces are provided and access/ egress will be provided from Neeves Road. A covered cycle shed will provide parking for a minimum of 10 spaces as well as open air cycle parking in the car park.

The proposed activity will require earthworks to establish the industrial building and surrounding car parking, and associated stormwater management area (SMA). The bulk earthworks will involve stripping 350mm topsoil (average thickness) over an area of 31,400m², and cut-to-fill of approximately 4,000m³ to create the building platform is required (cut-fill balance). Approximately 3,000-4,000m³ of topsoil will be used on-site to form a 2.5m high bund around the western and northern boundaries, the remaining surplus topsoil will be removed from site. The topsoil bund is shown as 5m wide at the base, 1m wide at the top, and 2.5m high (2:1 batters), the bund may be increased in size to use up more topsoil to minimise the volume of soil removed from the site carted off-site. Approximately 18,000m³ of metalcourse will be imported for pavement and building pad construction. The proposed stormwater management area located in the south-eastern corner of the site will involve cut of approximately 1,000m³ and minor filling /shaping.

Estimated wastewater discharged from the site is 15m³/day (5,500m³ pa) assuming dry industry and up to 200 staff per day (single shift). Wastewater discharged for a wet industry will be higher to meet process water use plus staff consumptive use.

Options for disposal include on-site wastewater treatment and disposal (for dry industry only) or pump discharge to the Council gravity wastewater network in Kaiapoi (approximately 1km). Resource consent required for on-site wastewater treatment and disposal from Ecan.

Estimated water demand for the proposed development is 15m³/day (5,500m³ pa) for dry industry (staff consumptive use only), assuming up to 200 staff per day (single shift). Water demand for a wet industry will be higher to meet process water use plus staff consumptive use.

There is no Council reticulated water supply to the site, and therefore water supply will be either from extending the reticulated supply from Kaiapoi (approximately 1km) or establish an on-site water supply. Canterbury Maps records there is an existing shallow bore at 20 Neeves Road (BW24/0563, 29m deep) which is currently used for domestic water supply and stock water. A new bore may be required to supply raw water at suitable flow rate for the proposed activity. Resource consent will be required for water take for industrial use.

Site-specific discharge consents from Environment Canterbury will be required to authorise the discharge of construction and operational-phase stormwater from the site.

Existing stormwater runoff from the undeveloped site is discharged to an existing drain running eastwards alongside Neeves Road, discharging into a Ø600mm culvert under Main North Road and ultimately into Courtenay Stream.

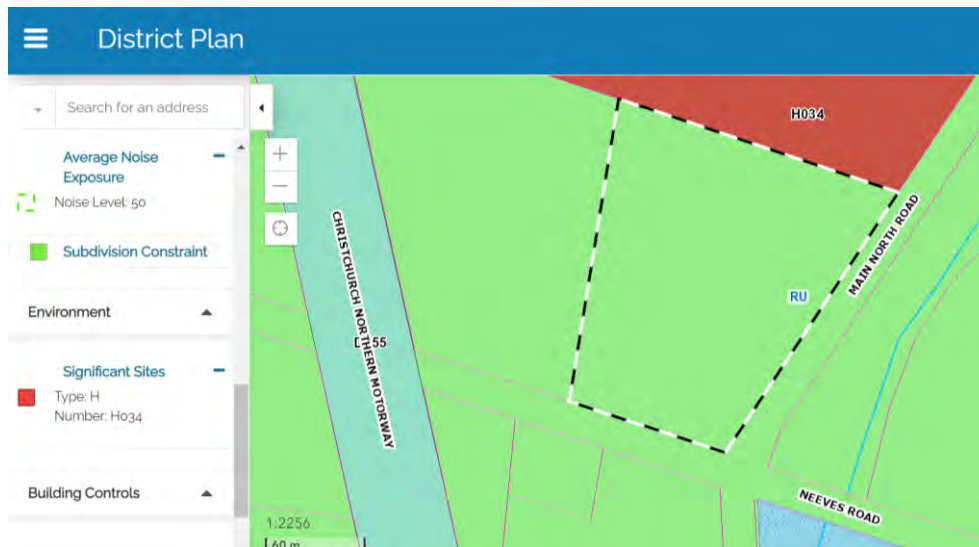
Stormwater runoff from the developed site would be managed by construction of a Stormwater Management Area (SMA) consisting of a first flush basin to hold and treat initial stormwater runoff volume with the highest concentration of contaminants, and a detention basin to attenuate runoff from large rainfall events and release slowly at the pre-development flow rate into the drain outlet on Neeves Road.

As the design has yet to be finalised, the report provides 4 possible foundation options. The report concludes that once the proposed building location has been finalised, further geotechnical investigation is required to better understand the ground conditions for the proposed building. Additionally, once the preferred foundation solution has been adopted, a detailed design will need to be carried out and final foundation plans should be reviewed by Tetra Tech Coffey prior to building consent application.

EXISTING ENVIRONMENT/ BACKGROUND INFORMATION

The subject site is located at 12 and 20 Neeves Road, Kaiapoi, and contains two titles which are legally described as Lot 1 DP 44992 BLK XV RANGIORA SD and Lot 2 DP 44992.

The site is zoned Rural (RU) zone under the Operative Waimakariri District Plan and contains a residential dwelling on each lot and associated accessory buildings. The site is within the subdivision constraint overlay.



The site is 4.98 hectares in area and is predominantly flat. There is some flood hazard affecting the north-eastern area of the site.

Rural and rural residential activity is located on sites to the north. Hellers Meat Factory is a dominant land use in the vicinity of the site and on Neeves Road and is situated to the south of the site. In the wider area, the Christchurch Northern Motorway (SH1) is to the west, and a landfill is located to the east, with industrial and service activities and the Waimakariri River further to the south. The Kaiapoi Town Centre is located approximately 4.5km northeast of the site.

There is an existing private sewer main from the Hellers factory site to Kaiapoi. There is no reticulated water in the vicinity of the site.

DECISION

The Delegated Officer, on the 14th October 2022, approved:

THAT pursuant to Section 104C of the Resource Management Act 1991, consent be granted to establish an industrial activity including 141 parking spaces, over 250 vehicle movements per day and associated earthworks at 12 and 20 Neeves Road, Kaiapoi being Lots 1 and 2 DP 44992 held in two records of title at 2.4ha each, as a restricted discretionary activity subject to the following conditions which are imposed under Section 108 of the Act:

1. Application Plan

1.1 The activity shall be carried out in accordance with the attached approved application plans stamped RC215602 and the information provided with the

application saved on Council file RC215602.

2. Standards

2.1 All stages of design and construction shall be in accordance with the following standards (and their latest amendments) where applicable:

- Waimakariri District Council Engineering Code of Practice
- Waimakariri District Council Stormwater Drainage and Watercourse Protection Bylaw (2018)
- Erosion & Sediment Control Toolbox For Canterbury
- NZS 4404:2010 Land Development and Subdivision Infrastructure
- NZS 4431:2022 Earthfill for Residential Development
- NZS 6803:1999 Acoustics for Construction Noise
- German DIN4150 Standard, Part 3 (1999), Effects of Vibration on Structures
- MOTSAM - Manual of Traffic Signs and Markings
- New Zealand Transport Agency Standards

3. Plans and Specifications

3.1 The Consent Holder shall submit engineering plans, specifications, design report and a design certificate, of all works to the Council for approval. The calculations for the stormwater flows shall be included with the design documentation submitted. No work shall commence until formal approval in writing has been provided by Council. The design certificate shall be signed by a suitably qualified Chartered Professional Engineer.

3.2 The Consent Holder shall ensure the supervising Engineer / Surveyor supplies a certificate signed by a Chartered Professional Engineer to the Council stating that all works have been designed in accordance with the appropriate standards.

3.3 The Consent Holder shall submit any subsequent amendments to the plans and specifications to Council for approval in writing.

3.4 All existing overland flow paths shall be retained at their pre-development capacity, unless provision has been made within engineering plans for the flow path to be diverted, subject to formal approval in writing by Council.

4. Earthworks

4.1 Where excavated cut material is greater than 200mm in thickness, the Consent Holder shall undercut and replace with 100mm minimum of compacted topsoil.

4.2 Any areas of land filling, together with dimensions relative to the property boundaries, shall be supplied to the Council.

4.3 The Consent Holder shall provide details of imported material including the source and type of material, laboratory tests to confirm mode of compaction, type and frequency of transportation and route used to enter the site to Council, in writing, prior to works commencing.

- 4.4 Earthworks shall not block, alter or redirect existing or natural overland flow paths, and shall not block or redirect drains.
- 4.5 All rubbish, organic or other unsuitable material shall be removed off site to an approved disposal facility to be legally disposed of.
- 4.6 All construction operations shall be limited to 7am to 6pm Monday to Sunday.
- 4.7 Dust containment measures shall be employed, such as watering, to avoid off site nuisance effects.
- 4.8 The Consent Holder shall maintain a register of the source of all clean fill materials imported onto the site. The Consent Holder shall provide the register to Council if requested.
- 4.9 Any stockpile not removed after a period of 2 months shall be grassed to prevent sediment migration.
- 4.10 The Consent Holder shall ensure stockpiles and building materials have a minimum setback of 10m from any sensitive areas (e.g. stormwater inlets, paved areas, footpaths or driveways), and are within a sediment control zone positioned behind the sediment barrier.
- 4.11 Construction noise shall not exceed the recommended limits specified in, and shall be measured and assessed in accordance with, the provisions of NZS:6803 MP 1999 Measurement and assessment of noise from Construction, Maintenance and Demolition work. Adjustments and exemptions provided in Clause 6 of NZS:6803 P1999 shall apply.
- 4.12 Earthworks and construction shall be carried out in accordance with a Construction Environmental Management Plan (CEMP) which should include a Site Management Plan. The plan shall be prepared by a suitably qualified and experienced professional (SQEP) and submitted to Council for approval, in writing, prior to works commencing on site.
- 4.13 The CMP shall include, as a minimum, the following information:
- An Erosion and Sediment Control Plan (ESCP)
 - A Site Management Plan (SMP)
 - Details of Stormwater management during the construction phase including: Minimisation of the flow of stormwater through the construction site; that works shall not be carried out during periods of heavy rain; the monitoring of the Councils stormwater infrastructure during the construction phase to ensure it is not overloaded
 - Details of the dewatering procedure and treatment of the water prior to entering the Councils stormwater infrastructure, if necessary
 - Detail the methodology of works and the environmental controls in place to limit effects from issues involving flooding, dust, noise and other pollutants
- 4.14 Any required amendments to the EMP as a result of adverse site conditions shall be submitted in writing to Council.
- 4.15 Any works proposed to be undertaken that do not accord with the EMP as a result of adverse site conditions require the approval of the Council, in writing, prior to these works commencing.

- 4.16 The Consent Holder shall be responsible for installing and maintaining any sediment control devices, protection of the existing land drainage and waterways and making regular inspections, repairs and changes to the proposed measures as required by the SMP.
- 4.17 All earthworks shall be carried out in accordance with NZS4431 and supervised and signed off via a suitably qualified and experienced professional and detailed in an earthworks completion report to be provided to Council for review prior to building consent.

5. Stormwater

- 5.1 The Consent Holder shall install site drains (if required) and a stormwater management area (SMA) in general accordance with the approved plans. All drains (piped and open) and the stormwater management area shall be designed to accommodate a 10% AEP (1 in 10 year) storm derived from rainfall figures for the site location from NIWA's HIRDS Version 4 with RCP 8.5, 2081 - 2100 climate change scenario. Plans, design and calculations shall be provided to Council in writing, for approval, before work commences on site.
- 5.2 The Consent Holder shall provide for secondary flow paths with a design capacity to accommodate flows from a 2% AEP event from the development. The design of the overall stormwater system shall also include consideration of secondary flow paths for events greater than the 2% AEP event.
- 5.3 The SMA constructed under condition 5.1 shall be maintained by the Consent Holder and shall achieve the minimum attenuation allowance designed within the approved plan, at all times.
- 5.4 Any discharge of stormwater runoff from the site or proposed SMA into an existing natural water body or existing Council drain will require specific design to ensure that the water quality of the receiving environment is not altered from its current state as a result of the discharge. Such a design solution shall be provided to Council for review and acceptance at engineering approval prior to works commencing on the site.

6. Water Supply

- 6.1 A potable water supply shall be established on site prior to the erection of the building.
- 6.2 Where the water supply is from an on-site well, the Consent Holder shall construct a new well in accordance with the following minimum requirements:
- a) The top of the well bore casing shall be a minimum of 400mm above the surrounding ground level or 100mm above the 200 year Flood Hazard depth, whichever is greater.
 - b) The bore casing shall be sealed to in situ soil below the surface with bentonite, so as to ensure no surface water or contaminants can enter underlying groundwater.
 - c) The bore head shall be encased by a concrete pad of 100mm minimum thickness which shall project a minimum of 300mm from the perimeter of the bore casing. The concrete pad shall be formed so as to shed water away from the bore casing

and terminate flush with the surrounding ground level. Concrete placed shall be a minimum 20 MPa strength at 28 days.

- d) The bore head shall be capped and all penetrations sealed so as to prevent contaminants entering the bore and underlying ground water.
 - e) A sample point and back-flow preventer shall be installed on the bore riser so as to prevent contaminants siphoning back into the bore and underlying ground water.
- 6.3 The Consent Holder shall confirm the water supply from a new well as potable and shall prove that the water can be readily made potable by recognised and practical treatment methods to the satisfaction of the Council. Water quality tests carried out by an IANZ accredited Laboratory, demonstrating chemical and bacteriological compliance with the Guideline Values (GV) and the Maximum Allowable Values (MAV) published in the “Drinking Water Standards for New Zealand 2005 (Revised 2018)” shall be submitted to the Council. Testing shall be undertaken to the Waimakariri District Council test suite. Samples from the water source shall be taken by an Independent Qualified Person (IQP) with accreditation of Unit Standard 17890: to undertake sampling and testing procedures for water treatment.
- 6.4 The Consent Holder shall supply calculations at engineering approval illustrating the daily volume of water needed to supply the development for dry Industrial use. Once calculated flow tests from any onsite supply shall demonstrate that the calculated minimum volume per day can be supplied to the proposed development and meeting the minimum Peak Hourly Flow of 1.00 L/s/ha.
- 6.5 If the proposed development is to be utilised for wet Industrial use additional calculations on the required capacity will need to be provided to Council for approval and depending on the proposed activity may require an additional supply installed to supply that aspect of the production.
- 6.6 The proposed development shall provide information at engineering approval stage to demonstrate that Fire Service Requirements in accordance with SNZ PAS 4509:2008 New Zealand Fire Service – Firefighting Water Supplies Code of Practice can be met. The approved design solution shall be implemented prior to code compliance certificate being issue.

7. Waste Water

- 7.1 The Consent Holder shall install a suitably designed waste disposal system, or a private reticulation system discharging to the Council reticulated network, with adequate capacity to service the industrial land use with a staff count of 200 people.
- 7.2 Any on-site system shall be complete with a biological filter on the outlet and an effluent pump and connect to the reticulation provided. Any on-site treatment system shall be designed and constructed in general accordance with the revised Waimakariri District Council Engineering Code of Practice Standard Drawing 600-355A issue H. The top of all lids and vents shall be set above the 50 year flood level. Soil permeability testing results, capacity calculations and the overall designed of the waste disposal system shall be reviewed by council prior to instillation
- 7.3 Any onsite system shall be located a minimum of 20m away from the proposed SMA, roadside swale system.

8. Vehicle Crossing

- 8.1 The Consent Holder shall provide a sealed vehicle crossing to Neeves Road located at a distance greater than 75m from the intersection as shown on the approved plan. The vehicle crossing shall be formed in accordance with the requirements of the Waimakariri District Council Engineering Code of Practice Standard Drawing 600-218 Issue E, excepting the 'pipe size' shall be 300mm minimum diameter with headwalls and to meet manufacturer's specifications. The existing table drains/swales shall be re-graded as required to provide a free outfall.
- 8.2 The Consent Holder shall Clegg Hammer test the access prior to final surfacing. A measured Clegg Impact Value of at least 35 for commercial crossings shall be obtained to assure adequate compaction and pavement strength prior to final surfacing. Documentation shall be supplied to Council confirming the test results obtained.
- 8.3 The Consent Holder shall decommission the existing accesses to the properties and reinstate the swale and grass berm.

9. Car Park

- 9.1 The Consent Holder shall submit a site plan and car park design including ten loading spaces, to Council for approval at engineering acceptance stage. The design shall be in general accordance with the stamped approved plan.
- 9.2 The Consent Holder shall construct all car park areas in general accordance with the requirements set out in the Waimakariri District Council Engineering Code of Practice Standard Drawing 600-274 (Issue D).
- 9.3 The Consent Holder shall install wheel stops in areas where the car parks adjoin footpaths adjacent to carparks or landscaping strips to ensure no part of any parked vehicle overhangs the footpath / landscaping strip.
- 9.4 The Consent Holder shall design and install the car park stormwater reticulation incorporating the following parameters:
- The pits shall have submerged outlets
 - Calculations shall be based on rainfall figures for the site location using NIWAs HIRDS Version 4 with RCP 8.5 climate change scenario
 - Secondary flow paths are to be provided for 2% AEP storm events in case of inlet blockages without flooding floors

10. Roading

- 10.1 The Consent Holder shall widen Neeves Road to a point 10m past the vehicle crossing location. Neeves Road shall be widened to meet a total road sealed width of 8.6m with 0.5m unsealed shoulders on each side of the road. The road shall be formed and sealed to general accord with the Waimakariri District Council Engineering Code of Practice drawing 600-272 Issue D.

The Consent Holder shall provide sealing that comprises a two coat wet seal system (grade 6 chip over grade 4 chip) over the entire carriageway surface.

- 10.2 The consent holder shall install a splitter island in Neeves Road or provide a similar

approved solution designed to allow cyclist and pedestrians to cross the intersection safely.

- 10.3 The Consent Holder shall provide Council with design plans for approval, demonstrating solutions to meet conditions 10.1 and 10.2.

11. Geotechnical

- 11.1 Prior to the erection of the building, the Consent Holder shall provide an updated site specific geotechnical assessment, prepared by a suitably qualified Chartered Professional Engineer (CPEng) with experience in commercial development. The results of this assessment shall be used to design specific foundations.

12. Cycle Parking

- 12.1 Prior to the industrial activity commencing on site, a minimum of nine long term cycle parks shall be provided on site, to the following specifications;

- to support the cycle frame and not the wheel only
- be made of durable materials and securely anchored to ground or building
- to allow at least 1m between parking rails where more than one park is provided
- be located; within 15 m of the entrance to the activity, to be easily seen when approaching or leaving the activity, under shelter (where this is available)
- be protected from motor vehicles
- be under lighting if designed to be used at night
- where use will not create a hazard for pedestrians, including visually impaired pedestrians
- provide bicycle parking space within a secure, covered facility

13. Landscaping

- 13.1 A detailed landscape plan shall be prepared and submitted to Council's Planning Manager for approval, and include hard landscaping and paving proposed for hardstand, pedestrian access, fencing, lighting and waste storage areas and associated treatments, along with planting plans and irrigation and maintenance programmes.

- 13.2 The Consent Holder shall plant and stabilise specimen trees to meet the following minimum requirements:

- The type of tree shall be noted on the landscape plan and accepted by the Council

- Each tree shall have a single leader and shall be a minimum of 2.5 metres in height at the time of planting
- 13.3 Car park trees shall include one tree per 5 parking spaces, or per 5 facing pairs of parking spaces. Trees shall:
- be planted at 8m to 10m spacing within a planting bed for which the minimum dimension shall be a circle with a 1.5m radius;
 - be protected from damage by vehicles;
 - be a minimum of 1.5m tall and be in a healthy state at planting;
 - be capable of attaining a minimum height of 4 m at maturity;
 - be planted no closer than 2 m from an underground service or 1 metre from a footpath or kerb; and
 - not impede the passage of pedestrians or vehicles.
- 13.4 Any dead, dying or diseased plants shall be replaced immediately.
- 13.5 The landscaping shall be established prior to the building being occupied for the intended purpose.
- 13.6 Any outdoor waste storage areas shall be screened from public areas (including from roads, car parks, vehicle and pedestrian access ways) and adjacent sites with fencing or landscaping to form a solid screen to a minimum height of 1.8m.

14. Signs

- 14.1 Any sign erected on the site shall only advertise the goods or services available at the site and be wholly located within the site. Any sign shall meet the following standards:
- Shall not mimic traffic signals
 - Shall not have flashing or revolving lights
 - Shall not illuminate or reflect upon exposure to artificial light
 - Shall not have movable parts (including blimps)
 - No more than one sign shall be erected per site, except where a site has a road frontage of more than 200m and two or more frontages two signs can be erected, but no more than one sign per frontage
 - Where the sign is visible from any road with a posted speed limit of 70km/hr or greater, present an unrestricted view to the motorists for a minimum distance of 180m

- Shall display no more than six words, or, if a combination of words and symbols, display no more than 40 characters
- Shall display symbols or letters of a minimum height of 160mm
- Have a display area of any free standing sign not exceeding 3m²
- Not exceed a height limit of 3 metres
- Where the sign is facing a State Highway where the posted speed limit is 70km/hr or greater, the minimum lettering height for the sign shall be 180mm; and
- where the sign is facing a State Highway, be located no closer than 15m to an official road sign erected by the New Zealand Transport Agency.

15. Artificial Exterior Lighting

15.1 Any artificial exterior lighting within the site shall meet the following minimum standards;

- be directed away from the sky
- except for any street light, be directed away from the site boundary and roads so as to avoid light spill, or in the case of a road boundary, avoid a distraction or glare which would create a traffic hazard
- be placed so as to avoid causing an air or sea navigation hazard

16. Noise Limits

16.1 Activities on the site shall not exceed the following noise limits within measurement time intervals in the time-frames stated at any point within the notional boundary of any dwellinghouse in the Rural Zone;

- a. Daytime: 7am to 7pm Monday to Saturday, and 9am to 7pm Sundays and Public Holidays: 50dBA L₁₀.
- b. Other times: 40dBA L₁₀.
- c. Daily 10pm-7am the following day: 70dBA L_{max}.

16.2 Construction noise shall not exceed the recommended limits specified in, and shall be measured and assessed in accordance with, the provisions of NZS:6803: P1984 "Measurement and Assessment of Noise from Construction, Maintenance, and Demolition Work". Adjustments and exemptions provided in clause 6 of NZS:6803: P1984 shall apply.

17. Hazardous Substances

17.1 The maximum amounts of the listed hazardous substances set out in column 2 of Table 31.3 shall not be exceeded.

Table 31.3: Hazardous Substance – Maximum Levels Per Site

| Substance | 2 Any Site in the Rural Zone |
|---|--|
| Class 3a flammable liquid such as petrol, ethanol, methanol, acetone, and adhesives | 100,000 litres |
| Class 3c flammable liquids in above ground tanks such as diesel, and petroleum oils | 100,000 litres |
| Chlorine gas | 1 tonne |
| Chlorites | 1 tonne |
| LPG | 6 tonnes 20,000 litres (water equivalent) |
| Timber treatment preservatives | 4000 litres |

17.2 Where any hazardous substance below the maximum quantities set out in Table 31.3 are permanently used or stored, the consent holder shall:

- Ensure all use, handling, and storage areas are sealed from the ground with impervious materials; and
- Provide protection measures to contain a spill or release of hazardous substance within a bunded or other secure area.

17.3 No hazardous substance shall be stored, used or disposed of in a manner in which it can be deposited or carried into any storm water system, or water body.

17.4 Where the site or facility is used for the use, storage, transportation, re-use, manufacture or disposal of hazardous substances listed in Table 31.3, the consent holder shall hold on the site, or on the facility, a copy of a contingency plan setting out emergency procedures to be followed in the event of an escape or spillage of hazardous substances.

18. Retail Activities

18.1 Any retail activity shall not exceed 20% of the net floor area of the sum of all buildings on the site.

18.2 Any goods retailed under condition 18.1 shall be produced and/or processed on the site including ancillary products and goods.

19. As-Built Records

19.1 An electronic set of 'As Built' plans shall be provided at a scale of 1:500 and 1:1000. In addition to the plans a Chartered Professional Engineer or Registered Professional Surveyor shall provide a separate certification statement stating that the 'As Built' plans are a true and accurate record of all services.

- 19.2 'As Built' plans including long sections setting out in detail the location of all utilities and services, road infrastructure (including footpaths), landscape planting and recreation reserves shall be provided to the Council immediately following completion of the works and shall be available at the time of the works complete inspection.
- 19.3 Where 'As-Built' plans have been prepared using computer aided draughting techniques a copy of the file shall be made available to the Council in either of the following formats -Microstation (.DGN), Autocad (.DWG), or (.DXF).
- 19.4 The Consent Holder shall provide an asset register for all assets to be vested in Council, including pipes, valves, fittings, manholes, structures and the like. The asset register shall include construction costs.

20. Maintenance

- 20.1 The Consent Holder shall lodge a bond equal to 5% of the cost of road upgrade works with Council for 12 months period.
- 20.2 The Consent Holder shall ensure development maintenance includes repair of any damage or defects in any of the works or services associated with the development as consented.
- 20.3 The Consent Holder shall be responsible for the maintenance of all development and the upgraded Neeves Road for a period of 12 months, excluding street trees and irrigation which shall have a maintenance period of 24 months, following the date of issue of the Section 224(c) 'Conditions Certificate'.

21. Conditions Auditing

- 21.1 The Council, on an actual cost basis, shall audit compliance with the conditions of consent by both site inspections and checking of associated documentation to ensure the work is completed in accordance with the approved plans and specifications and to the Council's standards. The Council will undertake inspections and checking.
- 21.2 For audit inspections required by the consent, the Consent Holder shall notify the Council Development Team at least 24 hours prior to commencing various stages of the works, preferably by email to subdivaudit@wmk.govt.nz including subdivision and contractor/agent contact details or by phone on 0800 965 468.
- 21.3 The minimum level of inspection shall be as follows:
- SMA / Stormwater
- On completion of earthworks
 - On completion
- Water
- On completion
- Earthworks
- Following stripping of topsoil
 - During progress of the earthworks

- Prior to filling drainage ditches
- On completion to final levels

Carparks Accesses and Road

- Following shaping of footpath sub grade prior to placement of sub base material
- Following metalling up, prior to pouring of any kerb and channel
- Following compaction of basecourse prior to sealing. The footpath shall be tested with a Clegg Hammer. The results shall be submitted to Council for approval
- On completion

Environmental Management

- Following set up of erosion and sediment control measures as per approved EMP
- During progress of the works

Whole Works

- One week prior to end of maintenance period (where applicable)
- On completion

21.4 Compliance with the above conditions shall be verified by inspection by a Council Officer pursuant to section 35(2)(d) of the Resource Management Act 1991. For inspection/s conducted under the above condition, the Consent Holder shall pay to the Council charges pursuant to section 36(1)(c) of the Resource Management Act 1991 to enable the Council to recover its actual and reasonable costs in carrying out the inspections.

22. **Works Condition**

22.1 Conditions 1 to 21 of this consent will not be considered to have been complied with until the Chartered Professional Engineer provides a “Certificate of Completion” to the satisfaction of the Waimakariri District Council.

ADVICE NOTES

Definition of Industrial Activity

- The definition of industrial activity in the resolution is from the National Planning Standards definition, meaning “... *an activity that manufactures, fabricates, processes, packages, distributes, repairs, stores, or disposes of materials (including raw, processed, or partly processed materials) or goods. It includes any ancillary activity to the industrial activity.*”

Resource Management Act

- This activity has been granted resource consent under the Resource Management Act 1991. It is not a consent under any other Act, Regulation or Bylaw. The activity must comply with all relevant council bylaws, the Building Act 2004 and any other relevant laws and regulations. If you require other approvals, such as a building consent or vehicle crossing permit, please visit Council’s website for application forms.

Traffic Management

- The Consent Holder is advised that Traffic Management Plan forms can be

sourced from Council Service Centres or on-line at:
<https://www.waimakariri.govt.nz/home>.

- No excavation shall commence within a public road reserve without the prior receipt and approval of a Corridor Access Request (CAR).

Selling food or drinks

- Any consent holder for a business preparing or serving food and/or alcohol will need to ensure that the business complies with any requirements under the Food Act 2014 and the Sale and Supply of Alcohol Act 2012 and associated regulations. Please contact Council's Environment Services Unit for further information

Environment Canterbury

- This activity may require resource consent from Environment Canterbury. Please ensure that consent is obtained from them prior to the commencement of the activity.

Monitoring & Inspections for a land use consent

- Please contact the Council's Compliance and Monitoring Team at compliance@wmk.govt.nz to alert the Council when work or project is beginning. Monitoring may be undertaken to ensure the activity is complying with the information supplied in the application; and
- Additional monitoring fees may be charged on a time and cost basis if required. This includes any non-compliance with the condition/s of the resource consent and the Council need to re-visit the site.
- Where the conditions of this consent require any reports or information to be submitted to the Council, please forward these documents to the Council's Compliance and Monitoring Team at compliance@wmk.govt.nz

Lapse Period (Land Use Consents)

Pursuant to Section 125 of the Resource Management Act 1991, if this resource consent is not given effect to within five years after the date of the decision for this consent, then this resource consent shall lapse unless a longer period has been approved by the Council under section 125 of the Act.

Development Contributions

The Consent Holder shall be advised that development contributions may apply depending on connection to services and that these will be levied in accordance with the Council's Development Contributions Policy. Development Contributions will be advised in a letter separate to the resource consent decision. Payment of development contributions is required prior to the completion of the 224(c) process, under section 208 of the Local Government Act 2002.

REASONS FOR DECISION

- The effects on the environment will be less than minor as a result of the location, design and set out of the proposed earthworks, car parking areas and activity. Vehicle access and parking has been provided that is accessible and safe to use, pedestrian access around and through the site is appropriate, and

the location is appropriate in the modified area of the Rural Zone.

- The proposal can achieve the objectives and policies of the Operative District Plan and limited weight is given to the Proposed District Plan objectives and policies.
- No parties have been identified as affected and there are no special circumstances.









DATED at Rangiora this 17th Day of October 2022

A handwritten signature in black ink, appearing to be 'Emma Frazer', written over a horizontal line.

SIGNED by **Emma Frazer**
RESOURCE MANAGEMENT PLANNER

WAIMAKARIRI DISTRICT COUNCIL
- APPROVED APPLICATION -
RC215602
APPROVED by Authorised Officer
Wendy Harris 14/10/2022

KEY:

-  Proposed Feature Trees
-  Existing Specimen Trees to be Retained (if possible)
-  Garden Beds and Planting
-  Lawn Areas, Softscapes, Swales or Stormwater Treatment
-  Building (indicative only design and layout tba)
-  Hardscape / Road / Concrete Surface (design tba)
-  Property Boundary
-  10m Setback Lines

GENERAL NOTES:

- A. Total site area = 49813m²
- B. Site coverage (shown by buildings - see A) is 19%. This is under the 20% allowed by the District Plan.
- C. Landscaping and site details to be designed once layout established.
- D. All dimensions shown on the Site Plan are approximate only, gathered from aerial data.
- E. The Concept Plan is based on information provided on behalf of/ by the client.
- F. The plans have been prepared for the purposes of concept and engagement only; details to be assessed.
- G. Intended solely for the use of the client in accordance with the agreed scope of works.
- H. Information contained within this drawing is the sole copyright of Novo Group and is not to be reproduced without their permission.
- I. Construction Drawings and Specification are not included as part of this stage of works.

SITE CONCEPT DESIGN

NEEVES RD DEVELOPMENT

DRAWING STATUS

RESOURCE CONSENT

REVISION
 20.10.21 - Rev 1.1
 12.10.22 - REV 2

A

| | |
|-------------------------|-----------------------------|
| STAGE CONCEPT DESIGN | DRAWN ANNE WILKINS (BLA) |
| SCALE 1:1500 @ A3 | DATE 11.05.21 |
| JOB NO. 889001 | DWG NO. NEEV-DRG-LA-101 |



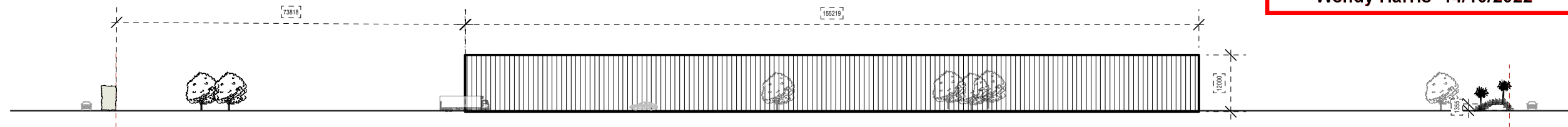
LEGEND

- A** Buildings (indicative) as shown. Total area = 9605m² / 19% of total site area (approx)
- B** Access road into site from Neeves Road. To be set back from intersection as per traffic engineer requirements.
- C** Areas of planting or landscaping with potential for retention of existing areas of trees to be retained where possible (to be determined).
- D** Main carparking area for site. Includes provision for 139 carparks (135 staff/visitor, and 4 mobility spaces).
- E** Potential areas for swales or planting along road frontage. Landscape design to be tied in with existing planting where possible.
- F** Covered cycle shed (at least 10x secure spaces) and cycle parking in carpark.
- G** Loading bay area and spaces for trucks and service vehicles. To allow for at least 9x loading bays (at 12.5m x 3.5 as shown). Area to be 40m x 40m to allow for tracking.
- H** Potential boundary planting and / or hedges. Potential for mounding or bunds with planting incorporated if required (to be defined)
- I** Grassed area utilised for stormwater pond or retention as required - as per engineers design provided by iNovo.

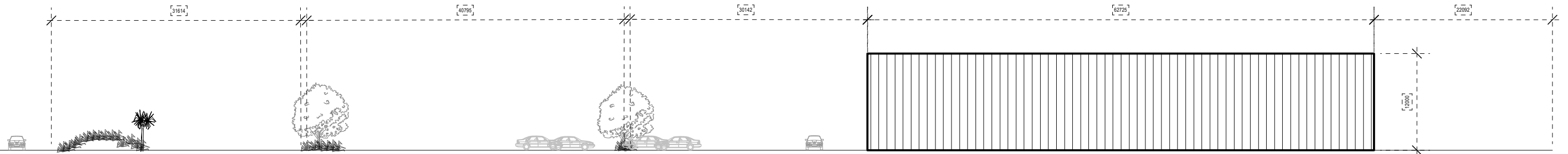


Environment Canterbury, Waimakariri

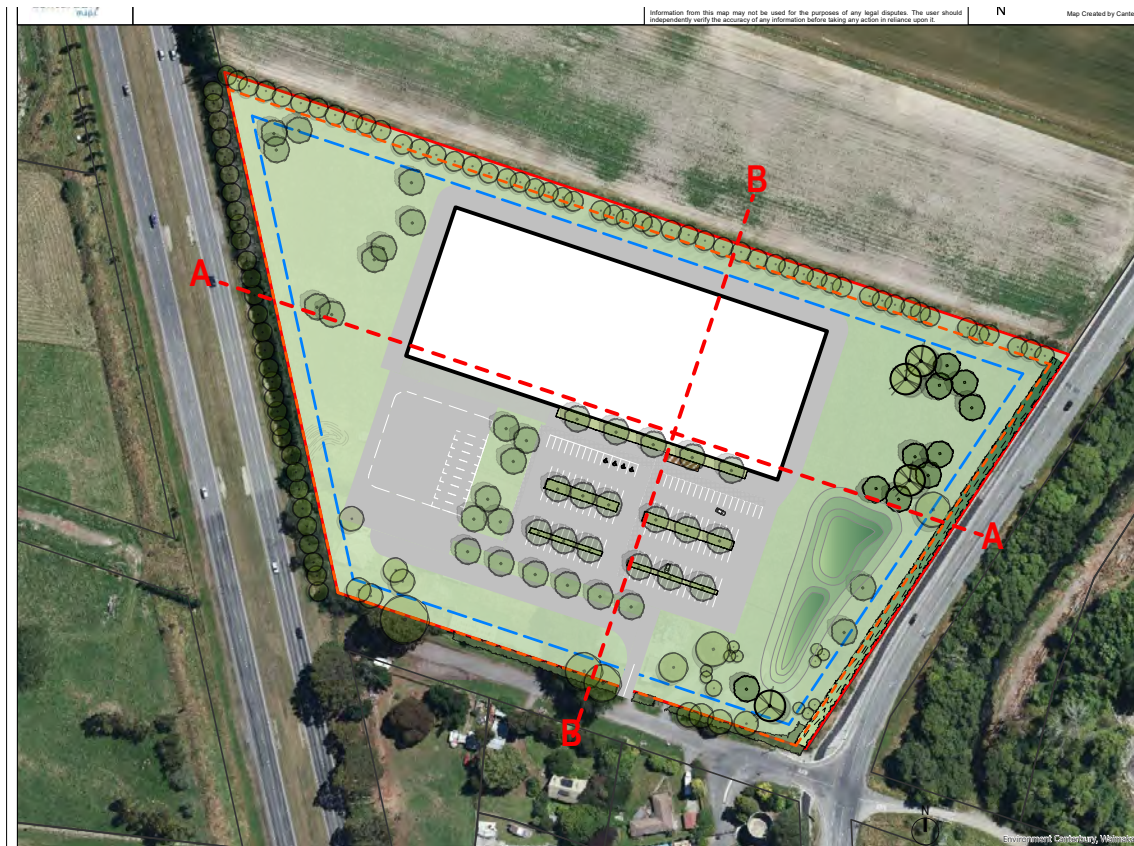
WAIMAKARIRI DISTRICT COUNCIL
 - APPROVED APPLICATION -
 RC215602
 APPROVED by Authorised Officer
 Wendy Harris 14/10/2022



1 Elevation A-A
 Scale: 1:1000



3 Elevation B-B
 Scale: 1:500



INDICATIVE ELEVATIONS
NEEVES RD DEVELOPMENT

DRAWING STATUS

RESOURCE CONSENT

REVISION
 20.10.21

(A)

STAGE
 CONCEPT DESIGN

DRAWN
 ANNE WILKINS (BLA)

SCALE
 1:1500 @ A3

DATE
 12.05.21

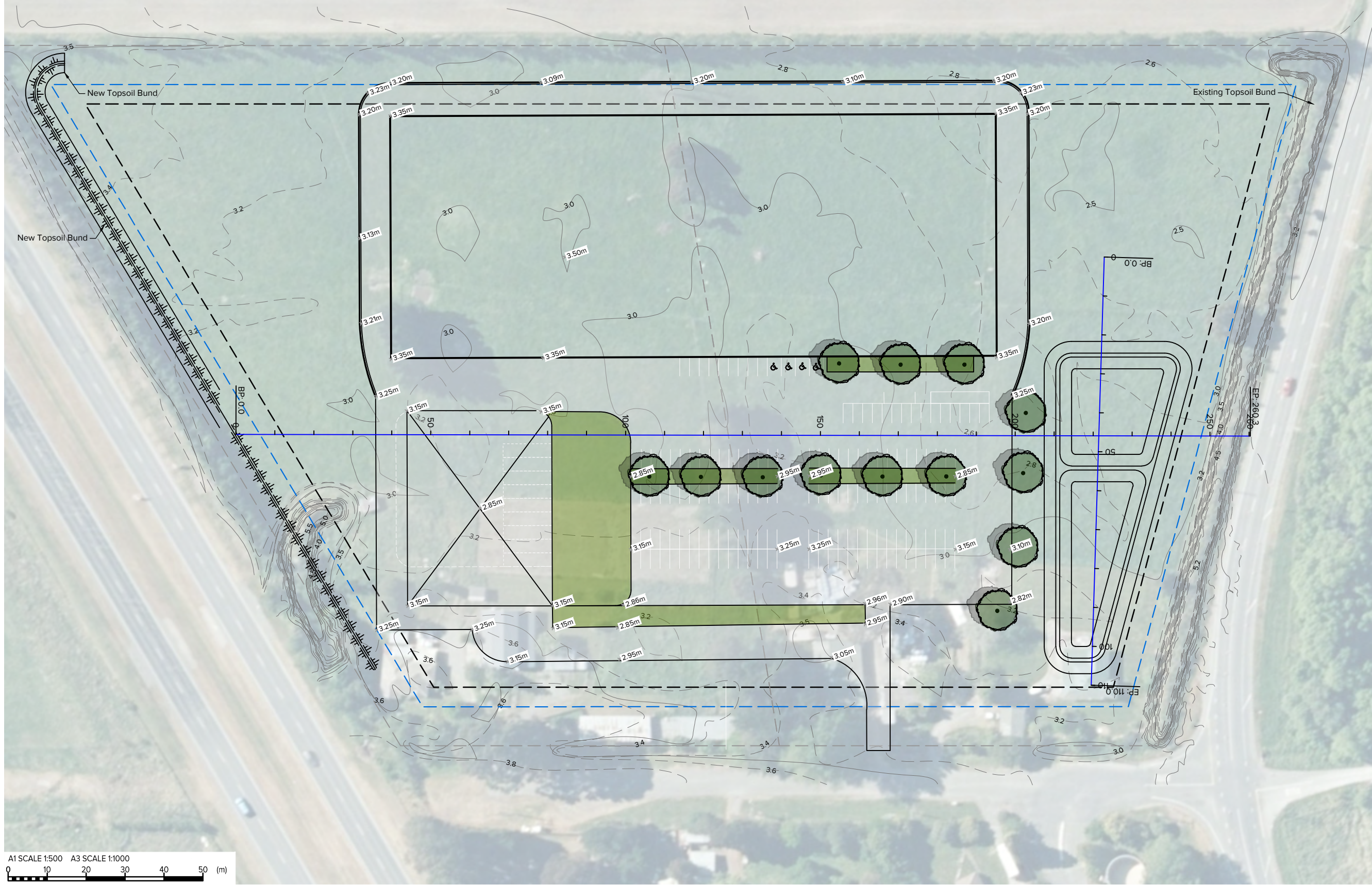
JOB NO.
 889001

DWG NO.
 NEEV-DRG-LA-102





WAIMAKARIRI DISTRICT COUNCIL
- APPROVED APPLICATION -
RC215602
APPROVED by Authorised Officer
Wendy Harris 14/10/2022



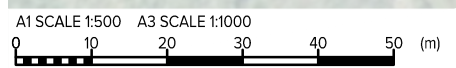
NOTES

Legal Description: Lot 1 and 2 DP 44992
 Comprised In: CB23B/1161 and CB23B/1162
 Application Address: 20 and 12 Neeves Road, Kaiapoi, Christchurch
 Registered Owners: Domett Properties Limited
 Local Authority: Waimakariri District Council
 Zone: RLZ - Rural Lifestyle Zone
 Horizontal Datum: NZGD 2000 Mt Pleasant Circuit

- All dimensions in metre unless otherwise specified.
- Boundary is indicative only subject to survey.
- Aerial imagery (flown 2020), Cadastral Information (as at 08/2022) and Lidar-1m-dem-2014 sourced from Linz Data Service and licensed for re-use under the Creative Commons Attribution 4.0 International Licence.
- This drawing to be read in conjunction with Novo group limited drawings No. NEEV-DRG-LA-101
- Areas and dimensions are subject to final survey.
- Location of existing services are approximate only and the contractor shall be responsible for the location and protection of all services prior to undertaking any excavation.

LEGEND

| | |
|--|----------------------------|
| | Lot Boundary |
| | Legal Road Boundary |
| | Abuttal Boundary |
| | Existing Easement Boundary |



| Rev# | Description | Drawn | Date |
|------|------------------------------------|-------|----------|
| C | PRELIMINARY ISSUE | CB | 12.10.22 |
| B | UPDATE CONTOURS, ADD SECTION LINES | TMcl | 30.09.22 |
| A | PRELIMINARY ISSUE | EA | 16.08.22 |

INOVO PROJECTS
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 www.inovo.nz

Scale A1
1:500
Scale A3
1:1000
DO NOT SCALE FROM DRAWING

Designed
TMcl
Approved
Date
16.08.2022

Client

Licensed Agent REAA 2008

Project
NEEVES ROAD WAREHOUSE

Drawing Title
PROPOSED SITE LAYOUT & EXISTING GRND CONTOURS

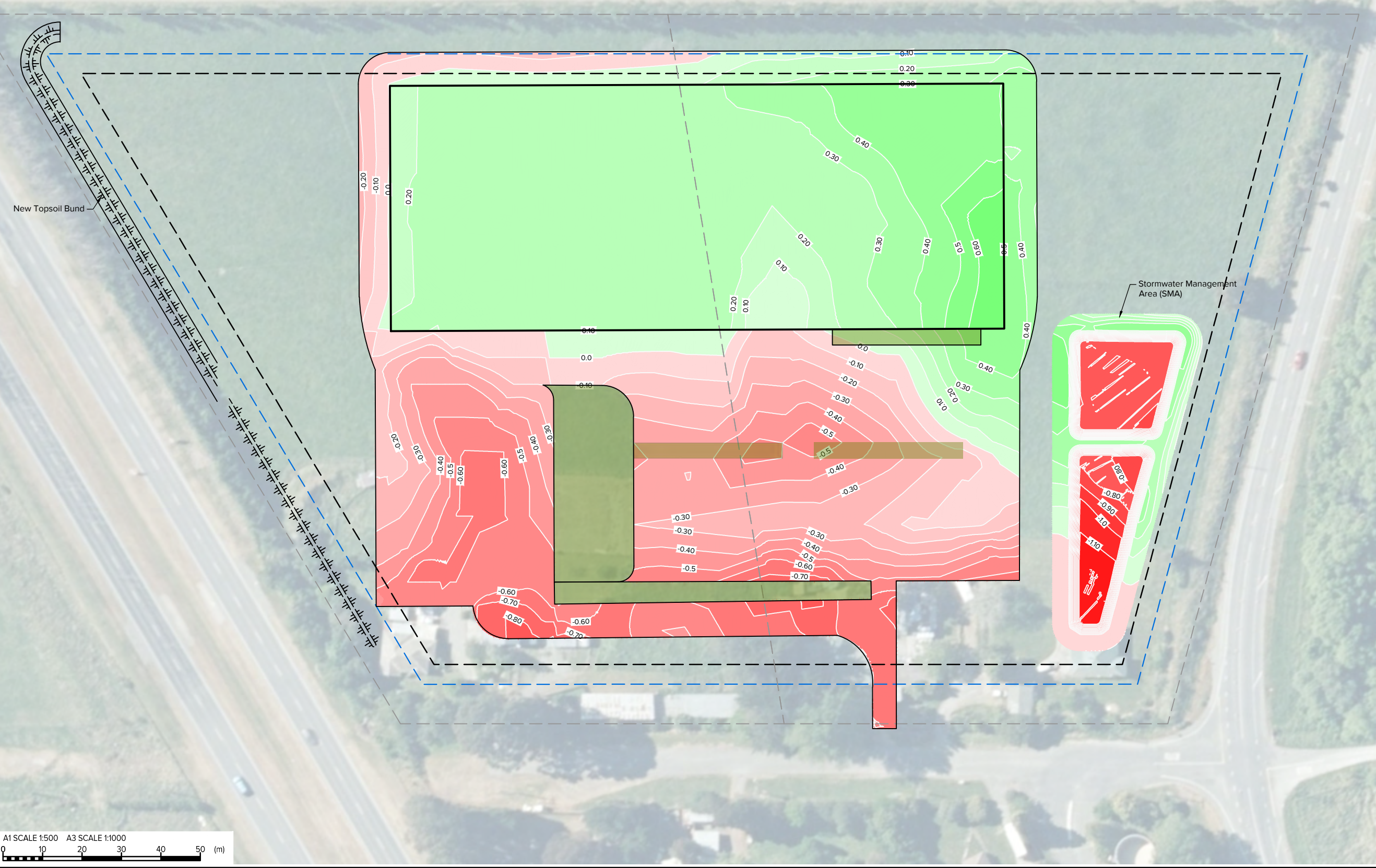
Status
PRELIMINARY

Drawing No.
15440-E-100

Rev
C



WAIMAKARIRI DISTRICT COUNCIL
- APPROVED APPLICATION -
RC215602
APPROVED by Authorised Officer
Wendy Harris 14/10/2022



NOTES

Legal Description: Lot 1 and 2 DP 44992
 Comprised In: CB23B/1161 and CB23B/1162
 Application Address: 20 and 12 Neeves Road, Kaiapoi, Christchurch
 Registered Owners: Domett Properties Limited
 Local Authority: Waimakariri District Council
 Zone: RLZ - Rural Lifestyle Zone
 Horizontal Datum: NZGD 2000 Mt Pleasant Circuit

- All dimensions in metre unless otherwise specified.
- Boundary is indicative only subject to survey.
- Aerial imagery (flown 2020), Cadastral Information (as at 08/2022) and Lidar-1m-dem-2014 sourced from Linz Data Service and licensed for re-use under the Creative Commons Attribution 4.0 International Licence.
- This drawing to be read in conjunction with Novo group limited drawings No. NEEV-DRG-LA-101
- Areas and dimensions are subject to final survey.
- Location of existing services are approximate only and the contractor shall be responsible for the location and protection of all services prior to undertaking any excavation.

LEGEND

— Lot Boundary
 — Legal Road Boundary
 - - - Abuttal Boundary
 - - - Existing Easement Boundary

BULK CUT & FILL

Assumptions:
 Topsoil Strip = 350mm
 Building FFL = 3.50m
 Building slab thickness = 150mm
 Building raft thickness = 450mm
 Carpark pavement total thickness = 600mm
 Truck park pavement total thickness = 700mm

BULK CUT&FILL
 Cut Volume = 3,500m³
 Fill Volume = 3,500m³
 (cut-fill balance)

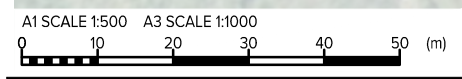
Topsoil Strip = 8,000m³
 Topsoil bund around site = 2,000m³
 Surplus Topsoil = 6,000m³ (remove from site)

IMPORT METALCOURSE (subbase & basecourse)
 Building raft = 4,500m³
 Carpark pavement = 5,500m³
 Truck park pavement = 2,500m³

SMA VOLUMES

Basin total depth 1.15m
 Water depth on basin 1.00m
 Water Retention Volume 615m³
 First Flush Volume 605m³

CUT&FILL
 Cut - 1000m³
 Fill - 200m³
 Net volume - 800m³ of cut
 *No topsoil strip has been considered for the basin area.



| Rev# | Description | Drawn | Date |
|------|-----------------------------------|-------|----------|
| C | PRELIMINARY ISSUE | CB | 12.10.22 |
| B | SMA AREA, BULK EW VOLUMES UPDATED | CB | 30.09.22 |
| A | PRELIMINARY ISSUE | CB | 23.09.22 |

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Scale A1
1:500
Scale A3
1:1000
DO NOT SCALE FROM DRAWING

Designed
TMcl
Approved
Date
16.08.2022



Client
NEEVES ROAD WAREHOUSE

Project
BULK CUT & FILL PLAN

Status
PRELIMINARY

Drawing No.
15440-E-200

Rev
C

Stormwater Management Area Stormwater Management Area

WAIMAKARIRI DISTRICT COUNCIL
- APPROVED APPLICATION -
RC215602
APPROVED by Authorised Officer
Wendy Harris 14/10/2022

| | | | | | | | | | | | |
|----------------------|-----|------|------|-------|------|-------|-------|-------|--|-------|------|
| Datum R.L. -2.0 | | | | | | | | | | | |
| <u>DESIGN LEVELS</u> | | | | | | | | | | | |
| EXISTING LEVELS | | 2.65 | | 2.80 | | 2.80 | | 3.07 | | 3.20 | 3.20 |
| DEPTH | | | | -0.80 | | -0.80 | | -1.07 | | -0.95 | 0.00 |
| CHAINAGE | 0.0 | 20.0 | 40.0 | 60.0 | 80.0 | 100.0 | 107.0 | 110.0 | | | |

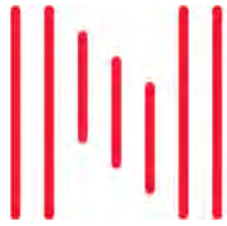
SECTION NORTH LONG SECTION

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|----------------------|-----|------|-------|-------|------|------|-------|-------|-------|-------|-------|
| Datum R.L. -2.0 | | | | | | | | | | | |
| <u>DESIGN LEVELS</u> | | | | | | | | | | | |
| EXISTING LEVELS | | 3.07 | | 3.08 | | 3.20 | | 3.04 | | 3.00 | 3.00 |
| DEPTH | | | | -0.02 | | 0.12 | | -0.12 | | 0.09 | 0.03 |
| CHAINAGE | 0.0 | 20.0 | 101.0 | 40.0 | 60.0 | 80.0 | 100.0 | 120.0 | 140.0 | 160.0 | 180.0 |

SECTION SOUTH LONG SECTION

| | | | | | | | | | | | |
|--|--|------|--|-------|--|-------|--|-------|--|-------|-------|
| | | | | | | | | | | | |
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| | | 3.14 | | 3.03 | | 3.07 | | 3.04 | | 3.01 | 2.69 |
| | | 3.04 | | 3.00 | | 3.20 | | 3.05 | | 2.72 | 2.80 |
| | | 0.09 | | 0.03 | | -0.13 | | -0.01 | | 0.29 | 2.86 |
| | | 80.0 | | 100.0 | | 120.0 | | 140.0 | | 160.0 | 180.0 |
| | | | | | | | | | | | 200.0 |
| | | | | | | | | | | | 220.0 |
| | | | | | | | | | | | 240.0 |
| | | | | | | | | | | | 260.0 |
| | | | | | | | | | | | 260.3 |

SECTION SOUTH LONG SECTION



NOVO group
Planning. Traffic. Development.

Land Use Consent Application
prepared for

DOMETT PROPERTIES
LIMITED

12 and 20 Neeves Road, Kaiapoi

October 2021



Land Use Consent Application
prepared for

DOMETT PROPERTIES LIMITED

12 and 20 Neeves Road, Kaiapoi

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| | |
|--------------------------|---|
| Document Date: | 28/10/2021 |
| Document Version/Status: | FINAL |
| Project Reference: | 889001 |
| Project Manager: | Jeremy Phillips, Senior Planner and Director |
| Prepared by: | Helen Pickles, Senior Planner Nick Fuller, Senior Traffic Engineer Anne Wilkins, Principal Landscape Architect and Urban Designer |
| Reviewed by | Jeremy Phillips, Senior Planner and Director |

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Form 9: Application for Resource Consent Under Section 88 of the Resource Management Act 1991

TO: The Waimakariri District Council

We: Domett Properties Limited ('the applicant'), apply for the Land Use Consent described below.

1. The activity to which the application relates (the proposed activity) is as follows:

Resource consent is sought to establish an industrial activity and associated landscaping, parking and access at 12 and 20 Neeves Road, Kaiapoi.

The proposed activities for which consent is sought will be undertaken in accordance with the details, information and plans that accompany and form part of the application, including the Assessment of Effects on the Environment attached.

2. The site at which the proposed activity is to occur is as follows:

The application site is 12 and 20 Neeves Road, Kaiapoi and is legally described as Lot 1 DP 44992 BLK XV RANGIORA SD and Lot 2 DP 44992. Refer to the Certificate of Title in **Appendix 1**.

The natural and physical characteristics of the site and any adjacent uses that may be relevant to the consideration of the application is set out in further detail within the details, information and plans that accompany and form part of the application, including the attached Assessment of Effects on the Environment ('**AEE**').

3. The full name and address of each owner or occupier (other than the applicant) of the site to which the application relates are as follows:

Domett Properties Limited.

The site contains three residential dwellings and associated accessory buildings.

4. There are no other activities that are part of the proposal to which this application relates.

5. No additional consents are required at this time in relation to this proposal.

6. I attach an assessment of the proposed activity's effect on the environment that—

(a) includes the information required by clause 6 of Schedule 4 of the Resource Management Act 1991; and

(b) addresses the matters specified in clause 7 of Schedule 4 of the Resource Management Act 1991; and

(c) includes such detail as corresponds with the scale and significance of the effects that the activity may have on the environment.

7. I attach an assessment of the proposed activity against the matters set out in Part 2 of the Resource Management Act 1991.



8. I attach an assessment of the proposed activity against any relevant provisions of a document referred to in section 104(1) (b) of the Resource Management Act 1991, including the information required by clause 2(2) of Schedule 4 of that Act.
9. I attach an assessment of the proposed activity against the resource management matters set out in the relevant planning documents.
10. I attach all necessary further information required to be included in this application by the district plan, the regional plan, the Resource Management Act 1991, or any regulations made under that Act.

Helen Pickles, Senior Planner

DATED: 28 October 2021

(Signature of applicant or person authorised to sign on behalf)

Address for service:

Novo Group Limited
PO Box 38 123
Christchurch 8842

Attention: Helen Pickles

T: 021708737
E: helen@novogroup.co.nz

Address for Council fees:

Domett Properties Ltd c/o Rangatira Ltd
Level 8, Equinox House, 111 The
Terrace, Wellington 6140

Attention: Ali Brown

T: 027 4869694
E: ali.brown@rangatira.co.nz



Assessment of Effects on the Environment (AEE)



Table of Contents

| | |
|---|----|
| Introduction..... | 1 |
| The Site and Surrounding Environment..... | 1 |
| The Proposal..... | 3 |
| Statutory Context..... | 4 |
| NES for Contaminants in Soil..... | 4 |
| Waimakariri District Plan..... | 4 |
| Overall Activity Status..... | 5 |
| Proposed Waimakariri District Plan..... | 5 |
| Resource Management Act 1991- s95-95E and s104-104C..... | 5 |
| Greater Christchurch Regeneration Act 2016..... | 6 |
| Assessment of Actual or Potential Effects on the Environment..... | 6 |
| Summary of Effects..... | 10 |
| Relevant Provisions of Planning Instruments..... | 10 |
| Waimakariri District Plan..... | 10 |
| Proposed Waimakariri District Plan..... | 14 |
| Relevant Other Matters..... | 19 |
| Consultation..... | 19 |
| Mitigation Measures..... | 19 |
| Consideration of Alternatives..... | 20 |
| Resource Management Act 1991: Sections 5-8 (Part 2)..... | 20 |
| Greater Christchurch Regeneration Act 2016..... | 20 |
| Conclusion..... | 20 |

List of Figures and Tables

| | |
|--|---|
| Figure 1: Site Location (Source: Canterbury Maps)..... | 2 |
|--|---|



Appendices

Appendix 1 Certificate of Titles

Appendix 2 Concept Plans

Appendix 3 Compliance Assessment

Appendix 4 Transport Assessment



Introduction

1. This application seeks land use consent as a restricted discretionary activity to establish an industrial development, and associated landscaping, signage, parking and access at 12 and 20 Neeves Road, Kaiapoi.
2. Section 88 of the Resource Management Act 1991 ('the Act') sets out the particular requirements for persons making an application to a local authority for a resource consent. Section 88(2)(b) states that:

"an application must be made in the prescribed form and manner; and include, in accordance with Schedule 4 of the Act, an assessment of environmental effects in such detail as corresponds with the scale and significance of the effects that the activity may have on the environment. The following assessment is made in accordance with these requirements".

3. The following assessment is made in accordance with these requirements

The Site and Surrounding Environment

4. The subject site is located at 12 and 20 Neeves Road, Kaiapoi, and contains two titles which are legally described as Lot 1 DP 44992 BLK XV RANGIORA SD and Lot 2 DP 44992. The relevant Certificate of Titles are contained within **Appendix 1**. The site is zoned Rural (RU) zone under the Waimakariri District Plan and contains a residential dwelling on each lot, and associated accessory buildings, as shown in **Figure 1** below.
5. The site is 4.98 hectares in area and is predominantly flat. As shown in **Figure 1** below, the surrounding environment is varied in nature. Rural and rural residential activity is located on sites to the north. Hellers Meat Factory is a dominant land use in the vicinity of the site and on Neeves Road, and is situated to the south of the site. In the wider area, the Christchurch Northern Motorway (SH1) is to the west, and a landfill is located to the east, with industrial and service activities and the Waimakariri River further to the south. The Kaiapoi Town Centre is located approximately 4.5km northeast of the site.



Figure 1: Site Location outlined in red (source: Canterbury Maps)



The Proposal

6. It is proposed to establish an industrial development at the subject site with associated access, loading and parking areas. The proposed structure / building will have a total gross floor area of 9657m².
7. In order to provide maximum flexibility for future tenant needs and any changes to tenants, the applicant seeks consent for industrial activity which is defined as the '*manufacturing, fabricating, processing, repairing, assembly, packaging, wholesaling or storage of products*'¹.
8. The building will be constructed of concrete tilt panels, with a metal roof, and loading dock on the southern elevation of the building as set out in the application plans in **Appendix 2**.
9. Details of signage are yet to be confirmed, but they will comply with the maximum permitted district plan signage standards, or be the subject of a separate resource consent.
10. External downlighting is proposed to ensure the safety of the sites users. All lighting will comply with Council's standard lux levels.
11. It is proposed to establish a new vehicle access and crossing mid way along the southern boundary of the site to/from Neeves Road. This access will be lined with earthen bunds and associated landscaping. Further landscaping is proposed along the periphery of the site including bunding at the north west corner of the site to screen views of the site from the Northern Motorway and from the adjoining site to the north.
12. In terms of car parking provision 141 spaces are provided and access/ egress will be provided from Neeves Road. A covered cycle shed will provide parking for a minimum of 10 spaces as well as open air cycle parking in the car park.
13. A minor site scrape is proposed to establish the building platform, drainage and additional landscaping. No change in contours is proposed. Earthworks will be within the maximum permitted volume of 1000m³ per hectare.
14. All dust created on the site will be controlled by water cart or other such Council approved methods.
15. All bulk filling will be compacted in accordance with NZS 4431:1989. All fill testing will be carried out by an independent laboratory.

¹ Industrial activity: means the use of land and/or buildings for manufacturing, fabricating, processing, repairing, assembly, packaging, wholesaling or storage of products. It excludes high technology industrial activity, mining exploration, quarrying activity, aggregates-processing activity and heavy industrial activity. Chapter 2 Abbreviations and Definitions, Christchurch District Plan



Statutory Context

NES for Contaminants in Soil

16. Based on a review of the Listed Land Use Register held by Environment Canterbury, there is no evidence of ground contamination or of activities described on the Hazardous Substances and Industries List occurring or having occurred on the site. Accordingly, the NES does not apply to the proposed activity.

Waimakariri District Plan

17. The site is zoned Rural (RU) under the Waimakariri District Plan ('District Plan') as shown in Figure 3 below. The site is surrounded by rural zoning to the south and east. The Christchurch Northern Motorway (Designation D055) is adjacent to the western boundary of the subject site. The adjoining site to the north is zoned rural and contains a significant heritage site 'The Cream House' (ref H034).
18. Neeves Road is classified in the District Plan as a Local Road.

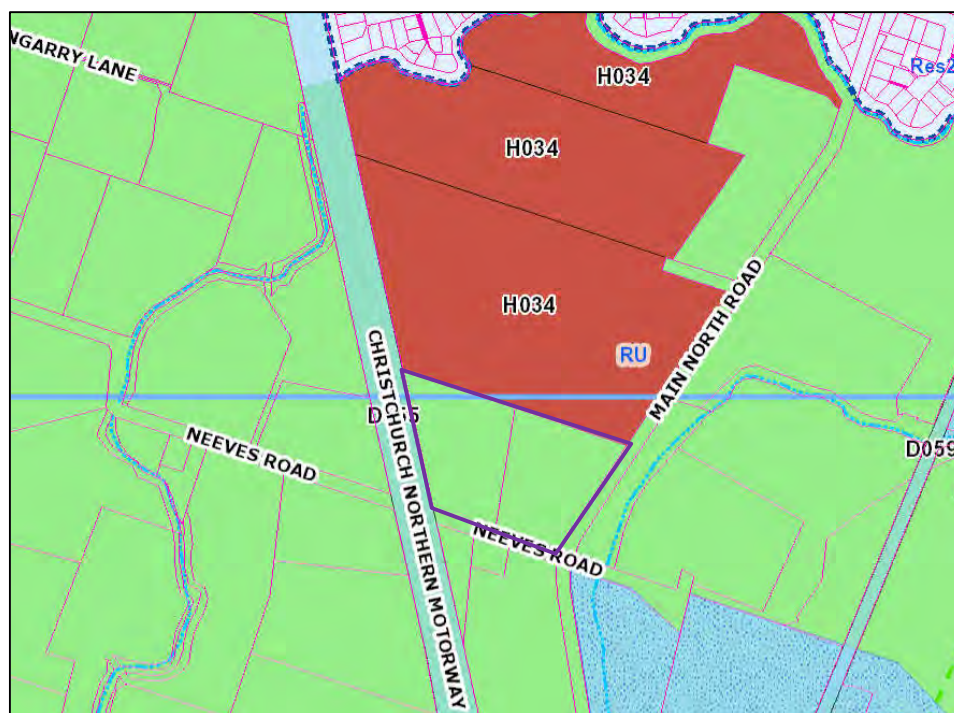


Figure 3: Zoning for the application site outlined in purple (source: Waimakariri District Plan)

19. An assessment of the proposal's compliance with the applicable rules in the District Plan is set out in **Appendix 3**. Based on that assessment, resource consent is required in respect of the following matters:



Section 31 - Health, Safety and Well-being

- Rule 31.25.2 (*Retail Activities and Traffic Matters*): Any land use on any site in the Rural Zone that has a parking requirement of 10 or more on-site spaces under Rule 30.6.1.34, excluding parking requirements associated with any dwellinghouse, is a discretionary activity (restricted). The proposal has 141 car parking spaces.
 - Rule 31.25.3 (*Vehicle Movements*): Any land use in any zone resulting in a total of more than 250 motorised vehicles movements, either entering or exiting the site, per day is a discretionary activity. In this case, 724 vehicle movements are anticipated.
20. It is noted that the proposed (industrial) activity is not specifically controlled by District Plan rules and the application does not breach any rules other than those listed above.

Overall Activity Status

21. Overall, land use consent is required for the proposal as a **Restricted Discretionary Activity** under the District Plan.

Proposed Waimakariri District Plan

22. Waimakariri District Council notified their Proposed District Plan on 17 September 2021.
23. Under the Proposed District Plan (PDP), the subject site is zoned Rural Landscape Zone (RLZ). As there are no rules in the PDP that have immediate legal effect, submissions are yet to close and hearings are yet to commence, very limited weighting should be given to the PDP, in accordance with s86A(2) which states:
- Except to the extent that subsection (1) applies, sections 86B to 86G do not limit or affect the weight that a consent authority gives to objectives, policies, and other issues, reasons, or methods in plans before the plan becomes operative.*
24. The relevant objectives and policies are assessed later within this report.

Resource Management Act 1991- s95-95E and s104-104C

25. In terms of notification considerations in sections 95A-95E of the Act the following matters are noted:
- i. public notification is not requested by the applicant;
 - ii. there are no special circumstances necessitating public notification.
26. As a Restricted Discretionary Activity, the provisions in sections 104 and 104C direct the substantive determination of applications and the following sections of this AEE have regard to the relevant provisions referred to therein.



Greater Christchurch Regeneration Act 2016

27. Section 60 of the Greater Christchurch Regeneration Act 2016 ('GCR Act') requires that:

Any person exercising powers or performing functions under the Resource Management Act 1991 must not make a decision or recommendation relating to all or part of greater Christchurch that is inconsistent with the Plan on any of the following matters under the Resource Management Act 1991:

(a) an application for a resource consent for a restricted discretionary, discretionary, or non-complying activity (whether or not the application was first lodged after the Plan was gazetted)

28. In determining the application, Council must be satisfied that the application is not inconsistent with any recovery plans relevant to the application.

Assessment of Actual or Potential Effects on the Environment

29. For the rules which are of relevance to this application, the District Plan details matters to which discretion is restricted. In considering any application for a resource consent under Rules 31.25.1 to 31.25.3, the Council shall, in deciding whether to grant or refuse consent, and in deciding whether to impose conditions, restrict the exercise of its discretion to the matters listed in Rule 31.25 (a)-(m). These are assessed as follows:

a. conditions for permitted activities (Rule 31.1.1);

Condition 31.1.1.10: Structure Coverage

30. The District Plan requires structure coverage of the net area of any site not to exceed 20% in the Rural zone. The proposed structure is 9787m² in area, which is approximately 19% structure coverage. Accordingly the proposal complies with the maximum permitted structure coverage of 20%.

Condition 31.1.1.15: Setback for Structures

31. The District Plan requires setbacks of 10m for any structure (other than a dwellinghouse) of 10m in the Rural zone. For any internal boundary 3m for any structure (other than a dwelling house) of 3m. The proposed structure is setback a minimum of 10m from the eastern boundary. It is noted that the structure setback from the other site boundary ranges between 31m (northern boundary) to 96m (from the western boundary). The proposal also readily complies with the required 3m setback.

Condition 31.1.1.20: Structure Height

32. There is no maximum height restriction for structures located in the Rural zone. The height of the proposed structure is 12m which is similar in height to the maximum height of buildings in business or residential zones.

33. Overall, it is considered that the scale of the proposed building is within the realms of that anticipated for the underlying zone. The scale and height of the proposed building is not dissimilar in height from other rural properties in the surrounding or indeed wider area. It is



noted that the Heller's Meat Factory to the south of the site, has significantly larger buildings in terms of height and scale.

34. In summary, the proposal complies with the relevant permitted activity conditions relating to bulk and location.

b. the need for landscaping to create a pleasant, safe and visually attractive setting for the site and the surrounding neighbourhood

35. It is noted that the District Plan does not detail specific screening and landscaping requirements for the Rural zone.
36. The applicant proposes to retaining existing established landscaping on the subject site and further enhance the site by including additional planting both around the periphery and within the site. This will enable a high level of screening of the structure and softening the appearance of the building. Specifically, the site features an established shelter belt comprising of willow trees, ranging between 6m to 8m in height. As detailed on the concept plan, garden beds and planting are proposed around the periphery site to a depth of 3m. The existing and proposed landscaping will provide a high level of screening of the structure and softening the appearance of the building. The building materials and design will be visually recessive and complimentary to the character of the surrounding area. These measures will ensure that the site is appropriately landscaped to create a pleasant, safe and visually attractive setting both for the site and the surrounding neighbourhood.

c. whether the topography, size and shape of the site, or the location of any natural or built feature(s) on the site or other requirements such as easements, right of ways or restrictive covenants, impose constraints on the activity

37. The subject site is flat and trapezoidal in shape and is approximately 49813m² in area. The site currently contains three dwellings and associated outbuildings. All of the existing built form will be removed prior to the construction of the proposed structure. There are no natural features or other requirements which would impose constraints on the proposed activity.

d. whether the creation of on-site parking will adversely affect the visual appearance of the site

38. The car parking area will also be landscaped and appropriately illuminated at night, to provide an attractive and safe environment for site users. The southern boundary of the site will feature additional planting with specimen trees to assist in screening the car park area when viewed from Neeves Road. The proposed car park will be setback approximately 36m from Neeves Road. Given the proposed and existing landscaping, and setback of the parking area, the car park is not anticipated to adversely effect the visual appearance of the site.



e. the positive effects arising from the retention and protection of notable plants, other significant plants, or heritage resources

39. The proposal will seek to retain existing trees on the site including mature trees such as oak trees and planting along the southern boundary, eastern and northern boundaries. Within the site, while some of the existing pine trees will be removed to provide for the building platform, the existing mature trees which are located on the boundary between 12 and 20 Neeves Road will be retained. Overall the retention of the existing established plants and trees will be further enhanced by the proposed landscaping as outlined in the concept plan in Appendix 4.

f. the effect of any activity on the visual and acoustic privacy of adjacent structures and private open space

40. As detailed above, the existing and proposed landscaping will provide screening of the proposed development when viewed from all directions around the site. The screening will provide a high level of screening to the structure and softening of the appearance of the proposed structure. This includes the provision of bunding along the common boundary with Main North Road. The applicant volunteers a condition of consent to ensure that all landscaping is retained to ensure that privacy is maintained in perpetuity.

g. effects on the characteristics of the Residential Zones (Policies 17.1.1.2 and 17.1.1.3) and the Rural Zone (Objective 14.1.1)

41. Policy 17.1.1.2 is not of relevance to this application as it relates to residential zones. However, Objective 14.1.1 (Rural Zone) is applicable. Neither rural production or rural character of the underlying zone will be undermined by the proposal. The surrounding area to the north will remain dominated by paddocks, trees and agricultural/horticultural activities and the existing site which is influenced by three residential dwellings will not experience a material loss of open space character. The proposed structure is not considered to alter the pattern of structures and buildings in the area, noting the range of the number and scale of buildings at the Hellers Meat Factory, opposite the subject site to the south. The site will not generate unreasonable noise or create adverse impacts on air quality. Any signage will comply with the District Plan standards.

h. effects on the form and function of the Urban Environment (Policy 15.1.1.1) and the Rural Zone (Policy 12.1.1.5)

42. The site is not located within the Urban Environment so Policy 15.1.1.1 is not of relevance. In terms of the effects on the form and function on the Rural zone, the proposal will result in 19% (approximately 9657m² in area) being covered by a building which complies with the 20% maximum permitted coverage. The proposal does not include the development of dwellinghouses. Accordingly, the proposal is considered to comply with this policy.

i. effects of the activity in terms of Policy 15.1.1.2

43. The subject site is not located within the urban environment. Accordingly the above policy is not of relevance.



44. Notwithstanding, to the extent that this policy considers the efficient and effective functioning of roads and ease and efficiency of access, a traffic assessment prepared by Nick Fuller of Novo Group (included at Appendix 4) addresses all the relevant traffic effects of the proposal including parking and loading, site access operation, and wider transport network effects. Mr Fuller concludes that these traffic effects will be less than minor. I concur with Mr Fullers comments and adopt his assessment accordingly.

j. the effect of the activity on the streetscape and character of the area in the immediate vicinity of the site

45. Neeves Road contains both lifestyle residential properties and the Heller's Meat Factory to the south of the site. The existing and proposed landscaping together with proposed setbacks from each of the sites boundaries, will assist in mitigating the effect of the proposed activity on both the streetscape and character of the area and immediate vicinity of the site. It is considered that any such effects would be **less than minor** and **acceptable**.
46. The building is compatible with other structures in the surrounding rural area and is within the scale permitted for the zone, particularly in light of the scale of the existing structures within the Heller's Meat Factory site at 65 Main North Road, and the area to the south of the Heller's site, which contains a number of trade supply /light industrial activities operating within the rural zone. A change in character through the introduction of an industrial activity, does not necessarily lead to an adverse effect. It is considered that suitably worded conditions of consent will enable the activity to operate within appropriate parameters. As such, the establishment of an industrial activity on the subject site will likely result in the provision of additional local employment opportunities.

k. effects of the activity in relation to noise, glare, dust, odour, or the use, storage or disposal of hazardous substances

47. The proposed development will not generate unreasonable noise or create adverse impacts on air quality such as dust, or lighting effects such as glare. The applicant is willing to accept suitably worded condition of consent to ensure that any such effects are appropriately managed.

l. whether on-site movement of vehicles is affected by the location of structures, topography, or the size and shape of the site

48. Ample space has been provided on-site to accommodate vehicle tracking for loading and car parking.

m. financial contributions as provided for in Chapter 20

49. The proposed development will comply with the relevant general rules in relation to financial contributions.

n. provision of esplanades

50. N/A



Summary of Effects

51. In summary of the assessment above, it is considered that the adverse effects of the proposal on the surrounding environment will be less than minor and acceptable. No persons are considered adversely affected.
52. The application will also generate several positive effects including local employment opportunities and economic activity

Relevant Provisions of Planning Instruments

53. The planning documents of relevance to this application and the provisions therein are listed and assessed in turn below:

Waimakariri District Plan

54. The relevant objectives and associated policies of the Operative District Plan including Chapters 11 (*Utilities and traffic management*), 12 (*Health safety and wellbeing*), and 14 (*Rural zones*), as detailed in **Table 1** below:

Table 1: Operative District Plan Policy Provisions

| ■ District Plan provision | ■ Comment / Assessment |
|---|--|
| Chapter 11 – Utilities and traffic management | |
| <p><i>Policy 11.1.1.5</i> New developments and activities in relation to their traffic generation characteristics should:</p> <ol style="list-style-type: none"> a. locate on or establish primary access to an appropriate level of road within the road hierarchy; b. not have vehicular access to an inappropriate level of road in the hierarchy; and c. provide cycleways along arterial, strategic and collector roads where: d. necessary to provide an identified transport or recreation function; and e. alternative opportunities do not exist within the road hierarchy. | <p>As detailed in the transport assessment in Appendix 4, any traffic effects resulting from the proposed development will be less than minor. Accordingly, the proposal is concluded to support these objectives and this policy.</p> |
| <p><i>Policy 11.1.1.6</i> Every site should have access that provides safe entry and exit for vehicles to and from the site to a road without compromising the safety or efficiency of the road or road network. Where a site has two or more road frontages access should be from the lowest road classification within the road hierarchy.</p> | |
| Objective 11.1.3: Parking | |
| Parking facilities that: | |
| <ol style="list-style-type: none"> a. provide for parking demand in an efficient, functional and sustainable manner; b. enhance the amenity and function of town centre and residential environments; | |



-
- c. are safe places for people to use and move through;
 - d. are accessible and convenient for pedestrians;
 - e. provide safe, secure and convenient cycle parking;
 - f. support greater use of public transport;
 - g. provide for loading and manoeuvring requirements without reducing amenity or compromising safety; and
 - h. support town centre consolidation and the development of continuous street frontages within identified sites in the Business 1 Zone where parking is principally located within public parking areas and not provided on individual sites.
-

Policy 11.1.3.1

Vehicle parking, loading and manoeuvring provided on-site, or within shared parking facilities, shall ensure that:

- a. safe and efficient access is provided;
 - b. use of off-site parking facilities will not adversely affect pedestrian, cycle or public transportation, public safety, and the safe, efficient operation of the road network; and
 - c. for shared parking, a legally binding arrangement is established that protects ongoing access and use.
-

Policy 11.1.3.2

Encourage the use of public transport by enabling parking facilities that support public transport services and infrastructure.

Policy 11.1.3.3

Encourage cycle transport by providing cycle parking that:

- a. is located in a convenient and safe position and considers pedestrian safety;
 - b. physically supports the cycle frame; and
 - c. provides for cycle security.
-

Policy 11.1.3.4

Ensure safe pedestrian access within and adjacent to parking facilities by providing:

- a. pedestrian routes that safely interact with vehicle movements associated with access, parking, manoeuvring, circulation, loading and public transportation;
 - b. visibility between vehicles and pedestrians; and
 - c. pedestrian routes that are designed and constructed to be accessible.
-

Policy 11.1.3.6

Parking facilities shall:

- a. provide efficient and effective layout of parking, manoeuvring and circulating areas including restriction of vehicle speed and avoidance of long 'blind aisles';
 - b. control any adverse effects on water quality and stormwater runoff, preferably through the use of low impact water management methods;
 - c. be surfaced and maintained to control the generation of dust, excessive noise, or other nuisance;
-



-
- d. *reduce opportunities for crime by implementing Crime Prevention through Environmental Design (CPTED) principles;*
 - e. *ensure visibility through natural lighting or illumination;*
 - f. *ensure that parking spaces required for people with disabilities is conveniently located and accessible, and the route from the parking space to the destination served is also easily accessible for people using mobility devices;*
 - g. *include landscaping that:*
 - i. *incorporates establishment and maintenance practices to ensure plant survival;*
 - ii. *visually softens the dominant effect of hard surfaces;*
 - iii. *uses plant species that avoid hazard or nuisance effects;*
 - iv. *integrates with stormwater management and footpaths; and*
 - v. *does not affect traffic and pedestrian safety by limiting visibility.*

Policy 11.1.3.7

Loading and manoeuvring facilities to support activities requiring delivery or collection by service vehicles shall:

- a. *provide safe and efficient vehicle movements for the largest vehicle type expected to use the facility;*
- b. *avoid reverse manoeuvring onto or from any strategic, arterial or collector road, and onto or from any local road where this would adversely affect safety;*
- c. *provide sufficient separation between service vehicles, car parking, pedestrians and cyclists to enable safe use of the facility;*
- d. *avoid obstruction of any accessway;*
- e. *be accessed from the rear of the site or a service lane where a site is located in a town centre and sufficient rear or service access is available for service vehicles expected to use the site; and*
- f. *n/a*

Chapter 12 - Health, Safety and Wellbeing

Policy 12.1.1.5

In the Rural Zones maintain the amenity values and quality of the environment by ensuring that the land is not dominated by dwellinghouses.

The proposal will result in 19% (approximately 9657m² in area) being covered by a building which complies with the 20% maximum permitted coverage. The proposal is considered to maintain the amenity values and quality of environment through the provision of a development which complies with bulk and location requirements for the Rural zone.

Signs: Policy 12.1.1.7

Avoid, remedy or mitigate the adverse effects of signs on the amenity values in different zones and avoid detrimentally affecting the safety of the community using road and rail corridors, particularly the Motorway and State Highway by controlling:

Signage for the proposed development will comply with Council's required signage limits.

- a. *Billboard and other signage which is intrusive and displaying information unrelated to the activities and/ or*



| | |
|---|--|
| <p>goods or services available on the site on which the sign is located.</p> | |
| <p>b. Signage which adversely effects the amenity of the Residential and Rural Zones.</p> | |
| <p>c. Signs which mimic traffic signals, have moveable parts, flashing or revolving lights.</p> | |
| <p>Glare: Policy 12.1.1.8 Control artificial light at a level that is appropriate to the zone.</p> | <p>External lighting will be downward facing and will be focussed on the site, to avoid glare or light spill beyond the boundary of the site.</p> |
| <p>Policy 12.1.1.9 Avoid glare from artificial light adversely affecting the amenity values and health and safety of people, on neighbouring properties and roads.</p> | |
| <p>Noise: Policy 12.1.1.10 Control noise to a level that is not unreasonable, measured against the character and circumstances of the zone.</p> | <p>The proposal will not generate adverse noise levels which could affect amenity values and health and safety of people on neighbouring sites or zones. The applicant will willingly accept suitably worded condition of consent to ensure the proposal complies with District Plan noise levels anticipated for the underlying zone.</p> |
| <p>Policy 12.1.1.11 Avoid noise adversely affecting the amenity values and health and safety of people on neighbouring sites or zones.</p> | |
| <p>Hazardous Substances: Policy 12.1.1.15 Hazardous substances should be securely contained during storage, use, or transportation, and monitoring and contingency procedures established, to minimise the risk of spillage or leakage and contamination of land and water.</p> | <p>The storage of any hazardous substances will be within the maximum relevant requirements as detailed in the District Plan.</p> |
| <p>Policy 12.1.1.16 Hazardous substances should be used in locations and by methods that avoid or mitigate adverse effects on the environment and health and safety.</p> | |
| <p>Policy 12.1.1.17 Facilities that store or use hazardous substances should be sited so as to minimise adverse effects on the community's use of the road network.</p> | |
| <p>Policy 12.1.1.18 Co-ordinate with national and regional organisations and adjoining District Councils in the management of hazardous substances.</p> | |
| <p>Objective 12.1.3 Protect people, vegetation, animals, and other natural and physical resources, from the adverse effects resulting from the discharge of contaminants to air.</p> | <p>The proposal is not anticipated to result in the discharge of contaminants to air.</p> |
| <p>Policy 12.1.3.1 Locate and/or design activities, that lead to the discharge of contaminants to air, so that any adverse effects on people, vegetation, animals and/or other natural and physical resources are avoided or mitigated.</p> | |
| <p>Policy 12.1.3.2 Avoid dwellinghouses and other sensitive land uses locating near to where contaminants are already being discharged to air, unless any adverse effects of the discharge are avoided or mitigated.</p> | |
| <p>Objective 12.1.4 The retention of plants that contribute significantly to the amenity of a site, or the character or quality of the surrounding environment.</p> | <p>It is proposed to maintain existing established specimen trees and landscaping on site while enhancing the subject site with additional landscaping in order to positively contribute to the amenity of both the site and the surrounding area. A condition of consent to maintain all landscaping in perpetuity is considered acceptable to the applicant.</p> |
| <p>Policy 12.1.4.1 Plants that contribute significantly to the amenity of a site, or the immediate area, shall be recognised and provided for in any work or subdivision of land, including being protected as a condition of consent.</p> | |
| <p>Policy 12.1.4.2 Retention and protection of significant plants will be taken into account in determining the extent of adverse effects in assessing land use and development.</p> | |

Chapter 14 Rural Zones



| | |
|--|---|
| <p>Objective 14.1.1 <i>Maintain and enhance both rural production and the rural character of the Rural Zones, which is characterised by:</i></p> <ul style="list-style-type: none"> a. <i>the dominant effect of paddocks, trees, natural features, and agricultural, pastoral or horticultural activities;</i> b. <i>separation between dwellinghouses to maintain privacy and a sense of openness;</i> c. <i>a dwellinghouse clustered with ancillary buildings and structures on the same site;</i> d. <i>farm buildings and structures close to lot boundaries including roads;</i> e. <i>generally quiet – but with some significant intermittent and/or seasonal noise from farming activities;</i> f. <i>clean air – but with some significant short term and/or seasonal smells associated with farming activities; and</i> g. <i>limited signage in the Rural Zone.</i> | <p>The rural production and rural character of the rural zone will not be undermined by this proposal. The site (currently characterised by three dwellings) and surrounding area will remain dominated by paddocks, trees, agricultural, pastoral or horticultural activities. The proposed building is not considered to significantly alter the pattern of buildings and structures in the area. The proposal will not generate significant noise levels. The proposal will not generate any air discharge. The proposed signage for the development will comply with the relevant District Plan requirements.</p> |
| <p>Policy 14.1.1.1 <i>Avoid subdivision and/or dwellinghouse development that results in any loss of rural character or is likely to constrain lawfully established farming activities.</i></p> | <p>N/A: Subdivision and/or dwellinghouse subdivision development is not proposed as part of this application.</p> |
| <p>Policy 14.1.1.2 <i>Maintain the continued domination of the Rural Zones by intensive and extensive agricultural, pastoral and horticultural land use activities.</i></p> | <p>The site and area will remain dominated by paddocks, trees, agricultural, pastoral or horticultural activities</p> |
| <p>Policy 14.1.1.3 <i>Maintain and enhance the environmental qualities such as natural features, air and noise levels, including limited signage and rural retail activities that contribute to the distinctive character of the Rural Zones, consistent with a rural working environment.</i></p> | <p>The existing and proposed landscaping will both maintain and enhance the rural environmental quality of the site. The proposal will not generate significant noise levels nor generate any air discharge. The proposed signage for the development will comply with the relevant District Plan requirements.</p> |

55. In summary, for the reasons set out in **Table 1** and otherwise having regard to the assessment of effects, the proposal is concluded to be generally consistent with the relevant provisions of the District Plan.

Proposed Waimakariri District Plan

56. As noted earlier, limited weight should be given to the Rural chapter of the Proposed Plan as the provisions which relate to this application have not yet been heard and decisions have not been released. It is considered that greater weight be given to the corresponding provisions in the Operative Plan. However, consideration has been given to the relevant objectives and policies in the proposed District Plan as detailed in **Table 2** below:

Table 2: Proposed District Plan Policy Provisions

| ■ Proposed District Plan – Policy Provision | ■ Comment / Assessment |
|---|--|
| RLZ – Rural Lifestyle Zone | |
| <p>RLZ-01 Purpose of the Rural Lifestyle Zone <i>Primary production activities and activities reliant on the natural and physical resources of the rural environment occur while recognising that the predominant character is small rural sites</i></p> | <p>This objective and policies are seeking to make industrial activity more challenging under the PDP. While it is acknowledged that the objective</p> |



with a more intensive pattern of land use and buildings than the General Rural Zone.

RLZ-P1

Character of the Rural Lifestyle Zone

Maintain the character in the Rural Lifestyle Zone which comprises:

- 1.a highly modified landscape strongly influenced by fine grained patterns and processes of human induced activity, including a predominance of small rural lots with a resulting pattern of residential units, buildings, fencing, amenity and domestic planting mixed with smaller scale primary production activities;*
- 2.a dominance of human modified open space and vegetation, including paddocks and trees over buildings; and*
- 3.a zone supporting activities reliant on the natural and physical resources of the Rural Lifestyle Zone.*

RLZ-P2 Activities in the Rural Lifestyle Zone

Retain opportunities for land within the zone to be used for primary production activities while maintaining the predominant character of small rural lots by avoiding new sites being created, or residential units being erected on sites, that are less than 4ha, unless:

- 1. associated with the development of infrastructure which reduces the size of the balance lot or site to below 4ha;*
- 2. associated with the establishment of a bonus residential unit or creation of a bonus allotment;*
- 3. the erection of a residential unit is protected by a legacy provision in this Plan; and*
- 4. is the establishment of a minor residential unit, where the site containing a residential unit is 4ha or greater, or is protected by a legacy provision in this Plan.*

TRAN-O2: Parking, loading area and associated access and manoeuvring area

Parking, where provided, loading area and associated access and manoeuvring area that:

- 1. caters for access, parking demand and manoeuvring in an efficient, functional and sustainable manner;*
- 2. enhances the amenity values and function of town centres and Residential Zones;*
- 3. results in safe places for people to use and move through;*
- 4. is accessible and convenient for pedestrians;*
- 5. provides secure, visible and convenient cycle parking, and cycling end-of-journey facilities for staff;*
- 6. supports greater use of public transport, including through park and ride facilities; and*
- 7. enables access, loading and manoeuvring without reducing amenity values or compromising safety.*

TRAN-O4: Effects of activities on the transport system

Adverse effects on the District's transport system from activities, including reverse sensitivity, are avoided, remedied or mitigated.

TRAN-P4: New activities

New activities:

- 1. locate on or establish primary access to the classification of road within the District Plan road hierarchy best able to accommodate the level and type of traffic generated;*
- 2. provide safe entry and exit for vehicles to and from a site to a road without compromising the safety or efficiency of the road corridor or rail corridor;*
- 3. where a site has two or more road frontages, provide access from the classification of road within the District Plan road hierarchy best able to accommodate the level and type of traffic generated;*
- 4. provide safe and efficient access, including ease of access by service and emergency service vehicles; and*
- 5. provide facilities for safe active transport, including through marked on-road cycle lanes, separated cycle lane, sealed road shoulders with sufficient width to safely accommodate*

and policies are relevant, limited weight can be given to these given the early stage in the process of the DPR, and relies on the ODP accordingly.

As detailed in the transport assessment within the above report, any traffic effects resulting from the proposed development will be less than minor. Accordingly, the proposal is concluded to support these objectives and this policy



cyclists, off-road formed cycle paths, cycling end-of-journey facilities for staff, shared use path and footpaths.

TRAN-P5: High traffic generating activities

Manage the adverse effects of high traffic generating activities on the transport system according to the extent that they:

1. *generate additional vehicle movements beyond what the existing road design can safely or efficiently accommodate or what the classification of the road within the District Plan road hierarchy intends to accommodate;*
2. *are accessible by a range of transport modes and encourage public and active transport use;*
3. *do not compromise the safe, efficient or effective use of the transport system, including ease of access by service and emergency service vehicles;*
4. *provide patterns of development that optimise the use of the transport system;*
5. *maximise positive transport effects;*
6. *avoid, remedy or mitigate adverse transport effects;*
7. *mitigate other adverse effects, such as effects on communities, and on the amenity values of the surrounding environment, including through travel demand management measures;*
8. *provide for the transport needs of people whose mobility is restricted; and*
9. *integrate and coordinate with the transport system, including proposed land transport infrastructure and service improvements.*

TRAN-P11: Parking and associated access and manoeuvring area

Parking (where provided) and associated access and manoeuvring area shall ensure the following:

1. *safe and efficient access, parking and manoeuvring is provided, including ease of access for service and emergency service vehicles;*
2. *provide efficient and effective layout of parking, manoeuvring and circulating areas including restriction of vehicle speed and avoidance of long 'blind aisles';*
3. *enable on site manoeuvring, and avoid reverse manoeuvring where required onto or from any road or pedestrian or cycling environment where this would adversely affect safety;*
4. *use of off site parking, in lieu of on site parking, will not adversely affect pedestrian, cycle or public transportation, public safety, and the safe or efficient operation of the road network;*
5. *for shared parking, a legally binding arrangement is established that protects ongoing access and use;*
6. *manage adverse effects on water quality and stormwater runoff, preferably through the use of low impact stormwater management methods, including water sensitive design, and stormwater collection and attenuation of runoff;*
7. *be permanently marked and surfaced where required, and maintained to control the generation of dust, excessive noise, or other nuisance;*
8. *reduce opportunities for crime and improve safety, taking into account the principles of CPTED and best practice Urban Design principles;*
9. *ensure visibility through natural lighting or illumination;*
10. *ensure that parking spaces required for people with disabilities are conveniently located and accessible, and the route from the parking space to the destination served is also easily accessible for people using mobility devices;*
11. *enable provision of charging facilities for electric vehicles;*
12. *include landscaping that:*
 - a. *incorporates establishment and maintenance practices to ensure plant survival, and replacement during the*



-
- next planting season if plants are diseased, damaged or dead;*
 - b. visually softens the dominant effect of hard surfaces;*
 - c. uses plant species that avoid hazard or nuisance effects, preferably uses frangible vegetation for safety reasons, and enhances local or regional indigenous biodiversity through the preferred use of indigenous vegetation naturally occurring within the ecological district within which planting will take place or from a naturally occurring and ecologically similar origin;*
 - d. integrates with stormwater management and footpaths, and may include the use of raingardens for stormwater collection and attenuation of runoff;*
 - e. does not adversely affect vehicle or pedestrian safety by impeding visibility; and*
13. *be designed to positively contribute to town centre amenity values and support town centre consolidation and the development of continuous street frontages within town centres, by locating parking principally within public parking areas, or by locating parking and vehicle access to the rear of sites or buildings, and not providing parking and vehicle access on individual site frontages, particularly on sites identified as having frontages to a Principal Shopping Street.*
-

TRAN-P12: Loading area and associated access and manoeuvring area

Loading area and associated access and manoeuvring area to support activities requiring delivery or collection by service vehicles shall:

- 1. be permanently marked and surfaced where required, and maintained to control the generation of dust, excessive noise, or other nuisance;*
 - 2. provide safe and efficient vehicle movements for the largest vehicle types expected to use the facility or site;*
 - 3. avoid reverse manoeuvring onto or from any road or pedestrian or cycling environment where this would adversely affect safety;*
 - 4. provide sufficient separation between service vehicles, car parking, pedestrians and cyclists to enable the safe use of the facility;*
 - 5. avoid obstruction of any accessway;*
 - 6. for shared loading facilities, a legally binding arrangement is established that protects ongoing access and use; and*
 - 7. be accessed from the rear of the site, service lane, public loading space, or shared loading space, especially where a site is located in a town centre or is identified as having frontage to a Principal Shopping Street, and sufficient access is available for the largest vehicle types expected to use the facility or site.*
-

EW-O1 Earthworks

Earthworks are undertaken in a way that minimises adverse effects on amenity values, cultural values, property, infrastructure and the health and safety of people and the environment.

EW-P1 Enabling earthworks

Enable earthworks where they:

- 1. are compatible with the character, values and qualities of the location and surrounding environment;*
 - 2. avoid, remedy or mitigate any adverse effects on any sites or areas identified as ONL, ONF, SAL, Coastal Environment Overlay, SNA, sites and areas of significance to Māori, Natural Open Space Zone, surface freshwater bodies and their margins, or any notable tree, historic heritage or heritage setting;*
 - 3. minimise erosion and avoid adverse effects from stormwater or sediment discharge from the site;*
 - 4. avoid increasing the risk to people or property from natural hazards;*
 - 5. maintain the stability of land including adjoining land, infrastructure, buildings and structures;*
-

Earthworks will comply with the relevant provisions contained in the Operative Plan and are limited in scale. Standard erosion and sediment controls will be used, dust suppression will be implemented and disturbed surfaces will be reinstated



-
6. *minimise the modification or disturbance of land, including any associated retaining structures, on the visual amenity values of the surrounding area; and*
 7. *minimise adverse dust, vibration and visual effects beyond the site.*

EW-P5 Rehabilitation

Require site rehabilitation during or immediately following the completion of earthworks activity to:

1. *minimise adverse effects on amenity values, natural values, cultural values, quality of the surrounding environment and the future use of the site, and*
2. *encourage rehabilitation that incorporates ecological enhancement and habitat for indigenous fauna and the use of locally sourced indigenous vegetation.*

LIGHT-O1: Outdoor lighting

Outdoor lighting enables a range of activities including work, rural production, recreation activities, sport, entertainment, and transportation to occur beyond daylight hours while:

1. *minimising adverse effects on amenity values, health and safety, ecology, significant natural values, areas of historic or cultural significance; and*
2. *maintaining the safe operation of the transport system.*

LIGHT-P1: Outdoor lighting

Enable outdoor lighting for night-time activities, safety and security while:

1. *remediating or mitigating adverse effects from light spill or glare on the receiving environment by controlling the intensity, shielding, colour temperature and direction of light;*
2. *ensuring that outdoor lighting does not distract traffic or interfere with any traffic aids and signals on the road, air or sea; and*
3. *ensuring lighting is compatible with the zone or zones in which the light spill and glare is received by applying the light levels for the receiving zone.*

LIGHT-P2: Outdoor lighting design - sky glow

Reduce the potential for upward light spill that contributes to sky glow, by controlling the location, direction, design and operation of outdoor lighting to minimise adverse effects on:

1. *amenity values including ability to view the night sky;*
2. *health and well-being of people and ecosystems; and*
3. *ongoing use of the Oxford Observatory.*

NOISE-O1: Adverse noise effects

Noise does not adversely affect human health, communities, natural values and the anticipated amenity values of the receiving environment.

NOISE-P1: Minimising adverse noise effects

Minimise adverse noise effects by:

1. *limiting the noise level, location, duration, time, intensity and any special characteristics of noise generating activities, to reflect the function, character and amenity values of each zone;*
2. *requiring lower noise levels during night hours compared to day time noise levels to protect human health, natural values and amenity values of sensitive environments; and*
3. *requiring sound insulation, or limiting the location of noise sensitive activities where they may be exposed to noise from existing activities.*

NOISE-P2: Limited duration noise generating activities

Enable specific noise generating activities of limited duration that are:

1. *required for anticipated activities within zones or the District, including construction noise, audible bird scaring*

The proposed activity will operate within the required lighting standards. The proposal will comply with the PDP objective and policies associated with outdoor lighting.

The proposed activity will operate within the required noise levels anticipated for the underlying zone, acknowledging the need for lower noise levels particularly during night time levels. The proposal will comply with the PDP objective and policies associated with noise levels.



-
- devices, frost control fans, temporary activities and emergency services, and
2. where noise levels and characteristics are consistent with the character and amenity values of the receiving environment.

SIGN-O1: Safety, well-being and amenity

Signs provide for the District's economic and community well-being without compromising transport safety, character and amenity values, landscape values, natural values or heritage values.

The proposed development will comply with Council's signage standards and in turn will meet with the associated objective and policies.

SIGN-P3: Transport safety

Ensure signs do not adversely affect transport safety by causing a distraction or obstruction to road users and pedestrians by:

1. managing the size, number, location, content, illumination, and design of signs;
2. limiting digital signs; and
3. managing off-site signs in Industrial Zones, and avoiding off-site signs in all other zones.

SIGN-P4: Amenity values and character

Maintain the character and amenity values of zones by:

1. limiting the size, height and the number of freestanding signs;
2. ensuring signs do not protrude above the roofline or fence line where attached to a building or fence;
3. N/A
4. N/A;
5. limiting proliferation of off-site signs by:
6. managing such signs in Industrial Zones including the interface with non-industrial zones; and
7. avoiding such signs in Residential Zones, Rural Zones, Commercial and Mixed Use Zones, Open Space and Recreation Zones, and Special Purpose Zones;
8. limiting digital signs; and
9. avoiding permanent signs identifying a subdivision development to support the integration of new developments with surrounding areas.

-
57. In summary, for the reasons set out in **Table 2** and otherwise having regard to the assessment of effects, the proposal is concluded to be generally consistent with the relevant provisions of the Proposed District Plan.

Relevant Other Matters

Consultation

58. A meeting was held with Council's Planner Ian Carstens on 1st July 2021 at Waimakariri Civic Offices. Mr Carstens discussed the appropriateness of the proposal for the underlying zone and that any application should assess the potential effects of the proposal on the wider environment. No other consultation has been undertaken to date noting the conclusion that no persons will be adversely affected.

Mitigation Measures

59. Based on the assessment of effects in the previous section, no particular mitigation measures are considered necessary for this proposal.



Consideration of Alternatives

60. The preceding assessment of effects shows that the proposal will not have any significant adverse effects on the environment. Therefore, an assessment of alternatives is not required.

Resource Management Act 1991: Sections 5-8 (Part 2)

61. The Operative District Plan is considered a valid, complete and certain planning document. It has already given substance to the principles in Part 2 of the RMA as the plan was prepared in a manner that reflects Part 2, therefore no further assessment against Part 2 matters are required for this application (*R J Davidson Family Trust v Marlborough District Council* [2018] NZCA 316).
62. Regardless, the proposed development is considered to recognise and provide for the relevant matters of Sections 6, 7 and 8 and to represent a sustainable management of the land resource and achieve the purpose of the Resource Management Act 1991, as well as give substance to Part 2 of the RMA.

Greater Christchurch Regeneration Act 2016

63. The GCRA came into force on 19 April 2016, and essentially replaces the Canterbury Earthquake Recovery Act. Section 60(2) of the Regeneration Act requires that *'[a]ny person exercising powers or performing functions under the Resource Management Act 1991 must not make a decision or recommendation relating to all or part of greater Christchurch that is inconsistent with the Plan [including Recovery Plan]..'*, including applications for resource consent.
64. In determining the application, Council must be satisfied that the application is not inconsistent with the Land Use Recovery Plan (LURP) – the only Recovery Document (Strategy or Plan) relevant to the application. The application site is located within an urban area as identified by the LURP, and the approval of this application will support the 'Rebuilding of Communities' sought by the LURP. Accordingly, (and otherwise noting assessment above of the District Plan and CRPS provisions above), the proposal is not considered to be inconsistent with the LURP, and in turn the GCRA.

Conclusion

65. In conclusion, the proposal is consistent with the purpose and principles of the Resource Management Act 1991 in that it enables people to provide for their economic and social well-being, whilst maintaining and enhancing the quality and amenity of the local environment and avoiding adverse effects.
66. In terms of section 104, the proposal will be consistent with the relevant provisions of the NES and will have actual or potential effects on the environment which are minor and consistent with the environmental outcomes envisaged by the relevant statutory planning framework.



Accordingly, it is concluded that the Council should grant consent to the activity on a non-notified basis in accordance with sections 104 and 104C, and Part 2 of the Act, subject to appropriate conditions.



Appendix 1

Certificate of Titles



Appendix 2

Concept Plans

LEGEND

- A** Buildings (indicative) as shown. Total area = 9657m² / 19% of total site area.
- B** Access road into site from Neeves Road. To be set back from intersection at least 75m.
- C** Areas of planting or landscaping with potential for retention of existing areas of trees to be retained where possible (to be determined).
- D** Main carparking area for site. Includes provision for 141 carparks (130 required), and 4 mobility spaces.
- E** Potential areas for swales or planting along road frontage. Landscape design to be tied in with existing planting where possible.
- F** Covered cycle shed (at least 10x secure spaces) and cycle parking in carpark.
- G** Loading bay area and spaces for trucks and service vehicles. To allow for at least 9x loading bays (at 12.5m x 3.5 as shown). Area to be 40m x 40m to allow for tracking.
- H** Access road / chip seal or hardscape around perimeter of building.
- I** Potential boundary planting and / or hedges. Potential for mounding or bunds with planting incorporated if required.
- J** Grassed area that could be utilised for stormwater pond or retention as required.

NOTES

1. Total site area = 49813m²
2. Site coverage (shown by buildings - see A) is 19% . This is under the 20% allowed by the District Plan.
3. Boundary setbacks: 3m setback, and 10m setback boundary, as shown on plan.
4. Landscaping and site details to be designed once layout established.
5. All dimensions shown on the Site Plan are approximate only, gathered from aerial data.



KEY:

- Proposed Feature Trees
- Existing Specimen Trees to be Retained
- Garden Beds and Planting
- Lawn Areas, Softscapes, Swales or Stormwater Treatment
- Building (indicative only design and layout tba)
- Hardscape / Road / Concrete Surface (design tba)
- Property Boundary

GENERAL NOTES:

- A. The Concept Plan is based on information provided on behalf of/ by the client. Intended solely for the use of the client in accordance with B.
- B. the agreed scope of works
- C. Information contained within this drawing is the sole copyright of Novo Group and is not to be reproduced without their permission.
- D. Construction Drawings and Specification are not included as part of this stage of works.

SITE CONCEPT DESIGN

NEEVES RD DEVELOPMENT

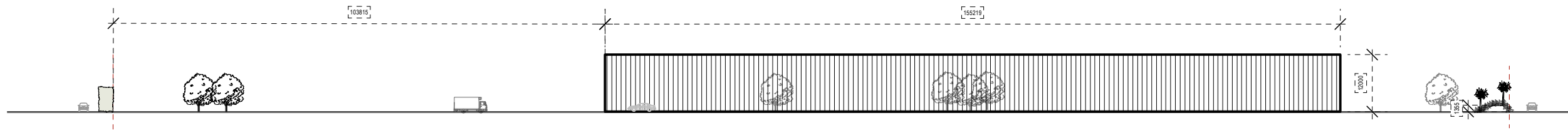
DRAWING STATUS

RESOURCE CONSENT

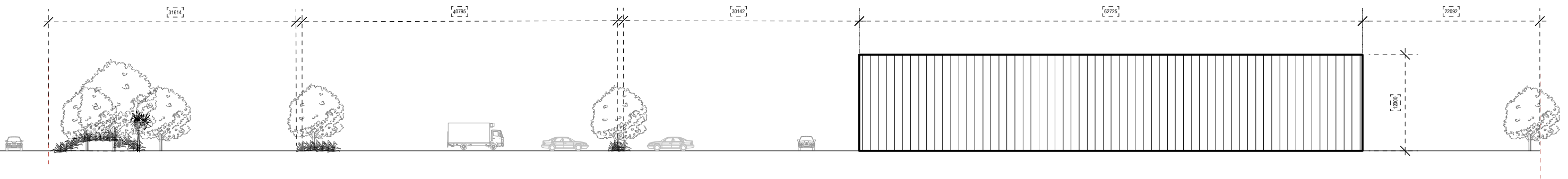
REVISION
 20.10.21 - Rev 1.1 **A**

| | |
|-------------------------|-----------------------------|
| STAGE CONCEPT DESIGN | DRAWN ANNE WILKINS (BLA) |
| SCALE 1:1500 @ A3 | DATE 11.05.21 |
| JOB NO. 889001 | DWG NO. NEEV-DRG-LA-101 |

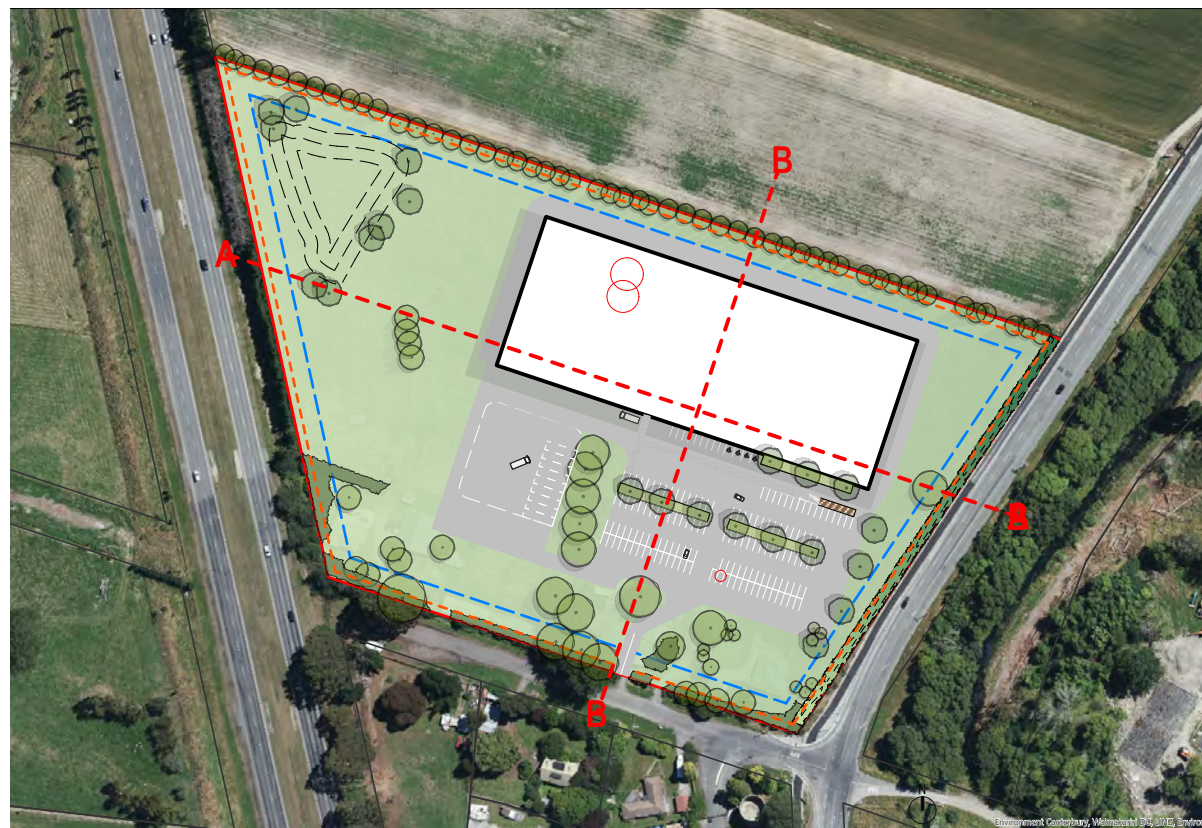




1 Elevation A-A
 Scale: 1:1000



3 Elevation B-B
 Scale: 1:500



3A Location Plan
 Scale: 1:3000

ELEVATIONS
NEEVES RD DEVELOPMENT

| | | | |
|-------------------------|--------------------|----------|---|
| DRAWING STATUS | | REVISION | A |
| RESOURCE CONSENT | | 20.10.21 | |
| STAGE | DRAWN | | |
| CONCEPT DESIGN | ANNE WILKINS (BLA) | | |
| SCALE | DATE | | |
| 1:1500 @ A3 | 11.05.21 | | |
| JOB NO. | DWG NO. | | |
| 889001 | NEEV-DRG-LA-102 | | |





Appendix 3

Compliance Assessment



| RULE | COMPLIANCE ASSESSMENT – OPERATIVE WAIKAMARIRI DISTRICT PLAN | STATUS |
|---|---|-----------------|
| Section 23– Land and Water Margins | | |
| <p>Earthworks 23.1.1.8</p> | <p>Earthworks, including the extraction of minerals, in the Rural Zones, other than in the bed of any river, shall not involve the disturbance of more than 1000m² of soil and/or rock per any 1ha.</p> <p>Comment- Excavation will involve a minor site scrape and is not anticipated to exceed the maximum permitted volumes,</p> | <p>Complies</p> |
| Section 31 – Health Safety and Wellbeing | | |
| Buildings and Structures | | |
| <p>Structure coverage 31.1.1.10</p> | <p>The structure coverage of the net area of any site shall not exceed 20% in the Rural zone</p> <p>Comment- The structure coverage of the proposed building is 9657m² which equates to 19% of the total site area (49813m²).</p> | <p>Complies</p> |
| <p>Setbacks for Structures 31.1.1.15</p> | <p>In accordance with Table 31.1 the applicable setbacks are:</p> <p>10 metres from any road boundary (Neeves Road/Main North Road)</p> <p>3m for any structure other than a dwelling house</p> <p>For any existing dwelling on an adjoining site – 10m for any structure</p> <p>Comment- The proposal will comply with the required 10m setback. Note: the existing dwellings will be removed from both sites prior to construction the proposal complies the applicable setbacks.</p> | <p>Complies</p> |
| <p>31.1.1.19</p> | <p>All structures, earthworks and other activities must comply with the requirements in NZECP 34:2001</p> <p>Comment- the proposal complies with the New Zealand Electrical Code of Practice for Electrical Safe Distances</p> | <p>Complies</p> |
| <p>31.4.1</p> | <p>Except as provided for by Rules 31.1.2, 31.2, 31.3, 31.5 and 31.6 any land use which does not comply with one or more of Rules 31.1.1.10 to 31.1.1.17, 31.1.1.20 to 31.1.1.63 is a discretionary activity.</p> <p>Comment- the proposal complies with Rule 31.1.1.10</p> | <p>Complies</p> |
| Signs | | |
| <p>31.7.1: Conditions</p> | <p>31.7.1.1: Any sign in any zone shall advertise the goods or services available at that site and be wholly located within that site</p> <p>31.7.1.2: Any sign in any zone shall not</p> <ol style="list-style-type: none"> a. mimic traffic signals b. have flashing or revolving lights <p>31.7.1.3: On a site in any Rural Zone:</p> <ol style="list-style-type: none"> c. illuminate or reflect upon exposure to artificial light; d. have movable parts (including blimps) <p>On any site in any Rural Zone</p> | <p>Complies</p> |



| | | |
|----------|--|--|
| 31.7.1.7 | <p>a. not more than one sign shall be erected per site, except where a site has a road frontage of more than 200m and two or more frontages two signs can be erected, but no more than one sign per frontage;</p> <p>b. where the sign is visible from any road with a posted speed limit of 70km/hr or greater, present an unrestricted view to the motorists for a minimum distance of 180m;</p> <p>c. display no more than six words, or, if a combination of words and symbols, display no more than 40 characters;</p> <p>d. display symbols or letters of a minimum height of 160mm;</p> <p>e. have a display area of any free standing sign not exceeding 3m²,</p> <p>f. not exceed a height limit of 3 metres;</p> <p>g. where the sign is facing a State Highway where the posted speed limit is 70km/hr or greater, the minimum lettering height for the sign shall be 180mm; and</p> <p>h. where the sign is facing a State Highway, be located no closer than 15m to an official road sign erected by the New Zealand Transport Agency.</p> <p>Comment- <i>It is assumed that signage on the proposed development will be compliant. At the time of writing, tenants have yet to be confirmed for the development?</i></p> | |
|----------|--|--|

| | | |
|--------------|--|----------|
| Glare | | |
| 31.10.1.1 | <p>In any Rural Zone, any artificial exterior lighting within a site shall:</p> <p>a. be directed away from the sky;</p> <p>b. except for any street light, be directed away from the site boundary and roads so as to avoid light spill, or in the case of a road boundary, avoid a distraction or glare which would create a traffic hazard; and</p> <p>c. be placed so as to avoid causing an air or sea navigation hazard.</p> <p>Comment- <i>The proposed development will comply with the above standards</i></p> | Complies |

| | | |
|--------------|--|----------|
| Noise | | |
| 31.12.1.2 | <p>Noise shall not exceed the following limits within measurement time intervals in the time-frames stated below:</p> <p>a. Daytime: 7am to 7pm Monday to Saturday, and 9am to 7pm Sundays and Public Holidays: 50dBA L₁₀.</p> <p>b. Other times: 40dBA L₁₀.</p> <p>c. Daily 10pm-7am the following day: 70dBA L_{max}.</p> <p>Comment- <i>The proposed development will comply with the above standards.</i></p> | Complies |
| 31.12.1.13 | <p>Construction noise in any zone shall not exceed the recommended limits specified in, and shall be measured and assessed in accordance with, the provisions of NZS:6803: P1984 "Measurement and Assessment of Noise from Construction, Maintenance, and Demolition Work".</p> | Complies |



| | | |
|--|---|---------------------------------|
| | Adjustments and exemptions provided in clause 6 of NZS:6803: P1984 shall apply. Comment- <i>The proposed development will comply with the above standards.</i> | |
| Hazardous Substances | | |
| 31.14.1.1 | Maximum amounts of listed hazardous substances set out in column 1 of Table 31.3 shall not be exceeded. Comment- <i>Any hazardous substances will be comply with maximum amounts detailed within Table 31.3</i> | Complies |
| Retail Activities and Traffic Matters | | |
| 31.23.1 | Any land use that has a parking requirement of two or more on-site parking spaces is a restricted discretionary activity. Comment- <i>the proposed development does not include any retail provision.</i> | Complies |
| 31.25.2 | Any land use on any site in the Rural Zone that has a parking requirement of 10 or more on-site spaces under Rule 30.6.1.34, excluding parking requirements associated with any dwellinghouse, is a discretionary activity (restricted). Comment- <i>The proposal complies with the parking requirements outlined in Rule 30.6.1.34</i> | Complies |
| 31.25.3 | Except as provided for by Rule 31.26, any land use in any zone resulting in a total of more than 250 motorised vehicles movements, either entering or exiting the site, per day is a discretionary activity (restricted). Comment- <i>The site will generate approximately 724 vehicle movements per day, so it will trigger the non-compliance with Rule 31.25.3. Does not comply.</i> | Restricted discretionary |
| Section 30 - Utilities and Traffic Management | | |
| Access to Roads | | |
| 30.6.1.1 | All land uses in any Residential Zone or Business Zone, and any dwellinghouse in any Rural Zone shall be located on a site that has access to a road which complies with the design attributes of Table 30.1 Comment- <i>N/A</i> | N/A |
| 30.9.1 | Any land use that does not comply with one or more of the conditions under Rule 30.6.1.1 to 30.6.1.32 or 30.7.1 is a discretionary activity. Comment- <i>The proposal complies with all conditions under Rule 30.6.1.1 to 30.6.1.32 , and 30.7.1 – complies.</i> | Complies |
| Accessways | | |
| 30.6.1.13 | Any accessway, except on a State Highway where the posted speed limit is 70km/hr or greater, shall comply with the minimum standards of Table 30.3 Comment- <i>The speed limit for Neeves Road is 60km/hr, therefore this rule is not of relevance.</i> | N/A |
| Parking, Loading and Manoeuvring | | |



| | | |
|-----------|---|----------|
| 30.6.1.34 | <p>Except as provided for by Rule 30.6.1.40, all parking spaces shall:</p> <p>a. be provided on-site for the activity and in accordance with Table 30.8 and explanatory Figure 30.8, and Tables 30.9, 30.10. and 30.11</p> <p>Comment- <i>The site is required to provide 130 car parking spaces, and 141 have been provided plus 4 mobility spaces.</i></p> | Complies |
| 30.6.1.44 | <p>Where more than five car parking spaces are required on a site under Rules 30.6.1.34 to 30.6.1.39, a minimum of one tree shall be planted and maintained per 5 parking spaces, or per 5 facing pairs of parking spaces, within, or immediately adjacent to, the parking area</p> <p>Comment- <i>Refer to concept plan in Appendix 2 - complies</i></p> | Complies |
| 30.6.1.45 | <p>Cycle parking required by Rule 30.6.1.34 shall be constructed to meet a number of specifications.</p> <p>Comment- <i>Complies</i></p> | Complies |
| 30.8.1 | <p>Any land use that does not comply with one or more of the conditions under Rules 30.6.1.34 to 30.6.1.45 is a restricted discretionary activity.</p> <p>Comment- <i>The proposal complies with the conditions outlined in Rules 30.6.1.34 to 30.6.1.45</i></p> | Complies |



Appendix 4

Transport Assessment

15 October 2021

Novo Group Limited
 Level 1, 279 Montreal Street
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 info@novogroup.co.nz

MEMO

TO: Helen Pickles
FROM: Nick Fuller, Senior Transport Engineer
PROJECT REF: 889-001

**12 NEEVES ROAD, TRANSPORT REVIEW
 INDUSTRIAL DEVELOPMENT**

- It is proposed to develop 12 and 20 Neeves Road (in Kaiapoi) as a 9,657m² GFA industrial activity. A copy of the proposed site layout is included in **Attachment 1**.

Proposal Overview

- The traffic generation of the proposed activity has been based on data published in the ITE Trip Generation guide, which sets out traffic generation rates for a range of activities. The highest traffic generation rate for industrial activities (per 100m² GFA) is for *General Light Industrial*. **Table 1** sets out the traffic generation for the proposed activity.

Table 1: Trip Generation

| | | Arrivals | Departures | Total |
|---------------------------------------|---------|----------|------------|-------|
| Trip Rate (per 100m ² GFA) | AM Peak | 0.88 | 0.12 | 1 |
| | PM Peak | 0.12 | 0.87 | 0.99 |
| | Daily | 3.75 | 3.75 | 7.5 |
| Traffic Generation | AM Peak | 85 | 12 | 97 |
| | PM Peak | 11 | 84 | 96 |
| | Daily | 362 | 362 | 724 |

- The proposed activity will be supported by 148 car parks (including four mobility spaces). The car parks will generally be 2.5m wide, 5.0m long with an aisle of 6.6m. These comply with the District Plan parking layout requirements.
- Loading is provided for nine trucks. The site is proposed to be served by 12.5m long rigid trucks (as a maximum) and the loading has been designed to accommodate these vehicles.



5. The access is proposed to be to Neeves Road and will be located at least 75m from the Main North Road / Neeves Road intersection. The proposed access will be 6.0m wide at the boundary.

Compliance Review

6. A review of Compliance against the District Plan Transport Standards is included in **Attachment 1**. This indicates that the proposal complies with the relevant standards and no further assessment is required.



Attachment 1: District Plan Transport Compliance Assessment

| RULE | COMMENT | COMPLIES? |
|--|---|-----------|
| Access to Roads | | |
| 30.6.1.1 All land uses in any Residential Zone or Business Zone, and any dwellinghouse in any Rural Zone, shall be located on a site that has access to a road which complies with the design attributes of Table 30.1, Table 30.2 for the Residential 7 Zone, other than land uses in the Residential 6, 6A and Business 1 Zones at Pegasus which shall be located on a site that has access to a road which complies with the design attributes of Table 32.2. | Not applicable, as the site is zoned Rural | N/A |
| 30.6.1.2 Except where part of a cluster housing development under Rule 31.34.1 access to seven or more sites shall only be provided by way of a road which complies with the design attributes of Table 30.1, or Table 30.2 for the Residential 7 Zone | Complies as there is only one site. | Yes |
| 30.6.1.3 All sites in the Residential 1 Zone, immediately south of the railway line on Williams Street, Kaiapoi, shall be limited to one access point for that zone. | The site is not within this location | N/A |
| 30.6.1.4 Where a site has frontage to a State Highway and any other road in the road hierarchy, access shall not be to the State Highway. | The site does not have access to a State highway. | Yes |
| 30.6.1.5 Where a site in the Southbrook Business 2 Zone has frontage to Fernside Road and another road in the road hierarchy or an accessway, access shall not be to Fernside Road. | The site is not within this location | N/A |
| 30.6.1.6 Access to State Highway 1 from Mapleham Rural 4B Zone shall be limited to the two locations as shown on the Mapleham Concept Plan (District Plan Map 147), provided that: | The site is not within this location | N/A |
| 30.6.1.7 Vehicle crossings to Tram Road from the Residential 4A Zone (Wards Road, Mandeville North), shown on District Plan Map 162, shall be limited to the crossings and number of users as identified in Figure 30.1. | The site is not within this location | N/A |
| 30.6.1.8 Within the Todds Road Business 2 Zone identified on District Plan Map 175 no vehicle crossing shall access directly onto Fernside Road | The site is not within this location | N/A |
| 30.6.1.9 Within the Southbrook Business 6 Zone no vehicle crossing shall directly access Flaxton Road | The site is not within this location | N/A |
| 30.6.1.10 Within the Kaiapoi Business 5 Zone Outline Development Plan area shown on District Plan Map 170: | The site is not within this location | N/A |



| RULE | COMMENT | COMPLIES? |
|--|---|-----------|
| 30.6.1.11 Vehicle crossings to Tram Road from the Residential 4A Zone Mandeville Road – Tram Road Mandeville North, shown on District Plan Map 182, shall be limited to the crossings and number of users as identified in Figure 30.2. | The site is not within this location | N/A |
| Accessways | | |
| 30.6.1.12 Within the Residential 7 Zone no access from the new Urban Collector Roads west of Island Road shall be provided to Butchers Road or Giles Road until the Arterial Road shown on District Plan Map 164 is constructed and completed. This road access shall be limited to the two locations shown. | The site is not within this location | N/A |
| 30.6.1.13 Any accessway, except on a State Highway where the posted speed limit is 70km/hr or greater, shall comply with the minimum standards of Table 30.3 | Requires a minimum entry width of 6m and a minimum legal width of 8m. | Yes |
| 30.6.1.14 All accessways within Residential 1 and 2, Residential 6 and 6A Zones, and Business 1 and 2 Zones, shall: a. where serving more than one site, be formed and sealed for their full length; or b. where serving only one site, be formed to an all weather standard | Not applicable, as the site is in eth Rural zone. | N/A |
| 30.6.1.15 a. All accessways within the Residential 3, 4A, 4B Zones and the Rural Zone shall be formed to an all weather standard. b. In the Residential 6 and 6A Zones, all accessways shall be held in the same ownership or by tenancy-in-common in the same ownership as the lots or sites to which the accessway provides access. c. All sites in the Residential 6A Zone shall be provided with access by way of an accessway. | The access will be constructed to an all weather standard. | Yes |
| 30.6.1.16 All accessways within the Residential 7 Zone (Area A) shall: | The site is not within this location | N/A |
| 30.6.1.17 All accessways within the Kaiapoi Business 5 Zone shall be formed and sealed for their full length. | The site is not within this location | N/A |
| 30.6.1.18 Within the Mandeville North Business 4 Zone one left turn exit onto Tram Road shall be provided. The exit location shall be located no closer than 125 metres from the intersection of McHughs Road and Tram Road, measured from the centre of McHughs Road) and shall be constructed to avoid the ability for vehicles to turn right from this exit | The site is not within this location | N/A |



| RULE | COMMENT | COMPLIES? |
|--|---|-----------|
| Vehicle Crossings | | |
| <p>30.6.1.19 The maximum number, spacing and width of vehicle crossings for all roads, other than State Highways where the posted speed limit is 70km/hr or greater, shall comply with Table 30.4</p> | <p>Requires a separation of either less than 10m or greater than 180m to crossing on the same side of the road. Requires a width of between 3.5m and 6.0m.</p> <p>A width of 6m is proposed and it is the only crossing on this side of the road.</p> | N/A |
| <p>30.6.1.20 The minimum distance between crossings for any vehicle crossing accessing a State Highway where the posted speed limit is 70km/hr or greater shall be: 70km/hr - 40m; 80km/hr - 100m; 100km/hr - 200m provided that there shall be no more than five individual crossings along any 1km section of State Highway (on both sides) measured 500m on either side of a proposed crossing, on a State Highway with a posted speed limit of 100km/hr.</p> | <p>There is no access to the State highway, so this is not applicable.</p> | N/A |
| <p>30.6.1.21 Accessways on any road adjacent to a footpath shall achieve the minimum sight distance for pedestrians safety as depicted in Figure 30.3.</p> | <p>There is no footpath on Neeves Road along the site boundary.</p> | N/A |
| <p>30.6.1.22 The width of any vehicle crossing shall be the distance measured from side to side, across the flat part of the crossing at the kerb line; or, where there is no kerb and channel, the same measurement at the throat of the entrance way.</p> | | Noted |
| <p>30.6.1.23 The distance between vehicle crossings shall be the distance measured parallel to the road centreline between the nearest edge of each respective vehicle crossing.</p> | | Noted |
| <p>30.6.1.24 Vehicle crossings on arterial, strategic and collector roads shall have minimum unobstructed sight distances that comply with Table 30.5 and there shall be no obstruction to visibility inside the area bounded by the sight lines as depicted in Figure 30.4.</p> | <p>Neeves Road is a Local Road, so this is not applicable.</p> | N/A |
| <p>30.6.1.25 The sight distances and sight lines shall be measured as depicted in Figure 30.4. The sight distances shall be measured from a height of 1.15m above:</p> <ol style="list-style-type: none"> the existing road surface; and the proposed surface level of the vehicle crossing | | Noted |



| RULE | COMMENT | COMPLIES? |
|---|--|-----------|
| 30.6.1.26 Distances of vehicle crossings to intersections shall comply with Table 30.6. | Neeves Road is a Local Road and Main North Road is a Strategic Road. The speed limit is greater than 50km/hr, so a separation of 75m is required. 75m is provided. | Yes |
| 30.6.1.27 The distance between vehicle crossings and road intersections shall be measured from the centreline of the vehicle crossing to the nearest point of the formed road at the intersection on the same side as the vehicle crossing and shall be measured parallel to the road centreline. | | Noted |
| 30.6.1.28 Within the Mandeville North Business 4 Zone any site access from Tram Road shall be constructed to include a deceleration lane with a minimum width of 2.5 metres, over a minimum length of 88 metres and allowing for a 1 in 10 taper to be provided. | The site is not within this location | N/A |
| 30.6.1.29 For any retail activity on a site, acceleration and deceleration tapers shall be constructed as part of the road carriageway and in accordance with Figure 30.5 where any vehicle crossing from the site connects to any road, other than a State Highway, and that road is shown in the District Plan Maps as a strategic, arterial or collector road with a posted speed limit of more than 70km/hr in the Rural Zone and Residential 4A and 4B Zones | The site does not trigger this requirement. | N/A |
| 30.6.1.30 For vehicle crossings accessing a State Highway with a posted speed limit of 70km/hr or greater, and with 30 or fewer equivalent car movements per day, the crossing shall be constructed in accordance with Figure 30.6 | The site does not access a State highway. | N/A |
| 30.6.1.31 For vehicle crossings accessing a State Highway with a posted speed limit of 70km/hr or greater and with between 31 and 100 equivalent car movements per day, acceleration and deceleration tapers shall be constructed as part of the road carriageway in accordance with Figure 30.7 | The site does not access a State highway | N/A |
| Road Intersection Spacing | | |
| 30.6.1.32 The minimum spacing between road intersections shall comply with Table 30.7 | There are no intersections planned as part of this proposal. | N/A |
| 30.6.1.33 Distances between intersections shall be measured parallel to the boundaries of the site of the respective road intersection along the road centreline, except where any corner splay has been taken the distance shall be measured as though the corner splay had not been taken | Not applicable | N/A |



| RULE | COMMENT | COMPLIES? |
|--|--|-----------|
| Parking, Loading and Manoeuvring | | |
| <p>30.6.1.34 Except as provided for by Rule 30.6.1.40, all parking spaces shall:</p> <p>a. be provided on-site for the activity and in accordance with Table 30.8 and explanatory Figure 30.8, and Tables 30.9, 30.10. and 30.11, except for sites excluded or exempted by Rules 30.6.2.8 and 30.6.2.9, where a financial contribution applies for the provision of off-site parking and loading; and</p> <p>b loading dimensions in Table 30.10 apply based on the largest vehicle expected to use the loading space. For business zoned sites where on-site waste collection occurs, the loading and manoeuvring space shall accommodate a medium rigid truck.</p> | <p>The proposal is for 9,657m² GFA of industrial activity. This requires:</p> <ul style="list-style-type: none"> - 138 car parks; - 9 loading spaces; and - 10 long-term cycle parks. <p>The dimensions of parking and loading comply.</p> | Yes |
| <p>30.6.1.35 Where the parking requirement requires a fractional space, any fraction under one half shall be disregarded. Any fraction of one half or more should be counted as one space.</p> | | Noted |
| <p>30.6.1.37 The total number of parking and loading spaces required shall be the sum of car parking, loading and cycle parking spaces identified in Table 30.8, provided:</p> <p>a. where different activities are undertaken on the same site, the parking requirement shall be the sum of those spaces required for each activity;</p> <p>b. where a single activity falls within two or more categories in Table 30.8, the category that yields the greater number of parking spaces shall apply.</p> | | Noted |
| <p>30.6.1.37 Sufficient loading and manoeuvring space shall be provided on-site to ensure that no vehicle is required to reverse either onto or off a site where access is to a collector, strategic or arterial road or where the site gains access by a right of way or shared accessway.</p> | Complies | Yes |
| <p>30.6.1.38 Access for loading and manoeuvring on any site identified by Figure 31.2 Rangiora and Kaiapoi Principal Shopping Street Frontages shall not occur across that road frontage</p> | Not applicable | N/A |
| <p>30.6.1.39 Accessible parking spaces for disabled persons and accessible routes from parking spaces to the associated activity or road shall be provided in accordance with NZS:4121:2001: Design for Access and Use of Buildings and Facilities for Disabled Persons. Accessible parking is included within the spaces required by Rule 30.6.1.34.</p> | Complies | Yes |
| <p>30.6.1.40 Within Sub-Areas A to D of the Rangiora Central Outline Development Plan area, shown on District Plan Map 178, car parking for activities specified by Rule 30.6.1.34, Table 30.8, shall only be provided for in a public car parking building within Sub-Area C.</p> | The site is not within this location | N/A |



| RULE | COMMENT | COMPLIES? |
|--|--------------------------------------|-----------|
| 30.6.1.41 Within the Mandeville North Business 4 Zone shown on District Plan Map 182 no parking space or manoeuvring space shall be located within 3 metres of the Tram Road boundary | The site is not within this location | N/A |
| 30.6.1.42 In the Residential 6A Zone: | The site is not within this location | N/A |
| 30.6.1.43 In the Business 5 Zone: | The site is not within this location | N/A |
| 30.6.1.44 Where more than five car parking spaces are required on a site under Rules 30.6.1.34 to 30.6.1.39, a minimum of one tree shall be planted and maintained per 5 parking spaces , or per 5 facing pairs of parking spaces, within, or immediately adjacent to, the parking area. Trees shall: a. be planted at 8m to 10m spacing within a planting bed for which the minimum dimension shall be a circle with a 1.5m radius; b. be protected from damage by vehicles; c. be a minimum of 1.5m tall and be in a healthy state at planting; d. be capable of attaining a minimum height of 4 m at maturity; e. be planted no closer than 2 m from an underground service or 1 metre from a footpath or kerb; and f. not impede the passage of pedestrians or vehicles. | The proposal complies | Yes |
| 30.6.1.45 Cycle parking required by Rule 30.6.1.34 shall be constructed: a. to support the cycle frame and not the wheel only; b. of durable materials and securely anchored to ground or building; c. to allow at least 1m between parking rails where more than one park is provided; d. for short term parking, be located: i. within 15 m of the entrance to the activity; ii. to be easily seen when approaching or leaving the activity; iii. under shelter (where this is available); iv. where cycles will be protected from motor vehicles; v. under lighting if designed to be used at night; and vi. where use will not create a hazard for pedestrians, including visually impaired pedestrians; and e. for long term parking, to provide bicycle parking space within a secure, covered facility | Complies | Yes |
| Traffic Sight Lines at Railway Crossings | | |
| 30.6.1.46 Any use of land (including structures or vegetation) on a site abutting a railway shall comply with traffic sight lines at road rail crossings in accordance with Figure 30.13 | Not applicable | N/A |



| RULE | COMMENT | COMPLIES? |
|---|---------|-----------|
| Exemptions | | |
| 30.6.2.8 On-site car parking spaces required by Rule 30.6.1.34, in the Business 1 Zone, shall not be provided where the site is identified on Figure 31.2 Rangiora and Kaiapoi Principal Shopping Street Frontages where car parking will be provided by financial contribution under Rule 34.2.7 | | Noted |
| 30.6.2.9 On-site loading and manoeuvring space required by Rule 30.6.1.34, in the Business 1 Zone, shall not be required for new development where: a. the site is identified on Figure 31.2 Rangiora and Kaiapoi Principal Shopping Street Frontages; and b. loading for the largest expected service vehicle can be undertaken from a service lane, public loading space, or shared loading space | | Noted |
| 30.10.3 The provision of on-site parking on a site identified as having frontage to a principal shopping street in Figure 31.2, is a non-complying activity. | | Noted |

Proposed Industrial Development at Neeves Road, Kaiapoi

Geotechnical Assessment Report

Domett Properties Limited



Reference: 773-CHCGE303819

22 September 2022

PROPOSED INDUSTRIAL DEVELOPMENT AT NEEVES ROAD, KAIAPOI

Geotechnical Assessment Report

Report reference number: 773-CHCGE303819

22 September 2022

PREPARED FOR

Domett Properties Limited

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QUALITY INFORMATION

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| Revision | Description | Date | Author | Reviewer | Approver |
|----------|-------------|------------|--------|----------|----------|
| 0 | Final | 22/09/2022 | BC | AG | CT |

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CONTENTS

| | | |
|-----------|--|----------|
| 1. | INTRODUCTION | 1 |
| 2. | SCOPE | 1 |
| 3. | SITE DESCRIPTION AND PROPOSED DEVELOPMENT | 1 |
| | 3.1 Existing information..... | 2 |
| | 3.2 Flood hazard..... | 3 |
| | 3.3 Contaminated land considerations..... | 3 |
| | 3.4 Observed earthquake performance..... | 3 |
| 4. | GROUND CONDITIONS | 4 |
| | 4.1 Geological setting..... | 4 |
| | 4.2 Geotechnical Site Investigation..... | 4 |
| | 4.3 Ground model..... | 4 |
| | 4.4 Groundwater conditions..... | 5 |
| | 4.5 Site sub-soil class..... | 5 |
| 5. | ANALYSES | 5 |
| | 5.1 Seismic design ground motion parameters..... | 5 |
| | 5.2 Liquefaction assessment..... | 6 |
| 6. | FOUNDATION OPTIONS | 7 |
| 7. | DETAILED DESIGN AND PLAN REVIEW | 8 |
| 8. | CONSTRUCTION CONSIDERATIONS | 8 |
| | 8.1 Earthworks..... | 8 |
| 9. | LIMITATIONS | 9 |

LIST OF TABLES

| | |
|---|---|
| Table 1: Ground model..... | 4 |
| Table 2: Earthquake scenario and parameters for analysis..... | 6 |
| Table 3: Liquefaction hazard assessment results | 6 |

APPENDICES

APPENDIX A: SITE PLA

APPENDIX B: GEOTECHNICAL INVESTIGATION DATA

APPENDIX C: LIQUEFACTION ANALYSES

1. INTRODUCTION

Novo Projects Limited (Novo) on behalf of Domett Properties Limited has engaged Tetra Tech Coffey (NZ) Limited (Tetra Tech Coffey) to provide a geotechnical assessment report of the area, including possible foundation options for the proposed industrial development at 12 – 20 Neeves Road, Kaiapoi.

The purpose of our work is to evaluate the subsurface conditions at the site, provide recommendations for suitable foundation options with reference to the Ministry of Business, Innovation and Employment (MBIE) Guidance¹, including updates and clarifications²; the Building Code, New Zealand Geotechnical Society (NZGS) Module 4 – Earthquake resistant foundation design³, and other relevant industry documents, as appropriate, and provide geotechnical design information for the site.

This geotechnical report is considered suitable to accompany the application for Resource Consent, and provide the basis for the geotechnical input to the foundation design to support a Building Consent application.

2. SCOPE

In accordance with our proposal dated 27 May 2022, the following items were included in the scope for this project:

- Geotechnical desktop study.
- Shallow ground investigation comprising 4 hand auger boreholes (HA) with accompanying dynamic cone penetration and shear vane tests to 2.0 to 3.0 metres below ground level (mbgl) or refusal.
- Deep ground investigation comprising 4 cone penetrometer tests (CPTs) to 15.0mbgl or refusal.
- Geological ground model and natural hazards assessment.
- Geotechnical assessment report (GAR) suitable for proposed industrial development.

3. SITE DESCRIPTION AND PROPOSED DEVELOPMENT

The site is located along Neeves Road, in Kaiapoi, between State Highway 1 and Main North Road (Figure 1). Immediately to the south is an existing industrial Hellers factory and a large storage yard to the east. At the time of writing this report, the site is occupied by 2 separate rural dwellings (Lot 1 and Lot 2 DP992) along with various barns and sheds on the southern portion of the site. The overall site is generally flat with a 2.0 to 3.0m high man-made bund along the boundary between 12 Neeves Road and Main North Road. The northern portion of the site is considered a greenfield site.

The Courtenay Stream is located less than 50m to the east from the site boundary, flowing north and the Waimakariri River is located approximately 1.2 kilometres (km) to the southeast of the site.

Domett Properties is proposing to construct an industrial development across the approximately 4.9 hectare site, including a carpark and a stormwater pond.

¹ Ministry of Business, Innovation and Employment, 2014: Assessment, repair and rebuild of earthquake-affected industrial buildings in Canterbury, December 2014 (Version 1).

² Ministry of Business, Innovation and Employment, Updates and clarification to the residential guidance, Issue 1 to 10, June 2018.

³ New Zealand Geotechnical Society (NZGS) 2021: Earthquake geotechnical engineering practice Module 4; Earthquake resistant foundation design.



Figure 1: Site location (red) (GoogleEarth, 2020).

3.1 EXISTING INFORMATION

Tetra Tech Coffey have reviewed the New Zealand Geotechnical Database (NZGD)⁴ and ECan Well Search⁵ for any existing data within the proposed development site. We have identified the following information within the vicinity of the proposed development area which will be used to form part of our geotechnical ground model:

- NZGD BH48985, target depth of 19.85mbgl, located approximately 100m southwest of the site.
- NZGD BH25125, target depth of 19.85mbgl, located approximately 100m southwest of the site.
- ECan Well log, BW24/0563, target depth of 29.0mbgl, located on the property of 20 Neeves Road.

Information on the above existing data can be found in Appendix B of this report.

⁴ <https://www.nzgd.org.nz/ARCGISMapViewer/mapviewer.aspx>

⁵ <https://www.ecan.govt.nz/data/well-search/>

3.2 FLOOD HAZARD

Current information from the Waimakariri District Council (WDC) Flood Hazards Map⁶ indicate parts of the eastern portion of the site has a low chance of a 1 in 200 year flood event.

Floor level height requirements should be confirmed with the WDC prior to foundation design.

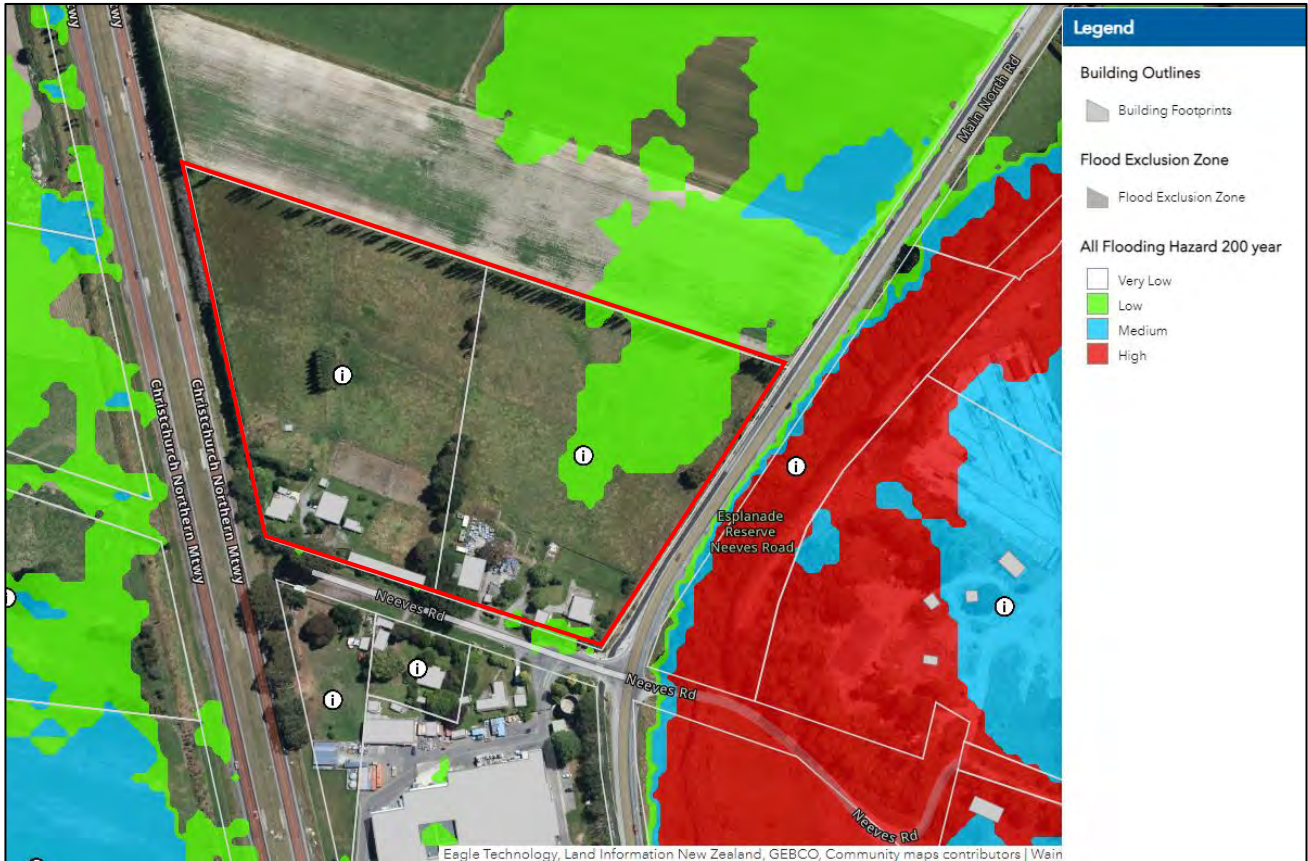


Figure 2: Flood Hazards Map. Site location in red.

3.3 CONTAMINATED LAND CONSIDERATIONS

Tetra Tech Coffey has reviewed the ECan Listed Land Use register (LLUR) as part of the desktop study phase of this investigation. The information reviewed did not identify the site as being on the Hazardous Activities and Industries List (HAIL).

3.4 OBSERVED EARTHQUAKE PERFORMANCE

Our observations from review of the NZGD layers indicate that whilst the site was not mapped, aerial photography indicates no liquefaction ejecta or land damage was observed.

⁶ <https://waimakariri.maps.arcgis.com/apps/MapSeries/index.html?appid=16d97d92a45f4b3081ffa3930b534553>

4. GROUND CONDITIONS

4.1 GEOLOGICAL SETTING

The local surface geology is Springston Formation⁷, which generally comprises alluvial deposits of gravel, sand, and silt deposits. The site-specific, surface geology is mapped as *Grey river alluvium, comprising gravel, sand and silt, in active floodplains (Q1a)*⁷.

4.2 GEOTECHNICAL SITE INVESTIGATION

Tetra Tech Coffey carried out site-specific investigation on 24 August 2022, comprising 5 HA boreholes and 4 CPTs. The HA boreholes reached a target depth of 2.0mbgl along with dynamic cone penetrometer tests to a depth of 0.9mbgl. The CPTs reached a maximum depth of 13.4mbgl where it refused on natural sandy gravel. Nearby boreholes show the sandy gravel was encountered to at least 29.0mbgl, the maximum explored depth.

A test location plan is presented in Appendix A and the test data is presented in Appendix B.

4.3 GROUND MODEL

The site stratigraphy has been derived from our geotechnical investigations and from the NZGD website. The units have been broken down into layers as shown in Table 1 to better understand the sub-surface geology across the site. As shown in Figure 3, CPT01 and CPT04 contains a consistent clayey silt/sandy silt layer up to 4.7mbgl which overlies the sandy gravel to gravelly sand. On the other hand, CPT02 and CPT03 vary considerably between 2.5m – 11.5mbgl.

A summary of the ground model is shown in Table 1 and Figure 3. The outputs can be found in Appendix B.

Table 1: Ground model

| Layer ref. | Layer | Top of layer (mbgl) | Approx. thickness (m) | Properties |
|------------|--|---------------------|-----------------------|---|
| 0 | Topsoil | 0.0 | 0.3 – 0.4 | N/A |
| 1 | Silt/clayey silt | 0.3 – 0.4 | 1.0 – 2.1 | Stiff to very stiff. |
| 2 | Interbedded sandy silt / silty sand | 1.2 – 2.3 | 1.3 – 5.8 | Loose to dense. Silt is stiff to very stiff. |
| 3 | Sandy gravel / Gravelly sand with interbedded silt | 2.5 – 7.2 | 3.1 – >9.0 | Medium dense to very dense. Silt is firm to very stiff. |
| 4 | Interbedded sandy silt / silty sand (CPT02/CPT03 only) | 6.5 – 10.3 | 0.4 – 4.0 | Medium dense to dense. Silt is stiff to very stiff. |
| 5 | Clayey silt (CPT02/CPT03 only) | 10.5 – 10.7 | 1.1 – 1.2 | Stiff to very stiff. |

⁷ Forsyth, P.J.; Barrell, D.J.A.; Jongens, R. (compilers) 2008. Geology of the Christchurch area. Institute of Geological & Nuclear Sciences 1: 250,000 geological map 16. 1 sheet + 67p. Lower Hutt, New Zealand. GNS Science.

| Layer ref. | Layer | Top of layer (mbgl) | Approx. thickness (m) | Properties |
|------------|---|---------------------|-----------------------|----------------------|
| 6 | Sandy Gravel/gravelly sand (CPT02/CPT03 only) | 11.7 – 11.8 | >15 | Dense to very dense. |

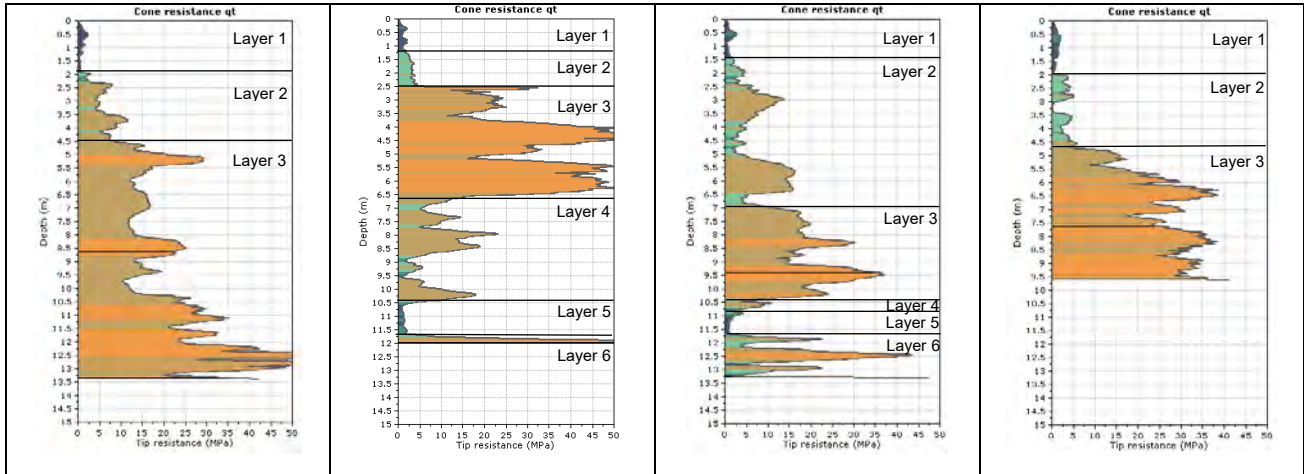


Figure 3: From left to right, CPT01 - CPT04 profile showing the variability of the soil profile across the site. Note: clayey/silty mixture is coloured blue/green and sandy/gravelly mixtures is coloured brown/orange.

4.4 GROUNDWATER CONDITIONS

Groundwater was observed in three of the five on-site HAs with a depth to groundwater ranging between 0.2 (HA01) to 1.7mbgl (HA4). It is noted that there were areas of perched standing water across the site when we carried out our investigation and therefore the measurement in HA01 is likely to be the inflow of surface water.

The CPTs encountered groundwater within the upper 0.5m based on the review of the recorded pore pressure measurements. A conservative design groundwater level of 0.5mbgl has been adopted for the liquefaction analyses.

4.5 SITE SUB-SOIL CLASS

Based on our site investigation and understanding of the geology, and in accordance with Section 3.1.3 of NZS1170.5⁸, a site subsoil classification of “Class D – Deep or soft soil sites” may be assumed for this site.

5. ANALYSES

5.1 SEISMIC DESIGN GROUND MOTION PARAMETERS

Serviceability Limit State (SLS) and Ultimate Limit State (ULS) design earthquake scenarios were assessed using the parameters provided by the NZGS Guidelines⁹ for an Importance Level 2 (IL2) structure and a Class D sub-soil site.

The earthquake parameters adopted for geotechnical seismic design, particularly liquefaction analysis, are presented in Table 2.

⁸ NZS 1170.5:2004 - Structural design actions - Part 5: Earthquake actions - New Zealand.

⁹ MBIE and NZGS (2021): Earthquake geotechnical engineering practice, Module 1: Overview of the guidelines, November 2021.

Table 2: Earthquake scenario and parameters for analysis

| Earthquake scenario | Moment magnitude (M_w) | α_{max} (g) |
|---------------------|----------------------------|--------------------|
| SLS | 6.0 | 0.19 |
| SLS | 7.5 | 0.13 |
| ULS | 7.5 | 0.35 |

5.2 LIQUEFACTION ASSESSMENT

Tetra Tech Coffey has carried out a liquefaction hazard assessment in accordance with MBIE and NZGS Guidelines¹⁰ to assess the liquefaction risk at the site. MBIE liquefaction-induced, free-field settlement values are presented in Table 2 and Appendix C. These settlement estimates account for the free-field component of the expected settlement. Actual total settlements under SLS or ULS earthquake loading may be greater due to foundation loading.

While index settlements tell us about the free-field settlement at a site, the non-liquefiable crust thickness and risk of liquefaction ejecta at a site are also key foundation design considerations. Liquefaction damage such as crust thinning, crust degradation, and / or loss of ground beneath a foundation / bearing capacity failure due to shallow liquefaction can result in significant foundation deformation. The risk of liquefaction-induced surface deformation at a site can be measured using the liquefaction severity number (LSN). LSN results are also presented in Table 3 and Appendix C.

Table 3: Liquefaction hazard assessment results

| Layer information | | | Liquefaction triggering | |
|-------------------|--|---------------------------------------|-------------------------|-------------|
| Layer ID | Layer description | Top of layer depth range (indicative) | SLS | ULS |
| 0 | Topsoil | 0.0 | N/A | N/A |
| 1 | Silt/clayey silt | 0.3 – 0.4 | None | None |
| 2 | Interbedded sandy silt / silty sand | 1.2 – 2.3 | Likely | Very Likely |
| 3 | Sandy gravel / Gravelly sand with interbedded silt | 2.5 – 7.2 | Likely | Very Likely |
| 4 | Interbedded sandy silt / silty sand (CPT02/CPT03 only) | 6.5 – 10.3 | Likely | Very Likely |
| 5 | Clayey silt (CPT02/CPT03 only) | 10.5 – 10.7 | None | None |
| 6 | Sandy Gravel/gravelly sand (CPT02/CPT03 only) | 11.7 – 11.8 | None | None |

¹⁰ New Zealand Geotechnical Society (NZGS) 2016: Earthquake geotechnical engineering practice Module 3; Identification, assessment and mitigation of liquefaction hazards.

The key observations from our analyses are:

- At SLS levels of shaking:
 - Liquefaction triggering and liquefaction induced free-field settlements are predominantly in the medium dense to dense sandy/silty lenses in Layer 2 and Layer 3, with liquefaction triggering occurring below 2.0m and the majority below 8.5 – 10.5m. Some isolated / discrete lenses of liquefaction are predicted between these depths but do not appear to be consistently at the same depth.
 - Free-field settlement values range from 30mm to 55mm.
 - LSN values typically indicate little to minor surface expression (LSN average value ~13), which correlates with the materials encountered and typical ground model.
- At ULS levels of shaking:
 - Liquefaction triggering occurs in the loose to medium dense sandy and silty layers throughout the soil profile with the majority occurring below 2m. Discrete sandy lenses between 0.5 to 2.0m triggering only under ULS.
 - Non-liquefiable crust thickness ranges from 1.4m to 2.0m.
 - Full depth free-field settlement values range from 55mm to 90mm.
 - LSN values typically indicate moderate surface expression (LSN average value ~23), which indicates that the clayey surficial soils will limit the surface manifestation of liquefaction.

Lateral stretch of the ground in this location is expected to be minimal as the nearest free face is 50.0m between the eastern boundary of the site and the Courtenay Stream. Depending on the final building location, further assessment may be required.

6. FOUNDATION OPTIONS

We understand that Domett Properties Limited is proposing to construct a new industrial development for the site, along with a large carpark and a stormwater pond. However, the locations and the design for the proposed building is yet to be finalised.

Foundation recommendations for the proposed development have taken the MBIE Guidance¹, updates and clarifications to the MBIE Guidance², the Building Code, and NZGS Module 4 – Earthquake resistant foundation design³ into account.

Based on the ground profile, the following design considerations are relevant for the site:

- The ground profile typically comprises a surface layer of stiff to very stiff clayey soil overlying interbedded silty sandy soils with gravel lenses encountered at variable depths.
- Liquefaction triggering at SLS is minor and minor to moderate at ULS.
- Static settlement of shallow foundations (if preferred) will need to be assessed as the clayey soils are likely to undergo some consolidation when loaded by shallow foundations.

Based on the field test results, our experience in the area, and the findings of our investigation and analyses, a geotechnical ultimate bearing capacity (GUBC) of 200kPa can be found below topsoil. As the building design is yet to be finalised, the following preliminary foundation options should be considered:

- Shallow pad and beam foundation designed for a GUBC of 200kPa.
- If higher bearing capacities are required, a geogrid reinforced gravel raft may be incorporated into the foundation system. The Geogrid reinforced raft should comprise a basal geogrid, Cirtex DuraGrid X 30/30 (or similar approved), 0.4m thick gravel hardfill beneath the ground beams and extend 1.0m laterally from the beam edge.
- If foundation loads are high, and shallow bearing capacities are insufficient, a piled foundation solution may be pursued. Piling on this site may require predrilling to achieve a uniform founding depth due to the variable soil deposits in the upper 10 – 12.0m. Pile depths may range from 5.0m to 13.5m across the site. If this solution is preferred, we should be contacted to confirm pile capacities for foundation design.
- Alternately, stone column ground improvement can be considered. This option would allow for improvement of the upper soil layers and to provide a more uniform subgrade for shallow foundations. Treatment depths would range from 2.5m to ~5.0m based on the CPTs carried out to date. Tetra Tech Coffey has significant experience designing stone column ground improvement and can recommend contractors to discuss options with or carry out the design if preferred.

Static settlement for any shallow foundations will need to be assessed during detailed design once building loads are confirmed. It is possible, if building loads are high, that shallow foundations may not be appropriate.

7. DETAILED DESIGN AND PLAN REVIEW

Once the proposed building location has been finalised, further geotechnical investigation is required to better understand the ground conditions for the proposed building. Additionally, once the preferred foundation solution has been adopted, a detailed design will need to be carried out and final foundation plans should be reviewed by Tetra Tech Coffey prior to building consent application. This is to ensure that our recommendations have been interpreted as intended and to avoid Waimakariri District Council requests for information if there are discrepancies.

8. CONSTRUCTION CONSIDERATIONS

8.1 EARTHWORKS

Where earthworks are to be carried out, it must be undertaken in accordance with NZS4431 (Code of practice for earth fill). Topsoil should be stripped from earthworks areas and stockpiled for later use. Prior to filling, confirmation by Tetra Tech Coffey personnel of suitable stripping of topsoil will be required. Proof rolling to compact loose sandy soils may be required prior to fill placement, this instruction will be provided by Tetra Tech Coffey if required, during construction.

Where uncontrolled fill material is encountered at the site during earthworks, it is recommended that this fill is excavated, checked for suitability and, if required, replaced with engineered fill according to NZS 4431. This process also applies to any soft layers of organic silts, topsoil or other unsuitable material. It is recommended that any such excavation works, and placement of engineered fill be observed, tested, and/or approved by Tetra Tech Coffey personnel during construction.

Engineered fill should be GAP65 hardfill or similar placed and compacted on an approved subgrade in layers not exceeding 200mm thickness. Each layer should be compacted to achieve a relative compaction of at least 95% of the maximum dry density as indicated in NZS 4407:2015 Test 4.3.

Laboratory compaction tests within the past 6 months to assess the maximum dry density of the imported engineered fill will be required prior to commencement of earthworks. A target MDD of 95% should be assumed as compaction criteria.

We require at least 48 hours' notice for site observation visits.

9. LIMITATIONS

The opinions, recommendations and comments given in this report result from the application of normal methods of site investigation. As factual evidence has been obtained solely from test methods that by their nature only provide information about a relatively small volume of sub-soils, there may be special conditions pertaining to this site that have not been disclosed by the investigation and that have not been taken into account in the report. If variations in the sub-soils occur from those described or assumed to exist, then the matter should be referred to us immediately.

This report has been prepared solely for the use of our client, Domett Properties Limited, and the Waimakariri District Council in relation to the specific project described herein. No liability is accepted in respect of its use for any other purpose or by any other person or entity.

If you have queries or require further clarification regarding aspects of this report, please contact the undersigned.

Prepared by



Benjamin Chau
BSc PMEG
Engineering Geologist

Authorised by



Andreas Giannakogiorgos
BSc MSc DIC CEngNZ CPEng IntPE (NZ)
Senior Principal Geotechnical Engineer

IMPORTANT INFORMATION ABOUT YOUR TETRA TECH COFFEY REPORT

As a client of Tetra Tech Coffey you should know that site subsurface conditions cause more construction problems than any other factor. These notes have been prepared by Tetra Tech Coffey to help you interpret and understand the limitations of your report.

Your report is based on project specific criteria

Your report has been developed on the basis of your unique project specific requirements as understood by Tetra Tech Coffey and applies only to the site investigated. Project criteria typically include the general nature of the project; its size and configuration; the location of any structures on the site; other site improvements; the presence of underground utilities; and the additional risk imposed by scope-of-service limitations imposed by the client. Your report should not be used if there are any changes to the project without first asking Tetra Tech Coffey to assess how factors that changed subsequent to the date of the report affect the report's recommendations. Tetra Tech Coffey cannot accept responsibility for problems that may occur due to changed factors if they are not consulted.

Subsurface conditions can change

Subsurface conditions are created by natural processes and the activity of man. For example, water levels can vary with time, fill may be placed on a site and pollutants may migrate with time. Because a report is based on conditions which existed at the time of subsurface exploration, decisions should not be based on a report whose adequacy may have been affected by time. Consult Tetra Tech Coffey to be advised how time may have impacted on the project.

Interpretation of factual data

Site assessment identifies actual subsurface conditions only at those points where samples are taken and when they are taken. Data derived from literature and external data source review, sampling and subsequent laboratory testing are interpreted by geologists, engineers or scientists to provide an opinion about overall site conditions, their likely impact on the proposed development and recommended actions. Actual conditions may differ from those inferred to exist, because no professional, no matter how qualified, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than assumed based on the facts obtained. Nothing can be done to change the actual site conditions which exist, but steps can be taken to reduce the impact of unexpected conditions. For this reason, owners should retain the services of Tetra Tech Coffey through the development stage, to identify variances, conduct additional tests if required, and recommend solutions to problems encountered on site.

Your report will only give preliminary recommendations

Your report is based on the assumption that the site conditions as revealed through selective point sampling are indicative of actual conditions throughout an area. This assumption cannot be substantiated until project implementation has commenced and therefore your report recommendations can only be regarded as preliminary. Only Tetra Tech Coffey, who prepared the report, is fully familiar with the background information needed to assess whether or not the report's recommendations are valid and whether or not changes should be considered as the project develops. If another party undertakes the implementation of the recommendations of this report there is a risk that the report will be misinterpreted and Tetra Tech Coffey cannot be held responsible for such misinterpretation.

Your report is prepared for specific purposes and persons

To avoid misuse of the information contained in your report it is recommended that you confer with Tetra Tech Coffey before passing your report on to another party who may not be familiar with the background and the purpose of the report. Your report should not be applied to any project other than that originally specified at the time the report was issued.

Interpretation by other design professionals

Costly problems can occur when other design professionals develop their plans based on misinterpretations of a report. To help avoid misinterpretations, retain Tetra Tech Coffey to work with other project design professionals who are affected by the report. Have Tetra Tech Coffey explain the report implications to design professionals affected by them and then review plans and specifications produced to see how they incorporate the report findings.

Data should not be separated from the report

The report as a whole presents the findings of the site assessment and the report should not be copied in part or altered in any way. Logs, figures, drawings, etc. are customarily included in our reports and are developed by scientists, engineers or geologists based on their interpretation of field logs (assembled by field personnel) and laboratory evaluation of field samples. These logs etc. should not under any circumstances be redrawn for inclusion in other documents or separated from the report in any way.

Geoenvironmental concerns are not at issue

Your report is not likely to relate any findings, conclusions, or recommendations about the potential for hazardous materials existing at the site unless specifically required to do so by the client. Specialist equipment, techniques, and personnel are used to perform a geoenvironmental assessment. Contamination can create major health, safety and environmental risks. If you have no information about the potential for your site to be contaminated or create an environmental hazard, you are advised to contact Tetra Tech Coffey for information relating to geoenvironmental issues.

Rely on Tetra Tech Coffey for additional assistance

Tetra Tech Coffey is familiar with a variety of techniques and approaches that can be used to help reduce risks for all parties to a project, from design to construction. It is common that not all approaches will be necessarily dealt with in your site assessment report due to concepts proposed at that time. As the project progresses through design towards construction, speak with Tetra Tech Coffey to develop alternative approaches to problems that may be of genuine benefit both in time and cost.

Responsibility

Reporting relies on interpretation of factual information based on judgement and opinion and has a level of uncertainty attached to it, which is far less exact than the design disciplines. This has often resulted in claims being lodged against consultants, which are unfounded. To help prevent this problem, a number of clauses have been developed for use in contracts, reports and other documents. Responsibility clauses do not transfer appropriate liabilities from Tetra Tech Coffey to other parties but are included to identify where Tetra Tech Coffey's responsibilities begin and end. Their use is intended to help all parties involved to recognise their individual responsibilities. Read all documents from Tetra Tech Coffey closely and do not hesitate to ask any questions you may have.

APPENDIX A: SITE PLAN



LEGEND

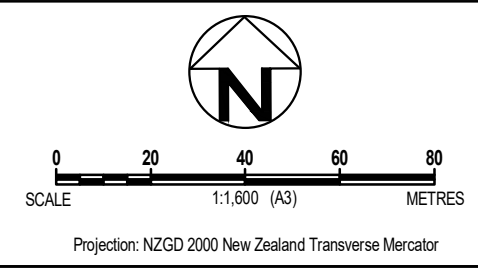
- CPT
- Well borehole
- Hand auger
- NZGD borehole
- Site boundary

Source & Notes:
 Aerial imagery flown 2017 supplied by LINZ
 Data licenced for re-use under the Creative Commons
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Eagle Technology, Land Information New Zealand, GEBCO, Community maps contributors

MXD ref: 303819_02_CIS001_1

| revision | no. | description | drawn | approved | date |
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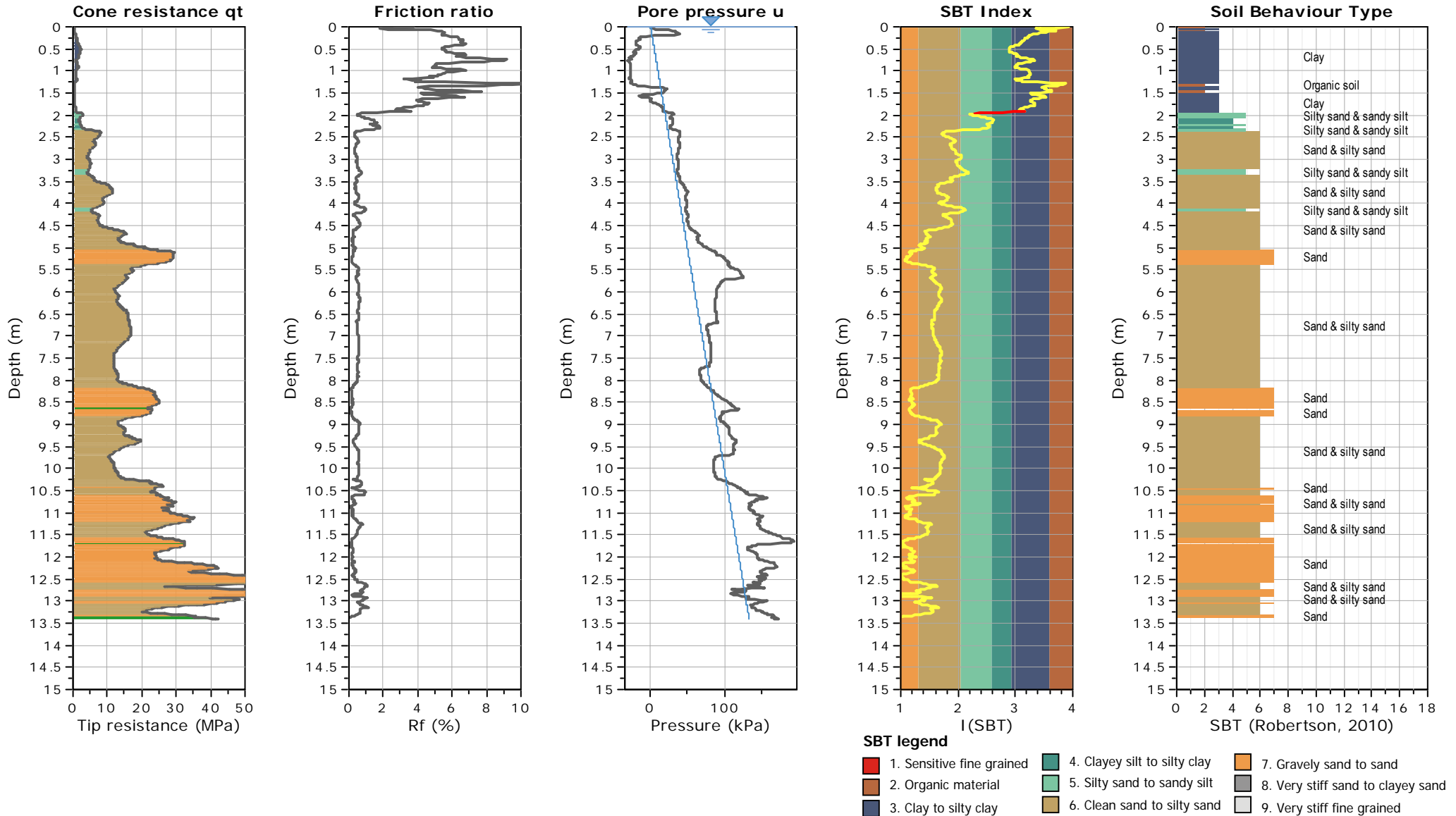


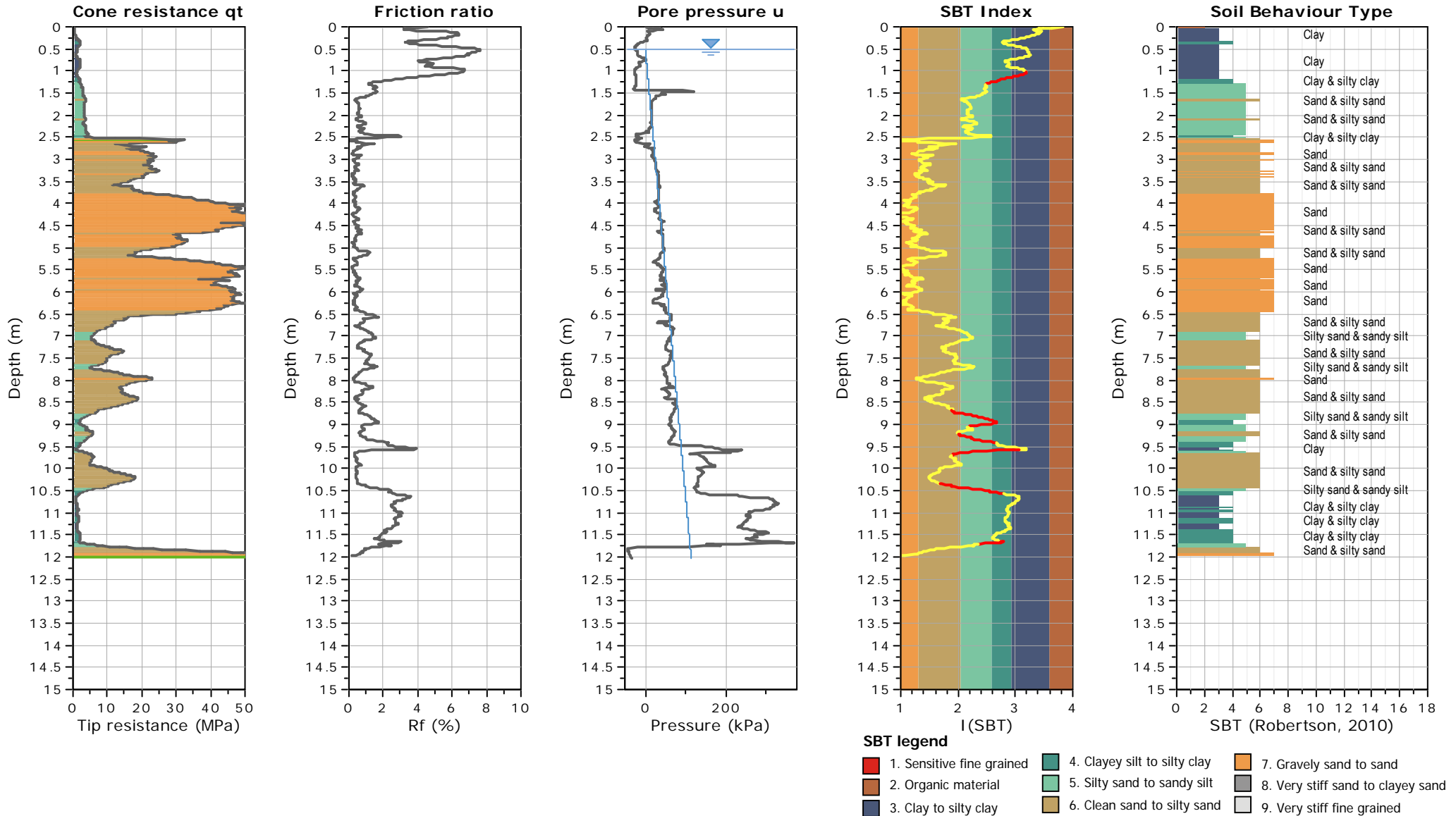
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| approved | BC |
| date | 21.09.2022 |
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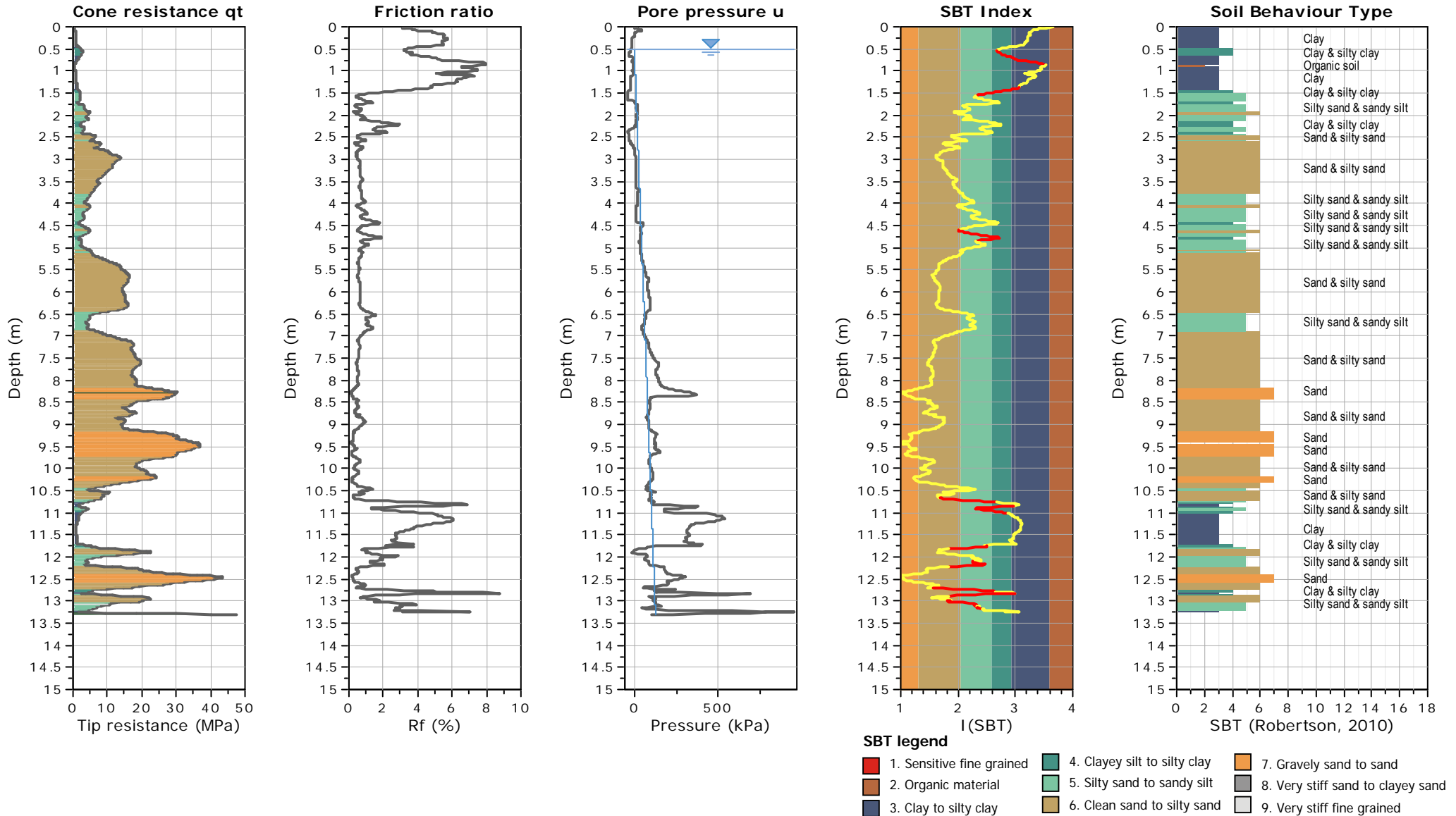


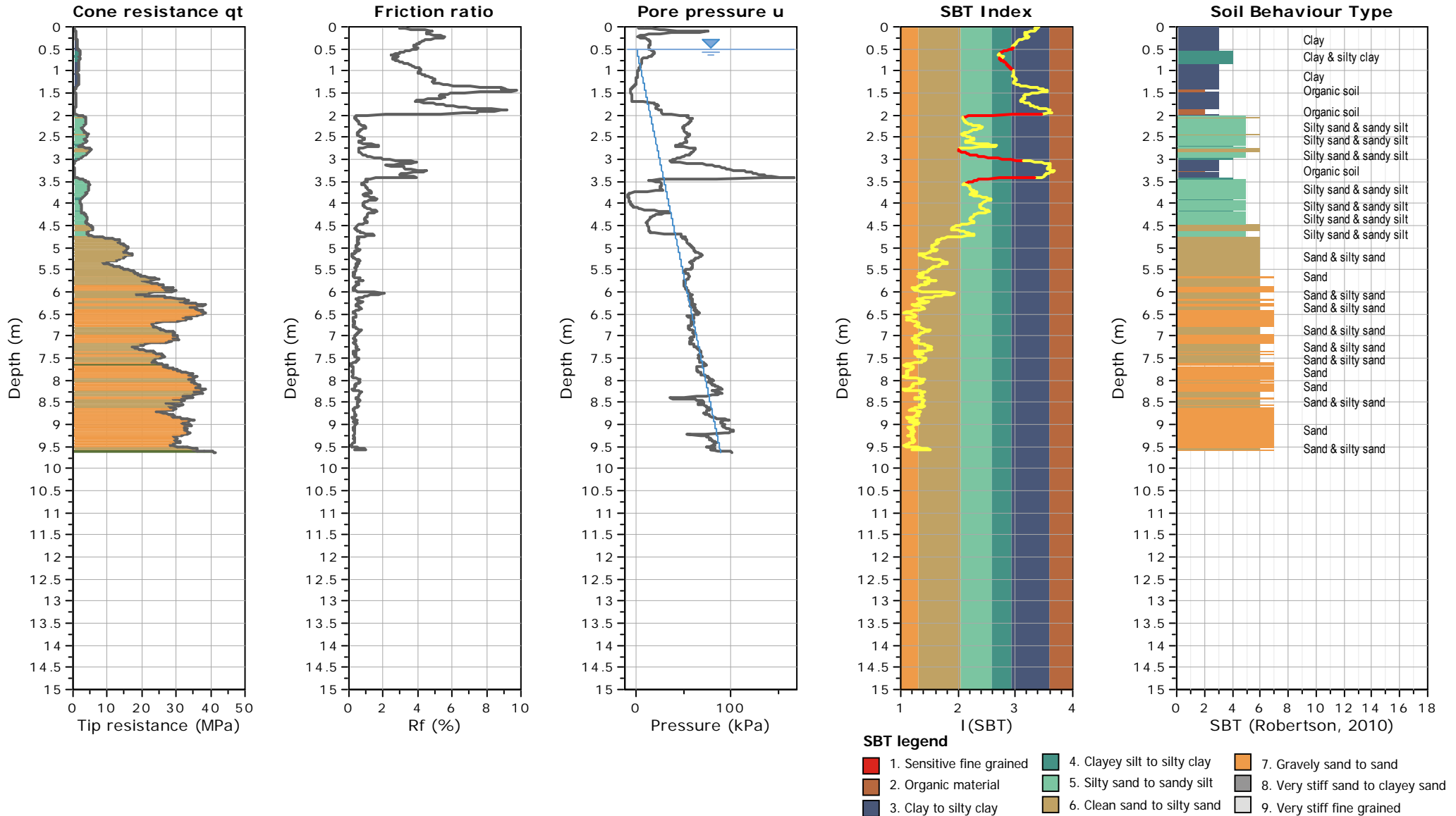
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|-------------|----------------------------|------------|----|
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| project: | 12-20 NEEVES ROAD, KAIAPOI | | |
| title: | SITE PLAN | | |
| project no: | 773-CHCGE303819 | figure no: | 01 |
| rev: | A | | |

APPENDIX B: GEOTECHNICAL INVESTIGATION DATA









Engineering Log - Hand Auger

 client: **Domett Properties LTD**

principal: -

 project: **12-20 Neeves Road**

 location: **Kaiapoi, Christchurch**

 Borehole ID: **HA01**

sheet: 1 of 1

 project no. **773-CHCGE303819**

 date started: **24 Aug 2022**


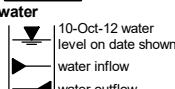
 date completed: **24 Aug 2022**

 logged by: **B. Chau**

 checked by: **C. Thompson**

 position: Not Specified surface elevation: Not Specified angle from horizontal: 90° DCP id.: -
 drill model: Hand Auger drilling fluid: Hand Auger hole diameter : 50 mm vane id.: 1508

| drilling information | | | | material substance | | | | | | | | |
|--|-------------|-----------------------|--------|--------------------|-------------|-------------------|---|---|--------------------------------|------------------|--------------------|--|
| method & support | penetration | samples & field tests | RL (m) | depth (m) | graphic log | soil group symbol | material description | moisture condition | consistency / relative density | vane shear (kPa) | DCP (blows/100 mm) | soil origin, structure and additional observations |
| HA N VS 115/32 kPa VS 83/58 kPa VS 102/6 kPa VS 80/19 kPa VS 86/13 kPa | 1 | | | 0.0 | | ML | SILT: low plasticity, brown, with trace of rootlets. | M | | | | TOPSOIL DCP: 0.0-0.1m Self-weight |
| | 2 | | | 0.5 | | ML | SILT: low plasticity, pale brown-grey with orange mottling. | St - VS | | | | SPRINGSTON FORMATION |
| | 3 | | | 1.0 | | ML-MH | Clayey SILT: low to medium plasticity, pale grey with orange mottling. | W | | | | |
| | | | | 2.0 | 2.0 | | | Hand Auger HA01 terminated at 2.0 m Target depth | | | | |

| | | | | |
|--|--|--|--|--|
| method DT diatube AD auger drilling* AS auger screwing* HA hand auger W washbore RR rock roller * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit | support M mud N nil C casing penetration  water  | samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing | soil group symbol & material description based on AS 1726:2017 moisture condition D dry M moist W wet S saturated Wp plastic limit Wl liquid limit | consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense |
|--|--|--|--|--|

CDF_0_10_00.4_LIBRARY.GLB rev.CDF_0_10_00.4_2021-09-30 Log COF BOREHOLE: NON CORED + DCP 773-CHCGE303819 GINT FILE GPJ <<DrawingFile>> 14/09/2022 12:09


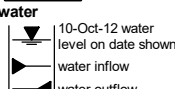
Engineering Log - Hand Auger

 client: **Domett Properties LTD**
 principal: -
 project: **12-20 Neeves Road**
 location: **Kaiapoi, Christchurch**

 Borehole ID: **HA02**
 sheet: 1 of 1
 project no. **773-CHCGE303819**
 date started: **24 Aug 2022**
 date completed: **24 Aug 2022**
 logged by: **B. Chau**
 checked by: **C. Thompson**

 position: Not Specified surface elevation: Not Specified angle from horizontal: 90° DCP id.: -
 drill model: Hand Auger drilling fluid: Hand Auger hole diameter : 50 mm vane id.: 1508

| drilling information | | | | material substance | | | | | | | | | |
|----------------------|-------------|-----------------------|-------|--------------------|-----------|-------------|-------------------|--|--------------------|--------------------------------|------------------|--------------------|--|
| method & support | penetration | samples & field tests | water | RL (m) | depth (m) | graphic log | soil group symbol | material description | moisture condition | consistency / relative density | vane shear (kPa) | DCP (blows/100 mm) | soil origin, structure and additional observations |
| 1 2 3 | | | | | | | | SOIL NAME: plasticity or particle characteristics, colour, secondary and minor components | | | remoulded peak | | |
| HA | N | VS 137/ 61 kPa | | | 0.5 | | ML | SILT: low plasticity, brown, with trace of rootlets. | M | | | | TOPSOIL DCP: 0.0-0.1m Self-weight |
| | | VS 147/ 61 kPa | | | | | ML | SILT: low plasticity, pale brown-grey with orange mottling. | VSt | | | | SPRINGSTON FORMATION |
| | | VS 208/ 54 kPa | | | 1.0 | | ML-MH | Clayey SILT: low to medium plasticity, pale brown-grey with orange mottling. | M - W | | | | |
| | | | | | 1.5 | | SM | SILTY SAND: fine grained, pale blue-grey. | H | | | | |
| | | | | | 2.0 | | | Hand Auger HA02 terminated at 2.0 m Target depth | MD | | | | |
| | | | | | 2.5 | | | | S | | | | |
| | | | | | 3.0 | | | | | | | | |
| | | | | | 3.5 | | | | | | | | |

| | | | | |
|--|--|--|--|--|
| method DT diatube AD auger drilling* AS auger screwing* HA hand auger W washbore RR rock roller * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit | support M mud N nil C casing penetration  water  | samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing | soil group symbol & material description based on AS 1726:2017 moisture condition D dry M moist W wet S saturated Wp plastic limit Wl liquid limit | consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense |
|--|--|--|--|--|

CDF_0_10_00.4_LIBRARY.GLB rev.CDF_0_10_00.4_2021-09-30 Log COF BOREHOLE: NON CORED + DCP 773-CHCGE303819 GINT FILE.GPJ <<DrawingFile>> 14/09/2022 12:09

Engineering Log - Hand Auger

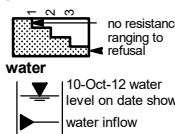
 client: **Domett Properties LTD**
 principal: -
 project: **12-20 Neeves Road**
 location: **Kaiapoi, Christchurch**

 Borehole ID: **HA03**
 sheet: 1 of 1
 project no. **773-CHCGE303819**
 date started: **24 Aug 2022**
 date completed: **24 Aug 2022**
 logged by: **B. Chau**
 checked by: **C. Thompson**

 position: Not Specified surface elevation: Not Specified angle from horizontal: 90° DCP id.: -
 drill model: Hand Auger drilling fluid: Hand Auger hole diameter : 50 mm vane id.: 1508

| drilling information | | | | material substance | | | | | | | | |
|----------------------|-------------|-----------------------|--------|--------------------|-------------|-------------------|--|--------------------|--------------------------------|-------------------|--------------------|--|
| method & support | penetration | samples & field tests | RL (m) | depth (m) | graphic log | soil group symbol | material description | moisture condition | consistency / relative density | vane shear (kPa) | DCP (blows/100 mm) | soil origin, structure and additional observations |
| 1 2 3 | | | | | | | SOIL NAME: plasticity or particle characteristics, colour, secondary and minor components | | | remoulded peak | | |
| HA | N | VS 125/ 54 kPa | | 0.5 | | ML | SILT: low plasticity, brown, with trace of rootlets. | M | | ⊕ ⊙ | | TOPSOIL |
| | | VS 147/ 16 kPa | | 1.0 | | ML | SILT: low plasticity, pale brown-grey, with orange mottling. | | VSt | ⊕ ⊙ | | SPRINGSTON FORMATION |
| | | VS 179/ 13 kPa | | 1.2 | | ML-MH | Clayey SILT: low to medium plasticity, pale grey with orange mottling. | | | ⊕ ⊙ | | |
| | | | | 1.5 | | SM | SILTY SAND: fine grained, pale grey, with trace of fine grained gravel. | W | MD | ⊕ ⊙ | | |
| | | | | 1.6 | | | Hand Auger HA03 terminated at 1.6 m Refusal on inferred gravel | S | | | | |

CDF_0_10_00_4_LIBRARY.GLB rev.CDF_0_10_00_4_2021-09-30 Log COF BOREHOLE: NON CORED *DCP 773-CHCGE303819 GINT FILE GPJ <<DrawingFile>> 14/09/2022 12:09

| | | | | |
|--|---|--|--|--|
| method DT diatube AD auger drilling* AS auger screwing* HA hand auger W washbore RR rock roller * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit | support M mud N nil C casing penetration  10-Oct-12 water level on date shown water inflow water outflow | samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing | soil group symbol & material description based on AS 1726:2017 moisture condition D dry M moist W wet S saturated Wp plastic limit Wl liquid limit | consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense |
|--|---|--|--|--|

Engineering Log - Hand Auger

 client: **Domett Properties LTD**

principal: -

 project: **12-20 Neeves Road**

 location: **Kaiapoi, Christchurch**

 Borehole ID: **HA04**

sheet: 1 of 1

 project no. **773-CHCGE303819**

 date started: **24 Aug 2022**


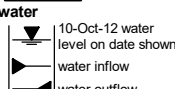
 date completed: **24 Aug 2022**

 logged by: **B. Chau**

 checked by: **C. Thompson**

 position: Not Specified surface elevation: Not Specified angle from horizontal: 90° DCP id.: -
 drill model: Hand Auger drilling fluid: Hand Auger hole diameter : 50 mm vane id.: 1508

| drilling information | | | | material substance | | | | | | | | |
|----------------------|-------------|-----------------------|--------|--------------------|-------------|-------------------|---|--------------------|--------------------------------|-------------------|--------------------|--|
| method & support | penetration | samples & field tests | RL (m) | depth (m) | graphic log | soil group symbol | material description | moisture condition | consistency / relative density | vane shear (kPa) | DCP (blows/100 mm) | soil origin, structure and additional observations |
| 1 | 2 | | | | | | SOIL NAME: plasticity or particle characteristics, colour, secondary and minor components | | | remoulded peak | | |
| HA | N | VS 144/45 kPa | | 0.0 | | ML | SILT: low plasticity, brown, with trace of rootlets. | M | | | | TOPSOIL DCP: 0.0-0.1m Selfweight |
| | | VS 166/61 kPa | | 0.5 | | ML | SILT: low plasticity, pale grey-brown with orange mottling. | VSt | | | | SPRINGSTON FORMATION |
| | | VS 144/45 kPa | | 1.0 | | ML-MH | Clayey SILT: low to medium plasticity, pale grey with orange mottling. | W | | | | |
| | | VS 96/54 kPa | | 1.5 | | | with trace of rootlets mottling absent | St | | | | |
| | | VS 185/16 kPa | | 2.0 | | ML | Sandy SILT: non plastic to low plasticity, pale grey. Hand Auger HA04 terminated at 2.0 m Target depth | VSt | | | | |

| | | | | |
|--|--|--|--|--|
| method DT diatube AD auger drilling* AS auger screwing* HA hand auger W washbore RR rock roller * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit | support M mud N nil C casing penetration  water  | samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing | soil group symbol & material description based on AS 1726:2017 moisture condition D dry M moist W wet S saturated Wp plastic limit Wl liquid limit | consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense |
|--|--|--|--|--|

CDF_0_10_00.4_LIBRARY.GLB rev.CDF_0_10_00.4_2021-09-30 Log COF BOREHOLE: NON CORED + DCP 773-CHCGE303819 GINT FILE GPJ <<DrawingFile>> 14/09/2022 12:09

Engineering Log - Hand Auger


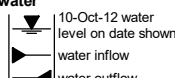
 client: **Domett Properties LTD**
 principal: -
 project: **12-20 Neeves Road**
 location: **Kaiapoi, Christchurch**

 Borehole ID: **HA05**
 sheet: 1 of 1
 project no. **773-CHCGE303819**
 date started: **24 Aug 2022**
 date completed: **24 Aug 2022**
 logged by: **B. Chau**
 checked by: **C. Thompson**

 position: Not Specified surface elevation: Not Specified angle from horizontal: 90° DCP id.: -
 drill model: Hand Auger drilling fluid: Hand Auger hole diameter : 50 mm vane id.: 1508

| drilling information | | | | material substance | | | | | | | | | |
|----------------------|-------------|-----------------------|-------|--------------------|-----------|-------------|-------------------|--|--------------------|--------------------------------|-------------------|--------------------|--|
| method & support | penetration | samples & field tests | water | RL (m) | depth (m) | graphic log | soil group symbol | material description | moisture condition | consistency / relative density | vane shear (kPa) | DCP (blows/100 mm) | soil origin, structure and additional observations |
| | 1 2 3 | | | | | | | SOIL NAME: plasticity or particle characteristics, colour, secondary and minor components | | | remoulded peak | | |
| HA N | | VS 118/ 54 kPa | | | 0.5 | | ML | SILT: low plasticity, brown, with trace to minor fine grained gravel. | M | | | | TOPSOIL |
| | | VS 160/ 64 kPa | | | 0.5 | | ML | SILT: low plasticity, pale brown-grey with orange mottling. | VSt | | | | SPRINGSTON FORMATION |
| | | VS 192/ 51 kPa | | | 1.0 | | | | | | | | |
| | | VS 169/ 61 kPa | | | 1.5 | | ML-MH | Clayey SILT: low to medium plasticity, pale grey with orange mottling. | M - W | | | | |
| | | VS 157/ 61 kPa | | | 2.0 | | | | | | | | |
| | | | | | 2.0 | | | Hand Auger HA05 terminated at 2.0 m Target depth | | | | | |
| | | | | | 2.5 | | | | | | | | |
| | | | | | 3.0 | | | | | | | | |
| | | | | | 3.5 | | | | | | | | |

CDF_0_10_00.4_LIBRARY.GLB rev.CDF_0_10_00.4_2021-09-30 Log COF BOREHOLE: NON CORED + DCP 773-CHCGE303819 GINT FILE.GPJ <<DrawingFile>> 14/09/2022 12:09

| | | | | |
|--|--|--|--|--|
| method DT diatube AD auger drilling* AS auger screwing* HA hand auger W washbore RR rock roller * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit | support M mud N nil C casing penetration  water  | samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing | soil group symbol & material description based on AS 1726:2017 moisture condition D dry M moist W wet S saturated Wp plastic limit Wl liquid limit | consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense |
|--|--|--|--|--|



DRILLHOLE BORELOG

Hole ID: BH02

Sheet: 1 of 2

Date: 18/02/2013

Project No.: 3534

Equipment: Dual tube

G.L.R.L.: 0.00m

Logged By: YUY

Project: 67 Main North Road

Drilling Co: McMillan Drilling

Max Depth: 19.85m

Checked By: NJT

Client: Byrne & Wauty Consultants Limited

Operator: R.Conkie

Inclination: 90°

Sampled By: YUY

North (m): 5194376.2 East (m): 1571196.8

Grid: NZTM

Location: Refer to site plan

| Geological Formation | STRATA DESCRIPTION | Graphic Log | Depth | Classification Symbol | Piezometer & Water Levels | TCR (%) | | | Drill Method | Samples | Tests | SPT (blows/mm) | | | | | | | | |
|----------------------|--|-------------|---|-----------------------|---------------------------|--|----|----|--------------|---------|---|----------------|----|----|----|----|--|--|--|--|
| | | | | | | 25 | 50 | 75 | | | | 10 | 20 | 30 | 40 | 50 | | | | |
| | No Sample. | C/L | | | | | | | | | | | | | | | | | | |
| | Asphalt and GRAVEL (FILL). | | | | | | | | | | | | | | | | | | | |
| | SILT w with minor Sand; grey brown mottled yellow. Very fine Sand, low plasticity. -1.7m, trace of Sand. Very fine Sand, medium plasticity. -2.0m, low plasticity. -4.2-4.3m, trace of Peat. -4.5m, high plasticity. -6.0-6.2m, trace of shell fragments. -7.8-7.9m, some Sand. Fine Sand. -7.9m, minor Sand. Fine Sand. | | 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 | MH | | 70% 90% 75% 90% 80% 80% | | | | | 1.50m SPT (C) 3.00m SPT (C) 4.50m SPT (C) 6.00m SPT (C) 7.50m SPT (C) | | | | | | | | | |
| | SAND w with minor Silt; dark grey. Fine Sand. -9.6-10.1m, minor shell fragments. | | 10.0 | | | 100% | | | | | 9.00m SPT (C) | | | | | | | | | |
| | SAND w with trace of Silt; yellow brown. Fine to coarse Sand. | | 11.0 | | | 85% | | | | | 10.50m SPT (C) | | | | | | | | | |
| | Gravelly SAND; yellow brown. Fine to coarse Sand, fine to coarse Gravel. Sub-rounded to rounded. | | 12.0 13.0 14.0 15.0 | SP | | 20% 20% | | | | | 12.00m SPT (C) 13.50m SPT (C) | | | | | | | | | |

Remarks: Static Water Levels:
1.02m @ Casing depth of 18.75m
1000 Litres Water added. Safety Auto Trip Hammer #396 used (energy ratio 83%)



DRILLHOLE BORELOG

Hole ID: BH02

Sheet: 2 of 2

Date: 18/02/2013

Project No.: 3534 Equipment: Dual tube G.L R.L.: 0.00m Logged By: YUY
 Project: 67 Main North Road Drilling Co: McMillan Drilling Max Depth: 19.85m Checked By: NJT
 Client: Byrne & Wanty Consultants Limited Operator: R.Conkie Inclination: 90° Sampled By: YUY
 North (m): 5194376.2 East (m): 1571196.8 Grid: NZTM Location: Refer to site plan

| Geological Formation | STRATA DESCRIPTION | Graphic Log | Depth | Classification Symbol | Piezometer & Water Levels | TCR (%) | | | Drill Method | Samples | Tests | SPT (blows/mm) | | | | |
|----------------------|---|-------------|-------|-----------------------|---------------------------|---------|----|----|--------------|---------|----------------|----------------|----|----|----|----------------|
| | | | | | | 25 | 50 | 75 | | | | 10 | 20 | 30 | 40 | 50 |
| | SAND; yellow brow n. Fine to medium Sand. | | | SP | | | | | | | 15.00m SPT (C) | | | | | 60 |
| | Sandy GRAVEL with trace of Silt; grey brow n. Fine to coarse Sand, fine to coarse Gravel. Sub-rounded to rounded. | | | GW | | 30% | | | | | | | | | | 60/125mm |
| | No Sample. | C/L | 16.0 | | | | | | | | | | | | | |
| | | C/L | | | | | | | | | 16.50m SPT (C) | | | | | 60 |
| | | C/L | 17.0 | | | | | | | | | | | | | 60/135mm |
| | | C/L | | | | | | | | | 17.25m SPT (C) | | | | | 14 35 26 |
| | | C/L | 18.0 | | | | | | | | | | | | | 60/300mm |
| | | C/L | | | | | | | | | 18.00m SPT (C) | | | | | 28 40 20 |
| | | C/L | 19.0 | | | | | | | | | | | | | 60/235mm |
| | | C/L | | | | | | | | | 18.75m SPT (C) | | | | | 22 19 27 |
| | | C/L | | | | | | | | | | | | | | 46/300mm |
| | | C/L | | | | | | | | | 19.50m SPT (C) | | | | | 27 44 |

EOH: 19.85m

16
60/200mm

Remarks: Static Water Levels:
 1.02m @ Casing depth of 18.75m
 1000 Litres Water added. Safety Auto Trip Hammer #396 used (energy ratio 83%)



DRILLHOLE BORELOG

Hole ID: BH02

Sheet: 1 of 2

Date: 18/02/2013

Project No.: 3534

Equipment: Dual tube

G.L.R.L.: 0.00m

Logged By: YUY

Project: 67 Main North Road

Drilling Co: McMillan Drilling

Max Depth: 19.85m

Checked By: NJT

Client: Byrne & Wauty Consultants Limited

Operator: R.Conkie

Inclination: 90°

Sampled By: YUY

North (m): 5194376.2 East (m): 1571196.8

Grid: NZTM

Location: Refer to site plan

| Geological Formation | STRATA DESCRIPTION | Graphic Log | Depth | Classification Symbol | Piezometer & Water Levels | TCR (%) | | | Drill Method | Samples | Tests | SPT (blows/mm) | | | | | | | | |
|----------------------|--|-------------|---|-----------------------|---------------------------|--|----|----|--------------|---------|---|----------------|----|----|----|----|--|--|--|--|
| | | | | | | 25 | 50 | 75 | | | | 10 | 20 | 30 | 40 | 50 | | | | |
| | No Sample. | C/L | | | | | | | | | | | | | | | | | | |
| | Asphalt and GRAVEL (FILL). | | | | | | | | | | | | | | | | | | | |
| | SILT w with minor Sand; grey brown mottled yellow. Very fine Sand, low plasticity. -1.7m, trace of Sand. Very fine Sand, medium plasticity. -2.0m, low plasticity. -4.2-4.3m, trace of Peat. -4.5m, high plasticity. -6.0-6.2m, trace of shell fragments. -7.8-7.9m, some Sand. Fine Sand. -7.9m, minor Sand. Fine Sand. | | 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 | MH | | 70% 90% 75% 90% 80% 80% | | | | | 1.50m SPT (C) 3.00m SPT (C) 4.50m SPT (C) 6.00m SPT (C) 7.50m SPT (C) | | | | | | | | | |
| | SAND w with minor Silt; dark grey. Fine Sand. -9.6-10.1m, minor shell fragments. | | 10.0 | | | 100% | | | | | 9.00m SPT (C) | | | | | | | | | |
| | SAND w with trace of Silt; yellow brown. Fine to coarse Sand. | | 11.0 | | | 85% | | | | | 10.50m SPT (C) | | | | | | | | | |
| | Gravelly SAND; yellow brown. Fine to coarse Sand, fine to coarse Gravel. Sub-rounded to rounded. | | 12.0 13.0 14.0 15.0 | SP | | 20% 20% | | | | | 12.00m SPT (C) 13.50m SPT (C) | | | | | | | | | |

Remarks: Static Water Levels:
1.02m @ Casing depth of 18.75m
1000 Litres Water added. Safety Auto Trip Hammer #396 used (energy ratio 83%)



DRILLHOLE BORELOG

Hole ID: BH02

Sheet: 2 of 2

Date: 18/02/2013

Project No.: 3534 Equipment: Dual tube G.L R.L.: 0.00m Logged By: YUY
 Project: 67 Main North Road Drilling Co: McMillan Drilling Max Depth: 19.85m Checked By: NJT
 Client: Byrne & Wauty Consultants Limited Operator: R.Conkie Inclination: 90° Sampled By: YUY
 North (m): 5194376.2 East (m): 1571196.8 Grid: NZTM Location: Refer to site plan

| Geological Formation | STRATA DESCRIPTION | Graphic Log | Depth | Classification Symbol | Piezometer & Water Levels | TCR (%) | | | Drill Method | Samples | Tests | SPT (blows/mm) | | | | |
|----------------------|---|-------------|-------|-----------------------|---------------------------|---------|----|----|--------------|---------|----------------|----------------|----|----|----|----------------|
| | | | | | | 25 | 50 | 75 | | | | 10 | 20 | 30 | 40 | 50 |
| | SAND; yellow brow n. Fine to medium Sand. | | | SP | | | | | | | 15.00m SPT (C) | | | | | 60 |
| | Sandy GRAVEL with trace of Silt; grey brow n. Fine to coarse Sand, fine to coarse Gravel. Sub-rounded to rounded. | | | GW | | 30% | | | | | | | | | | 60/125mm |
| | No Sample. | C/L | 16.0 | | | | | | | | | | | | | |
| | | C/L | | | | | | | | | 16.50m SPT (C) | | | | | 60 |
| | | C/L | 17.0 | | | | | | | | | | | | | 60/135mm |
| | | C/L | | | | | | | | | 17.25m SPT (C) | | | | | 14 35 26 |
| | | C/L | 18.0 | | | | | | | | | | | | | 60/300mm |
| | | C/L | | | | | | | | | 18.00m SPT (C) | | | | | 28 40 20 |
| | | C/L | 19.0 | | | | | | | | | | | | | 60/235mm |
| | | C/L | | | | | | | | | 18.75m SPT (C) | | | | | 22 19 27 |
| | | C/L | | | | | | | | | | | | | | 46/300mm |
| | | C/L | | | | | | | | | 19.50m SPT (C) | | | | | 27 44 |

EOH: 19.85m

16
60/200mm

Remarks: Static Water Levels:
 1.02m @ Casing depth of 18.75m
 1000 Litres Water added. Safety Auto Trip Hammer #396 used (energy ratio 83%)

Borelog for well BW24/0563

Grid Reference (NZTM): 1571134 mE, 5194510 mN

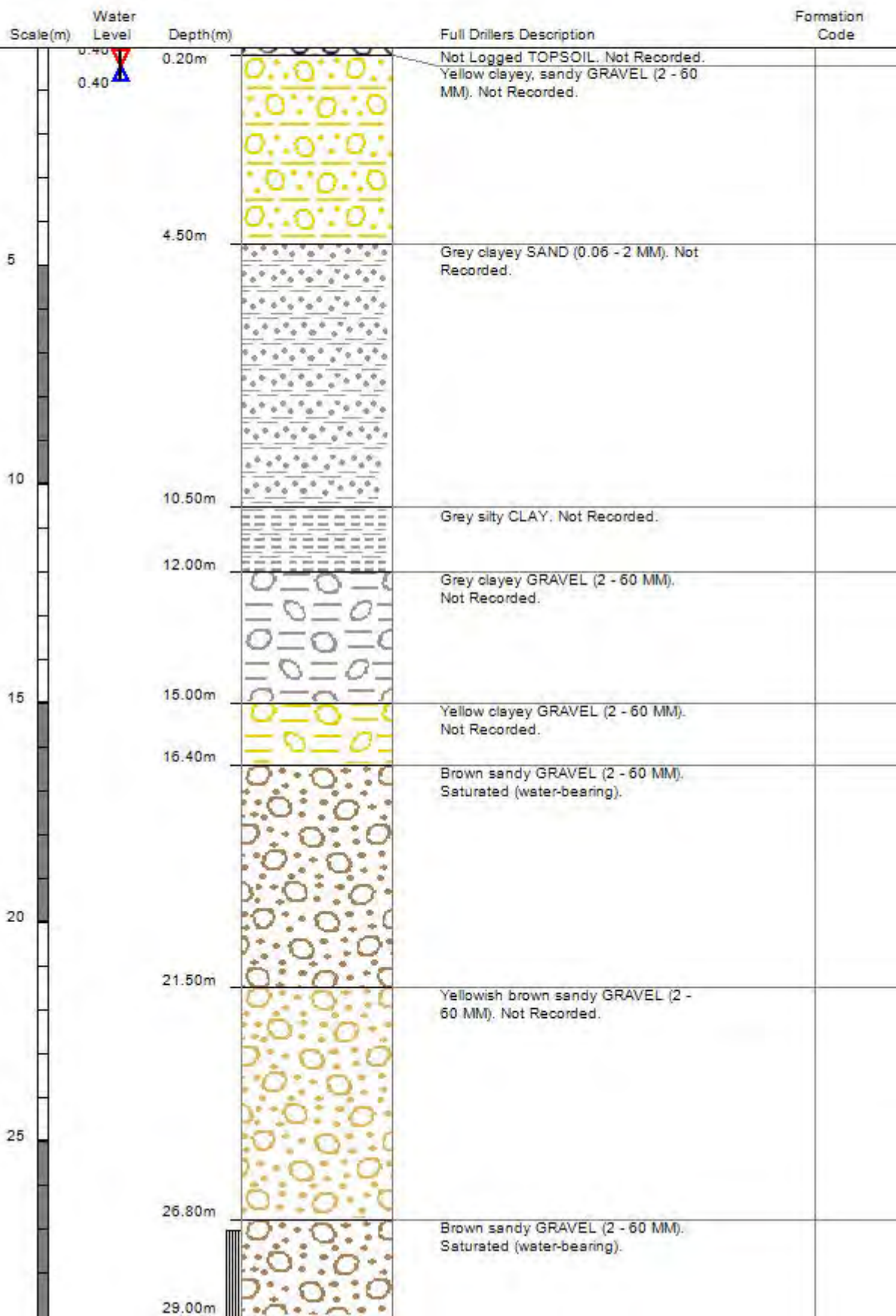
Location Accuracy: 50 - 300m

Ground Level Altitude: m +MSD Accuracy:

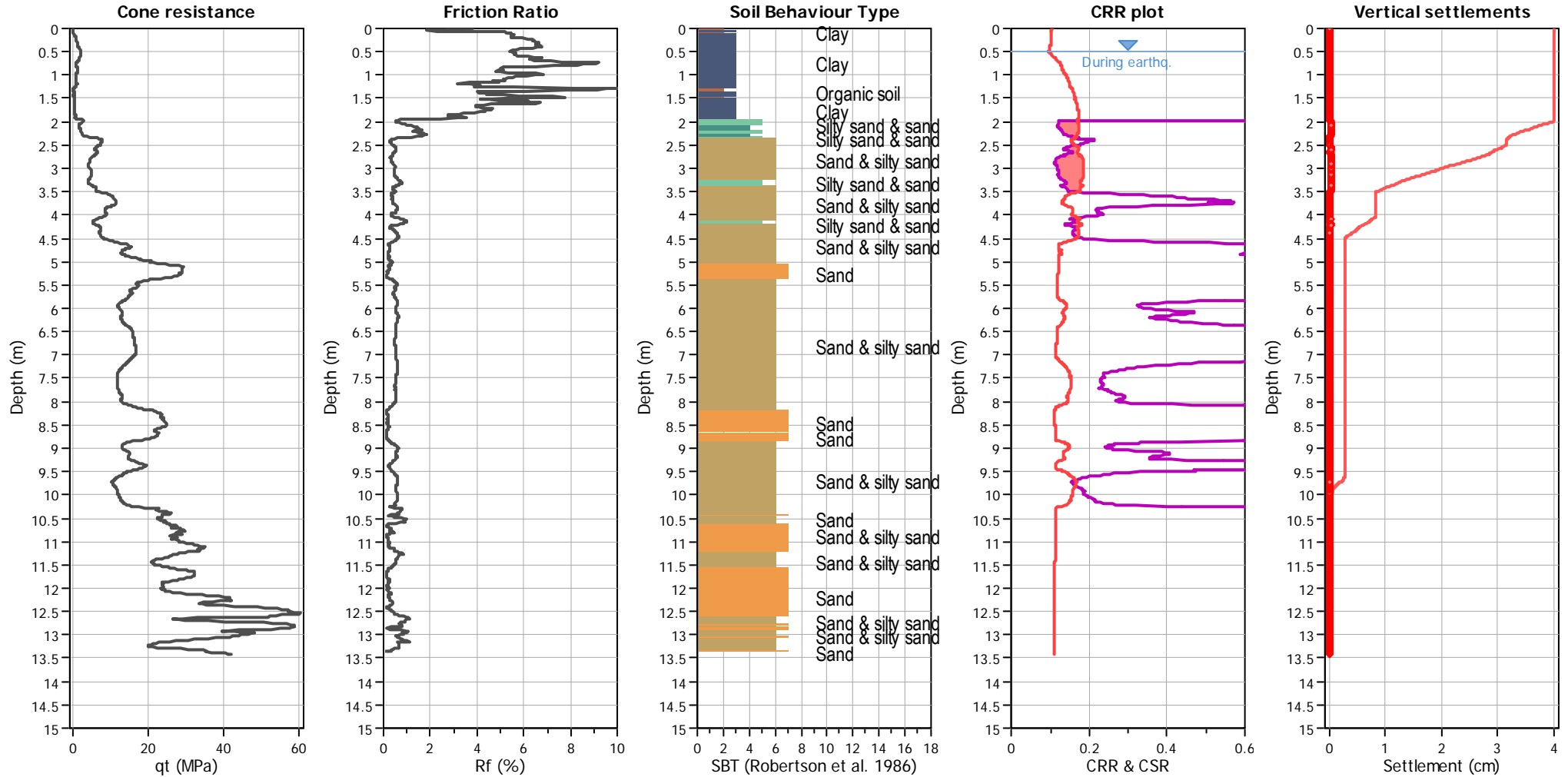
Driller: Clemence Drilling Contractors

Drill Method: Rotary/Percussion

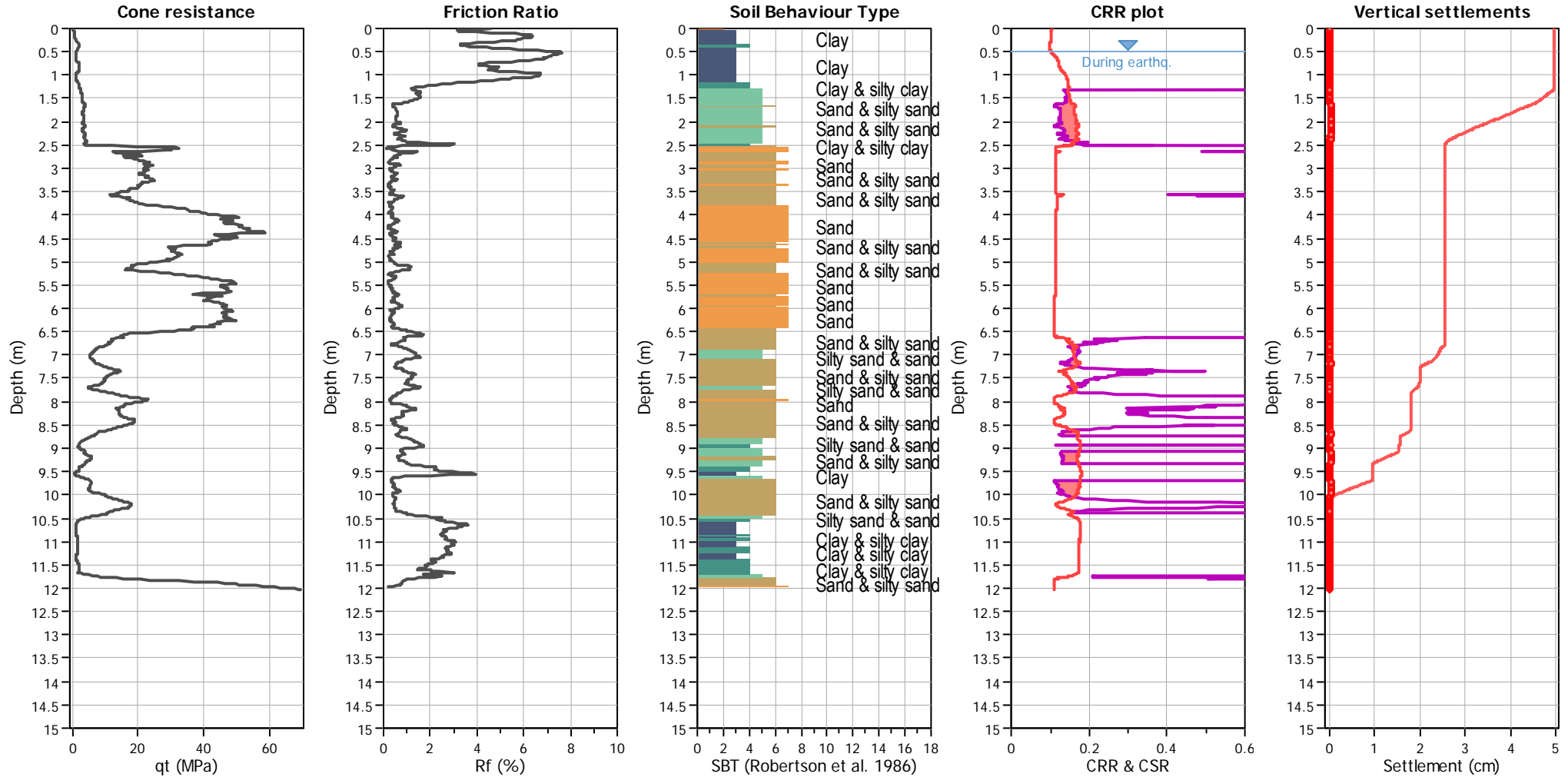
Borelog Depth: 29.0 m Drill Date: 17-Sep-2020



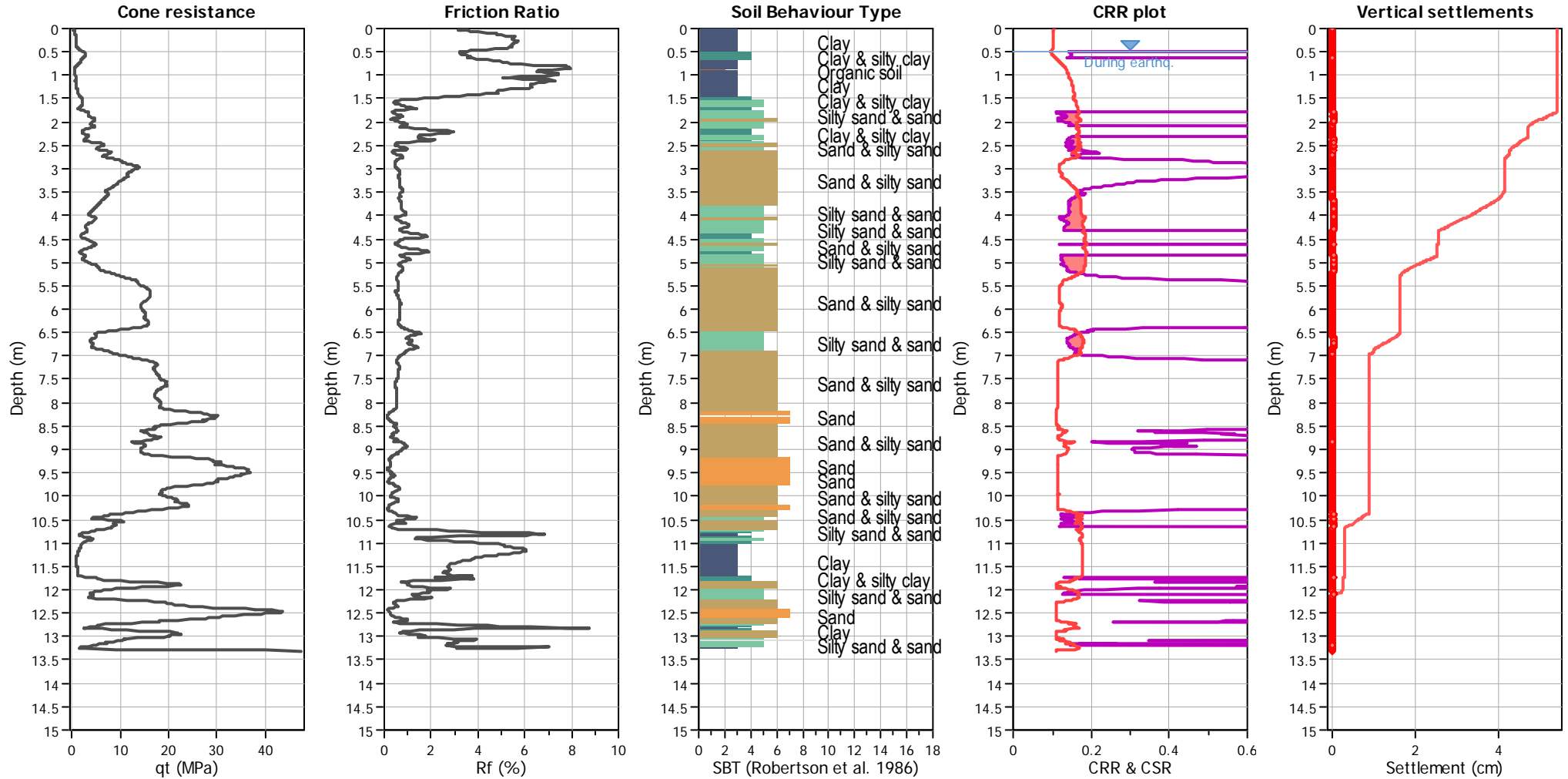
APPENDIX C: LIQUEFACTION ANALYSES



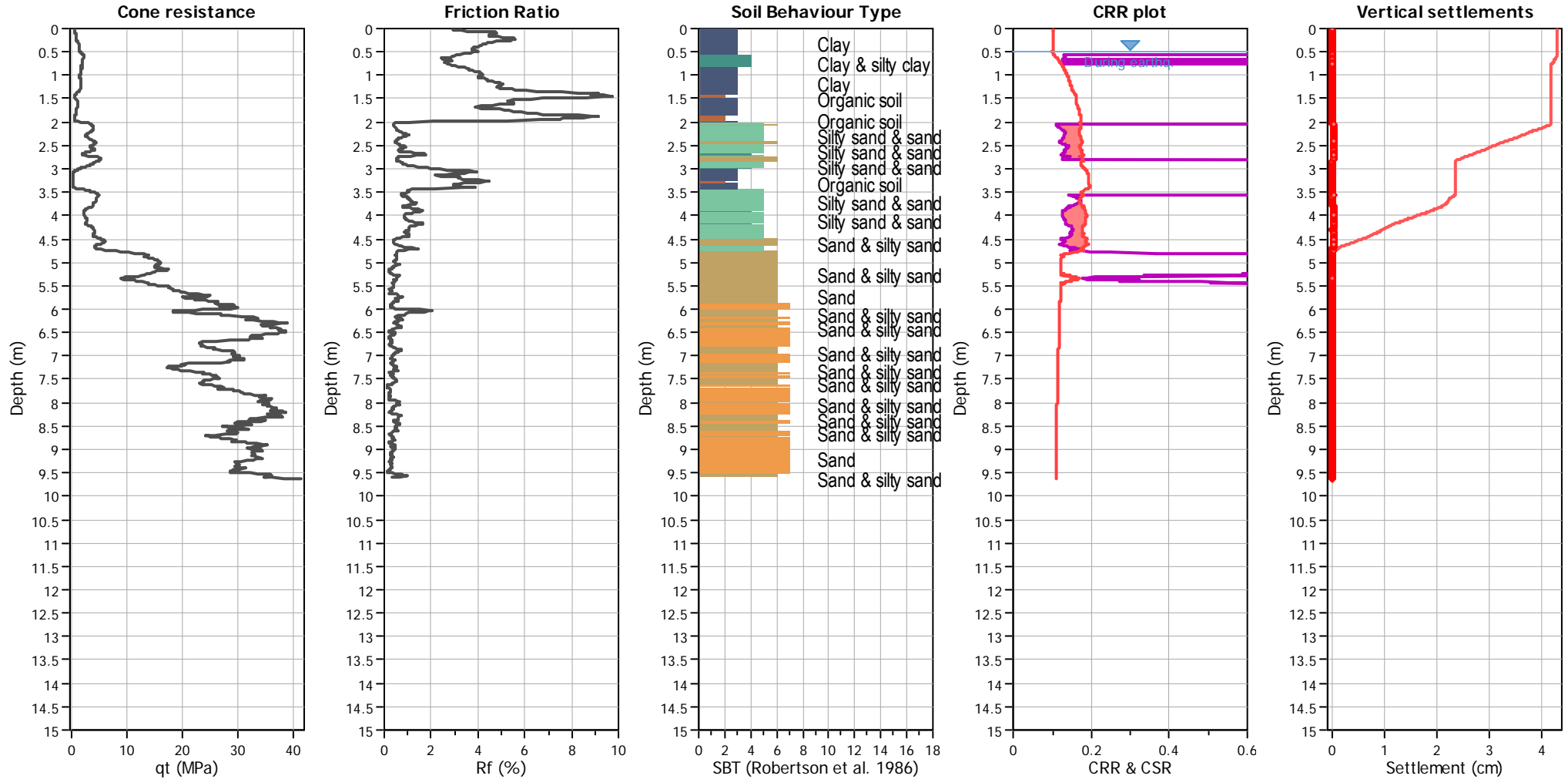
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| Peak ground acceleration: | 0.19 | Unit weight calculation: | Based on SBT | K_σ applied: | Yes | MSF method: | Method based |



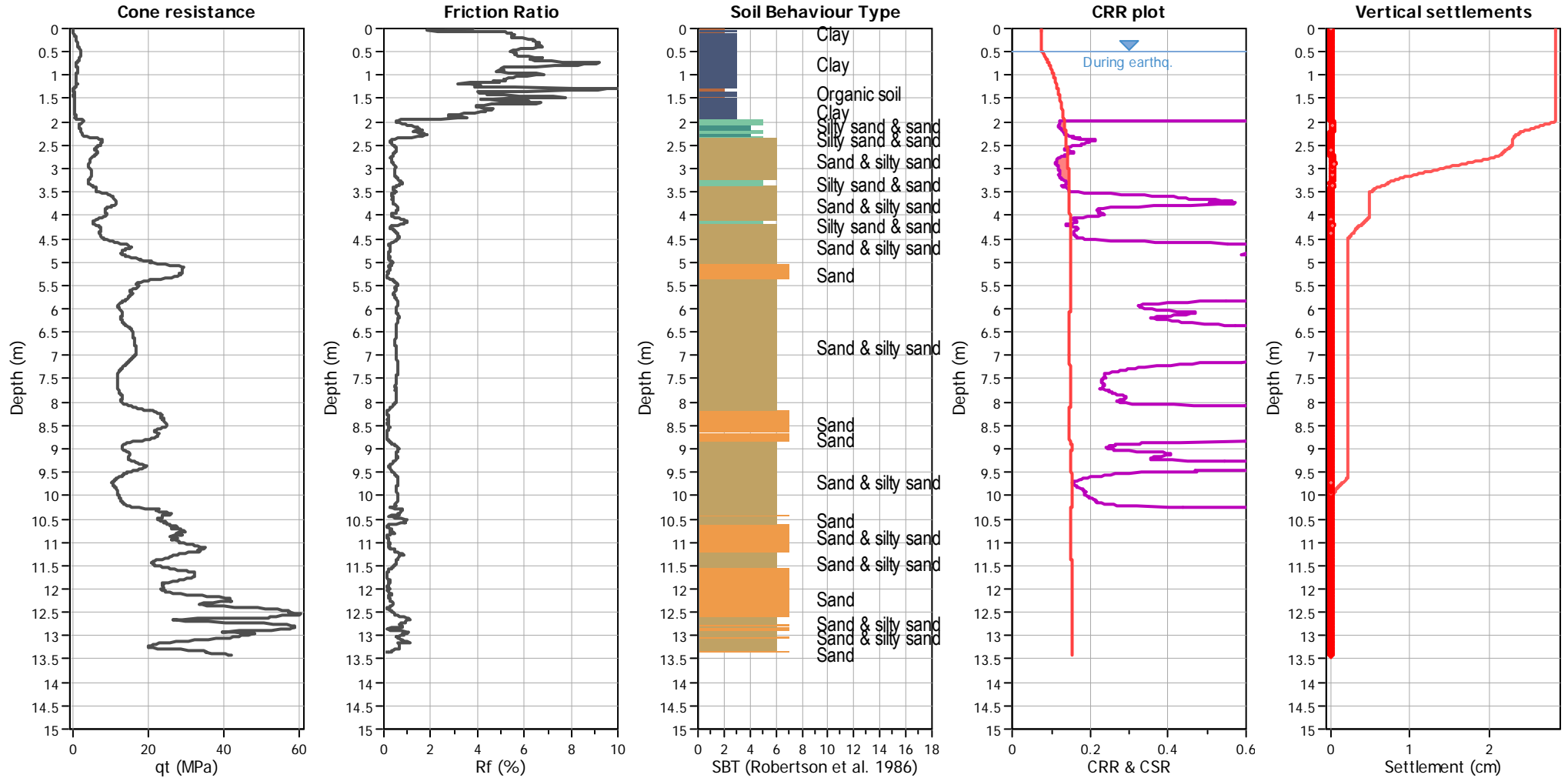
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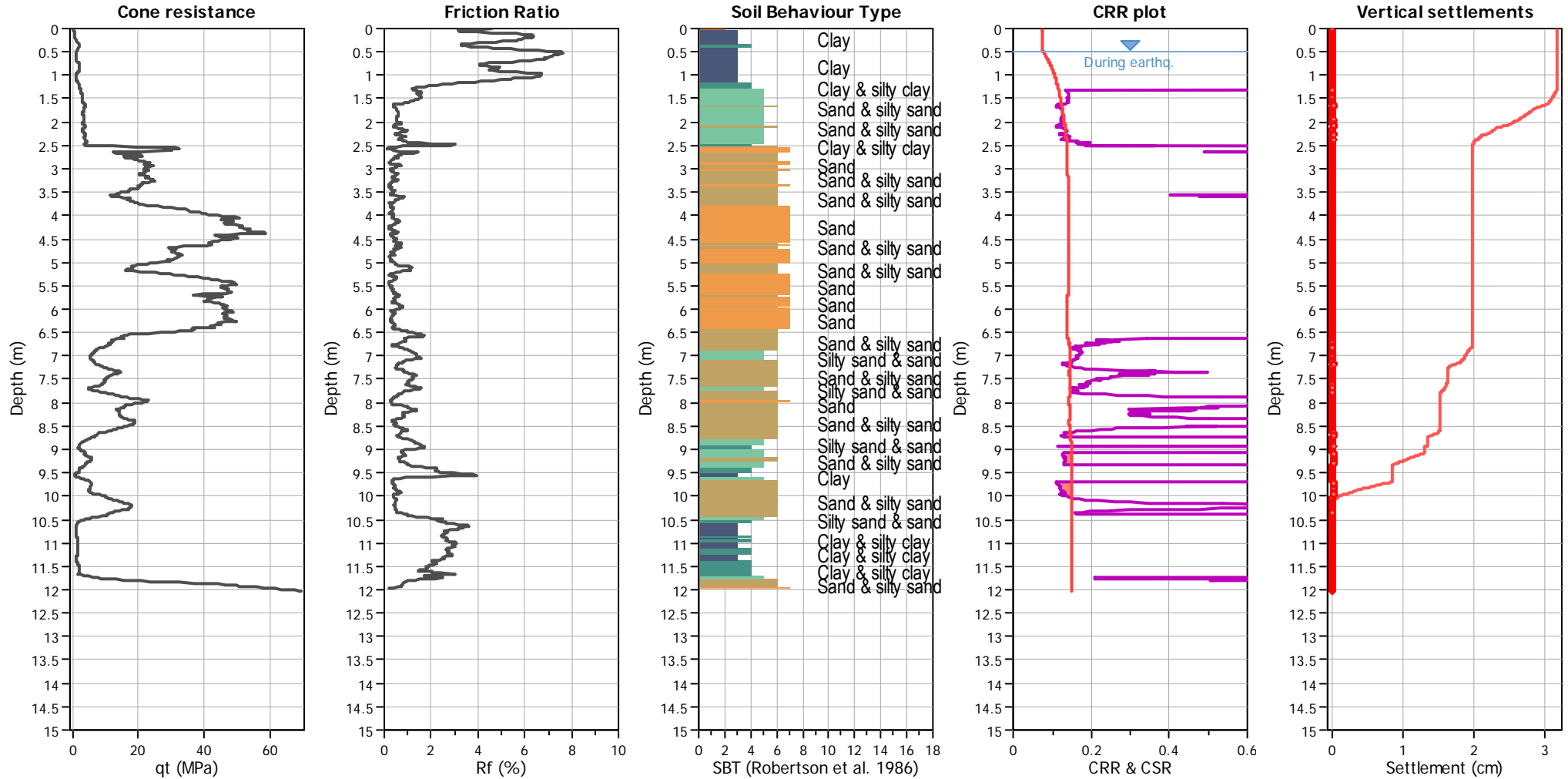
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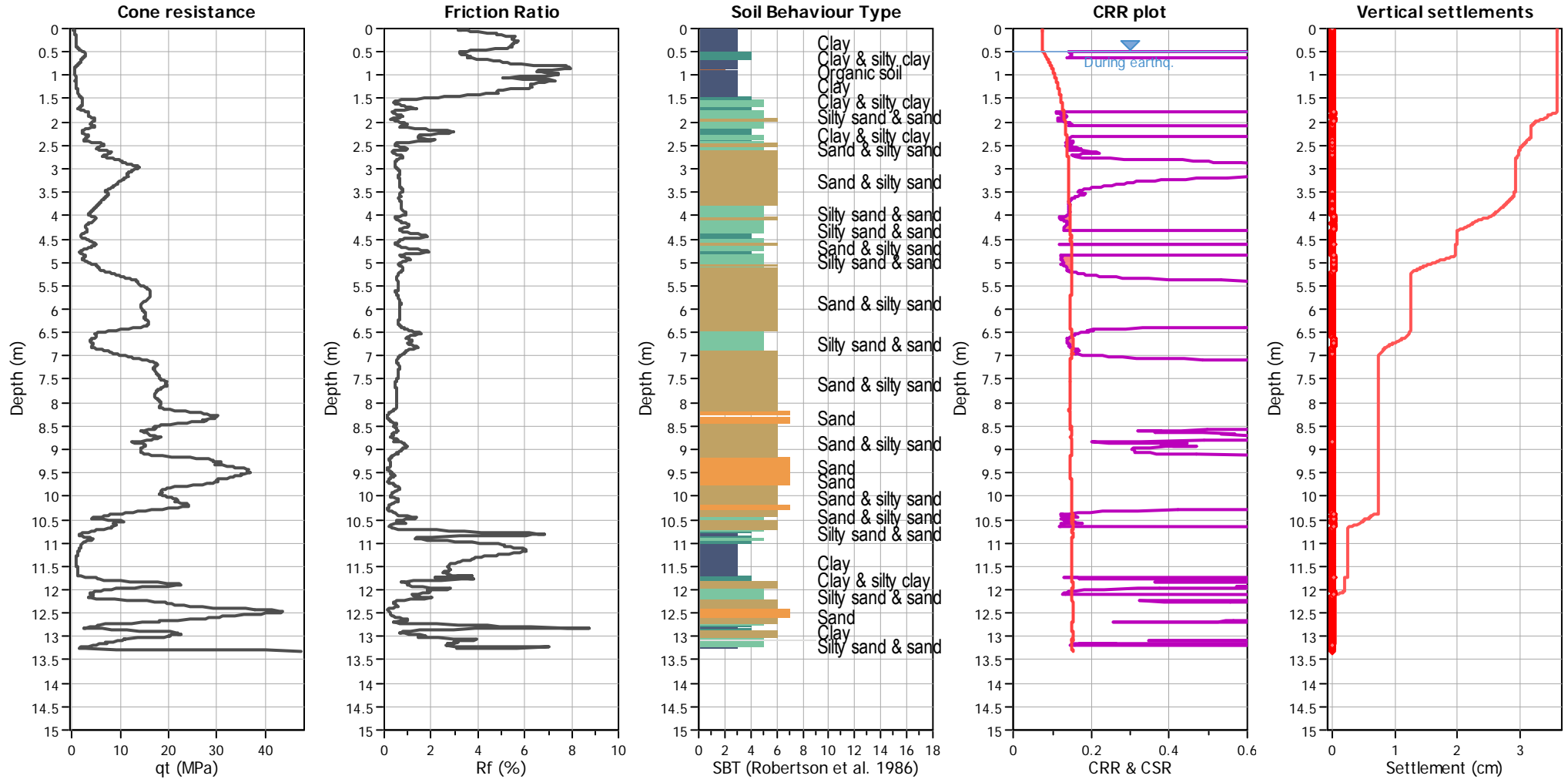
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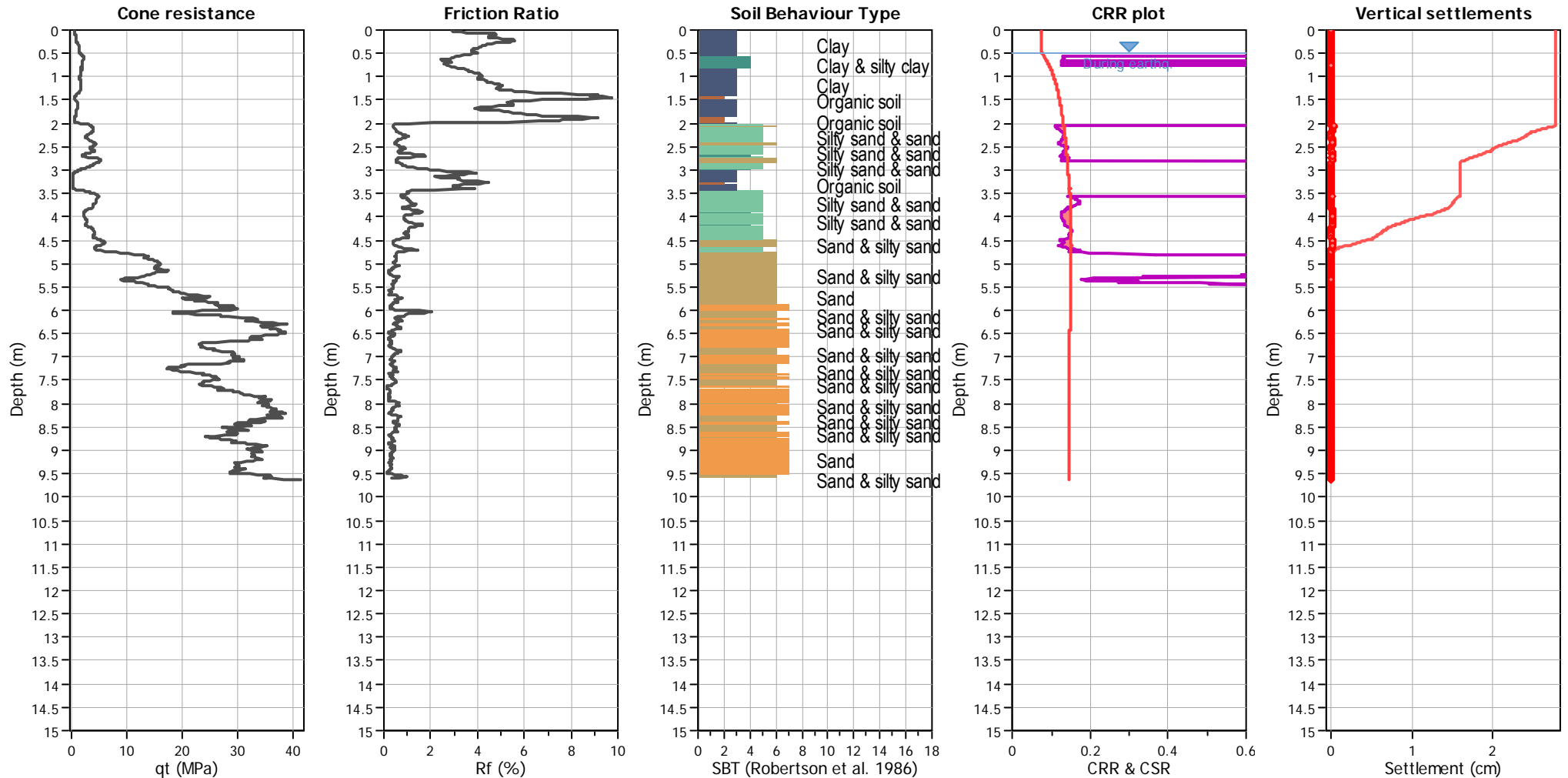
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| Fines correction method: | B&I (2014) | G.W.T. (earthq.): | 0.50 m | Fill height: | N/A | applied: | . |
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| Earthquake magnitude M_w : | 7.50 | Ic cut-off value: | 2.60 | Trans. detect. applied: | Yes | Limit depth: | N/A |
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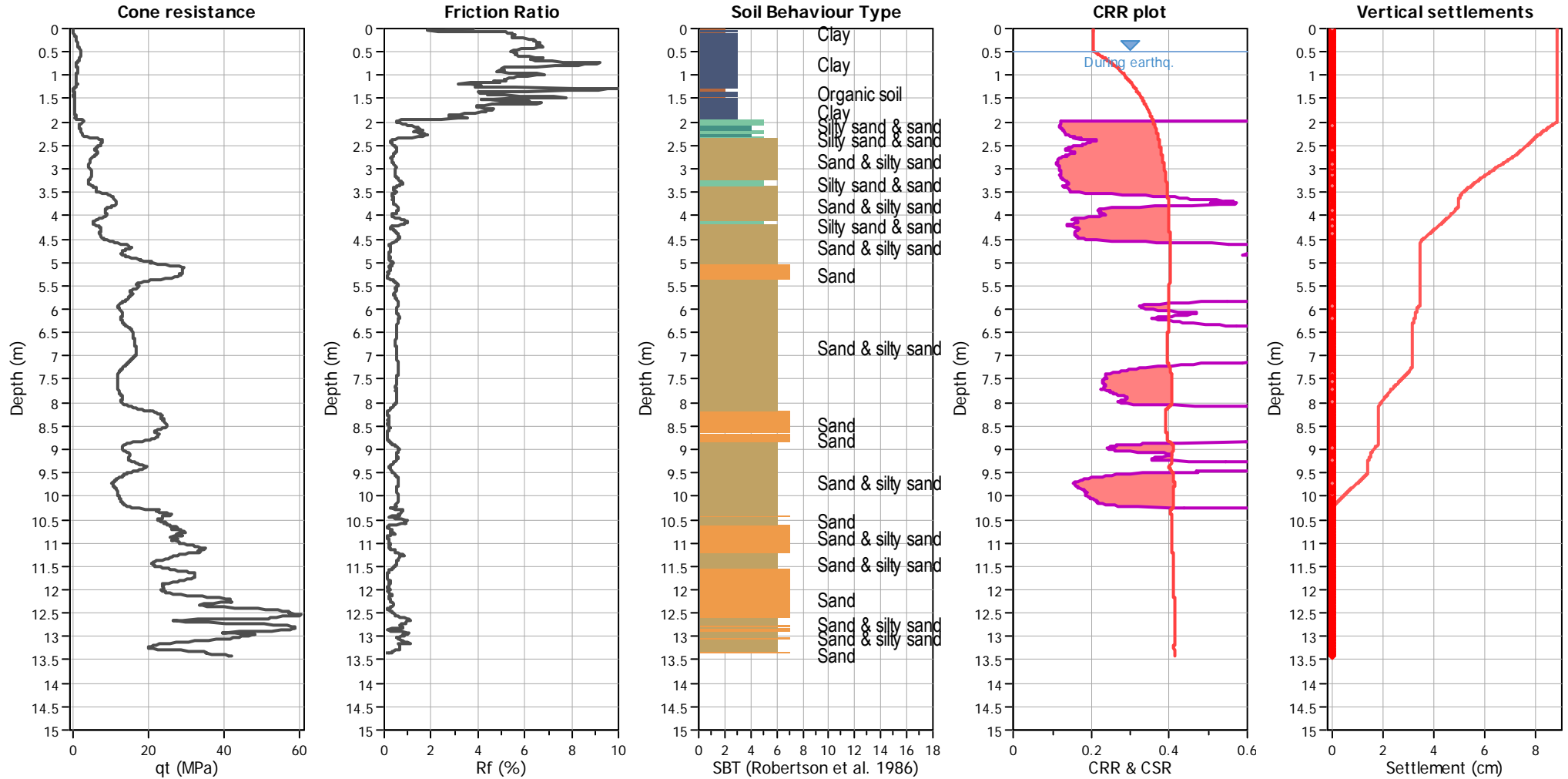
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| Peak ground acceleration: | 0.13 | Unit weight calculation: | Based on SBT | K_σ applied: | Yes | MSF method: | Method based |



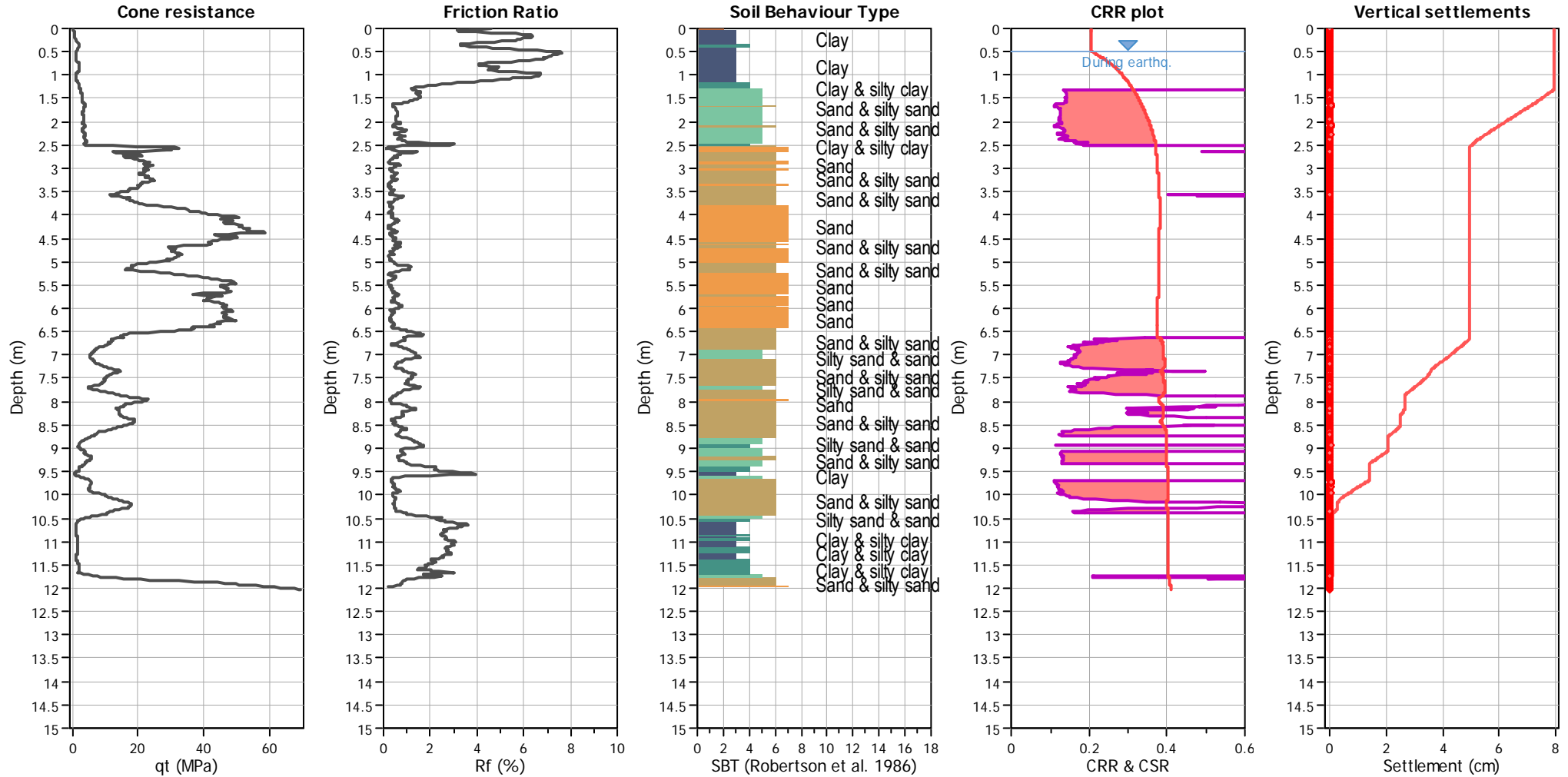
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| Fines correction method: | B&I (2014) | G.W.T. (earthq.): | 0.50 m | Fill height: | N/A | applied: | . |
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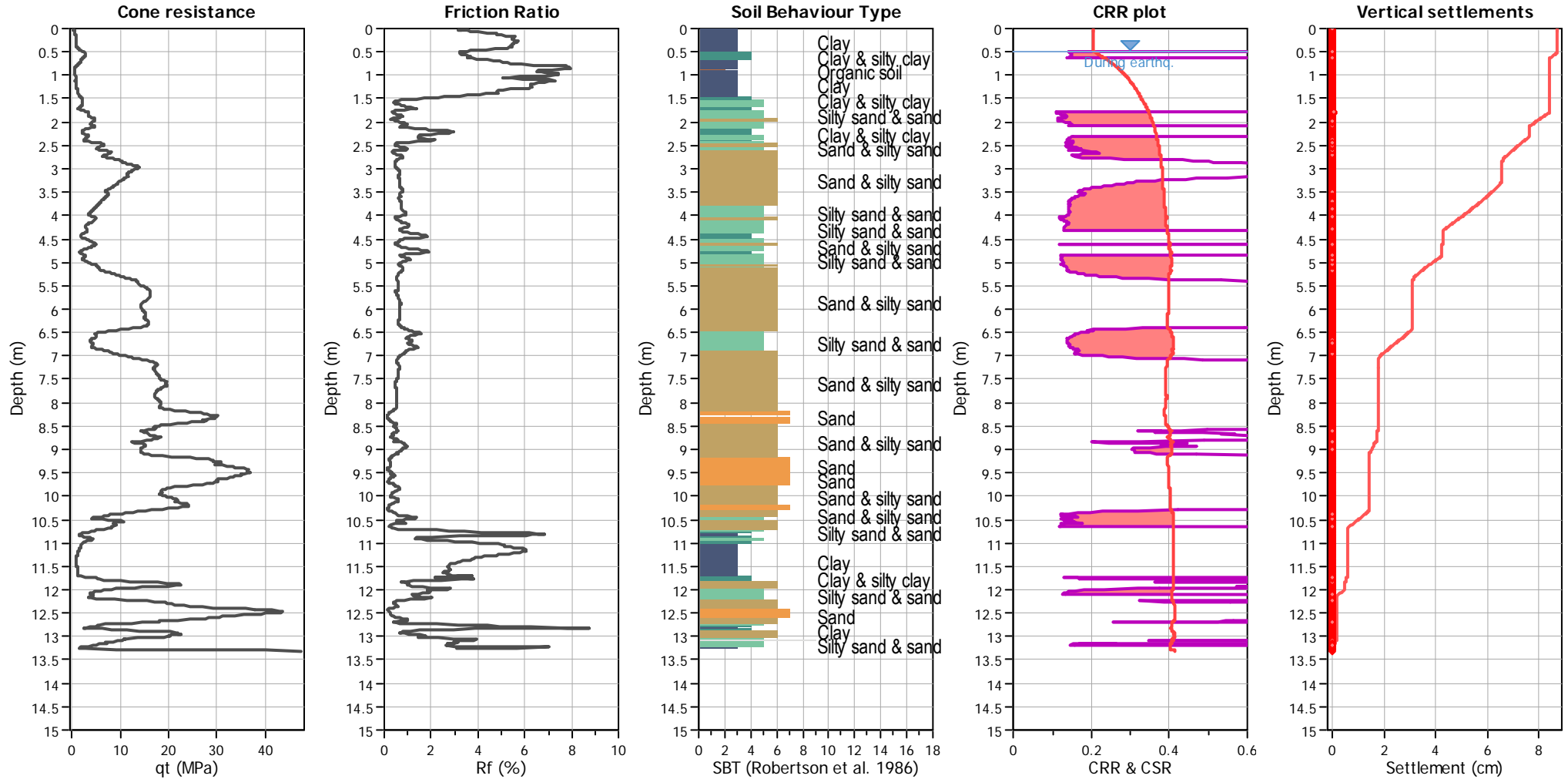
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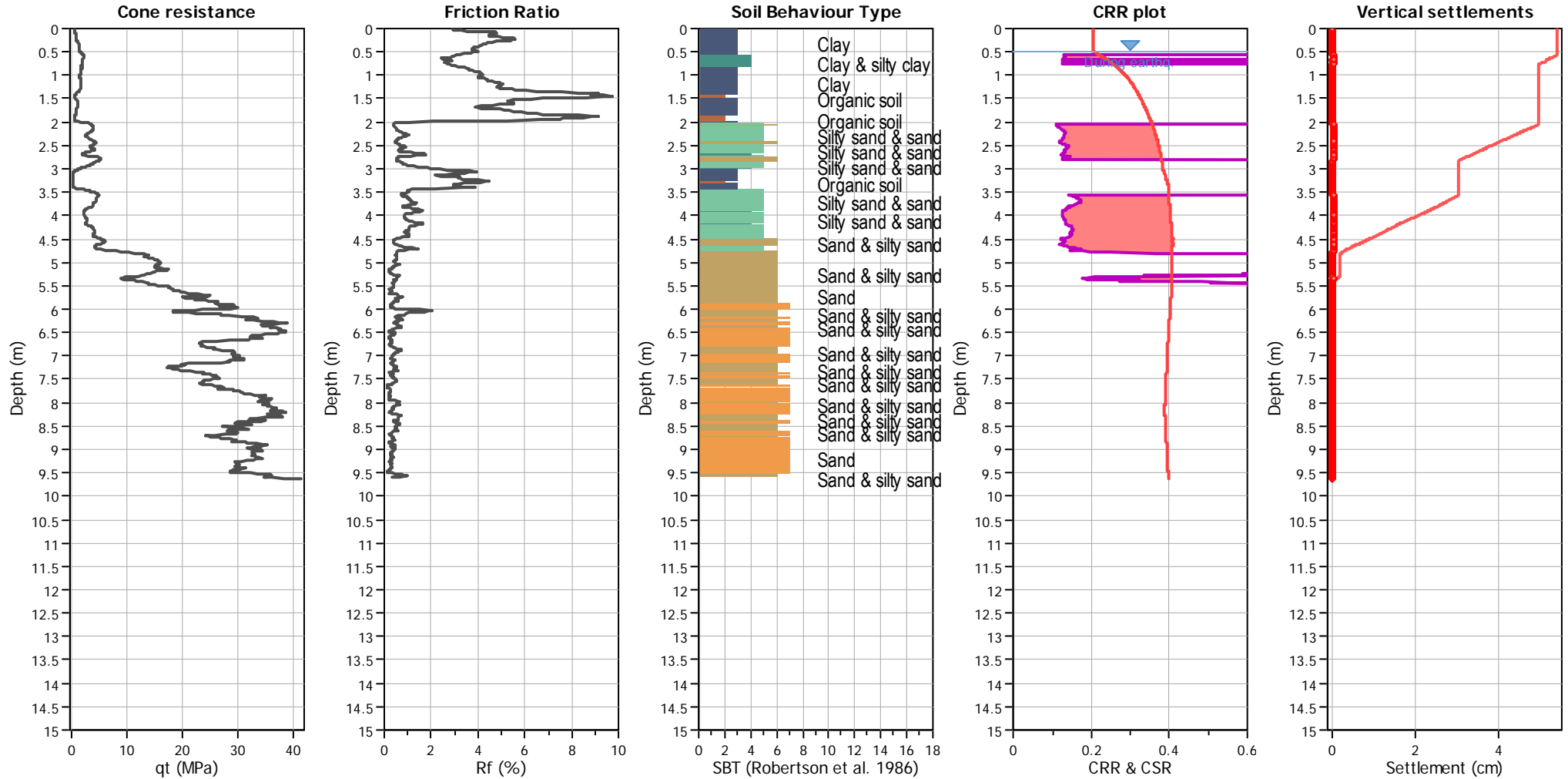
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| Earthquake magnitude M_w : | 7.50 | Ic cut-off value: | 2.60 | Trans. detect. applied: | Yes | Limit depth: | N/A |
| Peak ground acceleration: | 0.35 | Unit weight calculation: | Based on SBT | K_σ applied: | Yes | MSF method: | Method based |



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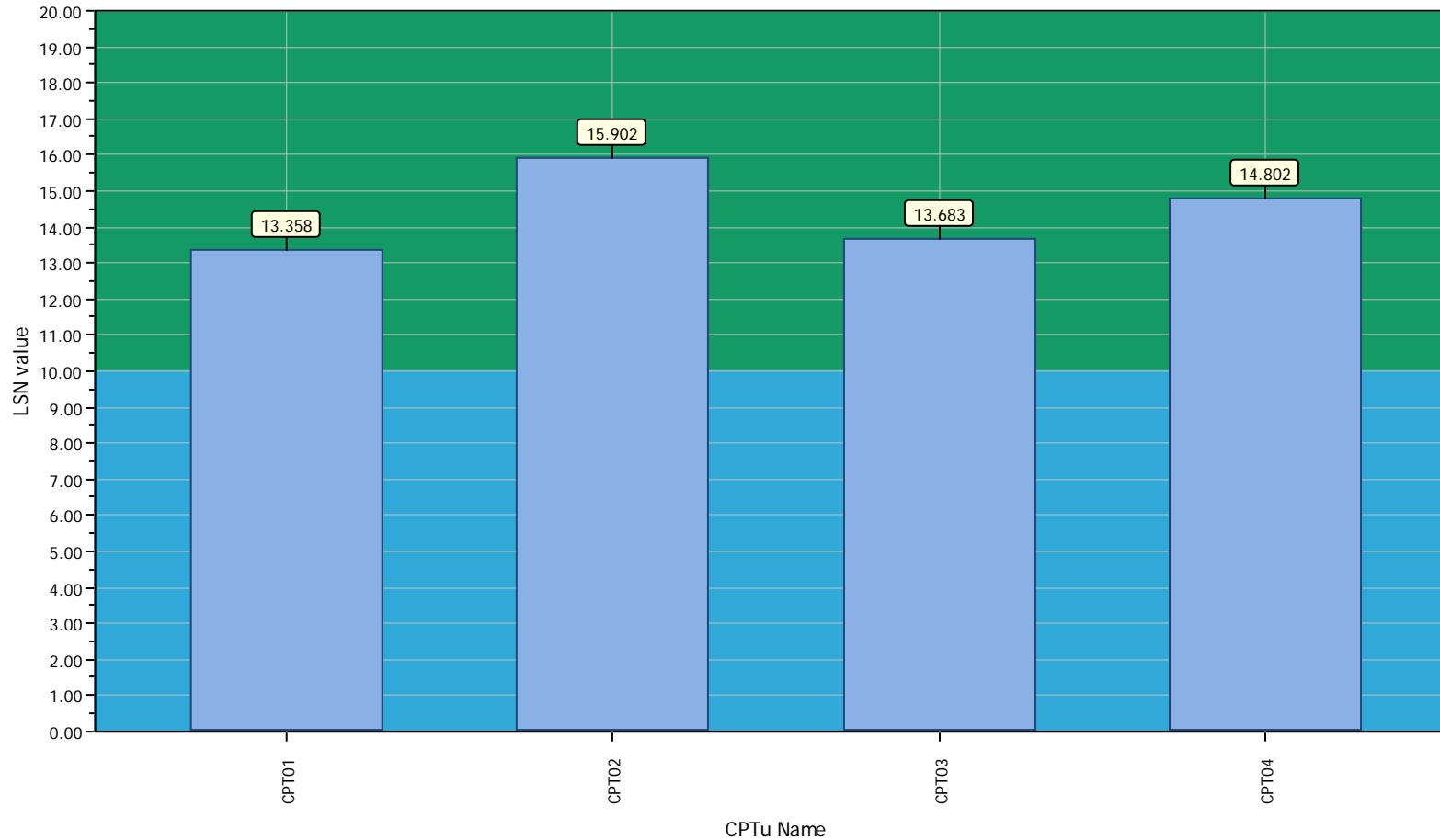


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Project title : 12-20 Neeves Road - SLS (0.19g)

Location : Kaiapoi

Overall Liquefaction Severity Number report



LSN color scheme

- Severe damage
- Major expression of liquefaction
- Moderate to severe exp. of liquefaction
- Moderate expression of liquefaction
- Minor expression of liquefaction
- Little to no expression of liquefaction

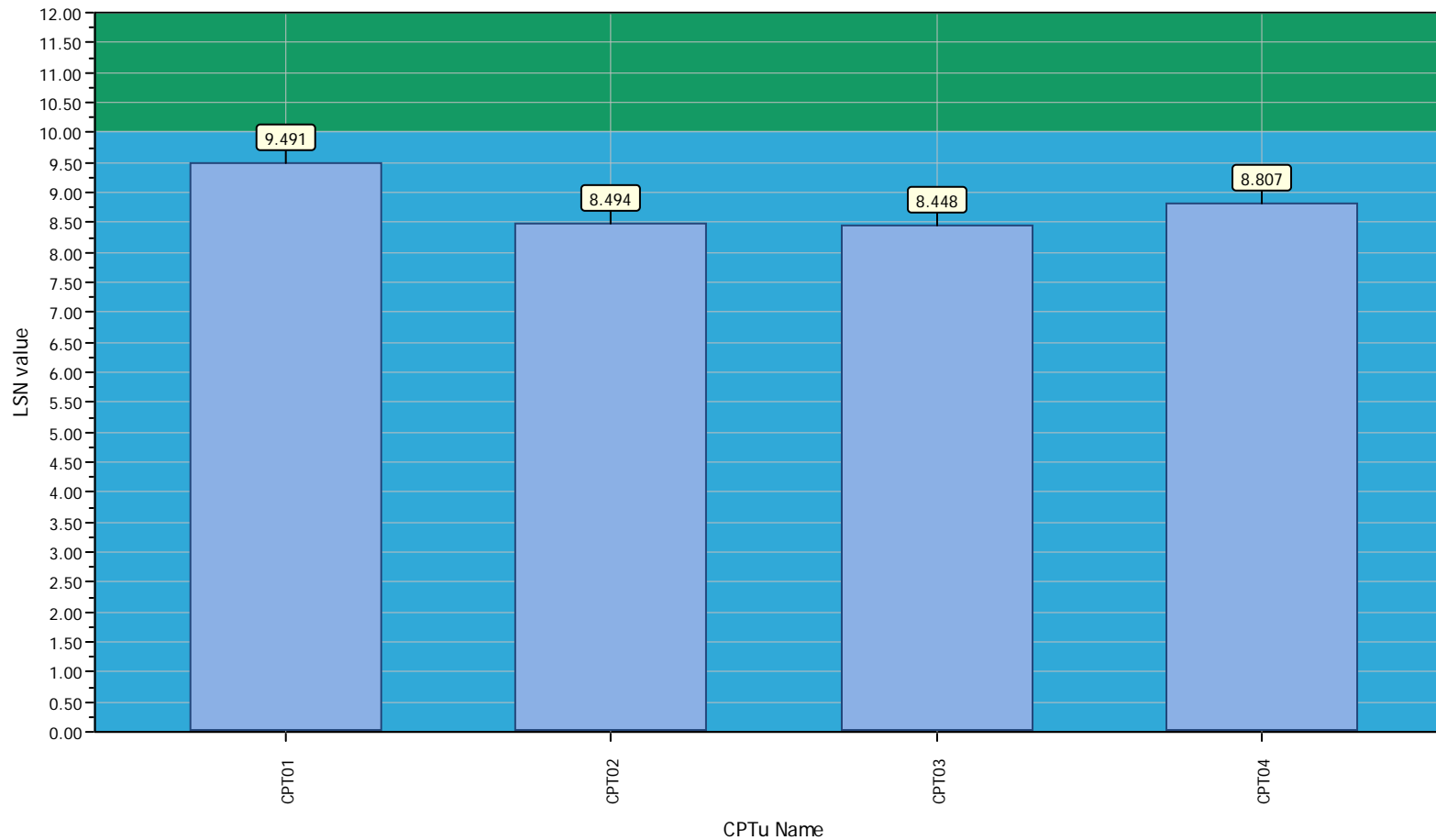
Basic statistics

- Total CPT number: 4
- 0% little liquefaction
- 100% minor liquefaction
- 0% moderate liquefaction
- 0% moderate to major liquefaction
- 0% major liquefaction
- 0% severe liquefaction

Project title : 12-20 Neeves Road - SLS (0.13g)

Location : Kaiapoi

Overall Liquefaction Severity Number report



LSN color scheme

- Severe damage
- Major expression of liquefaction
- Moderate to severe exp. of liquefaction
- Moderate expression of liquefaction
- Minor expression of liquefaction
- Little to no expression of liquefaction

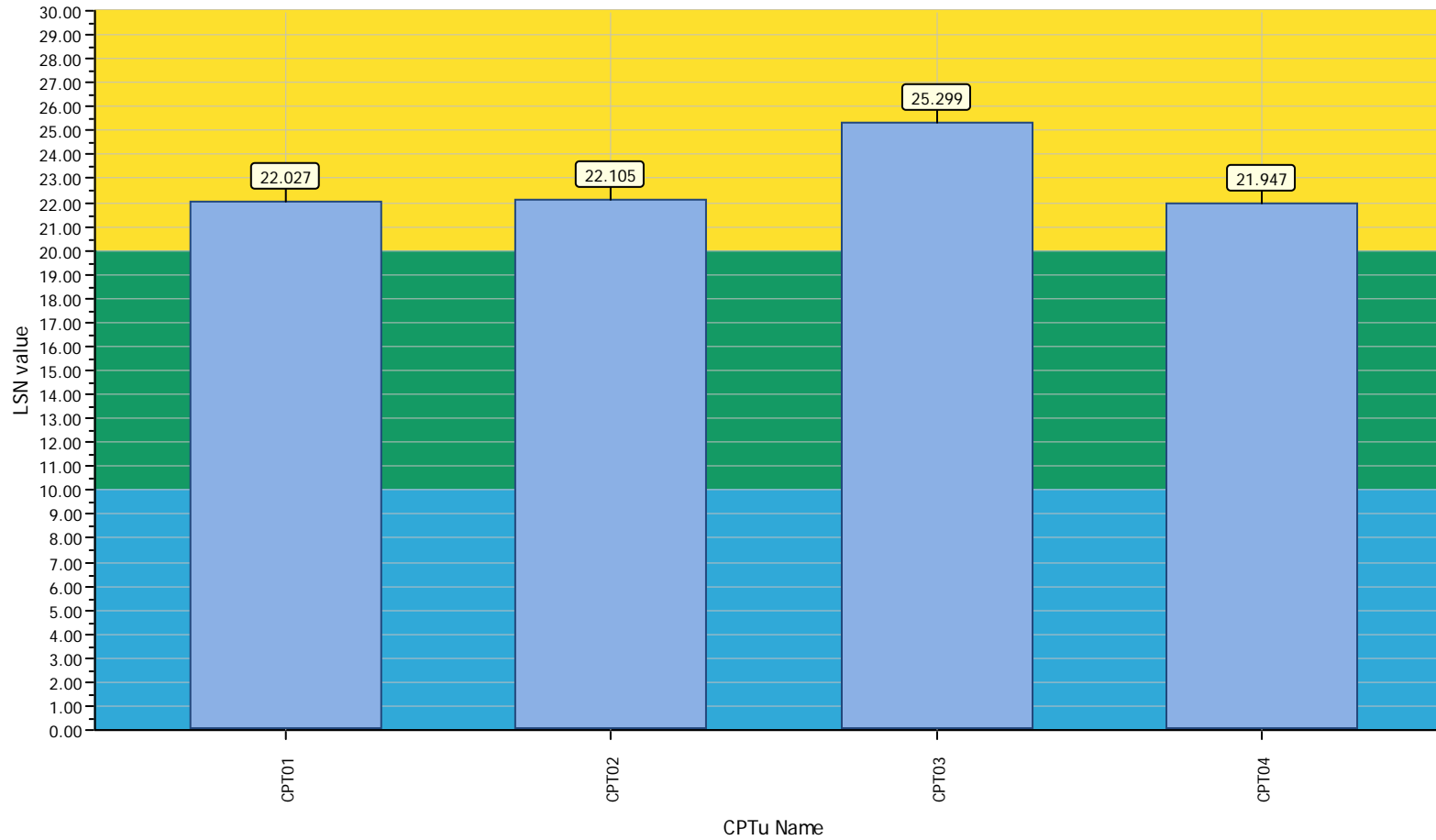
Basic statistics

- Total CPT number: 4
- 100% little liquefaction
- 0% minor liquefaction
- 0% moderate liquefaction
- 0% moderate to major liquefaction
- 0% major liquefaction
- 0% severe liquefaction

Project title : 12-20 Neeves Road - ULS

Location : Kaiapoi

Overall Liquefaction Severity Number report



LSN color scheme

- Severe damage
- Major expression of liquefaction
- Moderate to severe exp. of liquefaction
- Moderate expression of liquefaction
- Minor expression of liquefaction
- Little to no expression of liquefaction

Basic statistics

- Total CPT number: 4
- 0% little liquefaction
- 0% minor liquefaction
- 100% moderate liquefaction
- 0% moderate to major liquefaction
- 0% major liquefaction
- 0% severe liquefaction

Proposed Industrial Development at Neeves Road, Kaiapoi

Geotechnical Assessment Report

Domett Properties Limited



Reference: 773-CHCGE303819

22 September 2022

PROPOSED INDUSTRIAL DEVELOPMENT AT NEEVES ROAD, KAIAPOI

Geotechnical Assessment Report

Report reference number: 773-CHCGE303819

22 September 2022

PREPARED FOR

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QUALITY INFORMATION

Revision history

| Revision | Description | Date | Author | Reviewer | Approver |
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| 0 | Final | 22/09/2022 | BC | AG | CT |

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| Final | 1 | PDF | Helen Pickles (Novo Group) | 22/09/2022 |

CONTENTS

| | | |
|-----------|--|----------|
| 1. | INTRODUCTION | 1 |
| 2. | SCOPE | 1 |
| 3. | SITE DESCRIPTION AND PROPOSED DEVELOPMENT | 1 |
| | 3.1 Existing information..... | 2 |
| | 3.2 Flood hazard..... | 3 |
| | 3.3 Contaminated land considerations..... | 3 |
| | 3.4 Observed earthquake performance..... | 3 |
| 4. | GROUND CONDITIONS | 4 |
| | 4.1 Geological setting..... | 4 |
| | 4.2 Geotechnical Site Investigation..... | 4 |
| | 4.3 Ground model..... | 4 |
| | 4.4 Groundwater conditions..... | 5 |
| | 4.5 Site sub-soil class..... | 5 |
| 5. | ANALYSES | 5 |
| | 5.1 Seismic design ground motion parameters..... | 5 |
| | 5.2 Liquefaction assessment..... | 6 |
| 6. | FOUNDATION OPTIONS | 7 |
| 7. | DETAILED DESIGN AND PLAN REVIEW | 8 |
| 8. | CONSTRUCTION CONSIDERATIONS | 8 |
| | 8.1 Earthworks..... | 8 |
| 9. | LIMITATIONS | 9 |

LIST OF TABLES

| | |
|---|---|
| Table 1: Ground model..... | 4 |
| Table 2: Earthquake scenario and parameters for analysis..... | 6 |
| Table 3: Liquefaction hazard assessment results | 6 |

APPENDICES

APPENDIX A: SITE PLA

APPENDIX B: GEOTECHNICAL INVESTIGATION DATA

APPENDIX C: LIQUEFACTION ANALYSES

1. INTRODUCTION

Novo Projects Limited (Novo) on behalf of Domett Properties Limited has engaged Tetra Tech Coffey (NZ) Limited (Tetra Tech Coffey) to provide a geotechnical assessment report of the area, including possible foundation options for the proposed industrial development at 12 – 20 Neeves Road, Kaiapoi.

The purpose of our work is to evaluate the subsurface conditions at the site, provide recommendations for suitable foundation options with reference to the Ministry of Business, Innovation and Employment (MBIE) Guidance¹, including updates and clarifications²; the Building Code, New Zealand Geotechnical Society (NZGS) Module 4 – Earthquake resistant foundation design³, and other relevant industry documents, as appropriate, and provide geotechnical design information for the site.

This geotechnical report is considered suitable to accompany the application for Resource Consent, and provide the basis for the geotechnical input to the foundation design to support a Building Consent application.

2. SCOPE

In accordance with our proposal dated 27 May 2022, the following items were included in the scope for this project:

- Geotechnical desktop study.
- Shallow ground investigation comprising 4 hand auger boreholes (HA) with accompanying dynamic cone penetration and shear vane tests to 2.0 to 3.0 metres below ground level (mbgl) or refusal.
- Deep ground investigation comprising 4 cone penetrometer tests (CPTs) to 15.0mbgl or refusal.
- Geological ground model and natural hazards assessment.
- Geotechnical assessment report (GAR) suitable for proposed industrial development.

3. SITE DESCRIPTION AND PROPOSED DEVELOPMENT

The site is located along Neeves Road, in Kaiapoi, between State Highway 1 and Main North Road (Figure 1). Immediately to the south is an existing industrial Hellers factory and a large storage yard to the east. At the time of writing this report, the site is occupied by 2 separate rural dwellings (Lot 1 and Lot 2 DP992) along with various barns and sheds on the southern portion of the site. The overall site is generally flat with a 2.0 to 3.0m high man-made bund along the boundary between 12 Neeves Road and Main North Road. The northern portion of the site is considered a greenfield site.

The Courtenay Stream is located less than 50m to the east from the site boundary, flowing north and the Waimakariri River is located approximately 1.2 kilometres (km) to the southeast of the site.

Domett Properties is proposing to construct an industrial development across the approximately 4.9 hectare site, including a carpark and a stormwater pond.

¹ Ministry of Business, Innovation and Employment, 2014: Assessment, repair and rebuild of earthquake-affected industrial buildings in Canterbury, December 2014 (Version 1).

² Ministry of Business, Innovation and Employment, Updates and clarification to the residential guidance, Issue 1 to 10, June 2018.

³ New Zealand Geotechnical Society (NZGS) 2021: Earthquake geotechnical engineering practice Module 4; Earthquake resistant foundation design.



Figure 1: Site location (red) (GoogleEarth, 2020).

3.1 EXISTING INFORMATION

Tetra Tech Coffey have reviewed the New Zealand Geotechnical Database (NZGD)⁴ and ECan Well Search⁵ for any existing data within the proposed development site. We have identified the following information within the vicinity of the proposed development area which will be used to form part of our geotechnical ground model:

- NZGD BH48985, target depth of 19.85mbgl, located approximately 100m southwest of the site.
- NZGD BH25125, target depth of 19.85mbgl, located approximately 100m southwest of the site.
- ECan Well log, BW24/0563, target depth of 29.0mbgl, located on the property of 20 Neeves Road.

Information on the above existing data can be found in Appendix B of this report.

⁴ <https://www.nzgd.org.nz/ARCGISMapViewer/mapviewer.aspx>

⁵ <https://www.ecan.govt.nz/data/well-search/>

3.2 FLOOD HAZARD

Current information from the Waimakariri District Council (WDC) Flood Hazards Map⁶ indicate parts of the eastern portion of the site has a low chance of a 1 in 200 year flood event.

Floor level height requirements should be confirmed with the WDC prior to foundation design.

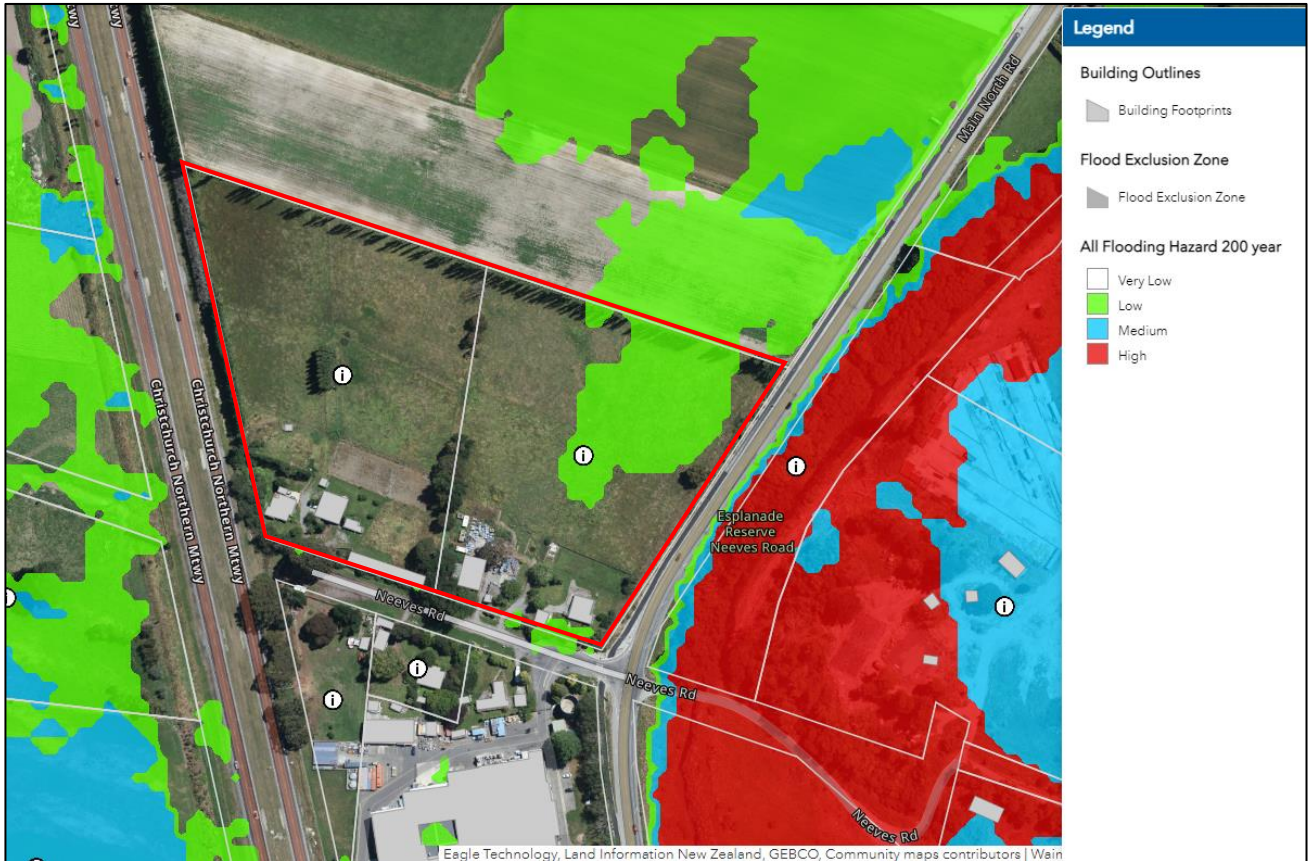


Figure 2: Flood Hazards Map. Site location in red.

3.3 CONTAMINATED LAND CONSIDERATIONS

Tetra Tech Coffey has reviewed the ECan Listed Land Use register (LLUR) as part of the desktop study phase of this investigation. The information reviewed did not identify the site as being on the Hazardous Activities and Industries List (HAIL).

3.4 OBSERVED EARTHQUAKE PERFORMANCE

Our observations from review of the NZGD layers indicate that whilst the site was not mapped, aerial photography indicates no liquefaction ejecta or land damage was observed.

⁶ <https://waimakariri.maps.arcgis.com/apps/MapSeries/index.html?appid=16d97d92a45f4b3081ffa3930b534553>

4. GROUND CONDITIONS

4.1 GEOLOGICAL SETTING

The local surface geology is Springston Formation⁷, which generally comprises alluvial deposits of gravel, sand, and silt deposits. The site-specific, surface geology is mapped as *Grey river alluvium, comprising gravel, sand and silt, in active floodplains (Q1a)*⁷.

4.2 GEOTECHNICAL SITE INVESTIGATION

Tetra Tech Coffey carried out site-specific investigation on 24 August 2022, comprising 5 HA boreholes and 4 CPTs. The HA boreholes reached a target depth of 2.0mbgl along with dynamic cone penetrometer tests to a depth of 0.9mbgl. The CPTs reached a maximum depth of 13.4mbgl where it refused on natural sandy gravel. Nearby boreholes show the sandy gravel was encountered to at least 29.0mbgl, the maximum explored depth.

A test location plan is presented in Appendix A and the test data is presented in Appendix B.

4.3 GROUND MODEL

The site stratigraphy has been derived from our geotechnical investigations and from the NZGD website. The units have been broken down into layers as shown in Table 1 to better understand the sub-surface geology across the site. As shown in Figure 3, CPT01 and CPT04 contains a consistent clayey silt/sandy silt layer up to 4.7mbgl which overlies the sandy gravel to gravelly sand. On the other hand, CPT02 and CPT03 vary considerably between 2.5m – 11.5mbgl.

A summary of the ground model is shown in Table 1 and Figure 3. The outputs can be found in Appendix B.

Table 1: Ground model

| Layer ref. | Layer | Top of layer (mbgl) | Approx. thickness (m) | Properties |
|------------|--|---------------------|-----------------------|---|
| 0 | Topsoil | 0.0 | 0.3 – 0.4 | N/A |
| 1 | Silt/clayey silt | 0.3 – 0.4 | 1.0 – 2.1 | Stiff to very stiff. |
| 2 | Interbedded sandy silt / silty sand | 1.2 – 2.3 | 1.3 – 5.8 | Loose to dense. Silt is stiff to very stiff. |
| 3 | Sandy gravel / Gravelly sand with interbedded silt | 2.5 – 7.2 | 3.1 – >9.0 | Medium dense to very dense. Silt is firm to very stiff. |
| 4 | Interbedded sandy silt / silty sand (CPT02/CPT03 only) | 6.5 – 10.3 | 0.4 – 4.0 | Medium dense to dense. Silt is stiff to very stiff. |
| 5 | Clayey silt (CPT02/CPT03 only) | 10.5 – 10.7 | 1.1 – 1.2 | Stiff to very stiff. |

⁷ Forsyth, P.J.; Barrell, D.J.A.; Jongens, R. (compilers) 2008. Geology of the Christchurch area. Institute of Geological & Nuclear Sciences 1: 250,000 geological map 16. 1 sheet + 67p. Lower Hutt, New Zealand. GNS Science.

| Layer ref. | Layer | Top of layer (mbgl) | Approx. thickness (m) | Properties |
|------------|---|---------------------|-----------------------|----------------------|
| 6 | Sandy Gravel/gravelly sand (CPT02/CPT03 only) | 11.7 – 11.8 | >15 | Dense to very dense. |

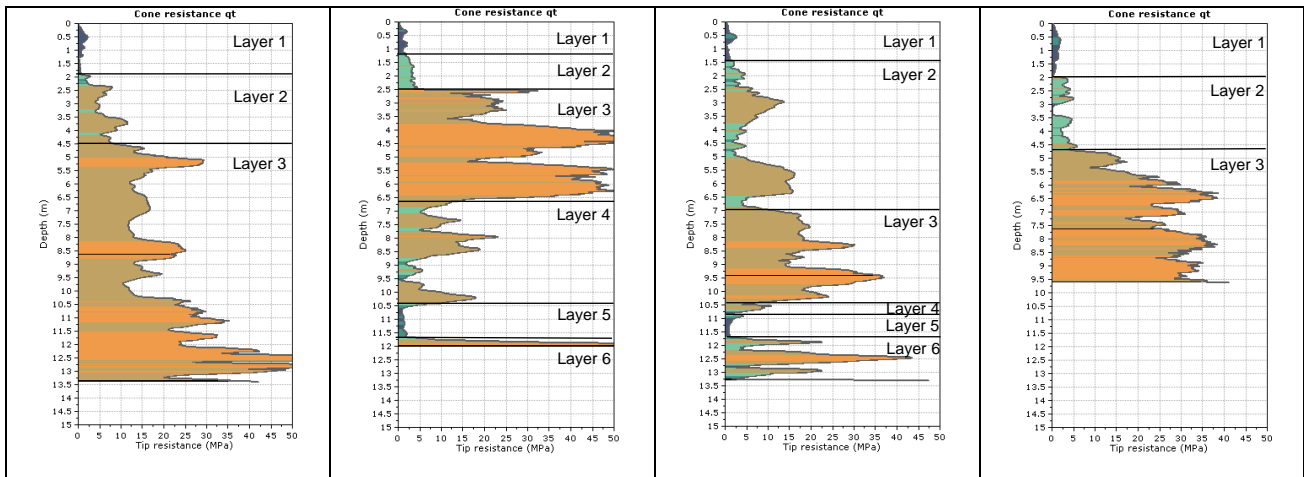


Figure 3: From left to right, CPT01 - CPT04 profile showing the variability of the soil profile across the site. Note: clayey/silty mixture is coloured blue/green and sandy/gravelly mixtures is coloured brown/orange.

4.4 GROUNDWATER CONDITIONS

Groundwater was observed in three of the five on-site HAs with a depth to groundwater ranging between 0.2 (HA01) to 1.7mbgl (HA4). It is noted that there were areas of perched standing water across the site when we carried out our investigation and therefore the measurement in HA01 is likely to be the inflow of surface water.

The CPTs encountered groundwater within the upper 0.5m based on the review of the recorded pore pressure measurements. A conservative design groundwater level of 0.5mbgl has been adopted for the liquefaction analyses.

4.5 SITE SUB-SOIL CLASS

Based on our site investigation and understanding of the geology, and in accordance with Section 3.1.3 of NZS1170.5⁸, a site subsoil classification of “Class D – Deep or soft soil sites” may be assumed for this site.

5. ANALYSES

5.1 SEISMIC DESIGN GROUND MOTION PARAMETERS

Serviceability Limit State (SLS) and Ultimate Limit State (ULS) design earthquake scenarios were assessed using the parameters provided by the NZGS Guidelines⁹ for an Importance Level 2 (IL2) structure and a Class D sub-soil site.

The earthquake parameters adopted for geotechnical seismic design, particularly liquefaction analysis, are presented in Table 2.

⁸ NZS 1170.5:2004 - Structural design actions - Part 5: Earthquake actions - New Zealand.

⁹ MBIE and NZGS (2021): Earthquake geotechnical engineering practice, Module 1: Overview of the guidelines, November 2021.

Table 2: Earthquake scenario and parameters for analysis

| Earthquake scenario | Moment magnitude (M_w) | α_{max} (g) |
|---------------------|----------------------------|--------------------|
| SLS | 6.0 | 0.19 |
| SLS | 7.5 | 0.13 |
| ULS | 7.5 | 0.35 |

5.2 LIQUEFACTION ASSESSMENT

Tetra Tech Coffey has carried out a liquefaction hazard assessment in accordance with MBIE and NZGS Guidelines¹⁰ to assess the liquefaction risk at the site. MBIE liquefaction-induced, free-field settlement values are presented in Table 2 and Appendix C. These settlement estimates account for the free-field component of the expected settlement. Actual total settlements under SLS or ULS earthquake loading may be greater due to foundation loading.

While index settlements tell us about the free-field settlement at a site, the non-liquefiable crust thickness and risk of liquefaction ejecta at a site are also key foundation design considerations. Liquefaction damage such as crust thinning, crust degradation, and / or loss of ground beneath a foundation / bearing capacity failure due to shallow liquefaction can result in significant foundation deformation. The risk of liquefaction-induced surface deformation at a site can be measured using the liquefaction severity number (LSN). LSN results are also presented in Table 3 and Appendix C.

Table 3: Liquefaction hazard assessment results

| Layer information | | | Liquefaction triggering | |
|-------------------|--|---------------------------------------|-------------------------|-------------|
| Layer ID | Layer description | Top of layer depth range (indicative) | SLS | ULS |
| 0 | Topsoil | 0.0 | N/A | N/A |
| 1 | Silt/clayey silt | 0.3 – 0.4 | None | None |
| 2 | Interbedded sandy silt / silty sand | 1.2 – 2.3 | Likely | Very Likely |
| 3 | Sandy gravel / Gravelly sand with interbedded silt | 2.5 – 7.2 | Likely | Very Likely |
| 4 | Interbedded sandy silt / silty sand (CPT02/CPT03 only) | 6.5 – 10.3 | Likely | Very Likely |
| 5 | Clayey silt (CPT02/CPT03 only) | 10.5 – 10.7 | None | None |
| 6 | Sandy Gravel/gravelly sand (CPT02/CPT03 only) | 11.7 – 11.8 | None | None |

¹⁰ New Zealand Geotechnical Society (NZGS) 2016: Earthquake geotechnical engineering practice Module 3; Identification, assessment and mitigation of liquefaction hazards.

The key observations from our analyses are:

- At SLS levels of shaking:
 - Liquefaction triggering and liquefaction induced free-field settlements are predominantly in the medium dense to dense sandy/silty lenses in Layer 2 and Layer 3, with liquefaction triggering occurring below 2.0m and the majority below 8.5 – 10.5m. Some isolated / discrete lenses of liquefaction are predicted between these depths but do not appear to be consistently at the same depth.
 - Free-field settlement values range from 30mm to 55mm.
 - LSN values typically indicate little to minor surface expression (LSN average value ~13), which correlates with the materials encountered and typical ground model.
- At ULS levels of shaking:
 - Liquefaction triggering occurs in the loose to medium dense sandy and silty layers throughout the soil profile with the majority occurring below 2m. Discrete sandy lenses between 0.5 to 2.0m triggering only under ULS.
 - Non-liquefiable crust thickness ranges from 1.4m to 2.0m.
 - Full depth free-field settlement values range from 55mm to 90mm.
 - LSN values typically indicate moderate surface expression (LSN average value ~23), which indicates that the clayey surficial soils will limit the surface manifestation of liquefaction.

Lateral stretch of the ground in this location is expected to be minimal as the nearest free face is 50.0m between the eastern boundary of the site and the Courtenay Stream. Depending on the final building location, further assessment may be required.

6. FOUNDATION OPTIONS

We understand that Domett Properties Limited is proposing to construct a new industrial development for the site, along with a large carpark and a stormwater pond. However, the locations and the design for the proposed building is yet to be finalised.

Foundation recommendations for the proposed development have taken the MBIE Guidance¹, updates and clarifications to the MBIE Guidance², the Building Code, and NZGS Module 4 – Earthquake resistant foundation design³ into account.

Based on the ground profile, the following design considerations are relevant for the site:

- The ground profile typically comprises a surface layer of stiff to very stiff clayey soil overlying interbedded silty sandy soils with gravel lenses encountered at variable depths.
- Liquefaction triggering at SLS is minor and minor to moderate at ULS.
- Static settlement of shallow foundations (if preferred) will need to be assessed as the clayey soils are likely to undergo some consolidation when loaded by shallow foundations.

Based on the field test results, our experience in the area, and the findings of our investigation and analyses, a geotechnical ultimate bearing capacity (GUBC) of 200kPa can be found below topsoil. As the building design is yet to be finalised, the following preliminary foundation options should be considered:

- Shallow pad and beam foundation designed for a GUBC of 200kPa.
- If higher bearing capacities are required, a geogrid reinforced gravel raft may be incorporated into the foundation system. The Geogrid reinforced raft should comprise a basal geogrid, Cirtex DuraGrid X 30/30 (or similar approved), 0.4m thick gravel hardfill beneath the ground beams and extend 1.0m laterally from the beam edge.
- If foundation loads are high, and shallow bearing capacities are insufficient, a piled foundation solution may be pursued. Piling on this site may require predrilling to achieve a uniform founding depth due to the variable soil deposits in the upper 10 – 12.0m. Pile depths may range from 5.0m to 13.5m across the site. If this solution is preferred, we should be contacted to confirm pile capacities for foundation design.
- Alternately, stone column ground improvement can be considered. This option would allow for improvement of the upper soil layers and to provide a more uniform subgrade for shallow foundations. Treatment depths would range from 2.5m to ~5.0m based on the CPTs carried out to date. Tetra Tech Coffey has significant experience designing stone column ground improvement and can recommend contractors to discuss options with or carry out the design if preferred.

Static settlement for any shallow foundations will need to be assessed during detailed design once building loads are confirmed. It is possible, if building loads are high, that shallow foundations may not be appropriate.

7. DETAILED DESIGN AND PLAN REVIEW

Once the proposed building location has been finalised, further geotechnical investigation is required to better understand the ground conditions for the proposed building. Additionally, once the preferred foundation solution has been adopted, a detailed design will need to be carried out and final foundation plans should be reviewed by Tetra Tech Coffey prior to building consent application. This is to ensure that our recommendations have been interpreted as intended and to avoid Waimakariri District Council requests for information if there are discrepancies.

8. CONSTRUCTION CONSIDERATIONS

8.1 EARTHWORKS

Where earthworks are to be carried out, it must be undertaken in accordance with NZS4431 (Code of practice for earth fill). Topsoil should be stripped from earthworks areas and stockpiled for later use. Prior to filling, confirmation by Tetra Tech Coffey personnel of suitable stripping of topsoil will be required. Proof rolling to compact loose sandy soils may be required prior to fill placement, this instruction will be provided by Tetra Tech Coffey if required, during construction.

Where uncontrolled fill material is encountered at the site during earthworks, it is recommended that this fill is excavated, checked for suitability and, if required, replaced with engineered fill according to NZS 4431. This process also applies to any soft layers of organic silts, topsoil or other unsuitable material. It is recommended that any such excavation works, and placement of engineered fill be observed, tested, and/or approved by Tetra Tech Coffey personnel during construction.

Engineered fill should be GAP65 hardfill or similar placed and compacted on an approved subgrade in layers not exceeding 200mm thickness. Each layer should be compacted to achieve a relative compaction of at least 95% of the maximum dry density as indicated in NZS 4407:2015 Test 4.3.

Laboratory compaction tests within the past 6 months to assess the maximum dry density of the imported engineered fill will be required prior to commencement of earthworks. A target MDD of 95% should be assumed as compaction criteria.

We require at least 48 hours' notice for site observation visits.

9. LIMITATIONS

The opinions, recommendations and comments given in this report result from the application of normal methods of site investigation. As factual evidence has been obtained solely from test methods that by their nature only provide information about a relatively small volume of sub-soils, there may be special conditions pertaining to this site that have not been disclosed by the investigation and that have not been taken into account in the report. If variations in the sub-soils occur from those described or assumed to exist, then the matter should be referred to us immediately.

This report has been prepared solely for the use of our client, Domett Properties Limited, and the Waimakariri District Council in relation to the specific project described herein. No liability is accepted in respect of its use for any other purpose or by any other person or entity.

If you have queries or require further clarification regarding aspects of this report, please contact the undersigned.

Prepared by



Benjamin Chau
BSc PMEG
Engineering Geologist

Authorised by



Andreas Giannakogiorgos
BSc MSc DIC CEngNZ CPEng IntPE (NZ)
Senior Principal Geotechnical Engineer

IMPORTANT INFORMATION ABOUT YOUR TETRA TECH COFFEY REPORT

As a client of Tetra Tech Coffey you should know that site subsurface conditions cause more construction problems than any other factor. These notes have been prepared by Tetra Tech Coffey to help you interpret and understand the limitations of your report.

Your report is based on project specific criteria

Your report has been developed on the basis of your unique project specific requirements as understood by Tetra Tech Coffey and applies only to the site investigated. Project criteria typically include the general nature of the project; its size and configuration; the location of any structures on the site; other site improvements; the presence of underground utilities; and the additional risk imposed by scope-of-service limitations imposed by the client. Your report should not be used if there are any changes to the project without first asking Tetra Tech Coffey to assess how factors that changed subsequent to the date of the report affect the report's recommendations. Tetra Tech Coffey cannot accept responsibility for problems that may occur due to changed factors if they are not consulted.

Subsurface conditions can change

Subsurface conditions are created by natural processes and the activity of man. For example, water levels can vary with time, fill may be placed on a site and pollutants may migrate with time. Because a report is based on conditions which existed at the time of subsurface exploration, decisions should not be based on a report whose adequacy may have been affected by time. Consult Tetra Tech Coffey to be advised how time may have impacted on the project.

Interpretation of factual data

Site assessment identifies actual subsurface conditions only at those points where samples are taken and when they are taken. Data derived from literature and external data source review, sampling and subsequent laboratory testing are interpreted by geologists, engineers or scientists to provide an opinion about overall site conditions, their likely impact on the proposed development and recommended actions. Actual conditions may differ from those inferred to exist, because no professional, no matter how qualified, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than assumed based on the facts obtained. Nothing can be done to change the actual site conditions which exist, but steps can be taken to reduce the impact of unexpected conditions. For this reason, owners should retain the services of Tetra Tech Coffey through the development stage, to identify variances, conduct additional tests if required, and recommend solutions to problems encountered on site.

Your report will only give preliminary recommendations

Your report is based on the assumption that the site conditions as revealed through selective point sampling are indicative of actual conditions throughout an area. This assumption cannot be substantiated until project implementation has commenced and therefore your report recommendations can only be regarded as preliminary. Only Tetra Tech Coffey, who prepared the report, is fully familiar with the background information needed to assess whether or not the report's recommendations are valid and whether or not changes should be considered as the project develops. If another party undertakes the implementation of the recommendations of this report there is a risk that the report will be misinterpreted and Tetra Tech Coffey cannot be held responsible for such misinterpretation.

Your report is prepared for specific purposes and persons

To avoid misuse of the information contained in your report it is recommended that you confer with Tetra Tech Coffey before passing your report on to another party who may not be familiar with the background and the purpose of the report. Your report should not be applied to any project other than that originally specified at the time the report was issued.

Interpretation by other design professionals

Costly problems can occur when other design professionals develop their plans based on misinterpretations of a report. To help avoid misinterpretations, retain Tetra Tech Coffey to work with other project design professionals who are affected by the report. Have Tetra Tech Coffey explain the report implications to design professionals affected by them and then review plans and specifications produced to see how they incorporate the report findings.

Data should not be separated from the report

The report as a whole presents the findings of the site assessment and the report should not be copied in part or altered in any way. Logs, figures, drawings, etc. are customarily included in our reports and are developed by scientists, engineers or geologists based on their interpretation of field logs (assembled by field personnel) and laboratory evaluation of field samples. These logs etc. should not under any circumstances be redrawn for inclusion in other documents or separated from the report in any way.

Geoenvironmental concerns are not at issue

Your report is not likely to relate any findings, conclusions, or recommendations about the potential for hazardous materials existing at the site unless specifically required to do so by the client. Specialist equipment, techniques, and personnel are used to perform a geoenvironmental assessment. Contamination can create major health, safety and environmental risks. If you have no information about the potential for your site to be contaminated or create an environmental hazard, you are advised to contact Tetra Tech Coffey for information relating to geoenvironmental issues.

Rely on Tetra Tech Coffey for additional assistance

Tetra Tech Coffey is familiar with a variety of techniques and approaches that can be used to help reduce risks for all parties to a project, from design to construction. It is common that not all approaches will be necessarily dealt with in your site assessment report due to concepts proposed at that time. As the project progresses through design towards construction, speak with Tetra Tech Coffey to develop alternative approaches to problems that may be of genuine benefit both in time and cost.






Responsibility

Reporting relies on interpretation of factual information based on judgement and opinion and has a level of uncertainty attached to it, which is far less exact than the design disciplines. This has often resulted in claims being lodged against consultants, which are unfounded. To help prevent this problem, a number of clauses have been developed for use in contracts, reports and other documents. Responsibility clauses do not transfer appropriate liabilities from Tetra Tech Coffey to other parties but are included to identify where Tetra Tech Coffey's responsibilities begin and end. Their use is intended to help all parties involved to recognise their individual responsibilities. Read all documents from Tetra Tech Coffey closely and do not hesitate to ask any questions you may have.

APPENDIX A: SITE PLAN

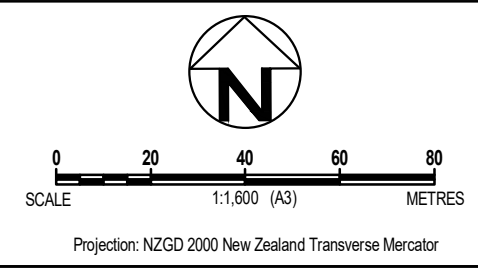


LEGEND

-  CPT
-  Well borehole
-  Hand auger
-  NZGD borehole
-  Site boundary

Source & Notes:
 Aerial imagery flown 2017 supplied by LINZ
 Data licenced for re-use under the Creative Commons Attribution 4.0 New Zealand licence.

| no. | description | drawn | approved | date |
|-----|----------------|-------|----------|----------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| A | ORIGINAL ISSUE | RZ | BC | 21.09.22 |



| | |
|---------------|------------|
| drawn | RZ |
| approved | BC |
| date | 21.09.2022 |
| scale | AS SHOWN |
| original size | A3 |



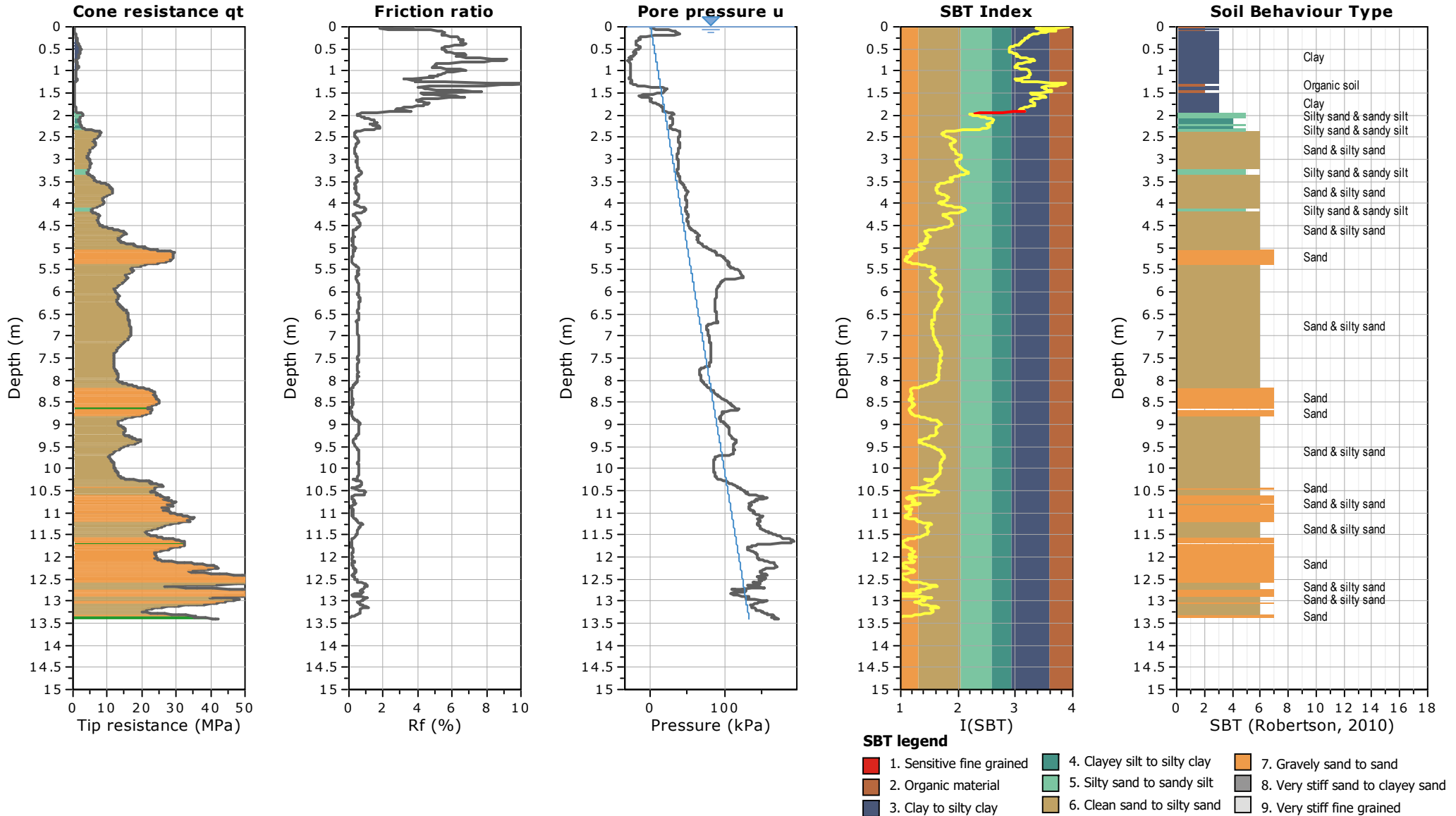
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|-------------|----------------------------|------------|----|
| client: | DOMETT PROPERTIES LTD. | | |
| project: | 12-20 NEEVES ROAD, KAIAPOI | | |
| title: | SITE PLAN | | |
| project no: | 773-CHCGE303819 | figure no: | 01 |
| rev: | A | | |

MXD ref: 303819_02_CIS001_1

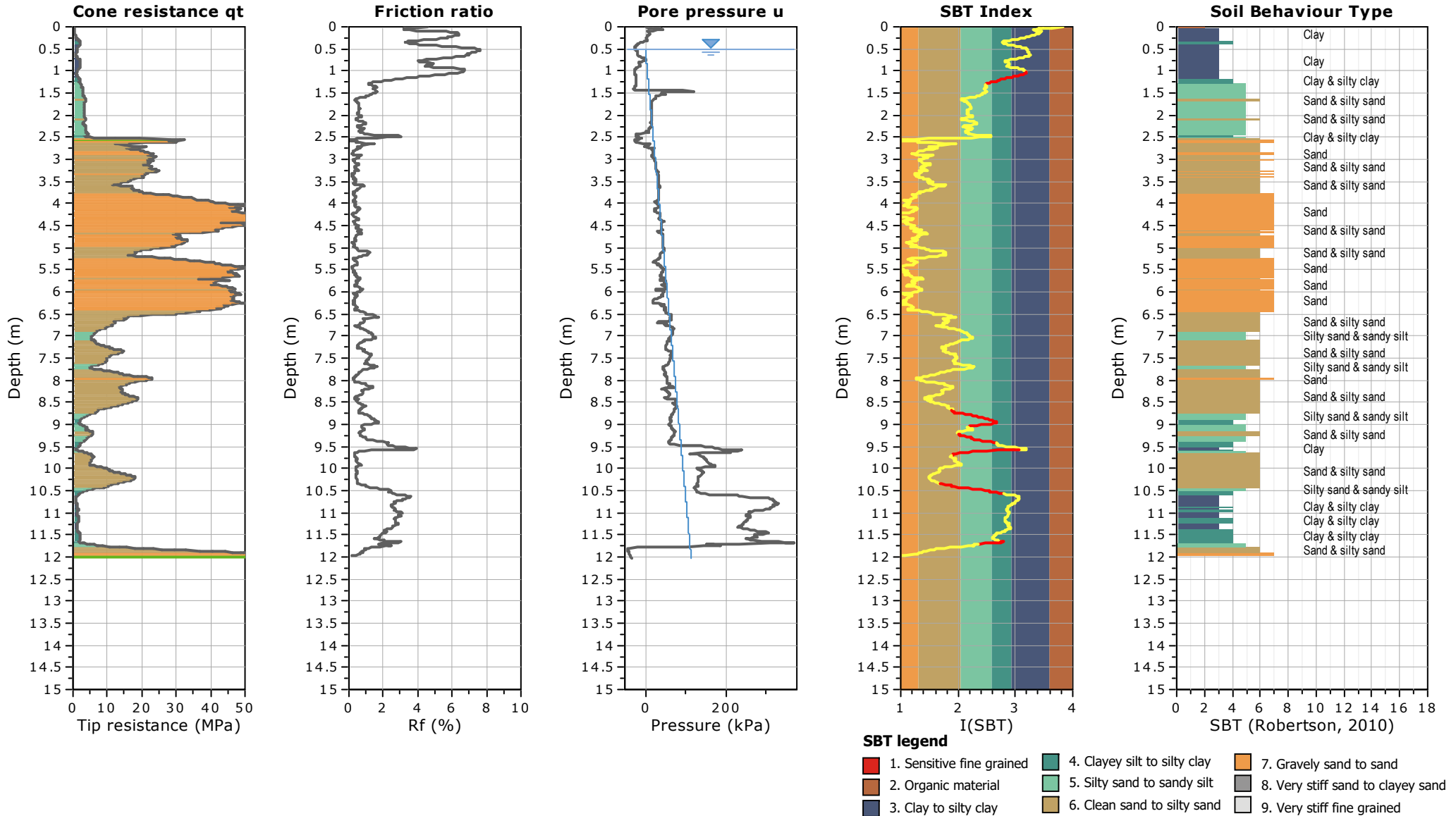
APPENDIX B: GEOTECHNICAL INVESTIGATION DATA

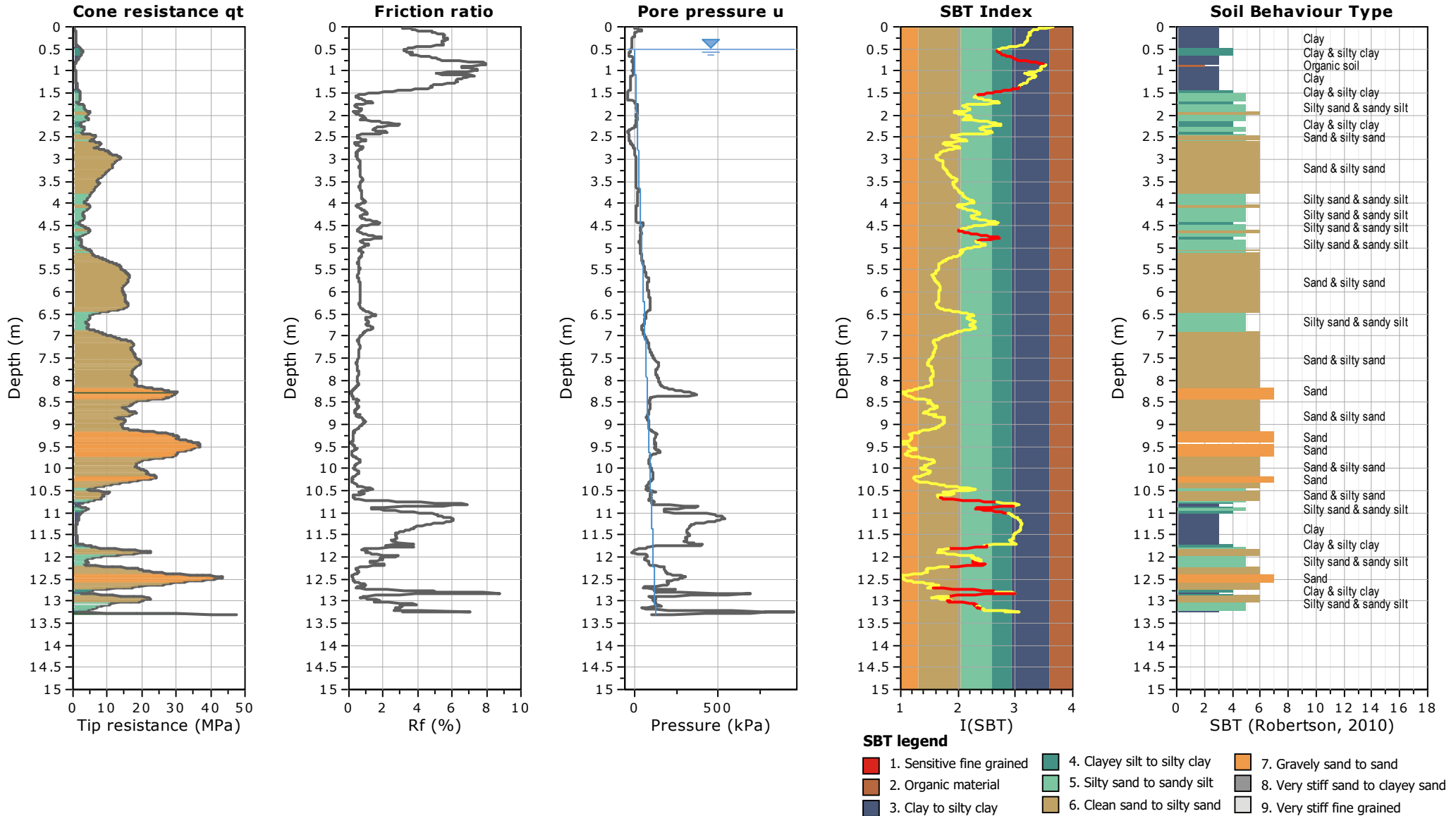
Project: 12-20 Neeves Road

Location: Kaiapo



Project: 12-20 Neeves Road
Location: Kaiapoi

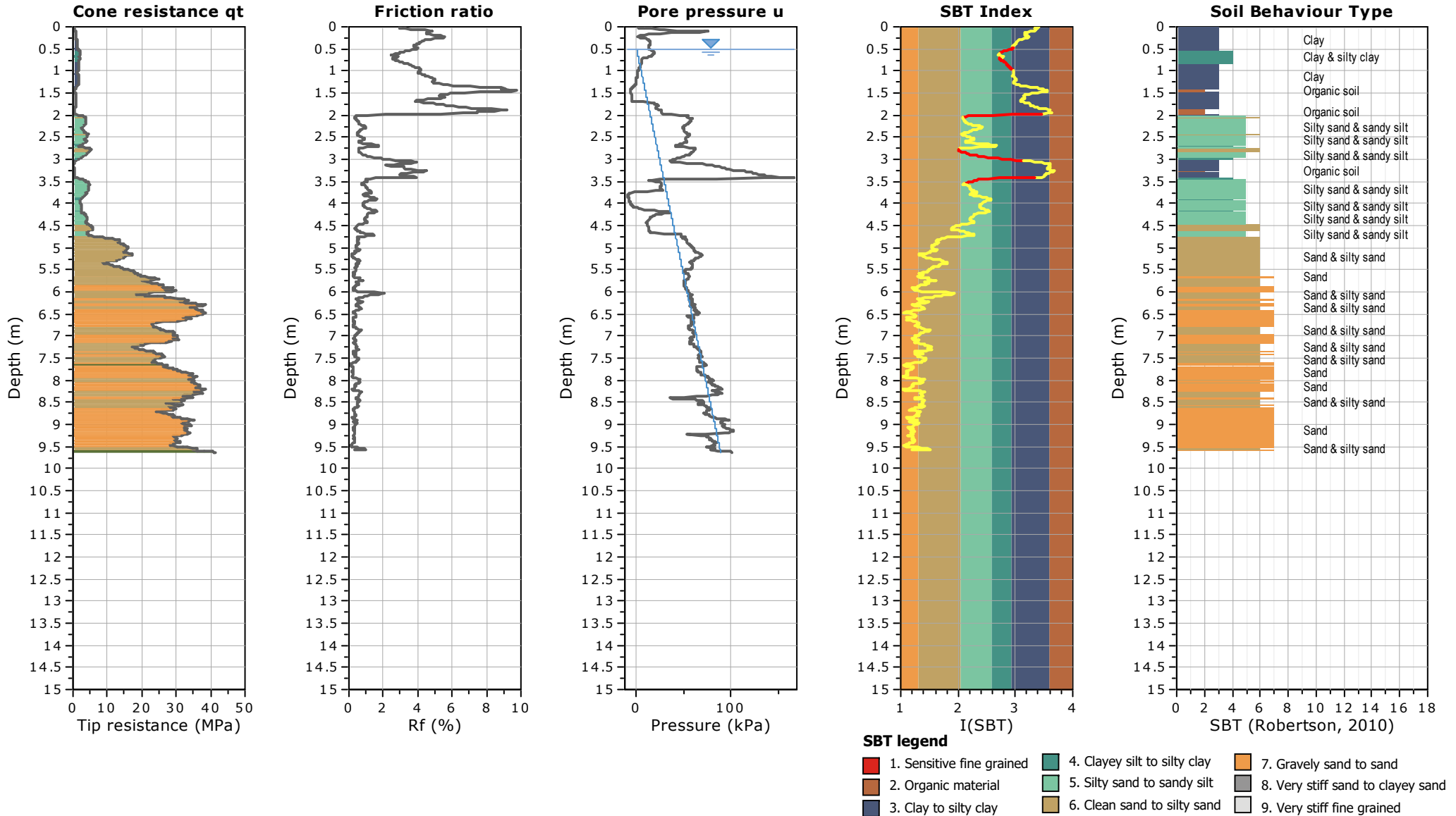






Project: 12-20 Neeves Road

Location: Kaiapoi



Engineering Log - Hand Auger

 client: **Domett Properties LTD**

principal: -

 project: **12-20 Neeves Road**

 location: **Kaiapoi, Christchurch**

 Borehole ID: **HA01**

sheet: 1 of 1

 project no. **773-CHCGE303819**

 date started: **24 Aug 2022**


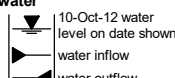
 date completed: **24 Aug 2022**

 logged by: **B. Chau**

 checked by: **C. Thompson**

 position: Not Specified surface elevation: Not Specified angle from horizontal: 90° DCP id.: -
 drill model: Hand Auger drilling fluid: Hand Auger hole diameter : 50 mm vane id.: 1508

| drilling information | | | | material substance | | | | | | | | | |
|----------------------|-------------|-----------------------|----------|--------------------|-----------|-------------|-------------------|--|--------------------|--------------------------------|----------------------------------|--------------------|--|
| method & support | penetration | samples & field tests | water | RL (m) | depth (m) | graphic log | soil group symbol | material description | moisture condition | consistency / relative density | vane shear (kPa) | DCP (blows/100 mm) | soil origin, structure and additional observations |
| | 1 2 3 | | | | | | | SOIL NAME: plasticity or particle characteristics, colour, secondary and minor components | | | remoulded peak 50 100 150 200 | 2 4 6 8 10 | |
| HA | | VS 115/ 32 kPa | 24/08/22 | | 0.0 - 0.5 | | ML | SILT: low plasticity, brown, with trace of rootlets. | M | | | | TOPSOIL DCP: 0.0-0.1m Self-weight |
| | | VS 83/ 58 kPa | | | 0.5 - 1.0 | | ML | SILT: low plasticity, pale brown-grey with orange mottling. | St - VSt | | | | SPRINGSTON FORMATION |
| | | VS 102/ 6 kPa | | | 1.0 - 1.5 | | ML-MH | Clayey SILT: low to medium plasticity, pale grey with orange mottling. | W | | | | |
| | | VS 80/ 19 kPa | | | 1.5 - 2.0 | | | 1.4 to 1.8 m: with trace of organic silt and trace of rootlets 1.5 m: mottling absent | St | | | | |
| | | VS 86/ 13 kPa | | | 2.0 - 2.0 | | | Hand Auger HA01 terminated at 2.0 m Target depth | | | | | |

| | | | | |
|--|--|--|--|--|
| method DT diatube AD auger drilling* AS auger screwing* HA hand auger W washbore RR rock roller * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit | support M mud N nil C casing penetration  water  | samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing | soil group symbol & material description based on AS 1726:2017 moisture condition D dry M moist W wet S saturated Wp plastic limit Wl liquid limit | consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense |
|--|--|--|--|--|

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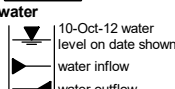
Engineering Log - Hand Auger

 client: **Domett Properties LTD**
 principal: -
 project: **12-20 Neeves Road**
 location: **Kaiapoi, Christchurch**

 Borehole ID: **HA02**
 sheet: 1 of 1
 project no. **773-CHCGE303819**
 date started: **24 Aug 2022**
 date completed: **24 Aug 2022**
 logged by: **B. Chau**
 checked by: **C. Thompson**

 position: Not Specified surface elevation: Not Specified angle from horizontal: 90° DCP id.: -
 drill model: Hand Auger drilling fluid: Hand Auger hole diameter : 50 mm vane id.: 1508

| drilling information | | | | material substance | | | | | | | | | |
|----------------------|-------------|-----------------------|-------|--------------------|-----------|-------------|-------------------|--|--|--------------------------------|------------------|--------------------|--|
| method & support | penetration | samples & field tests | water | RL (m) | depth (m) | graphic log | soil group symbol | material description | moisture condition | consistency / relative density | vane shear (kPa) | DCP (blows/100 mm) | soil origin, structure and additional observations |
| | 1 2 3 | | | | | | | SOIL NAME: plasticity or particle characteristics, colour, secondary and minor components | | | remoulded peak | | |
| HA N | | VS 137/ 61 kPa | | | 0.5 | | ML | SILT: low plasticity, brown, with trace of rootlets. | M | | | | TOPSOIL DCP: 0.0-0.1m Self-weight |
| | | VS 147/ 61 kPa | | | | | ML | SILT: low plasticity, pale brown-grey with orange mottling. | VSt | | | | SPRINGSTON FORMATION |
| | | VS 208/ 54 kPa | | | 1.0 | | ML-MH | Clayey SILT: low to medium plasticity, pale brown-grey with orange mottling. | M - W | | | | |
| | | | | | | 1.5 | | SM | SILTY SAND: fine grained, pale blue-grey. | H | | | |
| | | | | | 2.0 | | | Hand Auger HA02 terminated at 2.0 m Target depth | MD | | | | |
| | | | | | 2.5 | | | | S | | | | |
| | | | | | 3.0 | | | | | | | | |
| | | | | | 3.5 | | | | | | | | |

| | | | | |
|--|--|--|--|--|
| method DT diatube AD auger drilling* AS auger screwing* HA hand auger W washbore RR rock roller * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit | support M mud N nil C casing penetration  water  | samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing | soil group symbol & material description based on AS 1726:2017 moisture condition D dry M moist W wet S saturated Wp plastic limit Wl liquid limit | consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense |
|--|--|--|--|--|

CDF_0_10_00.4_LIBRARY.GLB rev.CDF_0_10_00.4_2021-09-30 Log COF BOREHOLE: NON CORED + DCP 773-CHCGE303819 GINT FILE.GPJ <<DrawingFile>> 14/09/2022 12:09

Engineering Log - Hand Auger


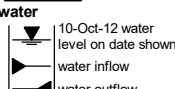
 client: **Domett Properties LTD**
 principal: -
 project: **12-20 Neeves Road**
 location: **Kaiapoi, Christchurch**

 Borehole ID: **HA03**
 sheet: 1 of 1
 project no. **773-CHCGE303819**
 date started: **24 Aug 2022**
 date completed: **24 Aug 2022**
 logged by: **B. Chau**
 checked by: **C. Thompson**

 position: Not Specified surface elevation: Not Specified angle from horizontal: 90° DCP id.: -
 drill model: Hand Auger drilling fluid: Hand Auger hole diameter: 50 mm vane id.: 1508

| drilling information | | | | material substance | | | | | | | | |
|----------------------|-------------|-----------------------|--------|--------------------|-------------|-------------------|---|--------------------|--------------------------------|-------------------|--------------------|--|
| method & support | penetration | samples & field tests | RL (m) | depth (m) | graphic log | soil group symbol | material description | moisture condition | consistency / relative density | vane shear (kPa) | DCP (blows/100 mm) | soil origin, structure and additional observations |
| 1 2 3 | | | | | | | SOIL NAME: plasticity or particle characteristics, colour, secondary and minor components | | | remoulded peak | | |
| HA | N | VS 125/ 54 kPa | | 0.5 | | ML | SILT: low plasticity, brown, with trace of rootlets. | M | | ⊕ | | TOPSOIL |
| | | VS 147/ 16 kPa | | 1.0 | | ML | SILT: low plasticity, pale brown-grey, with orange mottling. | | VSt | ⊕ | | SPRINGSTON FORMATION |
| | | VS 179/ 13 kPa | | 1.5 | | ML-MH | Clayey SILT: low to medium plasticity, pale grey with orange mottling. 1.2 m: mottling absent | W | | ⊕ | | |
| | | | | 1.5 | | SM | SILTY SAND: fine grained, pale grey, with trace of fine grained gravel. | S | MD | ⊕ | | |
| | | | | 2.0 | | | Hand Auger HA03 terminated at 1.6 m Refusal on inferred gravel | | | | | |
| | | | | 2.5 | | | | | | | | |
| | | | | 3.0 | | | | | | | | |
| | | | | 3.5 | | | | | | | | |

CDF_0_10_00.4_LIBRARY.GLB rev.CDF_0_10_00.4_2021-09-30 Log COF BOREHOLE: NON CORED *DCP 773-CHCGE303819 GINT FILE GPJ <<DrawingFile>> 14/09/2022 12:09

| | | | | |
|--|--|--|--|--|
| method DT diatube AD auger drilling* AS auger screwing* HA hand auger W washbore RR rock roller * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit | support M mud N nil C casing penetration  water  | samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing | soil group symbol & material description based on AS 1726:2017 moisture condition D dry M moist W wet S saturated Wp plastic limit Wl liquid limit | consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense |
|--|--|--|--|--|

Engineering Log - Hand Auger

 client: **Domett Properties LTD**

principal: -

 project: **12-20 Neeves Road**

 location: **Kaiapoi, Christchurch**

 Borehole ID: **HA04**

sheet: 1 of 1

 project no. **773-CHCGE303819**

 date started: **24 Aug 2022**


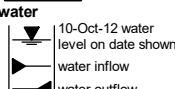
 date completed: **24 Aug 2022**

 logged by: **B. Chau**

 checked by: **C. Thompson**

 position: Not Specified surface elevation: Not Specified angle from horizontal: 90° DCP id.: -
 drill model: Hand Auger drilling fluid: Hand Auger hole diameter : 50 mm vane id.: 1508

| drilling information | | | | material substance | | | | | | | | |
|----------------------|-------------|-----------------------|--------|--------------------|-------------|-------------------|---|--------------------|--------------------------------|------------------|--------------------|--|
| method & support | penetration | samples & field tests | RL (m) | depth (m) | graphic log | soil group symbol | material description | moisture condition | consistency / relative density | vane shear (kPa) | DCP (blows/100 mm) | soil origin, structure and additional observations |
| 1 | 2 | | | | | | SOIL NAME: plasticity or particle characteristics, colour, secondary and minor components | | 50 | 100 | 200 | |
| HA | N | VS 144/45 kPa | | 0.0 | | ML | SILT: low plasticity, brown, with trace of rootlets. | M | | | | TOPSOIL DCP: 0.0-0.1m Selfweight |
| | | VS 166/61 kPa | | 0.5 | | ML | SILT: low plasticity, pale grey-brown with orange mottling. | VSt | | | | SPRINGSTON FORMATION |
| | | VS 144/45 kPa | | 1.0 | | ML-MH | Clayey SILT: low to medium plasticity, pale grey with orange mottling. | W | | | | |
| | | VS 96/54 kPa | | 1.5 | | | with trace of rootlets mottling absent | St | | | | |
| | | VS 185/16 kPa | | 2.0 | | ML | Sandy SILT: non plastic to low plasticity, pale grey. Hand Auger HA04 terminated at 2.0 m Target depth | VSt | | | | |

| | | | | |
|--|--|--|--|--|
| method DT diatube AD auger drilling* AS auger screwing* HA hand auger W washbore RR rock roller * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit | support M mud N nil C casing penetration  water  | samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing | soil group symbol & material description based on AS 1726:2017 moisture condition D dry M moist W wet S saturated Wp plastic limit Wl liquid limit | consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense |
|--|--|--|--|--|

CDF_0_10_00_4_LIBRARY.GLB rev.CDF_0_10_00_4_2021-09-30 Log COF BOREHOLE: NON CORED *DCP 773-CHCGE303819 GINT FILE.GPJ <<DrawingFile>> 14/09/2022 12:09

Engineering Log - Hand Auger


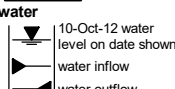
 client: **Domett Properties LTD**
 principal: -
 project: **12-20 Neeves Road**
 location: **Kaiapoi, Christchurch**

 Borehole ID: **HA05**
 sheet: 1 of 1
 project no. **773-CHCGE303819**
 date started: **24 Aug 2022**
 date completed: **24 Aug 2022**
 logged by: **B. Chau**
 checked by: **C. Thompson**

 position: Not Specified surface elevation: Not Specified angle from horizontal: 90° DCP id.: -
 drill model: Hand Auger drilling fluid: Hand Auger hole diameter : 50 mm vane id.: 1508

| drilling information | | | | material substance | | | | | | | | | |
|----------------------|-------------|-----------------------|-------|--------------------|-----------|-------------|-------------------|--|--------------------|--------------------------------|------------------|--------------------|--|
| method & support | penetration | samples & field tests | water | RL (m) | depth (m) | graphic log | soil group symbol | material description | moisture condition | consistency / relative density | vane shear (kPa) | DCP (blows/100 mm) | soil origin, structure and additional observations |
| | 1 2 3 | | | | | | | SOIL NAME: plasticity or particle characteristics, colour, secondary and minor components | | | remoulded peak | | |
| HA N RR | | VS 118/ 54 kPa | | | 0.0 - 0.5 | | ML | SILT: low plasticity, brown, with trace to minor fine grained gravel. | M | | ⊕ | | TOPSOIL |
| | | VS 160/ 64 kPa | | | 0.5 - 1.0 | | ML | SILT: low plasticity, pale brown-grey with orange mottling. | VSt | | ⊕ | | SPRINGSTON FORMATION |
| | | VS 192/ 51 kPa | | | 1.0 - 1.5 | | ML-MH | Clayey SILT: low to medium plasticity, pale grey with orange mottling. | M - W | | ⊕ | | |
| | | VS 169/ 61 kPa | | | 1.5 - 2.0 | | | | | | ⊕ | | |
| | | VS 157/ 61 kPa | | | 2.0 - 2.0 | | | | | | ⊕ | | |
| | | | | | 2.0 - 2.0 | | | Hand Auger HA05 terminated at 2.0 m Target depth | | | | | |

CDF_0_10_00.4_LIBRARY.GLB rev.CDF_0_10_00.4_2021-09-30 Log COF BOREHOLE: NON CORED + DCP 773-CHCGE303819 GINT FILE.GPJ <<DrawingFile>> 14/09/2022 12:09

| | | | | |
|--|--|--|--|--|
| method DT diatube AD auger drilling* AS auger screwing* HA hand auger W washbore RR rock roller * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit | support M mud N nil C casing penetration  water  | samples & field tests B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing | soil group symbol & material description based on AS 1726:2017 moisture condition D dry M moist W wet S saturated Wp plastic limit Wl liquid limit | consistency / relative density VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense |
|--|--|--|--|--|



DRILLHOLE BORELOG

Hole ID: BH02

Sheet: 1 of 2

Date: 18/02/2013

Project No.: 3534

Equipment: Dual tube

G.L.R.L.: 0.00m

Logged By: YUY

Project: 67 Main North Road

Drilling Co: McMillan Drilling

Max Depth: 19.85m

Checked By: NJT

Client: Byrne & Wauty Consultants Limited

Operator: R.Conkie

Inclination: 90°

Sampled By: YUY

North (m): 5194376.2 East (m): 1571196.8

Grid: NZTM

Location: Refer to site plan

| Geological Formation | STRATA DESCRIPTION | Graphic Log | Depth | Classification Symbol | Piezometer & Water Levels | TCR (%) | | | Drill Method | Samples | Tests | SPT (blows/mm) | | | | | | | | |
|----------------------|--|-------------|---|-----------------------|---------------------------|--|----|----|--------------|---------|---|----------------|----|----|----|----|--|--|--|--|
| | | | | | | 25 | 50 | 75 | | | | 10 | 20 | 30 | 40 | 50 | | | | |
| | No Sample. | C/L | | | | | | | | | | | | | | | | | | |
| | Asphalt and GRAVEL (FILL). | | | | | | | | | | | | | | | | | | | |
| | SILT w with minor Sand; grey brown mottled yellow. Very fine Sand, low plasticity. -1.7m, trace of Sand. Very fine Sand, medium plasticity. -2.0m, low plasticity. -4.2-4.3m, trace of Peat. -4.5m, high plasticity. -6.0-6.2m, trace of shell fragments. -7.8-7.9m, some Sand. Fine Sand. -7.9m, minor Sand. Fine Sand. | | 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 | MH | | 70% 90% 75% 90% 80% 80% | | | | | 1.50m SPT (C) 3.00m SPT (C) 4.50m SPT (C) 6.00m SPT (C) 7.50m SPT (C) | | | | | | | | | |
| | SAND w with minor Silt; dark grey. Fine Sand. -9.6-10.1m, minor shell fragments. | | 10.0 | | | 100% | | | | | 9.00m SPT (C) | | | | | | | | | |
| | SAND w with trace of Silt; yellow brown. Fine to coarse Sand. | | 11.0 | | | 85% | | | | | 10.50m SPT (C) | | | | | | | | | |
| | Gravelly SAND; yellow brown. Fine to coarse Sand, fine to coarse Gravel. Sub-rounded to rounded. | | 12.0 13.0 14.0 15.0 | SP | | 20% 20% | | | | | 12.00m SPT (C) 13.50m SPT (C) | | | | | | | | | |

Remarks: Static Water Levels:
1.02m @ Casing depth of 18.75m
1000 Litres Water added. Safety Auto Trip Hammer #396 used (energy ratio 83%)



DRILLHOLE BORELOG

Hole ID: BH02

Sheet: 2 of 2

Date: 18/02/2013

Project No.: 3534

Equipment: Dual tube

G.L R.L.: 0.00m

Logged By: YUY

Project: 67 Main North Road

Drilling Co: McMillan Drilling

Max Depth: 19.85m

Checked By: NJT

Client: Byrne & Wauty Consultants Limited

Operator: R.Conkie

Inclination: 90°

Sampled By: YUY

North (m): 5194376.2 East (m): 1571196.8

Grid: NZTM

Location: Refer to site plan

| Geological Formation | STRATA DESCRIPTION | Graphic Log | Depth | Classification Symbol | Piezometer & Water Levels | TCR (%) | | | Drill Method | Samples | Tests | SPT (blows/mm) | | | | | |
|----------------------|--|-------------|-------|-----------------------|---------------------------|---------|----|----|--------------|---------|----------------|----------------|----|----|----|----|----------------|
| | | | | | | 25 | 50 | 75 | | | | 10 | 20 | 30 | 40 | 50 | |
| | SAND; yellow brow n. Fine to medium Sand. | | | SP | | | | | | | 15.00m SPT (C) | | | | | | 60 |
| | Sandy GRAVEL w ith trace of Silt; grey brow n. Fine to coarse Sand, fine to coarse Gravel. Sub-rounded to rounded. | | | GW | | 30% | | | | | | | | | | | 60/125mm |
| | No Sample. | C/L | 16.0 | | | | | | | | | | | | | | |
| | | C/L | | | | | | | | | 16.50m SPT (C) | | | | | | 60 |
| | | C/L | 17.0 | | | | | | | | | | | | | | 60/135mm |
| | | C/L | | | | | | | | | 17.25m SPT (C) | | | | | | 14 35 26 |
| | | C/L | 18.0 | | | | | | | | | | | | | | 60/300mm |
| | | C/L | | | | | | | | | 18.00m SPT (C) | | | | | | 28 40 20 |
| | | C/L | 19.0 | | | | | | | | | | | | | | 60/235mm |
| | | C/L | | | | | | | | | 18.75m SPT (C) | | | | | | 22 19 27 |
| | | C/L | | | | | | | | | | | | | | | 46/300mm |
| | | C/L | | | | | | | | | 19.50m SPT (C) | | | | | | 27 44 |

EOH: 19.85m

16
60/200mm

Remarks: Static Water Levels:
1.02m @ Casing depth of 18.75m
1000 Litres Water added. Safety Auto Trip Hammer #396 used (energy ratio 83%)



DRILLHOLE BORELOG

Hole ID: BH02

Sheet: 1 of 2

Date: 18/02/2013

Project No.: 3534

Equipment: Dual tube

G.L.R.L.: 0.00m

Logged By: YUY

Project: 67 Main North Road

Drilling Co: McMillan Drilling

Max Depth: 19.85m

Checked By: NJT

Client: Byrne & Wauty Consultants Limited

Operator: R.Conkie

Inclination: 90°

Sampled By: YUY

North (m): 5194376.2 East (m): 1571196.8

Grid: NZTM

Location: Refer to site plan

| Geological Formation | STRATA DESCRIPTION | Graphic Log | Depth | Classification Symbol | Piezometer & Water Levels | TCR (%) | | | Drill Method | Samples | Tests | SPT (blows/mm) | | | | | | |
|----------------------|--|-------------|---|-----------------------|---------------------------|--|----|----|--------------|---|-------|---|----|----|----|----|--|--|
| | | | | | | 25 | 50 | 75 | | | | 10 | 20 | 30 | 40 | 50 | | |
| | No Sample. | C/L | | | | | | | | | | | | | | | | |
| | Asphalt and GRAVEL (FILL). | | | | | | | | | | | | | | | | | |
| | SILT w with minor Sand; grey brown mottled yellow. Very fine Sand, low plasticity. -1.7m, trace of Sand. Very fine Sand, medium plasticity. -2.0m, low plasticity. -4.2-4.3m, trace of Peat. -4.5m, high plasticity. -6.0-6.2m, trace of shell fragments. -7.8-7.9m, some Sand. Fine Sand. -7.9m, minor Sand. Fine Sand. | | 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 | MH | | 70% 90% 75% 90% 80% 80% | | | | 1.50m SPT (C) 3.00m SPT (C) 4.50m SPT (C) 6.00m SPT (C) 7.50m SPT (C) | | 2/300mm 3/300mm 0/300mm 0/300mm 0/300mm | | | | | | |
| | SAND w with minor Silt; dark grey. Fine Sand. -9.6-10.1m, minor shell fragments. | | 10.0 | | | 100% | | | | 9.00m SPT (C) | | 4/300mm | | | | | | |
| | SAND w with trace of Silt; yellow brown. Fine to coarse Sand. | | 11.0 | | | 85% | | | | 10.50m SPT (C) | | 24/300mm | | | | | | |
| | Gravelly SAND; yellow brown. Fine to coarse Sand, fine to coarse Gravel. Sub-rounded to rounded. | | 12.0 13.0 14.0 15.0 | SP | | 20% 20% | | | | 12.00m SPT (C) 13.50m SPT (C) | | 7/300mm 50/300mm | | | | | | |

Remarks: Static Water Levels:
1.02m @ Casing depth of 18.75m
1000 Litres Water added. Safety Auto Trip Hammer #396 used (energy ratio 83%)



DRILLHOLE BORELOG

Hole ID: BH02

Sheet: 2 of 2

Date: 18/02/2013

Project No.: 3534 Equipment: Dual tube G.L.R.L.: 0.00m Logged By: YUY
 Project: 67 Main North Road Drilling Co: McMillan Drilling Max Depth: 19.85m Checked By: NJT
 Client: Byrne & Wauty Consultants Limited Operator: R.Conkie Inclination: 90° Sampled By: YUY
 North (m): 5194376.2 East (m): 1571196.8 Grid: NZTM Location: Refer to site plan

| Geological Formation | STRATA DESCRIPTION | Graphic Log | Depth | Classification Symbol | Piezometer & Water Levels | TCR (%) | | | Drill Method | Samples | Tests | SPT (blows/mm) | | | | | |
|----------------------|---|-------------|-------|-----------------------|---------------------------|---------|----|----|--------------|---------|----------------|----------------|----|----|----|----|----------------|
| | | | | | | 25 | 50 | 75 | | | | 10 | 20 | 30 | 40 | 50 | |
| | SAND; yellow brow n. Fine to medium Sand. | | | SP | | | | | | | 15.00m SPT (C) | | | | | | 60 |
| | Sandy GRAVEL with trace of Silt; grey brow n. Fine to coarse Sand, fine to coarse Gravel. Sub-rounded to rounded. | | | GW | | 30% | | | | | | | | | | | 60/125mm |
| | No Sample. | C/L | 16.0 | | | | | | | | | | | | | | |
| | | C/L | | | | | | | | | 16.50m SPT (C) | | | | | | 60 |
| | | C/L | 17.0 | | | | | | | | | | | | | | 60/135mm |
| | | C/L | | | | | | | | | 17.25m SPT (C) | | | | | | 14 35 26 |
| | | C/L | 18.0 | | | | | | | | | | | | | | 60/300mm |
| | | C/L | | | | | | | | | 18.00m SPT (C) | | | | | | 28 40 20 |
| | | C/L | 19.0 | | | | | | | | | | | | | | 60/235mm |
| | | C/L | | | | | | | | | 18.75m SPT (C) | | | | | | 22 19 27 |
| | | C/L | | | | | | | | | | | | | | | 46/300mm |
| | | C/L | | | | | | | | | 19.50m SPT (C) | | | | | | 27 44 |

EOH: 19.85m

16
60/200mm

Remarks: Static Water Levels:
 1.02m @ Casing depth of 18.75m
 1000 Litres Water added. Safety Auto Trip Hammer #396 used (energy ratio 83%)

Borelog for well BW24/0563

Grid Reference (NZTM): 1571134 mE, 5194510 mN

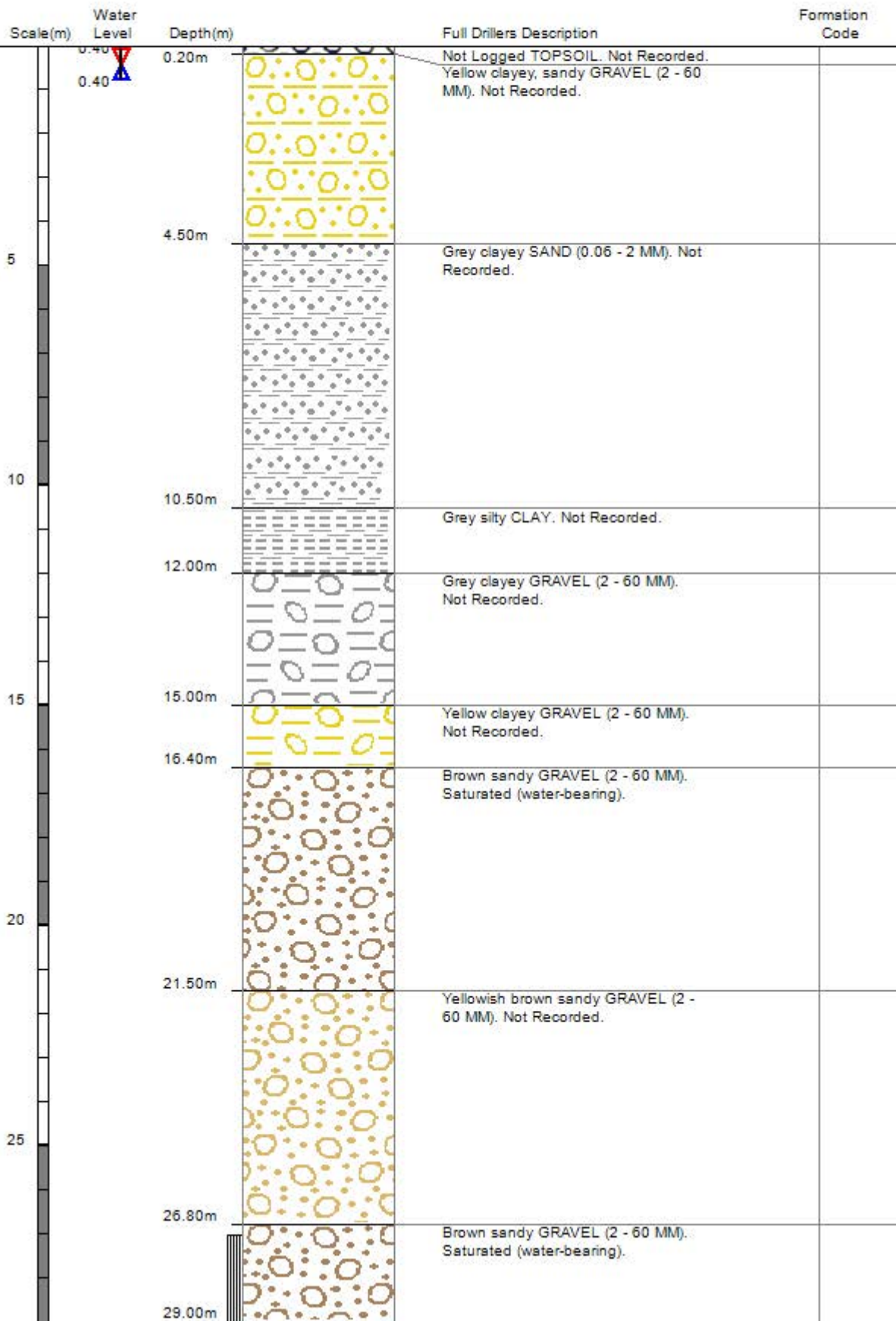
Location Accuracy: 50 - 300m

Ground Level Altitude: m +MSD Accuracy:

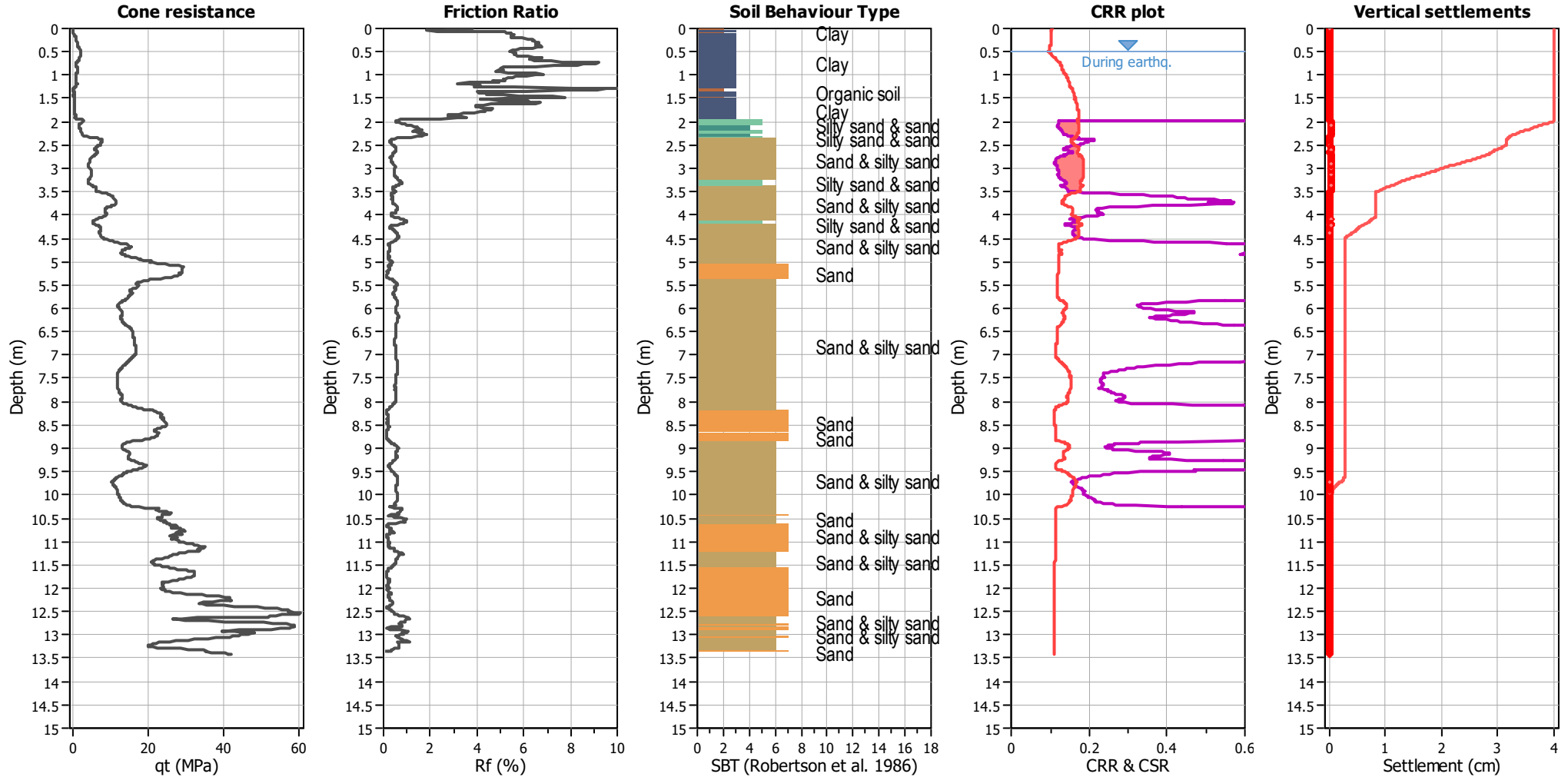
Driller: Clemence Drilling Contractors

Drill Method: Rotary/Percussion

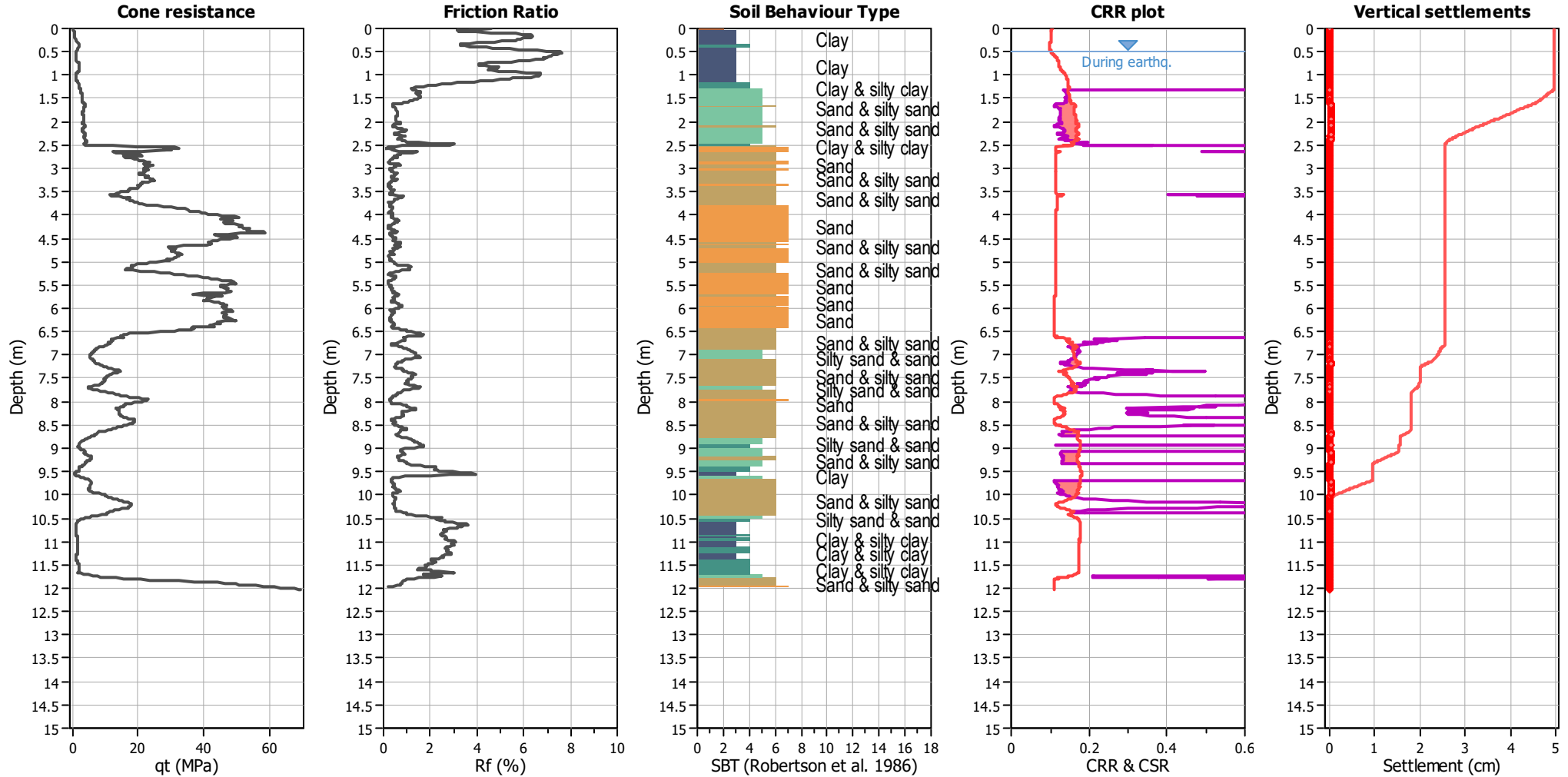
Borelog Depth: 29.0 m Drill Date: 17-Sep-2020



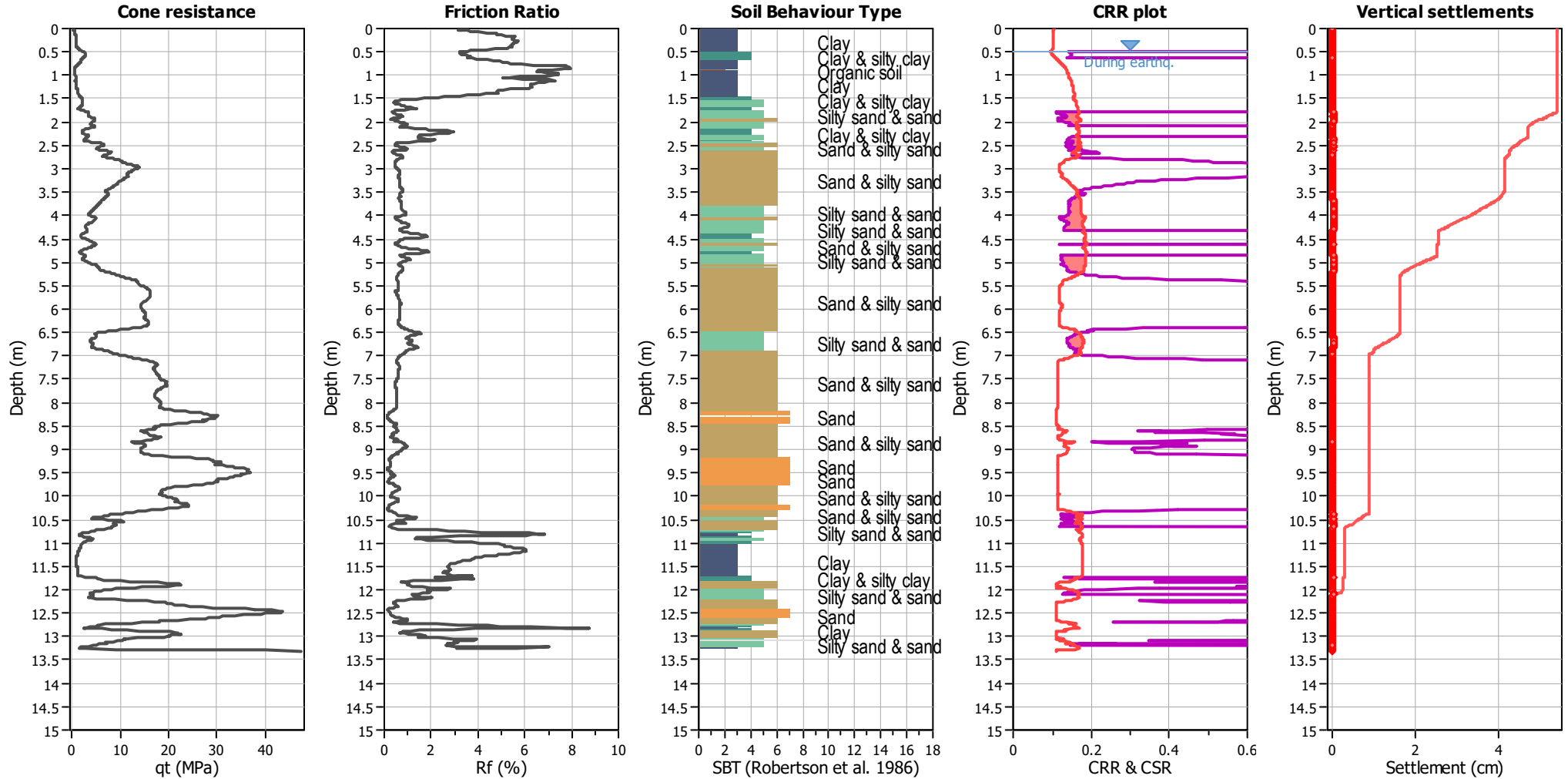
APPENDIX C: LIQUEFACTION ANALYSES



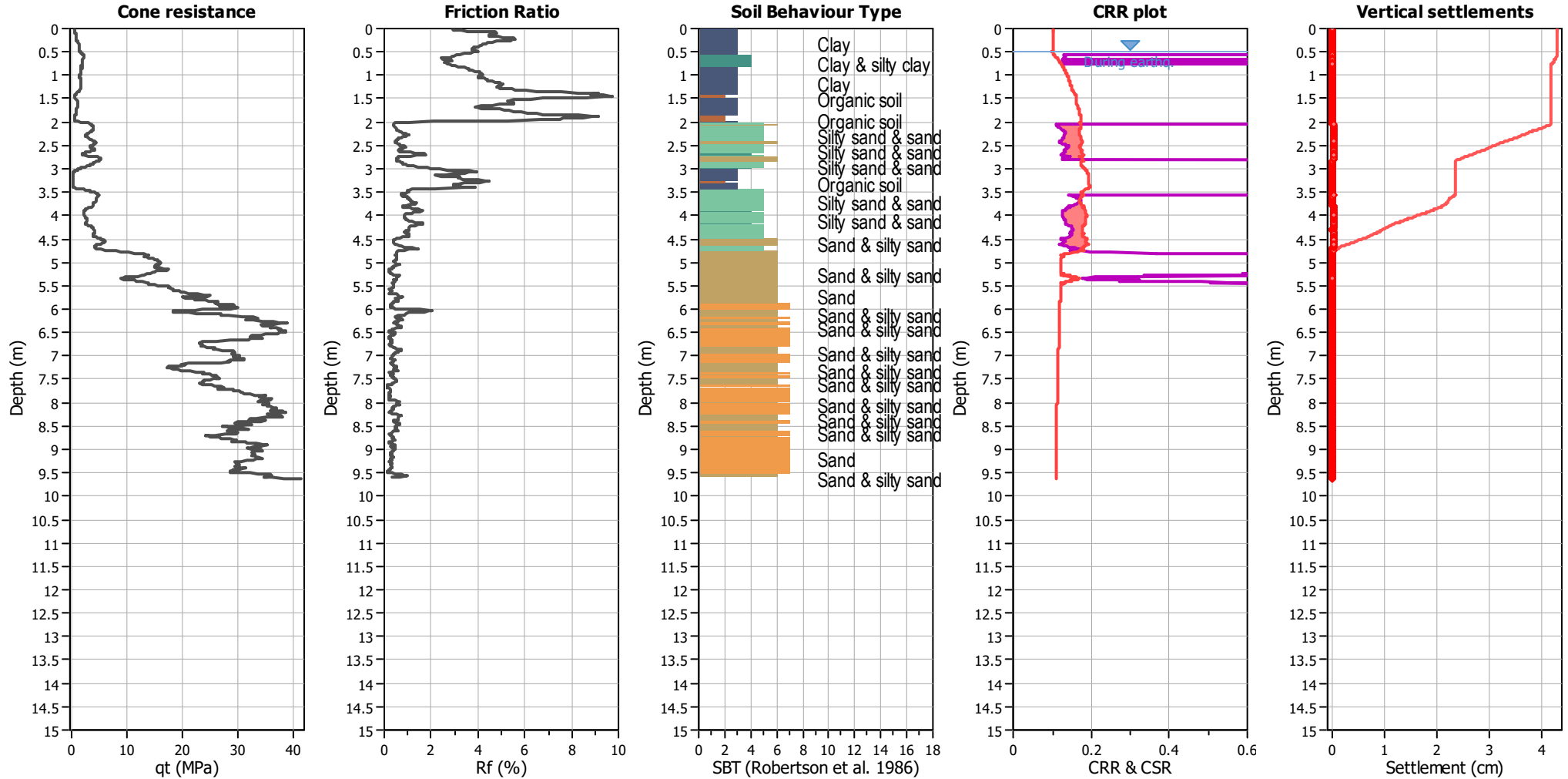
| | | | | | | | |
|------------------------------|-------------------|---------------------------|--------------|-------------------------|-----|----------------------|--------------|
| Analysis method: | B&I (2014) | G.W.T. (in-situ): | 0.50 m | Use fill: | No | Clay like behavior | |
| Fines correction method: | B&I (2014) | G.W.T. (earthq.): | 0.50 m | Fill height: | N/A | applied: | . |
| Points to test: | Based on Ic value | Average results interval: | 3 | Fill weight: | N/A | Limit depth applied: | No |
| Earthquake magnitude M_w : | 6.00 | Ic cut-off value: | 2.60 | Trans. detect. applied: | Yes | Limit depth: | N/A |
| Peak ground acceleration: | 0.19 | Unit weight calculation: | Based on SBT | K_σ applied: | Yes | MSF method: | Method based |



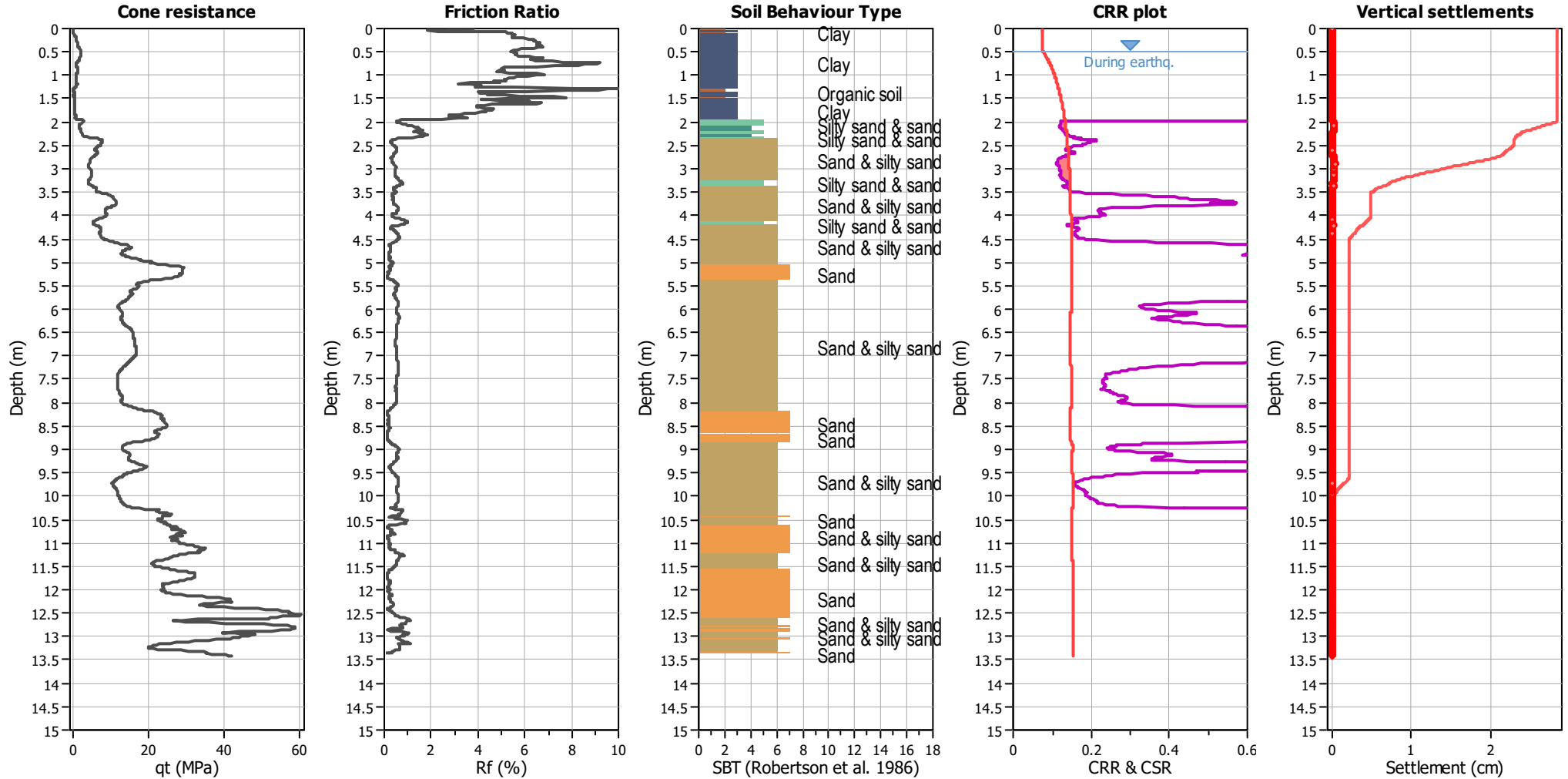
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|------------------------------|-------------------|---------------------------|--------------|-------------------------|-----|----------------------|--------------|
| Analysis method: | B&I (2014) | G.W.T. (in-situ): | 0.50 m | Use fill: | No | Clay like behavior | |
| Fines correction method: | B&I (2014) | G.W.T. (earthq.): | 0.50 m | Fill height: | N/A | applied: | . |
| Points to test: | Based on Ic value | Average results interval: | 3 | Fill weight: | N/A | Limit depth applied: | No |
| Earthquake magnitude M_w : | 6.00 | Ic cut-off value: | 2.60 | Trans. detect. applied: | Yes | Limit depth: | N/A |
| Peak ground acceleration: | 0.19 | Unit weight calculation: | Based on SBT | K_σ applied: | Yes | MSF method: | Method based |



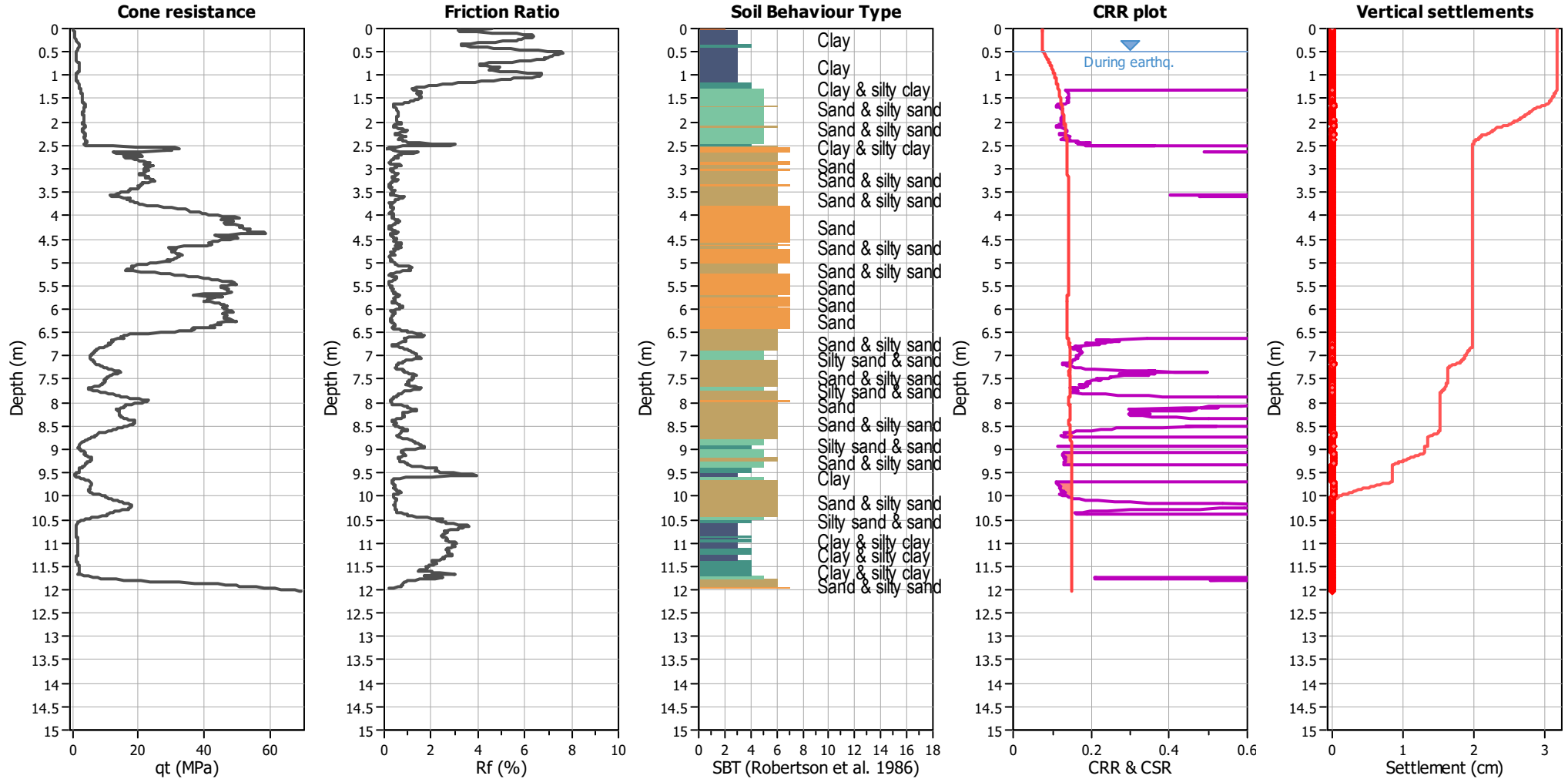
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|------------------------------|-------------------|---------------------------|--------------|-------------------------|-----|----------------------|--------------|
| Analysis method: | B&I (2014) | G.W.T. (in-situ): | 0.50 m | Use fill: | No | Clay like behavior | |
| Fines correction method: | B&I (2014) | G.W.T. (earthq.): | 0.50 m | Fill height: | N/A | applied: | . |
| Points to test: | Based on Ic value | Average results interval: | 3 | Fill weight: | N/A | Limit depth applied: | No |
| Earthquake magnitude M_w : | 6.00 | Ic cut-off value: | 2.60 | Trans. detect. applied: | Yes | Limit depth: | N/A |
| Peak ground acceleration: | 0.19 | Unit weight calculation: | Based on SBT | K_σ applied: | Yes | MSF method: | Method based |



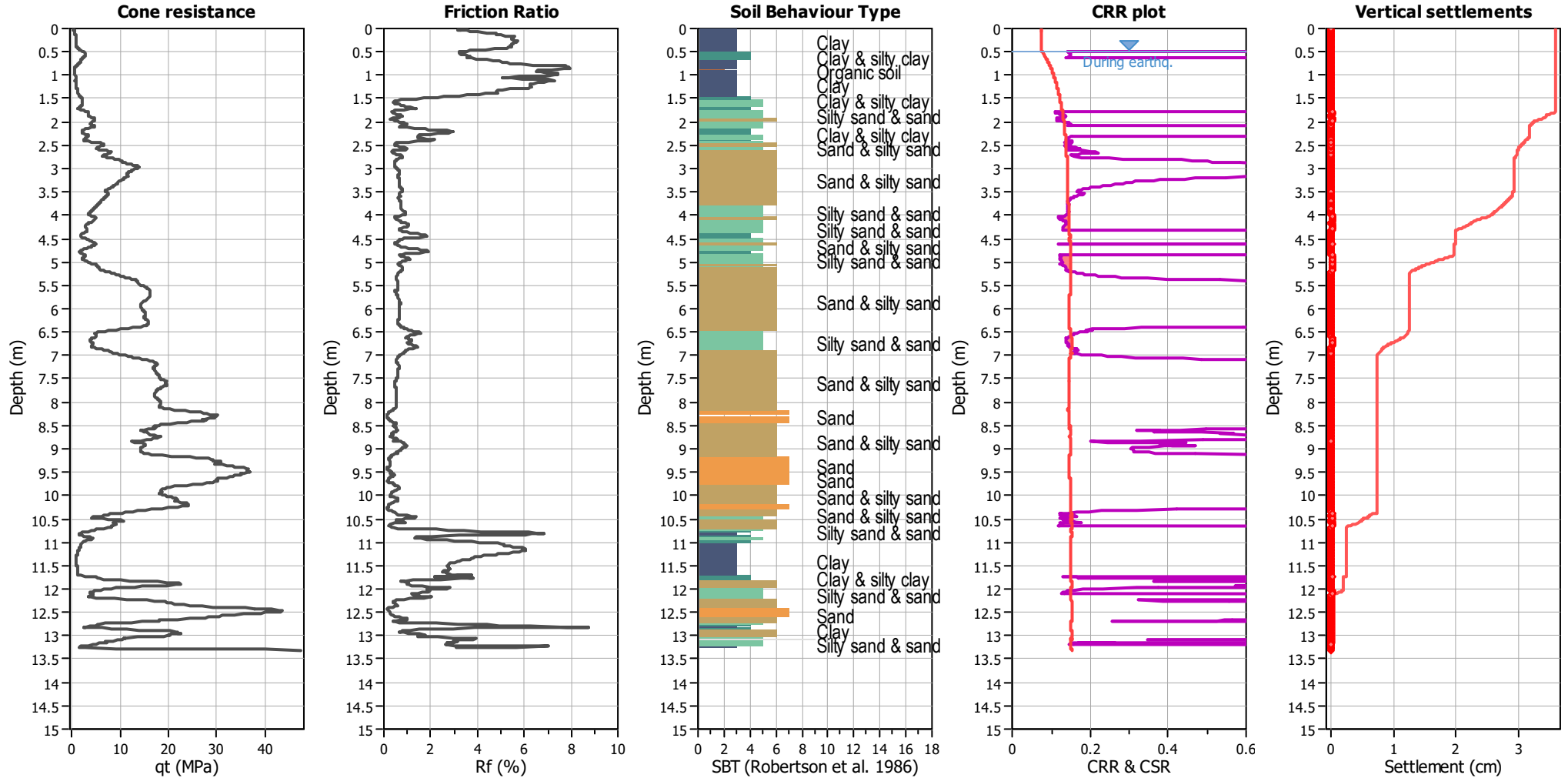
| | | | | | | | |
|------------------------------|-------------------|---------------------------|--------------|-------------------------|-----|----------------------|--------------|
| Analysis method: | B&I (2014) | G.W.T. (in-situ): | 0.50 m | Use fill: | No | Clay like behavior | |
| Fines correction method: | B&I (2014) | G.W.T. (earthq.): | 0.50 m | Fill height: | N/A | applied: | . |
| Points to test: | Based on Ic value | Average results interval: | 3 | Fill weight: | N/A | Limit depth applied: | No |
| Earthquake magnitude M_w : | 6.00 | Ic cut-off value: | 2.60 | Trans. detect. applied: | Yes | Limit depth: | N/A |
| Peak ground acceleration: | 0.19 | Unit weight calculation: | Based on SBT | K_σ applied: | Yes | MSF method: | Method based |



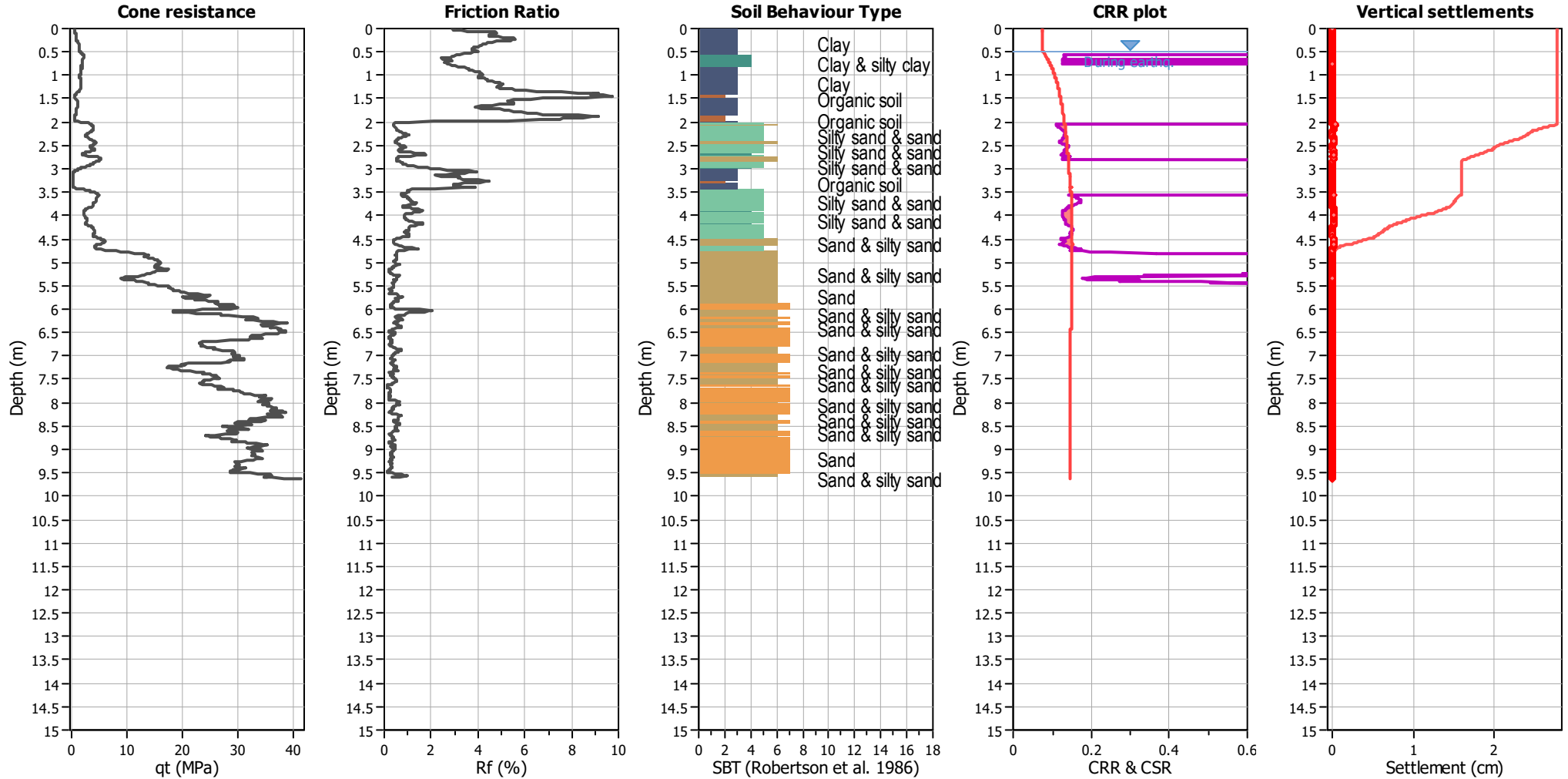
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|------------------------------|-------------------|---------------------------|--------------|-------------------------|-----|----------------------|--------------|
| Analysis method: | B&I (2014) | G.W.T. (in-situ): | 0.50 m | Use fill: | No | Clay like behavior | |
| Fines correction method: | B&I (2014) | G.W.T. (earthq.): | 0.50 m | Fill height: | N/A | applied: | . |
| Points to test: | Based on Ic value | Average results interval: | 3 | Fill weight: | N/A | Limit depth applied: | No |
| Earthquake magnitude M_w : | 7.50 | Ic cut-off value: | 2.60 | Trans. detect. applied: | Yes | Limit depth: | N/A |
| Peak ground acceleration: | 0.13 | Unit weight calculation: | Based on SBT | K_σ applied: | Yes | MSF method: | Method based |



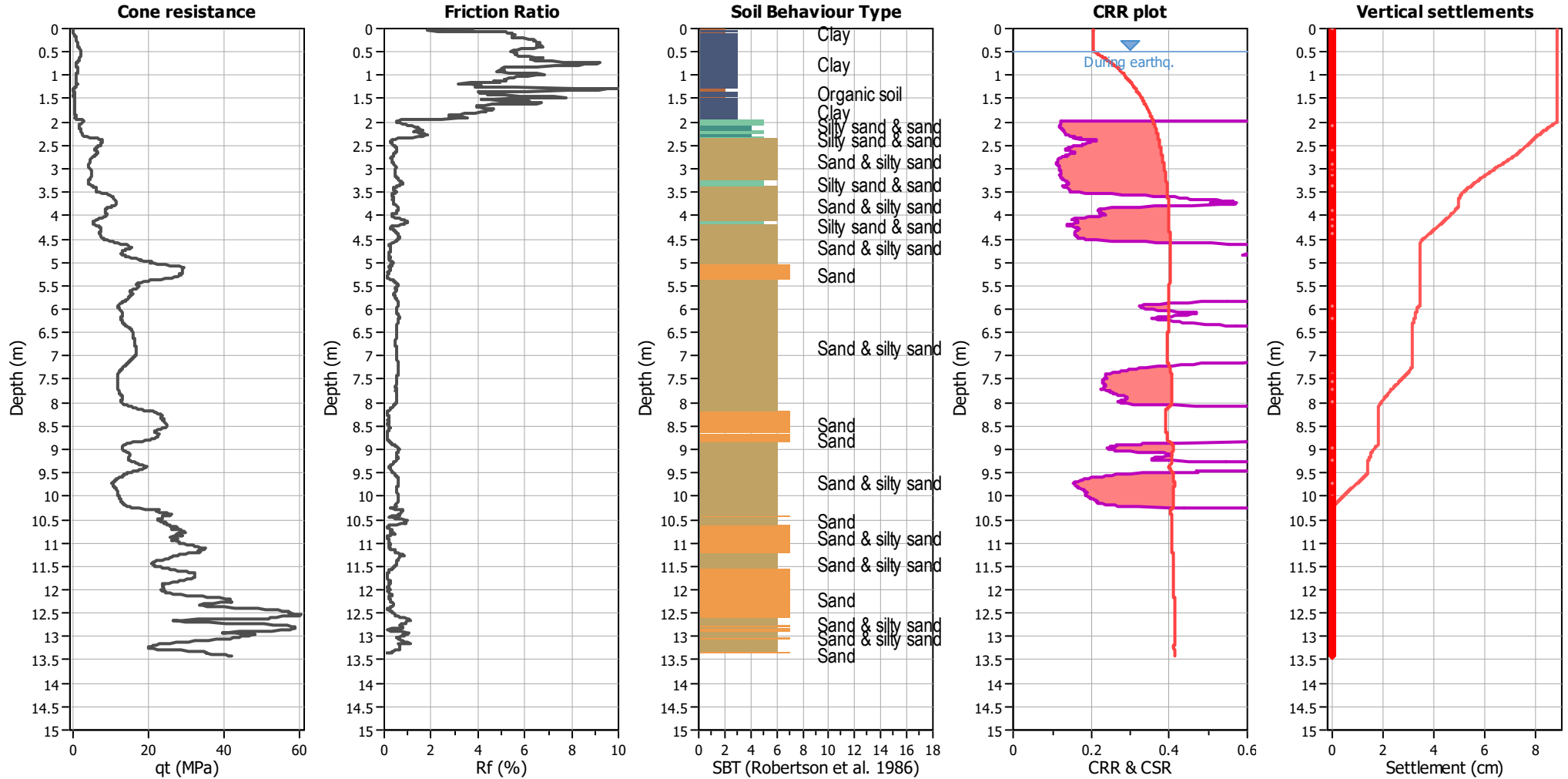
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|------------------------------|-------------------|---------------------------|--------------|-------------------------|-----|----------------------|--------------|
| Analysis method: | B&I (2014) | G.W.T. (in-situ): | 0.50 m | Use fill: | No | Clay like behavior | |
| Fines correction method: | B&I (2014) | G.W.T. (earthq.): | 0.50 m | Fill height: | N/A | applied: | . |
| Points to test: | Based on Ic value | Average results interval: | 3 | Fill weight: | N/A | Limit depth applied: | No |
| Earthquake magnitude M_w : | 7.50 | Ic cut-off value: | 2.60 | Trans. detect. applied: | Yes | Limit depth: | N/A |
| Peak ground acceleration: | 0.13 | Unit weight calculation: | Based on SBT | K_σ applied: | Yes | MSF method: | Method based |



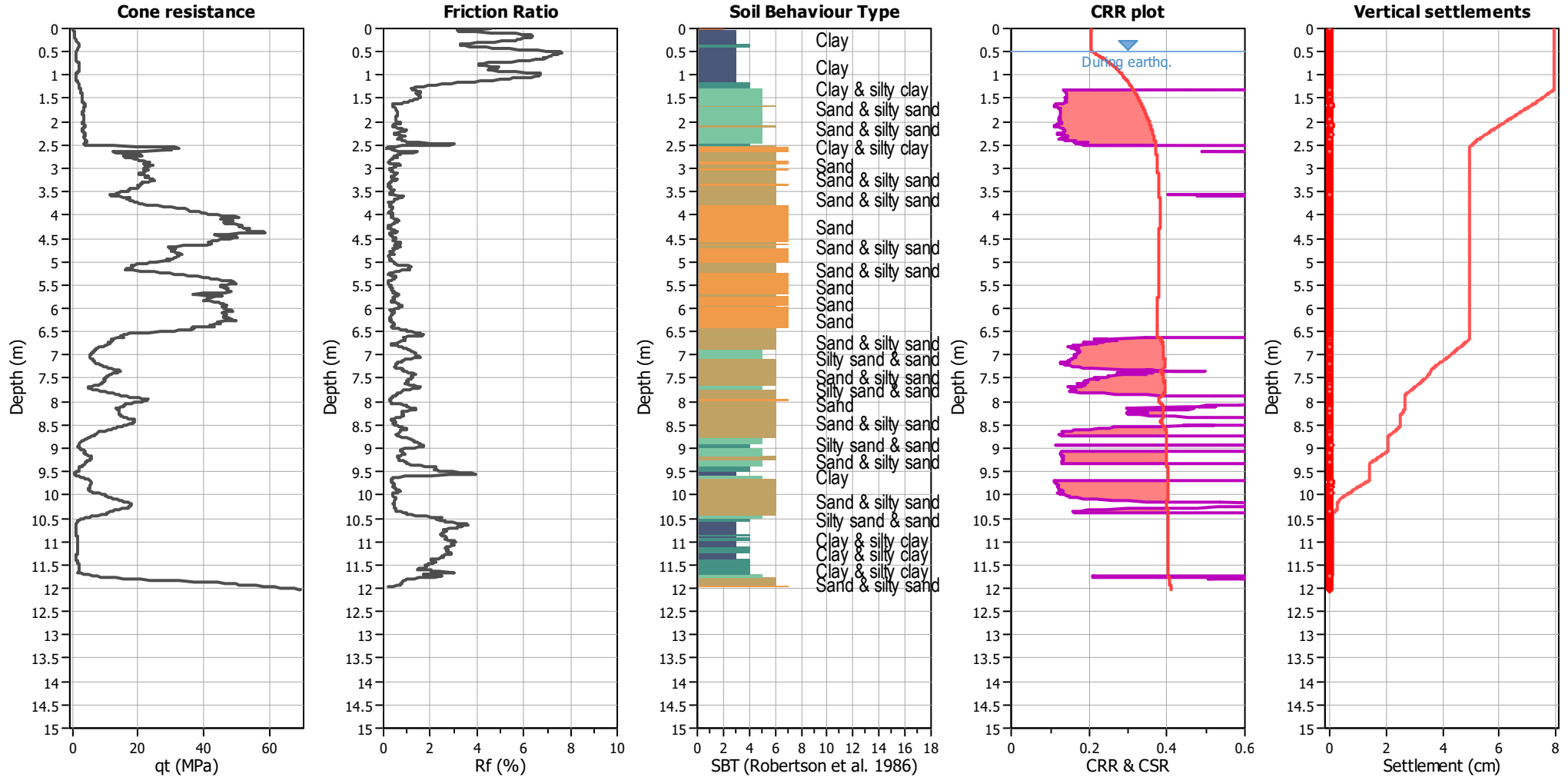
| | | | | | | | |
|------------------------------|-------------------|---------------------------|--------------|-------------------------|-----|----------------------|--------------|
| Analysis method: | B&I (2014) | G.W.T. (in-situ): | 0.50 m | Use fill: | No | Clay like behavior | |
| Fines correction method: | B&I (2014) | G.W.T. (earthq.): | 0.50 m | Fill height: | N/A | applied: | . |
| Points to test: | Based on Ic value | Average results interval: | 3 | Fill weight: | N/A | Limit depth applied: | No |
| Earthquake magnitude M_w : | 7.50 | Ic cut-off value: | 2.60 | Trans. detect. applied: | Yes | Limit depth: | N/A |
| Peak ground acceleration: | 0.13 | Unit weight calculation: | Based on SBT | K_σ applied: | Yes | MSF method: | Method based |



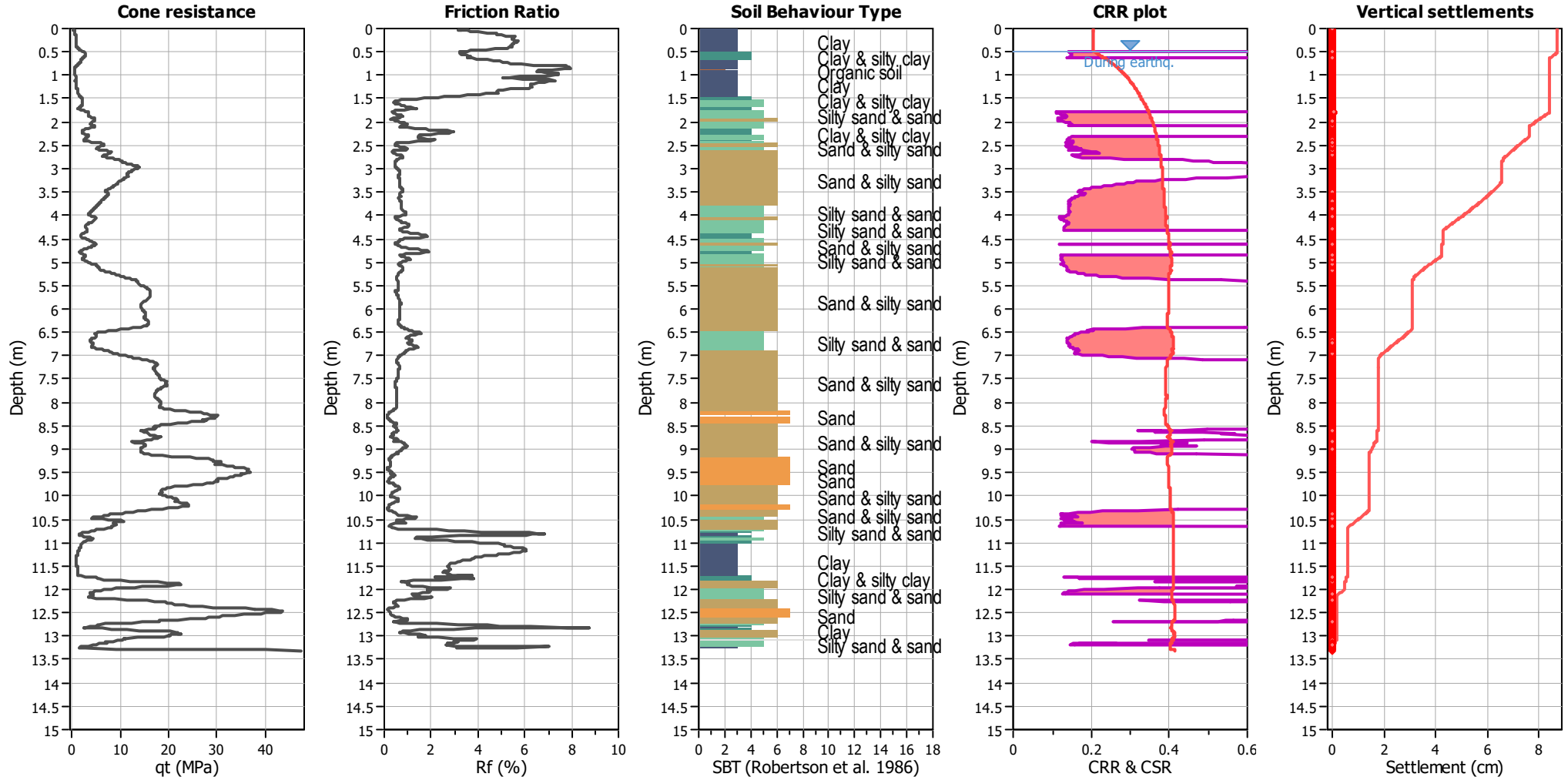
| | | | | | | | |
|------------------------------|-------------------|---------------------------|--------------|-------------------------|-----|----------------------|--------------|
| Analysis method: | B&I (2014) | G.W.T. (in-situ): | 0.50 m | Use fill: | No | Clay like behavior | |
| Fines correction method: | B&I (2014) | G.W.T. (earthq.): | 0.50 m | Fill height: | N/A | applied: | . |
| Points to test: | Based on Ic value | Average results interval: | 3 | Fill weight: | N/A | Limit depth applied: | No |
| Earthquake magnitude M_w : | 7.50 | Ic cut-off value: | 2.60 | Trans. detect. applied: | Yes | Limit depth: | N/A |
| Peak ground acceleration: | 0.13 | Unit weight calculation: | Based on SBT | K_σ applied: | Yes | MSF method: | Method based |



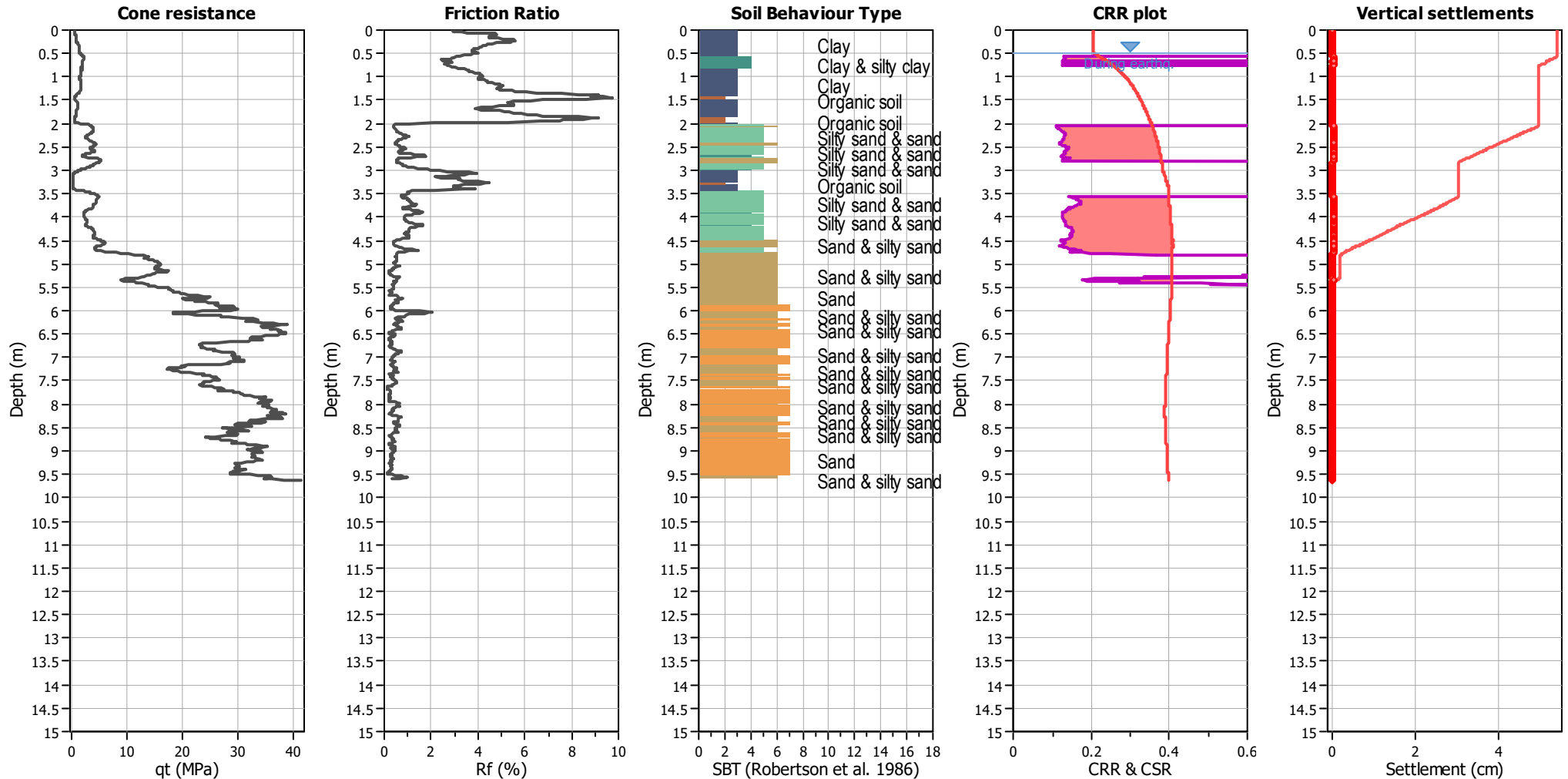
| | | | | | | | |
|------------------------------|-------------------|---------------------------|--------------|-------------------------|-----|----------------------|--------------|
| Analysis method: | B&I (2014) | G.W.T. (in-situ): | 0.50 m | Use fill: | No | Clay like behavior | |
| Fines correction method: | B&I (2014) | G.W.T. (earthq.): | 0.50 m | Fill height: | N/A | applied: | . |
| Points to test: | Based on Ic value | Average results interval: | 3 | Fill weight: | N/A | Limit depth applied: | No |
| Earthquake magnitude M_w : | 7.50 | Ic cut-off value: | 2.60 | Trans. detect. applied: | Yes | Limit depth: | N/A |
| Peak ground acceleration: | 0.35 | Unit weight calculation: | Based on SBT | K_σ applied: | Yes | MSF method: | Method based |



| | | | | | | | |
|------------------------------|-------------------|---------------------------|--------------|-------------------------|-----|----------------------|--------------|
| Analysis method: | B&I (2014) | G.W.T. (in-situ): | 0.50 m | Use fill: | No | Clay like behavior | |
| Fines correction method: | B&I (2014) | G.W.T. (earthq.): | 0.50 m | Fill height: | N/A | applied: | . |
| Points to test: | Based on Ic value | Average results interval: | 3 | Fill weight: | N/A | Limit depth applied: | No |
| Earthquake magnitude M_w : | 7.50 | Ic cut-off value: | 2.60 | Trans. detect. applied: | Yes | Limit depth: | N/A |
| Peak ground acceleration: | 0.35 | Unit weight calculation: | Based on SBT | K_σ applied: | Yes | MSF method: | Method based |



| | | | | | | | |
|------------------------------|-------------------|---------------------------|--------------|-------------------------|-----|----------------------|--------------|
| Analysis method: | B&I (2014) | G.W.T. (in-situ): | 0.50 m | Use fill: | No | Clay like behavior | |
| Fines correction method: | B&I (2014) | G.W.T. (earthq.): | 0.50 m | Fill height: | N/A | applied: | . |
| Points to test: | Based on Ic value | Average results interval: | 3 | Fill weight: | N/A | Limit depth applied: | No |
| Earthquake magnitude M_w : | 7.50 | Ic cut-off value: | 2.60 | Trans. detect. applied: | Yes | Limit depth: | N/A |
| Peak ground acceleration: | 0.35 | Unit weight calculation: | Based on SBT | K_σ applied: | Yes | MSF method: | Method based |

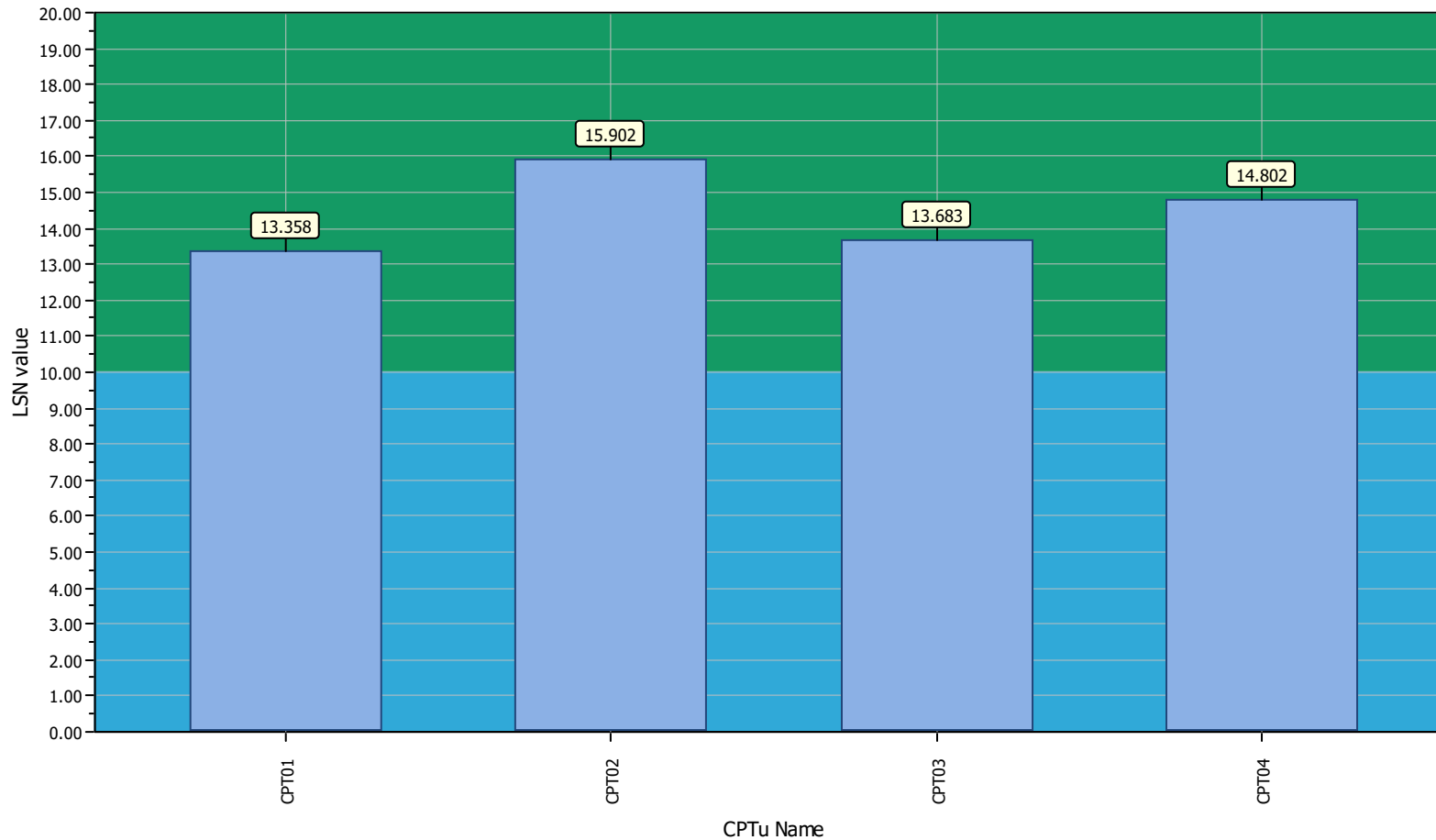


| | | | | | | | |
|------------------------------|-------------------|---------------------------|--------------|-------------------------|-----|----------------------|--------------|
| Analysis method: | B&I (2014) | G.W.T. (in-situ): | 0.50 m | Use fill: | No | Clay like behavior | |
| Fines correction method: | B&I (2014) | G.W.T. (earthq.): | 0.50 m | Fill height: | N/A | applied: | . |
| Points to test: | Based on Ic value | Average results interval: | 3 | Fill weight: | N/A | Limit depth applied: | No |
| Earthquake magnitude M_w : | 7.50 | Ic cut-off value: | 2.60 | Trans. detect. applied: | Yes | Limit depth: | N/A |
| Peak ground acceleration: | 0.35 | Unit weight calculation: | Based on SBT | K_σ applied: | Yes | MSF method: | Method based |

Project title : 12-20 Neeves Road - SLS (0.19g)

Location : Kaiapoi

Overall Liquefaction Severity Number report



LSN color scheme

- Severe damage
- Major expression of liquefaction
- Moderate to severe exp. of liquefaction
- Moderate expression of liquefaction
- Minor expression of liquefaction
- Little to no expression of liquefaction

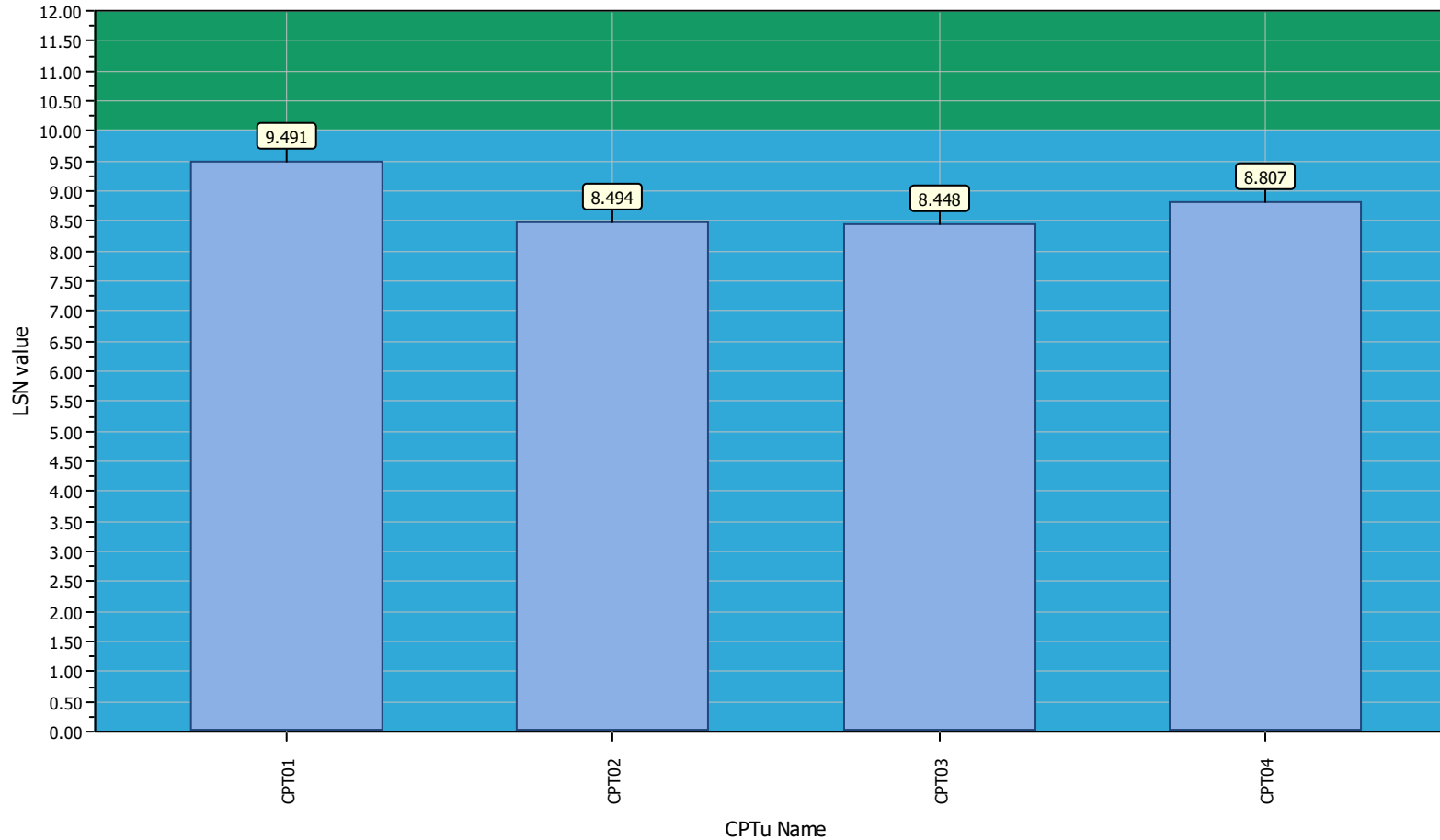
Basic statistics

- Total CPT number: 4
- 0% little liquefaction
- 100% minor liquefaction
- 0% moderate liquefaction
- 0% moderate to major liquefaction
- 0% major liquefaction
- 0% severe liquefaction

Project title : 12-20 Neeves Road - SLS (0.13g)

Location : Kaiapoi

Overall Liquefaction Severity Number report



LSN color scheme

- Severe damage
- Major expression of liquefaction
- Moderate to severe exp. of liquefaction
- Moderate expression of liquefaction
- Minor expression of liquefaction
- Little to no expression of liquefaction

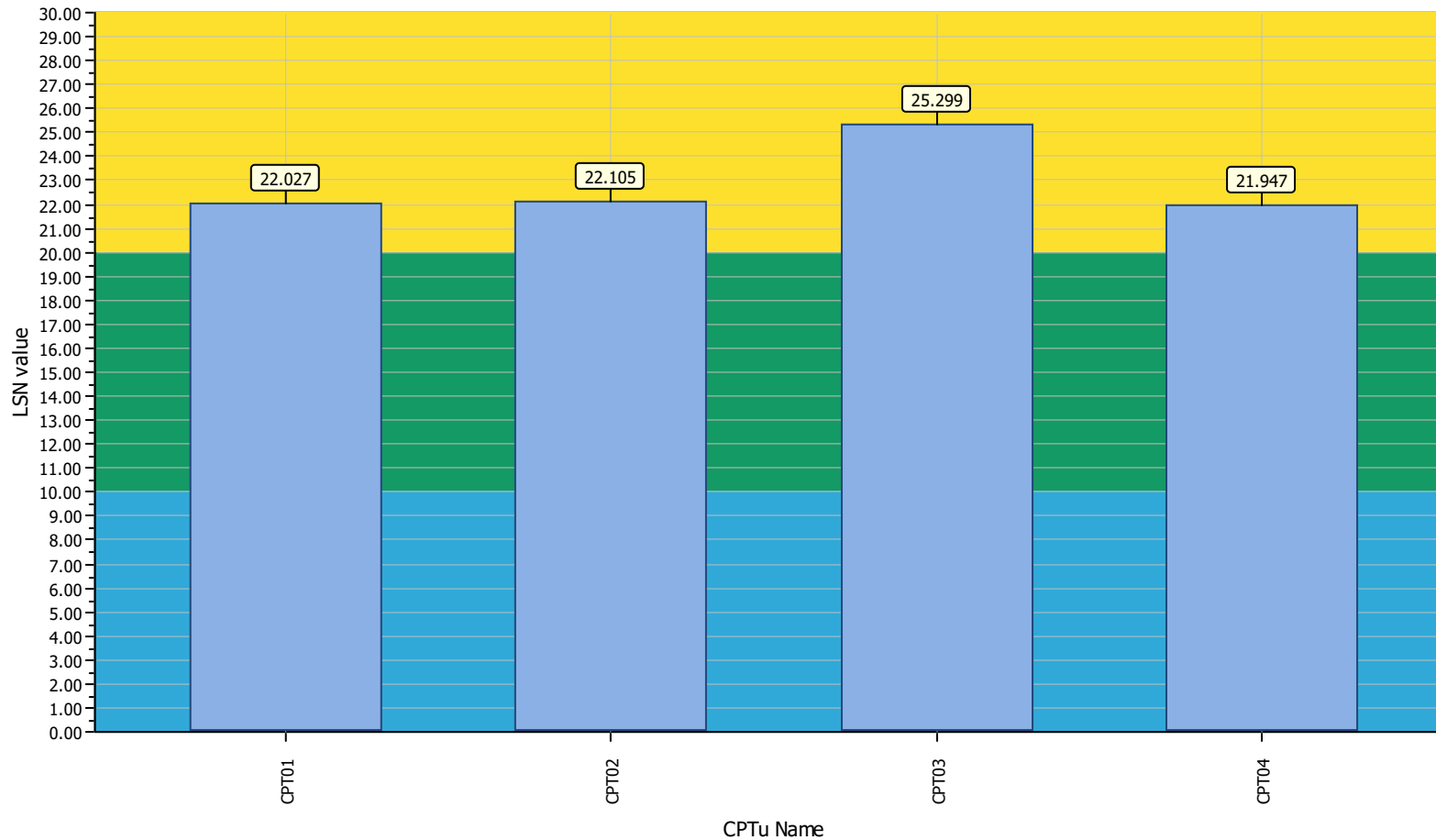
Basic statistics

- Total CPT number: 4
- 100% little liquefaction
- 0% minor liquefaction
- 0% moderate liquefaction
- 0% moderate to major liquefaction
- 0% major liquefaction
- 0% severe liquefaction

Project title : 12-20 Neeves Road - ULS

Location : Kaiapoi

Overall Liquefaction Severity Number report



LSN color scheme

- Severe damage
- Major expression of liquefaction
- Moderate to severe exp. of liquefaction
- Moderate expression of liquefaction
- Minor expression of liquefaction
- Little to no expression of liquefaction

Basic statistics

- Total CPT number: 4
- 0% little liquefaction
- 0% minor liquefaction
- 100% moderate liquefaction
- 0% moderate to major liquefaction
- 0% major liquefaction
- 0% severe liquefaction

ATTACHMENT 2: PROPOSED OUTLINE DEVELOPMENT PLAN

INSERT INTO GIZ-R2 AS FOLLOWS:

**GIZ-R2 SCHEDULE: GIZ-R2: 12-20 NEEVES ROAD OUTLINE
DEVELOPMENT PLAN**

LEGEND

- A** Buildings (indicative) as shown. Total area = 9605m² / 19% of total site area (approx)
- B** Access road into site from Neeves Road. To be set back from intersection as per traffic engineer requirements.
- C** Areas of planting or landscaping with potential for retention of existing areas of trees to be retained where possible (to be determined).
- D** Main carparking area for site. Includes provision for 139 carparks (135 south-east, and 4 mobility spaces).
- E** Potential areas for swales or planting along road frontage. Landscape design to be tied in with existing planting where possible.
- F** Covered cycle shed (at least 10x secure spaces) and cycle parking in carpark.
- G** Loading bay area and spaces for trucks and service vehicles. To allow for at least 8x loading bays (at 12.5m x 3.5 as shown). Area to be 40m x 40m to allow for trucking.
- H** Potential boundary planting and / or hedges. Potential for mounding or bunds with planting incorporated if required (to be defined)
- I** Grassed area utilised for stormwater pond or retention as required - as per engineers design provided by Novo.



KEY:

- Proposed Feature Trees
- Existing Specimen Trees to be Retained (if possible)
- Garden Beds and Planting
- Lawn Areas, Softscapes, Swales or Stormwater Treatment
- Building (indicative only design and layout (ba)
- Hardscape / Road / Concrete Surface (design (ba)
- Property Boundary
- 10m Setback Lines

GENERAL NOTES:

- A. Total site area = 43813m²
- B. Site coverage (shown by buildings - see A) is 19% - This is under the 20% allowed by the District Plan.
- C. Landscaping and site details to be designed once layout established.
- D. All dimensions shown on the Site Plan are approximate only, gathered from aerial data.
- E. The Concept Plan is based on information provided on behalf of by the client.
- F. The plans have been prepared for the purposes of concept and engagement only; details to be assessed.
- G. Intended solely for the use of the client in accordance with the agreed scope of works.
- H. Information contained within this drawing is the sole copyright of Novo Group and is not to be reproduced without their permission.
- I. Construction Drawings and Specifications are not included as part of this stage of works.

AMENDED SUBMISSION REZONING SUBMISSION

NEEVES RD DEVELOPMENT

DRAWING STATUS

RESOURCE CONSENT

| | | | |
|---------|----------------|---------|-------------------|
| STAGE | CONCEPT DESIGN | DRAWN | ANNE WALKING (BA) |
| SCALE | 1:1000 @ A3 | DATE | 11.05.21 |
| JOB NO. | 880001 | DWG NO. | NEEV-CRSLA-101 |

REVISION: 26.10.21 - Rev 1.1
 12.10.22 - REV 2



1. Insert new rule GIZ-R2: 12-20 Neeves Road Outline Development Plan as follows:

| | | |
|--------|--|---|
| GIZ-R2 | 12-20 Neeves Road Outline Development Plan | |
| | <p><u>All development undertaken within the area shown within GIZ SCHEDULES: GIZ-SCHED1: 12-20 Neeves Road ODP, shall be in accordance with the ODP.</u></p> | <p>Activity status where compliance is not achieved: RD</p> <p>Matters of discretion are restricted to: TRAN-MD5:</p> <ol style="list-style-type: none"> 1. The number of pedestrian and cycle movements across the site frontage and the number and type of vehicles using the vehicle crossing. 2. The extent to which use of the vehicle crossing will adversely affect the safety and/or efficiency of the frontage road or an adjacent road/rail level crossing including with respect to visibility from the vehicle crossing or proximity of the vehicle crossing to a road/rail level crossing or volume of vehicles using the vehicle crossing. 3. The speed at which vehicles will be able to enter/exit the site and the effect of this on the safety of pedestrians, cyclists and other road users. |

**ATTACHMENT 3 ASSESSMENT OF ALTERNATIVE OPTIONS –
EFFICIENCY AND EFFECTIVENESS**

With reference to the assessment of alternative options table below, it is considered that the proposed rezoning of the subject site to reflect the consented environment and the suitability of the subject site to GIZ zoning, the benefits are considered to outweigh the costs. The proposed rezoning is therefore considered to be an efficient means of achieving the objective.

| Option | Benefit/Advantages | Costs/Disadvantages | Efficiency/Effectiveness |
|--|---|---|--|
| <p>1. Rezone the subject site to GIZ</p> | <ul style="list-style-type: none"> • Enables compatibility with the consented environment. • Potential for adverse effects on adjoining properties minimised through adherence to GIZ rules/requirements. • New employment opportunities for the Kaiapoi area. • Economic benefits of commercial investment in the site development. • Reduced regulation costs for future developers of the proposed GIZ. | <ul style="list-style-type: none"> • Loss of rural lifestyle capacity. • Potential adverse effects of industrial activity on adjoining residential/lifestyle sites. | <p>Moderate to high</p> <ul style="list-style-type: none"> • The proposed rezoning to establish additional GIZ land to the south of Kaiapoi and the application of the existing suite of GIZ rules and requirements with no change is considered to be an effective means of achieving GIZ zoning on the site. • With reference to the outlined costs and benefits, the potential benefits of the rezoning are considered to outweigh the costs. Accordingly, the rezoning is considered to be efficient means of achieving the objective. |

| | | | |
|--|---|--|---|
| <p>2. Retain the proposed RLZ zoning</p> | <ul style="list-style-type: none"> • RLZ provisions allow for Rural industry activities as a permitted activity enabling limited growth of rural industrial opportunities in the area. | <ul style="list-style-type: none"> • The proposed RLZ zoning is contrary to the approved resource consent activity. • Costs of preparing application(s) with uncertain outcome (of achieving future consent approval). | <p>Low</p> <p>Resource consent processes are considered to be a less effective means of establishing a RLZ due to the ad hoc nature of the process and reduced strategic overview. The potential for single or multiple resource consent processed is also considered to be a less efficient means of achieving the objective of this proposal.</p> |
|--|---|--|---|

**ATTACHMENT 4: ASSESSMENT OF PROPOSAL AGAINST PROPOSED
PLAN OBJECTIVES AND POLICIES**

ASSESSMENT OF PROPOSAL AGAINST PROPOSED PLAN OBJECTIVES AND POLICIES

| PWDP Provision | Assessment of Proposed Rezoning |
|---|---|
| <p>SD - STRATEGIC DIRECTIONS</p> <p>SD-02 Urban development</p> <p>Urban development and infrastructure that:</p> <ol style="list-style-type: none"> 1. Is consolidated and integrated with the urban environment; 2. That recognises existing character, amenity values, and is attractive and functional to residents, businesses and visitors; 3. Utilises the District Council's reticulated wastewater system, and potable water supply and stormwater infrastructure where available; 4. Provides a range of housing opportunities, focusing new residential activity within existing towns, and identified development areas in Rangiora and Kaiapoi, in order to achieve the housing bottom lines in RFD-O1 5. Supports a hierarchy of urban centres, with the District's main centres in Rangiora, Kaiapoi, Oxford and Woodend being: <ol style="list-style-type: none"> a. The primary centres for communities facilities; b. The primary focus for retain, office and other commercial activity; and | <p><i>The requested rezoning of the subject site adjoins an established industrial area and the approved resource consent for the site is appropriate for the type and scale of activity which will support self-sufficiency in the district.</i></p> |

| | |
|---|--|
| <p>c. The focus around which residential development and intensification can occur.</p> <ol style="list-style-type: none"> 6. Provides opportunities for business activities to establish and prosper within a network of business and industrial areas zoned appropriate to their type and scale of activity and which support district self-sufficiency; 7. Provides people with access to a network of spaces within urban environments for open space and recreation; 8. Supports the transition of the Special Purpose Zone (Kāinga Nohoanga) to a unique mixture of urban and rural activities reflecting the aspirations of Te Ngai Tūāhuriri Rūnanga; 9. Provides limited opportunities for Large Lot Residential development in identified areas, subject to adequate infrastructure; and 10. Recognise and support Nga Tūāhuriri cultural values through the protection of sites and areas of significance to Māori identified in SASM-SCHED1. | |
| <p>GIZ - General Industrial Zone</p> <p>GIZ-O1: Provision of general industrial activities</p> <p>Provide for general industrial activities where the adverse effects of these activities on adjacent non-industrial zones are managed at the interface to provide an acceptable level of amenity in these more sensitive zones.</p> <p>GIZ-P1: Activities</p> | <p><i>The request seeks the creation of GIZ for the subject site. The approved resource consent (Ref: RC215602) states that the effects on the environment will be less than minor as a result of the location, design and set out of the proposed earthworks, car parking areas and activity. The request is reflective of the provision for general industrial activities and consistent with these policies</i></p> |

Recognise and provide for a range of general industrial and other compatible activities and avoid activities which do not support the primary function of the zone.

GIZ-P2: Amenity effects

Adverse amenity effects within the zone, and on the amenity values of neighbouring zones are managed.

**ATTACHMENT 5: TIM MCLEOD, INOVO GROUP: INFRASTRUCTURE
ASSESSMENT**

MEMORANDUM

| | | |
|----------------|---|-----------------------|
| PROJECT | 12 & 20 Neeves Road, Kaiapoi | 5 March 2024 |
| SUBJECT | Infrastructure Assessment for Proposed District Plan Rezoning | |
| ISSUED BY | Tim McLeod | Senior Civil Engineer |
| ISSUED TO | Domett Properties Limited | |
| FILE / REF No. | 15440/E/24 | |

PURPOSE

Inovo Projects Ltd has been engaged by Domett Properties Limited to complete an Infrastructure Assessment in support of a submission for proposed re-zoning of the site at 12 & 20 Neeves Road, Kaiapoi.

SITE DESCRIPTION

The submission site is located at #12 & 20 Neeves Road, Kaiapoi, on the north side of Neeves Road between the Christchurch Northern Motorway (State Highway 1) and Main North Road. Hellers Meat Factory is located across Neeves Road to the south. Land to the north is used for horticulture & ready lawn production. The site is 4.98 hectares in area and is predominantly flat. At the time of writing this report, the site is comprised of two adjacent lots each with separate rural dwellings (Lot 1 and Lot 2 DP 44992) along with various outbuildings.

The site is zoned rural (RU) in the current District Plan and Rural Lifestyle (RLZ) in the Proposed District Plan. The submitter opposes the proposed Rural Lifestyle Zone (RLZ) and seeks rezoning of the land to General Industrial Zone (GIZ).

Resource consent (Ref:RC215602) to establish an industrial development on the site with associated access, loading and parking areas, was granted in October 2022. Conditions of consent associated with the industrial activity relate to matters of earthworks, servicing, access/roading/parking, geotechnical and landscaping.

GROUND CONDITIONS

A geotechnical investigation and assessment of suitability for subdivision has been carried out by Tetra Tech Coffey (NZ) Limited as described in their report titled *Proposed Industrial Development at Neeves Road, Kaiapoi* (Reference: 773-CHCGE303819) dated November 2022.

The geotechnical investigation report describes the ground model as a consistent clayey silt/sandy silt layer up to 4.7 mbgl which overlies the sandy gravel. Groundwater was encountered during hand auger investigations at depths ranging between 0.2 - 1.7 mbgl. The measured depth to groundwater in wells near the site varies between 0.5 - 0.9 mbgl.

STORMWATER

Stormwater infrastructure bordering the site consists of an open drain along the North side of Neeves Road discharging into a Ø600mm culvert under Main North Road and into Courtenay Stream to the east. The existing site generally falls to the east towards Main North Road. Excess stormwater is prevented from runoff off the site by an earth bund along the Main North Road boundary.

Proposed primary stormwater runoff from the developed site would be managed by construction of a Stormwater Management Area (SMA) consisting of a first flush basin to hold and treat initial stormwater runoff volume, and a detention basin to attenuate site runoff from large rainfall events and release slowly at the pre-development flow rates into the drain outlet on Neeves Road.

FLOODING

Detailed model results showing the extent and flood depth are available to view on the WDC's website. The map shows the extent and depth of potential flooding during a 200-year ARI or 0.5% AEP flood resulting from heavy rainfall. The site is shown as 'low' to no flooding hazard in a 200-year ARI. WDC defines 'low' flooding hazard as a flooding depth less than 0.3 m. Flooding less than 0.3m is noted in the north-east corner of site.

It is noted that the site is not located in an overland flow path, and is essentially protected from up-slope by the Christchurch Northern Motorway. The nearest overland flow path is the Courtenay Stream to the east.

In a 1:500 year event (0.2% AEP) ponding occurs in the north east corner of the site to a level of 1m. The Waimakariri District Flood Hazard Management Strategy 2008 defines high hazard as where the flood depth is greater than 1m. Therefore, the northeast corner of the site can be deemed high hazard in a 1:500 year event. It is noted that this hazard is due to ponding on the natural ground surface and not due to an overland flow path.

WASTEWATER

There is no Council reticulated wastewater in the vicinity. Existing dwellings presumably discharge to on-site septic tanks and disposal fields. Hellers Meat Factory has a private wastewater rising main that discharges into the Kaiapoi gravity wastewater network.

On-site treatment and discharge may be feasible for dry industries with up to approximately 20 staff, subject to obtaining resource consents for discharge of treated effluent. There is insufficient room on-site for on-site treatment and discharge of wastewater generated by wet industries or larger staff numbers.

If wastewater volumes require off-site discharge the options are to share the private rising main owned and operated by Hellers Meat Factory (subject to agreement) or install a new wastewater rising main to the Kaiapoi wastewater network (approximately 1.2km north). The pumped discharge could connect to the existing gravity sewer manhole on Williams Street, which ultimately drains to the Parnham Lane Pump Station. Because a pump system will be required, there is opportunity for the wastewater flows to be attenuated to discharge at off-peak periods to avoid overloading the downstream network.

The Kaiapoi Wastewater Activity Management Plan (AMP) reference's Beca report no. TRIM 111205058266 which concludes that the existing Kaiapoi wastewater treatment plant is well within its design capacity, and following the peer review the Council has determined that no further upgrades are required at this stage.

POTABLE WATER

There is no Council reticulated water supply to the site, and therefore water supply will to be supplied by either extending the reticulated supply from Kaiapoi (approximately 1.2km north) or establishing an on-site water supply.

Canterbury Maps Well Search shows there is an existing shallow bore at 20 Neeves Road (BW24/0563, 29m deep) which is currently used for domestic water supply and stock water. This bore would likely need to be replaced to supply raw water at suitable flow rate for the proposed industrial activity.

The site is in the Eyre Ground Water Allocation Zone and Coastal Confined Gravel Aquifer System as defined by LWRP. ECan's report titled The Current State of Groundwater Quantity in The Waimakariri Zone (2016) Report No. R18/81 indicates that the Eyre River GAZ is fully allocated however the report does not distinguish between confined and unconfined aquifers.

Resource consent would be required for groundwater take for industrial use. The quantity of water that can be consented may restrict the type of activity that can be conducted on the site (e.g. no wet industry/food processing).

POWER & TELECOMMUNICATIONS

Full appraisal of the network extension requirements will be carried out by the network provider once the Plan Change approval has been obtained. Network upgrades to existing zone substations at Kaiapoi and the associated high voltage distribution network to service the Site can be completed in time to meet the expected increase in load from the proposed development.

The existing trunk fibre network in Main North Road can be extended to service the Site to provide broadband fibre to industry standards.

SUMMARY & CONCLUSION

From an infrastructure perspective, the plan change can be supported by either the extension of existing infrastructure from neighbouring subdivisions or the provision of new water supply and wastewater infrastructure to service the development area.

Regards



Tim McLeod
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BE(NatRes) MEngNZ CPEng
tim.mcleod@inovo.nz