Thursday, 18 July 2024

Te Hui o Te Kaunihera ā-Rohe o Heretaunga
Hastings District Council
Hearings Committee Meeting

Kaupapataka

Attachments – Volume 3

(Oderings Nurseries CHCH Limited - 55 and 57 Brookvale Road, H Nth)

Te Rā Hui: Meeting date:	**Thursday, 18 July 2024**
Te Wā: Time:	**9.30am**
Te Wāhi: Venue:	**Council Chamber** **Ground Floor** **Civic Administration Building** **Lyndon Road East** **Hastings**

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HASTINGS DISTRICT COUNCIL
207 Lyndon Road East, Hastings 4122 | Private Bag 9002, Hastings 4156
Phone **06 871 5000** | **www.hastingsdc.govt.nz**
TE KAUNIHERA Ā-ROHE O HERETAUNGA

ITEM	SUBJECT	PAGE

2. ODERINGS NURSERIES CHCH LIMITED - RESOURCE CONSENT APPLICATION FOR RESIDENTIAL DEVELOPMENT OF 55 AND 57 BROOKVALE ROAD, HAVELOCK NORTH (RMA20230145)

Document 2 Containing these attachments

Attachment A	S92 Further Information Required Letter	**Pg 3**
Attachment B	Complete s92 response Letter	**Pg 11**
Attachment C	Applicant's Assessment of HDP Objectives and Policies	**Pg 19**
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If calling ask for David Bishop
File Ref: RMA20230145#0027

22 June 2023

Oderings Nurseries ChCh Limited
c/- David Clark, Saddleback Planning Limited (Agent)
Level 2, 104 Fanshawe Street
Auckland Central
Auckland 1010

Sent via email: david@saddleback.nz

Dear Sir/Madam

Application for Resource Consent: 55 Brookvale Road, Havelock North, RMA20230145

An initial assessment of your application for resource consent has been completed.

Council received the above resource consent application from Oderings Nurseries ChCh Limited (Oderings) on 31 May 2023. The application is for a non-complying residential development for 35 dwelling units (land use, subdivision), development of a new carpark to service the existing commercial garden centre and consented café on the site (land use – commercial activity), and the necessary enabling works (land use – earthworks), as well as consent under the NESCS, in Brookvale Road, Havelock North, within the Plains Production Zone.

Under Section 92 of the Resource Management Act (RMA) 1991, the Hastings District Council requires further information to fully assess your proposal, its effect on the environment, and the ways in which any adverse effects on the environment might be mitigated, as follows:

1. Application of the NPS-HPL to the Proposal

   The application is supported by a desktop soil and Land Use Capability classification assessment of the site by Dr Reece Hill of Landsystems (dated 21 April 2023) that concludes the land is most appropriately classified as non-productive land and that, as such, the NPS-HPL does not apply. However, this is not considered sufficient to address the application of the NPS-HPL to the land in question.

   As indicated in the assessment of effects accompanying the application, the land is shown as being LUC 3, as mapped by the New Zealand Land Resource Inventory.

   Clause 3.5(7) of the NPS-HPL requires that until a regional policy statement containing maps of highly productive land in the region is operative, land classified as LUC 1-3 and not identified for future urban development must be treated as 'highly productive land'.

   Under the NPS-HPL, LUC 1, 2, or 3 land means *'land identified as Land Use Capability Class 1, 2, or 3, as mapped by the New Zealand Land Resource Inventory or by any more detailed mapping that uses the Land Use Capability classification'* [underline added].

   The land meets this interim definition and must therefore be treated as 'highly productive land' under the NPS-HPL.

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Attachment A

On the basis that the land in question must be treated as 'highly productive land', the proposal seeks to subdivide and build housing which appears to be contrary to the following policies of the NPS-HPL, notably:

Policy 7: The subdivision of highly productive land is avoided, except as provided in this National Policy Statement.

Policy 8: Highly productive land is protected from inappropriate use and development.

Clause 3.8 of the NPS-HPL requires avoidance of subdivision, except in limited circumstances which do not appear to be applicable to the proposal.

Clause 3.9 of the NPS-HPL requires avoidance of inappropriate use and development of highly productive land, where any use is inappropriate unless listed in clause 3.9(2). None of the matters listed in clause 3.9(2) appear to apply to the proposal.

Clause 3.10 of the NPS-HPL provides a limited exemption to clauses 3.8 and 3.9.

It is considered that there is insufficient information for Council to assess and be satisfied that the exemption provided for in clause 3.10 of the NPS-HPL is applicable to the proposal.

To assist with this assessment, please provide the following information:

- an assessment of the proposal against each of the matters in clause 3.10 of the NPS-HPL, with appropriate technical evidence (noting that they are cumulative); and
- as part of the above assessment, it would be useful to include an economic assessment as to economic viability of the land to be used as a land-based productive site over the next 30 years (which may address clause 3.10(1)(a)).

It is likely that Council will commission a peer review of this assessment.

The above information will assist with the assessment of the proposal against the relevant provisions of a national policy statement (section 104(1)(b)(iii) of the RMA).

2. <u>Proposed Carpark (ancillary to Commercial Activity)</u>

To assist with a full understanding of the proposal, and to assist with the assessment of the transportation and amenity effects of the construction and operation of the proposed carpark on the environment:

a. Please confirm the number of parking spaces proposed for the proposed carpark is 40 parking spaces, inclusive of the two accessible spaces – this relates to a numerical inconsistency between section 9.3, pg 16 of the Transportation Assessment Report (40 carparks), and section 3.2, pg 3 of the Infrastructure Report (43 carparks). Please provided revised report(s) accordingly.

b. Please advise the construction standard proposed for the carpark, and supply a lighting plan, a landscape plan (including details of the proposed rain gardens shown on Drawing No: 1938-01/402/RC-1 dated 26.05.2023 supplied by Envelope Engineering in the Infrastructure Report), and advise any fencing or screening of the carpark proposed.

c. Please advise the number of existing on-site parking spaces (sealed and marked out) serving the existing garden centre and consented café that will be removed as a result of this proposal, and how that number correlates (or not) with the number of parking spaces in the proposed new carpark.

   If there are fewer parking spaces proposed than currently supplied, please provide an updated Transportation Assessment Report from East Cape Consulting Limited, outlining the effects of the proposed parking supply on the ability of the proposed carpark to continue to adequately cater for the anticipated parking demand associated with both the operation of the existing garden centre and that associated with the yet-to-be built consented café.

d. Further, I note page 13 of the AEE accompanying the application states:

Attachment A

'…the new carpark that will be constructed to service the garden centre and new café is proposed to be used as after-hours carparking for visitors to the proposed residential development. As such, this additional use is considered part of the proposal.'

Please provide an updated Transportation Assessment Report from East Cape Consulting Limited, that includes an assessment of the effects of after-hours use of the carpark for visitors to the proposed residential development on the environment.

In addition, please outline the mechanism proposed to enable use of the proposed commercial carpark for residential parking outside of business hours, and how this is intended to work.

3. Urban Design, Landscaping & Visual Effects

To assist with the assessment of landscape and visual effects of the proposal, and with assessment of how the proposed development aligns with the design guidance contained in the Hastings Residential Intensification Design Guide 2020, which link to the District Plan assessment criteria:

a. **Design Statement** – Please provide an updated Design Statement to include an assessment of the layout options investigated and the philosophy behind the design concept lodged.

Note: Council policy planners have carried out an initial assessment of the proposal against the Hastings Residential Intensification Design Guide 2020. Their assessment is attached to this letter for your information, as it may provide some useful insight in preparing an updated Design Statement.

b. **Reserve Edges** – Council staff consider the Guthrie Park interface as being particularly important as it fronts a public open space with high amenity values and public uses.

Please identify on the plans provided, the specific treatment proposed for the reserve edges (Guthrie Park and Karituwhenua Stream).

Specific front-on 3D perspectives would further assist in this regard – the inclusion of colour would be beneficial (in accordance with their cladding design statement) along with a front on, closer up, rather than oblique view from a distance.

Further, a 3D perspective view into the connection from the Reserve would be useful for assessment purposes, along with one from within the development looking out to the park along the pedestrian access, as this would assist in assessing how it feels in terms of public access from within the development to the reserve.

c. **Materials** – The Design Statement (pg 5) states:

'While a colour scheme is not provided for the development, a cladding design statement included in the masterplan document notes the following:

- *Too much colour variation within the development should be avoided as this contributes to a visually cluttered urban environment and detracts from a cohesive identity.*
- *Dwelling types painted the same colour are not discouraged as variation will develop over time through occupier preference and landscaping.*
- *Cladding Type A should typically be a darker, more recessive colour to anchor the buildings to their site. This should support reducing the visual dominance of garages.*
- *Cladding Types B and C can be the same colour as the material difference and building form will provide visual variation. Where these are different colours they should be natural, neutral, or tones of the same base colour. no colour palette has been provided, instead opting for the use of a cladding design statement.'*

Please advise how the applicant anticipates effectively and practically implementing the above e.g. through offering consent conditions (consent notices).

d. **Typology A** – Please review the zero lot boundary features for Type A (i.e. proposed Lots 7 & 16) as there is a window to the side wall (refer E2, drawings A105 and A106). Please provide updated drawings.

Attachment A

e. **Landscaping** – District Plan performance standard 8.2.6F(5) – which Council uses as a guide for assessment of comprehensive residential developments in the Havelock North General Residential Zone – anticipates a minimum of 20% of the exclusive use area for each residential building be landscaped with mixed vegetation cover and specimen trees. Please demonstrate whether the concept complies with this.

f. **Outdoor Living Space / Service Areas** – It is difficult to assess from the drawings and information provided whether outdoor living space / service area is adequate for each lot. Please provide a site plan(s) showing service areas and outdoor living spaces for each individual lot, rather than the overlay onto one plan for particular typologies.

In relation to outdoor living space, please demonstrate this not only in relation to size of the space but also whether or not they meet other aspects of District Plan performance standard 8.2.6F(4) – e.g. 2.5m minimum dimension, 4m diameter circle, north facing etc – which Council uses as a guideline for assessment of comprehensive residential developments in the Havelock North General Residential Zone. Refer District Plan performance standard 8.2.6F(7) in terms of guidance around service areas.

g. **Managing Flood Risk** – The Infrastructure Report accompanying the application states (section 4.3, pg 6):

'The proposed development intends to fill and raise the northern areas of the site to be above the flooding levels and finished floor levels (FFL's) to be above the flood levels plus a 200mm freeboard (using the 0.20m accuracy tolerance mentioned in 4.2). It is anticipated that by raising the ground here, this would decrease the capacity of the Karituwhenua Stream during flood events. To prevent this from happening, it is proposed to cut existing ground material from above the southern bank of the Karituwhenua Stream at the northern boundary. This will increase the capacity of the stream during flood events and thus offset the earthworks filling of the new lots in the north.

…

Proposed dwellings along the northern boundary that are near the 8.44m flood level will have minimum FFLs of 8.95m, while proposed dwellings along the northern boundary that are near the 8.74m flood level will have minimum FFLs of 9.25m. These FFLs have been chosen as they will provide a 200mm freeboard to compensate for the 0.20m accuracy tolerance from the HBRC flood hazard maps, as well as an additional 300mm as a margin of safety. It is assumed that the finished ground levels around these new dwellings will be around 150-250mm below FFL.'

However, the Landscape & Visual Effects Assessment accompanying the application does not address the visual effects of these measures. Please provide an updated Landscape & Visual Effects Assessment addressing the visual effects of the flood mitigation proposed.

h. **Bin Storage** – It is noted that some of the lots propose bin storage location within the front yard (e.g. Lots 8 & 9, 27-29). Council prefers not to have outdoor storage areas provided within the front yard, especially where there are alternatives which there appears to be in this instance. Please reconsider the location of these areas or provide information to show what this will look like from a visual perspective.

i. **Lighting** – Please provide a Lighting Design and assessment showing street lighting and any illumination proposed for access lots and public pedestrian areas, sufficient and appropriate to the anticipated residential setting.

j. **Common Space Management (where held in Private Ownership)** – The AEE accompanying the application (pgs 14 & 15) states that the maintenance obligations for the underground stormwater infrastructure within the proposed commercial carpark, and within the private jointly owned access lots, will be met by the owners and a Residents Association (or similar entity).

Please provide further information addressing, more fully, how infrastructure in private ownership is to be managed and maintained (including any connections to Reserves).

4. Engineering/Servicing

To assist with the assessment of the proposal in terms of design and operation of servicing infrastructure, and its effects on the environment, including on public infrastructure and receiving environments:

a. **Public Infrastructure Easements** – Any infrastructure that is proposed to be vest to HDC that falls within private roads and/or property will need to be protected by an easement. This includes any easements required for overland flow and pipes within Guthrie Park. Please provide amended plans to show easements, where required.

b. **Geotechnical Investigation** – The Infrastructure Report (section 2.2, pgs 2/3) outlines a summary of the findings of a geotechnical investigation for the proposed development undertaken by Initia, and states this report is attached. The Geotechnical Investigation Report has not been provided with the application. Please provide a copy of this report.

c. **Services Plans** – Please provide an overall plan showing all services, planting, and lighting to demonstrate that there is enough space for all services proposed.

d. **Vehicle Manoeuvring** – Please provide the tracking curves for manoeuvring for critical points e.g. Lot 31 – it does not appear possible to manoeuvre within Lot 103. Please also confirm manoeuvring the legal road and private vehicle access lots is sufficient for fire appliances to access the lot(s).

e. **Engineering Plans** – Please review the scales on engineering plans – some appear to have incorrect scales (e.g. drawings 401, 402 & 403). Please provide a revised set of engineering plans with corrected scales.

f. **Stormwater** – The Infrastructure Report does not provide the level of detail required. Considering the recent natural disaster event in Hastings, which had a particularly devastating impact on parts of Havelock North, robust and well-designed stormwater solutions are required. Please provide the following:

i. Clause 4.3.4.1: System Design of the Hastings District Council's Engineering Code of Practice (ECoP) states that an assessment of the effects of a 100-year storm needs to be carried out. The Infrastructure Report does not demonstrate compliance with this requirement such that the proposed stormwater solutions, earthworks levels/finished floor levels (FFLs) etc can be deemed adequate, and that there will be no adverse impacts on the receiving environment and the proposed development during a 1 in 100-year event, with any confidence.

Furthermore, clause 4.3.5.2 of NZ4404:2010 states a minimum freeboard height of 500mm above the computed 1 in 100-year storm is required for habitable dwellings. The Infrastructure Report has considered the 1 in 50-year storm event as the basis for determining FFLs across the site. Hazard mapping from HBRC indicates the site is inundated with flood waters along the northeastern edge during a 50-year event.

Please provide an assessment of the effects of a 1 in 100-year storm for review and consideration.

ii. Further to point i, please provide pre/post overland flow path analysis demonstrating overland flow behaviour (depth and direction etc) both up to and exceeding a 50-year event.

iii. Please provide an assessment of the impacts (if any) on the relationship between the Crombie, Karituwhenua, and School streams and how this development proposal may impact the relationship between these streams. This includes the

outlet into the Karituwhenua Stream and the concentrated flows from a series of discharge points and sheet flow to one primary and one secondary discharge point.

iv. Please provide further detail on the proposed reshaping of the bank of the Karituwhenua Stream, including:

- In principle approval from HBRC that they are not opposed to the proposal including earthworks within 20m from the stream, approval for installation of the 2 culverts and stormwater discharge for development into the stream.
- Evidence to suggest compliance with clause 4.3.9.1 'Location and Alignment of Public Mains' of the ECoP. This may include geotechnical evidence against lateral erosion risk and degradation erosion risk.
- Calculations and cross/long sections demonstrating this will create the required volume replacement required to offset any lost storage space due to earthworks.

v. Please amend the plans where applicable to show compliance with requirement for minimum 6m setback from the top of the bank, for any building, fence, or other structure (refer Rule 71 of Hawke's Bay Regional Resource Management Plan), or a copy of any Regional Council consent that reduces this width.

vi. Recent site visits indicate the site is not fully impervious as stated in the Infrastructure Report for determination of pre vs post development flows (refer section 4.5, pg 7), noting that a considerable portion of the site is covered in grass and weeds.

Please revisit the neutrality calculations to match current site conditions and demonstrate how site neutrality will be met including any mitigation measures required to achieve this.

vii. Stormwater calculations are missing the 1 in 5-year event. Please amend the Infrastructure Report accordingly and provide for review.

viii. From the engineering plans (refer drawings 400-403), it appears that all drains located on the public road (Lot 500) and private roads (Lot 100 and Lot 102) are proposed as public, and drains located under private roads (Lot 101 and Lot 103) will be private. This does not appear to correlate with the Memorandum of Easements in Gross on the Scheme Plan for Lot 102. Please indicate clearly on the plans what is public / private and update where required.

Also, the pipe and treatment/rain gardens on Lot 50 which will serve the commercial activity is classed as private infrastructure not to be vested with Hastings District Council. Please amend the plans to label these as private.

ix. The AEE accompanying the application (pg 14) indicates the obligations for maintenance and upkeep of the underground proprietary device (Hynds Up-Flo Filter) proposed for the northern end of the private road will be via a residents' association (or similar), however it is shown as 'public' on the plans. Please confirm if this is a public or private asset.

g. **Wastewater** – The need for a pump station is understood, however the proposed location of the pump station (at the northern end of the private road) is unlikely to be acceptable. Please amend proposal (and associated reports and plans) to show a more suitable location where safe access for operations and maintenance is achieved, following consultation with Council engineers.

h. **Rubbish Collection Points** – As Council does not collect the rubbish from private roads and all roads after roundabout are proposed as private, please outline what the recycling/waste arrangements will be and indicate where the rubbish collection points will be.

If agreements are reached to collect within the private road(s), please supply tracking curves to ensure it will accommodate a 12m truck.

i. **Roading** – Council supports the proposed development incorporating a new kerb and channel and new footpath along the northern boundary of Brookvale Road, connecting to the existing concrete footpath at Guthrie Park in the west, and to the existing concrete footpath at the Romanes Drive roundabout in the east (section 3.2, pg 4 Infrastructure Report).

However, there appears to be some discrepancy between the Infrastructure Report and the Traffic Assessment Report – the latter proposes a new footpath along only half of the site frontage, from the western boundary to the access road (section 6.2, pg 12).

Further, the Earthworks Plan (drawing 210) and the Utilities Plans (drawings 500 & 501) in the Infrastructure Report and the Landscape Concept plans (drawing LMP01) indicate footpath layouts along Brookvale Road that differ again from either of the above.

Please confirm what is proposed in terms of new kerb and channel and footpath along the northern boundary of Brookvale Road. Please indicate clearly on the relevant engineering and landscape plans.

In addition, please advise what the proposed streetscape treatment is along the full length of Brookvale Road frontage (i.e. street tree planting, undergrounding remaining overhead wires etc) to ensure it is appropriate in terms of integrating the development with the surrounding residential streetscape character.

Note: Council's Landscape Architect, Bart Leslie, has indicated he would be happy to discuss or provide a recommendation on a suitable streetscape treatment for this small length of street frontage e.g. tree species selection and location.

5. Below are additional comments from Council's Landscape Architect on the proposed planting plans, included for your information and consideration:

- *It appears there are trees proposed between property boundaries and footpaths. Suggestion is for an upright tree species in suitable root directors, between the footpath and road as being a better long-term option to avoid complaints about shading, leaf & debris.*
- *Strongly advise against Quercus palustris (Pin Oak) which are a very large deciduous tree within the subdivision as this will likely lead to complaints about leaf & debris & shade in autumn/winter, not to mention root damage to surrounding property & infrastructure. Trees of this scale really belong in parks or much wider road reserves where they have the space to grow to maturity.*
- *Plant palette: Pachysandra terminalis, Ligularia reniformis, Carpet Roses are not the best selections as they struggle in the Hawke's Bay climate, and carpet roses are fairly high maintenance and do not look great through winter when dormant.*
- *The amount of verge planting, including alongside the access road to be vested, is considerable. Council does not carry sufficient maintenance budgets to support extensive plantings. While Council supports green streets initiatives, this needs to be realistic in terms of how much maintenance costs the ratepayer can afford – suggest that more grass area with well-placed street tree plantings is a more affordable option.*
- *Street lighting layout and proposed street tree layout needs to align so that do not end up with trees directly under lights impacting light levels and causing black spots. This is an easy task to get right but is often overlooked in new subdivisions.*

In accordance with section 92A of the Act you must within 15 working days of the date of this request, take one of the following options:

1. Provide the information; or
2. Inform the Council in a written notice that you agree to provide the information; or specify a reasonable timeframe for providing the information for agreement of Council, or;
3. Inform the Council in a written notice that you refuse to provide the information.

While section 95C(2) of the Resource Management Act requires Council to publicly notify your application if:

i) the information is not received within either 15 days, or;
ii) the information is not received within any agreed timeframe, or;
iii) if you decline to provide the information,

it is noted that the applicant has requested that the application be publicly notified.

Public notification of your application has been placed on hold awaiting your response to this request, in accordance with section 88B of the Act. Where possible however, the application will continue to be processed as allowed by the information already supplied.

Please contact me if you have any questions regarding the above information request or the further processing of the application.

Yours sincerely

Rowena Macdonald
Consultant Planner
rowena@sageplanning.co.nz

Authorised by:

David Bishop
Team Leader Environmental Consents / Subdivision
davidb@hdc.govt.nz

Saddleback

4 October 2023

Rowena Macdonald
Consultant Planner
Sage Planning

55 Brookvale Road, Havelock North, RMA20230145 – Complete response to request for further information

Dear Rowena,

Thank you for your letter, dated 22 June 2023, setting out additional information to you request in relation to our application for land use and subdivision consent. This letter is a partial response to some of the queries while our engineering team gathers information to respond to further flooding queries.

1. Application of the NPS-HPL to the Proposal

The attached letter prepared by James Gardner-Hopkins sets out why the assessment provided by Dr Reece Hill qualifies as a site specific "more detailed mapping" exercise to demonstrate that the land can no longer be considered LUC 1, 2 or 3 land. Additional commentary is also provided by Mr Gardner-Hopkins, setting out other Part 2 RMA matters that should be considered alongside the NPS-HPL.

As a further precaution, and in response to your request, an assessment of Clause 3.10 of the NPS-HPL is provided below:

3.10 Exemption for highly productive land subject to permanent or long-term constraints

(1) Territorial authorities may only allow highly productive land to be subdivided, used, or developed for activities not otherwise enabled under clauses 3.7, 3.8, or 3.9 if satisfied that:

(a) there are permanent or long-term constraints on the land that mean the use of the highly productive land for land-based primary production is not able to be economically viable for at least 30 years; and

The site was previously fully comprised of buildings and hardstand areas that were associated with a wholesale nursey that was established on the site in the 1960s. The buildings have since been removed, along with some of the concrete building platforms and hardstand areas.

Dr Hills' assessment was based on previously completed geotechnical data that assessed core logs from three locations across the site. All three cores showed fill overlying fill material (anthropic soil) and possibly some excavation before placement. In Mr Hills opinion, the entire site is most appropriately classified as non-productive land.

Based on the above (and further points below), there are permanent or long-term constraints on the land that mean the use of the highly productive land for land-based primary production is not able to be economically viable for at least 30 years.

(b) the subdivision, use, or development:

Contact Us

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Attachment B

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(i) avoids any significant loss (either individually or cumulatively) of productive capacity of highly productive land in the district; and
(ii) avoids the fragmentation of large and geographically cohesive areas of highly productive land; and
(iii) avoids if possible, or otherwise mitigates, any potential reverse sensitivity effects on surrounding land-based primary production from the subdivision, use, or development; and

Based on Mr Hills advice, the proposal will not result in any loss (either individually or cumulatively) of productive capacity of highly productive land in the district.

There are no adjacent rural properties, therefore the proposal will not result in any fragmentation of highly productive land or reverse-sensitivity effects on surrounding land-based primary production.

(c) the environmental, social, cultural and economic benefits of the subdivision, use, or development outweigh the long-term environmental, social, cultural and economic costs associated with the loss of highly productive land for land-based primary production, taking into account both tangible and intangible values.

Because there is no loss of productive land, the environmental, social, cultural and economic benefits of the proposed development outweigh the loss of highly productive land for land-based primary production, taking into account both tangible and intangible values.

(2) In order to satisfy a territorial authority as required by subclause (1)(a), an applicant must demonstrate that the permanent or long-term constraints on economic viability cannot be addressed through any reasonably practicable options that would retain the productive capacity of the highly productive land, by evaluating options such as (without limitation):

(a) alternate forms of land-based primary production:
(b) improved land-management strategies:
(c) alternative production strategies:
(d) water efficiency or storage methods:
(e) reallocation or transfer of water and nutrient allocations:
(f) boundary adjustments (including amalgamations):
(g) lease arrangements.

Permanent long-term constraints on economic viability cannot be addressed through any reasonably practicable options that would retain the productive capacity of the highly productive land. In particular:

- Because of the poor soils in-place and more sensitive residential land uses adjoining, there are no feasible alternate forms of land-based primary production.
- Any improved land-management or alternative production strategies would require removal of the remaining hardfill, significant rehabilitation of underlying soil and/or importing additional topsoil which is not practicable given the small size of the site and more sensitive residential land uses adjoining.

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- There are no additional water efficiency or storage methods that could improve the productive capacity as water availability does not appear to be a limiting factor to the sites' productive capacity.
- There are no boundary adjustments or lease arrangements that could improve the productive capacity of the site as there is no adjoining rural land.

(3) Any evaluation under subclause (2) of reasonably practicable options:

(a) must not take into account the potential economic benefit of using the highly productive land for purposes other than land-based primary production; and
(b) must consider the impact that the loss of the highly productive land would have on the landholding in which the highly productive land occurs; and
(c) must consider the future productive potential of land-based primary production on the highly productive land, not limited by its past or present uses.

The assessment of subclause 2 above does not consider the economic benefits of the proposed development. There are no productive soils within the landholding and because of the existing soil constraints identified previously, the site has limited (if any) future productive potential.

(4) The size of a landholding in which the highly productive land occurs is not of itself a determinant of a permanent or long-term constraint.

While the site is small and therefore difficult to convert into an economically feasible productive unit, the lack of adjacent rural land, poor quality soils and sensitive residential uses are also critical constraints to current and future productive use.

2. (a) Please confirm the number of parking spaces proposed for the proposed carpark is 40 parking spaces, inclusive of the two accessible spaces – this relates to a numerical inconsistency between section 9.3, pg 16 of the Transportation Assessment Report (40 carparks), and section 3.2, pg 3 of the Infrastructure Report (43 carparks). Please provided revised report(s) accordingly.

There are 40 car parking spaces, inclusive of two accessible parks. The infrastructure report has been updated accordingly.

(b) Please advise the construction standard proposed for the carpark, and supply a lighting plan, a landscape plan (including details of the proposed rain gardens shown on Drawing No: 1938-01/402/RC-1 dated 26.05.2023 supplied by Envelope Engineering in the Infrastructure Report), and advise any fencing or screening of the carpark proposed.

Car parks will be constructed in accordance with the Hastings District Council Engineering Code of Practice (2020). A concept lighting plan is attached.

The landscape plans have been updated to show the proposed planting within the raingardens.

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There is no fencing proposed immediately adjacent to the car park, however specimen trees (x4) and low planting is proposed along the southern boundary of Lot 101, which provides access to Lots 7-9.

(c) Please advise the number of existing on-site parking spaces (sealed and marked out) serving the existing garden centre and consented café that will be removed as a result of this proposal, and how that number correlates (or not) with the number of parking spaces in the proposed new carpark.
If there are fewer parking spaces proposed than currently supplied, please provide an updated Transportation Assessment Report from East Cape Consulting Limited, outlining the effects of the proposed parking supply on the ability of the proposed carpark to continue to adequately cater for the anticipated parking demand associated with both the operation of the existing garden centre and that associated with the yet-to-be built consented café.

There are 35 existing car parks (including 2 accessible) for the garden centre that are available for garden centre customers. The proposed development will therefore result in a gain of 5 additional car parks.

(d) Further, I note page 13 of the AEE accompanying the application states:
'…the new carpark that will be constructed to service the garden centre and new café is proposed to be used as after-hours carparking for visitors to the proposed residential development. As such, this additional use is considered part of the proposal.'
Please provide an updated Transportation Assessment Report from East Cape Consulting Limited, that includes an assessment of the effects of after-hours use of the carpark for visitors to the proposed residential development on the environment.
In addition, please outline the mechanism proposed to enable use of the proposed commercial carpark for residential parking outside of business hours, and how this is intended to work.

Following further discussions with East Cape Consulting, the need for over-flow parking from the proposed residential development is no longer considered necessary.

The position expressed in the TAR was that the internal road network provided eight on-street parking spaces which could be used by visitors to the residential area. This supply rate (1 space per 4.4 dwellings) exceeds typical demand for visitor parking (1 per 5 spaces, based on the RMS Guide (from NSW, Australia, used because no visitor rate is given in the NZ guide).

Therefore, it is not necessary that the garden centre/café parking be available to residents and their visitors.

3. Urban Design, Landscaping and Visual Effects

Please find attached a response to the urban design queries raised, along with updated architectural plans with additional detail to respond to the queries.

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4. (a) **Public Infrastructure Easements** – Any infrastructure that is proposed to be vest to HDC that falls within private roads and/or property will need to be protected by an easement. This includes any easements required for overland flow and pipes within Guthrie Park. Please provide amended plans to show easements, where required.

Please find an updated scheme plan attached. Easements are shown on the Envelope 100 series drawings.

(b) **Geotechnical Investigation** – The Infrastructure Report (section 2.2, pgs 2/3) outlines a summary of the findings of a geotechnical investigation for the proposed development undertaken by Initia, and states this report is attached. The Geotechnical Investigation Report has not been provided with the application. Please provide a copy of this report.

Please find the Geotechnical Report attached.

(c) **Services Plans** – Please provide an overall plan showing all services, planting, and lighting to demonstrate that there is enough space for all services proposed.

Please find a revised set of engineering drawings attached. New sheets 600, 601 and 602 show all services combined, including street lighting (from lighting design provided by Techlight) and raingardens/berms.

(d) **Vehicle Manoeuvring** – Please provide the tracking curves for manoeuvring for critical points e.g. Lot 31 – it does not appear possible to manoeuvre within Lot 103. Please also confirm manoeuvring the legal road and private vehicle access lots is sufficient for fire appliances to access the lot(s).

Tracking curves are attached that demonstrate that the access arrangement can support vehicle tracking from a large rigid truck (11.5m long). This is more than enough for pumping appliances (8m long) and aerial appliances (12.6m long) as they have rear steering.

Updated tracking curves to demonstrate that Lot 31 is workable will be provided in an updated package by Envelope.

(e) **Engineering Plans** – Please review the scales on engineering plans – some appear to have incorrect scales (e.g. drawings 401, 402 & 403). Please provide a revised set of engineering plans with corrected scales.

Please find a revised set of engineering drawings attached. Scales have been updated and are now correct.

(f) **Stormwater** – The Infrastructure Report does not provide the level of detail required. Considering the recent natural disaster event in Hastings, which had a particularly devastating impact on parts of Havelock North, robust and well-designed stormwater solutions are required.

A stormwater management report has been prepared in response to items f(i)-(ix). Specifically:

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i) Refer to stormwater report for 1 in 100-year flood event investigation and effects.
ii) Refer to stormwater report for flow path analysis of the 1 in 100yr event.
iii) Refer to stormwater report for relationship of Crombie, Karituwhenua and School Streams.
iv) The existing bank will no longer be re-shaped, additional cross sections have been added to show the stream shape with RL's.
v) The 6m offset from the bank has been included on sheet 302. Lot 09 is the only lot with the proposed dwelling sitting within the 6m offset, and we intend to apply for a resource consent with HBRC at a later stage.
vi) The site was largely impervious with greenhouses and footpaths, and we believe it is fair to calculate the pre vs post development flows on this basis, as the greenhouses and other impervious surfaces were only removed due to the client not being aware of the stormwater neutrality requirements for the future development.
vii) The 1 in 5yr event has been included in the stormwater report.
viii) New drainage mains & Infrastructure has been better distinguished between private and public ownership on the 400 series plans. The rain gardens and stormwater on lot 50 has been updated to be privately owned drainage.
ix) The new underground proprietary device shown on the drawings will become a public asset upon completion of the works.

(g) **Wastewater** – The need for a pump station is understood, however the proposed location of the pump station (at the northern end of the private road) is unlikely to be acceptable. Please amend proposal (and associated reports and plans) to show a more suitable location where safe access for operations and maintenance is achieved, following consultation with Council engineers.

The wastewater pump station has been moved to a more suitable location, following discussions with Council engineering staff. The revised plan is shown on the updated engineering drawings attached.

(h) **Rubbish Collection Points** – As Council does not collect the rubbish from private roads and all roads after roundabout are proposed as private, please outline what the recycling/waste arrangements will be and indicate where the rubbish collection points will be.
If agreements are reached to collect within the private road(s), please supply tracking curves to ensure it will accommodate a 12m truck.

Attached are emails from both JJ's Waste and Recycling and Kerbside Services confirming that the site can be serviced by the two private waste companies if necessary.

The tracking curves provided demonstrate that Council rubbish trucks can also service the site if agreement can be reached.

(i) **Roading** – Council supports the proposed development incorporating a new kerb and channel and new footpath along the northern boundary of Brookvale Road, connecting to the existing concrete footpath at Guthrie Park in the west, and to the existing concrete footpath at the

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Romanes Drive roundabout in the east (section 3.2, pg 4 Infrastructure Report).
However, there appears to be some discrepancy between the Infrastructure Report and the Traffic Assessment Report – the latter proposes a new footpath along only half of the site frontage, from the western boundary to the access road (section 6.2, pg 12).
Further, the Earthworks Plan (drawing 210) and the Utilities Plans (drawings 500 & 501) in the Infrastructure Report and the Landscape Concept plans (drawing LMP01) indicate footpath layouts along Brookvale Road that differ again from either of the above.
Please confirm what is proposed in terms of new kerb and channel and footpath along the northern boundary of Brookvale Road. Please indicate clearly on the relevant engineering and landscape plans.
In addition, please advise what the proposed streetscape treatment is along the full length of Brookvale Road frontage (i.e. street tree planting, undergrounding remaining overhead wires etc) to ensure it is appropriate in terms of integrating the development with the surrounding residential streetscape character.

At a meeting with Council staff on 10 July 2023 it was expressed that Council prefers that a footpath be established along the Brookvale Road frontage. One of the key drivers is to accommodate a pedestrian connection to a future pedestrian crossing of Brookvale Road (opposite Legorne Lane) that Council plans to establish.

Oderings do not wish to construct and establish a footpath along Brookvale Road because:

- pedestrian access has been provided for future residents travelling north or west via Guthrie Park
- it is safe for pedestrians to cross Brookvale Road immediately opposite the entry for future residents travelling south or east
- the cost of the new footpath is not insignificant; and
- the footpath would accommodate a wide public catchment from beyond the site.

However, it is proposed to install a new kerb and channel between proposed Lot 35 and the main entrance to reduce stormwater runoff from Brookvale Road into the neighbouring property at number 53.

5. Council's Landscape Architect comments.

An updated landscape plan is attached that has sought to address the matters raised by Council's landscape architect.

Should you have any questions, please do not hesitate to contact me.

Yours Sincerely,

Joe Gray
Principal Planner
Saddleback Planning Ltd

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Attachment 1 – Letter prepared by James Gardner-Hopkins re NPS-HPL issues
Attachment 2 – Lighting Concept Plan
Attachment 3 – Urban Design RFI Response
Attachment 4 – Revised Architectural Plans
Attachment 5 – Geotechnical Report
Attachment 6 – Large rigid truck tracking
Attachment 7 – Advice from JJ's Waste and Recycling and Kerbside Services
Attachment 8 – Revised Scheme Plan
Attachment 9 – Revised Engineering Drawings
Attachment 10 – Revised Civil Infrastructure Report
Attachment 11 – Stormwater Management Report
Attachment 12 – Revised Landscape Plans

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Strategy | Planning | Design

Oderings Nurseries – Proposed subdivision of 55-57 Brookvale Road, Havelock North

Hastings District Plan - Assessment of relevant objectives and polices

4 October 2023

PLAINS PRODUCTION ZONE

Outcomes

PPAO1 – The sustainable management of the versatile land of the Heretaunga Plains.

There are no versatile soils in the site that will be impacted.

PPAO2 – Recognition and acceptance of the level of effects associated with the sustainable management of land based primary production activities on the Heretaunga Plains.

There are no adjacent farming activities that would generate reverse sensitivity effects on future residents.

PPAO3 – Avoidance or mitigation of adverse effects on adjoining activities, including reverse sensitivity effects.

As above.

PPAO4 – Wineries that provide a range of activities that are aligned with the viticulture use of the land.

The site cannot support a winery or viticulture.

PPAO5 – An environment that has low scale commercial and industrial activities linked to produce grown and/or stock farmed on the site or nearby.

There is no produce grown and/or stock farmed on nearby sites.

PPAO6 – Retention of the open character, land based primary production activities, and low scale of buildings that comprise the amenity of the Plains Production Zone.

The proposed development will continue to retain the amenity of the Plains Production Zone. The site is surrounded by residential development or formal recreation land and, as a result, does not currently contribute to the amenity of the Plains Production Zone.

PPAO7 – Recognition of long-established infrastructure and community facilities.

Appropriate connections have been provided to Guthrie Park to the west and additional infrastructure can be established to ensure that the appropriate capacity of existing Council three waters and roading infrastructure is maintained.

PPAO8 – Recognition of the unique characteristics of the Roys Hill Winegrowing District.

Not applicable.

PPAO9 – The life supporting capacity of the Heretaunga Plains Unconfined Aquifer system will be sustained.

The proposed development will not impact the Heretaunga Plains Unconfined Aquifer system.

PPAO10 – That Mana Whenua values regarding the Kaitiakitanga of the Aquifer water resource are maintained.

Oderings are continuing to communicate with Mana Whenua in relation to all aspects of the proposal, including Mana Whenua values regarding the Kaitiakitanga of the Aquifer.

PPAO11 – Provision for the use and development of marae.

Not applicable.

Objectives and Policies

OBJECTIVE PPO1, Relates to PPAO1 – To ensure that the versatile land across the Plains Production Zone is not fragmented or compromised by building and development.

There is no versatile land within the site. The site is not adjacent to any other Plains Production Zone land, so will not result in any further fragmentation.

POLICY PPP1 – Encourage the amalgamation of existing Plains Production Zone lots into larger land parcels.

There are no adjacent sites within the Plains Production Zone that the site could be amalgamated with.

POLICY PPP2 – Restrict Forestry activities in the Plains Production Zone.

No forestry activities are proposed.

POLICY PPP3 – Limit the number and scale of buildings (other than those covered by Policy PPP4) impacting on the versatile soils of the District.

There are no versatile soils within the site.

POLICY PPP4 – To enable land based primary production, including by providing for directly associated accessory buildings where they are not of such a scale as to adversely affect the life-supporting capacity of the versatile land resource and which are consistent with the rural character of the Zone.

There are no versatile soils within the site.

POLICY PPP5 – Recognise that residential dwellings and buildings accessory to them are part of primary production land use but that the adverse effects of these buildings on the versatile land of the Plains production Zone are managed by specifying the number and size of the buildings that are permitted.

There is no versatile land within the site.

POLICY PPP6 – Restrict the ability to create lifestyle sites within the Plains Production Zone to those from an existing non-complying site where the balance of the site is amalgamated with one or more adjoining sites to form a complying site.

There are no lifestyle sites proposed and the site is bound by residential and formal recreation land, therefore there is no ability to amalgamate the site with adjoining land to create a complying site. The supporting explanation for PPP6 notes that the intent of the policy is to retain versatile soils within the District. There are no versatile soils within the site.

POLICY PPP7 – Establish defined urban limits to prevent ad hoc urban development into the Plains Production Zone.

The site is surrounded by Residential and formal recreation land, so there will be no ad hoc development into the Plains Production Zone.

OBJECTIVE PPO2, Relates to PPAO1 and PPAO5 – To provide for flexibility in options for the use of versatile land.

POLICY PPP8 – Provide for industrial and commercial activities in the Plains Production Zone where they are linked to the use of the land and with limits on the scale and intensity to protect soil values and rural character.

There are no high value soils within the site and the proposed development will continue to retain the rural character of the Plains Production Zone. The site is surrounded by residential development or formal recreation land and, as a result, does not currently contribute to the rural character of the Plains Production Zone.

POLICY PPP9 – To provide for Rural Transport Depots as activities that are directly reliant on the land to hold stock in transit, or undertake a land based primary production activity as part of this activity taking into account the need to avoid, remedy or mitigate the adverse effects on versatile land, water values and rural character.

Not applicable.

POLICY PPP10 – Provide for a dairy processing plant as a Discretionary Activity in recognition of its unique requirements of reliance on primary produce together with the need to locate in proximity to land suitable for the irrigation of high-volume wastewater.

Not applicable.

POLICY PPP11 – Require that any subdivision within the Plains Production Zone does not result in reducing the potential for versatile land to be used in a productive and sustainable manner.

There is no versatile land within the site.

POLICY PPP12 – Provide for a Retirement Village on Lot 2 DP 437278 as a Discretionary Activity in recognition of the unique characteristics of the site that would make it particularly suited to retirement living while taking into account the need to provide a strong artificial urban buffer to signal the limit to further urban sprawl to the south.

Not applicable.

OBJECTIVE PPO3, Relates to PPAO6 – To retain the rural character and amenity values of the Plains Production Zone.

POLICY PPP13 – Require that any new development or activity is consistent with the open and low scale nature that comprises the rural character and amenity of the Plains Production Zone.

The supporting explanation provides further clarity on the intent of the policy.

Explanation

The Plains Production Zone is topographically flat but does have a distinctive rural character. This relates to the openness of the environment and to the low scale of any development within the Zone.

Generally the property sizes within the Plains Production area are of a size that supports production. These features help to accentuate the flat and open topography of the Plains.

In this instance there is no adjacent or surrounding open and low scale nature that comprises the rural character and amenity of the Plains Production Zone. The site is surrounded by residential and formal recreation land and is typical of an established residential landscape. Therefore the proposed development will not detract from the distinctive rural character and amenity of the Plains Production Zone.

POLICY PPP14 - Require that any new activity locating within the Plains Production Zone shall have a level of adverse effects on existing lawfully established land uses that are no more than minor.

The proposal will not generate adverse effects on any existing lawfully established land uses that are more than minor.

POLICY PPP15 – Noise levels for activities should not be inconsistent with the character and amenity of the Plains Production Zone.

The site is bound by residential and informal recreation land, so there is no surrounding character of the Plains Production Zone. Noise levels will be appropriate and consistent with noise generated by the surrounding land uses.

OBJECTIVE PPO4, Relates to PPAO2 – To enable the operation of activities relying on the productivity of the soil without limitation as a result of reverse sensitivities.

POLICY PPP16 – Require that any activity locating within the Plains Production Zone will need to accept existing amenity levels and the accepted management practices for land based primary production activities.

There is no other Plains Productive Land adjoining the site that would generate reverse sensitivity effects.

OBJECTIVE PPO5, Relates to PPAO4 – To enable Wineries to vertically integrate activities associated with the production of grapes where they do not compromise the versatile land.

POLICY PPP17 – To enable wineries to vertically integrate with grape production on the land, but to limit the scale of associated buildings and outdoor storage areas.

No wineries are proposed.

OBJECTIVE PPO6, Relates to PPAO7 – To provide for Existing Regional Infrastructure facilities that contribute to the transport and service network.

POLICY PPP18 – Provide for the continued use and development of the Bridge Pa Aerodrome within its existing site.

The proposed development will not impact the operation of the Bridge Pa Aerodrome.

OBJECTIVE PPO7, Relates to PPAO2 – To ensure the Integrated management of the land and water resources on the Heretaunga Plains.

POLICY PPP19 – Work collaboratively with the Hawke's Bay Regional Council to manage land uses that impact on water quality and quantity.

Hawkes Bay Regional Council have been provided with plans of the proposed development in relation to stormwater management and have not raised any concerns to date. The stormwater treatment system has sought to meet HBRC requirements.

OBJECTIVE PPO8, Relates to PPAO1 – To recognise and provide, as scheduled activities, land uses that are long established on a site, or previously zoned industrial sites, that have a proven economic benefit to the community.

POLICY PPP20 – To list scheduled sites in the District Plan that provide a valuable service to the community or satisfy a proven community need whilst avoiding, remedying or mitigating the adverse effects resulting from the Scheduled Activity.

There are no scheduled sites that apply.

POLICY PPP21 – To provide for existing industrial activities, previously zoned Industrial 6, within the Plains Production Zone as Scheduled Activities, whilst avoiding, remedying or mitigating any adverse effects resulting from the Scheduled Activity.

Not applicable.

OBJECTIVE PPO9, Relates to PPAO9 and PPAO10 – To ensure the life supporting capacity of the Heretaunga Plains Unconfined Aquifer water resource is not compromised by the effects of land use occurring above it.

POLICY PPP22 – Ensure that where activities involving hazardous substances are located within the sensitive environment of the Heretaunga Plains Unconfined Aquifer Overlay area (Appendix 59), their usage and storage are designed and managed to ensure the water supply for the environment and community is not compromised.

The proposed development (including the existing garden centre) will be involve the storage of large quantities of hazardous substances. Fertilisers and cleaners sold to garden centre customers will be contained in small volumes and stored appropriately.

POLICY PPP23 – Monitor land use activities occurring within the Heretaunga Plains Unconfined Aquifer Overlay area (Appendix 59) to ensure that current regulation is adequately preventing contaminants from entering this groundwater resource.

The proposed activity will not generate any contaminants that may enter groundwater.

OBJECTIVE PPO9, Relates to PPAO8 – To recognise the unique soil and climatic characteristics and the uniform land use of the Roys Hill area of the District.

POLICY PPP24 – To provide an overlay 'Roys Hill Winegrowing District' to identify the concentration of viticulture and wine production on Class 7 soils, and protect the unique amenity that results.

Not applicable.

POLICY PPP25 – To ensure that activities are complementary to the character and amenity of the Roys Hill Winegrowing District and safeguard the grape growing potential of the land.

Not applicable.

OBJECTIVE PPO10 – To recognise and provide for tangata whenua's cultural and physical relationship with their land.

POLICY PPP26 – To provide for the development and maintenance of marae in rural locations in recognition of their cultural significance and taking into account the adverse effects on rural character.

Oderings are continuing to communicate with Mana Whenua in relation to all aspects of the proposal.

SUBDIVISION (relevant provisions)

POLICY SDP9 – Ensure that land being subdivided, including any potential structure on that land, is not subject to material damage by erosion, falling debris, subsidence, slippage or inundation from any source.

Appropriate measures are in place to ensure that the proposed lots can be designed in a way to avoid inundation of dwelling. The geotechnical assessment demonstrates that there are no material subsidence risks that would limit development of the site.

POLICY SDP10 - Ensure that any measures used to avoid, remedy or mitigate the risks of natural hazards do not have significant adverse effects on the environment.

The revised flood risk assessment demonstrates that the proposed earthworks and design will not result in significant flooding effects upstream or downstream.

POLICY SDP12 - Ensure provision of onsite services for water supply, sewage disposal or stormwater disposal for sites in the Rural and Plains areas unless the provision of reticulated services is identified as an appropriate work to mitigate adverse effects on the environment.

In this instance onsite services are not appropriate due to the scale. The development has been appropriately designed to connect to public reticulation that is immediately adjacent to the site.

POLICY SDP14 - Require the provision of safe and practicable access for pedestrians and vehicular traffic from a public road to each site.

Appropriate vehicle access will be made available to Brookvale Road intersection that has been designed to the necessary Council standards. Pedestrian access has been provided for future residents travelling north or west via Guthrie Park and it is safe for pedestrians to cross Brookvale Road immediately opposite the entry for future residents travelling south or east.

POLICY SDP15 - Ensure that roads provided within subdivision sites are suitable for the activities likely to establish on them and are compatible with the design and construction standards of roads in the District Transport Network which the site is required to be connected to.

The proposed roads have been designed to the appropriate standard.

POLICY SDP18 - Ensure that earthworks associated with providing vehicle access or services on land being subdivided will neither detract from the visual amenities of the area, nor have adverse environmental impacts, such as dust, or result in the destruction of heritage sites, cause natural hazards, or increase the risk of natural hazards occurring.

Due to the generally flat topography the earthworks volumes will be completed over a relatively short duration. Appropriate measures, including noise, dust and erosion and sediment controls, will be employed to further minimise potential adverse effects.

POLICY SDP25 - To avoid, remedy or mitigate the adverse effects of the subdivision of land for residential purposes, where soils have the potential to contain historic persistent chemical residues that may result in potential adverse health effects for the future occupants.

The application has been supported by a detailed site investigation that found that there are no concentrations of contaminants onsite that would pose a risk to human health or the receiving environment. However, as a precaution, controls will be in place during earthworks to minimise potential mobilisation of soil contaminants and accidental discovery protocols will be put in place.

17 July 2023

Hastings District Council
207 Lyndon Road East,
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By email: rowena@sageplanning.co.nz (Consultant Planner)
davidb@hdc.govt.nz (Team Leader)

ODERINGS BROOKVALE ROAD, HAVELOCK NORTH SITE: NPS-HPL ISSUES

Introduction

1. HDC has stated the following in its s92 Request:

> The application is supported by a desktop soil and Land Use Capability classification assessment of the site by Dr Reece Hill of Landsystems (dated 21 April 2023) that concludes the land is most appropriately classified as non-productive land and that, as such, the NPS-HPL does not apply.
>
> However, this is not considered sufficient to address the application of the NPS-HPL to the land in question.
>
> As indicated in the assessment of effects accompanying the application, the land is shown as being LUC 3, as mapped by the New Zealand Land Resource Inventory.
>
> Clause 3.5(7) of the NPS-HPL requires that until a regional policy statement containing maps of highly productive land in the region is operative, land classified as LUC 1-3 and not identified for future urban development must be treated as 'highly productive land'.
>
> Under the NPS-HPL, LUC 1, 2, or 3 land means 'land identified as Land Use Capability Class 1, 2, or 3, as mapped by the New Zealand Land Resource Inventory or by any more detailed mapping that uses the Land Use Capability classification' [underline added].
>
> The land meets this interim definition and must therefore be treated as 'highly productive land' under the NPS-HPL.

2. We agreed at a follow-up meeting that we would come back to you explaining our reasoning in more detail as to why the Landsystems site specific assessment does qualify as "more detailed mapping" using the "Land Use Capability classification". I also note that, although the s92 Request refers at the second to last paragraph of the above extract to underlining being added, no underlining actually appeared in the s92 Request (although it is unlikely that anything will turn on this).

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Attachment D

Oderings' approach

3. Oderings has approached the applicability of the NPS-HPL in the same way that Queenstown Lakes District Council ("**QLDC**") itself has recently taken, in the context of part of its proposed district plan review.[1]

4. In that process, a submitter relied on the evidence of Dr Reece Hill (of Landsystems) which provided a desktop analysis of available LUC map information and interpretation of aerial photography and detailed contour map information. Dr Hill's conclusion was:

> … the property scale assessment using aerial photography and detailed slope class map information, indicates that the subject site land would more accurately be class as LUC class 4 or greater, based on slope alone, and as such would not be classed as NPS highly productive land.

5. QLDC engaged Mr Ian Lynn to complete a peer review of Dr Hill's evidence. Mr Lynn agreed with Dr Hill's findings that the site is not LUC 3 land, stating:

> **Based on the more detailed mapping undertaken**, and the findings of Dr Hill and Mr Lynn, **Council accepts that the NPS-HPL does not apply to the submitter's proposal**, and consequently, the NPS-HPL is not a reason to reject the rezoning request.

6. This position was challenged, particularly the approach of accepting "more detailed mapping" on a site specific rather than on a district or region-wide basis. QLDC's reply submissions set this out, together with its response, as follows (original emphasis):

> "LUC 1, 2, or 3 land" is defined in the NPS-HPL as follows:
>
> > **LUC 1, 2, or 3 land** means land identified as Land Use Capability Class 1, 2, or 3, as mapped by the New Zealand Land Resource Inventory **or by any more detailed mapping that uses the Land Use Capability classification**
>
> Ms Limmer's submissions for APONLS draw attention to the Ministry for the Environment's 'Guide to Implementation' of the NPS-HPL. An extract is quoted in respect of the definition of LUC 1, 2 and 3 which, in summary, suggests that any more detailed mapping needs to have happened at a region or district level (rather than site by site), before it can be used by a council to identify Highly Productive Land (HPL) under the transitional definition of LUC 1, 2 or 3 land.
>
> The Guidelines also say:
>
> > More detailed mapping could be tools such as S-Map, **however it is not intended to include site-specific soil assessments prepared by landowners**. If a local authority intends to use more detailed mapping information, it must be based on the LUC classification parameters (completing the assessment according to the methodology in the Land Use Capability Survey Handbook (2009)), and not consider other factors such as water availability. **Part 2 of the guide will provide further**

[1] As part of the hearing, before commissioners, of Stage 1 submissions: Gertrude's Saddlery Limited and Larchmont Developments Limited, at Arthurs Point.

Attachment D

> **guidance on best practice for undertaking more detailed assessment of LUC**.

As submitted orally at the hearing, MfE's guidance document inserts words into the NPS-HPL that are simply not there. They would require the definition of LUC 1, 2 or 3 land to be read as follows (ie. with the addition of the additional underlined words):

> **LUC 1, 2, or 3 land** means land identified as Land Use Capability Class 1, 2, or 3, as mapped by the New Zealand Land Resource Inventory or by any more detailed mapping completed at a region or district level, that uses the Land Use Capability classification completing the assessment according to the methodology in the Land Use Capability Survey Handbook (2009).

Recent decisions of the Environment Court support the position that non-statutory MfE guidance cannot alter the meaning of a statutory instrument:

(a) In *Federated Farmers v Northland Regional Council* the Environment Court expressed concerns regarding MfE guidance on the National Policy Statement for Freshwater Management 2020 (NPS-FM), and noted that it has no regulatory force. The Court stated:

> We have put aside any implied directions in the guideline, but the entire Court is uneasy at the implications of the documents and its potential ramifications".

(b) In *Greater Wellington Regional Council v Adams*, the Court confirmed that the same guidance on the NPS-FM cannot alter the definition contained in the NPS-FM, noting:

> Firstly, we note that NPS-FM is a statutory instrument established under Part 5 (ss 45-55) RMA, changes to which must be effected in accordance with s 53. The proposition that a definition contained in such a statutory instrument might be altered in some way or its application affected by operation of non-statutory instruments such as the Guidance document and hydrology tool is one with which we have extreme difficulty as a legal proposition. The Guidance document appears to be just that, "guidance", the application of which is tempered by caveats in the document itself which we will refer to shortly but one of which makes it clear that the Guidance document does not purport to alter laws, official guidelines or requirements, a category which the definition contained in NPS-FM must surely fall into.

Context and purpose are key factors when resolving competing interpretations in planning instruments. Council's view on the NPSHPL "more detailed mapping" question is that MfE's interpretation (in its Guidelines) is difficult to reconcile with the context and purpose of clause 3.5(7), and the NPS-HPL more generally. In effect, that interpretation would maintain LUC mapping that has been proven inaccurate until such time as a regional / district exercise has been undertaken, resulting in the protection of land that does not have high productive value. It is submitted that it would be inconsistent with the purpose of the NPS-HPL, and would also border on producing an absurd outcome, by placing policy restrictions on land which is not intended to be protected by the NPS-HPL.

7. Oderings adopts QLDC's approach and reasoning. It is one reason why it went down the path of obtaining "more detailed mapping" using the

"Land Use Capability classification". I address the detail of this mapping below.

"More detailed mapping" using the "Land Use Capability classification"

8. The Landsystems report clearly uses the Land Use Capability classification. It explains what that system is, and refers to the LUC Survey Handbook. It further explains:

> For an accurate assessment of LUC classification for a property, the assessment should be based on the current condition of the area. This is important because some land management practices (e.g. the placement of tracks, excavation for and placement of buildings, excavation of drains, soil remediation for soil contamination, and general earthworks) cause irreversible changes to the soil (i.e. changes other than those that can be remediated by management practices and return the soil to its intrinsic state). These areas are referred to as modified soil areas. In essence, these are soil areas classified as Anthropic Soils, and can no longer be assessed using the LUC classification or considered high class soil.

9. In fact, the report explicitly states: "My assessment has been carried out using the Land Use Capability classification."

10. While Landsystems did not undertake on-site soil observations itself, it did have specific on-site soil information before it from previously drilled bore logs. It used this information together with:

    (a) available NZLRI soil and LUC map information; and

    (b) Aerial photographs available on Google Earth.

11. The Landsystems report concludes, in respect of LUC classification (emphasis added):

> The bore log core data and photo observations, in combination with the aerial photographs, confirms that the site has undergone modification of the original soil, including excavation of the soil, placement of fill, establishment of buildings and curtilage. **The land in its current state cannot be assigned a LUC classification due to the degree of modification and is best considered non-productive land**.

12. Oderings is firmly of the view that this qualifies as a site specific "more detailed mapping" exercise. On-site investigations are not required (and did not occur in the QLDC example), but, in this case, the use of site specific bore logs occurred – in addition to aerials and images. Effectively, site investigations have been used as part of the more detailed mapping exercise.

13. It is hard to see how this can otherwise be the case. It would be inefficient and unreasonable for Oderings to have to have additional site-specific investigations undertaken in order to qualify the assessment as a "more detailed mapping exercise", particularly when there is no expert opinion that such is required. In other circumstances, Dr Hill has required site

specific investigations to be undertaken so as to provide an opinion as to the LUC classification. This is not the case here.

Considerations should HDC not accept that the site is not LUC1-3

14. Without prejudice to its position that the site is not LUC1-3, if HDC were to take a different position, the approach that Oderings considers should be taken is set out here.

15. In this regard, it is noted that the HDC s92 Request further says:

> On the basis that the land in question must be treated as 'highly productive land', the proposal seeks to subdivide and build housing which appears to be contrary to the following policies of the NPS-HPL, notably:
>
> *Policy 7: The subdivision of highly productive land is avoided, except as provided in this National Policy Statement.*
>
> *Policy 8: Highly productive land is protected from inappropriate use and development.*
>
> Clause 3.8 of the NPS-HPL requires avoidance of subdivision, except in limited circumstances which do not appear to be applicable to the proposal.
>
> Clause 3.9 of the NPS-HPL requires avoidance of inappropriate use and development of highly productive land, where any use is inappropriate unless listed in clause 3.9(2). None of the matters listed in clause 3.9(2) appear to apply to the proposal.
>
> Clause 3.10 of the NPS-HPL provides a limited exemption to clauses 3.8 and 3.9.
>
> It is considered that there is insufficient information for Council to assess and be satisfied that the exemption provided for in clause 3.10 of the NPS-HPL is applicable to the proposal.
>
> To assist with this assessment, please provide the following information:
>
> - an assessment of the proposal against each of the matters in clause 3.10 of the NPS-HPL, with appropriate technical evidence (noting that they are cumulative); and
>
> - as part of the above assessment, it would be useful to include an economic assessment as to economic viability of the land to be used as a land-based productive site over the next 30 years (which may address clause 3.10(1)(a)).

16. The detail of the response to the specific clauses of the NPS-HPL is provided by Mr Gray in his letter response to further information request. My Gray concludes that the exemption provided in clause 3.10 of the NPS-HPL is met.

17. This letter provides further context for the consideration of this assessment, including in respect of Part 2, should HDC not accept that clause 3.10 is met. This is important as, whatever the assessment

against the NPS-HPL, understanding its place in decision making when considering Part 2 is critical.

Access to Part 2

18. This requires consideration of *King Salmon*,[2] *RJ Davidson*,[3] and other recent authorities.

NZ King Salmon

19. *King Salmon* concerned the lawfulness of a decision by a Board of Inquiry to approve certain site-specific plan changes to the Marlborough Sounds Resource Management Plan. However, context is everything,[4] and it is appropriate to provide a little more background about the case. Significantly, as it involved a plan change, the statutory directive under s67(3) of the RMA was to "give effect to" (as relevant) the New Zealand Coastal Policy Statement which contained objectives and policies, some of which were worded in strong terms (ie to "avoid" of "not allow"[5] certain outcomes). The Supreme Court found that "give effect to" means "implement" (at [77]).

20. On the facts of that case and in light of the particular wording of the NZCPS, the Supreme Court held the Board of Inquiry had erred in applying an "overall judgement" approach to assessing the consistency of the plan change with the NZCPS.[6] It then went on to hold that since the NZCPS had been intended to "give substance to" the principles in Part 2 of the RMA, there could be no question of the plan change being in accordance with Part 2. The Court said that:[7]

> In principle, by giving effect to the NZCPS, a regional council is necessarily acting "in accordance with" Part 2 and there is no need to refer back to the part when determining a plan change.

21. The Supreme Court subjected that statement to three caveats, however, which would have allowed resort to Part 2 in the case of invalidity, incomplete coverage or uncertainty of meaning.[8] The latter caveat is entirely consistent with (if not required under) the orthodox approach to interpretation of a statute or regulation, which is to be ascertained from its text and in the light of its purpose and its context (s 10 of the Legislation Act 2019).

22. So, in *King Salmon*, not only did the Council have to "implement" the NZCPS, the NZCPS contained relevant policies that were worded strongly; the two factors reinforced one another.

---

2 *Environmental Defence Society Inc v The New Zealand King Salmon Co Ltd* [2014] 1 NZLR 593.
3 *R J Davidson Family Trust v Marlborough District Council* [2018] 3 NZLR 283.
4 *McQuire v Hastings District Council* [2002] 2 NZLR 577 (PC), at [9].
5 *King Salmon* at [93].
6 King Salmon at [135]-[140].
7 *King Salmon* at [85].
8 *King Salmon* at [88] and [90].

23. Importantly, even in the context of the requirement to "give effect to" (or "implement"), the Supreme Court did not consider that the "avoid" requirement under the relevant policies of the NZCPS required all effects on ONFs and ONLs to be "not allowed". It explicitly contemplated that activities with minor (or transient) effects could be allowed, stating at [145]:

> … It is improbable that it would be necessary to prohibit an activity that has a minor or transitory adverse effect in order to preserve the natural character of the coastal environment, even where that natural character is outstanding. …

24. In the context of this application (ie the Oderings' application), the case for the Oderings is that the effects of its proposal are minor only.

25. In other words, the application is not prohibited, even if it were contrary to the objectives of the NPS-HPL under a strict application of *King Salmon* approach. In resolving whether or not to allow such a proposal (ie a proposal with minor effects), even under the *King Salmon* approach, it is entirely appropriate if not necessary to carefully consider it against Part 2.

26. Even more flexibility is allowed in accessing Part 2 in the context of a resource consent application, following the Court of Appeal's decision in *RJ Davidson*, which I turn to address next.

RJ Davidson

27. RJ Davidson concerned an application under the RMA for a resource consent for a mussel farm in Marlborough. The Court of Appeal was required to consider the scope of s 104(1) of the RMA, which requires decision-makers to "have regard to" relevant provisions of various planning documents, as well as other matters, "subject to Part 2 of the RMA".

28. The main question before the Court of Appeal in *R J Davidson* was whether the words "subject to Part 2 of the RMA" had any residual meaning in the light of the decision of the Supreme Court in *King Salmon*.

29. The Court of Appeal confirmed the application of Part 2 in the resource consent context, acknowledging it's pre-eminence in resource consent decision-making and confirming the ability to consult it directly in such decisions. The Court of Appeal specifically held that the analysis applied in *King Salmon* did not transfer over to the provisions of the RMA governing the granting of resource consents, specifically s 104(1), either in respect of the approach to be applied when taking into account the provisions of relevant planning documents under s 104(1)(b), or when considering the significance of taking into account the range of factors in s 104(1)(a)-(c) "subject to Part 2 of the RMA".[9]

[9] *R J Davidson* at [47] and [73].

30. The Court of Appeal held that s 104(1) "plainly contemplate[d]" decision-makers having direct regard to Part 2 of the RMA in appropriate cases. The Court observed:[10]

> The Act's general provisions dealing with resource consents do not respond to the same or similar reasoning to that which led the Supreme Court to reject the "overall judgment" approach in *King Salmon*. There is no equivalent in the resource consent setting to the range of provisions that the Supreme Court was able to refer in the context of the NZCPS, designed to ensure its provisions were implemented: the various matters of obligation discussed above. Nor can there be the same assurance outside the NZCPS setting that plans made by local authorities will inevitably reflect the provisions of pt 2 of the Act. That is of course the outcome desired and anticipated, but it will not necessarily be achieved.

31. The Court of Appeal held that if, when considering an application for resource consent, an activity engaged the NZCPS in a manner where "it was unclear from the NZCPS itself whether consent should be granted or refused", for example because there was "no clear breach of a prescriptive policy in the NZCPS", then the consent authority would need to exercise a judgement and could have regard to Part 2.[11]

32. Importantly, the Court held that a similar approach should be taken for activities engaging other types of plans (such as District Plans). After summarising the "fair appraisal" approach to considering relevant plan provisions, the Court went on to say:[12]

> It may be … that a fair appraisal of the policies means the appropriate response to an application is obvious, it effectively presents itself. Other cases will be more difficult. If it is clear that a plan has been prepared having regard to pt 2 and with a coherent set of policies designed to achieve clear environmental outcomes, the result of a genuine process that has regard to those policies in accordance with s 104(1) should be to implement those policies in evaluating a resource consent application. Reference to pt 2 in such a case would likely not add anything. It could not justify an outcome contrary to the thrust of the policies. Equally, if it appears the plan has not been prepared in a manner that appropriately reflects the provisions of pt 2, that will be a case where the consent authority will be required to give emphasis to pt 2.
>
> If a plan that has been competently prepared under the Act it may be that in many cases the consent authority will feel assured in taking the view that there is no need to refer to pt 2 because doing so would not add anything to the evaluative exercise. Absent such assurance, or if in doubt, it will be appropriate and necessary to do so. That is the implication of the words "subject to Part 2" in s 104(1), the statement of the Act's purpose in s 5, and the mandatory, albeit general, language of ss 6, 7 and 8.

33. While these passages refer to the processes by which relevant plan(s) considered as part of a s 104(1)(b) RMA "fair appraisal" analysis have been adopted, it is plain from the Court's reasoning that it did not intend for this to be the sole criterion for the application of Part 2 of the RMA.

10 *R J Davidson* at [70].
11 *R J Davidson* at [72].
12 *R J Davidson* at [74]-[75].

Attachment D

Rather, as the emphasised passages suggest, another important question is whether the "fair appraisal" analysis was finely balanced or involved the consideration of competing provisions, in which case the consent authority may have regard to Part 2.

34. This was the approach taken relatively recently by Palmer J in the High Court – refer *Tauranga Environmental Protection Society Inc v Tauranga City Council & BOP Regional Council* CIV 2020-470-31, at [86]:

> … Consistent with *EDS v King Salmon* and *RJ Davidson Family Trust*, a Court will refer to pt 2 if careful purposive interpretation and application of the relevant policies requires it. That is close to, but not quite the same as, Mr Gardner-Hopkins' submission that recourse to pt 2 is required "in a difficult case". To the extent that Mr Beatson's and Ms Hill's submissions attempt to confine reference to pt 2 only to situations where a plan has been assessed as "competently prepared", I do not accept them.

Gray – specifically considering the NPS-HPL

35. As recently been discussed by the Environment Court in a consent context (such as this), in *Gray v Dunedin City Council* [2023] NZEnvC 45, the NPS-HPL is just one of the various matters requiring consideration. The clear inference was that the HNP-HPL was not to be determinative in that case.

36. In *Gray*, the application was for resource consent for a residential activity on an undersized lot comprising 2.8 ha. The application was non-complying and declined at first instance by the Council. While particular policies and mitigation measures (particularly as to ecological restoration) under the District Plan were a focus of the decision, the Environment Court on appeal had to still consider the NPS-HPL.

37. The Environment Court, in that context:

    (a) found at [194] that the NPS-HPL does not "of itself have the effect of altering the district plan in any manner"; and

    (b) proceeded at [202] on the basis that "the NPS-HPL provisions are among the wide range of identified matters that the consent authority must have regard to".

38. This was following a detailed consideration of the scheme of the NPS-HPL at [195]-[201], which recognised some of the limitations of the NPS-HPL as expressed in the statutory consenting scheme.[13]

Summary – decision making:

39. The first point is that access to Part 2 is not restricted, given that:

    (a) the decision on a consent application under s104 is explicitly "subject to Part 2" (*RJ Davidson*);

[13] The Environment Court was also "not prepared to give any weight to the discussion of the NPS-HPL in the MfE guidelines (at [206]).

Attachment D

(b) the NPS-HPL is *relevant to* achieving sustainable management, but is *not determinative of* what will achieve sustainable management (s45,[14] *Gray v Dunedin City Council*); and, in this instance, the District Plan has not yet been updated to give effect to the NPS-HPL (including with greater specificity as to content and location); and

(c) even on the *King Salmon* approach, as the effects are in this context only minor, Part 2 is relevant to determining whether the Proposal should proceed.

40. In respect of considering Part 2 itself, it is necessary to look at all aspects that are relevant – both in favour of granting consent as well as those that weigh against it: refer *Ayrburn Farms Estates Ltd v Queenstown Lakes District Council* [2013] NZRMA 126 at [87]-[100]. Although that case was decided in the context of a restricted discretionary consent application, the High Court there found that the Environment Court had erred in only considering Part 2 matters in favour of granting consent.[15] By parity of reasoning, Part 2 cannot be looked at only to refuse consent.

41. Accordingly, the "enabling" aspects of section 5 and Part 2 require careful consideration in this case. Section 7(b) is of particular relevance in this case: "the efficient use and development of natural and physical resources", as part of the enabling aspects of section 5 in respect of enabling "people and communities to provide for their social, economic, and cultural well-being". The site will not be used for productive purposes, and so if the consent is not granted will most likely be unused, or put to some low-level use, such as storage. In contrast, provision of housing is not just a more efficient use, it is also a use that will contribute significant social benefits, given the shortage of housing in the District. These factors weigh heavily in support of the application.

Forward progress

42. I would be happy to discuss further, as necessary.

[14] This differentiates the NPS-HPL from the NZCPS which was the context of *King Salmon*: The NZCPS is the only mandatory NPS (required at all times under s57(1) of the RMA). Its purpose under s56 is also to "state objectives and policies *in order to achieve* the purpose of this Act in relation to the coastal environment of New Zealand". In comparison, the purpose of other NPSs under s45 is to "state objectives and policies for matters of national significance *that are relevant to achieving* the purpose of this Act", ie other NPSs are relevant, but not necessarily determinative (this makes sense as some NPSs themselves can pull in different directions, eg the NPS-UD and the NPS-HPL). The NZCPS is also holistic in addressing the coastal environment as a whole, while other NPSs are directed to specific matters, and cannot internally address all matters under Part 2

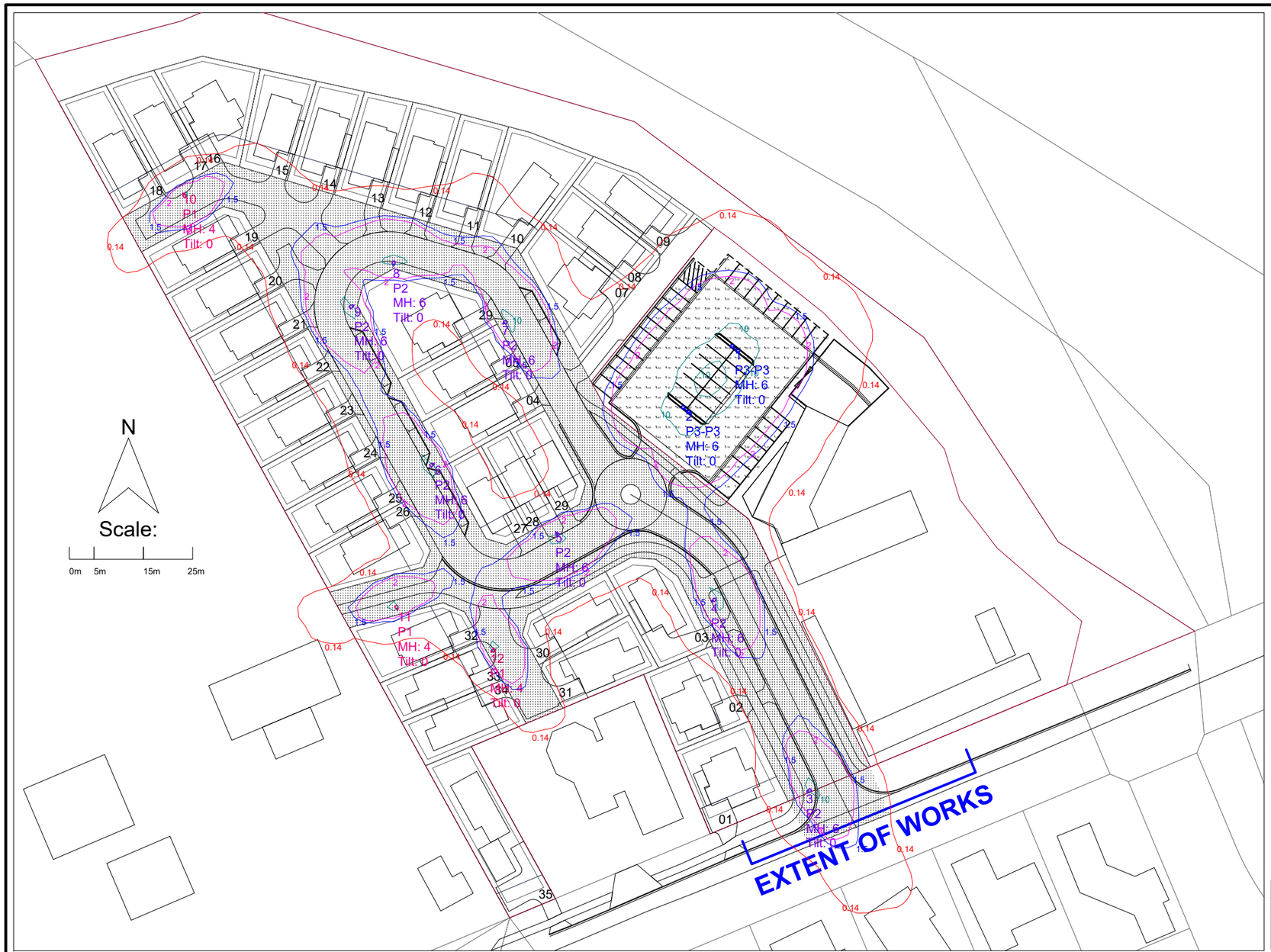
[15] "It follows that in this case the Environment Court was obliged to have regard to any Part 2 matters which related to the matters over which the council had reserved its discretion. Its view that Part 2 was relevant for the sole purpose of identifying benefit was erroneous and based on a misinterpretation of *Woolley*."

Yours faithfully

JAMES GARDNER-HOPKINS
Consultant | Advisor | Project Manager

M: 021 277 1425 | T: 09 889 2776 | E: james@jgh.nz
www.jgh.nz

Attachment D



GENERAL NOTES:

1. Lighting calculations have been completed in accordance with Hastings District Council and AS/NZS 1158.3.1:2020 for lighting subcategories:
Carpark - PC3.
Access Road - PR5

2. Initial lamp lumens & maintenance have been derived from the manufacturer's TM-21 data with a design maintenance factor applied & derived in accordance with AS/NZS 1158 and BS5489 as shown below.

3. Isolux lines show illuminance values (lux) at grade.

4. Luminaires are mounted at the heights & tilts as indicated on the drawing.

MAINTENANCE FACTOR (MF):

Lamp Lumen Maintenance Factor (LLMF)
- Philips Luxeon M LED lamp lumen depreciation after 100,000 hrs of operation equivalent to 23.5 years of operation based on an estimated annual operational hours of 4,250 hours.
- AEC/Philips data in accordance with IESNA TM-21-11 & LM-80-08, has been used for 15°C average night time ambient temperature.

Luminaire Maintenance Factor (LMF)
- Luminaire IP66 Rating
- Medium pollution category
- Luminaire cleaning cycle of every 48 months in accordance with AS/NZS 1158.1:2005 Table E1.
- All luminaires placed using a maintenance factor of 0.800.

Isoline Legend	
Illuminance (Lux)	
Color	Value
	0.14
	1.5
	2
	10

Calculation Summary			
Label	Min	Avg	Max/Avg
Access Road	0.15	2.29	6.100
Carpark	0.91	5.80	3.540

Luminaire Schedule						
Symbol	Label	Qty	Arrangement	LLF	Description	Lum. Watts
	P1	3	Single	0.800	1 x NEW AEC ITALO 1 0F2 STA 3.3-1M AEP 9.5W 3000K LED Street Light Mounted onto NEW 4.0m High Column, 0-deg Tilt	9.5
	P2	7	Single	0.880	1 x NEW AEC ITALO 1 0F2 STA 3.3-2M AEP 18.5W 3000K LED Street Light with BLS Mounted onto NEW 6.0m High Column, 0-deg Tilt	18.5
	P3-P3	2	Back-Back	0.890	2 x NEW AEC ITALO 1 0F2H1 S05 3.3-2M 21W 3000K LED Street Lights (x2) with BLS Mounted Back to Back onto NEW 6.0m High Column, 0-deg Tilt	21

Page 1 of 1

55-57 BROOKVALE ROAD
HAVELOCK NORTH
LIGHTING DESIGN OVERVIEW
CLIENT: SADDLEBACK

Designed By:	PA TechIES
Checked By:	
Date:	02-07-23
Scale:	1:800 @A3

Revision	No.	Date	Description
	1.	21-07-23	Concept Design - For Information Only

TECHLIGHT

Saddleback

27 July 2023

55-57 Brookvale Road Development

Urban Design RFI Response

Attention:	
Rowena Macdonald *Consultant Planner*	rowena@sageplanning.co.nz

Dear Rowena,

In response to your request for further information for the 35 Lot Comprehensive Development at 55-57 Brookvale Road, additional detail about the application has been provided. Of note:

- Further comments have been provided detailing the design rationale of the proposed layout, and why alternative layouts were not pursued;
- Clarification of the reserve treatment, including additional renders;
- Proposed Consent Conditions to address concerns around material selection and communal ownership of private infrastructure assets;
- Further detail on landscaping elements, infringements, flood risk mitigations; and
- The inclusion of a concept lighting plan for the private accessways.

These are addressed in detail on the following pages.

Kind regards,

Cameron Rossouw

Urban Designer
Saddleback Planning Limited

Attachment F

3. Urban Design, Landscaping & Visual Effects

To assist with the assessment of landscape and visual effects of the proposal, and with assessment of how the proposed development aligns with the design guidance contained in the Hastings Residential Intensification Design Guide 2020, which link to the District Plan assessment criteria:

A. Design Statement

Please provide an updated Design Statement to include an assessment of the layout options investigated and the philosophy behind the design concept lodged. Note: Council policy planners have carried out an initial assessment of the proposal against the Hastings Residential Intensification Design Guide 2020. Their assessment is attached to this letter for your information, as it may provide some useful insight in preparing an updated Design Statement.

Saddleback Response:

1. The following comments have been provided in response to the above request in addition to the Urban Design Statement provided with the application.

2. A range of alternative layout options were investigated through the conceptual design process. Following a review of these options, it was determined the submitted proposal offered the best compromise between all stakeholders and development objectives. Including:

    a. Discouraging vehicles moving through the development, and;

    b. Encourage modal shift / pedestrian connectivity – particularly with the park space to the west.

3. While in theory Council's suggestion of an edge-lane would be a desirable outcome in most situations, in this instance, by virtue of the site parameters (shape, size, single access points), we felt it wasn't appropriate because:

    a. The proposal is based on splitting off traffic as quickly as possible / reducing vehicle loads and movements progressively to the north. (Demarcated with the proposed roundabout and surface treatments).

    b. The proposal utilises shared-space design to intuitively lower vehicle speed and support pedestrian use of the corridor space; and

    c. Makes the west-east linkages (primarily the southern one) as 'pedestrian-friendly/dominant' as possible, including with shared space treatment of the road, planting, and additional demarcated footpaths.

    d. Utilising an edge-lane in this case would:

        i. Increase the amount of roading and related infrastructure required to service the development;

ii. Likely lose a dwelling (unless the lane widths/spaces are compromised); and

iii. Tends to encourage vehicle movement through the development (as public view it as a suitable location for parking which undermines the objectives sought above.

e. The current design allows dwellings to have rear-yards fronting to the park which:

i. Allows direct entry to units from park, meaning that the park becomes much more like the front doors for daily activity (visitors will still tend to use the internal lane).

ii. Encourages the use of the park as an extension of residential spaces, promoting further activation and a sense of ownership for the community; and

iii. Allows living courtyards to be optimised for north-west sun (afternoon/evening time in spring–autumn) which is when most people socialise, further contributing to activation and CPTED principles.

B. Reserve Edges

Council staff consider the Guthrie Park interface as being particularly important as it fronts a public open space with high amenity values and public uses. Please identify on the plans provided, the specific treatment proposed for the reserve edges (Guthrie Park and Karituwhenua Stream).

Specific front-on 3D perspectives would further assist in this regard – the inclusion of colour would be beneficial (in accordance with their cladding design statement) along with a front on, closer up, rather than oblique view from a distance.

Further, a 3D perspective view into the connection from the Reserve would be useful for assessment purposes, along with one from within the development looking out to the park along the pedestrian access, as this would assist in assessing how it feels in terms of public access from within the development to the reserve.

Saddleback Response:

4. The proposed treatment of the Guthrie Park Boundary is identified on drawings *LFP01 (Rev C)* prepared by Oderings Landscaping, dated 30th January 2023 and included with the application. This treatment includes:

a. To the rear yards of Lots 19-26, Lots 32-35

i. 1.2m high visually permeable fencing to the shared boundary (aluminium pool-style fencing with 100x100mm posts (gates to match), and;

ii. The front ~7m of lot 18 (approximately 130m cumulative length).

b. Lot 35 (approximately 25m), overlooking the carpark within Guthrie Park.

Attachment F

i. 1.8m solid fencing with top 300mm visually permeable

c. To the side of Lot 18 (approximately 15m in length).
   i. 1.8m solid fencing

5. In addition, low planting and specimen trees are proposed within the rear gardens of the lots bordering the parks which will contribute to the overall amenity value of the park and will represent a significant improvement to what is currently experienced.

6. Additional perspectives will be provided separately to demonstrate the pedestrian accessways between the reserve and the proposed development.

Figure 1: Render looking from Guthrie Park east through the pedestrian access link and roundabout beyond.

Figure 2: Render looking west from the roundabout towards the pedestrian link to Guthrie Park (Terraced Dwellings on the right).

C. Materials

The Design Statement (pg 5) states:

While a colour scheme is not provided for the development, a cladding design statement included in the masterplan document notes the following:

> *Too much colour variation within the development should be avoided as this contributes to a visually cluttered urban environment and detracts from a cohesive identity.*
>
> *Dwelling types painted the same colour are not discouraged as variation will develop over time through occupier preference and landscaping.*
>
> *Cladding Type A should typically be a darker, more recessive colour to anchor the buildings to their site. This should support reducing the visual dominance of garages.*
>
> *Cladding Types B and C can be the same colour as the material difference and building form will provide visual variation. Where these are different colours, they should be natural, neutral, or tones of the same base colour.*

no colour palette has been provided, instead opting for the use of a cladding design statement.

Please advise how the applicant anticipates effectively and practically implementing the above e.g., through offering consent conditions (consent notices).

Saddleback Response:

7. The following consent condition regarding material and colours are proposed:

   Confirmation of Cladding Choices:

   A Cladding Plan with supporting specifications should be prepared and submitted to Council for certification prior to construction commencing.

   The Cladding Plan must contain:

   - *Reference and alignment with the design principles outlined in the Urban Design Statement and Masterplan Document.*
   - *Selection and location of cladding choices per dwelling.*
   - *Selection and location of paint choices per dwelling.*

   There plans must be supported by specifications that describe in a written form the more specific technical matters such as the quality of materials.

D. Typology A

Please review the zero lot boundary features for Type A (i.e. proposed Lots 7 & 16) as there is a window to the side wall (refer E2, drawings A105 and A106). Please provide updated drawings.

Saddleback Response:

8. A hatch denoting the zero-lot boundary has been applied to this typology noting that the window won't be constructed on Lots 7 and 16. This plan update has been provided separately.

Figure 3: Architectural Plans RFI Response (Sheet A106)

E. Landscaping

District Plan performance standard 8.2.6F(5) – which Council uses as a guide for assessment of comprehensive residential developments in the Havelock North General Residential Zone – anticipates a minimum of 20% of the exclusive use area for each residential building be landscaped with mixed vegetation cover and specimen trees. Please demonstrate whether the concept complies with this.

Attachment F

Saddleback Response:

9. Based on the landscaped plans prepared by Oderings, the following table represents the landscaped areas per lot. Plans have been provided separately for Council's review.

Lot Number	Landscaped Area	Lot Number	Landscaped Area	Lot Number	Landscaped Area
Lot 1	25.6%	**Lot 13**	20.8%	**Lot 25**	20.1%
Lot 2	21.1%	**Lot 14**	18.2%	**Lot 26**	29.1%
Lot 3	17.9%	**Lot 15**	14.1%	**Lot 27**	23.5%
Lot 4	22.9%	**Lot 16**	32.2%	**Lot 28**	19.0%
Lot 5	20.5%	**Lot 17**	26.6%	**Lot 29**	22.5%
Lot 6	32.7%	**Lot 18**	36.0%	**Lot 30**	14.4%
Lot 7	26.1%	**Lot 19**	17.7%	**Lot 31**	20.7%
Lot 8	20.0%	**Lot 20**	20.1%	**Lot 32**	30.0%
Lot 9	27.1%	**Lot 21**	20.1%	**Lot 33**	14.1%
Lot 10	33.8%	**Lot 22**	20.1%	**Lot 34**	27.1%
Lot 11	23.2%	**Lot 23**	20.1%	**Lot 35**	43.4%
Lot 12	22.9%	**Lot 24**	20.1%		

10. Lots 3, 14, 15, 19, 28, 30, and 33 have been identified to be an infringement under 8.2.6.F(5). The actual, measured infringement to the landscaped areas of the sites above is:

    a. Lot 3 2.1% Infringement = 5.6 m^2
    b. Lot 14 1.8% Infringement = 3.9 m^2
    c. Lot 15 5.9% Infringement = 13.1 m^2
    d. Lot 19 2.3% Infringement = 4.9 m^2
    e. Lot 28 1.0% Infringement = 1.4 m^2
    f. Lot 30 5.6% Infringement = 11.4 m^2
    g. Lot 33 5.9% Infringement = 11.7 m^2

11. An assessment of the effects has been provided below, suggesting that the effects are less than minor:

    a. The cumulative effects of the landscape infringement will not be noticeable within the development due to:

        i. The extensive streetscape landscaping proposed within the shared-space laneways and park connections.

ii. The sites immediate adjacency to Guthrie Park and Karituwhenua Stream which wrap around the site on three boundaries (west/north/east).

iii. The cumulative landscaping area across all residential sites is 24.4%, circa 360m^2 greater than the minimum sought.

iv. The impacted lots are within the development and are not immediately adjacent to the neighbouring residential property at 53 Brookvale Road.

v. A stormwater assessment has been undertaken to support the development, which demonstrates that stormwater from the site can be managed appropriately.

b. Where individual lots do infringe the standards, the effects are managed as:

i. All sites have consistent and significant front yard landscaping, and provisions for specimen trees, to maintain the landscaped character of the streetscape and minimise the visual dominance of dwellings.

ii. Lots 33, 19, and 14, 15 have rear living courts which back onto Guthrie Park and Karituwhenua Stream respectively, minimising the visual effects and impact on the residential amenity of this infringement.

iii. Lots 03, 30 are corner sites which results in more streetscape frontage, and greater separation from neighbouring dwellings. These are also supported by the extensive streetscape planting proposed which further offset the visual impact of the infringement.

iv. Lot 28 is a terraced dwelling and does not have a side yard. This dwelling can reasonably be expected to have less landscaping, though landscaping is still provided within the front yard, and across the rear of the site. This balances the need for landscaping with the need to provide useable outdoor living spaces, which we feel is the appropriate balance to achieve good residential amenity.

F. Outdoor Living Space / Service Areas

It is difficult to assess from the drawings and information provided whether outdoor living space / service area is adequate for each lot. Please provide a site plan(s) showing service areas and outdoor living spaces for each individual lot, rather than the overlay onto one plan for particular typologies.

In relation to outdoor living space, please demonstrate this not only in relation to size of the space but also whether or not they meet other aspects of District Plan performance standard 8.2.6F(4) – e.g. 2.5m minimum dimension, 4m diameter circle, north facing etc – which Council uses as a guideline for assessment of comprehensive residential developments in the Havelock North General Residential Zone. Refer District Plan performance standard 8.2.6F(7) in terms of guidance around service areas.

Saddleback Response:

12.Compliance to standards 8.2.6F(4) and 8.2.6F(7) have been provided separately and quantified below.

Lot Number	ODLS	Lot Number	ODLS	Lot Number	ODLS
Lot 1	125.7 m^2	**Lot 13**	56.5 m^2	**Lot 25**	58.5 m^2
Lot 2	78.2 m^2	**Lot 14**	50.2 m^2	**Lot 26**	99.6 m^2
Lot 3	64.1 m^2	**Lot 15**	56.2 m^2	**Lot 27**	48.2 m^2
Lot 4	56.6 m^2	**Lot 16**	132.3 m^2	**Lot 28**	38.9 m^2
Lot 5	66.4 m^2	**Lot 17**	69.5 m^2	**Lot 29**	48.6 m^2
Lot 6	121.7 m^2	**Lot 18**	101.6 m^2	**Lot 30**	32.8 m^2
Lot 7	89.6 m^2	**Lot 19**	43.1 m^2	**Lot 31**	35.3 m^2
Lot 8	60.4 m^2	**Lot 20**	58.5 m^2	**Lot 32**	90.7 m^2
Lot 9	91.9 m^2	**Lot 21**	58.5 m^2	**Lot 33**	31.6 m^2
Lot 10	137.2 m^2	**Lot 22**	58.5 m^2	**Lot 34**	29.9 m^2
Lot 11	61.8 m^2	**Lot 23**	58.5 m^2	**Lot 35**	123.9 m^2
Lot 12	62.7 m^2	**Lot 24**	58.5 m^2		

13.Lot 34 infringes standard 8.2.6.F(4). The ODLS for this lot is 29.9m2, which is 0.1m^2 less than the rule requires. An assessment of the effects has been provided below:

a. This infringement represents a technical infringement of the standard.

b. The ODLS for this dwelling maintains good proportions and daylight access and is directly accessible from the living areas of the dwelling.

c. The ODLS is immediately adjacent to Guthrie Park, with pedestrian access via a gate. This provides residents additional amenity through use of this public asset.

d. The actual experienced area available for use for outdoor living for residents will be circa 55m^2. The variation between these numbers is the available spaces that do not meet the either the minimum 2.5m dimension or shading rules. While excluded, these areas support outdoor living because they:

i. Contribute to the lived experience/amenity of the dwelling,

ii. Remain of a useful dimension for outdoor living (2.0m is accepted for balconies)

iii. Remain useful beyond daylight hours, negating the shading effects.

14. Lot 31 infringe standard 8.2.6.F(4)(b) as a 4m diameter circle cannot accommodated within the ODLS. As assessment of the effects has been provided below, which we suggest results in a less than minor effect:

Figure 4: Lot 31 Outdoor Living Space (3.9m Diameter Circle Achieved)

a. Lot 31 can support a 3.9m diameter circle within the ODLS. The ODLS circle infringes the standard by 0.1m, due to the corner of the living room.

b. The onsite amenity for residents in not likely to be materially affected by this infringement because:

i. The ODLS is orientated to the north, maintaining sun access.

ii. The ODLS is directly accessible from the Living Room (north and east), and from the Master Bedroom.

iii. The dwelling to the north (Lot 30) is single level and won't result in any adverse shading or overlooking effects.

iv. The dwelling to the east (Lot 03) is two-levels but is appropriately set back from the common boundary to managed anticipated shading effects. Any overlooking effects are not likely to be significant as windows to the upper level are higher, and to the master bedroom/ W/R and Ensuite areas which is likely to be used at different times of the day than the ODLS.

Attachment F

v. The ODLS, while not supporting a 4m diameter circle, is at least 24m^2, through an approximately rectangular form 3.0 – 4.1m x 5.6m. When combined with the secondary living court, the Lot achieves 35.3m2 ODLS which is greater than the 30m2 required by the standard.

15. All lots comply with the standard 8.2.6.F(7) for Services/ Utility Area/ Deliveries.

G. Managing Flood Risk

The Infrastructure Report accompanying the application states (section 4.3, pg 6):

> *'The proposed development intends to fill and raise the northern areas of the site to be above the flooding levels and finished floor levels (FFL's) to be above the flood levels plus a 200mm freeboard (using the 0.20m accuracy tolerance mentioned in 4.2). It is anticipated that by raising the ground here, this would decrease the capacity of the Karituwhenua Stream during flood events. To prevent this from happening, it is proposed to cut existing ground material from above the southern bank of the Karituwhenua Stream at the northern boundary. This will increase the capacity of the stream during flood events and thus offset the earthworks filling of the new lots in the north…*
>
> *Proposed dwellings along the northern boundary that are near the 8.44m flood level will have minimum FFLs of 8.95m, while proposed dwellings along the northern boundary that are near the 8.74m flood level will have minimum FFLs of 9.25m. These FFLs have been chosen as they will provide a 200mm freeboard to compensate for the 0.20m accuracy tolerance from the HBRC flood hazard maps, as well as an additional 300mm as a margin of safety. It is assumed that the finished ground levels around these new dwellings will be around 150-250mm below FFL.'*

However, the Landscape & Visual Effects Assessment accompanying the application does not address the visual effects of these measures. Please provide an updated Landscape & Visual Effects Assessment addressing the visual effects of the flood mitigation proposed.

Saddleback Response:

16. The flooding assessment is being updated in accordance with engineering queries. A statement from the landscape and visual specialist will be provide don completion of the flooding assessment if it results in increased FFLs of some of the dwellings.

H. Bin Storage

It is noted that some of the lots propose bin storage location within the front yard (e.g. Lots 8 & 9, 27-29). Council prefers not to have outdoor storage areas provided within the front yard, especially where there are alternatives which there appears to be in this instance. Please reconsider the location of these areas or provide information to show what this will look like from a visual perspective.

Saddleback Response:

17. All bin storage areas are proposed within bin enclosures and are will therefore be screened. In most instances (particularly when the bins are within the front yards of the proposed dwellings) additional screening is provided through on-lot planting. Providing bins in this location is convenient for servicing and enables rear yards to remain clear of servicing and be the primary living space.

    Typical bin enclosures examples are shown below:

Individual bin storage screened with 1.2m enclosure (or 1.8m maximum).

18. Accepting that Council's preference for service areas is not to be between the dwelling and road, Standard 8.2.6.7(b) does not include internal private roads and therefore does not apply to these identified sites. Nevertheless, the following assessment has been provided as to their suitability as proposed.

19. Lots 8 and 9 are rear lots and therefore the location of the bins within the front yards will not be visually dominant from the streetscape. The front yard locations identified are preferred as to not compromise the rear-yard amenity of these lots, while maximising the front yard courtyard spaces.

20. Lot 28 is a terraced lot (no side-yard) and it is therefore not possible to have the bins in a different location without requiring residents to bring it through the dwelling.

21. Due to the site design of Lots 27 and 29 the bin enclosures will be in visually prominent locations from the streetscape regardless of location (corner sites) or will compromise the rear-yard amenity (within outdoor living courts). The bin locations as illustrated are to the south of the dwellings, and are screened by both the enclosure, hedging, and low planting.

Attachment F

I. Lighting

Please provide a Lighting Design and assessment showing street lighting and any illumination proposed for access lots and public pedestrian areas, sufficient and appropriate to the anticipated residential setting.

Saddleback Response:

22.A proposed lighting plan in alignment with Council's standards is provided separately.

J. Common Space Management (where held in Private Ownership)

The AEE accompanying the application (pgs 14 & 15) states that the maintenance obligations for the underground stormwater infrastructure within the proposed commercial carpark, and within the private jointly owned access lots, will be met by the owners and a Residents Association (or similar entity).

Please provide further information addressing, more fully, how infrastructure in private ownership is to be managed and maintained (including any connections to Reserves).

Saddleback Response:

23.The following consent condition is proposed:

> *Assets owned by Incorporated Society*
>
> *Lots 4-34 share common assets, which are located within Lots 100-103. To ensure that Lots 4-34 remain adequately serviced and connected, an Incorporated Society must be created by the consent holder to own, and be responsible and liable for the ongoing operation, maintenance and repair of the common assets within Lots 100-103.*
>
> *The following requirements must be met in order to satisfy this condition:*
>
> a. *Ownership of the common assets must be transferred to the Incorporated Society before any Lots 100-103 are transferred to new owners. The assets are required to remain in the ownership of the Incorporated Society, except with the prior approval of the Council.*
>
> b. *The Incorporated Society must not be disestablished without the prior written consent of the Council.*
>
> c. *The structure, functions and rules of the Incorporated Society must include provision for the following items:*

- *Requirements for all lot owners to automatically be and remain a member of the Incorporated Society for so long as they are a registered proprietor of a Lot;*
- *Requirement that the Incorporated Society must not be disestablished without the prior written consent of the Council;*
- *Requirements for all lot owners to fulfil the obligations of a member, as set out in the Rules of the Incorporated Society;*
- *Details of how the common assets will be managed and maintained;*
- *Ongoing compliance with the relevant resource consent, bylaw, or other requirements of Council;*
- *An acceptable method of management of the Incorporated Societies future affairs, and for the raising of funds from members from time to time to adequately finance any future maintenance and renewal obligations. The Rules should identify a process for setting, collecting and enforcing the payment of levies;*

d. *All costs associated with the establishment and maintenance of the Incorporated Society must be borne by the consent holder.*

e. *A copy of the document(s) describing the functions, powers, duties and liabilities of the Incorporated Society must be provided to the Council for certification. The document(s) must evidence each of the requirements above and that the ongoing operation, maintenance and repair obligations of this condition will be adequately provided for.*

Further, to ensure that future owners maintain membership of the Incorporated Society, the following must be registered as a consent notice on the records of title to be issued for Lots 4-34:

"Lots 4-34 are served or serviced by common assets which are located within Lots 100-103. For so long as they are a registered proprietor of that Lot, the owners of Lots 4-34 must be members of the established Incorporated Society that jointly owns and is responsible and liable for the ongoing operation, maintenance and repair of the common assets located within Lots 100-103."

Attachment F

Oderings HLN Comprehensive Residential Development

Saddleback

For Oderings Nurseries Chch Ltd

ID	REV	SHEET
A101	A	TYPOLOGY PLAN
A102	A	LOT DETAILS
A103	A	BULK & LOCATION PLAN
A104	A	TYPE A - TYPICAL LANDSCAPE PLAN
A105	A	TYPE A FLOOR PLANS
A106	A	TYPE A - TYPICAL ELEVATIONS
A107	A	TYPE B - TYPICAL LANDSCAPE PLAN
A108	A	TYPE B FLOOR PLANS
A109	A	TYPE B - TYPCIAL ELEVATIONS
A110	A	TYPE C - TYPICAL LANDSCAPE PLAN
A111	A	TYPE C FLOOR PLANS
A112	A	TYPE C - TYPICAL ELEVATIONS
A113	A	TYPE D - TYPCIAL LANDSCAPE PLAN
A114	A	TYPE D FLOOR PLAN
A115	A	TYPE D - TYPCIAL ELEVATIONS
A116	A	TYPE D2 - TYPCIAL LANDSCAPE PLAN
A117	A	TYPE D2 FLOOR PLAN
A118	A	TYPE D2 ELEVATIONS
A119	A	SUN STUDY - JUNE
A120	A	SUN STUDY - JUNE
A121	A	SUN STUDY - SEPTEMBER
A122	A	SUN STUDY - SEPTEMBER
A123	A	SUN STUDY - DECEMBER
A124	A	SUN STUDY - DECEMBER
A125	A	SUN STUDY - DECEMBER
A126	A	3D PERSPECTIVE
A127	A	3D PERSPECTIVE

Revision A	Resource Consent Issue	11 July 2023

REV	ISSUE	DATE
A	RESOURCE CONSENT	31-05-2023

LEGEND

- TYPE A
- TYPE A (Reflected)
- TYPE B
- TYPE B (Reflected)
- TYPE C
- TYPE C (Reflected)
- TYPE D
- TYPE D (Reflected)
- TYPE D2

TITLE
TYPOLOGY PLAN

SCALE (A3)
1:1000

NORTH

PROJECT
BROOKVALE ROAD DEVELOPMENT

CLIENT
ODERINGS NURSERIES CHCH LTD

JOB NO
22-04005

STATUS
RESOURCE CONSENT

DRAWING NO
A101

REVISION
A

DATE
11/07/2023

Saddleback

Lot Number	Lot Area	Lot Type	Dwelling Type	Building Coverage	Building Coverage (%)	GFA	Bedrooms	Parking Spaces	Outdoor Living Area
01	300.04	LT-01	Type A	102.53	34.2%	182.40	3.5	2	78.23
02	263.60	LT-01	Type A	102.53	38.9%	182.40	3.5	2	75.61
03	260.86	LT-02	Type B	89.64	34.4%	160.98	3	1	45.30
04	230.00	LT-02	Type B	89.64	39.0%	160.98	3	1	74.73
05	230.00	LT-02	Type B	89.64	39.0%	160.98	3.5	1	76.73
06	370.96	LT-01	Type A	102.53	27.6%	182.40	3.5	1	162.26
07	294.52	LT-01	Type A (R)	102.53	34.8%	182.40	3	1	83.30
08	204.54	LT-03	Type B	89.64	43.8%	160.98	3	1	63.36
09	225.48	LT-03	Type B	89.64	39.8%	160.98	3	1	64.24
10	325.40	LT-02	Type B (R)	89.64	27.5%	160.98	3	1	115.25
11	230.14	LT-02	Type B (R)	89.64	39.0%	160.98	3	1	76.05
12	227.09	LT-02	Type B (R)	89.64	39.5%	160.98	3	1	72.98
13	221.13	LT-02	Type B (R)	89.64	40.5%	160.98	3	1	67.04
14	214.03	LT-02	Type B (R)	89.64	41.9%	160.98	3	1	59.94
15	223.83	LT-02	Type B (R)	89.64	40.0%	160.98	3.5	1	61.81
16	304.31	LT-01	Type A	102.53	33.7%	182.40	3	1	103.41
17	240.71	LT-02	Type B (R)	89.64	37.2%	160.98	3	1	76.57
18	259.04	LT-02	Type B (R)	89.64	34.6%	160.98	3	1	105.14
19	215.50	LT-02	Type B	89.64	41.6%	160.98	3	1	66.74
20	220.00	LT-02	Type B	89.64	40.7%	160.98	3	1	66.73
21	220.00	LT-02	Type B	89.64	40.7%	160.98	3	1	66.73
22	220.00	LT-02	Type B	89.64	40.7%	160.98	3	1	66.73
23	220.00	LT-02	Type B	89.64	40.7%	160.98	3	1	66.73
24	220.11	LT-02	Type B	89.64	40.7%	160.98	3	1	66.72
25	220.00	LT-02	Type B	89.64	40.7%	160.98	3	1	66.72
26	249.06	LT-02	Type B (R)	89.64	36.0%	160.98	3	1	65.73
27	159.41	LT-04	Type C (R)	64.17	40.3%	116.61	2	1	48.44
28	132.03	LT-04	Type C	64.17	48.6%	116.61	2	1	39.02
29	159.66	LT-04	Type C	64.17	40.2%	116.61	2	1	39.02
30	205.00	LT-02	Type D (R)	99.91	48.7%	97.73	2	1	32.79
31	234.71	LT-02	Type D (R)	99.91	42.6%	97.73	2	1	32.58
32	243.83	LT-02	Type B	89.64	36.8%	160.98	3	1	89.51
33	199.18	LT-03	Type D	99.91	50.2%	97.73	2	1	41.94
34	221.31	LT-02	Type D2	104.12	47.0%	102.44	2	1	39.92
35	352.06	LT-01	Type D2	104.12	29.6%	102.44	2	1	128.95
35	8,317.54 m²								

REV	ISSUE	DATE
A	RESOURCE CONSENT	31-05-2023

TITLE
LOT DETAILS

SCALE (A3) NORTH

PROJECT
BROOKVALE ROAD DEVELOPMENT

CLIENT
ODERINGS NURSERIES CHCH LTD

JOB NO 22-04005
STATUS RESOURCE CONSENT

DRAWING NO A102
REVISION A
DATE 11/07/2023

Saddleback

REV	ISSUE	DATE
A	RESOURCE CONSENT	31-05-2023

TITLE
BULK & LOCATION PLAN

SCALE (A3)
1:1000

0 5 10 20

NORTH

PROJECT
BROOKVALE ROAD DEVELOPMENT

CLIENT
ODERINGS NURSERIES CHCH LTD

JOB NO
22-04005

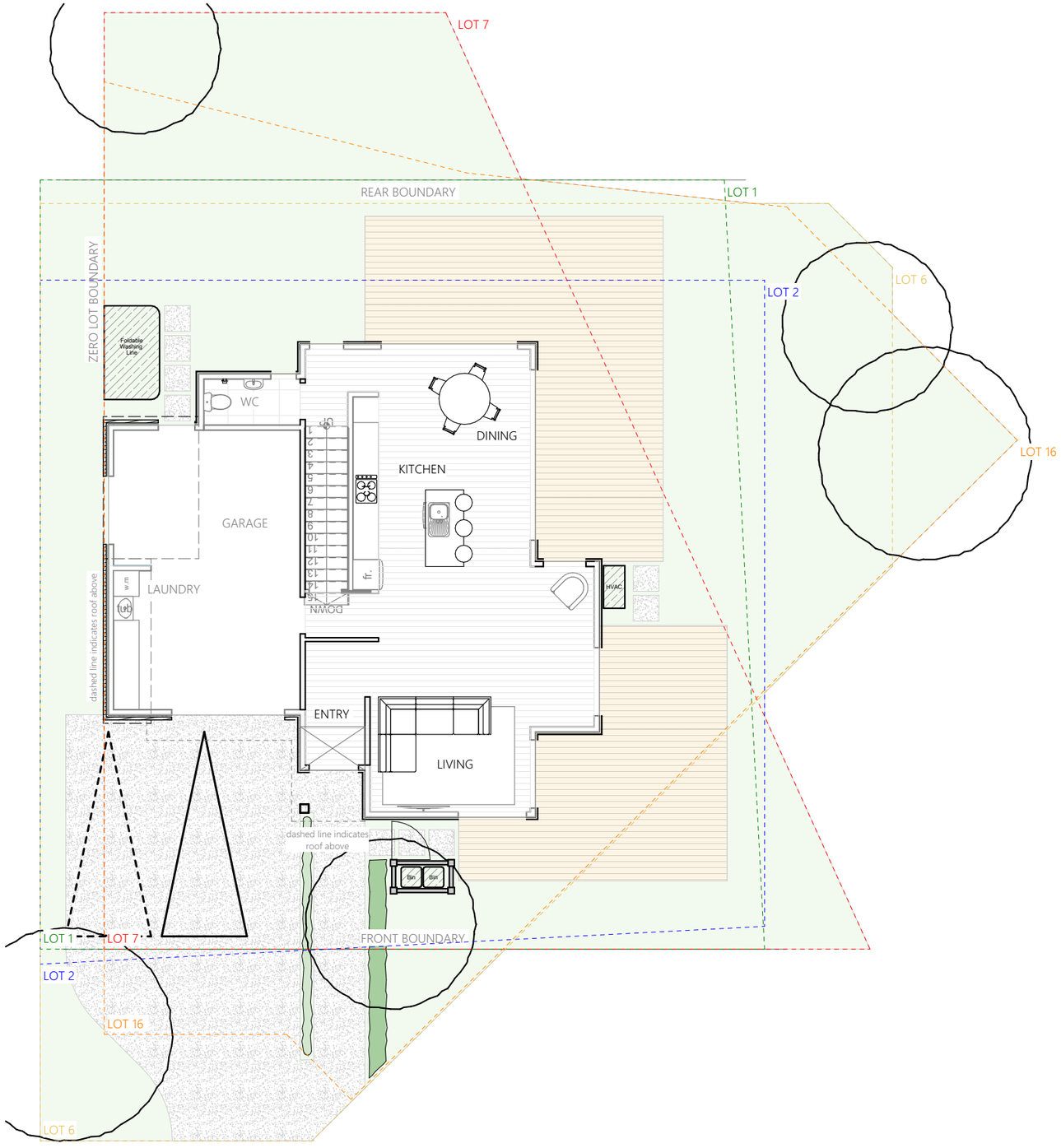
STATUS
RESOURCE CONSENT

DRAWING NO
A103

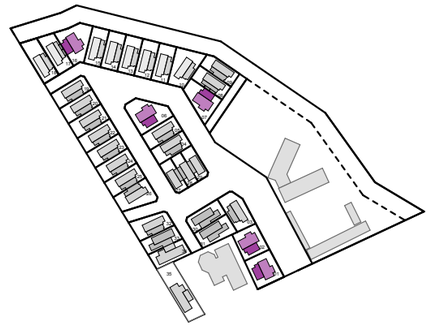
REVISION
A

DATE
11/07/2023

Saddleback



REV	ISSUE	DATE
A	RESOURCE CONSENT	31-05-2023



Note:

Refer to Landscape Plans prepared by Oderings Landscape for site specific details, including finishes, fencing and planting.

TITLE
TYPE A - TYPICAL LANDSCAPE PLAN

SCALE (A3) 1:100
NORTH

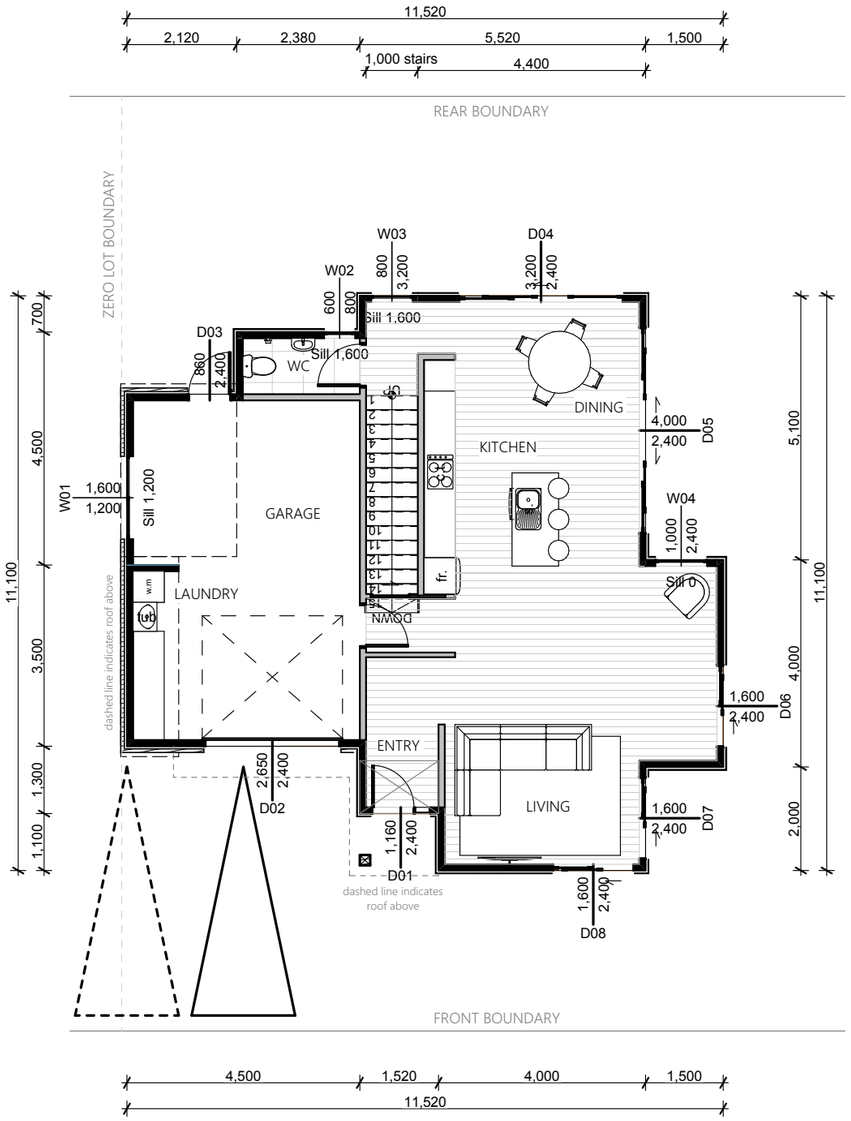
PROJECT
BROOKVALE ROAD DEVELOPMENT

CLIENT
ODERINGS NURSERIES CHCH LTD

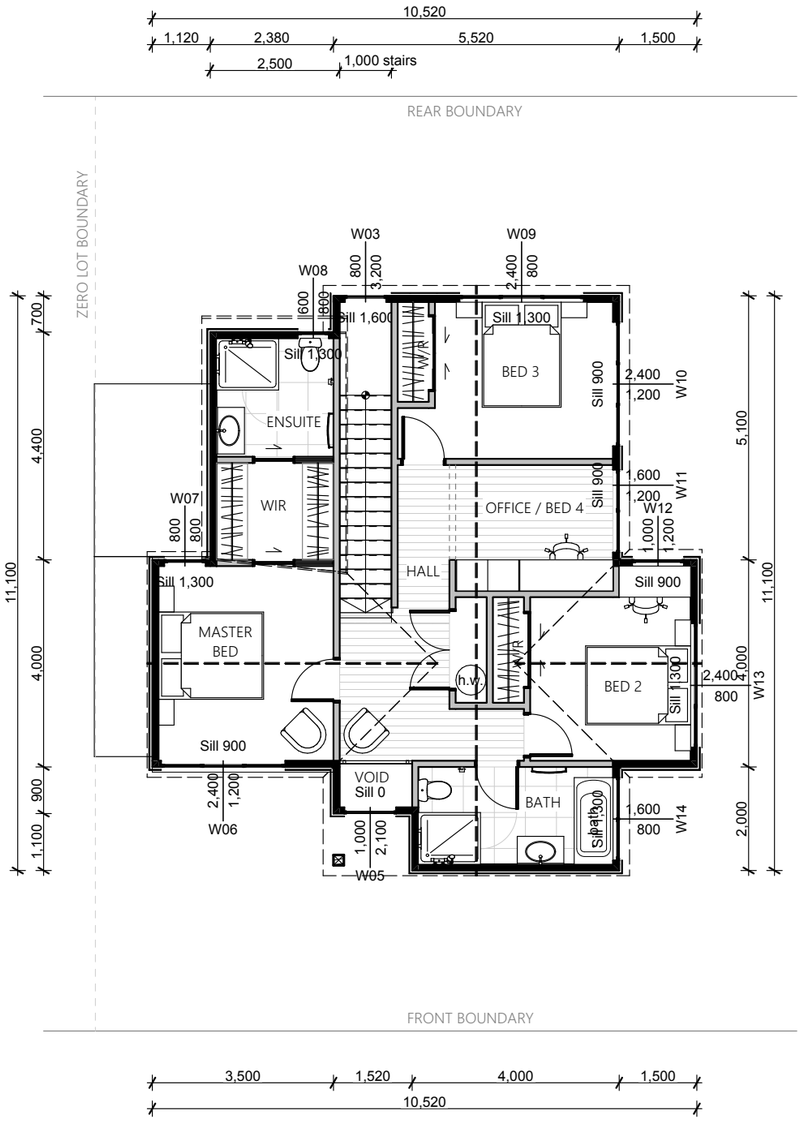
JOB NO 22-04005
STATUS RESOURCE CONSENT

DRAWING NO A104
REVISION A
DATE 11/07/2023

Saddleback



1 Type A - Ground Floor Plan 1:100



2 Type A - First Floor Plan 1:100

REV	ISSUE	DATE
A	RESOURCE CONSENT	31-05-2023

Ground Floor Area (incl garage) = 99.06m²
First Floor Area = 83.34m²
Total Floor Area = 182.40m²

Note: W01 does not apply to Lots 07 & 16

TITLE
TYPE A FLOOR PLANS

SCALE (A3) 1:100
NORTH

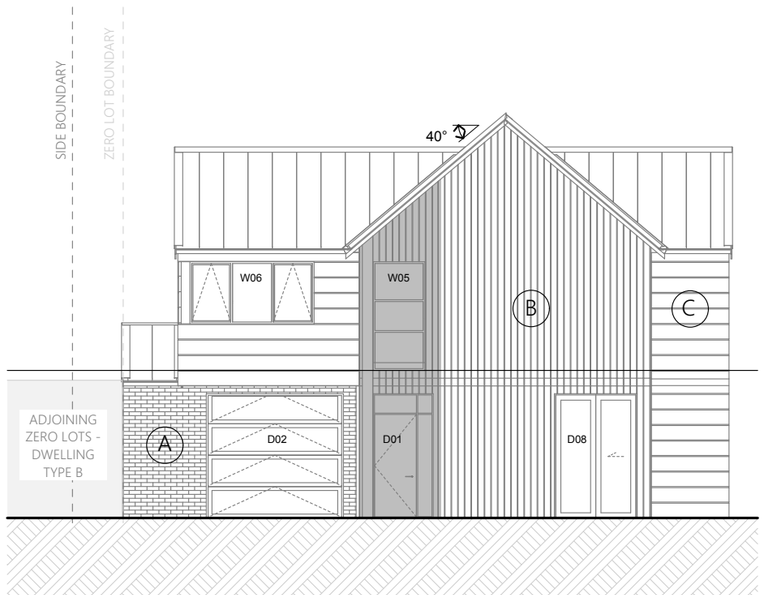
PROJECT
BROOKVALE ROAD DEVELOPMENT

CLIENT
ODERINGS NURSERIES CHCH LTD

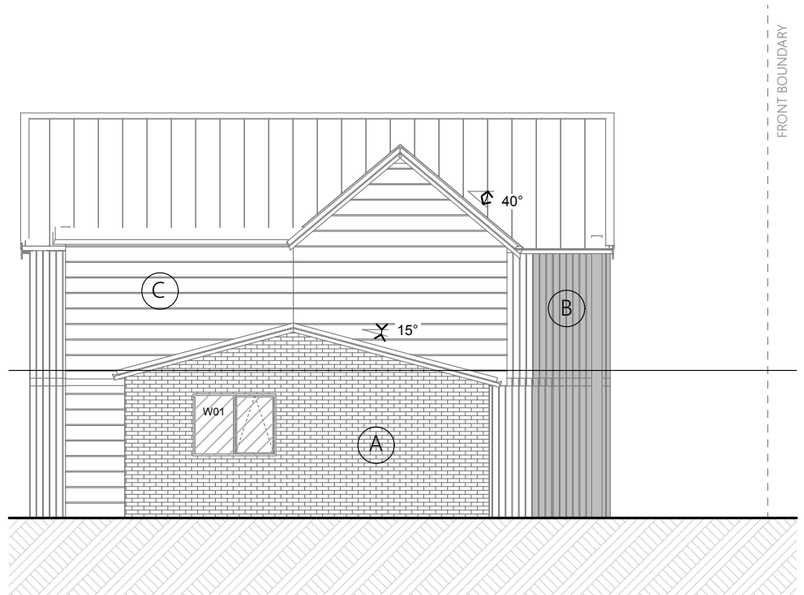
JOB NO 22-04005
STATUS RESOURCE CONSENT

DRAWING NO A105
REVISION A
DATE 11/07/2023

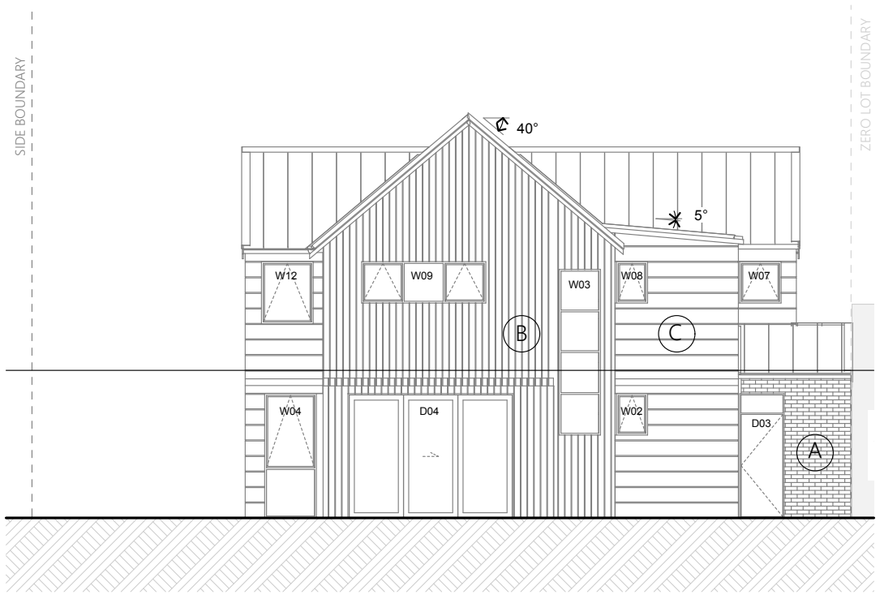
Saddleback



E1 Front Elevation 1:100



E2 Side Elevation 1:100



E3 Rear Elevation 1:100

E4 Side Elevation 1:100

REV	ISSUE	DATE
A	RESOURCE CONSENT	31-05-2023

CLADDING DESIGN

Cladding A - Solid Mass
Brick or Plaster

Cladding B - Vertical
Timber, Fibre Cement Panels or Metal Sheets

Cladding C - Horizontal
Timber or Fibre Cement Panels

Note: W01 does not apply to Lots 07 & 16

TITLE
TYPE A - TYPICAL ELEVATIONS

SCALE (A3) 1:100 NORTH

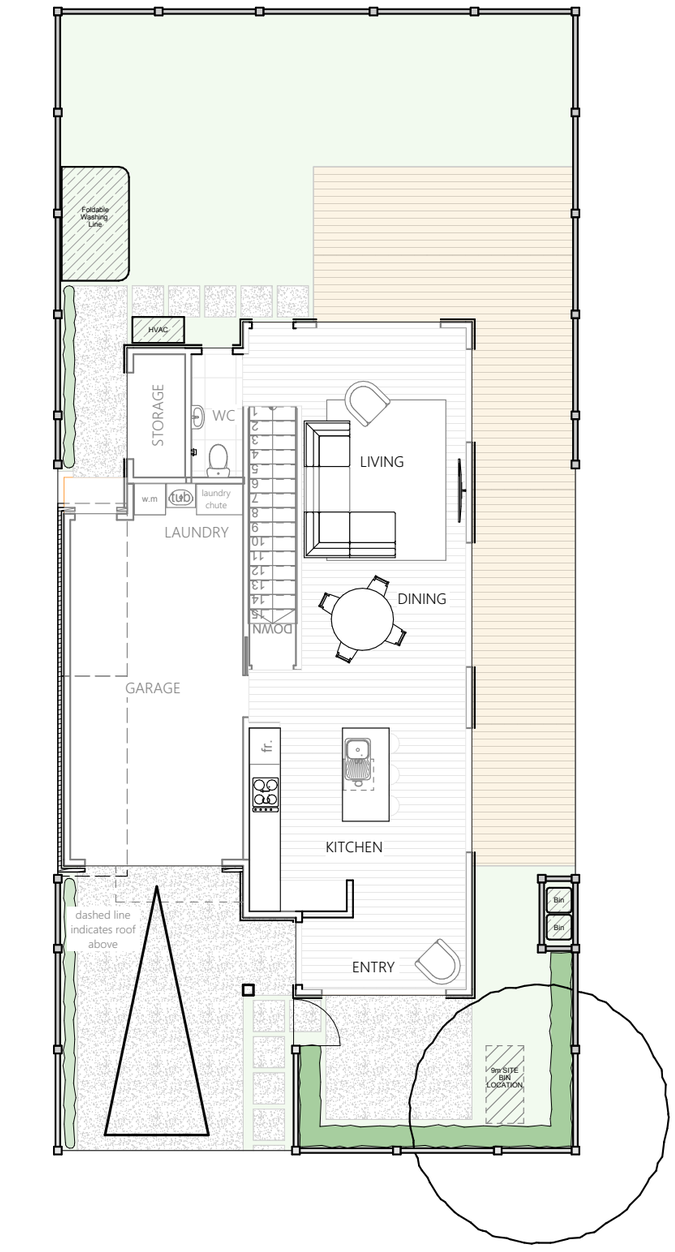
PROJECT
BROOKVALE ROAD DEVELOPMENT

CLIENT
ODERINGS NURSERIES CHCH LTD

JOB NO 22-04005
STATUS RESOURCE CONSENT

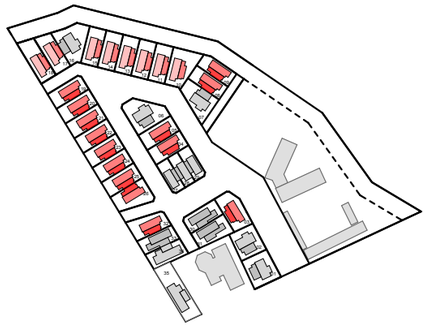
DRAWING NO A106
REVISION A
DATE 11/07/2023

Saddleback



1 Type B - Landscaping Plan 1:100

REV	ISSUE	DATE
A	RESOURCE CONSENT	31-05-2023



Note:

Refer to Landscape Plans prepared by Oderings Landscape for site specific details, including finishes, fencing and planting.

TITLE
TYPE B - TYPICAL LANDSCAPE PLAN

SCALE (A3) 1:100 0 1 2 NORTH

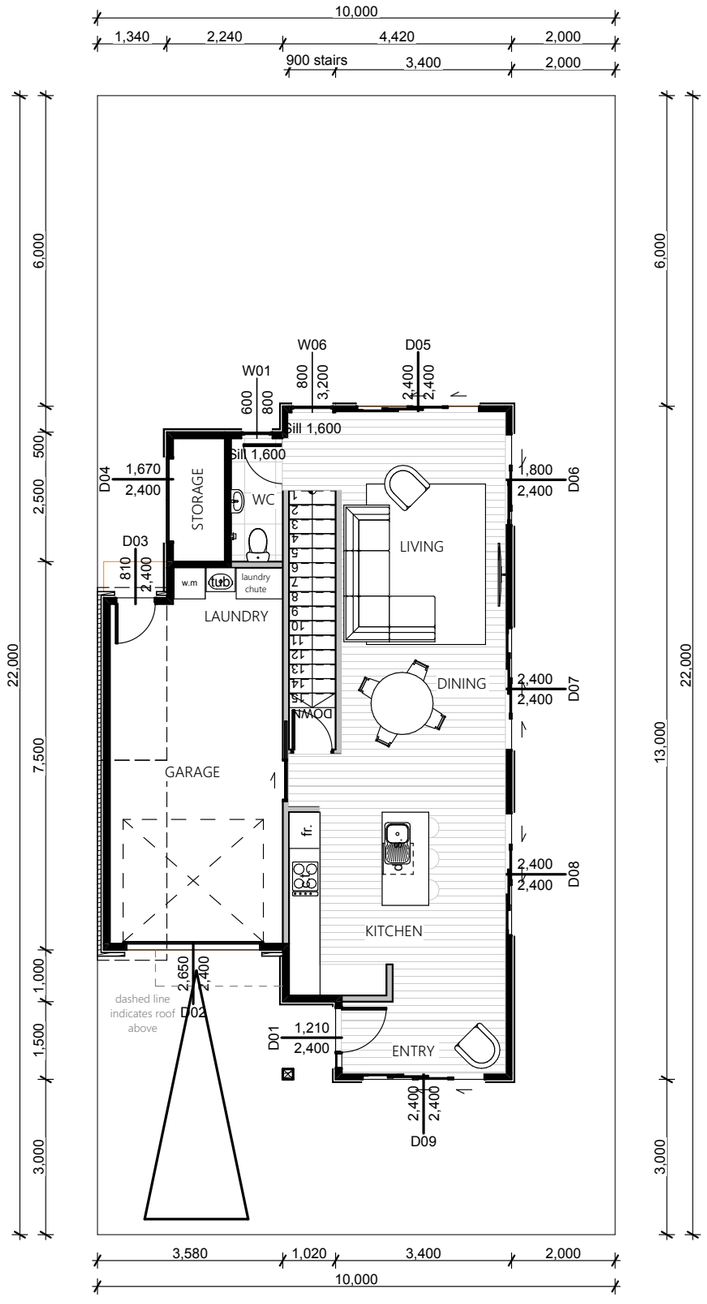
PROJECT
BROOKVALE ROAD DEVELOPMENT

CLIENT
ODERINGS NURSERIES CHCH LTD

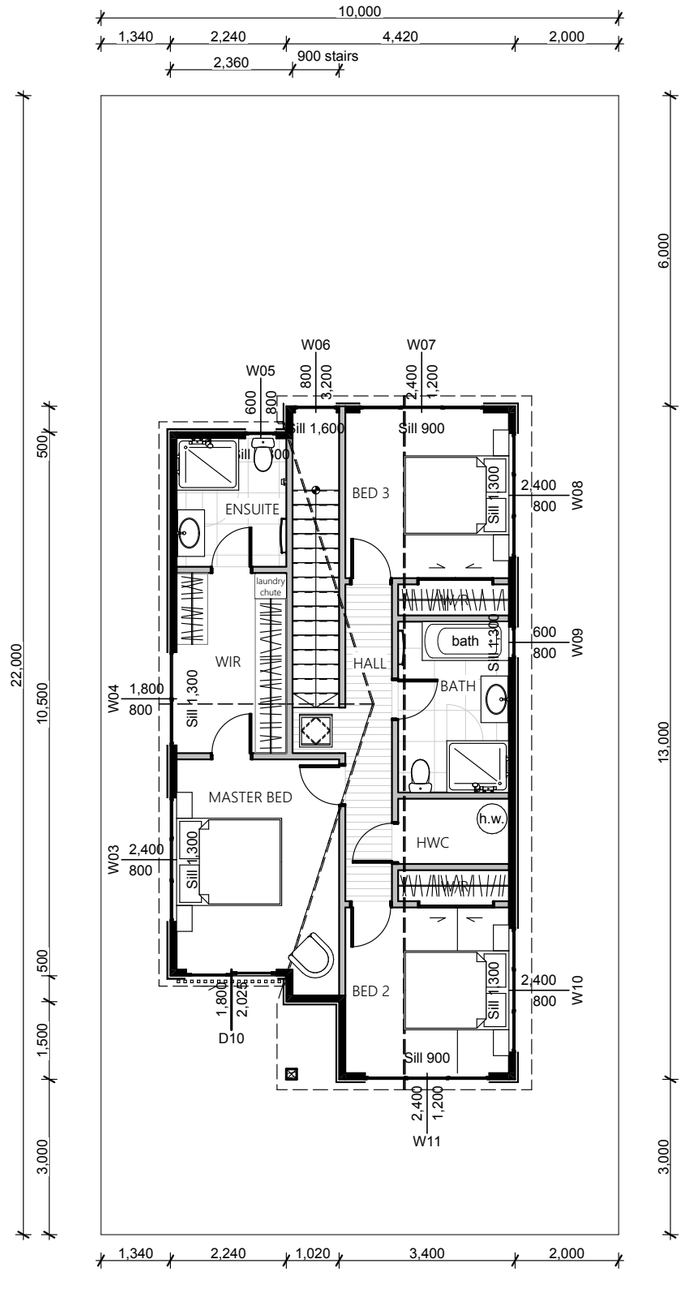
JOB NO 22-04005
STATUS RESOURCE CONSENT

DRAWING NO A107
REVISION A
DATE 11/07/2023

Saddleback



1 Type B - Ground Floor Plan 1:100



2 Type B - First Floor Plan 1:100

REV	ISSUE	DATE
A	RESOURCE CONSENT	31-05-2023

Ground Floor Area (incl garage) = 87.47m²
First Floor Area = 73.51m²
Total Floor Area = 160.98m²

TITLE
TYPE B FLOOR PLANS

SCALE (A3) 1:100
NORTH

PROJECT
BROOKVALE ROAD DEVELOPMENT

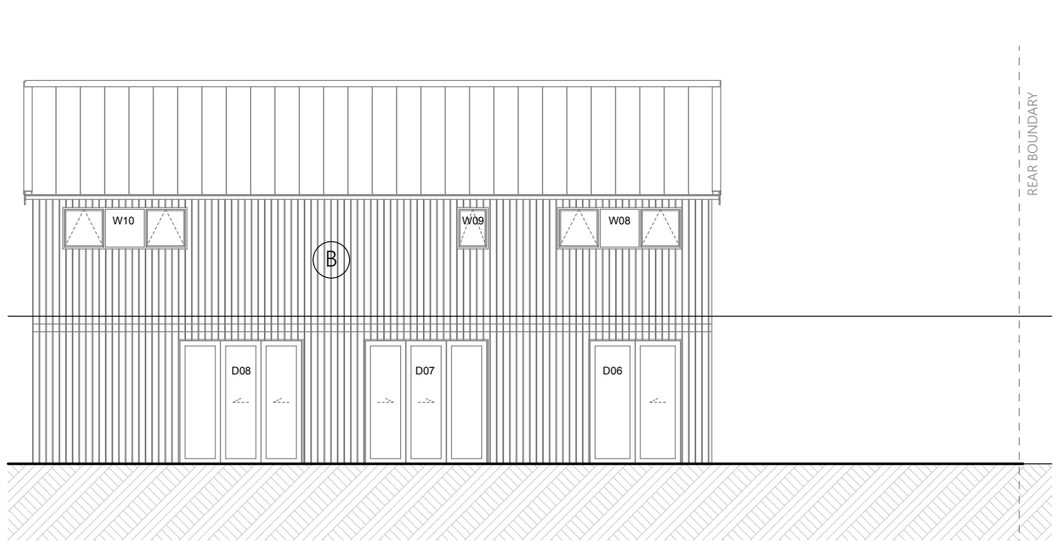
CLIENT
ODERINGS NURSERIES CHCH LTD

JOB NO 22-04005
STATUS RESOURCE CONSENT

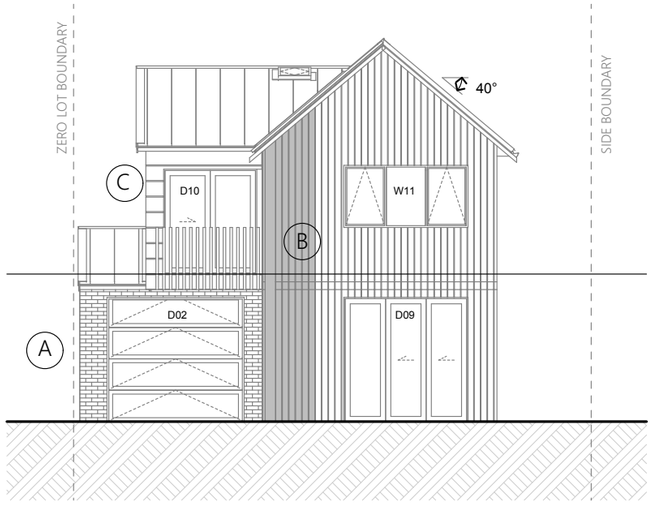
DRAWING NO A108
REVISION A
DATE 11/07/2023

Saddleback

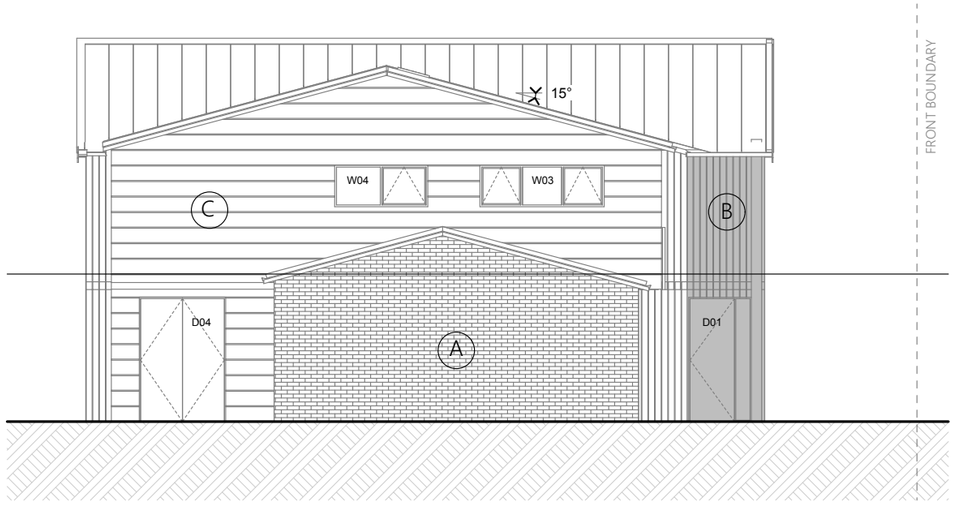
E5 Rear Elevation 1:100



E6 Side Elevation 1:100



E7 Front Elevation 1:100



E8 Side Elevation 1:100

REV	ISSUE	DATE
A	RESOURCE CONSENT	31-05-2023

CLADDING DESIGN

Cladding A - Solid Mass
Brick or Plaster

Cladding B - Vertical
Timber, Fibre Cement Panels or Metal Sheets

Cladding C - Horizontal
Timber or Fibre Cement Panels

TITLE
TYPE B - TYPCIAL ELEVATIONS

SCALE (A3) 1:100 NORTH

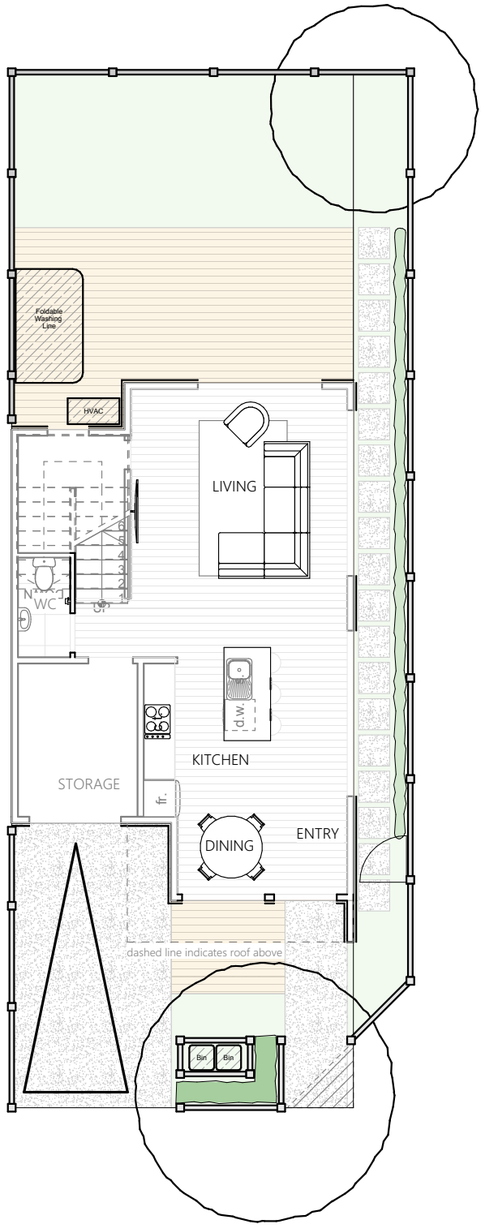
PROJECT
BROOKVALE ROAD DEVELOPMENT

CLIENT
ODERINGS NURSERIES CHCH LTD

JOB NO 22-04005
STATUS RESOURCE CONSENT

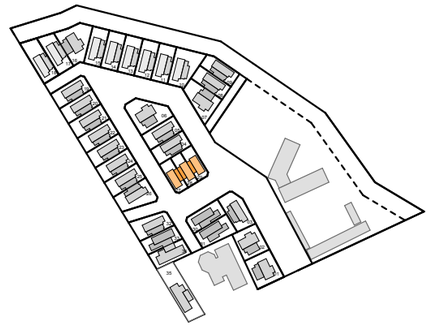
DRAWING NO A109
REVISION A
DATE 11/07/2023

Saddleback



1 Type C - Landscaping Plan 1:100

REV	ISSUE	DATE
A	RESOURCE CONSENT	31-05-2023



Note:

Refer to Landscape Plans prepared by Oderings Landscape for site specific details, including finishes, fencing and planting.

TITLE
TYPE C - TYPICAL LANDSCAPE PLAN

SCALE (A3) 1:100 0 1 2 NORTH

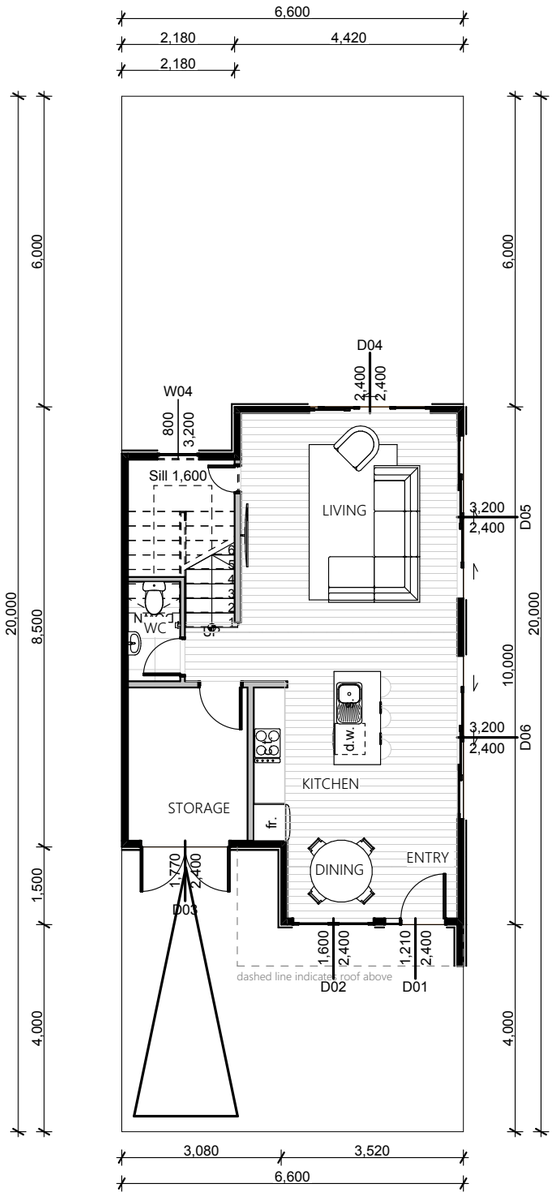
PROJECT
BROOKVALE ROAD DEVELOPMENT

CLIENT
ODERINGS NURSERIES CHCH LTD

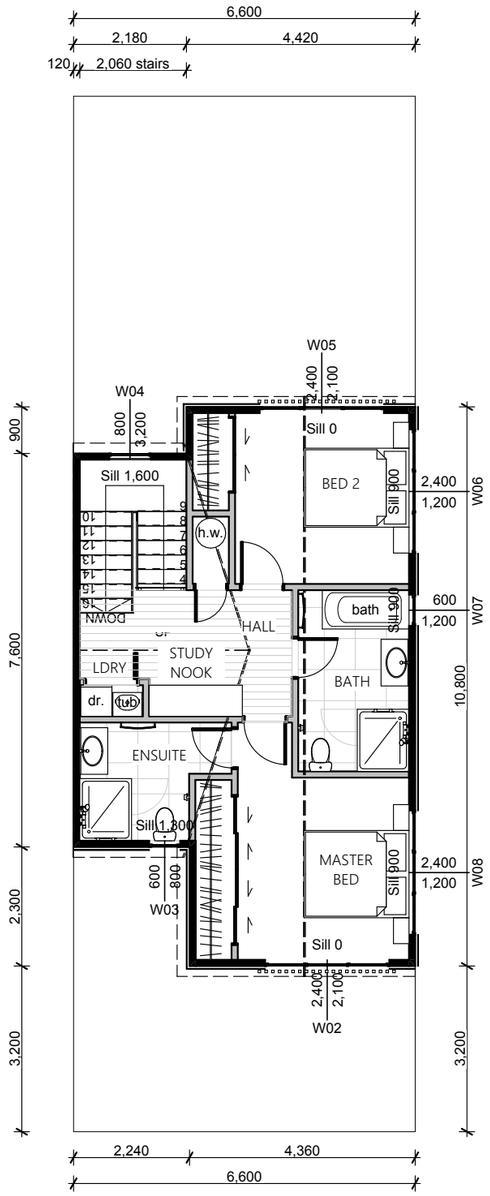
JOB NO 22-04005
STATUS RESOURCE CONSENT

DRAWING NO A110
REVISION A
DATE 11/07/2023

Saddleback



1 Type C - Ground Floor Plan 1:100



2 Type C - First Floor Plan 1:100

REV	ISSUE	DATE
A	RESOURCE CONSENT	31-05-2023

Ground Floor Area (incl garage) = 59.42m²
First Floor Area = 57.19m²
Total Floor Area = 116.61m²

TITLE
TYPE C FLOOR PLANS

SCALE (A3) 1:100 NORTH

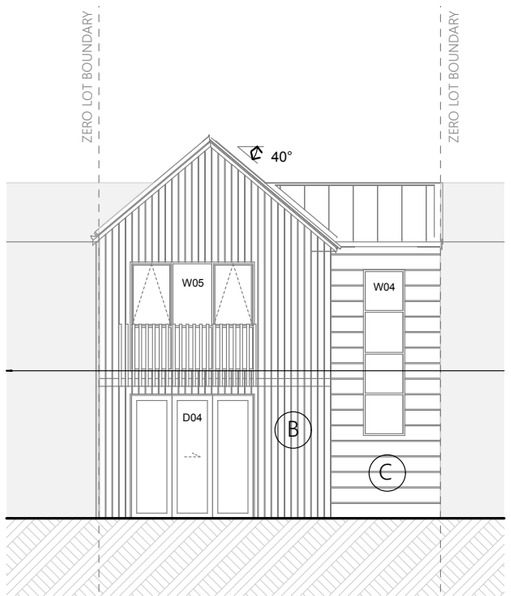
PROJECT
BROOKVALE ROAD DEVELOPMENT

CLIENT
ODERINGS NURSERIES CHCH LTD

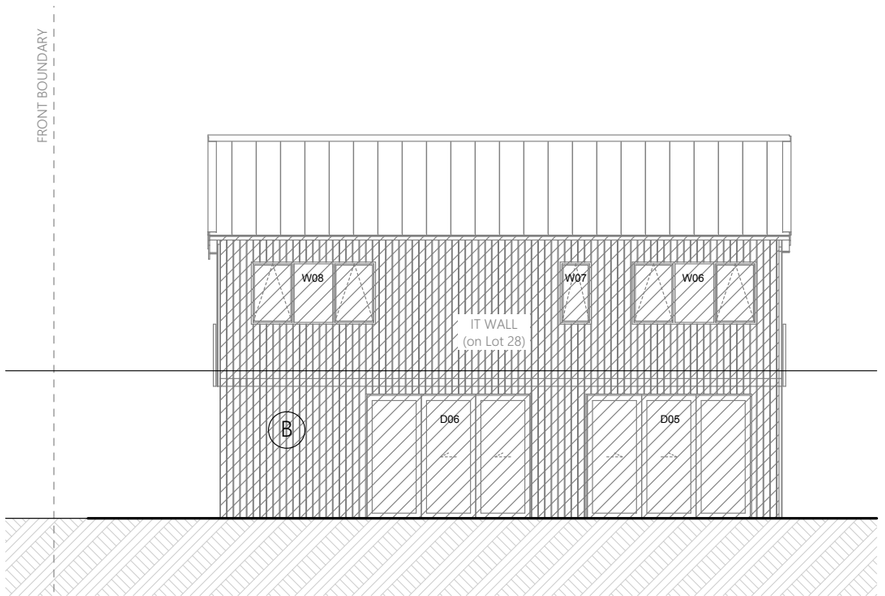
JOB NO 22-04005
STATUS RESOURCE CONSENT

DRAWING NO A111
REVISION A
DATE 11/07/2023

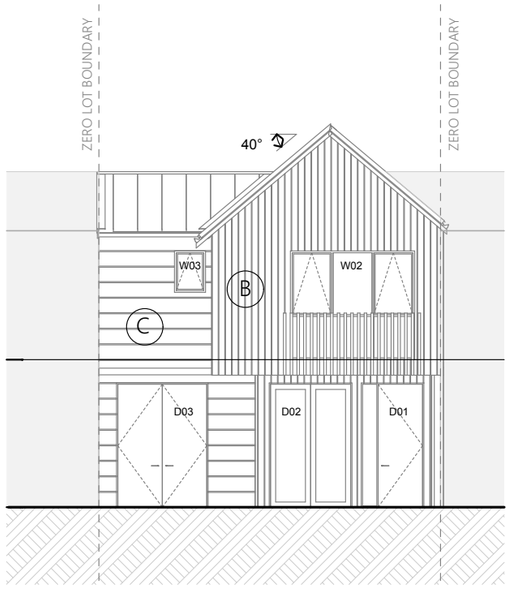
Saddleback



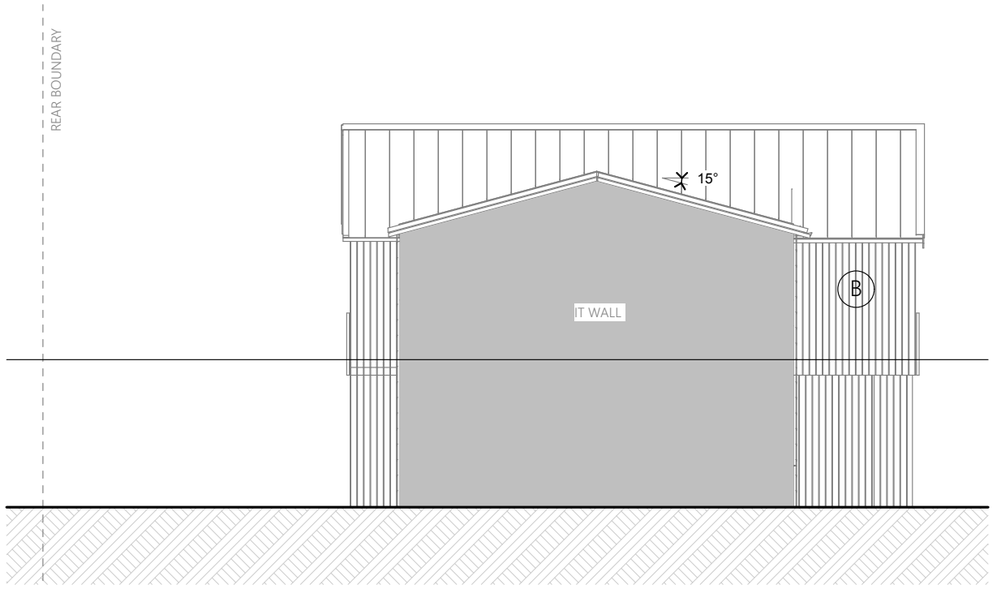
E9 Rear Elevation 1:100



E10 Side Elevation 1:100



E11 Front Elevation 1:100



E12 Side Elevation 1:100

REV	ISSUE	DATE
A	RESOURCE CONSENT	31-05-2023

CLADDING DESIGN

Cladding A - Solid Mass
Brick or Plaster

Cladding B - Vertical
Timber, Fibre Cement Panels or Metal Sheets

Cladding C - Horizontal
Timber or Fibre Cement Panels

TITLE
TYPE C - TYPICAL ELEVATIONS

SCALE (A3) 1:100 NORTH

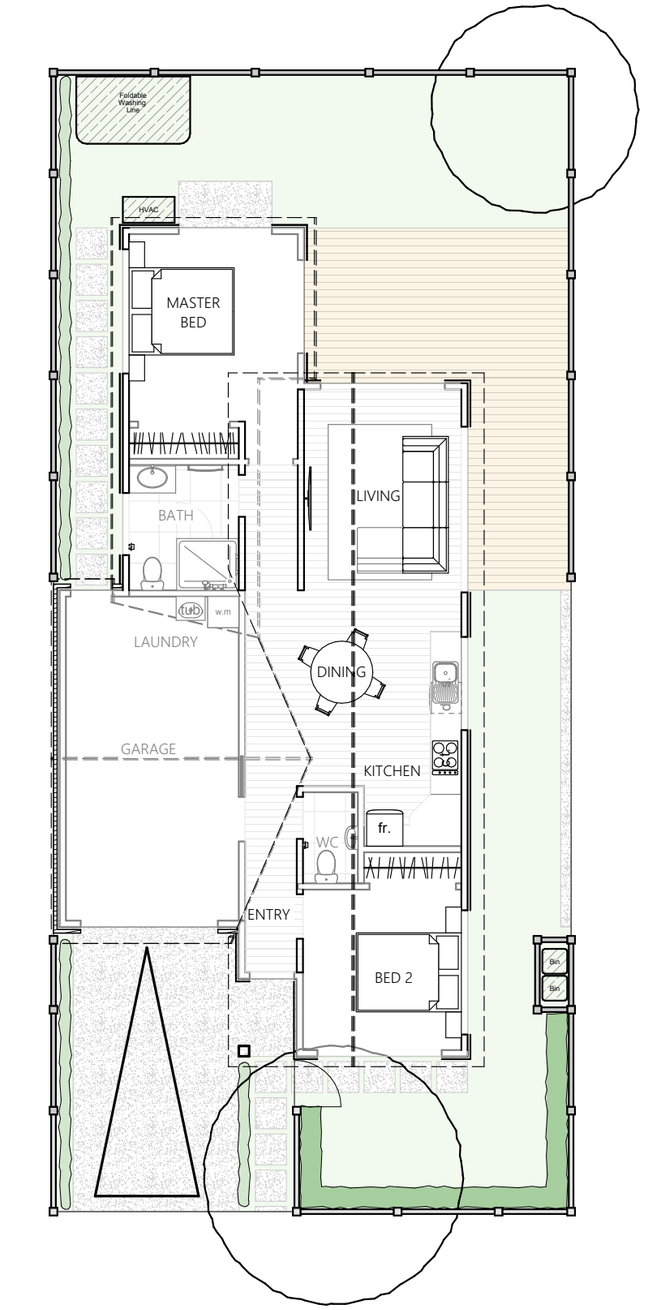
PROJECT
BROOKVALE ROAD DEVELOPMENT

CLIENT
ODERINGS NURSERIES CHCH LTD

JOB NO 22-04005
STATUS RESOURCE CONSENT

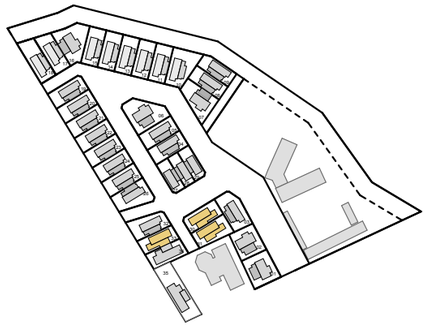
DRAWING NO A112
REVISION A
DATE 11/07/2023

Saddleback



1 Type D - Landscaping Plan 1:100

REV	ISSUE	DATE
A	RESOURCE CONSENT	31-05-2023



Note:

Refer to Landscape Plans prepared by Oderings Landscape for site specific details, including finishes, fencing and planting.

TITLE
TYPE D - TYPCIAL LANDSCAPE PLAN

SCALE (A3) 1:100 NORTH

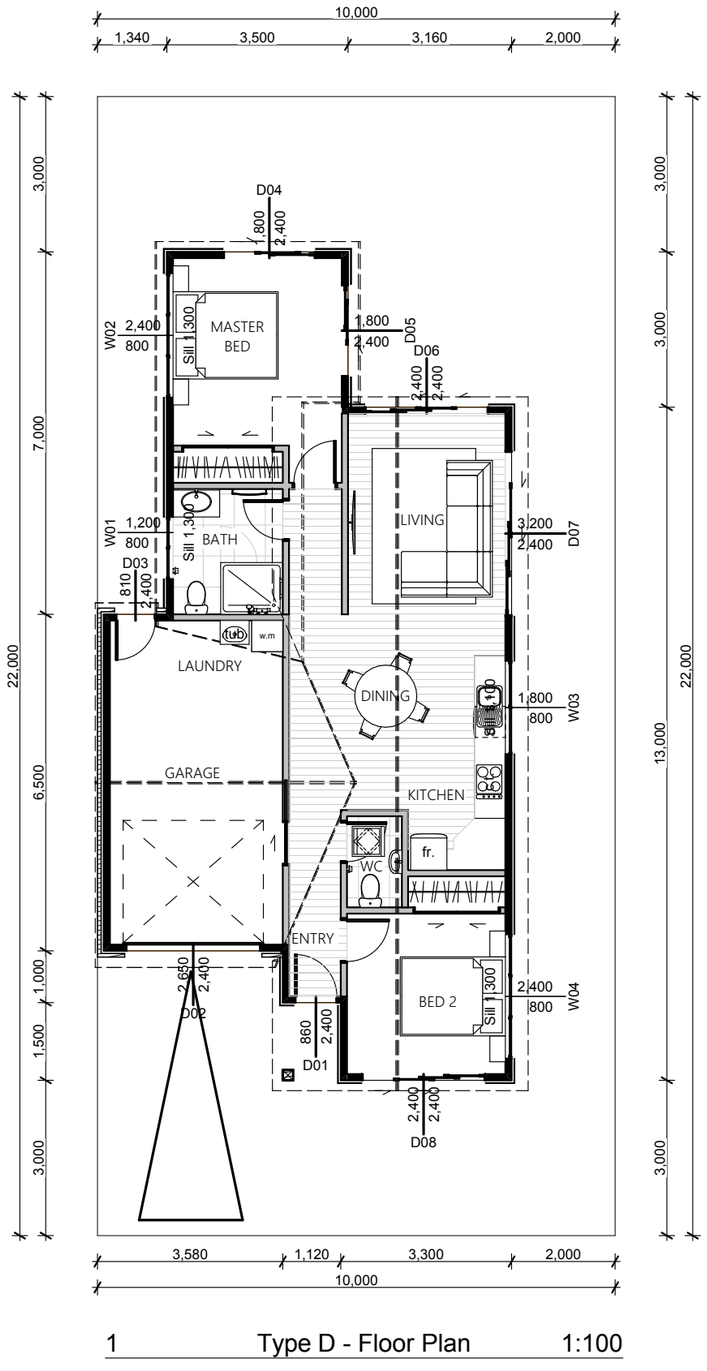
PROJECT
BROOKVALE ROAD DEVELOPMENT

CLIENT
ODERINGS NURSERIES CHCH LTD

JOB NO 22-04005
STATUS RESOURCE CONSENT

DRAWING NO A113
REVISION A
DATE 11/07/2023

Saddleback



1 Type D - Floor Plan 1:100

REV	ISSUE	DATE
A	RESOURCE CONSENT	31-05-2023

Total Floor Area (incl garage) = 97.73m²

TITLE
TYPE D FLOOR PLAN

SCALE (A3) 1:100 NORTH

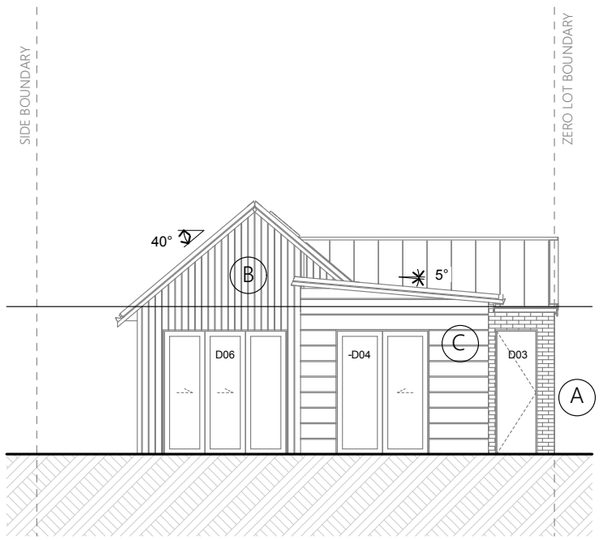
PROJECT
BROOKVALE ROAD DEVELOPMENT

CLIENT
ODERINGS NURSERIES CHCH LTD

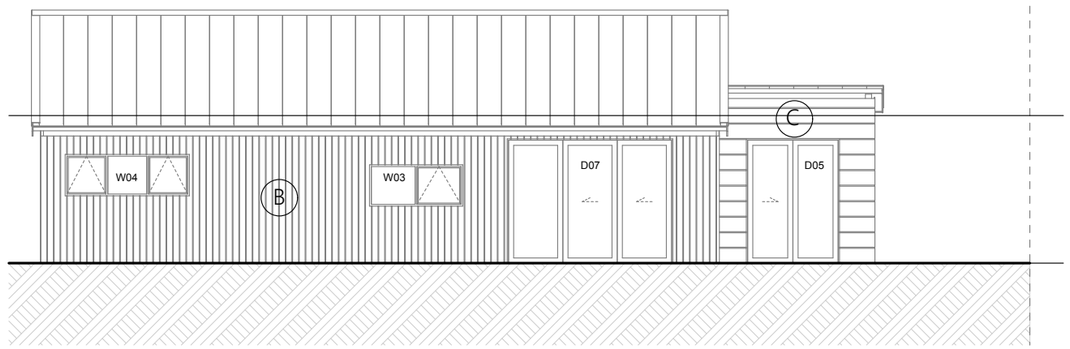
JOB NO 22-04005
STATUS RESOURCE CONSENT

DRAWING NO A114
REVISION A
DATE 11/07/2023

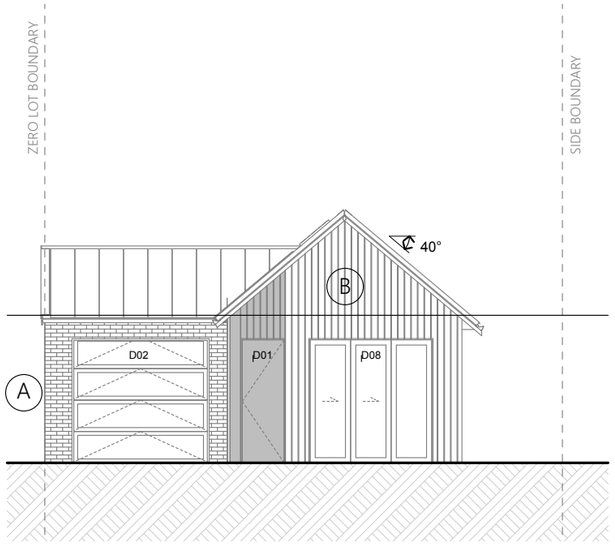
Saddleback



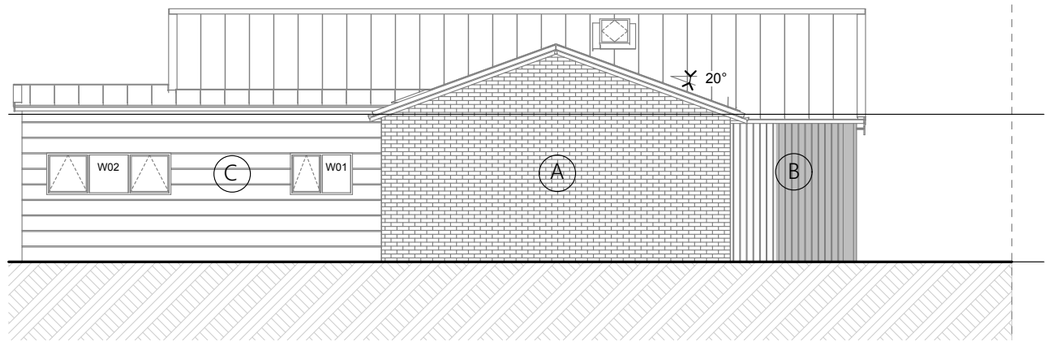
E13 Rear Elevation 1:100



E14 Side Elevation 1:100



E15 Front Elevation 1:100



E16 Side Elevation 1:100

REV	ISSUE	DATE
A	RESOURCE CONSENT	31-05-2023

CLADDING DESIGN

Cladding A - Solid Mass
Brick or Plaster

Cladding B - Vertical
Timber, Fibre Cement Panels or Metal Sheets

Cladding C - Horizontal
Timber or Fibre Cement Panels

TITLE
TYPE D - TYPCIAL ELEVATIONS

SCALE (A3) 1:100 NORTH

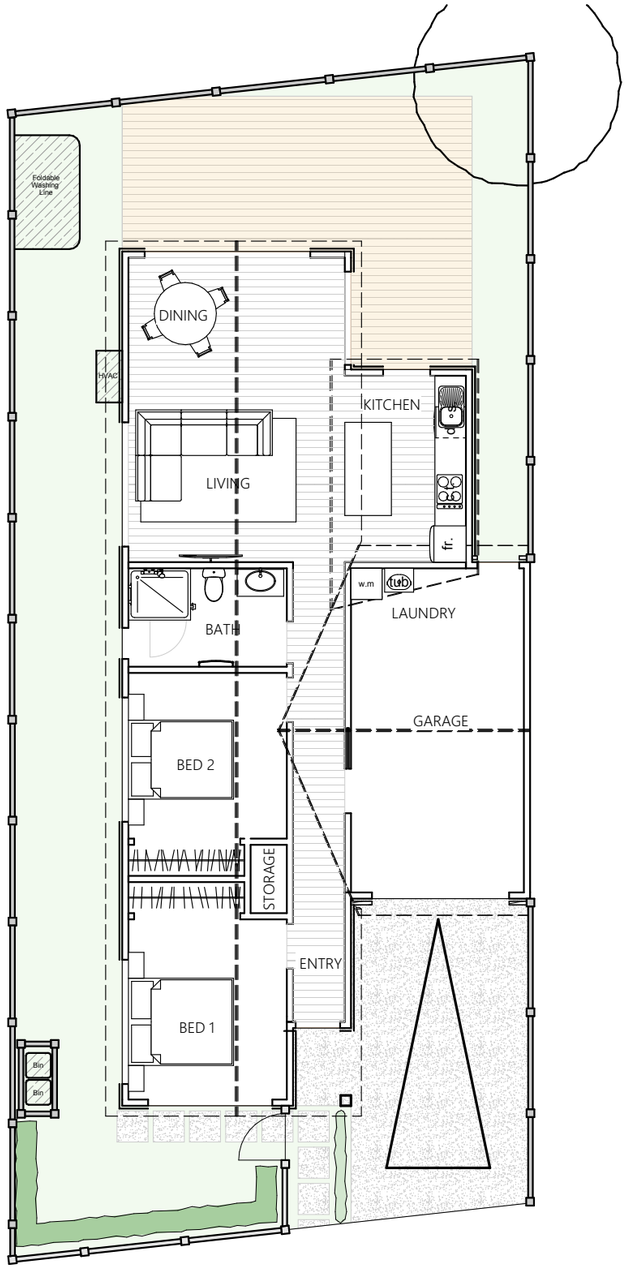
PROJECT
BROOKVALE ROAD DEVELOPMENT

CLIENT
ODERINGS NURSERIES CHCH LTD

JOB NO 22-04005
STATUS RESOURCE CONSENT

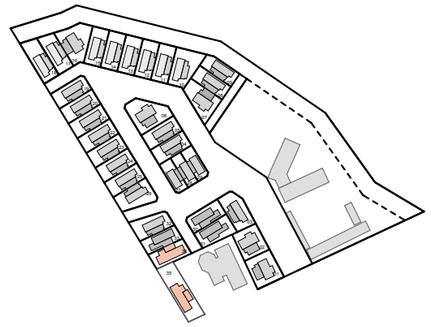
DRAWING NO A115
REVISION A
DATE 11/07/2023

Saddleback



1 Type D2 - Landscaping Plan 1:100

REV	ISSUE	DATE
A	RESOURCE CONSENT	31-05-2023



Note:

Refer to Landscape Plans prepared by Oderings Landscape for site specific details, including finishes, fencing and planting.

TITLE
TYPE D2 - TYPCIAL LANDSCAPE PLAN

SCALE (A3) 1:100 NORTH

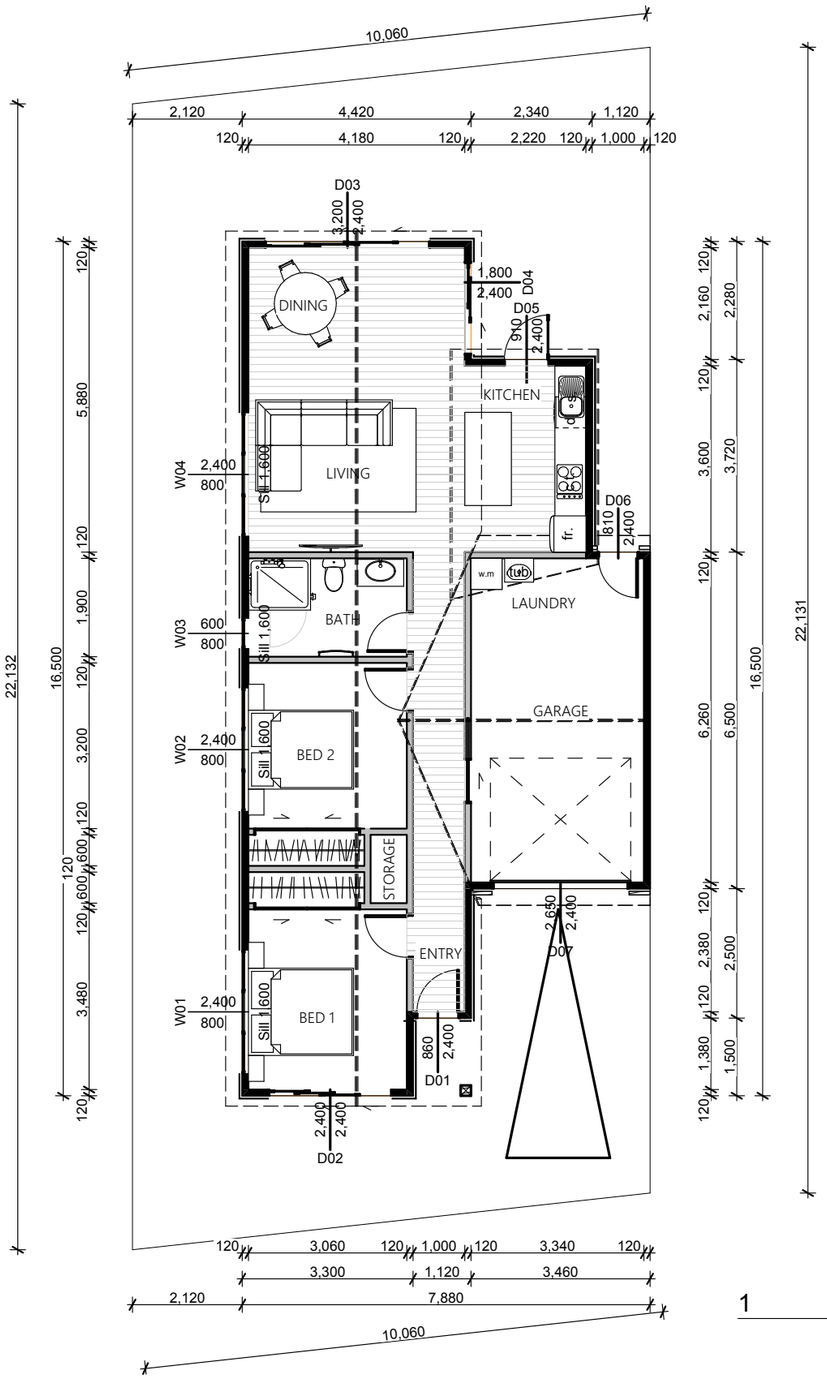
PROJECT
BROOKVALE ROAD DEVELOPMENT

CLIENT
ODERINGS NURSERIES CHCH LTD

JOB NO 22-04005
STATUS RESOURCE CONSENT

DRAWING NO A116
REVISION A
DATE 11/07/2023

Saddleback



1 Type D2 - Floor Plan 1:100

REV	ISSUE	DATE
A	RESOURCE CONSENT	31-05-2023

Total Floor Area (incl garage) = 102.44m²

TITLE
TYPE D2 FLOOR PLAN

SCALE (A3) 1:100 NORTH

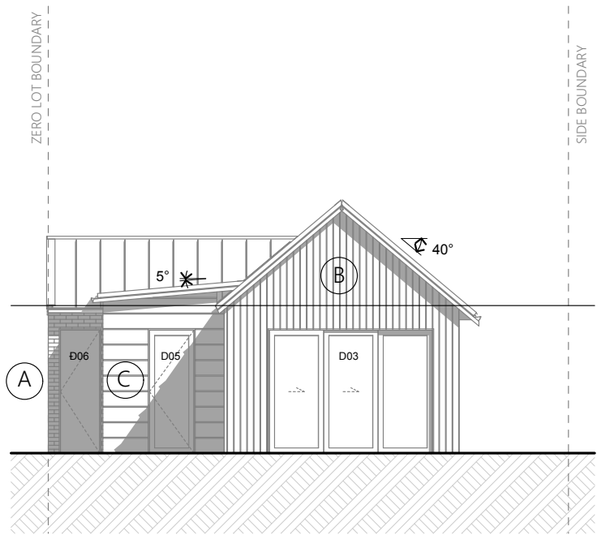
PROJECT
BROOKVALE ROAD DEVELOPMENT

CLIENT
ODERINGS NURSERIES CHCH LTD

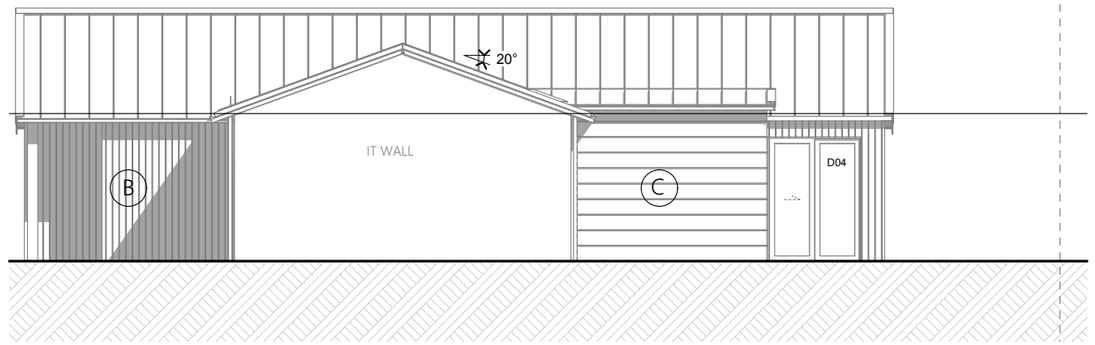
JOB NO 22-04005
STATUS RESOURCE CONSENT

DRAWING NO A117
REVISION A
DATE 11/07/2023

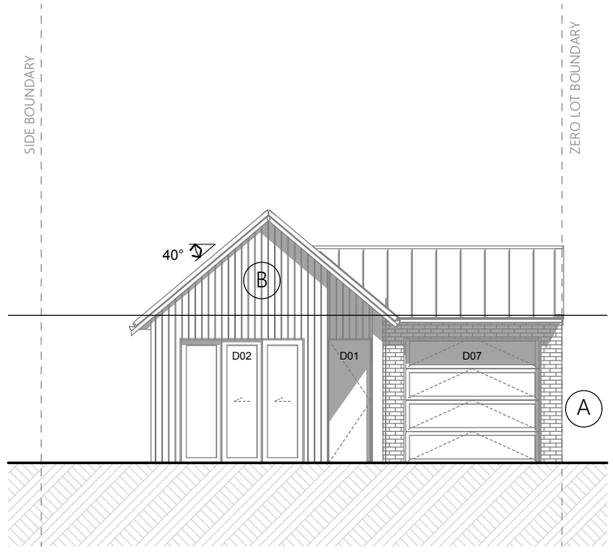
Saddleback



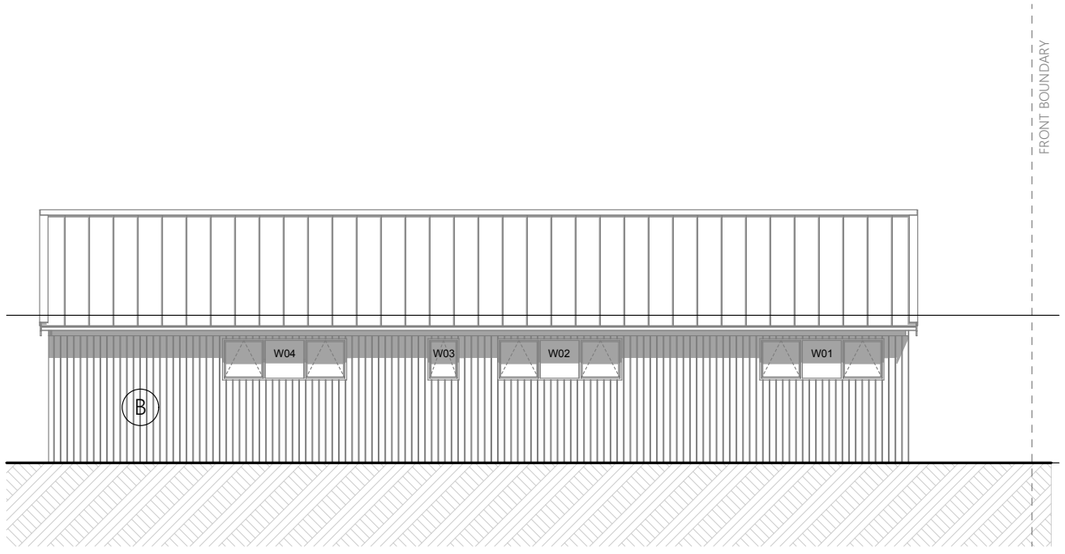
E21 Rear Elevation 1:100



E22 Side Elevation 1:100



E23 Front Elevation 1:100



E24 Side Elevation 1:100

REV	ISSUE	DATE
A	RESOURCE CONSENT	31-05-2023

CLADDING DESIGN

Cladding A - Solid Mass
Brick or Plaster

Cladding B - Vertical
Timber, Fibre Cement Panels or Metal Sheets

Cladding C - Horizontal
Timber or Fibre Cement Panels

TITLE
TYPE D2 ELEVATIONS

SCALE (A3) 1:100 NORTH

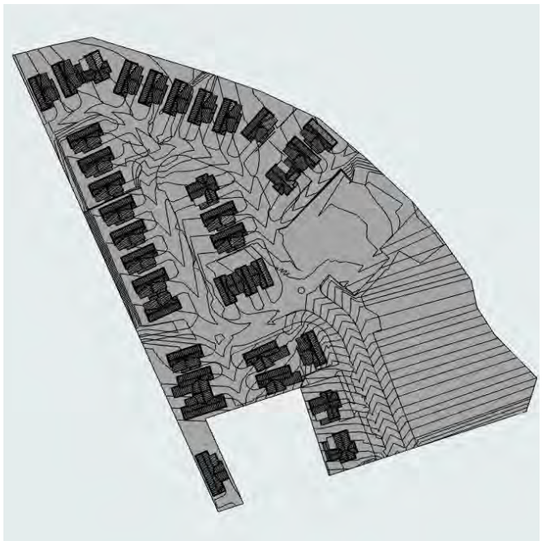
PROJECT
BROOKVALE ROAD DEVELOPMENT

CLIENT
ODERINGS NURSERIES CHCH LTD

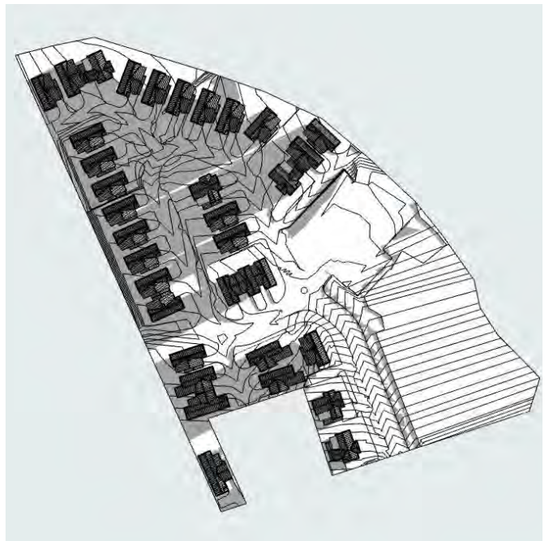
JOB NO 22-04005
STATUS RESOURCE CONSENT

DRAWING NO A118
REVISION A
DATE 11/07/2023

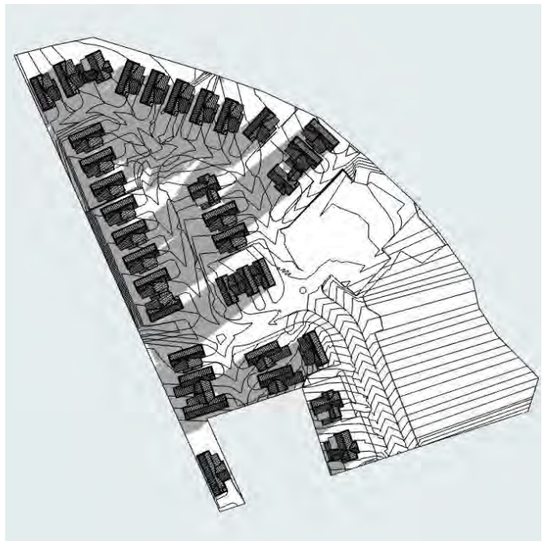
Saddleback



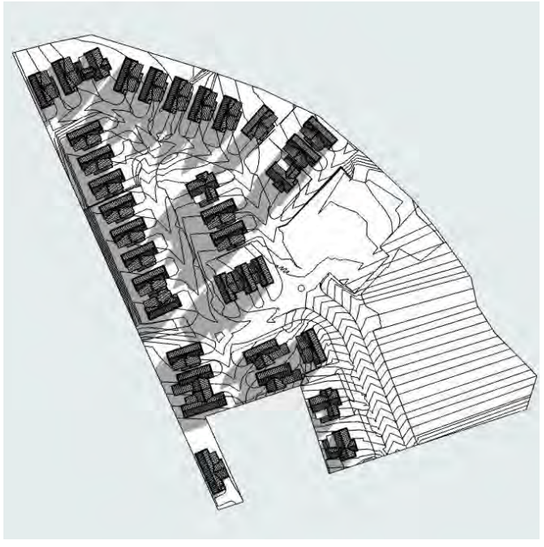
June 21st, 7:00am



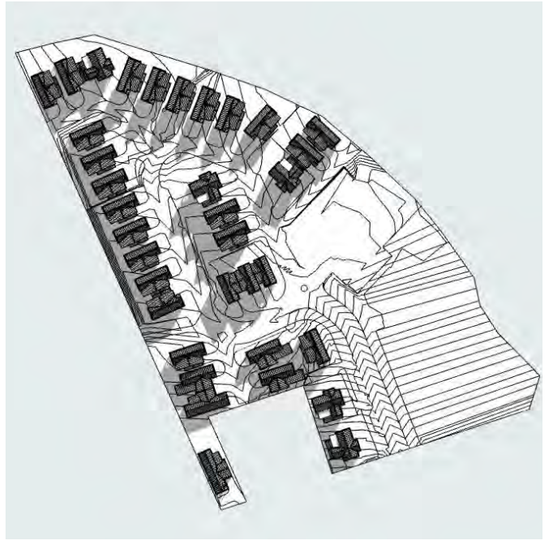
June 21st, 8:00am



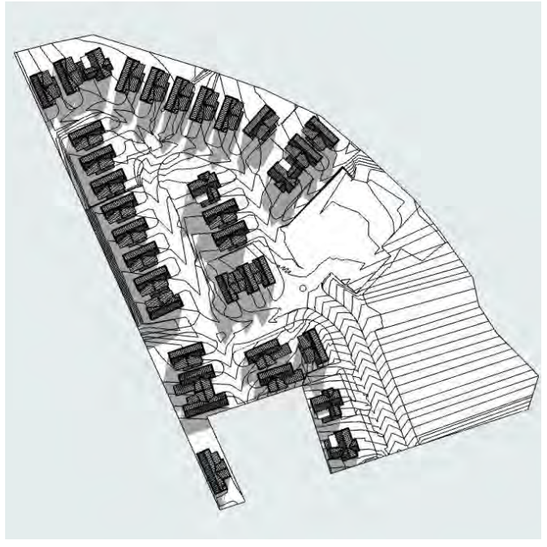
June 21st, 9:00am



June 21st, 10:00am



June 21st, 11:00am



June 21st, 12:00pm

REV	ISSUE	DATE
A	RESOURCE CONSENT	31-05-2023

TITLE
SUN STUDY - JUNE

SCALE (A3)
N.T.S

NORTH

PROJECT
BROOKVALE ROAD DEVELOPMENT

CLIENT
ODERINGS NURSERIES CHCH LTD

JOB NO
22-04005

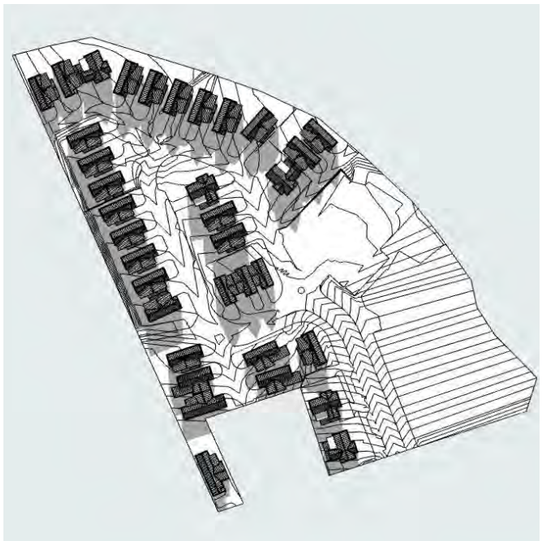
STATUS
RESOURCE CONSENT

DRAWING NO
A119

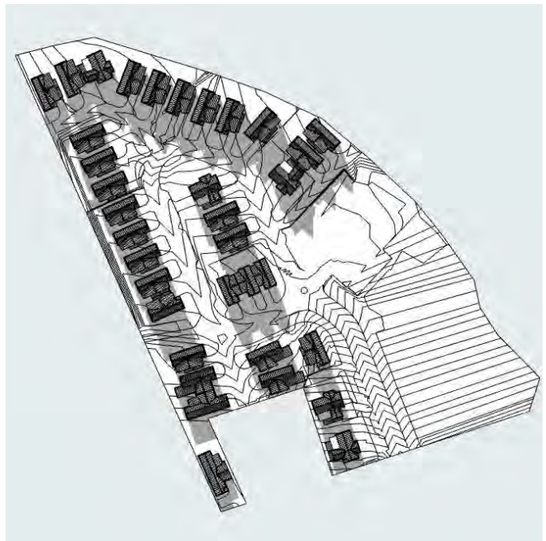
REVISION
A

DATE
11/07/2023

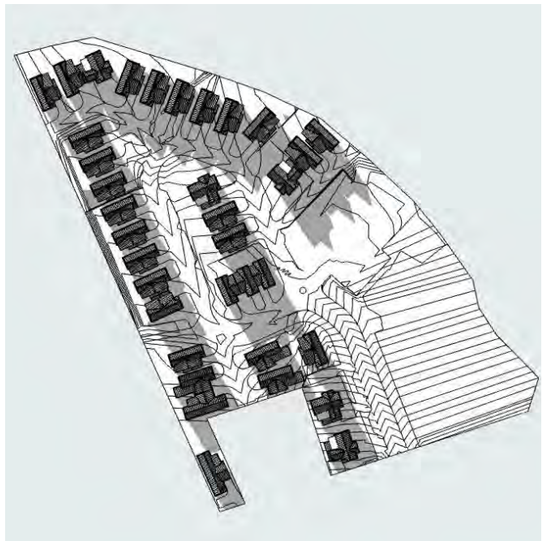
Saddleback



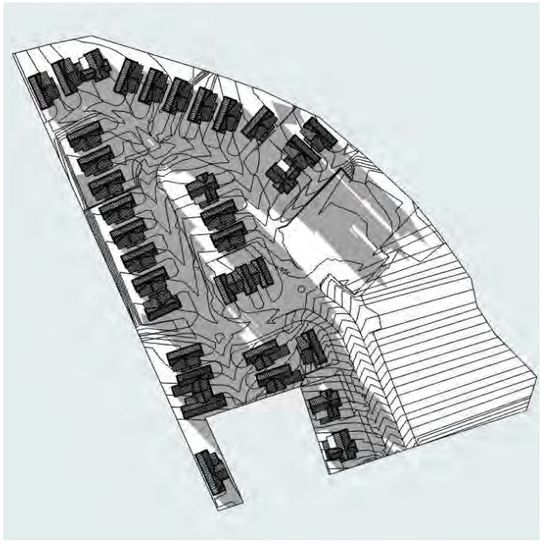
June 21st, 1:00pm



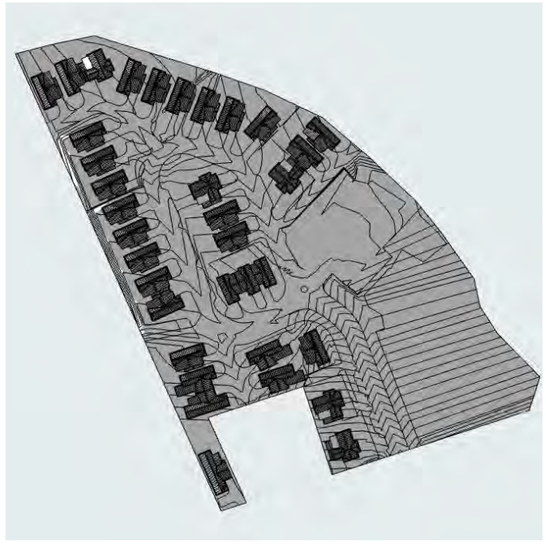
June 21st, 2:00pm



June 21st, 3:00am



June 21st, 4:00pm



June 21st, 5:00pm

REV	ISSUE	DATE
A	RESOURCE CONSENT	31-05-2023

TITLE
SUN STUDY - JUNE

SCALE (A3)
N.T.S

NORTH

PROJECT
BROOKVALE ROAD DEVELOPMENT

CLIENT
ODERINGS NURSERIES CHCH LTD

JOB NO
22-04005

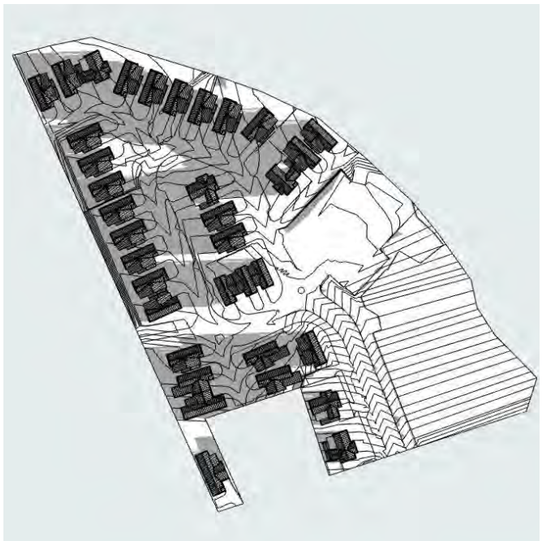
STATUS
RESOURCE CONSENT

DRAWING NO
A120

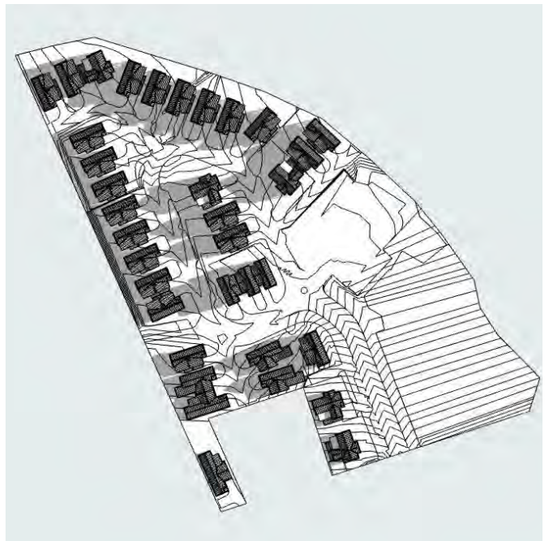
REVISION
A

DATE
11/07/2023

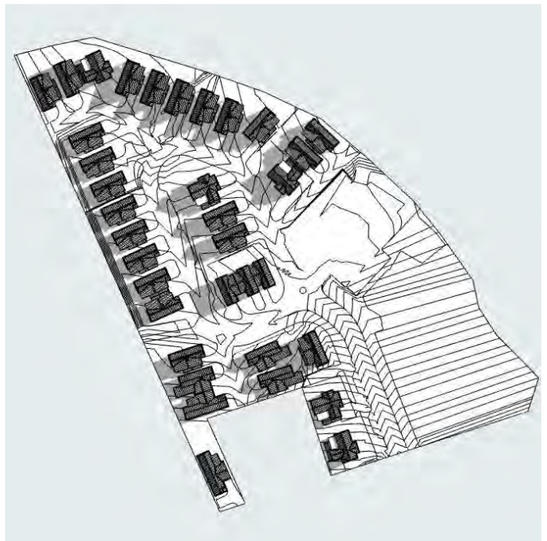
Saddleback



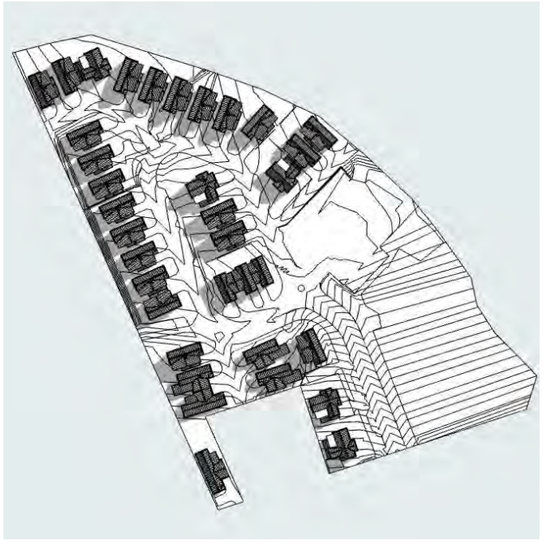
September 22nd, 7:00am



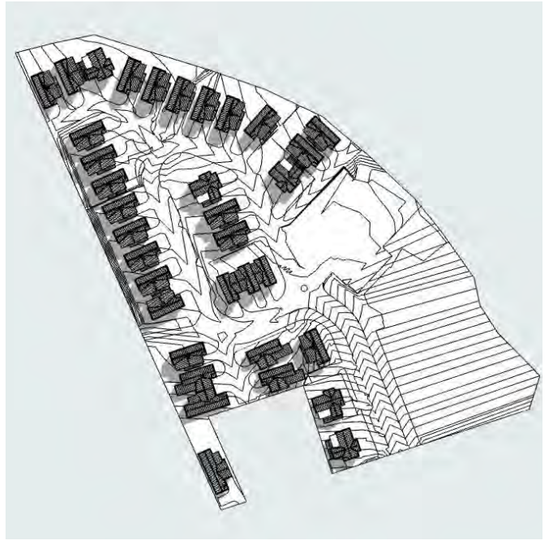
September 22nd, 8:00am



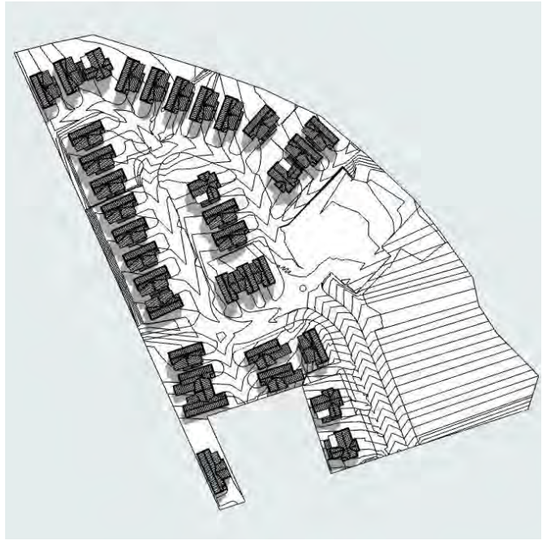
September 22nd, 9:00am



September 22nd, 10:00am



September 22nd, 11:00am



September 22nd, 12:00pm

REV	ISSUE	DATE
A	RESOURCE CONSENT	31-05-2023

TITLE
SUN STUDY - SEPTEMBER

SCALE (A3) N.T.S

NORTH

PROJECT
BROOKVALE ROAD DEVELOPMENT

CLIENT
ODERINGS NURSERIES CHCH LTD

JOB NO 22-04005

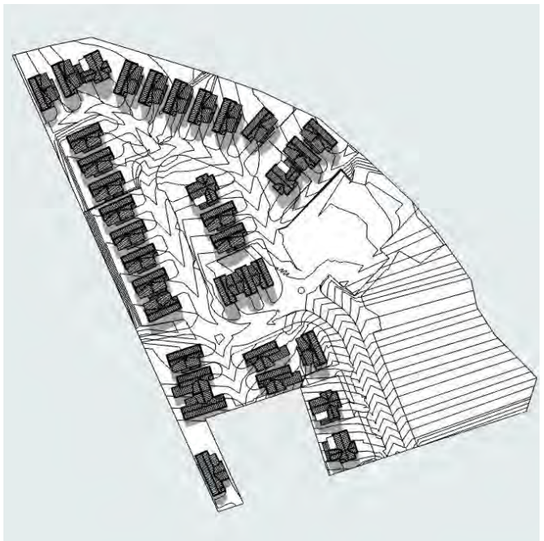
STATUS RESOURCE CONSENT

DRAWING NO A121

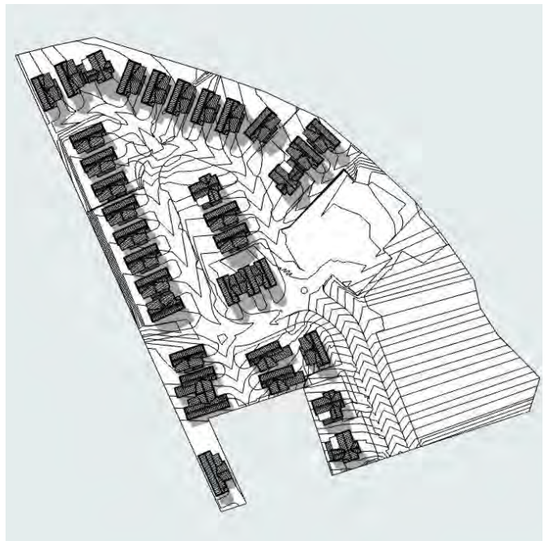
REVISION A

DATE 11/07/2023

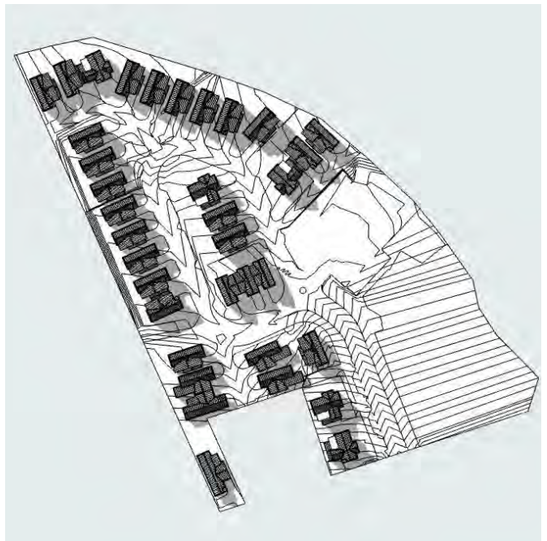
Saddleback



September 22nd, 1:00pm



September 22nd, 2:00pm



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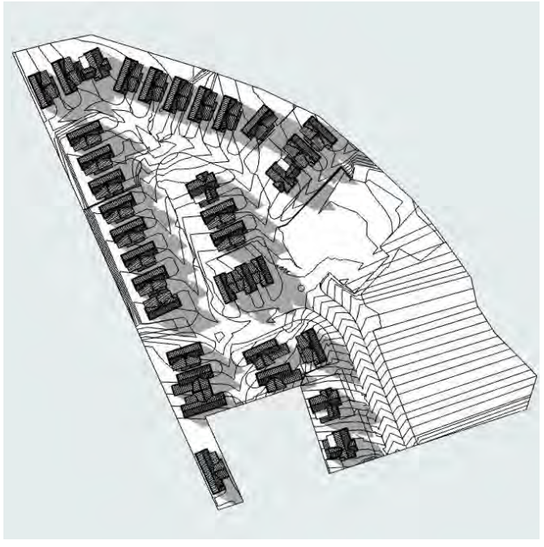

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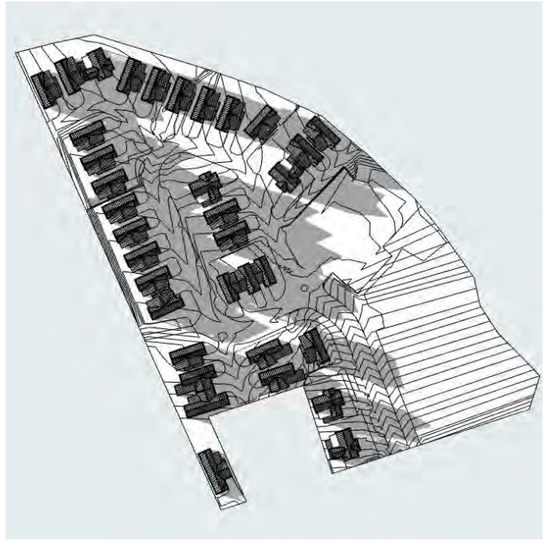

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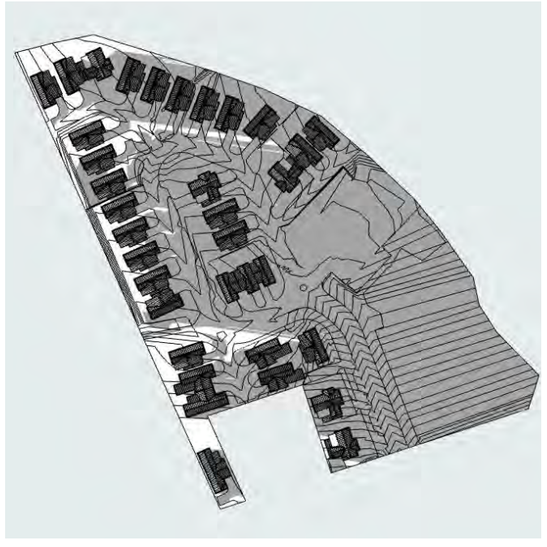

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REV	ISSUE	DATE
A	RESOURCE CONSENT	31-05-2023

TITLE
SUN STUDY - SEPTEMBER

SCALE (A3)
N.T.S

NORTH

PROJECT
BROOKVALE ROAD DEVELOPMENT

CLIENT
ODERINGS NURSERIES CHCH LTD

JOB NO
22-04005

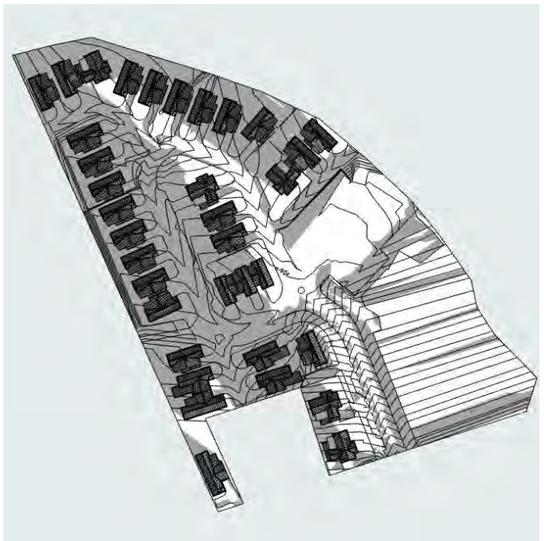
STATUS
RESOURCE CONSENT

DRAWING NO
A122

REVISION
A

DATE
11/07/2023

Saddleback



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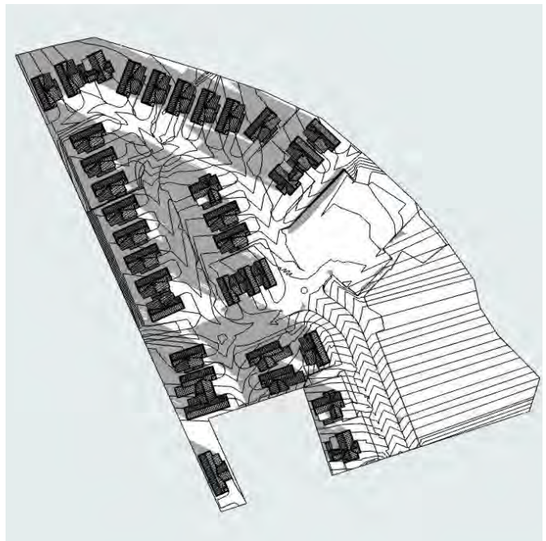

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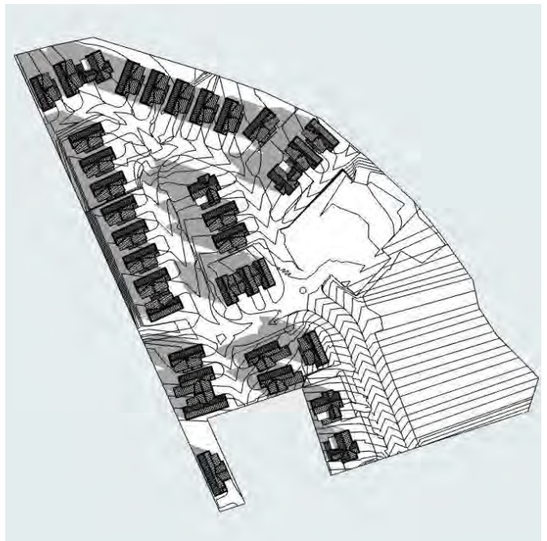

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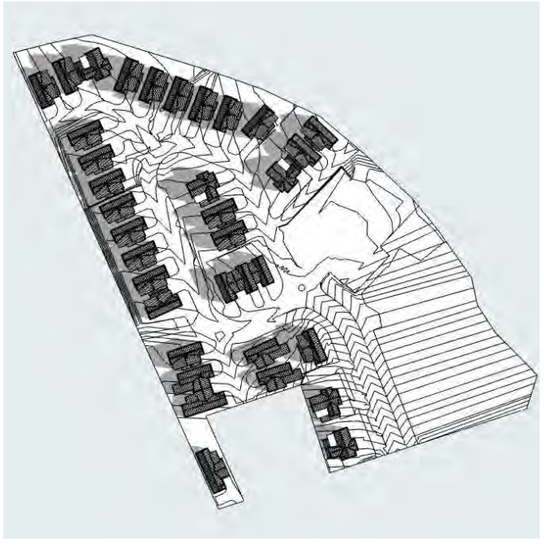

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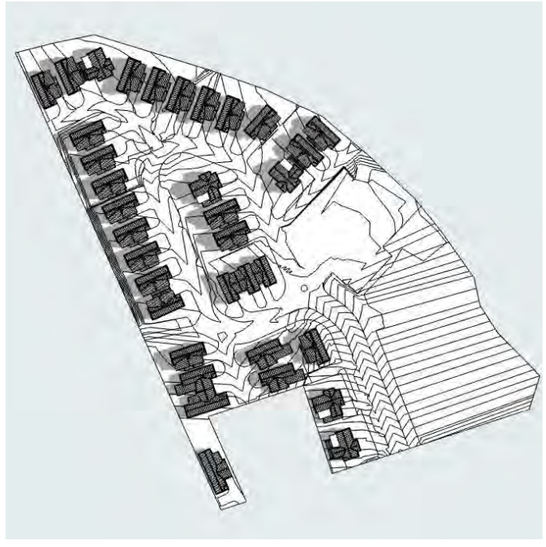

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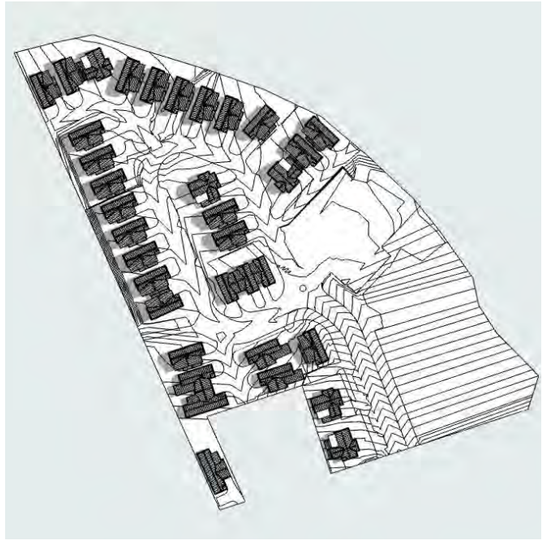

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REV	ISSUE	DATE
A	RESOURCE CONSENT	31-05-2023

TITLE
SUN STUDY - DECEMBER

SCALE (A3)
N.T.S

NORTH

PROJECT
BROOKVALE ROAD DEVELOPMENT

CLIENT
ODERINGS NURSERIES CHCH LTD

JOB NO
22-04005

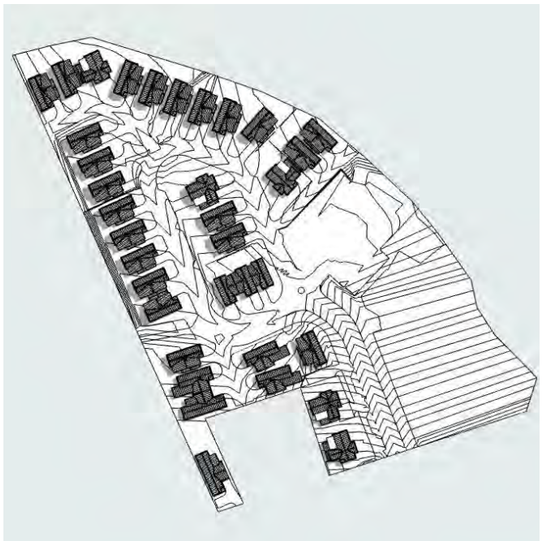
STATUS
RESOURCE CONSENT

DRAWING NO
A123

REVISION
A

DATE
11/07/2023

Saddleback



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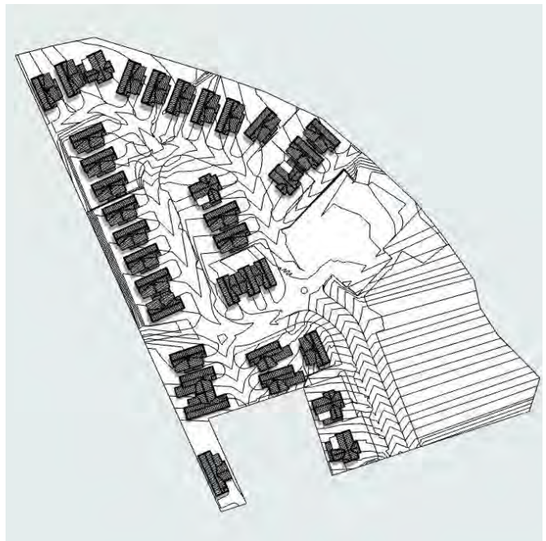

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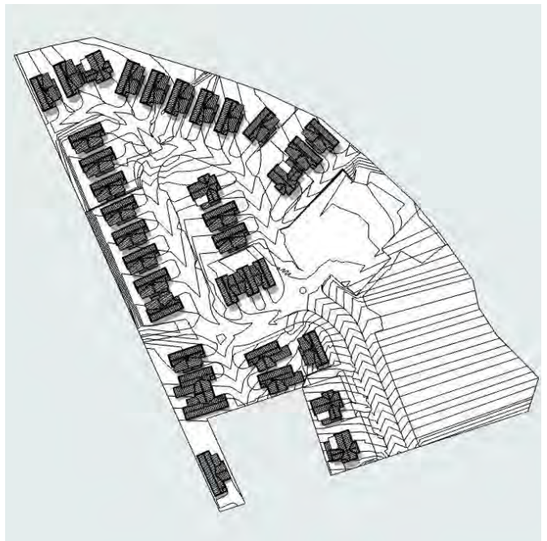

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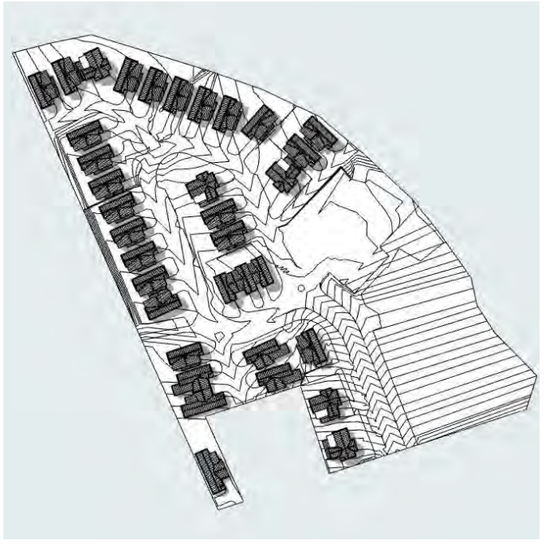

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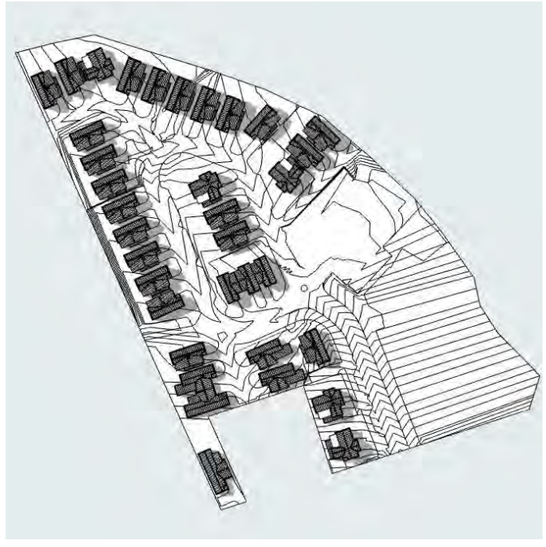

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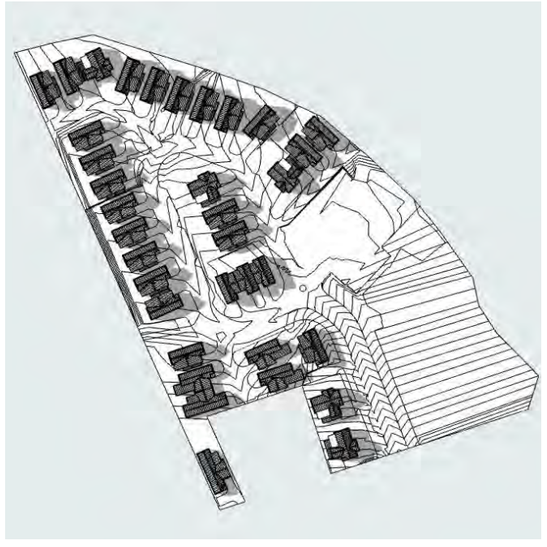

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REV	ISSUE	DATE
A	RESOURCE CONSENT	31-05-2023

TITLE
SUN STUDY - DECEMBER

SCALE (A3)
N.T.S

NORTH

PROJECT
BROOKVALE ROAD DEVELOPMENT

CLIENT
ODERINGS NURSERIES CHCH LTD

JOB NO
22-04005

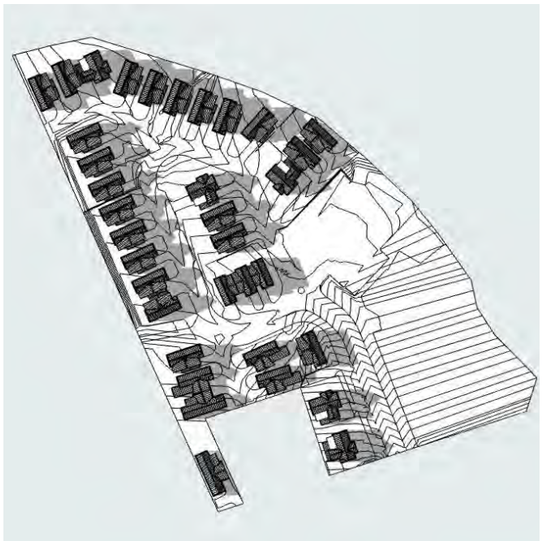
STATUS
RESOURCE CONSENT

DRAWING NO
A124

REVISION
A

DATE
11/07/2023

Saddleback



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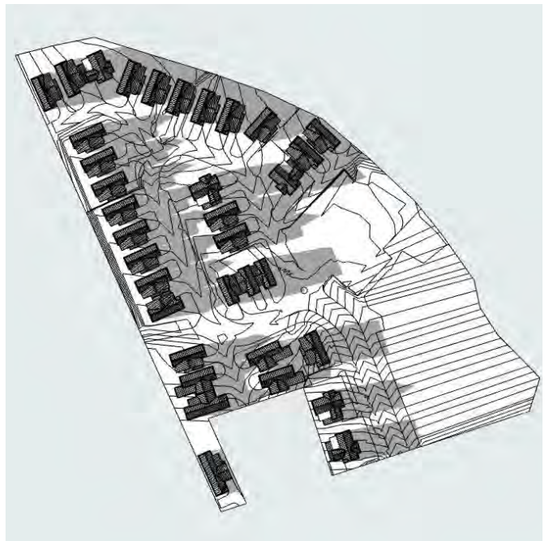

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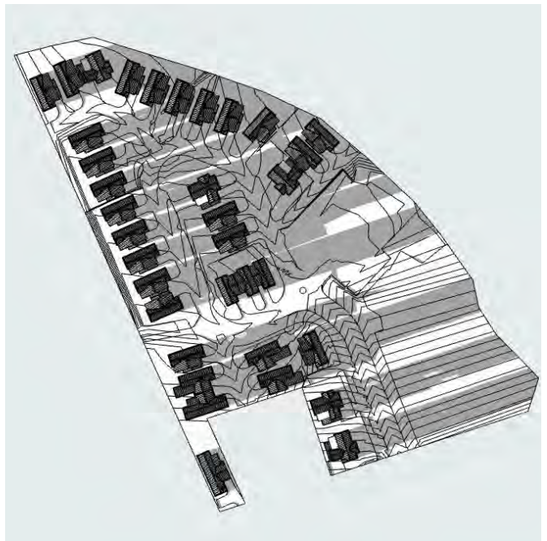

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REV	ISSUE	DATE
A	RESOURCE CONSENT	31-05-2023

TITLE
SUN STUDY - DECEMBER

SCALE (A3)
N.T.S

NORTH

PROJECT
BROOKVALE ROAD DEVELOPMENT

CLIENT
ODERINGS NURSERIES CHCH LTD

JOB NO
22-04005

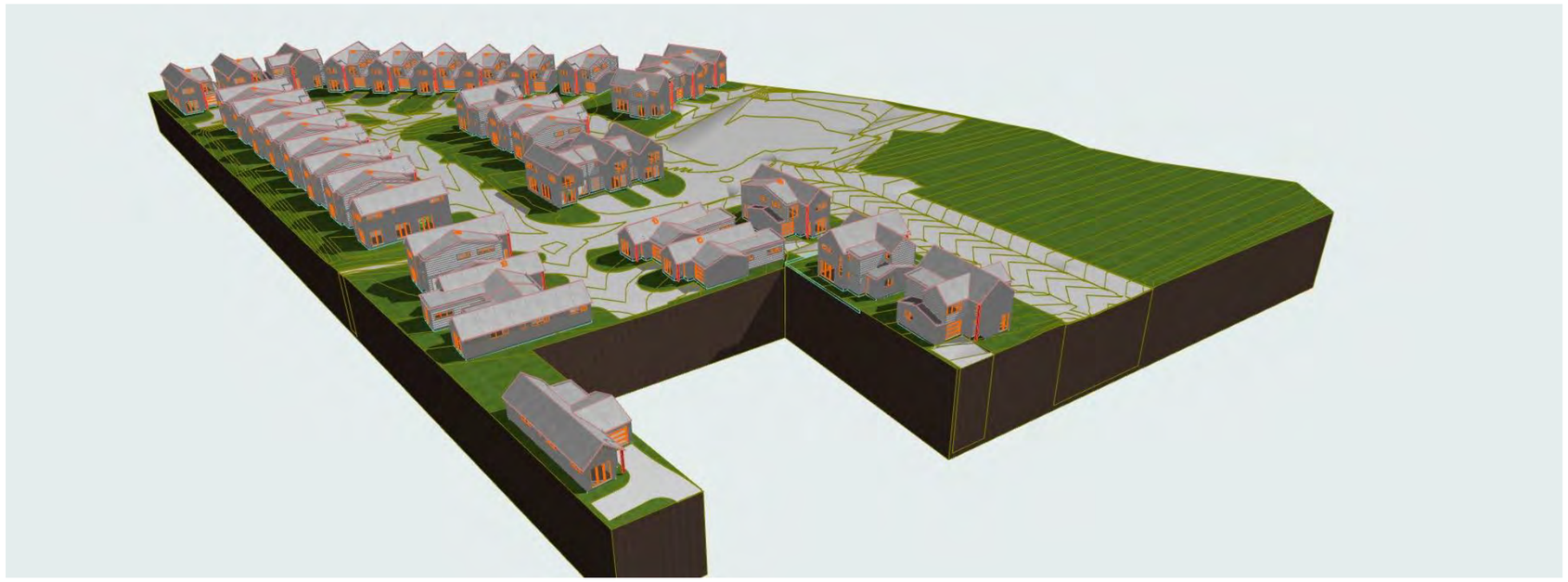
STATUS
RESOURCE CONSENT

DRAWING NO
A125

REVISION
A

DATE
11/07/2023

Saddleback



REV	ISSUE	DATE
A	RESOURCE CONSENT	31-05-2023

TITLE
3D PERSPECTIVE

SCALE (A3)
N.T.S

NORTH

PROJECT
BROOKVALE ROAD DEVELOPMENT

CLIENT
ODERINGS NURSERIES CHCH LTD

JOB NO
22-04005

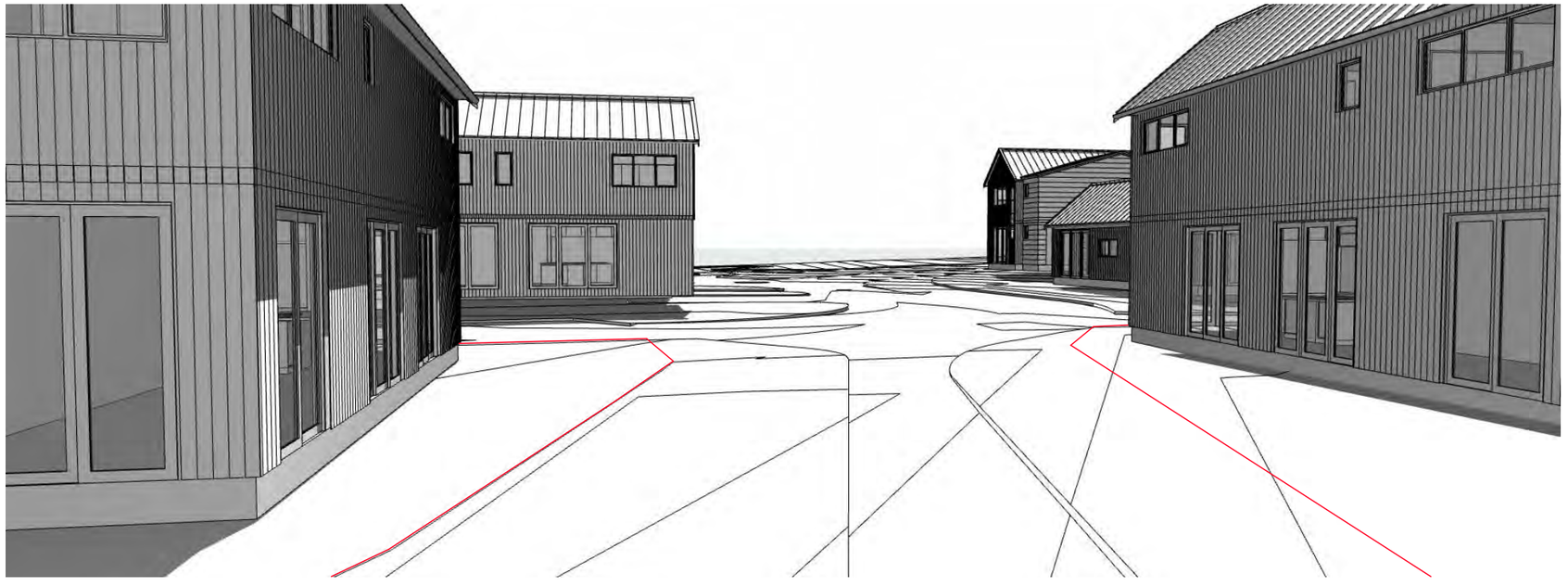
STATUS
RESOURCE CONSENT

DRAWING NO
A126

REVISION
A

DATE
11/07/2023

Saddleback



REV	ISSUE	DATE
A	RESOURCE CONSENT	31-05-2023

1) Perspective from central roundabout - viewpoint North

2) Perspective from park to West - viewpoint into development

TITLE
3D PERSPECTIVE

SCALE (A3)

NORTH

PROJECT
BROOKVALE ROAD DEVELOPMENT

CLIENT
ODERINGS NURSERIES CHCH LTD

JOB NO
22-04005

STATUS
RESOURCE CONSENT

DRAWING NO
A127

REVISION
A

DATE
11/07/2023

Saddleback

INITIA
GEOTECHNICAL SPECIALISTS

DEVELOPMENT NOUS

BROOKVALE RESIDENTIAL

GEOTECHNICAL ASSESSMENT REPORT

INITIA REF P-001006 REV A

FEBRUARY 2021

Attachment H

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February 2021
Initia Ref: P-001006 Rev A
Brookvale Residential
INITIA

Attachment H

1. Introduction

1.1 General

Initia Limited has been engaged by Development Nous Limited on behalf of Oderings Nurseries Christchurch Limited to provide geotechnical consultancy services in relation to the proposed residential subdivision development at a block of land, currently occupied by an Oderings Garden Centre, between Brookvale Road and Romanes Drive, Havelock North.

This Geotechnical Interpretative Report (GIR) provides geotechnical advice and recommendations to support design of the proposed development. It is considered suitable to support a Resource Consent application.

1.2 Scope of Works

The scope of works undertaken as part of the geotechnical assessment for the residential subdivision development includes the following:

- Geotechnical desk-study assessment including a review of the New Zealand Geotechnical Database (NZGD) to source any historical relevant geotechnical investigation data and a review of the published geological maps for the area.
- Site walkover/field mapping by a geotechnical specialist;
- Geotechnical field investigations comprising;
    - 3 No. machine drilled boreholes (BHs) extended to a depth of up to 8m.
    - 1 day of Static Cone Penetration tests (CPTs)
- Preparation of test logs and a field investigation location plan.
- Development of a subsurface model for the site;
- Liquefaction susceptibility analyses for SLS and ULS seismic events using the CPT and laboratory data;
- Preparation of test logs and a field investigation location plan.
- Development of a subsurface model for the site;
- Liquefaction susceptibility analyses for SLS and ULS seismic events using the CPT and laboratory data;
- Assessment of suitable foundation options derivation of design parameters;
- Preparation of a geotechnical report providing geotechnical advice to support earthworks and the Resource Consent for the development and future sections.

1.3 Proposed Development

The proposed development at 55 Brookvale Road is to be undertaken over an approximately 2 Ha site as shown on Figure 1006-001 in Appendix A. The development is to comprise predominantly residential dwellings between one and two storeys high with associated infrastructure.

2. Site Overview

2.1 Site Description

The site has been used as a garden centre with extensive glass houses and storage areas. Many of the glasshouses have now been removed, leaving the concrete slab exposed. This site is bounded by a drainage channel on the eastern and northern boundary. Playing fields are located to the west of the site and Brookvale Road is to the south of the site.

The site has a gentle slope with an elevation of RL 12.5 at the southern boundary, sloping down to the north at approximately RL 9 m.

2.2 Published Geology

The geological map of the area[1] indicates that the site is underlain by two different geological units. To the north west there is the recent Holocene river deposits including poorly consolidated alluvial gravel, sand and mud – shaded blue on the map below.

The rest of the site is underlain by Late Pleistocene river deposits comprising moderately weathered undifferentiated poorly sorted loess-covered alluvial gravel deposits – shaded orange (c. 6,500 to 3,000 year old) and yellow (> 14,000 years old)[2] on the map below.

Figure 2-1: Quaternary Geology of the Hawkes Bay area.

[1] Hawke's Bay Quaternary Geology, https://hbrcopendata-hbrc.opendata.arcgis.com/
[2] RDCL Report, Brookvale and Romanes Drive Subdivision Havelock North. Geotechnical Investigation. Ref: R_20029_02.

3. Geotechnical Investigation

3.1 Nearby Historical Investigations

A geotechnical investigation carried out from February to August 2020 was carried out by RDCL[2] for a proposed residential development to the north east, directly across Romanes Drive (approximately 100 m north east of the subject site). The development consists 105 lots approximately 550-600 m^2 each. The investigation comprised:

- 29 Test Pit excavations
- 26 Dynamic Cone Penetrometer tests
- 14 Cone Penetrometer Tests

With a second stage of investigation aimed to refine the risk of lateral spread along the northern boundary adjacent to a stormwater drain. This comprised:

- 8 Test Pits with 15 Shear Vane tests
- 7 Cone Penetrometer Tests
- 6 Soil samples laboratory tested for Atterberg's limit test, Particle size distribution and Linear shrinkage.

3.2 Initia Investigations

Geotechnical investigations for the proposed residential subdivision development took place over the 9th and 10th December 2020.

A summary of the investigations completed by Initia is provided in Table 3-1 below. The locations of all investigation points were surveyed using a handheld GPS unit and are presented on Figure 1006-001 in Appendix A.

3.2.1 Cone Penetration Tests

13 No. CPT's were undertaken by Geotech Drilling. All tests refused (tip resistance, q_c > 20 MPa) within the top 6 m. The CPTs were undertaken using a truck mounted CPT rig. The logs are presented in Appendix B.

3.2.2 Machine Boreholes

3 no. boreholes were drilled by Geotech drilling, all to a depth of 10.95 m. The boreholes were undertaken using a sonic drill rig. In situ Standard Penetration Tests (SPTs) were undertaken at 1.5 m intervals within the boreholes.

All boreholes were supervised by a qualified geologist/geotechnical engineer and all soils and rock encountered were logged in accordance with the New Zealand Geotechnical Society (NZGS) guidelines and are presented in Appendix B.

Table 3-1 Summary of investigations

Investigation Reference	Investigation Type	Coordinates (NZTM)		Elevation (mRL)	Depth (mBGL)
		Easting (m)	Northing (m)		
BH1	Machine Borehole	1933750	5602694	11.0	10.95
BH2	Machine Borehole	1933623	5602724	9.0	10.95
BH3	Machine Borehole	1933699	5602701	10.0	10.95
CPT01	Cone Penetration Test	1933677.55	5602609.03	11.7	3.5
CPT02	Cone Penetration Test	1933696.53	5602630.46	11.2	4.5
CPT03	Cone Penetration Test	1933745.91	5602698.40	10.7	4.6
CPT04	Cone Penetration Test	1933720.03	5602716.21	10.2	4.6
CPT05	Cone Penetration Test	1933695.28	5602720.62	9.5	4.9
CPT06	Cone Penetration Test	1933665.54	5602728.58	9.0	4.5
CPT07	Cone Penetration Test	1933633.12	5602734.44	9.0	5.9
CPT08	Cone Penetration Test	1933622.10	5602718.23	9.0	4.9
CPT09	Cone Penetration Test	1933661.95	5602705.38	9.5	4.6
CPT10	Cone Penetration Test	1933710.57	5602676.60	10.5	4.0
CPT11	Cone Penetration Test	1933677.86	5602675.76	11.8	4.6
CPT12	Cone Penetration Test	1933638.63	5602683.03	10.2	5.0
CPT13	Cone Penetration Test	1933659.92	5602638.72	11.0	3.5

3.3 Ground model

The results of machine boreholes and the CPT's carried out indicate the site is underlain by the following of geological units:

- Concrete overlying uncontrolled fill
- Holocene river deposits
- Pleistocene alluvium

A summary of the unit depths, thickness and in-situ strength testing is provided in Table 3-2, and geological sections are provided in Appendix A

Most of the site was covered by either concrete slabs from the demolished buildings or asphalt for Oderings carpark. Beneath this was up to 0.7 m of fill that generally consisted of loose, moist, brownish grey silty sandy fine to coarse gravels, with some cobbles. BH2 also had 200mm layer of fill comprising dark grey, medium dense, moist silty sand.

As illustrated in Figure 2-1, a geological boundary runs through the north west of the site. This separates the Holocene river deposits found in BH2, and the Pleistocene alluvium encountered in BH1 & BH3.

Both areas of the site had a similar stratigraphy of 4-5 m of clayey silts overlying 4.5 – 6.5 m of silty gravels. The in situ strength parameters outlined in Table 3-2 show that the geotechnical parameters of the two different units, and across the site are relatively consistent. The clayey silts are characterised by SPT values of 3 – 8 and CPT cone resistances of 1 – 16 MPa. The underlying gravels typically had SPT values of 50^{+}, and the CPT rig was Unable to Penetrate (UTP) this layer anywhere on the site.

Although geotechnically similar, the geological descriptions varied between the two units:

Holocene river deposits – North west corner (BH2)

Beneath the fill is an approximately 5 m thick layer of greenish grey/grey stiff, high plasticity, moist, clayey silts with a small silty sand layer.

Underlying this is a blueish grey medium dense, moist, silty sandy fine to coarse gravel, with trace cobbles. The base of this unit was unproven.

Pleistocene Alluvium – Rest of the site (BH1 & BH3)

Underlying the fill here is an approximately 4 m thick layer of greyish brown, stiff, high plasticity, moist clayey silt. This is above a brown and grey, medium dense to very dense, moist, silty fine to coarse gravel, with some clay, and a trace of sand and cobbles;

Table 3-2 Summary of geological units

Unit	Typical Description	Depth to top of unit (m)	Typical Layer Thickness (m)	In Situ Test Strength Parameters	
				SPT- N Value [blows/ 300] Range [Typical]	q_c, Cone resistance [MPa] Range [Typical]
Fill	Silty sandy GRAVEL, with some cobbles; brownish grey. Loose; moist; gravel, fine to coarse; sand, fine to coarse.	0.0	0.2 - 0.7	N/A	0.5 – 47
Holocene river deposits	Clayey SILTs and silty SANDs; greenish grey/grey. Stiff; high plasticity; moist.	0.2	~5.0	5 - 8	1 – 9 [1.5]
	Silty sandy GRAVEL, with trace cobbles; blueish grey. Medium dense; moist; gravel, fine to coarse, subrounded to subangular.	5.5	6.5(proved)	26 -50$^+$ [50$^+$]	25 – UTP [UTP]
Pleistocene Alluvium (c. 6,500 to 3,000 year old)	Clayey SILT; greyish brown. Stiff; high plasticity; moist.	0.9	~4.0	3 – 8 [3]	1 – 16 [1]
	Silty GRAVEL, with some clay, with trace sand and cobbles; brown and grey. Medium dense to very dense; moist; gravel, fine to coarse.	4.0 – 4.5	4.5 - 5.0	18 -50$^+$ [50$^+$]	25 – UTP UTP
	Clayey SILT; greyish brown. Stiff to very stiff; high plasticity; moist.	8.5 – 10.5	2.5(proved)	9 - 14	N/A

3.4 Groundwater

Water levels measured on the CPT's carried out on the 9th and 10th of December 2020 were between 2.10 and 3.80 m bgl.

Water levels were measured in the boreholes that were carried out concurrently with the CPT's. Ground water in BH1 measured at 2.3 m bgl approximately 3 hours after drilling. BH2 and BH3 both measured 1.8 m bgl directly after drilling. This level was likely elevated due to water introduced during the drilling process.

For the purposes of geotechnical analyses we have assumed a groundwater level 2.5m bgl.

4. Geotechnical Considerations

4.1 General

Geotechnical design and construction advice for the proposed development is presented in the following sub-sections, including:

1- Site Seismicity;
2- Liquefaction potential and consequences;
3- Consolidation Settlement;
4- Foundation options;
5- Earthworks considerations;
6- Construction and monitoring considerations.

4.2 Seismic Considerations

4.2.1 Seismic Subsoil Class

Given the seismic risk in the Hawkes Bay, any structures including foundations will need to be designed to comply with the NZ Building Code with consideration of seismic loading and effects.

In accordance with NZS 1170.5:2004 and the depth to inferred rock level (greater than 40m below existing ground level), it is recommended that the site subsoil Class D (deep soil) be utilised for the structural design of the proposed buildings.

For the purpose of geotechnical analysis, a Peak Ground Acceleration (PGA) of 0.34g with an earthquake magnitude of 6.9 has been derived for an Ultimate Limit State (ULS) earthquake event using the MBIE Guidelines, Module 1, based on assumed building importance level IL2 and a 50 year design life. A PGA of 0.08 should be used for the Serviceability Limit State (SLS) earthquake event, with an earthquake magnitude of 6.2.

We have also assessed the sensitivity of our analyses to the peak ground accelerations outlined in the GNS study[3] which captures an update to the New Zealand National Probabilistic Seismic Hazard Model. The GNS study recommends the following peak ground acceleration and earthquake magnitude pairings:

- SLS (1 in 25 year return period) 0.14g, Magnitude 6.2
- ULS (1 in 500 year return period, for IL2) 0.42, Magnitude 6.5

4.2.2 Liquefaction Potential and Effects on the development

The upper 4.0 to 6.5 m comprises stiff to hard cohesive material and is not considered susceptible to liquefaction.

Material beneath this, to depths of +8.5m comprises silty, sandy gravel and is considered susceptible to liquefaction.

Liquefaction triggering analyses have been carried out on material considered susceptible using the CLiq geotechnical analysis programme and in accordance with the Boulanger and Idriss (2014) method[4] with the SLS and ULS earthquake event parameters defined above using both CPT and SPT based methods.

[3] GNS (2015/186): Assessment of liquefaction risk in Hawke's Bay Volume : The liquefaction hazard model.
[4] Boulanger R.W., and Idriss I.M., 2014: CPT and SPT based Liquefaction Triggering Procedures. Centre for Geotechnical Modelling, Department of Civil & Environmental Engineering, College of Engineering, University of California at Davis.

The analyses indicate the following:

- under SLS levels of shaking, liquefaction is unlikely to be triggered;
- under ULS levels of shaking, layers within the profile are likely to liquefy. We note however, the layers are generally between 0.1 m and 0.5 m thick and generally non-continuous.

The Liquefaction Severity Number (LSN) index provides an indication of the likely effects of liquefaction at the ground surface and accordingly foundations.

LSN values range between 1 and 9 (on average 4) under ULS levels of shaking which suggests there will be little to no expression of liquefaction.

Our analyses indicate that liquefaction triggers at about 0.2 g (above SLS levels of shaking), and full liquefaction over the depths investigated is likely to be triggered at about 0.25 g as shown on Figure 4-1 below. This equivalent to about a 1 in 250 year event.

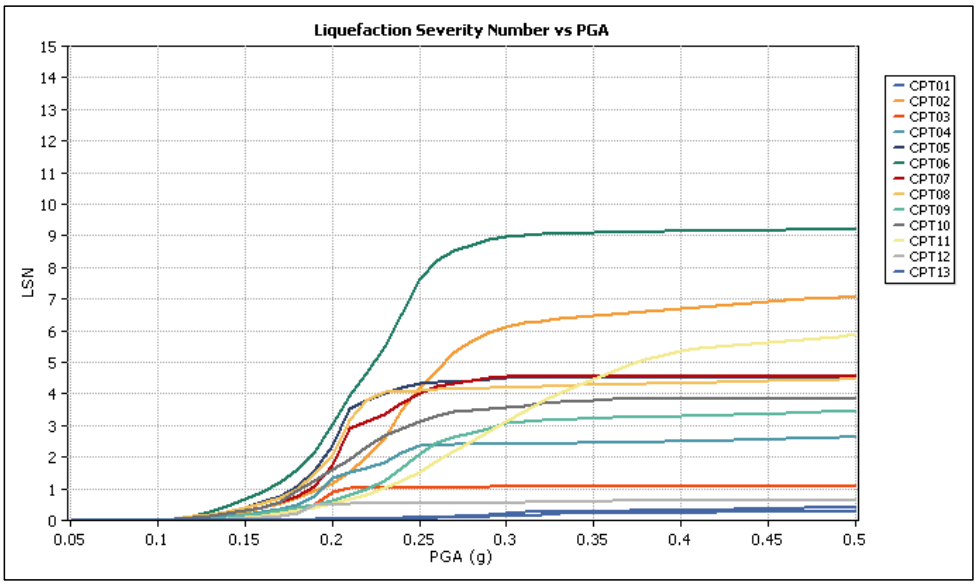

Figure 4-1: Sensitivity of LSN to PGA

The key consequences of liquefaction on the proposed development are:

- Vertical reconsolidation settlement; and
- Lateral spreading because of the presence of the drainage channel on the eastern and northern boundaries.

Reconsolidation Settlement

Under SLS levels of shaking, liquefaction induced free field settlement is expected to be less than 5mm.

Under ULS levels of shaking liquefaction induced free field settlement is expected to be less than 30 mm.

Attachment H

Lateral Spreading

Lateral spreading is generally defined as horizontal displacement of blocks of material towards an open slope face (e.g. stream banks) as a result of liquefaction on the underlying soils. The presence of a continuous liquefiable layer of reasonable thickness is required for significant spreading to occur.

Given the low liquefaction potential of the site subsoils over the depths investigated, the risk of lateral spreading is considered to minor.

While analyses indicate the risk of liquefaction and accordingly its effects are low, the foundations outlined in Section 4.4 are recommended to prevent structures from pulling apart during earthquake shaking. No ground improvements are considered necessary.

4.3 Consolidation Settlement

Due to the flat topography of the site, we do not expect a requirement for any major cut/fill works to be carried out. Given the stiff upper soils and relatively shallow very dense gravel bed across the site, we expect any consolidation settlement that may occur to be negligible (i.e. < 25 mm).

Should any fill material exceeding 0.5 m thickness need to be placed as part of the construction works, further analysis will need to be undertaken to reassess any consolidation settlement.

4.4 Foundation Considerations

To accommodate the anticipated levels of deformation outlined in Sections 4.2 and 4.3, raft type foundations are recommended for the proposed residential dwellings. The raft foundations can be constructed directly on the existing ground once the concrete slabs and any uncontrolled fill has been removed.

The following bearing pressures are considered suitable for use in preliminary design:

- Geotechnical Ultimate Capacity – 300 kPa;
- Ultimate Limit State – 150 kPa;
- Allowable bearing pressure – 100 kPa.

The values above are for the 'ribs' of the foundation.

During construction verification testing will need to be undertaken to confirm the in situ strengths are consistent with those assumed in design.

4.5 Services

Deformation from settlement and lateral spreading as a result of liquefaction under seismic loading is expected to be low, if any at all, however it is recommended that flexible materials and connections be used to allow efficient repair if damage was to occur.

4.6 Earthworks Considerations

Prior to construction the existing concrete slabs that cover a majority of the site will need to be demolished and removed. Site should be cleared of vegetation, and any surface topsoil or uncontrolled fill present stripped to natural ground. Should any deeper pockets of organic soils, uncontrolled fill or soft soils (undrained Shear Strength Su <80 kPa) be encountered below this, these soils must be removed/undercut and replaced with engineered fill.

5. Further Work

The following further work is recommended during design and construction of the proposed development.

Detailed Design

- Following removal of the remaining buildings and floor slabs, further investigation comprising test pits and laboratory testing to further characterise the site subsoils, especially fill depths across the site;
- Monitoring of groundwater levels;
- Assessment of suitable deformations for site services;
- Development of an earthworks specification.

Construction

- Observation of the site subgrade following removal of topsoil;
- Compaction testing and review of results;
- Settlement monitoring; and
- Observations of ground improvement work that may be required.

The observations will be required to certify the site suitable for construction of foundations.

6. Conclusions and Recommendations

On the basis of the subsurface information our conclusions and recommendations regarding the proposed development are as follows:

1. The site subsoils comprise clayey silts underlain by silty sandy gravels;
2. Based on the ground conditions encountered the key geotechnical hazards are liquefaction and consolidation settlement;
3. Liquefaction is not expected under Serviceability Limit State levels of shaking, however under Ultimate Limit State levels, non-continuous layers within the subsoil profile may liquefy;
4. The upper clayey silts are cohesive and considered not susceptible to liquefaction, and the underlying gravels are very dense, so liquefaction potential is low;
5. Consolidation settlements from the likely building loads are expected to be low (i.e. < 25 mm);
6. Engineered raft type foundations are recommended for the residential dwellings. Raft foundations can be constructed directly on the existing ground once the concrete slabs and any uncontrolled fill has been removed;
7. Flexible services and service connections are recommended.

7. Applicability

This report has been prepared for our client, Development Nous, with respect to the brief provided to us. The advice and recommendations presented in this report should not be applied to any other project or used in any other context without prior written approval from Initia Limited.

The liquefaction analyses outlined in this report are based on empirical methods derived from databased of various earthquakes. Earthquakes are unique and impose variable levels of shaking on different sites. Accordingly, it is important to understand that the actual performance may vary from that calculated.

During detailed design a review of the geotechnical aspects of the civil and structural design to ensure the considerations in this report have been adequately addressed.

During excavation and construction observations should be undertaken by a suitably qualified geotechnical engineer to confirm the exposed subsoils are compatible with the conditions on which this report has been based.

Report prepared by:

Andrew Klahn
Engineering Geologist

Report reviewed by:

Nathan Hickman
Senior Geotechnical Engineer

Authorised for Initia Ltd by:

Andy Pomfret
Senior Geotechnical Engineer, Director

Document control record

Report Title		Brookvale Residential Geotechnical Assessment Report			
Initia Project Reference		P-001006			
Client		Development Nous			
Revision	Date	Revision detail	Author	Reviewer	Approved by
-	02-02-21	First Issue	A. Klahn	N. Hickman	A. Pomfret
Current Revision		A			

Appendix A Figures

NOTES
1. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
2. COORDINATE DATUM: HAWKES BAY 2000
3. AERIAL IMAGE, CONTOURS AND PROPERTY BOUNDARY TAKEN FROM LINZ DATA.

SCALE A1 1:500
SCALE A3 1:1000
0 5 10 15 20 25 30 35 40 45 50m

FOR INFORMATION

Rev	Revision Description	Designed	Drawn	Checked
A	FIRST ISSUE (13/01/2021)	AK	GG	AK

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APPROVED:
DATE:
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INITIA GEOTECHNICAL SPECIALISTS

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DEVELOPMENT NOUS

ODERINGS GARDEN CENTRE, BROOKVALE RD, HAVELOCK

GEOTECHNICAL INVESTIGATION
LOCATION PLAN

Initia Project ref: P001006
Figure Number 1006-001
Revision A

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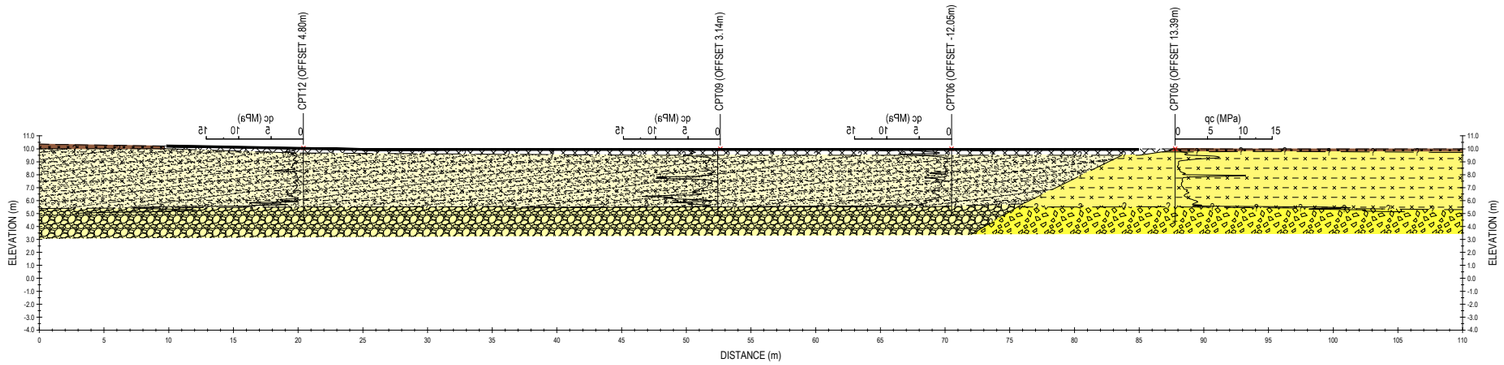
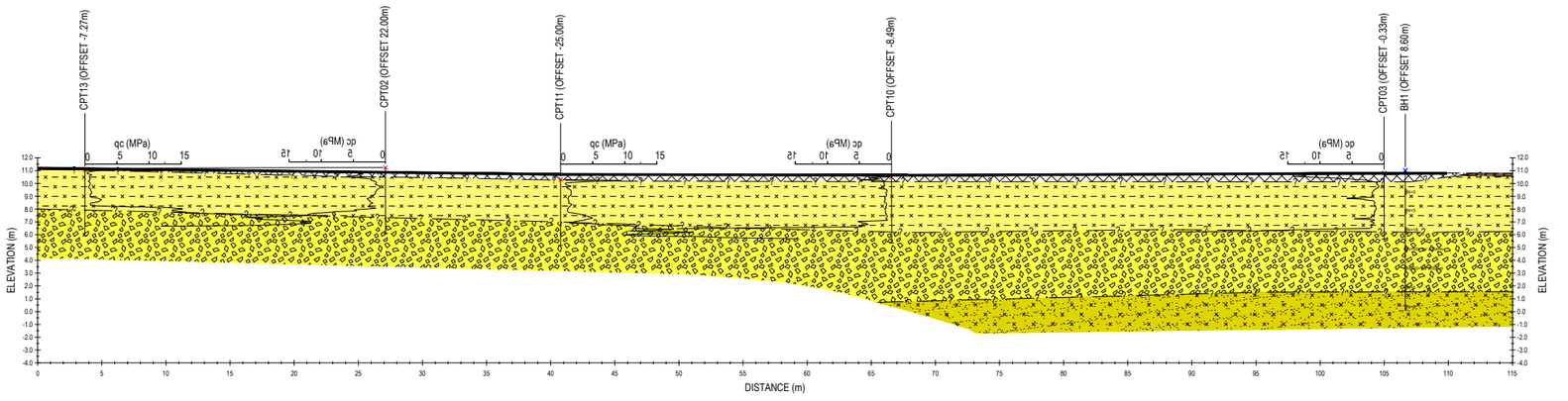
LEGEND

EXISTING GROUND LEVEL
INFERRED GEOLOGICAL UNIT BOUNDARY
CONCRETE SLAB
TOPSOIL
FILL
HOLOCENE STIFF CLAYEY SILTS AND SILTY SANDS
HOLOCENE MEDIUM DENSE TO VERY DENSE GRAVELS
PLEISTOCENE STIFF CLAYEY SILTS
PLEISTOCENE MEDIUM DENSE TO VERY DENSE GRAVELS
PLEISTOCENE VERY STIFF SILTS AND MEDIUM DENSE SANDS



1/001 SECTION 1
SCALE 1:400 (A3)



2/001 SECTION 2
SCALE 1:400 (A3)

SCALE A1 1:200
SCALE A3 1:400
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FOR INFORMATION

Rev	Revison Description	Designed	Drawn	Checked
A	FIRST ISSUE (14/01/2021)	AK	GG	AK

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APPROVED:
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DEVELOPMENT NOUS

ODERINGS GARDEN CENTRE, BROOKVALE RD, HAVELOCK
GEOTECHNICAL INVESTIGATION
GEOLOGICAL SECTION 1 & 2

Initia Project ref: P001006
Figure Number 1006-002
Revision A

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Attachment H

Appendix B Investigation Logs

INITIA
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BOREHOLE LOG

HOLE NO.: BH1

CLIENT: Development Nous
PROJECT: Brookvale Residential
SITE LOCATION: 55 Brookvale Road, Havelock North
Project Ref.: P-001006

CO-ORDINATES: 1933750.0mE, 5602694.0mN **ELEVATION:** 11m **CONTRACTOR:** Geotech Driiling
START DATE: 09/12/2020
Co-ordinate system: NZTM **Datum:** NAPIHT1962 **RIG:** Sonic Rig
END DATE: 09/12/2020
Location method: GPSH **Level method:** GIS **DRILLER:** Drew/Luke
LOGGED BY: APK
CHECKED BY: MDH

GEOLOGICAL UNIT	MATERIAL DESCRIPTION	METHOD	TCR (%)	DEPTH	RL	GRAPHIC	INSITU TESTING (SPT 'N' / Vane shear strength)	SAMPLES	RQD (%)	WATER	INSTALLATION	CORE BOXES
Fill	Silty sandy GRAVEL, with some cobbles; brownish grey. Loose; moist; gravel, fine to coarse; sand, fine to coarse.	PQTT	100%									
Topsoil	SILT; dark brown. Very stiff; non-plastic; moist.											
	Silty sandy GRAVEL; greyish brown. Loose; moist; sand, fine to coarse.											
	Sandy SILT, with some clay; light brownish grey. Stiff; low plasticity; moist; sand, fine.	SPT	100%	1.0	10.0		0, 0 / 1, 1, 0, 1 N=3	C 1.10 - 1.30m, 3				
	Clayey SILT, with trace gravel; greyish brown. Stiff; low plasticity; moist; gravel, fine, rounded.	PQTT	100%	2.0	9.0					09/12/2020		Box 1, 0.0-2.3m
	SILT, with minor clay and sand; mottled green/brown. Stiff; low plasticity; moist; sand, fine.							C 2.40 - 2.60m, 1				
	Clayey SILT, with trace sand and gravel; light brown. Stiff; low plasticity; moist; gravel, fine.	SPT	100%	3.0	8.0		1, 1 / 0, 1, 0, 2 N=3					
		PQTT	100%	4.0	7.0			C 3.60 - 3.80m, 2				
	Silty GRAVEL, with some clay and sand, with trace cobbles; brown. Medium dense; moist; gravel, fine to coarse, subangular to subround.	SPT	100%	5.0	6.0		3, 6 / 0, 3, 4, 11 N=18					Box 2, 2.3-5.0m
Holocene Alluvium/Beach Deposits		PQTT	100%	6.0	5.0						Bentonite	
	6.00m: Grades to very dense	SPT	100%	7.0	4.0		6, 15 / 13, 20, 17 N=50+ for 225mm					
		PQTT	100%	8.0	3.0							Box 3, 5.0-8.0m
		SPT	100%	9.0			15, 16 / 18, 17, 15 for 55mm N=50+ for 205mm					
	SILT, with some clay; light brown. Stiff; low plasticity; moist.	PQTT	100%									
	SILT, with minor clay; grey. Stiff; low plasticity; moist.	SPT	100%				0, 0 / 0, 3, 3, 3 N=9					
	Clayey SILT; greyish brown. Stiff; high plasticity; moist.	PQTT	100%									Box 4, 8.0-11.0m

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BOREHOLE LOG

HOLE NO.: BH1

CLIENT: Development Nous
PROJECT: Brookvale Residential
SITE LOCATION: 55 Brookvale Road, Havelock North
Project Ref.: P-001006

CO-ORDINATES: 1933750.0mE, 5602694.0mN **ELEVATION:** 11m **CONTRACTOR:** Geotech Driiling
START DATE: 09/12/2020
Co-ordinate system: NZTM **Datum:** NAPIHT1962 **RIG:** Sonic Rig
END DATE: 09/12/2020
Location method: GPSH **Level method:** GIS **DRILLER:** Drew/Luke
LOGGED BY: APK
CHECKED BY: MDH

GEOLOGICAL UNIT	MATERIAL DESCRIPTION	METHOD	TCR (%)	DEPTH	RL	GRAPHIC	INSITU TESTING (SPT 'N' / Vane shear strength)	SAMPLES	RQD (%)	WATER	INSTALLATION	CORE BOXES
Holocene Alluvium/Beach Deposits	[CONT] Clayey SILT; greyish brown. Stiff; high plasticity; moist.	PQTT	100%	11.0	0.0						Bentonite 10.95m	Box 4, 8.0-11.0m
		SPT	100%				1, 2 / 1, 3, 2, 3 N=9					
	EOH: 10.95m			12.0	-1.0							
				13.0	-2.0							
				14.0	-3.0							
				15.0	-4.0							
				16.0	-5.0							
				17.0	-6.0							
				18.0	-7.0							
				19.0	-8.0							

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CORE PHOTOS

HOLE No.: BH1
JOB No.: P-001006

Box 1, 0.0-2.3m

Box 2, 2.3-5.0m

Box 3, 5.0-8.0m

CORE PHOTOS

HOLE No.: BH1
JOB No.: P-001006

Box 4, 8.0-11.0m

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BOREHOLE LOG

HOLE NO.: BH2

CLIENT: Development Nous
PROJECT: Brookvale Residential
SITE LOCATION: 55 Brookvale Road, Havelock North
Project Ref.: P-001006

CO-ORDINATES: 1933623.0mE, 5602724.0mN **ELEVATION:** 9m **CONTRACTOR:** Geotech Driiling
START DATE: 09/12/2020
Co-ordinate system: NZTM **Datum:** NAPIHT1962 **RIG:** Sonic Rig
END DATE: 09/12/2020
Location method: GPSH **Level method:** GIS **DRILLER:** Drew/Luke
LOGGED BY: APK
CHECKED BY: MDH

GEOLOGICAL UNIT	MATERIAL DESCRIPTION	METHOD	TCR (%)	DEPTH	RL	GRAPHIC	INSITU TESTING (SPT 'N' / Vane shear strength)	SAMPLES	RQD (%)	WATER	INSTALLATION	CORE BOXES
Fill	Silty SAND; dark grey. Medium dense; moist; sand, fine to medium.	PQTT	100%	0.0	9.0							
Holocene Alluvium/Beach Deposits	SILT, with trace clay; dark brown grading to greyish brown. Stiff; moist. 0.30m - 0.35m: Silty PEAT (FIBROUS). 1.10m - 1.15m: Clayey silty GRAVEL. Medium dense; moist.											
	Clayey SILT; mottled grey/brownish grey. Stiff; low plasticity; moist.											
	Clayey SILT; greenish grey. Very stiff; high plasticity; moist.											
	Silty SAND, with trace shells and gravel; light grey. Loose; dilatant; wet; sand, fine; gravel, medium.	SPT	100%	1.0	8.0		2, 2 / 2, 2, 2, 2 N=8					
	2.15m - 2.20m: 50 mm wood fragment	PQTT	100%	2.0	7.0			C 1.95 - 2.15m, 5		▼ 09/12/2020		Box 1, 0.0-2.4m
	Clayey SILT, with some wood; brown. Stiff; low plasticity; moist.											
	Clayey SILT; greenish grey. Stiff; high plasticity; moist.	SPT	100%	3.0	6.0		0, 1 / 1, 1, 1, 2 N=5					
	Clayey gravelly SILT, with minor shells; greenish grey. Very stiff; low plasticity; moist.	PQTT	100%	4.0	5.0			C 3.80 - 4.00m, 4				
	Shelly silty sandy GRAVEL, with minor clay; light greenish grey. Dense; moist; gravel, fine to coarse.	SPT	100%	5.0	4.0		5, 8 / 5, 8, 8, 10 N=31				Bentonite	Box 2, 2.4-5.2m
	Silty sandy GRAVEL, with trace cobbles; blueish grey. Medium dense; moist; gravel, fine to coarse, subround to subangular.	PQTT	100%	6.0	3.0							
		SPT	100%	6.0	3.0		5, 6 / 7, 7, 5, 7 N=26					
		PQTT	100%	7.0	2.0							
	7.50m: Grades to very dense	SPT	100%	7.0	2.0		16, 20 / 18, 18, 14 for 60mm N=50+ for 210mm					Box 3, 5.2-8.4m
		PQTT	100%	8.0	1.0							
		SPT	100%	9.0	0.0		24, 26 for 70mm N=50+					Box 4, 8.4-11.0m
		PQTT	100%									

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BOREHOLE LOG

HOLE NO.: BH2

CLIENT: Development Nous
PROJECT: Brookvale Residential
SITE LOCATION: 55 Brookvale Road, Havelock North
Project Ref.: P-001006

CO-ORDINATES: 1933623.0mE, 5602724.0mN **ELEVATION:** 9m **CONTRACTOR:** Geotech Driiling
Co-ordinate system: NZTM **Datum:** NAPIHT1962 **RIG:** Sonic Rig
Location method: GPSH **Level method:** GIS **DRILLER:** Drew/Luke

START DATE: 09/12/2020
END DATE: 09/12/2020
LOGGED BY: APK
CHECKED BY: MDH

GEOLOGICAL UNIT	MATERIAL DESCRIPTION	METHOD	TCR (%)	DEPTH	RL	GRAPHIC	INSITU TESTING (SPT 'N' / Vane shear strength)	SAMPLES	RQD (%)	WATER	INSTALLATION	CORE BOXES
Holocene Alluvium/Beach Deposits	[CONT] Silty sandy GRAVEL, with trace cobbles; blueish grey. Medium dense; moist; gravel, fine to coarse, subround to subangular.	PQTT	100%	11.0	-2.0						Bentonite 10.95m	Box 4, 8.4-11.0m
		SPT	100%				8, 17 / 17, 15, 14, 4 for 20mm N=50+ for 245mm					
	EOH: 10.95m			12.0	-3.0							
				13.0	-4.0							
				14.0	-5.0							
				15.0	-6.0							
				16.0	-7.0							
				17.0	-8.0							
				18.0	-9.0							
				19.0	-10.0							

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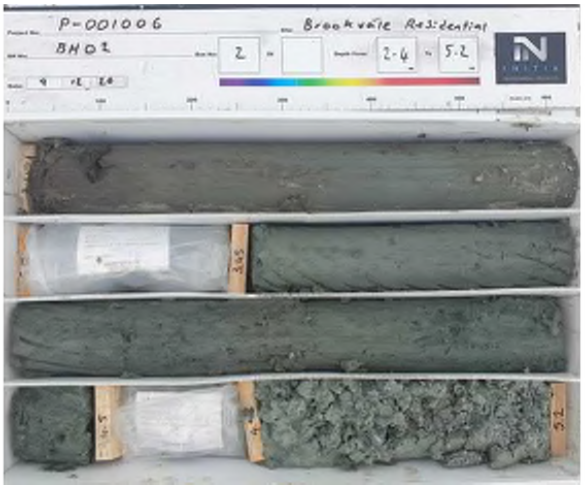
CORE PHOTOS

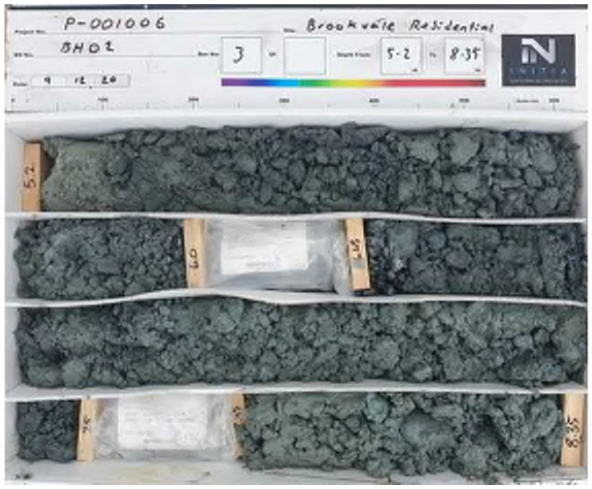
HOLE No.: BH2
JOB No.: P-001006

Box 1, 0.0-2.4m

Box 2, 2.4-5.2m



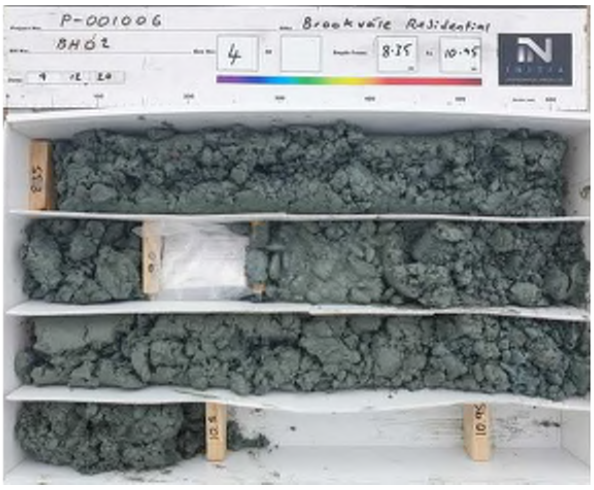
Box 3, 5.2-8.4m



CORE PHOTOS

HOLE No.: BH2
JOB No.: P-001006

Box 4, 8.4-11.0m



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BOREHOLE LOG

HOLE NO.: BH3

CLIENT: Development Nous
PROJECT: Brookvale Residential
SITE LOCATION: 55 Brookvale Road, Havelock North
Project Ref.: P-001006

CO-ORDINATES: 1933699.0mE, 5602701.0mN **ELEVATION:** 10m **CONTRACTOR:** Geotech Driiling
START DATE: 10/12/2020
Co-ordinate system: NZTM **Datum:** NAPIHT1962 **RIG:** Sonic Rig
END DATE: 10/12/2020
Location method: GPSH **Level method:** GIS **DRILLER:** Drew/Luke
LOGGED BY: APK
CHECKED BY: MDH

GEOLOGICAL UNIT	MATERIAL DESCRIPTION	METHOD	TCR (%)	DEPTH	RL	GRAPHIC	INSITU TESTING (SPT 'N' / Vane shear strength)	SAMPLES	RQD (%)	WATER	INSTALLATION	CORE BOXES
Fill	Silty GRAVEL, with some sand, with trace cobbles; grey and brown. Loose; moist; gravel, fine to coarse, subangular to subround.	PQTT	50%	1.0	9.0							
Fill	Gravelly SILT, with some sand; dark brown. Stiff; moist; gravel, fine to coarse.											
Fill	Core loss: 0.75 - 1.50 m											
Holocene Alluvium/Beach Deposits	Clayey SILT; greyish brown. Stiff; high plasticity; moist.	SPT	100%	2.0	8.0		0, 0 / 1, 1, 3, 3 N=8			10/12/2020		
Holocene Alluvium/Beach Deposits	Silty GRAVEL, with some sand, with trace cobbles; greyish brown. Loose; moist; gravel, fine to coarse.	PQTT	100%									
Holocene Alluvium/Beach Deposits	Clayey SILT; greyish brown. Stiff; high plasticity; moist.			3.0	7.0		1, 1 / 0, 1, 1, 1 N=3					Box 1, 1.0-3.5m
Holocene Alluvium/Beach Deposits	Clayey SILT, with trace sand; grey. Stiff; high plasticity; moist; sand, fine to medium.	SPT	100%									
Holocene Alluvium/Beach Deposits	Clayey SILT, with some gravel, with trace sand; greyish brown. Stiff; high plasticity; moist; gravel, fine to medium.	PQTT	100%	4.0	6.0		1, 7 / 10, 12, 10, 12 N=44				Bentonite	
Holocene Alluvium/Beach Deposits	Silty GRAVEL, with some clay, with trace sand and cobbles; brown and grey. Dense; moist; gravel, fine to coarse.	SPT	100%									
Holocene Alluvium/Beach Deposits		PQTT	100%	5.0	5.0							Box 2, 3.5-5.9m
Holocene Alluvium/Beach Deposits		SPT	100%	6.0	4.0		8, 11 / 11, 10, 10, 15 N=46					
Holocene Alluvium/Beach Deposits		PQTT	100%									
Holocene Alluvium/Beach Deposits	7.50m: Grades to very dense	SPT	100%	7.0	3.0		8, 12 / 18, 15, 17 for 55mm N=50+ for 205mm					
Holocene Alluvium/Beach Deposits		PQTT	100%	8.0	2.0							Box 3, 5.9-8.7m
Holocene Alluvium/Beach Deposits		SPT	100%	9.0	1.0		9, 12 / 13, 11, 12, 14 N=50+					
Holocene Alluvium/Beach Deposits	SAND; brown. Medium dense; moist; sand, fine to medium.	PQTT	100%									Box 4, 8.7-11.0m

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BOREHOLE LOG

HOLE NO.: BH3

CLIENT: Development Nous
PROJECT: Brookvale Residential
SITE LOCATION: 55 Brookvale Road, Havelock North
Project Ref.: P-001006

CO-ORDINATES: 1933699.0mE, 5602701.0mN **ELEVATION:** 10m **CONTRACTOR:** Geotech Driiling
START DATE: 10/12/2020
Co-ordinate system: NZTM **Datum:** NAPIHT1962 **RIG:** Sonic Rig
END DATE: 10/12/2020
Location method: GPSH **Level method:** GIS **DRILLER:** Drew/Luke
LOGGED BY: APK
CHECKED BY: MDH

GEOLOGICAL UNIT	MATERIAL DESCRIPTION	METHOD	TCR (%) (25 50 75)	DEPTH	RL	GRAPHIC	INSITU TESTING (SPT 'N' Vane shear strength)	SAMPLES	RQD (%) (25 50 75)	WATER	INSTALLATION	CORE BOXES
Holocene Alluvium/Beach Deposits	[CONT] SAND; brown. Medium dense; moist; sand, fine to medium.	PQTT	100%									
	Clayey SILT; mottled dark brown/grey. Very stiff; high plasticity; moist.	SPT	100%				2, 2 / 2, 3, 4, 5 N=14				Bentonite 10.95m	Box 4, 8.7-11.0m
	EOH: 10.95m			11.0 12.0 13.0 14.0 15.0 16.0 17.0 18.0 19.0	-1.0 -2.0 -3.0 -4.0 -5.0 -6.0 -7.0 -8.0 -9.0							

REMARKS

Initia Ltd.
13/114 St George's Bay Rd,
Parnell, Auckland 1052
T. 09 977 0460
E. enquiries@initia.co.nz

Page 2 of 4

Generated with CORE-GS by Geroc - Borehole_Initia - 15/01/2021 8:54:34 AM
Ver 3.0

Attachment H

CORE PHOTOS

HOLE No.: BH3
JOB No.: P-001006

Box 1, 0.0-3.5m

Box 2, 3.5-5.9m

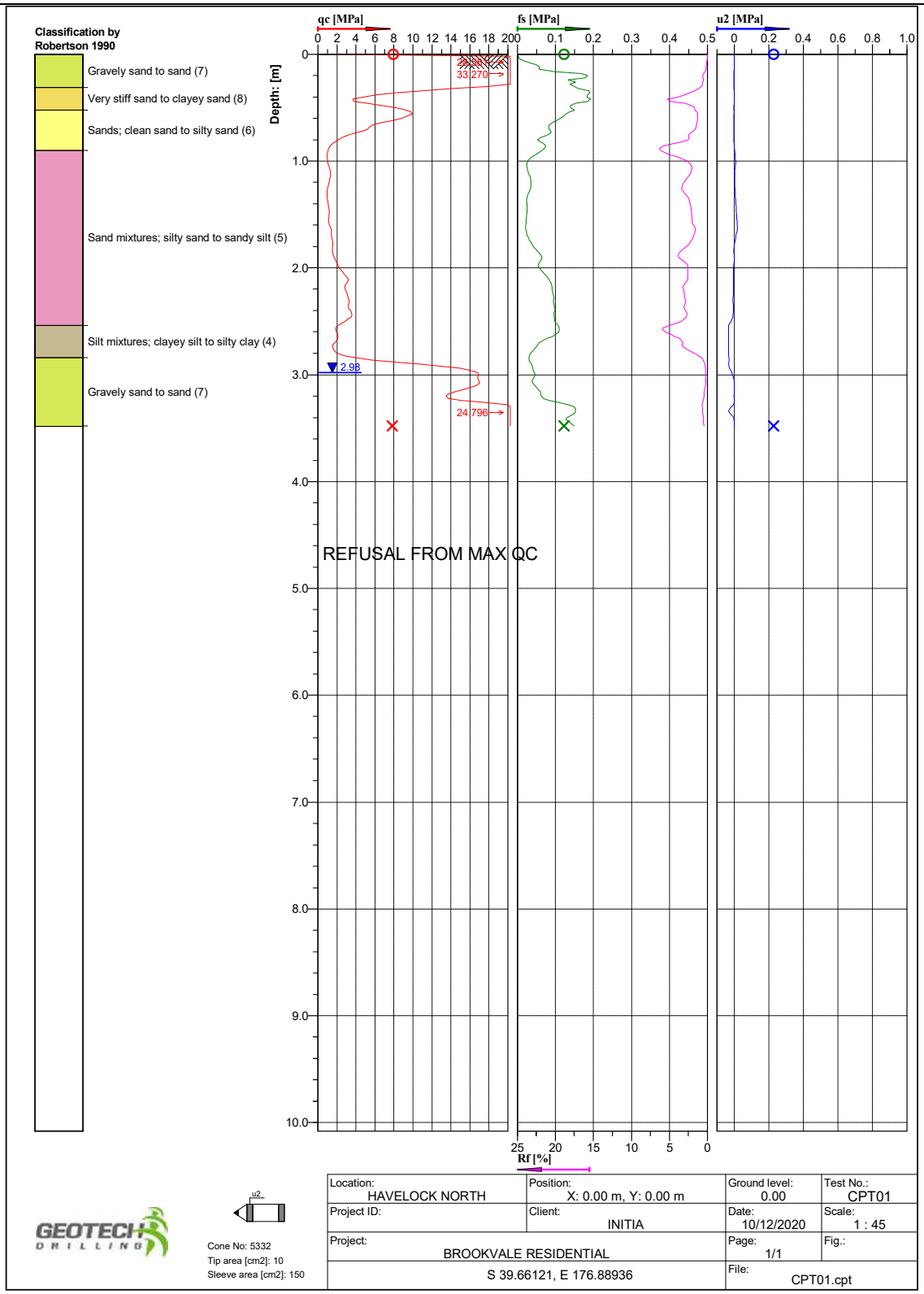
Box 3, 5.9-8.7m

CORE PHOTOS

HOLE No.: BH3
JOB No.: P-001006

Box 4, 8.7-11.0m

Attachment H



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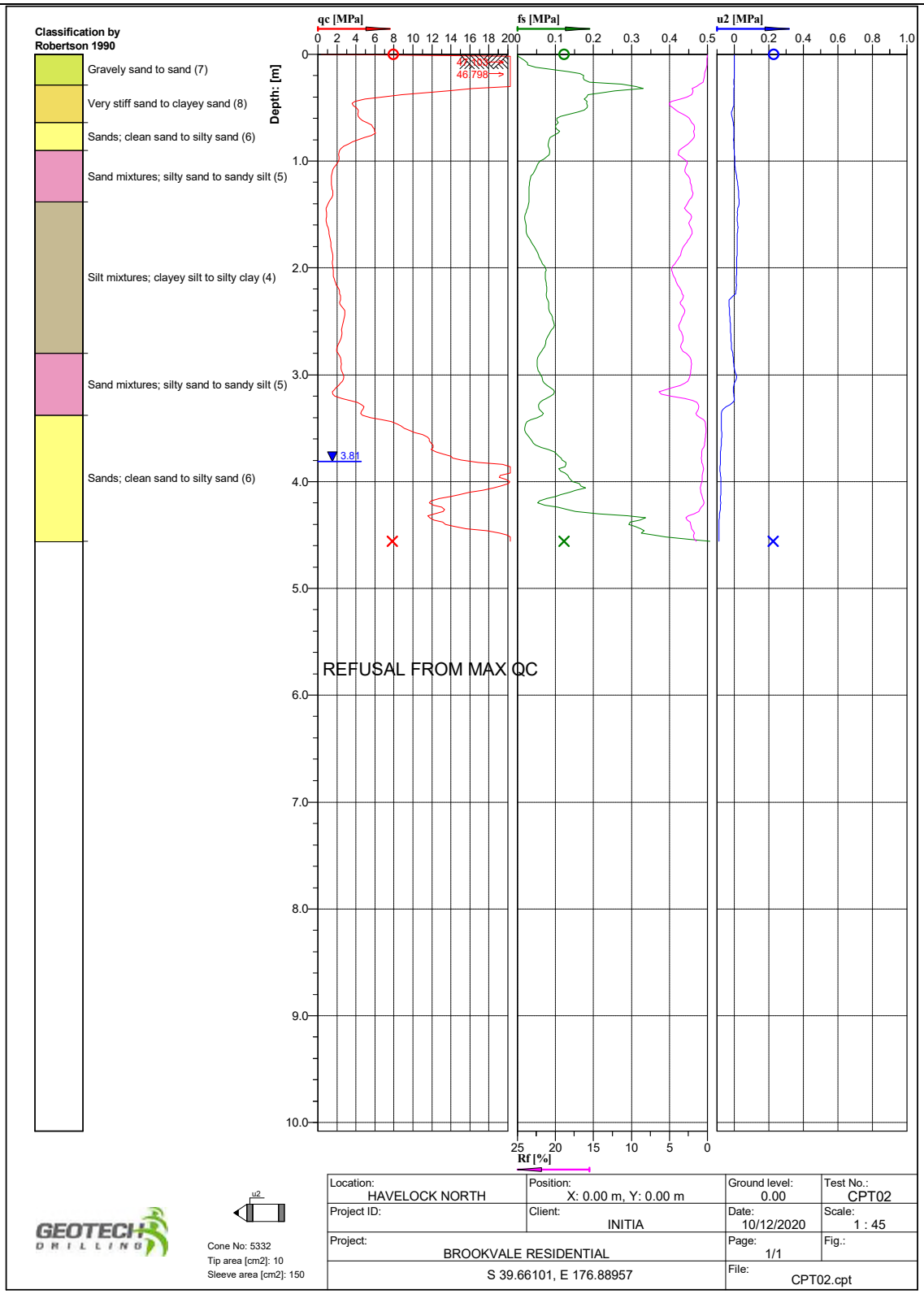

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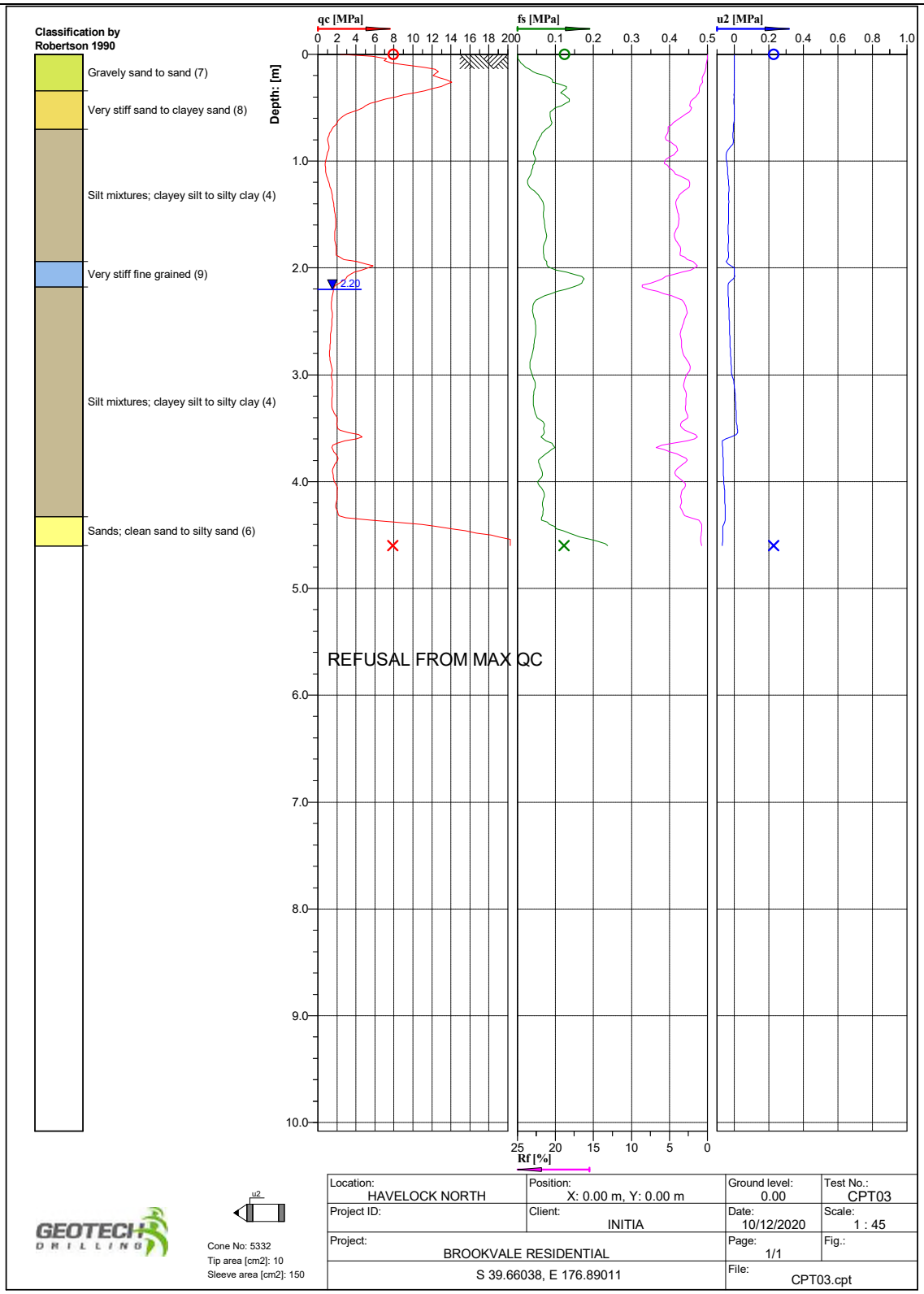

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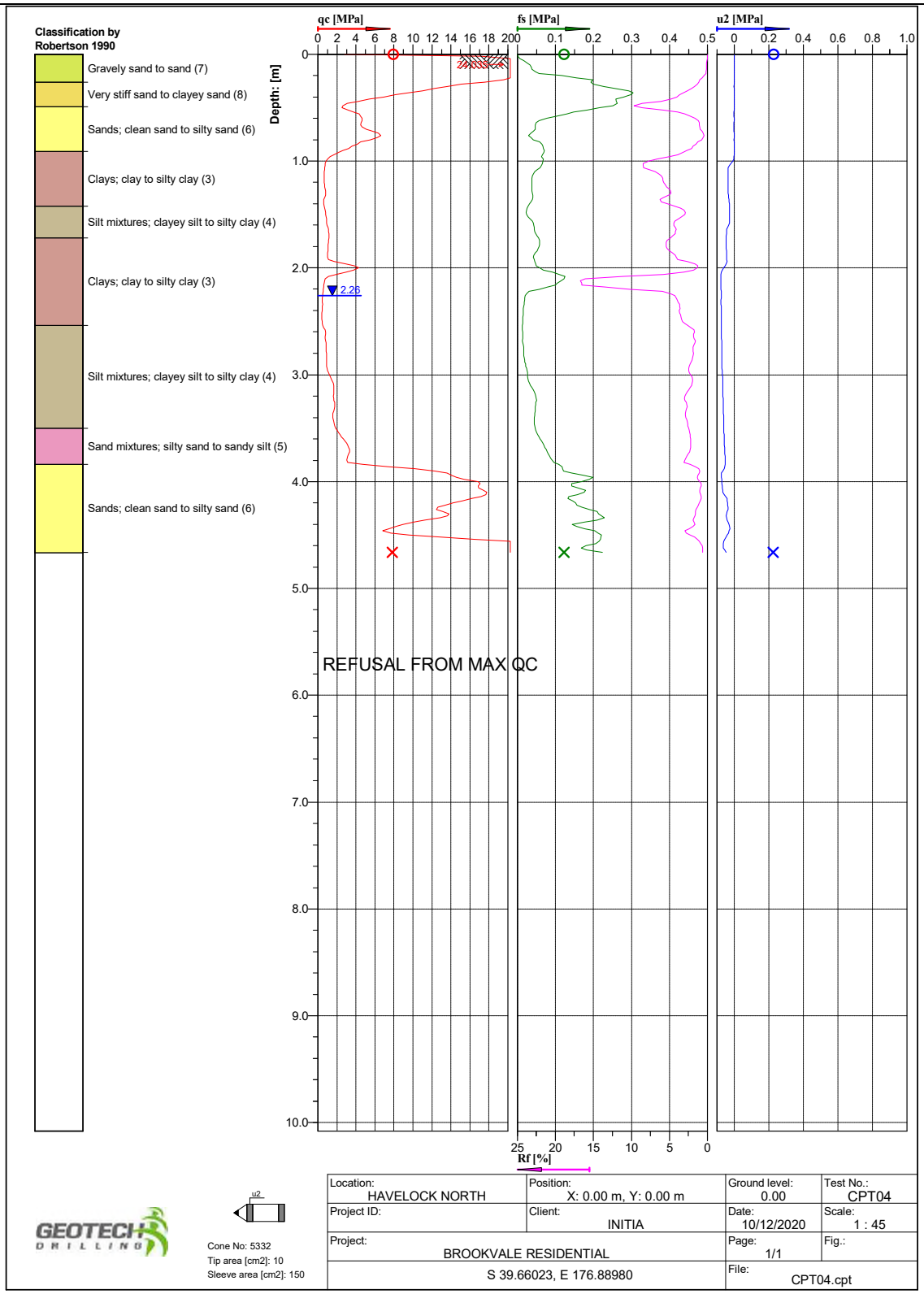

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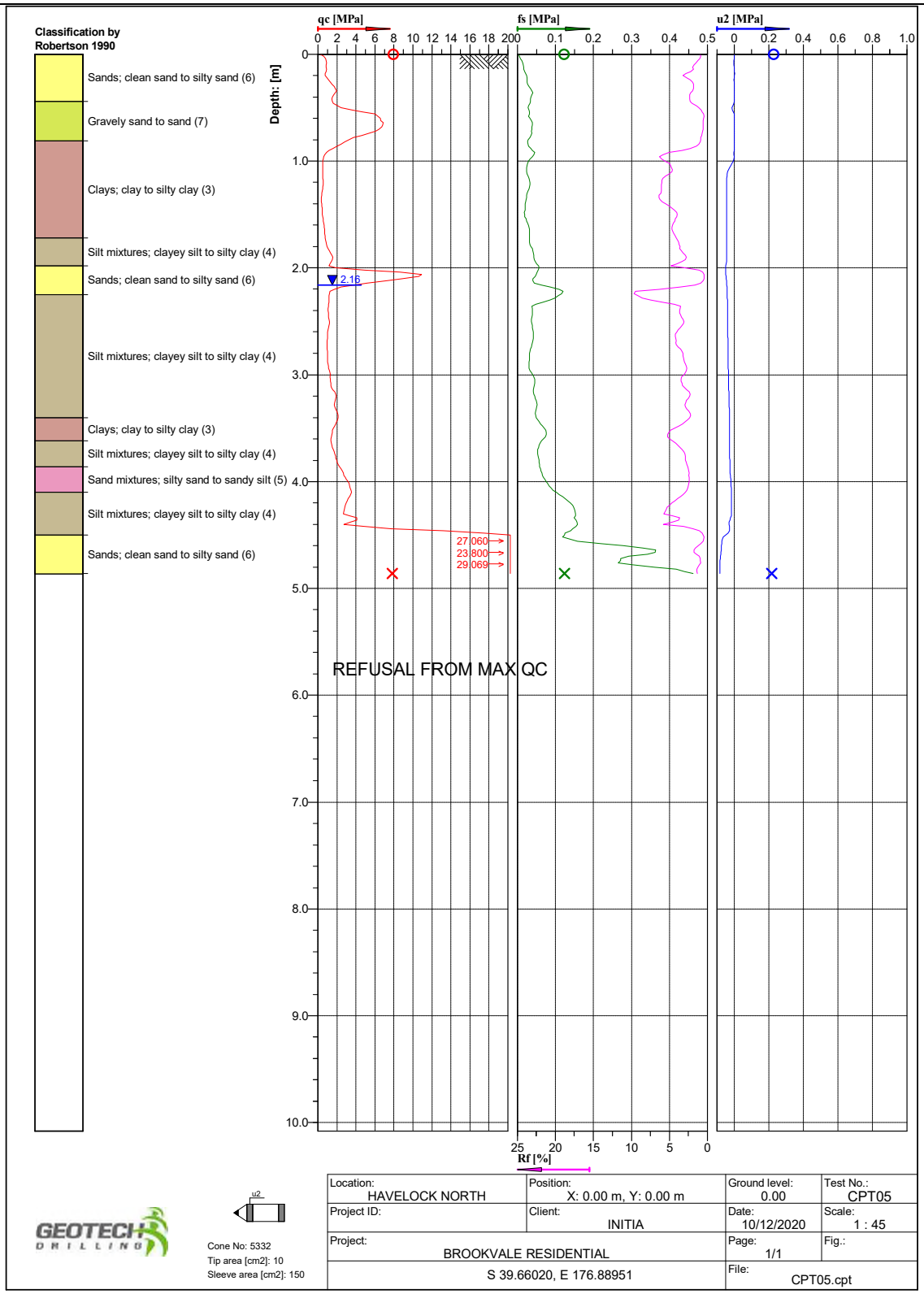

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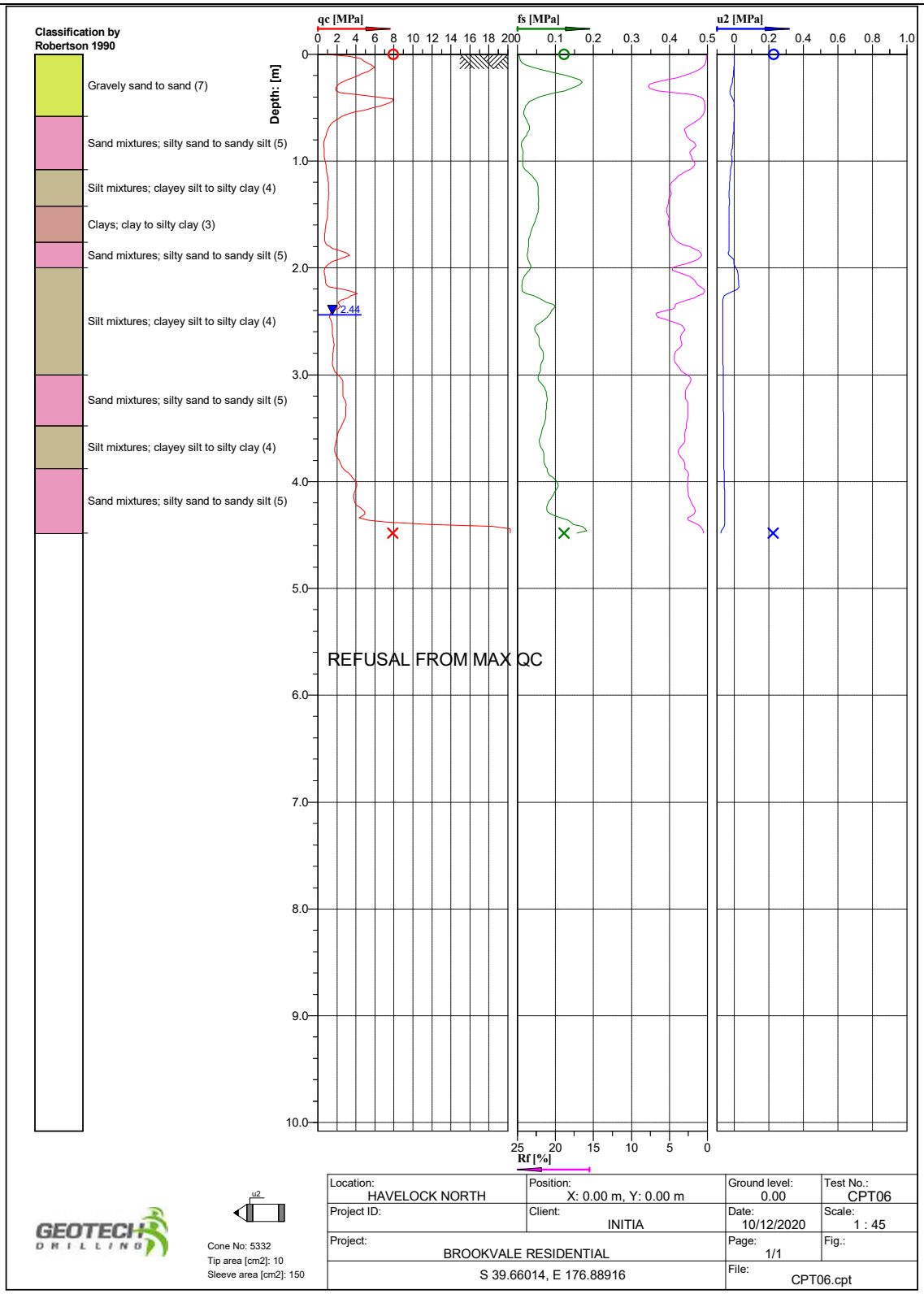

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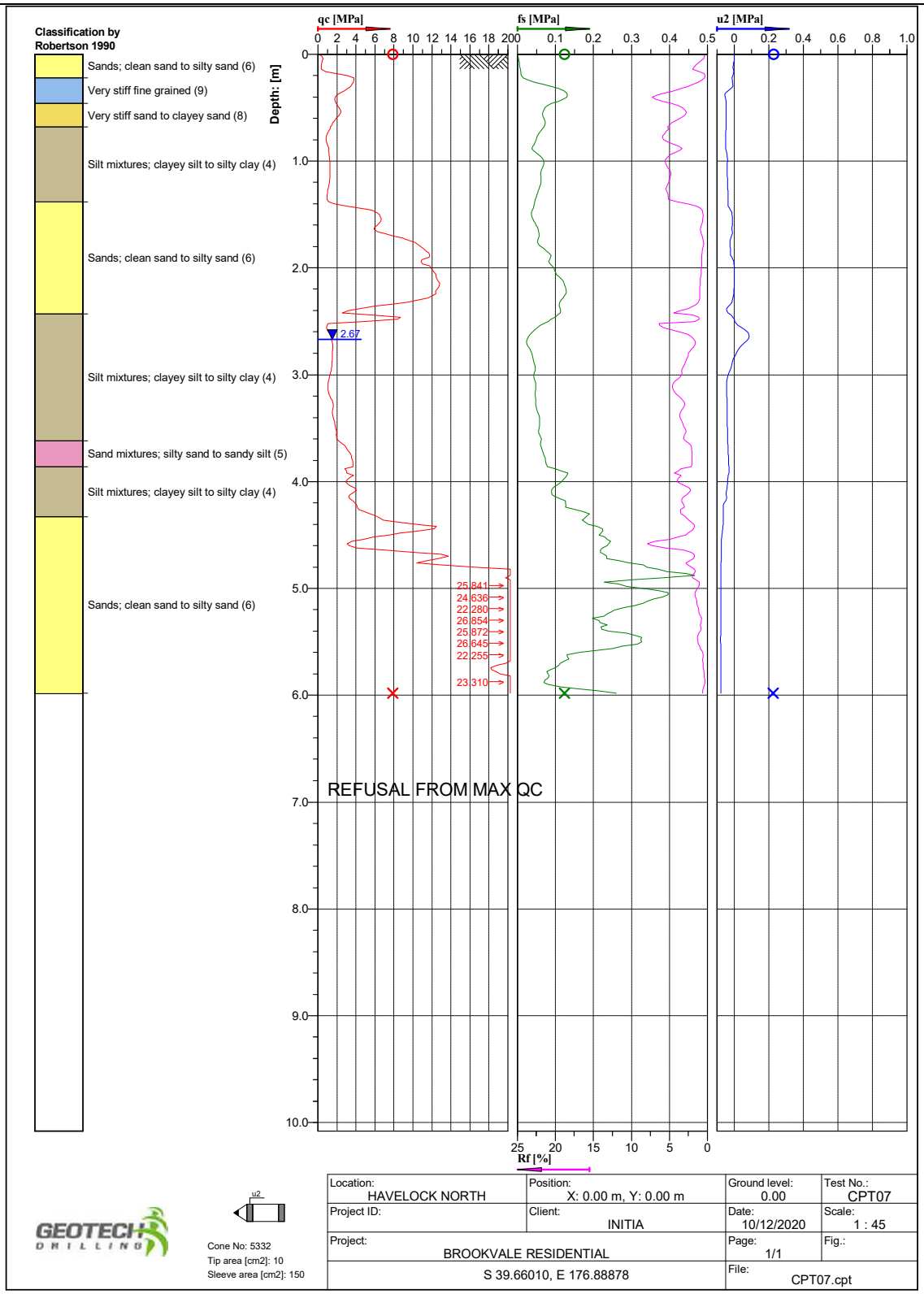

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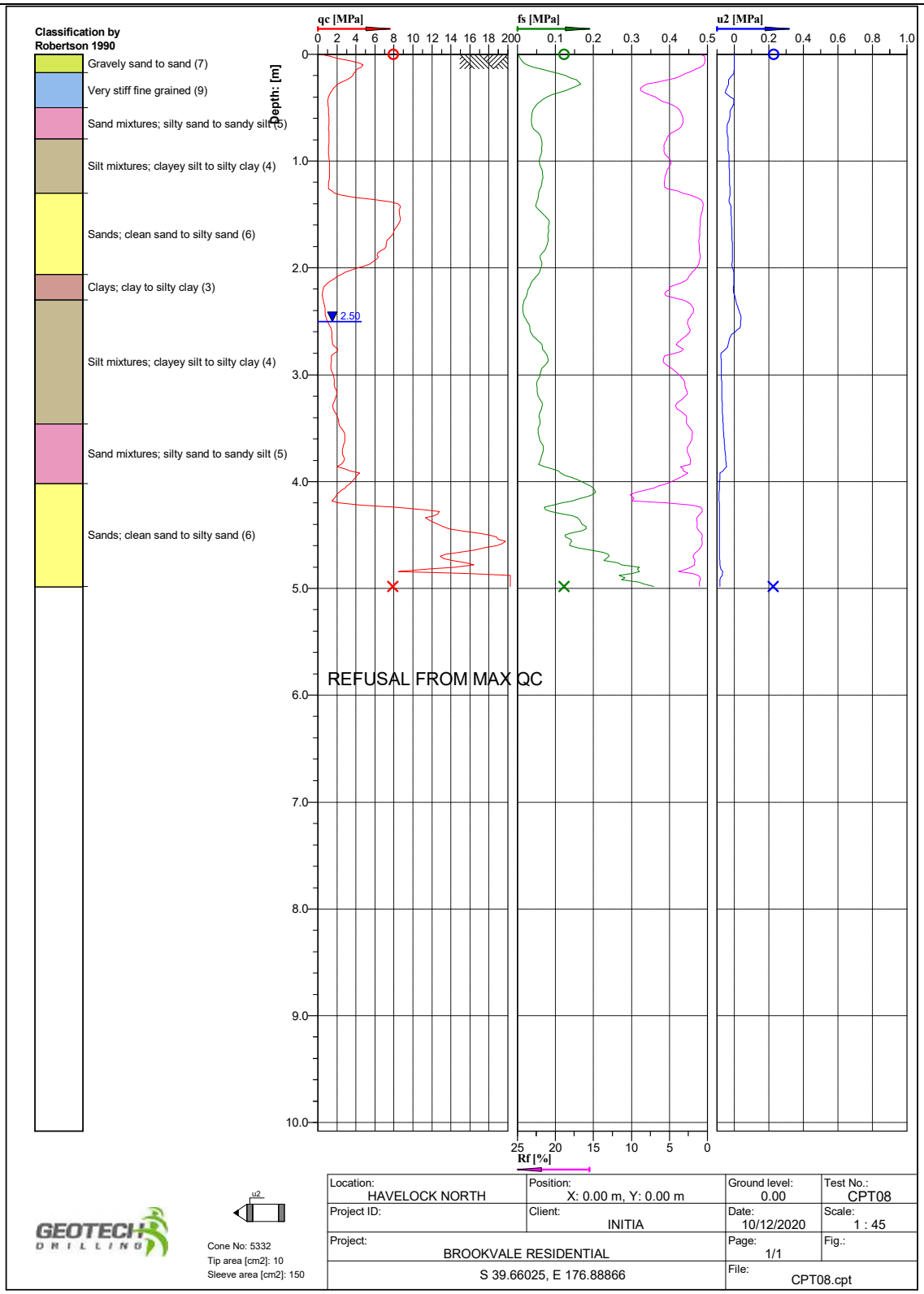

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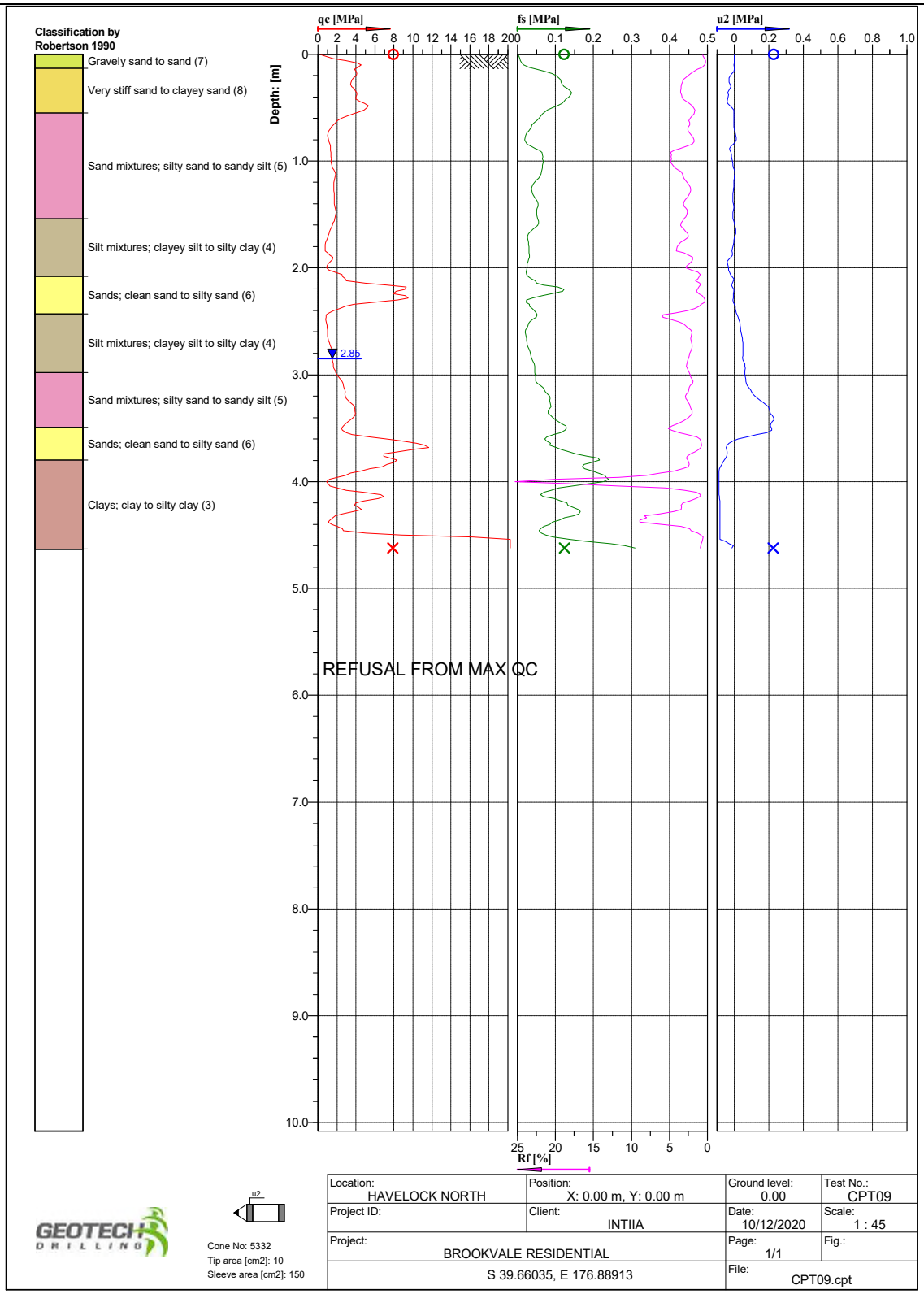

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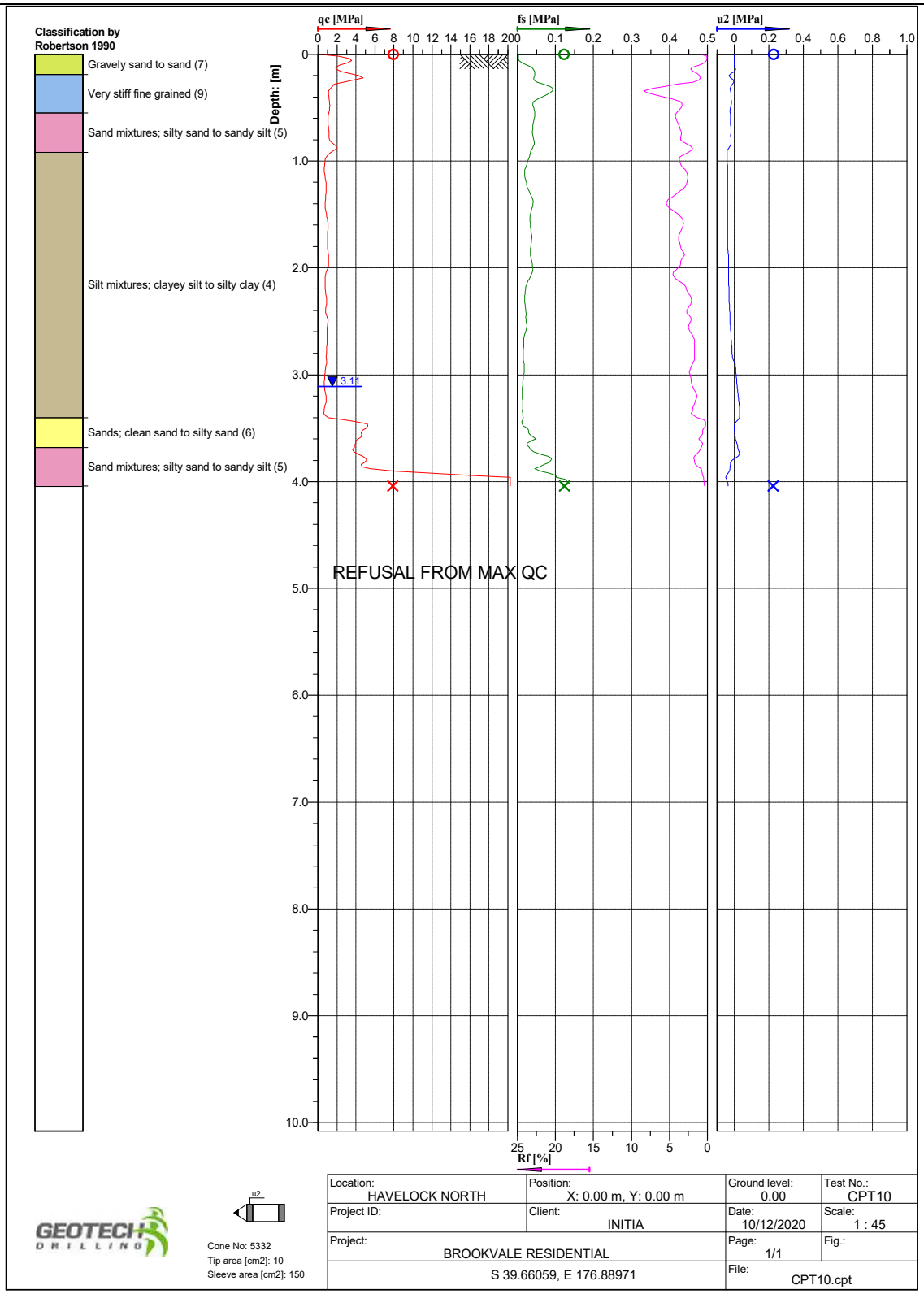

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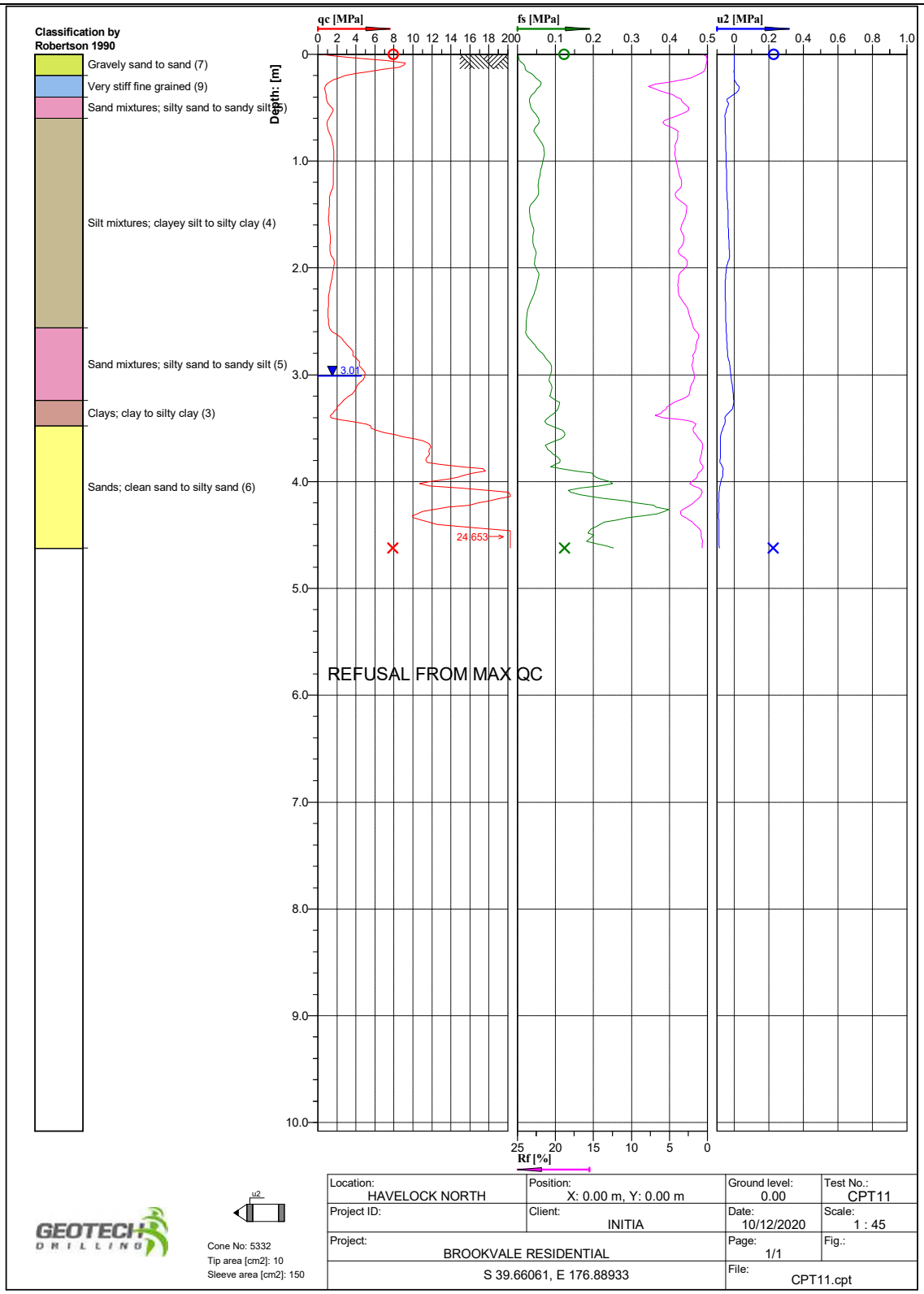

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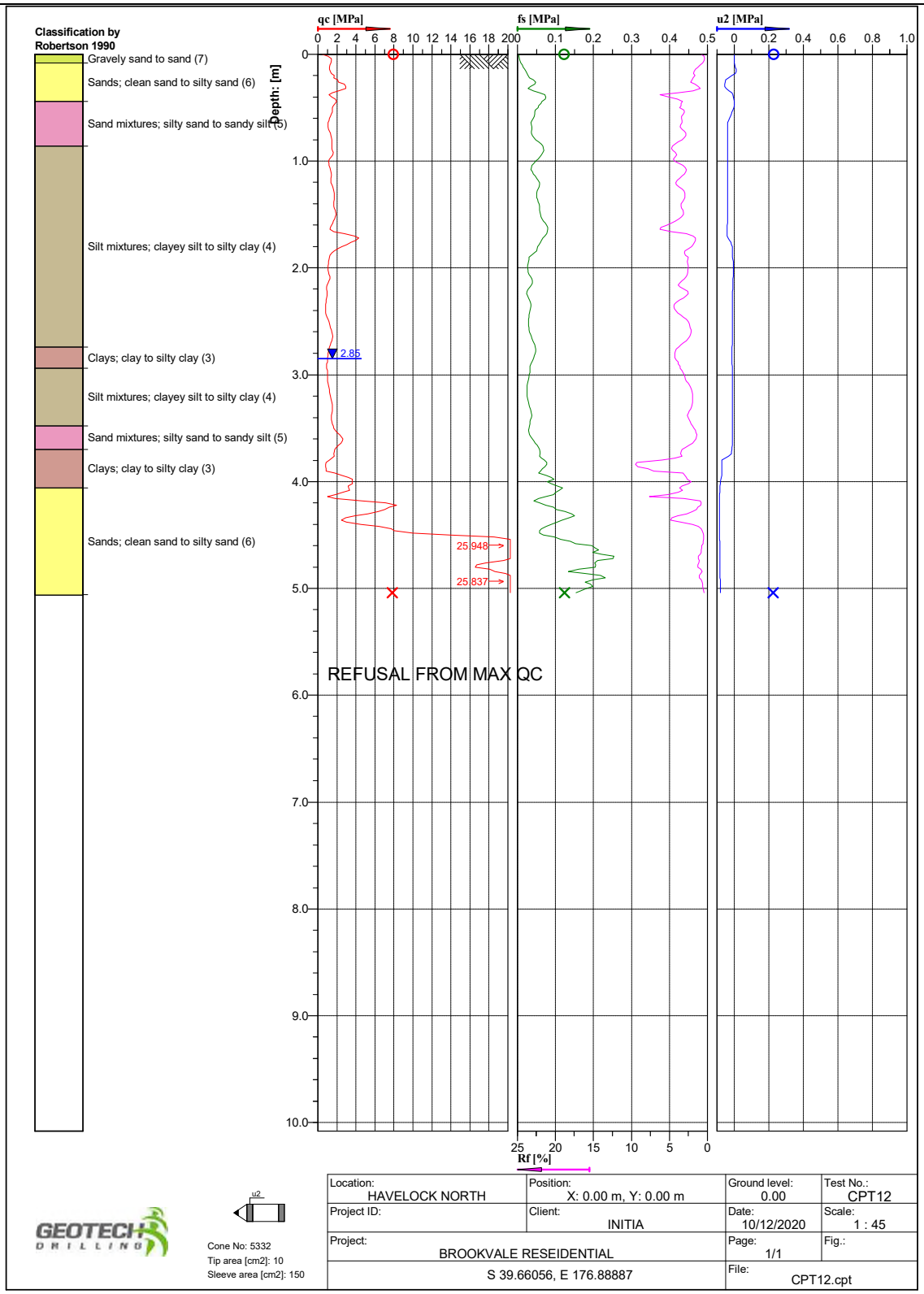

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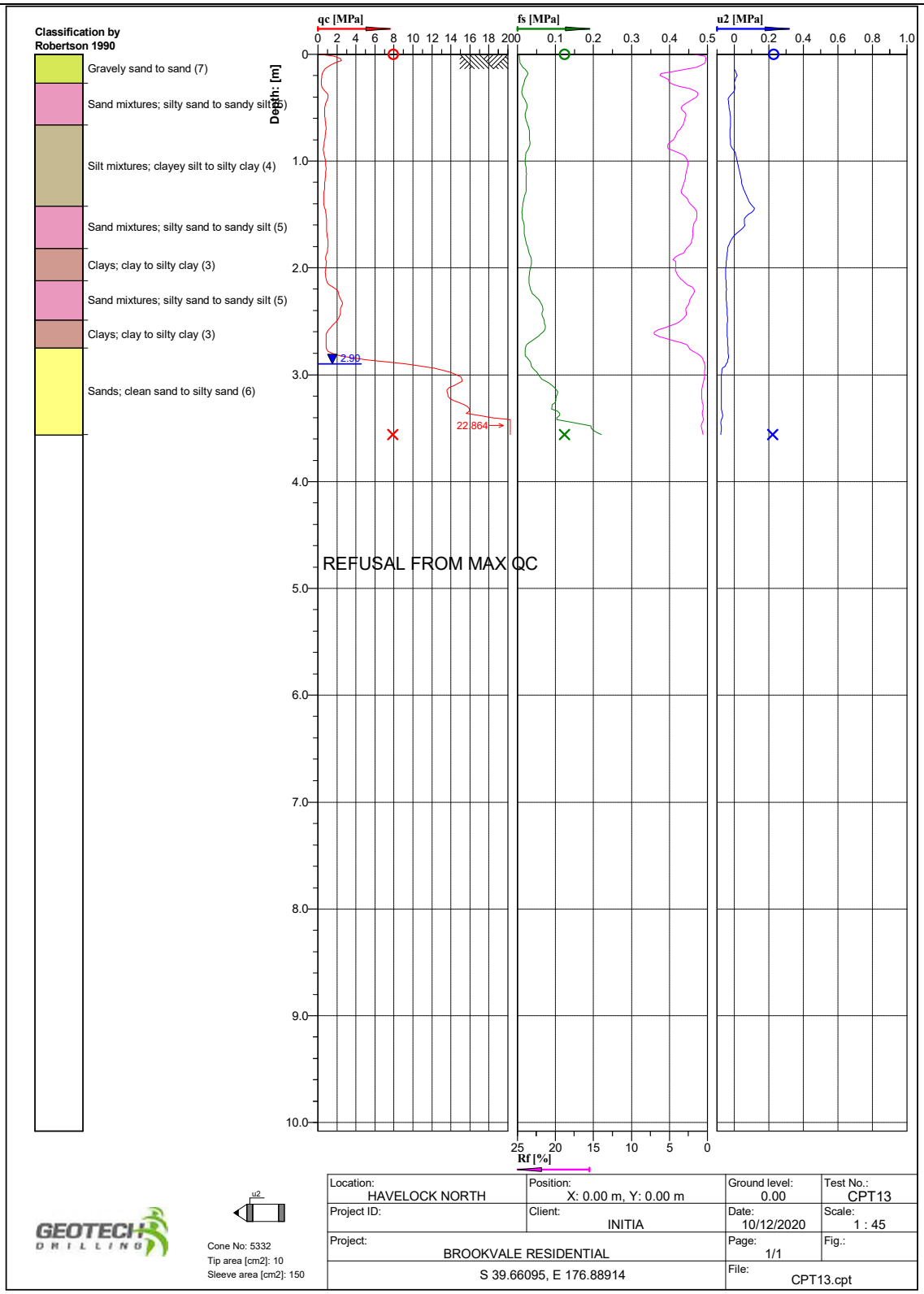


Attachment H

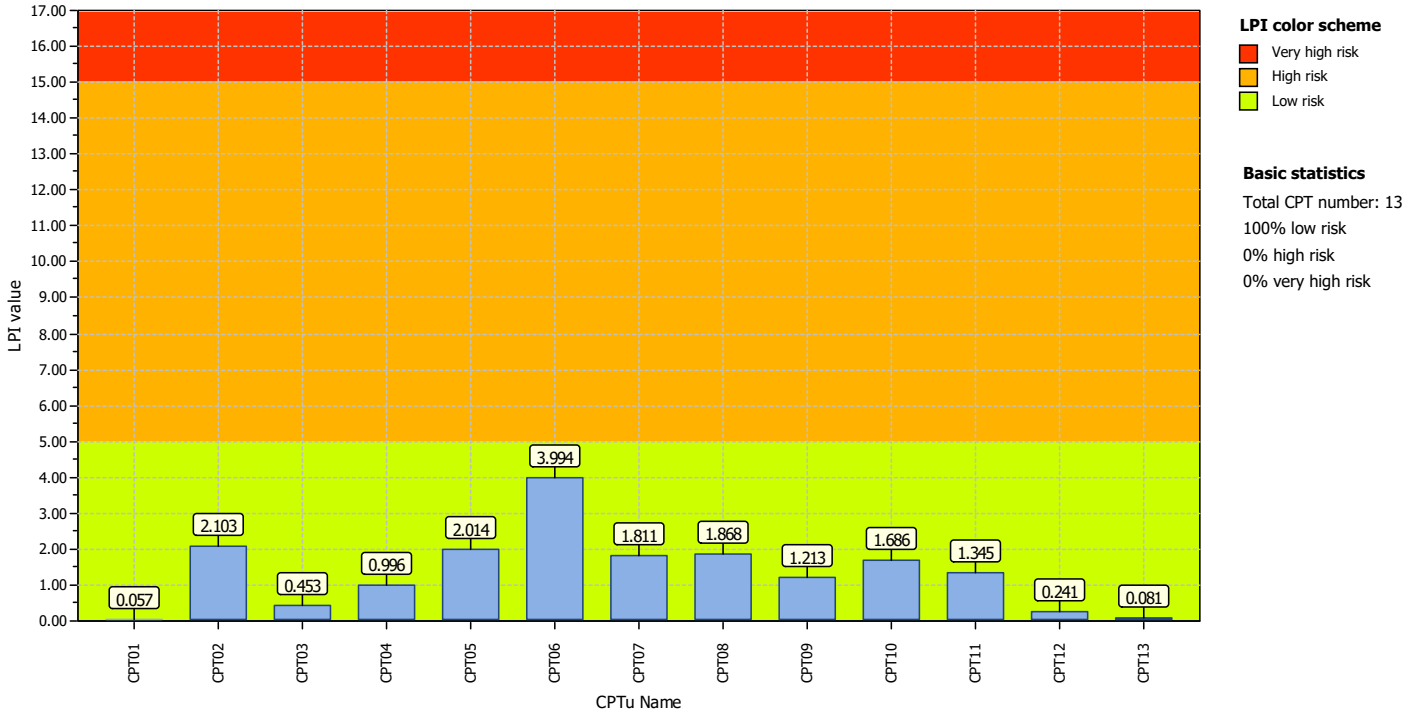
Appendix C Liquefaction Analysis

Initia Ltd
Geotechnical Specialists
114 St Georges Bay Road, Parnell, Auckland
www.initia.co.nz

Project title : Brookvale Residential

Location : 55 Brookvale Road, Havelock North

Overall Liquefaction Potential Index report



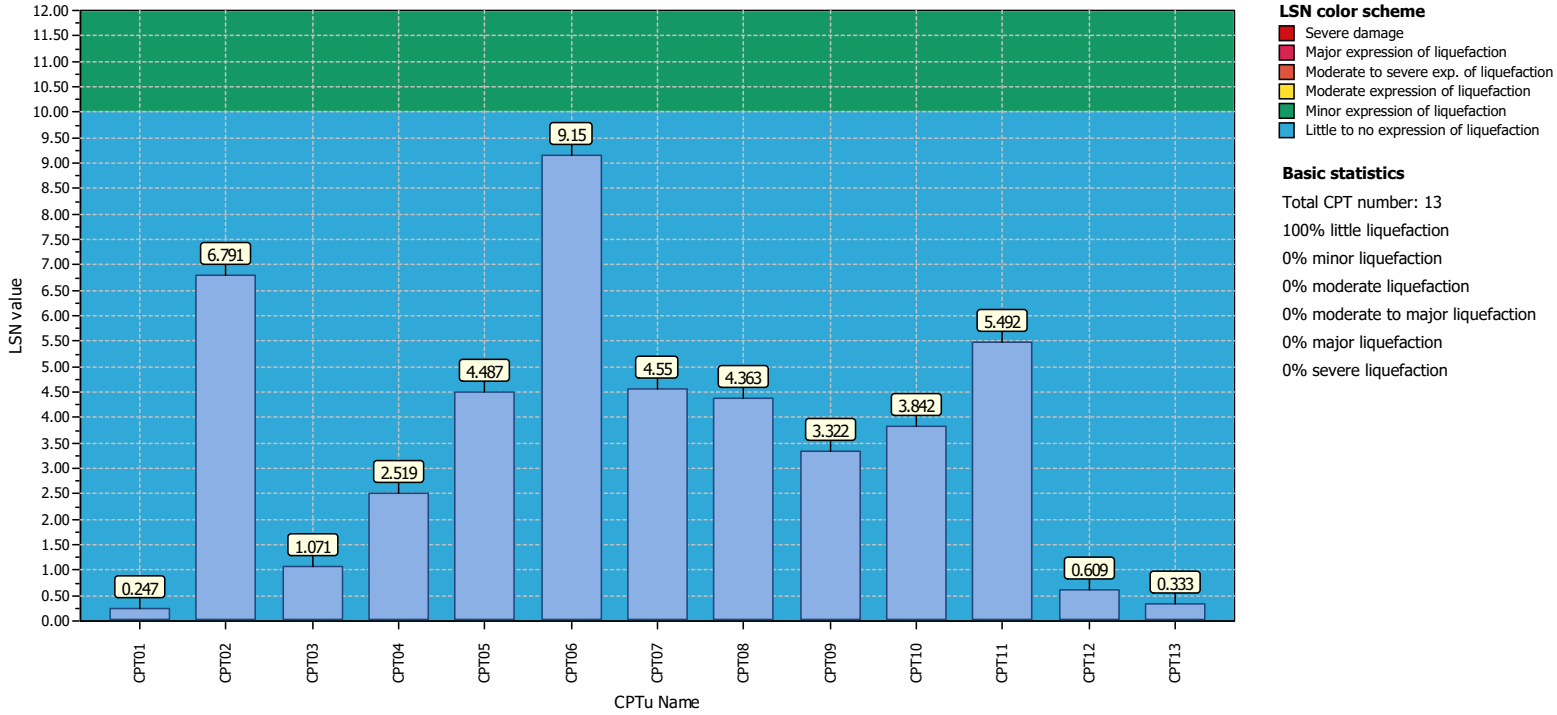
Attachment H

Initia Ltd
Geotechnical Specialists
114 St Georges Bay Road, Parnell, Auckland
www.initia.co.nz

Project title : Brookvale Residential

Location : 55 Brookvale Road, Havelock North

Overall Liquefaction Severity Number report



CLiq v.3.0.3.4 - CPT Liquefaction Assessment Software 1

Project file: C:\Users\Andrew Klahn\Initia Limited\Initia Limited Team Site - Projects\P-001006 - Brookvale Residential\Working Material\3. Liquefaction\ULS_Class D_IL2_PGA=0.42g_M=6.5_GWL=2.5m.clq

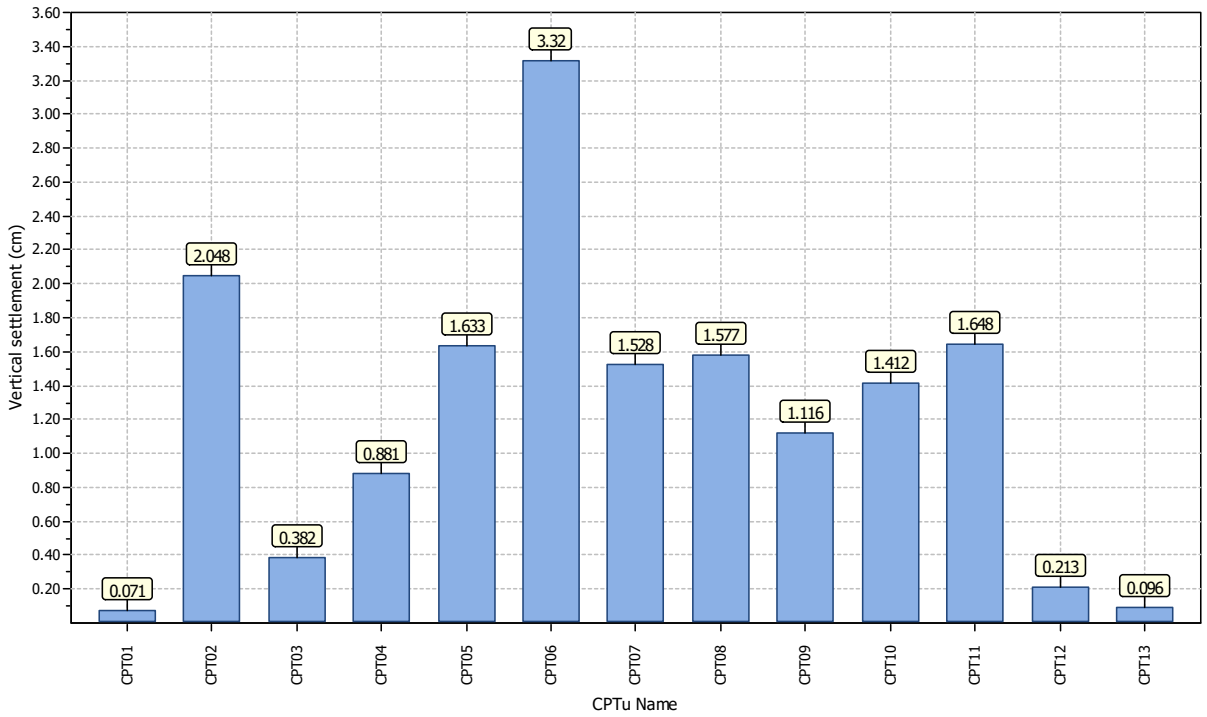
Attachment H

Initia Ltd
Geotechnical Specialists
114 St Georges Bay Road, Parnell, Auckland
www.initia.co.nz

Project title : Brookvale Residential

Location : 55 Brookvale Road, Havelock North

Overall vertical settlements report



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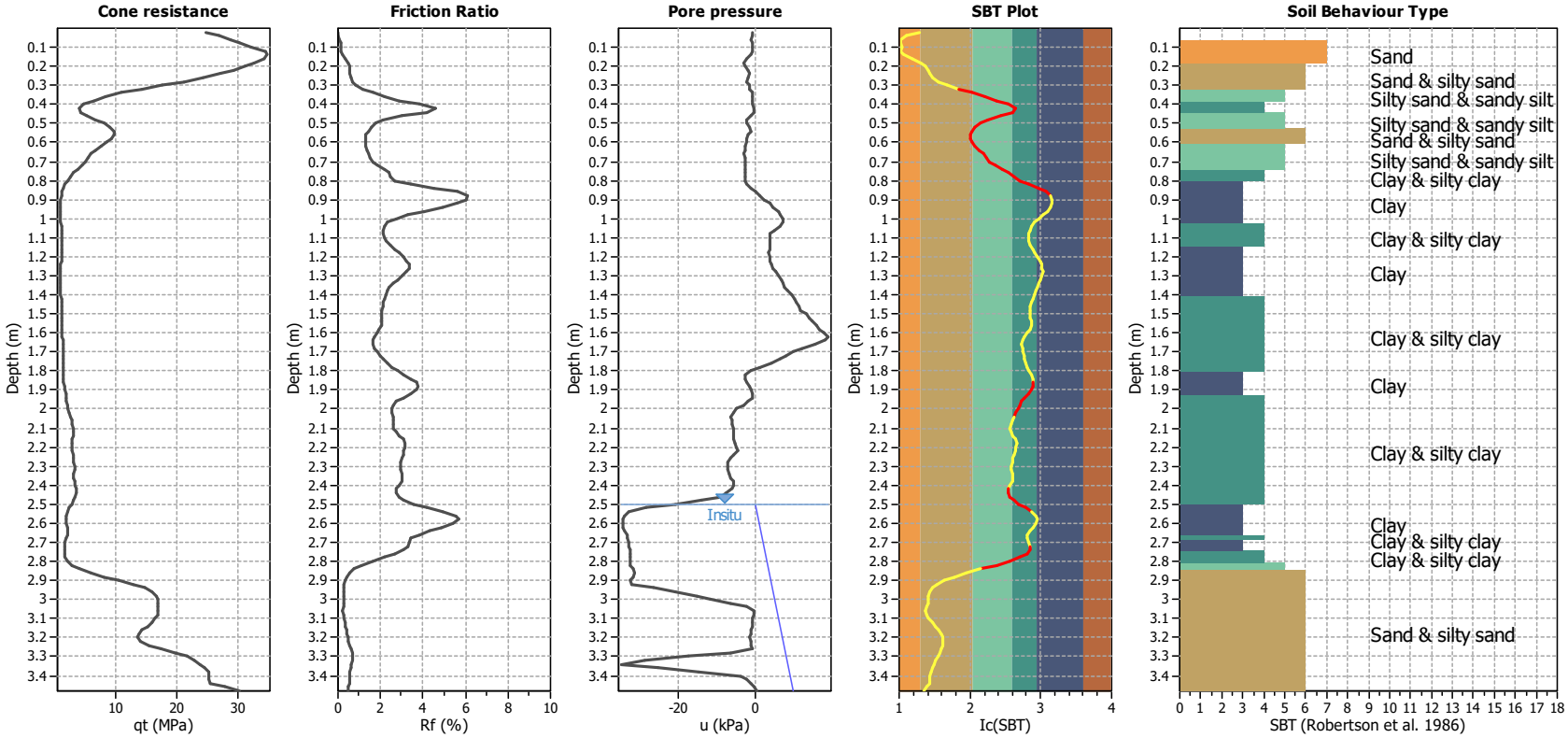
Initia Ltd
Geotechnical Specialists
114 St Georges Bay Road, Parnell, Auckland
www.initia.co.nz

Project: **Brookvale Residential**
Location: **55 Brookvale Road, Havelock North**

CPT: CPT01
Total depth: 3.48 m



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Fines correction method:	B&I (2014)	G.W.T. (earthq.):	2.50 m	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.42	Unit weight calculation:	Based on SBT	K_o applied:	Yes		

CLiq v.3.0.3.4 - CPTU data presentation & interpretation software - Report created on: 25/01/2021, 10:50:38 AM 1
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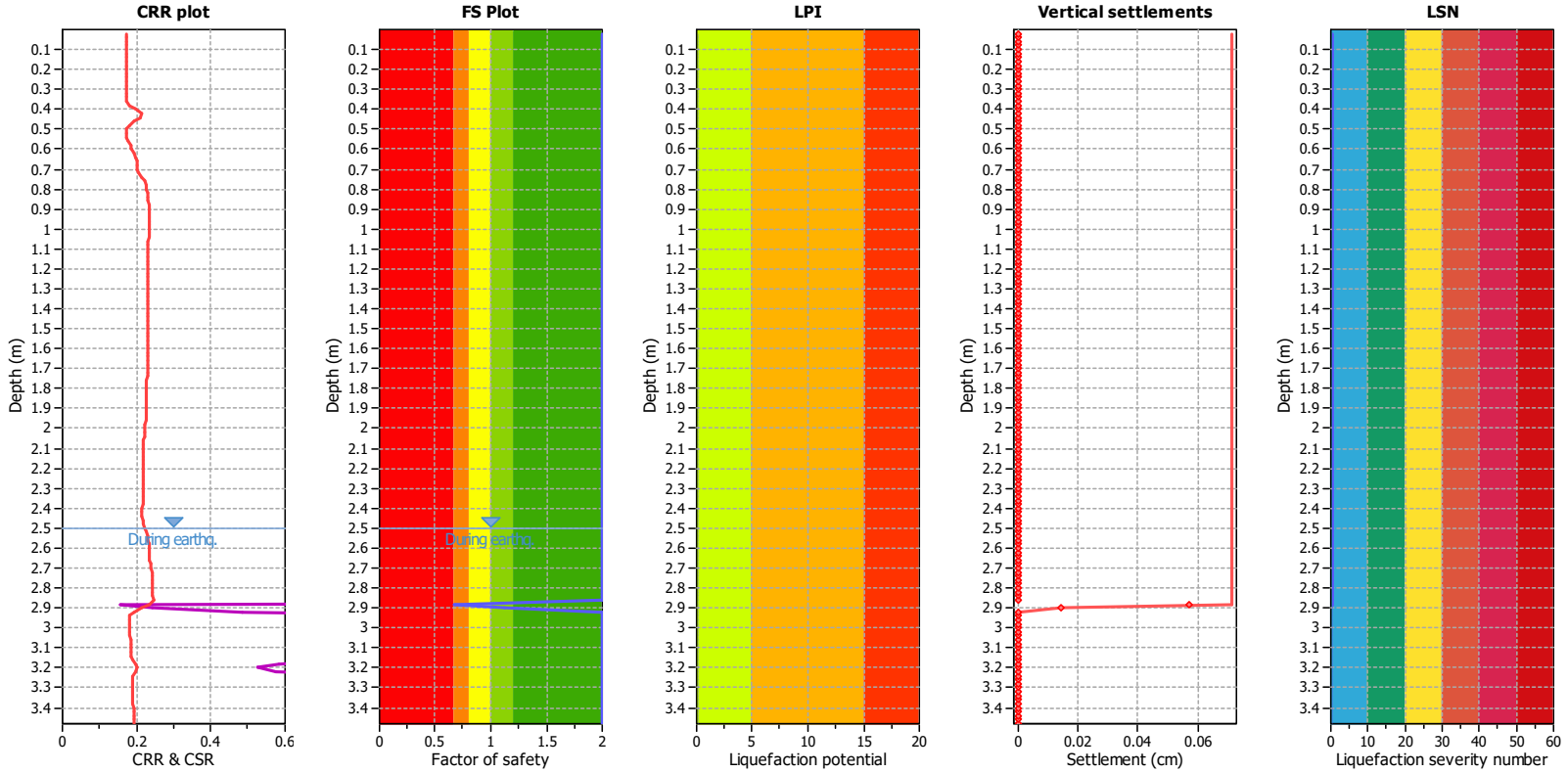
Initia Ltd
Geotechnical Specialists
114 St Georges Bay Road, Parnell, Auckland
www.initia.co.nz

Project: **Brookvale Residential**
Location: **55 Brookvale Road, Havelock North**

CPT: CPT01
Total depth: 3.48 m



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Fines correction method:	B&I (2014)	G.W.T. (earthq.):	2.50 m	Fill height:	N/A		
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth applied:	No
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	Limit depth:	N/A
Peak ground acceleration:	0.42	Unit weight calculation:	Based on SBT	K_σ applied:	Yes	MSF method:	Method based

CLiq v.3.0.3.4 - CPTU data presentation & interpretation software - Report created on: 25/01/2021, 10:50:38 AM 2
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Geotechnical Specialists
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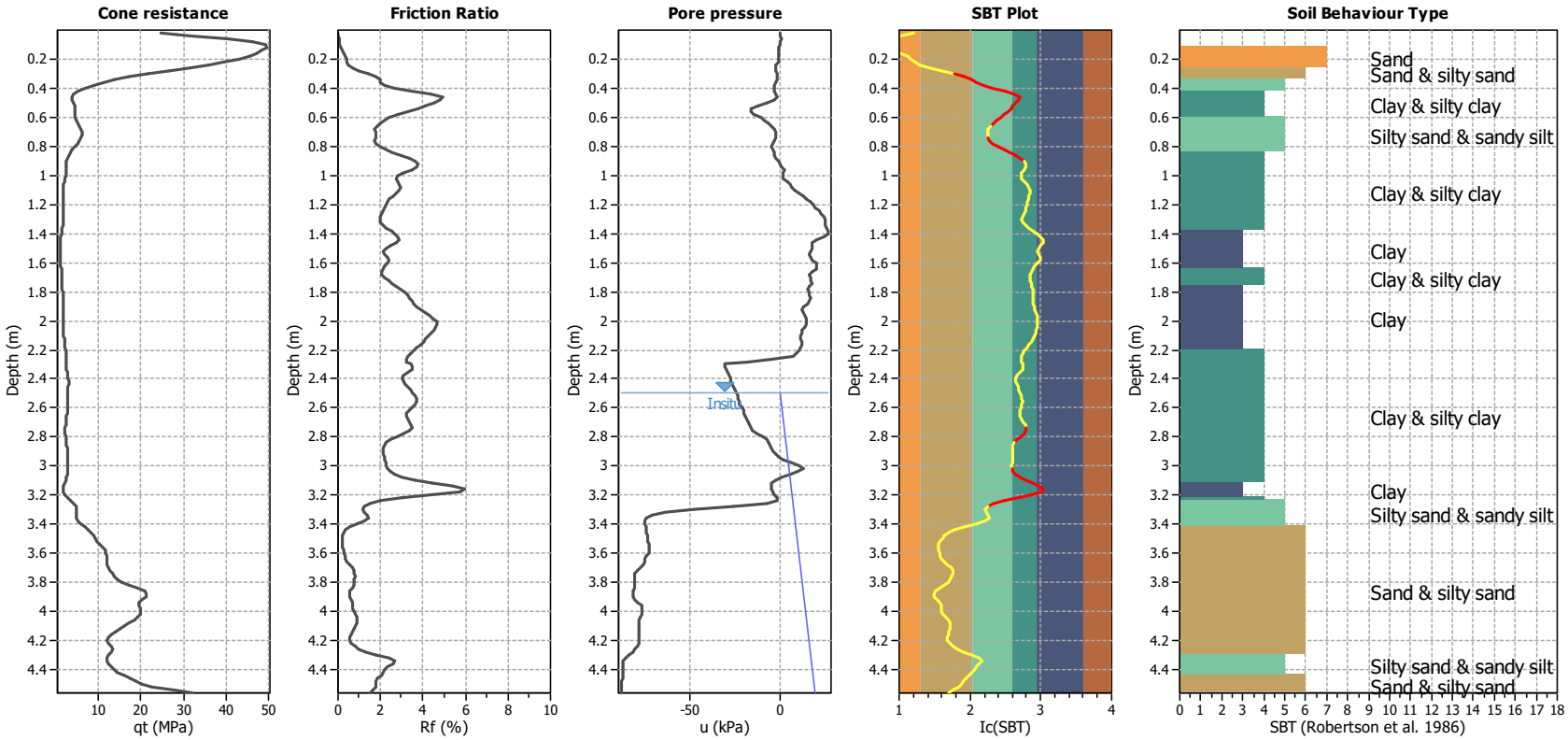
Project: **Brookvale Residential**
Location: **55 Brookvale Road, Havelock North**

CPT: CPT02
Total depth: 4.56 m



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Fines correction method:	B&I (2014)	G.W.T. (earthq.):	2.50 m	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.42	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

CLiq v.3.0.3.4 - CPTU data presentation & interpretation software - Report created on: 25/01/2021, 10:50:38 AM 3
Project file: C:\Users\Andrew Klahn\Initia Limited\Initia Limited Team Site - Projects\P-001006 - Brookvale Residential\Working Material\3. Liquefaction\ULS_Class D_IL2_PGA=0.42g_M=6.5_GWL=2.5m.clq

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Initia Ltd
Geotechnical Specialists
114 St Georges Bay Road, Parnell, Auckland
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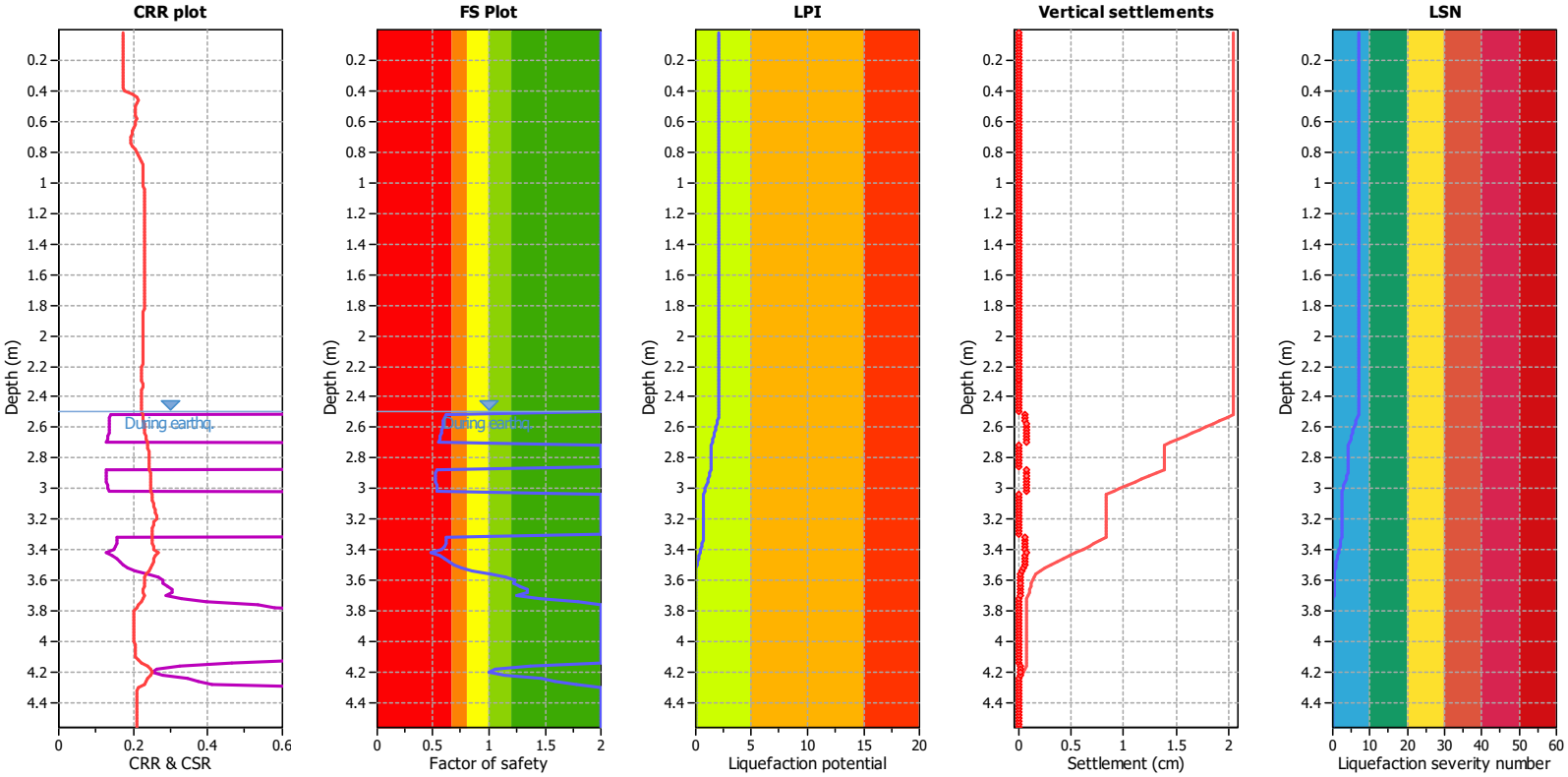
Project: **Brookvale Residential**
Location: **55 Brookvale Road, Havelock North**

CPT: CPT02
Total depth: 4.56 m



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Fines correction method:	B&I (2014)	G.W.T. (earthq.):	2.50 m	Fill height:	N/A		
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth applied:	No
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	Limit depth:	N/A
Peak ground acceleration:	0.42	Unit weight calculation:	Based on SBT	K_σ applied:	Yes	MSF method:	Method based

CLiq v.3.0.3.4 - CPTU data presentation & interpretation software - Report created on: 25/01/2021, 10:50:38 AM 4
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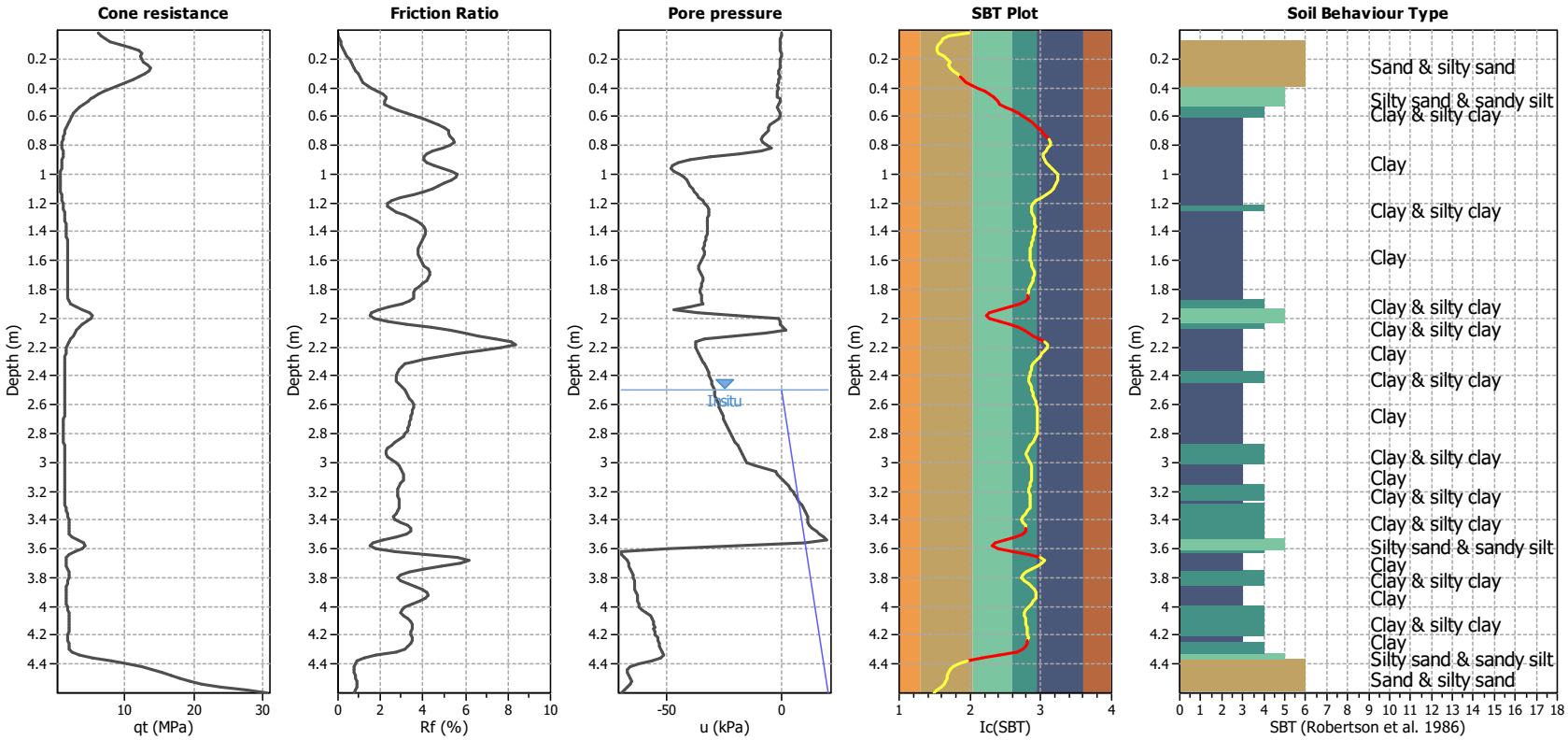
Initia Ltd
Geotechnical Specialists
114 St Georges Bay Road, Parnell, Auckland
www.initia.co.nz

Project: **Brookvale Residential**
Location: **55 Brookvale Road, Havelock North**

CPT: CPT03
Total depth: 4.60 m



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Fines correction method:	B&I (2014)	G.W.T. (earthq.):	2.50 m	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.42	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

CLiq v.3.0.3.4 - CPTU data presentation & interpretation software - Report created on: 25/01/2021, 10:50:39 AM 5
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Initia Ltd
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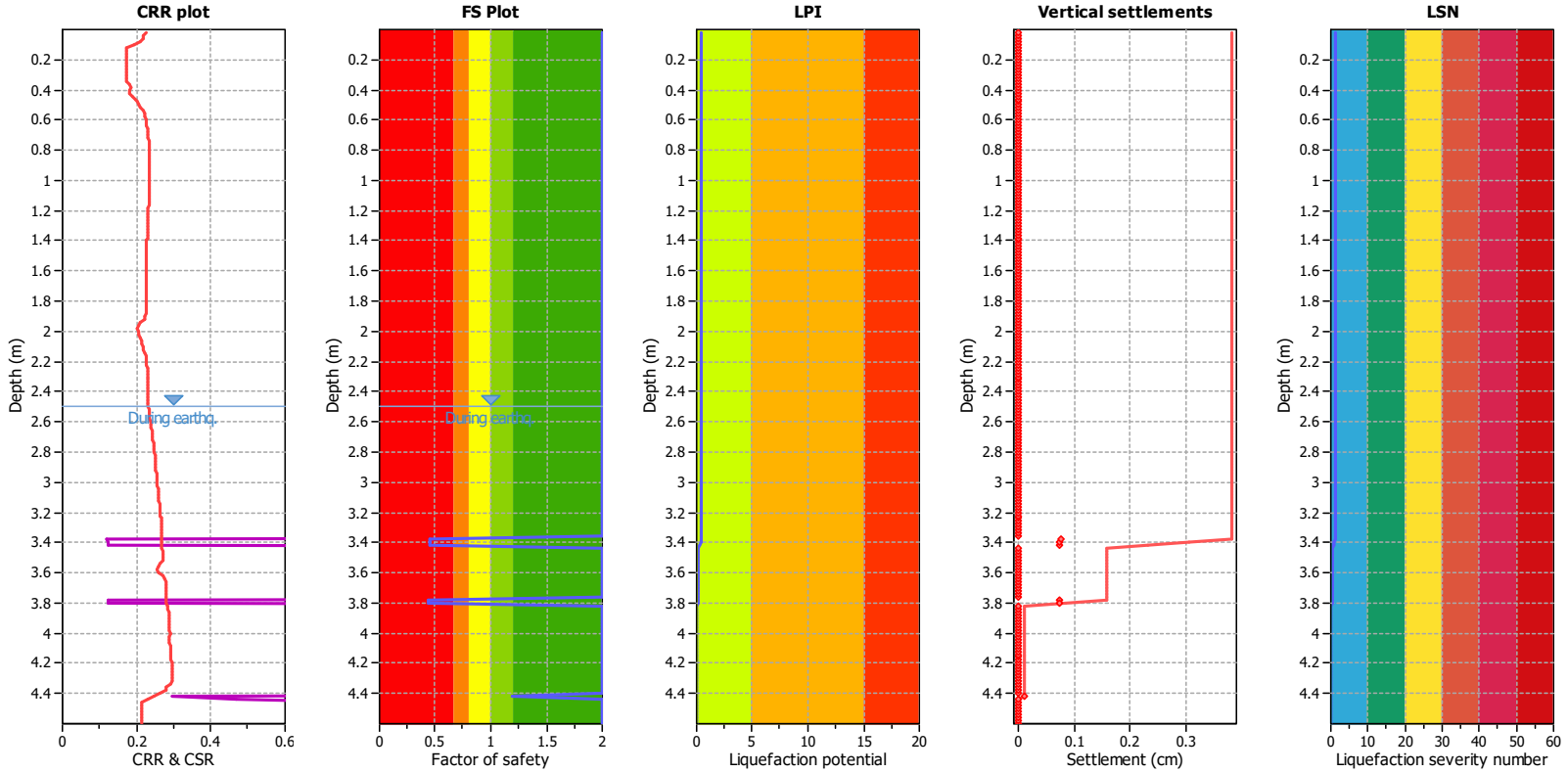
Project: **Brookvale Residential**
Location: **55 Brookvale Road, Havelock North**

CPT: CPT03
Total depth: 4.60 m



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Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth applied:	No
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	Limit depth:	N/A
Peak ground acceleration:	0.42	Unit weight calculation:	Based on SBT	K_σ applied:	Yes	MSF method:	Method based

CLiq v.3.0.3.4 - CPTU data presentation & interpretation software - Report created on: 25/01/2021, 10:50:39 AM 6
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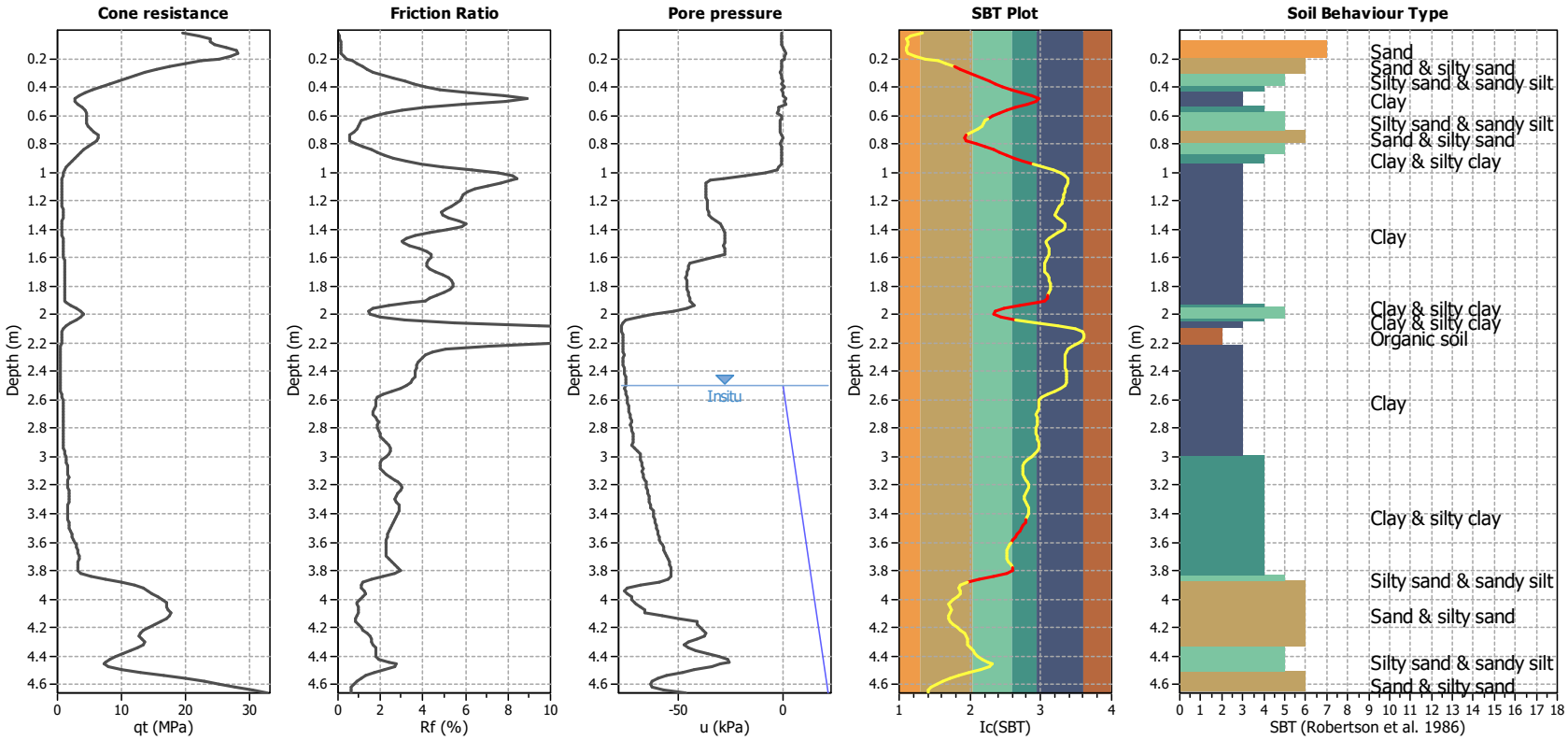
Project: **Brookvale Residential**
Location: **55 Brookvale Road, Havelock North**

CPT: CPT04
Total depth: 4.66 m



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Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.42	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

CLiq v.3.0.3.4 - CPTU data presentation & interpretation software - Report created on: 25/01/2021, 10:50:39 AM 7
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Initia Ltd
Geotechnical Specialists
114 St Georges Bay Road, Parnell, Auckland
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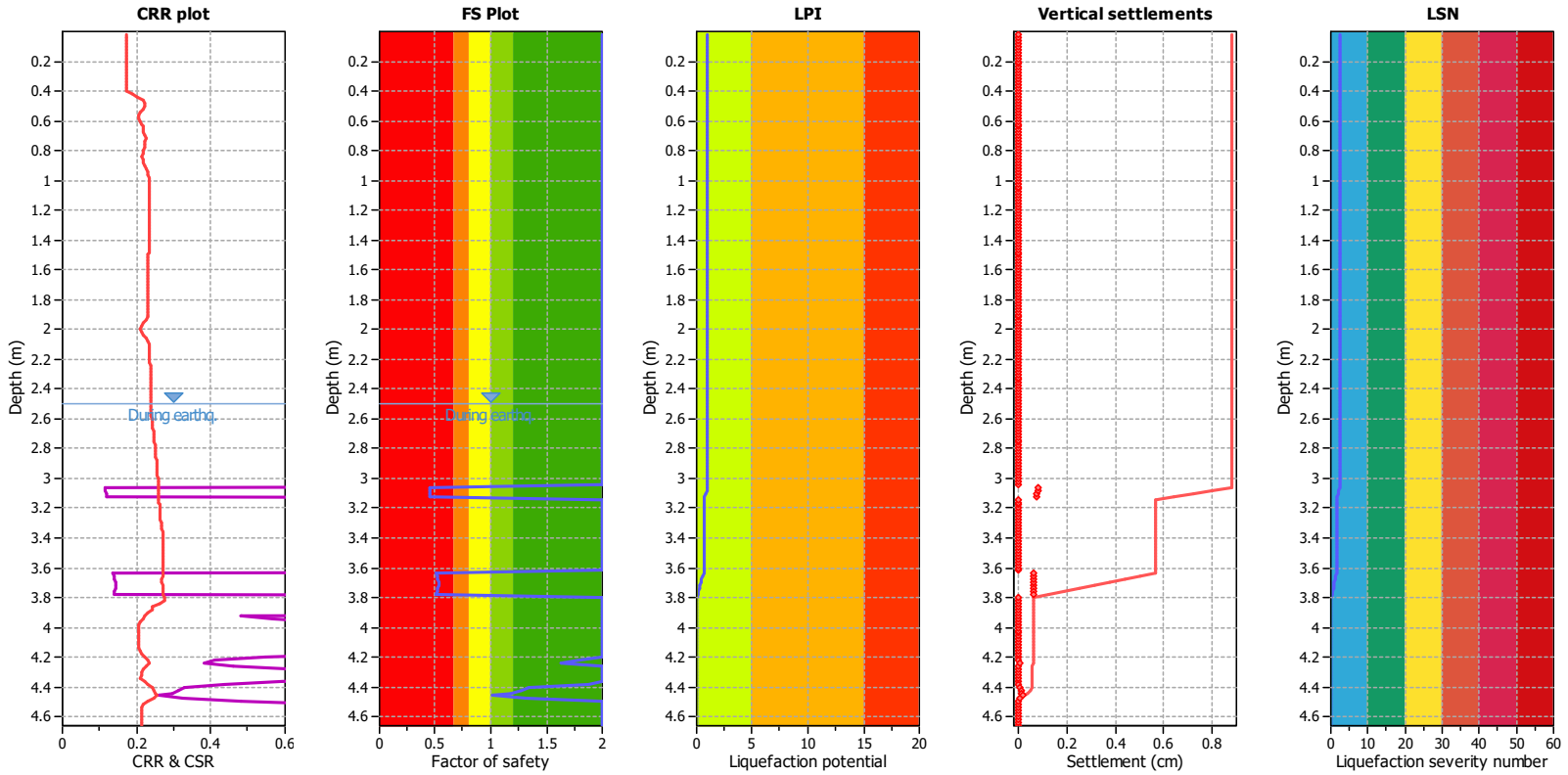
Project: **Brookvale Residential**
Location: **55 Brookvale Road, Havelock North**

CPT: CPT04
Total depth: 4.66 m



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Fines correction method:	B&I (2014)	G.W.T. (earthq.):	2.50 m	Fill height:	N/A		
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth applied:	No
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	Limit depth:	N/A
Peak ground acceleration:	0.42	Unit weight calculation:	Based on SBT	K_σ applied:	Yes	MSF method:	Method based

CLiq v.3.0.3.4 - CPTU data presentation & interpretation software - Report created on: 25/01/2021, 10:50:39 AM 8
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Attachment H

Initia Ltd
Geotechnical Specialists
114 St Georges Bay Road, Parnell, Auckland
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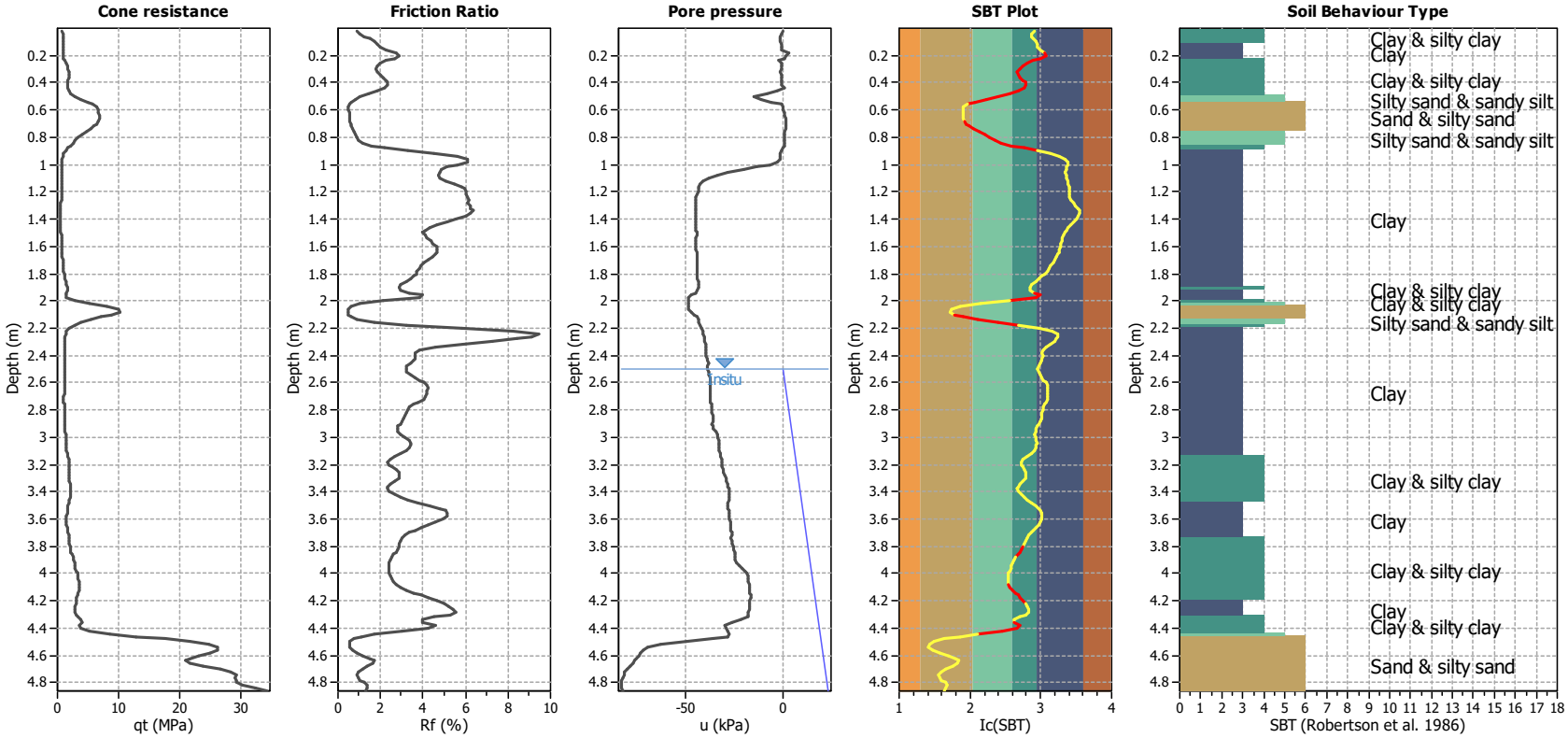
Project: **Brookvale Residential**
Location: **55 Brookvale Road, Havelock North**

CPT: CPT05
Total depth: 4.86 m



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Fines correction method:	B&I (2014)	G.W.T. (earthq.):	2.50 m	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.42	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

CLiq v.3.0.3.4 - CPTU data presentation & interpretation software - Report created on: 25/01/2021, 10:50:40 AM 9
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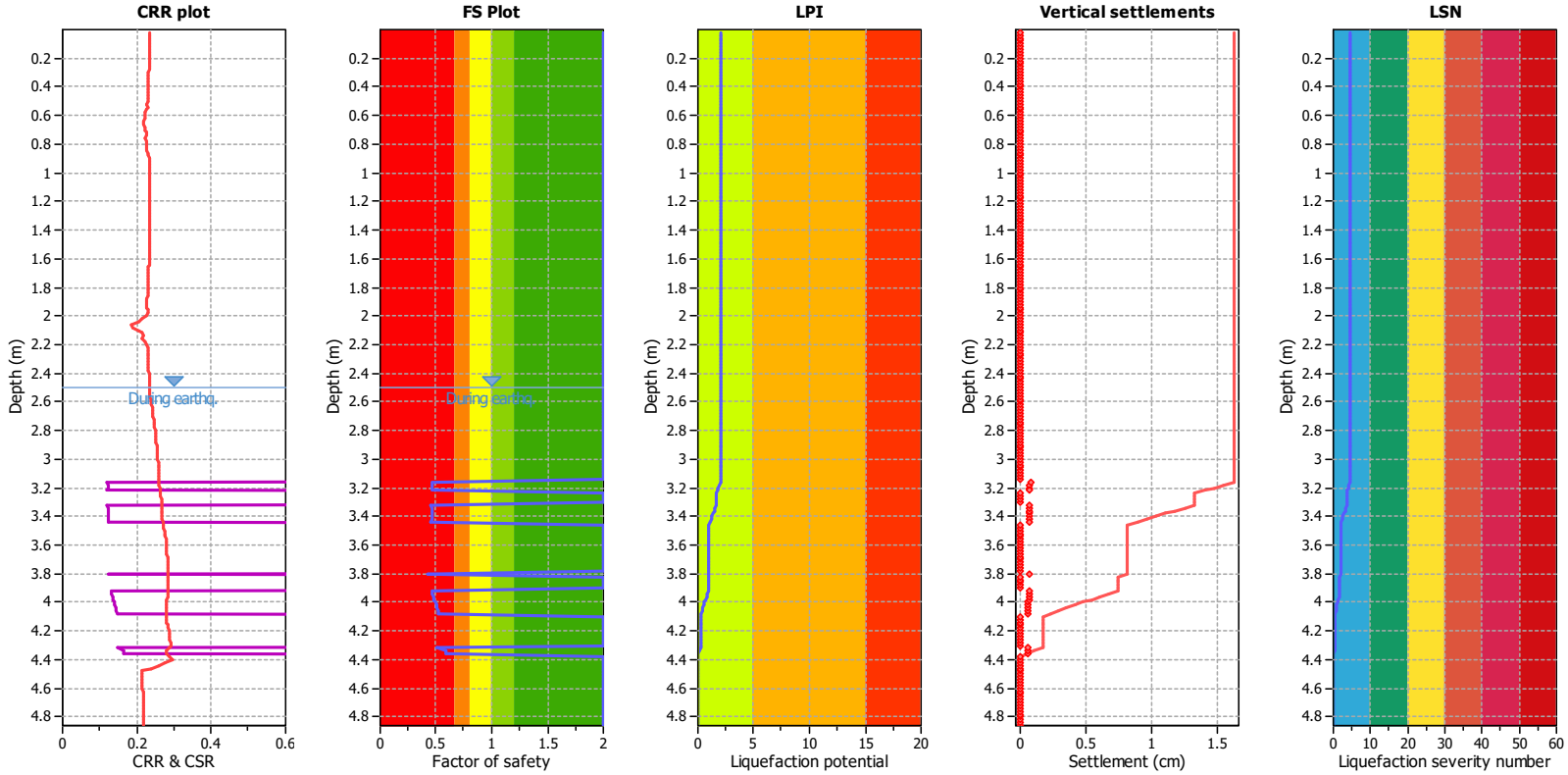
Initia Ltd
Geotechnical Specialists
114 St Georges Bay Road, Parnell, Auckland
www.initia.co.nz

Project: **Brookvale Residential**
Location: **55 Brookvale Road, Havelock North**

CPT: CPT05
Total depth: 4.86 m



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Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth applied:	No
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	Limit depth:	N/A
Peak ground acceleration:	0.42	Unit weight calculation:	Based on SBT	K_σ applied:	Yes	MSF method:	Method based

CLiq v.3.0.3.4 - CPTU data presentation & interpretation software - Report created on: 25/01/2021, 10:50:40 AM 10
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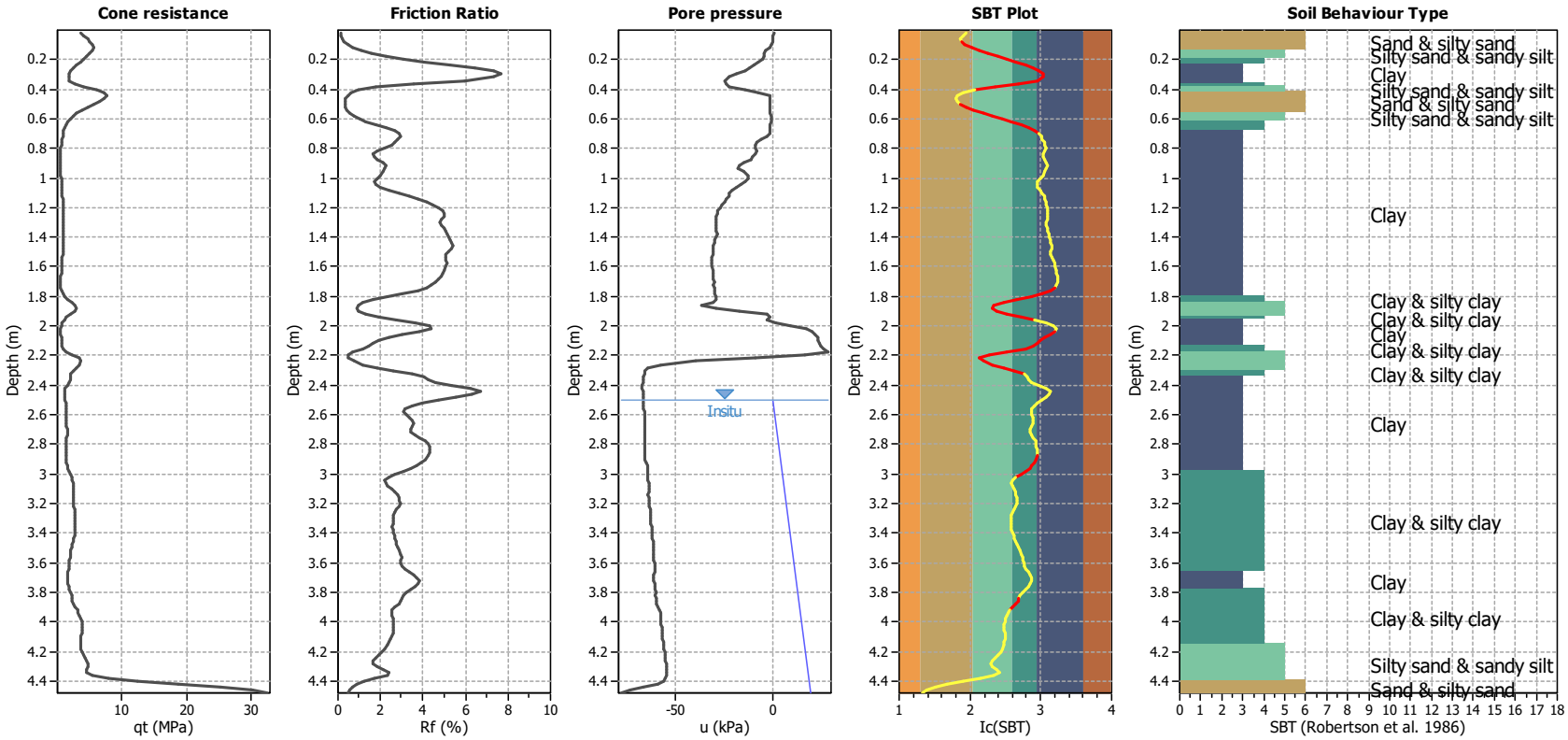
Attachment H

Initia Ltd
Geotechnical Specialists
114 St Georges Bay Road, Parnell, Auckland
www.initia.co.nz

Project: **Brookvale Residential**
Location: **55 Brookvale Road, Havelock North**

CPT: CPT06
Total depth: 4.48 m



Analysis method:	B&I (2014)	G.W.T. (in-situ):	2.50 m	Use fill:	No	Clay like behavior applied:	.
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	2.50 m	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.42	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

CLiq v.3.0.3.4 - CPTU data presentation & interpretation software - Report created on: 25/01/2021, 10:50:40 AM 11
Project file: C:\Users\Andrew Klahn\Initia Limited\Initia Limited Team Site - Projects\P-001006 - Brookvale Residential\Working Material\3. Liquefaction\ULS_Class D_IL2_PGA=0.42g_M=6.5_GWL=2.5m.clq

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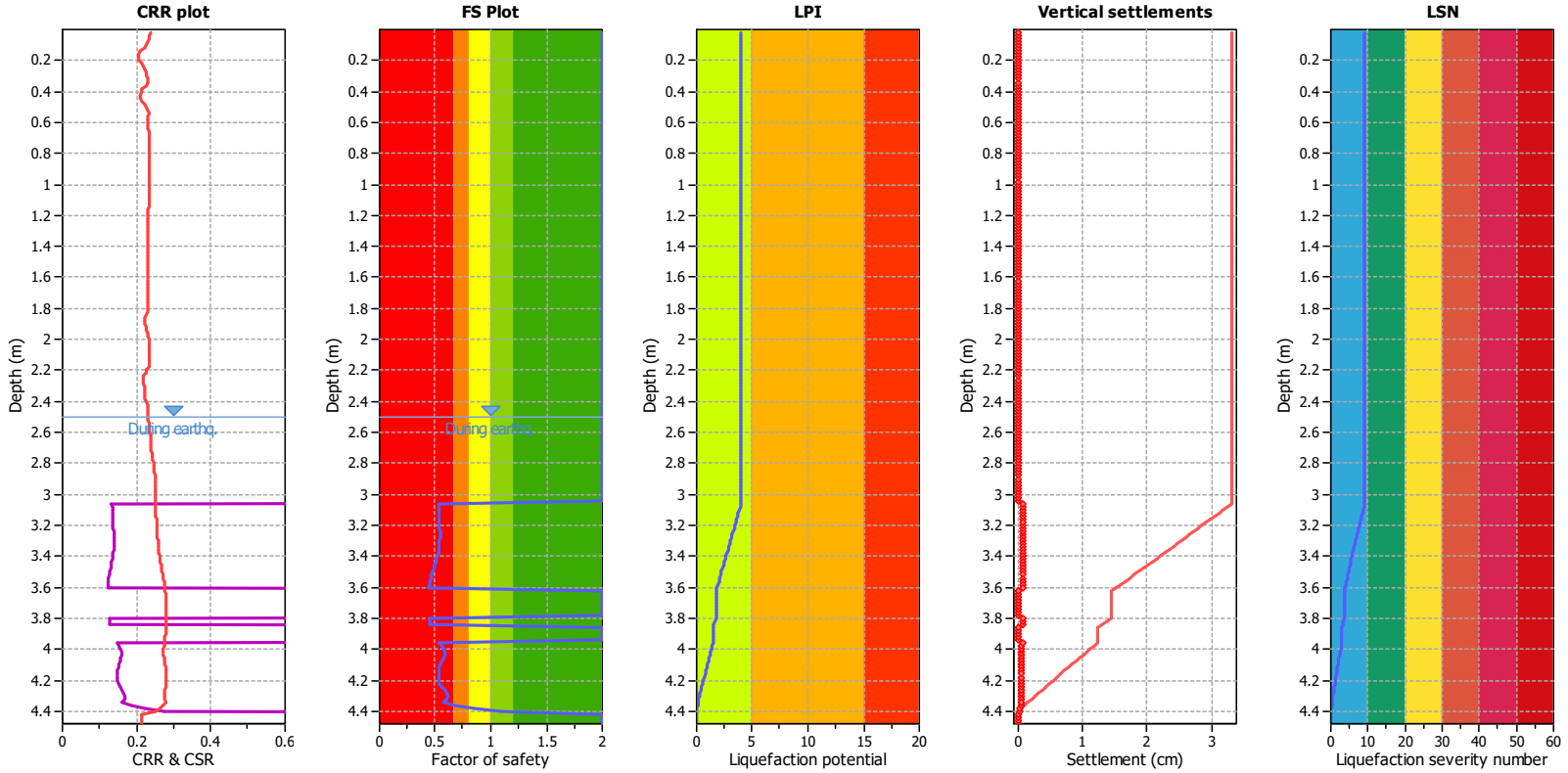
Project: **Brookvale Residential**
Location: **55 Brookvale Road, Havelock North**

CPT: CPT06
Total depth: 4.48 m



Analysis method:	B&I (2014)	G.W.T. (in-situ):	2.50 m	Use fill:	No	Clay like behavior applied:	.
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	2.50 m	Fill height:	N/A		
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth applied:	No
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	Limit depth:	N/A
Peak ground acceleration:	0.42	Unit weight calculation:	Based on SBT	K_σ applied:	Yes	MSF method:	Method based

CLiq v.3.0.3.4 - CPTU data presentation & interpretation software - Report created on: 25/01/2021, 10:50:40 AM 12
Project file: C:\Users\Andrew Klahn\Initia Limited\Initia Limited Team Site - Projects\P-001006 - Brookvale Residential\Working Material\3. Liquefaction\ULS_Class D_IL2_PGA=0.42g_M=6.5_GWL=2.5m.clq

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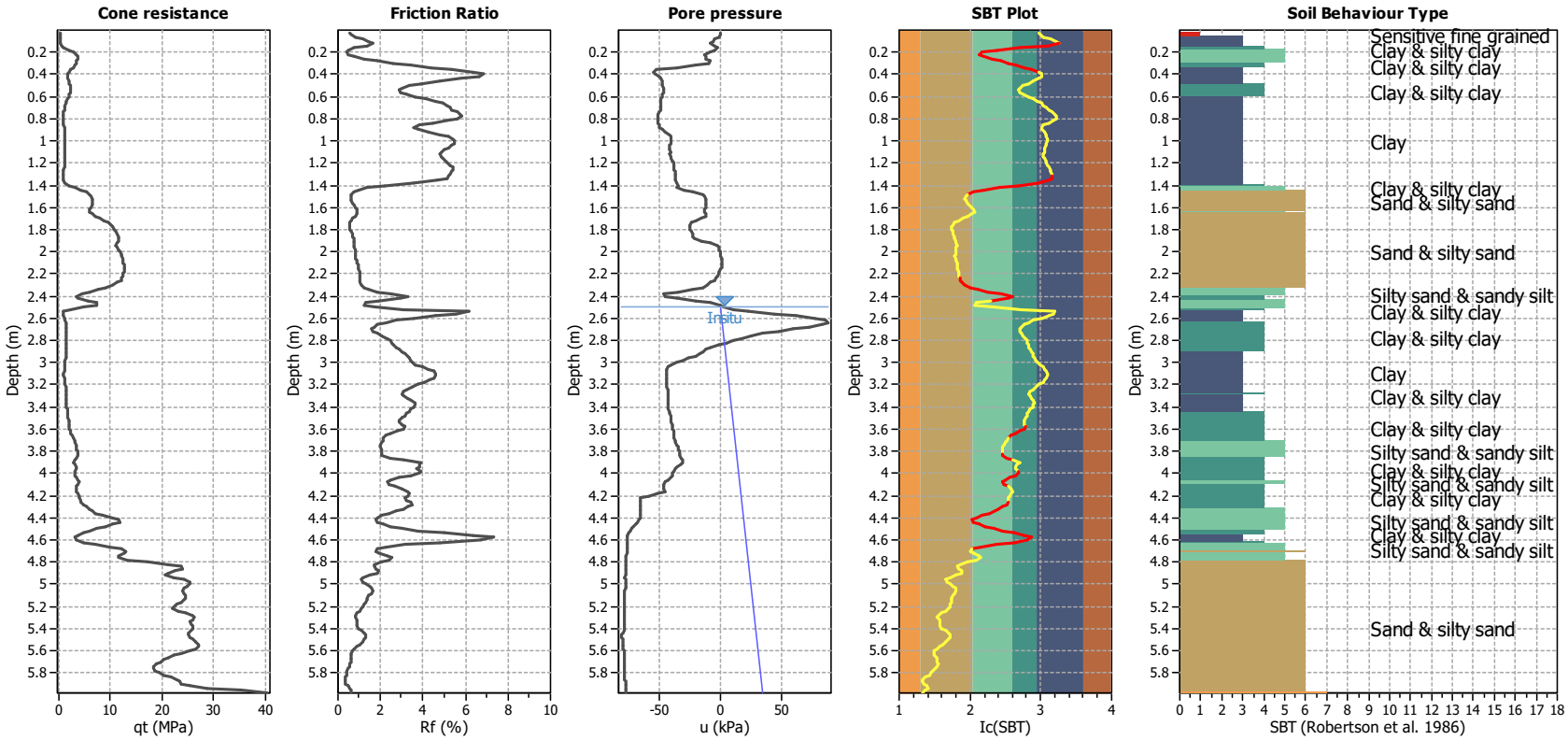
Project: **Brookvale Residential**
Location: **55 Brookvale Road, Havelock North**

CPT: CPT07
Total depth: 5.98 m



Analysis method:	B&I (2014)	G.W.T. (in-situ):	2.50 m	Use fill:	No	Clay like behavior applied:	.
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	2.50 m	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.42	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

CLiq v.3.0.3.4 - CPTU data presentation & interpretation software - Report created on: 25/01/2021, 10:50:41 AM 13
Project file: C:\Users\Andrew Klahn\Initia Limited\Initia Limited Team Site - Projects\P-001006 - Brookvale Residential\Working Material\3. Liquefaction\ULS_Class D_IL2_PGA=0.42g_M=6.5_GWL=2.5m.clq

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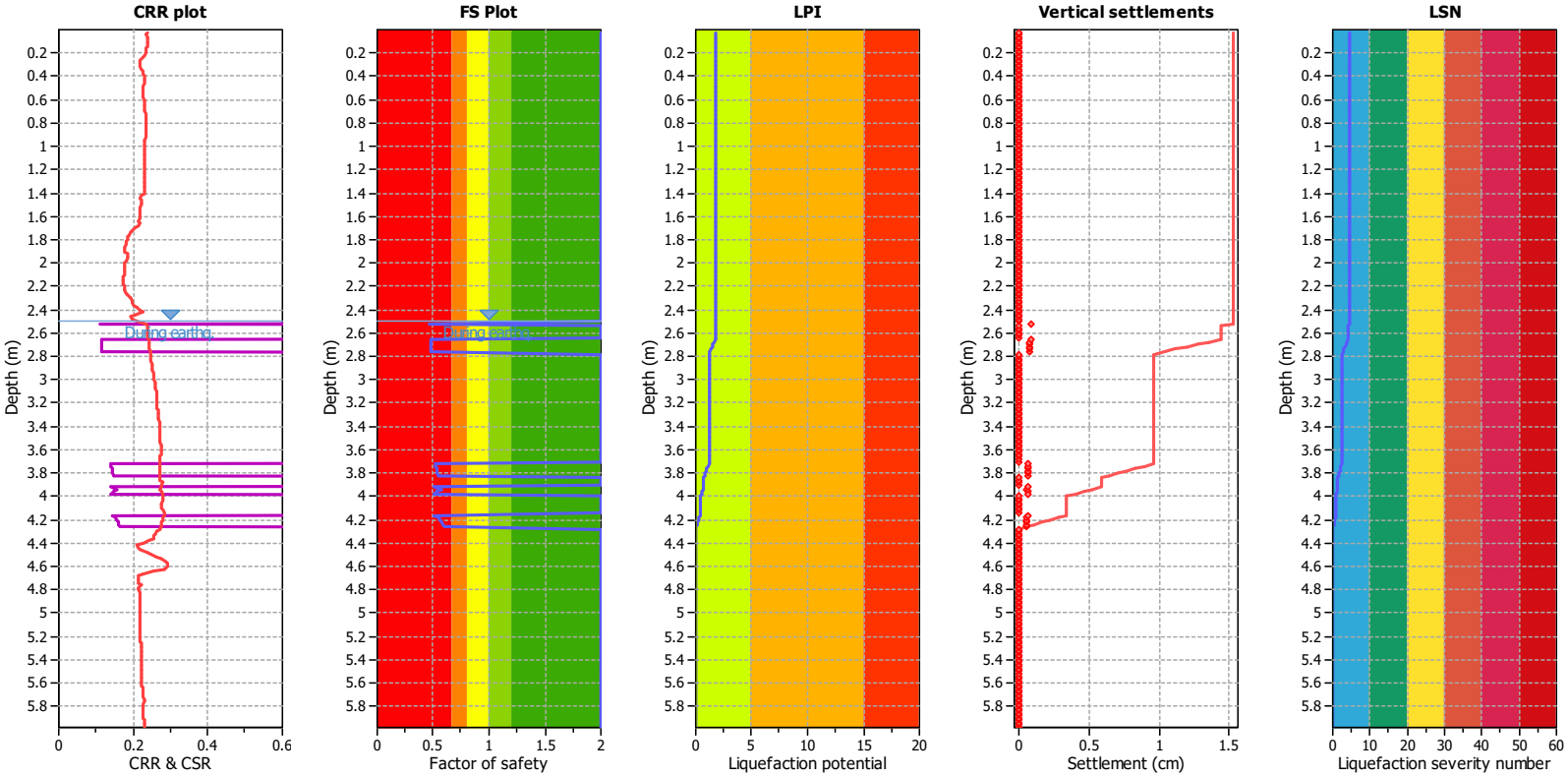
Project: **Brookvale Residential**
Location: **55 Brookvale Road, Havelock North**

CPT: CPT07
Total depth: 5.98 m



Analysis method:	B&I (2014)	G.W.T. (in-situ):	2.50 m	Use fill:	No	Clay like behavior applied:	.
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	2.50 m	Fill height:	N/A		
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth applied:	No
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	Limit depth:	N/A
Peak ground acceleration:	0.42	Unit weight calculation:	Based on SBT	K_σ applied:	Yes	MSF method:	Method based

CLiq v.3.0.3.4 - CPTU data presentation & interpretation software - Report created on: 25/01/2021, 10:50:41 AM
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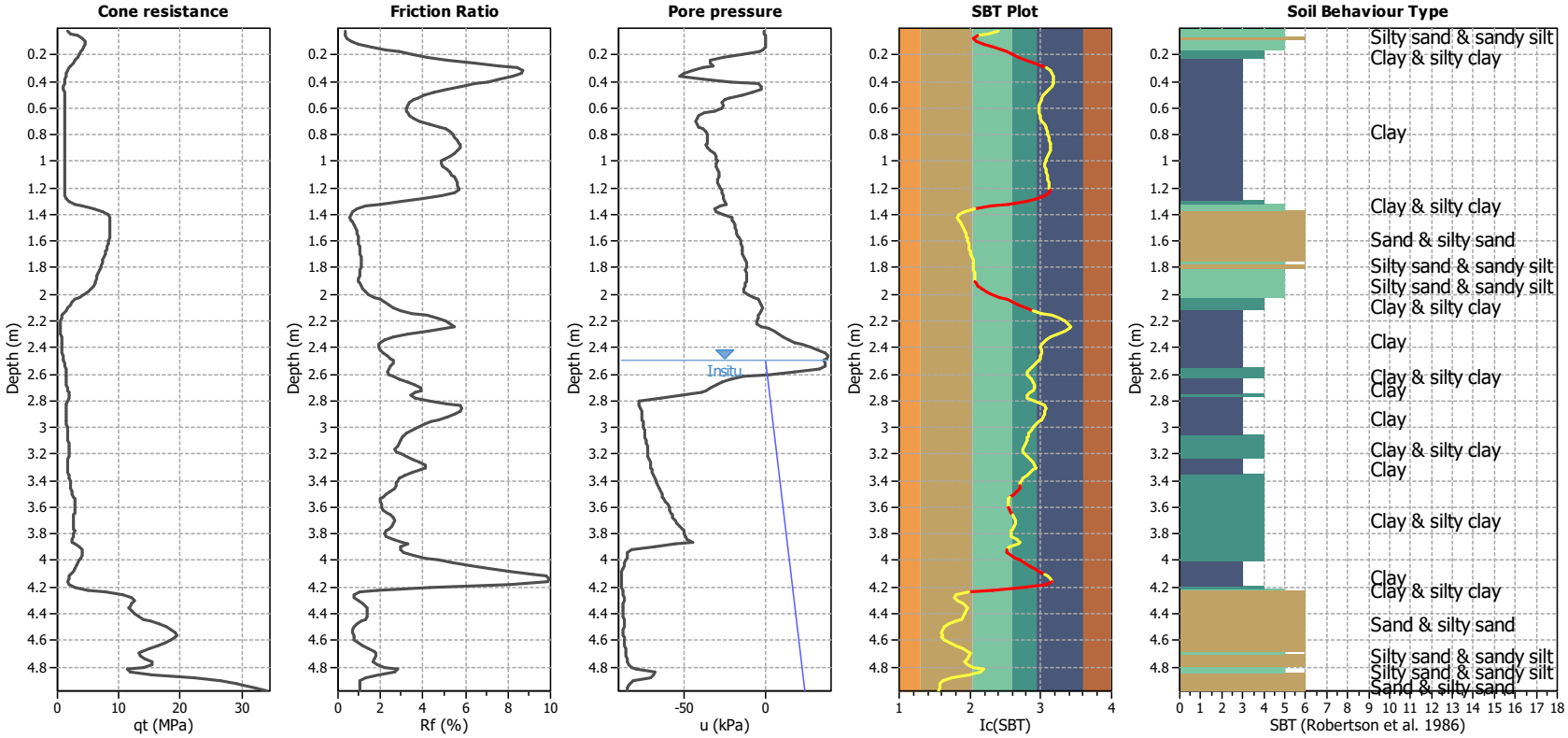
Project: **Brookvale Residential**
Location: **55 Brookvale Road, Havelock North**

CPT: CPT08
Total depth: 4.98 m



Analysis method:	B&I (2014)	G.W.T. (in-situ):	2.50 m	Use fill:	No	Clay like behavior applied:	.
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	2.50 m	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.42	Unit weight calculation:	Based on SBT	K_o applied:	Yes		

CLiq v.3.0.3.4 - CPTU data presentation & interpretation software - Report created on: 25/01/2021, 10:50:41 AM 15
Project file: C:\Users\Andrew Klahn\Initia Limited\Initia Limited Team Site - Projects\P-001006 - Brookvale Residential\Working Material\3. Liquefaction\ULS_Class D_IL2_PGA=0.42g_M=6.5_GWL=2.5m.clq

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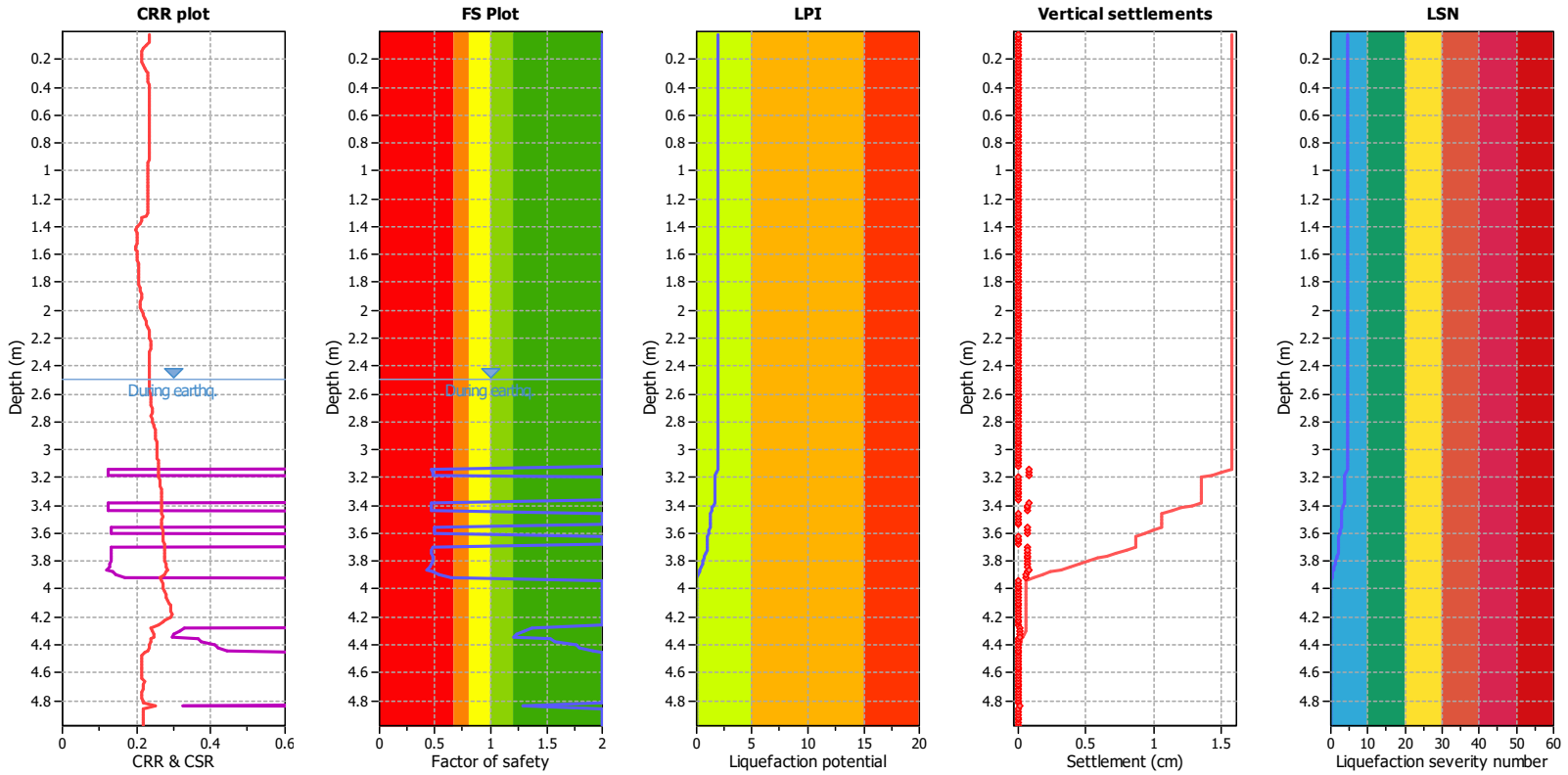
Project: **Brookvale Residential**
Location: **55 Brookvale Road, Havelock North**

CPT: CPT08
Total depth: 4.98 m



Analysis method:	B&I (2014)	G.W.T. (in-situ):	2.50 m	Use fill:	No	Clay like behavior applied:	.
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	2.50 m	Fill height:	N/A		
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth applied:	No
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	Limit depth:	N/A
Peak ground acceleration:	0.42	Unit weight calculation:	Based on SBT	K_σ applied:	Yes	MSF method:	Method based

CLiq v.3.0.3.4 - CPTU data presentation & interpretation software - Report created on: 25/01/2021, 10:50:41 AM 16
Project file: C:\Users\Andrew Klahn\Initia Limited\Initia Limited Team Site - Projects\P-001006 - Brookvale Residential\Working Material\3. Liquefaction\ULS_Class D_IL2_PGA=0.42g_M=6.5_GWL=2.5m.clq

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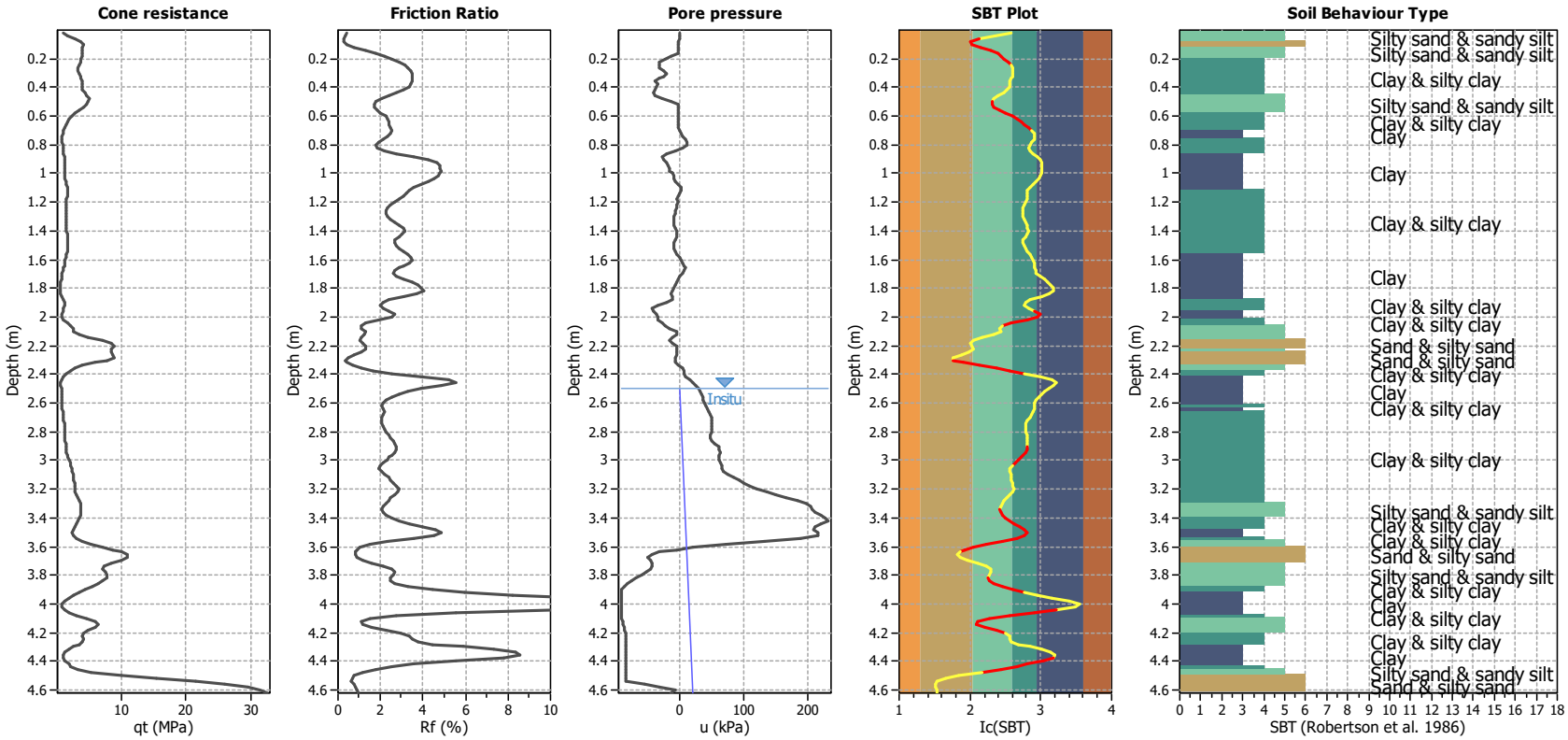
Project: **Brookvale Residential**
Location: **55 Brookvale Road, Havelock North**

CPT: CPT09
Total depth: 4.62 m



Analysis method:	B&I (2014)	G.W.T. (in-situ):	2.50 m	Use fill:	No	Clay like behavior applied:	.
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	2.50 m	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.42	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

CLiq v.3.0.3.4 - CPTU data presentation & interpretation software - Report created on: 25/01/2021, 10:50:42 AM 17
Project file: C:\Users\Andrew Klahn\Initia Limited\Initia Limited Team Site - Projects\P-001006 - Brookvale Residential\Working Material\3. Liquefaction\ULS_Class D_IL2_PGA=0.42g_M=6.5_GWL=2.5m.clq

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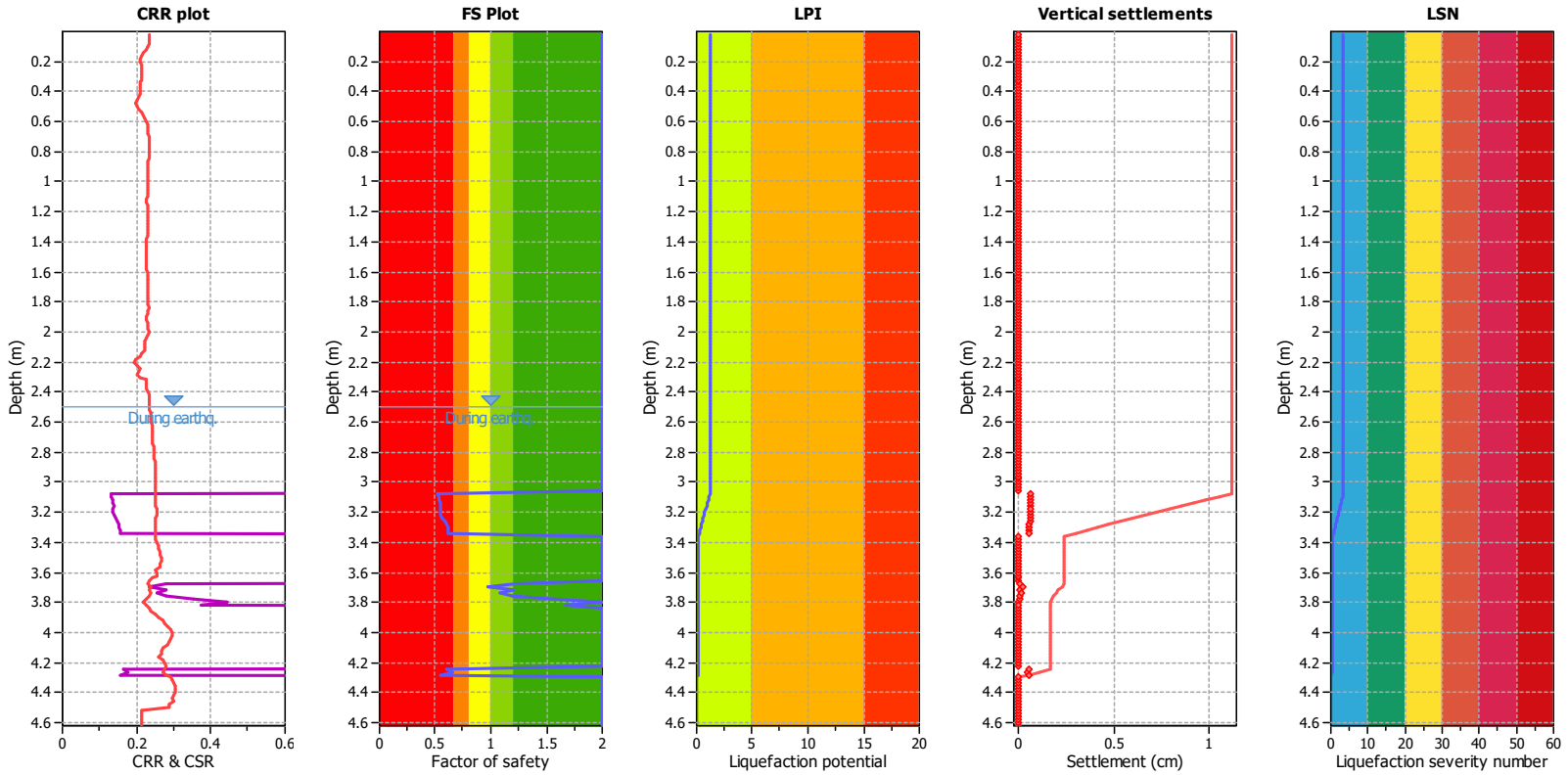
Project: **Brookvale Residential**
Location: **55 Brookvale Road, Havelock North**

CPT: CPT09
Total depth: 4.62 m



Analysis method:	B&I (2014)	G.W.T. (in-situ):	2.50 m	Use fill:	No	Clay like behavior applied:	.
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	2.50 m	Fill height:	N/A		
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth applied:	No
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	Limit depth:	N/A
Peak ground acceleration:	0.42	Unit weight calculation:	Based on SBT	K_σ applied:	Yes	MSF method:	Method based

CLiq v.3.0.3.4 - CPTU data presentation & interpretation software - Report created on: 25/01/2021, 10:50:42 AM 18
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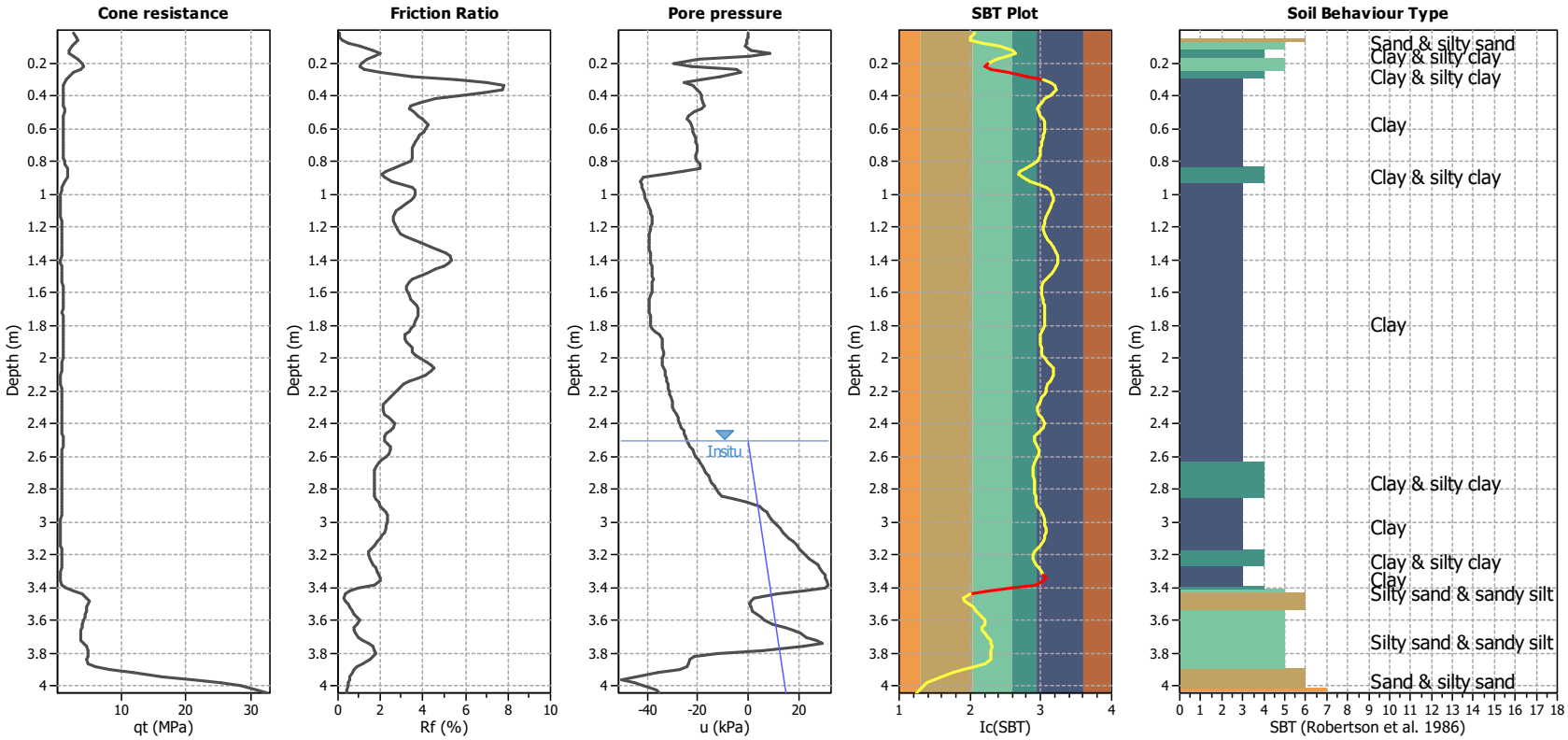
Project: **Brookvale Residential**
Location: **55 Brookvale Road, Havelock North**

CPT: CPT10
Total depth: 4.04 m



Analysis method:	B&I (2014)	G.W.T. (in-situ):	2.50 m	Use fill:	No	Clay like behavior applied:	.
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	2.50 m	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.42	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

CLiq v.3.0.3.4 - CPTU data presentation & interpretation software - Report created on: 25/01/2021, 10:50:42 AM 19
Project file: C:\Users\Andrew Klahn\Initia Limited\Initia Limited Team Site - Projects\P-001006 - Brookvale Residential\Working Material\3. Liquefaction\ULS_Class D_IL2_PGA=0.42g_M=6.5_GWL=2.5m.clq

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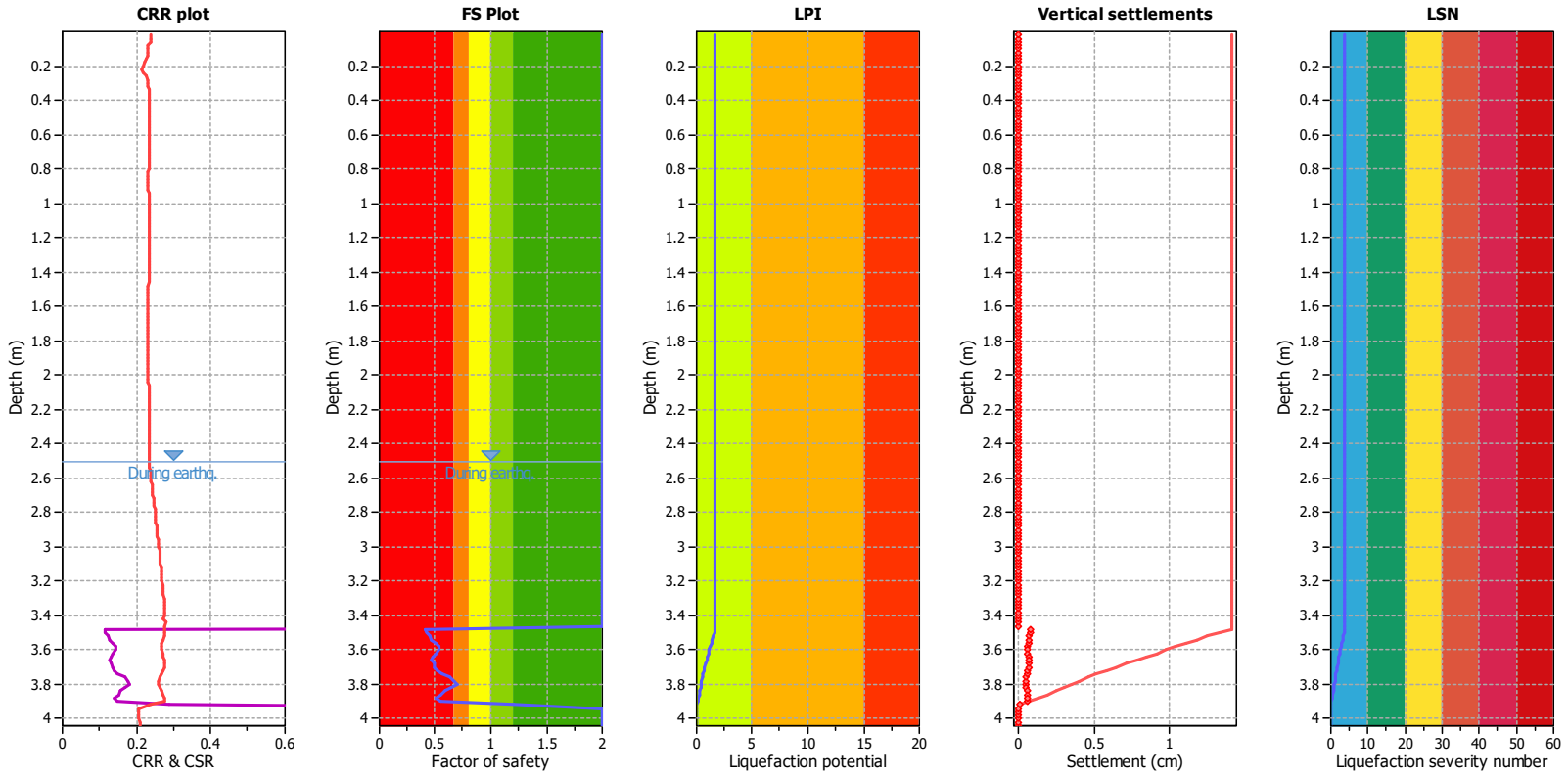
Project: **Brookvale Residential**
Location: **55 Brookvale Road, Havelock North**

CPT: CPT10
Total depth: 4.04 m



Analysis method:	B&I (2014)	G.W.T. (in-situ):	2.50 m	Use fill:	No	Clay like behavior applied:	.
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	2.50 m	Fill height:	N/A		
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth applied:	No
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	Limit depth:	N/A
Peak ground acceleration:	0.42	Unit weight calculation:	Based on SBT	K_σ applied:	Yes	MSF method:	Method based

CLiq v.3.0.3.4 - CPTU data presentation & interpretation software - Report created on: 25/01/2021, 10:50:42 AM 20
Project file: C:\Users\Andrew Klahn\Initia Limited\Initia Limited Team Site - Projects\P-001006 - Brookvale Residential\Working Material\3. Liquefaction\ULS_Class D_IL2_PGA=0.42g_M=6.5_GWL=2.5m.clq

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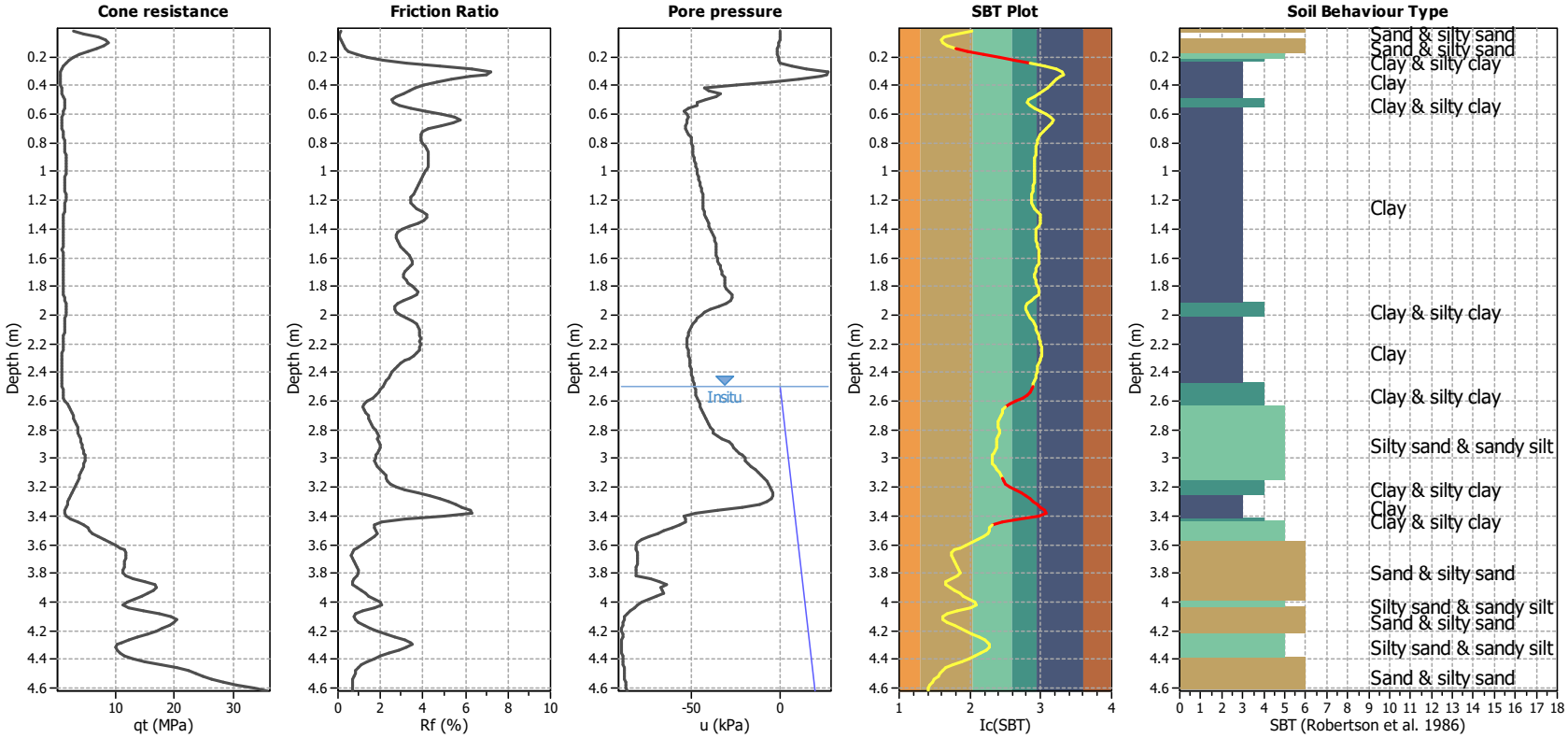
Project: **Brookvale Residential**
Location: **55 Brookvale Road, Havelock North**

CPT: CPT11
Total depth: 4.62 m



Analysis method:	B&I (2014)	G.W.T. (in-situ):	2.50 m	Use fill:	No	Clay like behavior applied:	.
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	2.50 m	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.42	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

CLiq v.3.0.3.4 - CPTU data presentation & interpretation software - Report created on: 25/01/2021, 10:50:43 AM 21
Project file: C:\Users\Andrew Klahn\Initia Limited\Initia Limited Team Site - Projects\P-001006 - Brookvale Residential\Working Material\3. Liquefaction\ULS_Class D_IL2_PGA=0.42g_M=6.5_GWL=2.5m.clq

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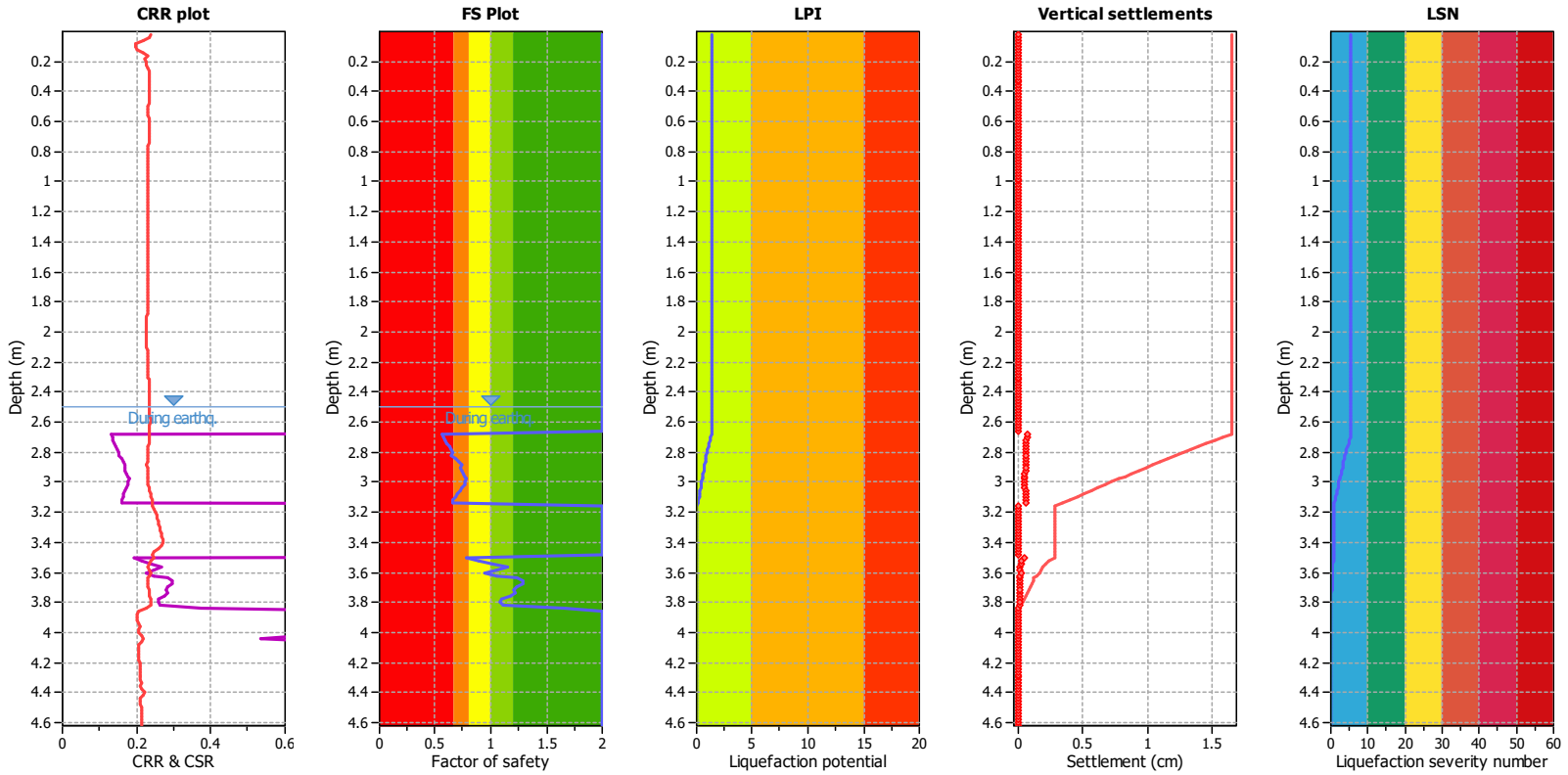
Project: **Brookvale Residential**
Location: **55 Brookvale Road, Havelock North**

CPT: CPT11
Total depth: 4.62 m



Analysis method:	B&I (2014)	G.W.T. (in-situ):	2.50 m	Use fill:	No	Clay like behavior applied:	.
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	2.50 m	Fill height:	N/A		
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth applied:	No
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	Limit depth:	N/A
Peak ground acceleration:	0.42	Unit weight calculation:	Based on SBT	K_σ applied:	Yes	MSF method:	Method based

CLiq v.3.0.3.4 - CPTU data presentation & interpretation software - Report created on: 25/01/2021, 10:50:43 AM 22
Project file: C:\Users\Andrew Klahn\Initia Limited\Initia Limited Team Site - Projects\P-001006 - Brookvale Residential\Working Material\3. Liquefaction\ULS_Class D_IL2_PGA=0.42g_M=6.5_GWL=2.5m.clq

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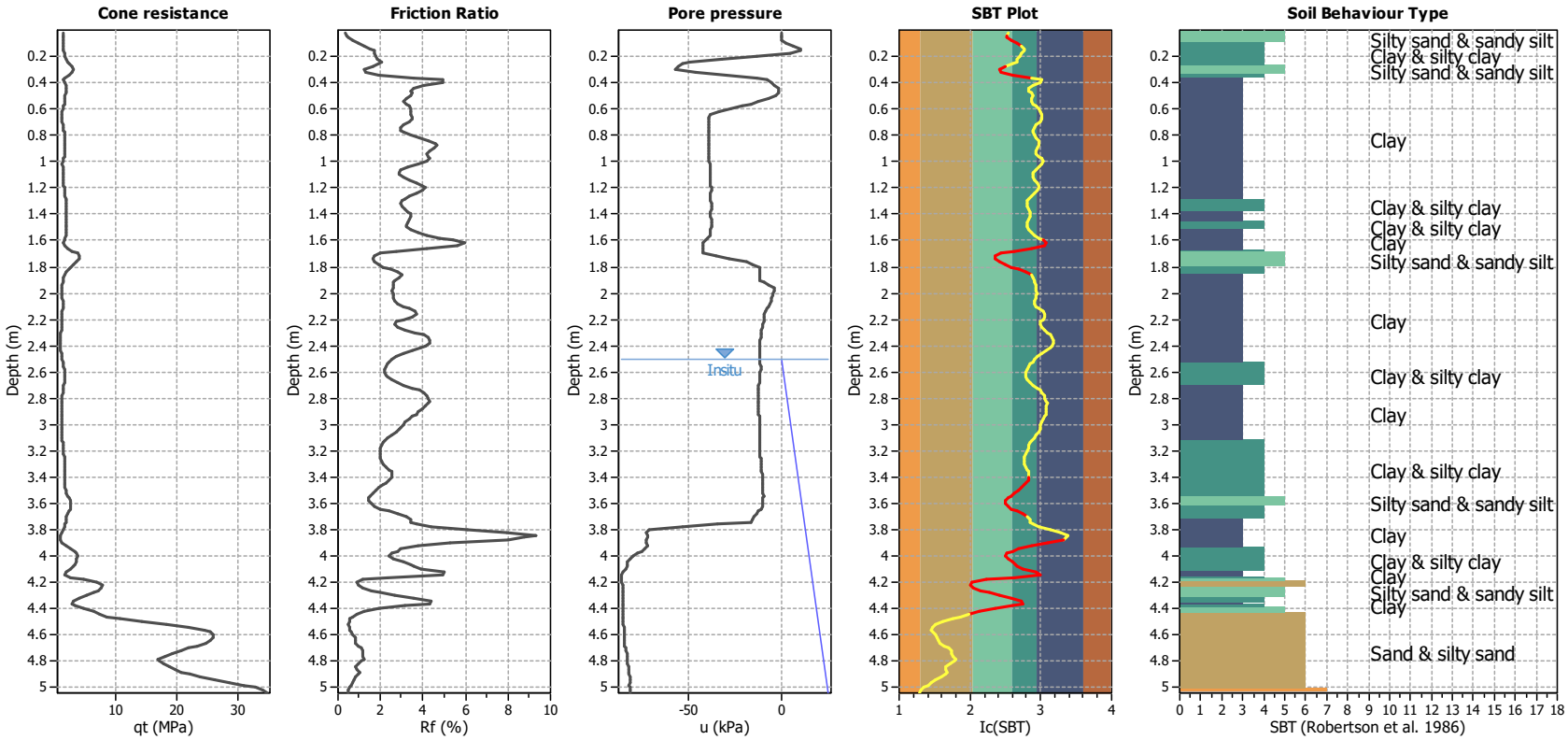
Project: **Brookvale Residential**
Location: **55 Brookvale Road, Havelock North**

CPT: CPT12
Total depth: 5.04 m



Analysis method:	B&I (2014)	G.W.T. (in-situ):	2.50 m	Use fill:	No	Clay like behavior applied:	.
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	2.50 m	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.42	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

CLiq v.3.0.3.4 - CPTU data presentation & interpretation software - Report created on: 25/01/2021, 10:50:43 AM 23
Project file: C:\Users\Andrew Klahn\Initia Limited\Initia Limited Team Site - Projects\P-001006 - Brookvale Residential\Working Material\3. Liquefaction\ULS_Class D_IL2_PGA=0.42g_M=6.5_GWL=2.5m.clq

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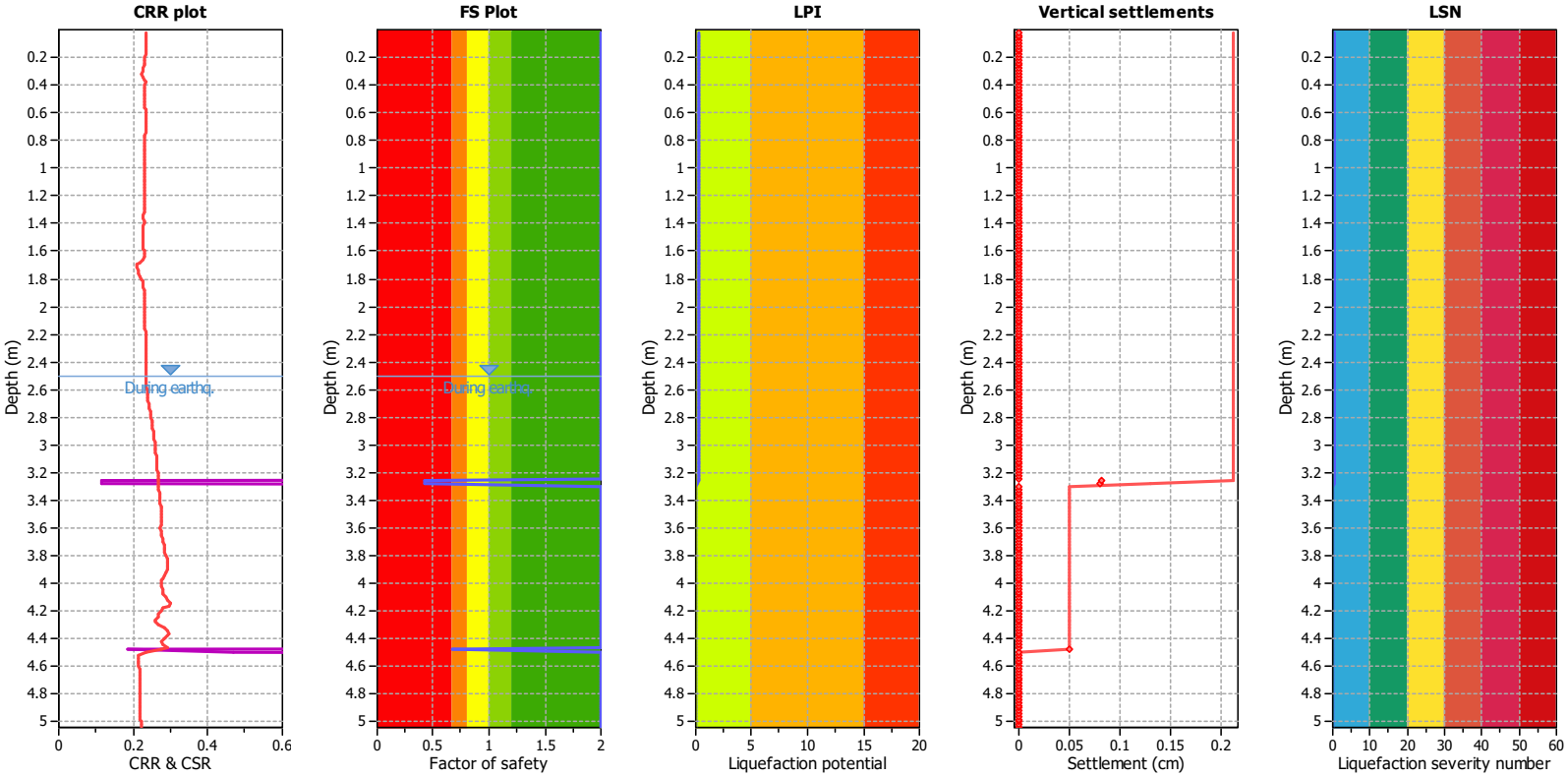
Project: **Brookvale Residential**
Location: **55 Brookvale Road, Havelock North**

CPT: CPT12
Total depth: 5.04 m



Analysis method:	B&I (2014)	G.W.T. (in-situ):	2.50 m	Use fill:	No	Clay like behavior applied:	.
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	2.50 m	Fill height:	N/A		
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth applied:	No
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	Limit depth:	N/A
Peak ground acceleration:	0.42	Unit weight calculation:	Based on SBT	K_σ applied:	Yes	MSF method:	Method based

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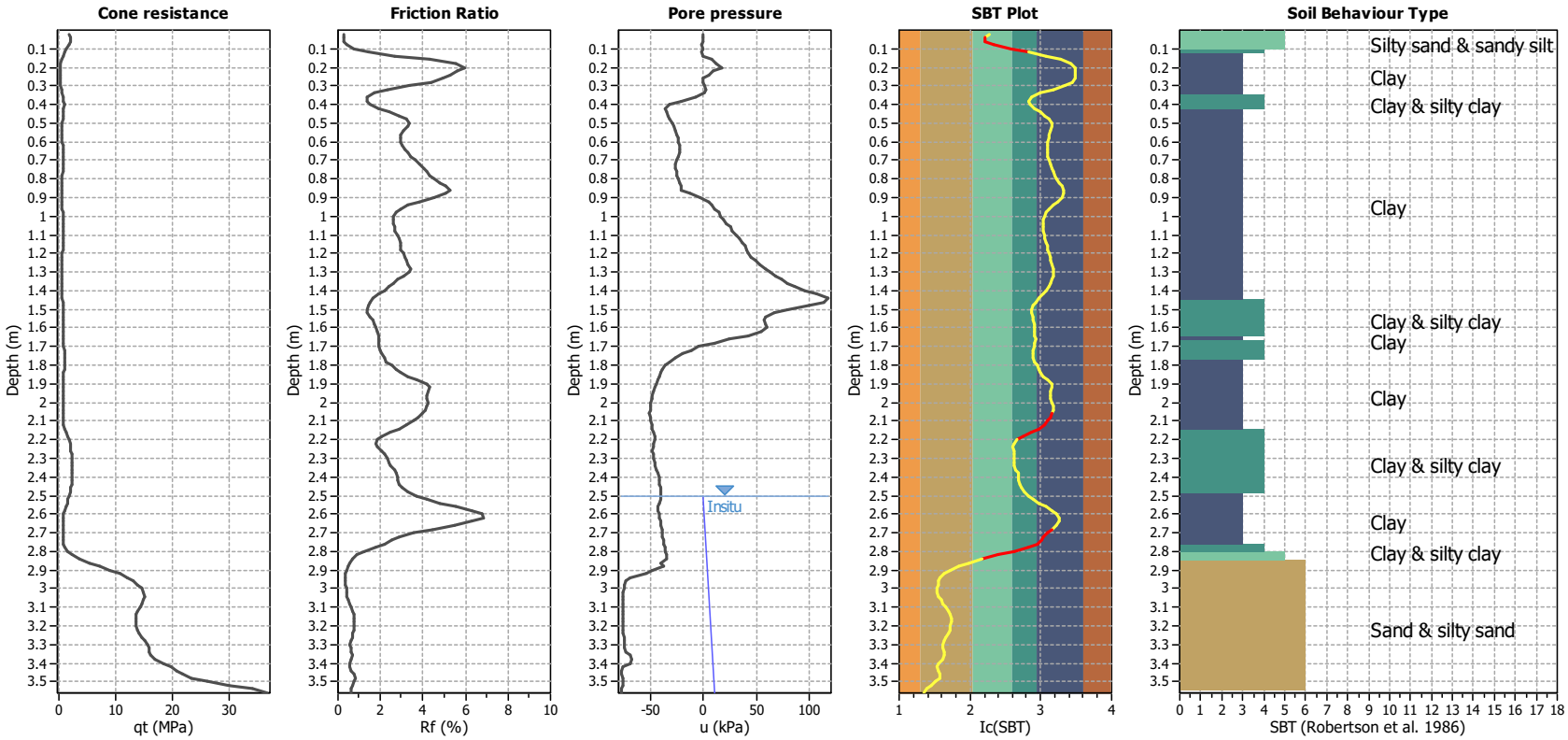
Project: **Brookvale Residential**
Location: **55 Brookvale Road, Havelock North**

CPT: CPT13
Total depth: 3.56 m



Analysis method:	B&I (2014)	G.W.T. (in-situ):	2.50 m	Use fill:	No	Clay like behavior applied:	.
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	2.50 m	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.42	Unit weight calculation:	Based on SBT	K_o applied:	Yes		

CLiq v.3.0.3.4 - CPTU data presentation & interpretation software - Report created on: 25/01/2021, 10:50:44 AM 25
Project file: C:\Users\Andrew Klahn\Initia Limited\Initia Limited Team Site - Projects\P-001006 - Brookvale Residential\Working Material\3. Liquefaction\ULS_Class D_IL2_PGA=0.42g_M=6.5_GWL=2.5m.clq

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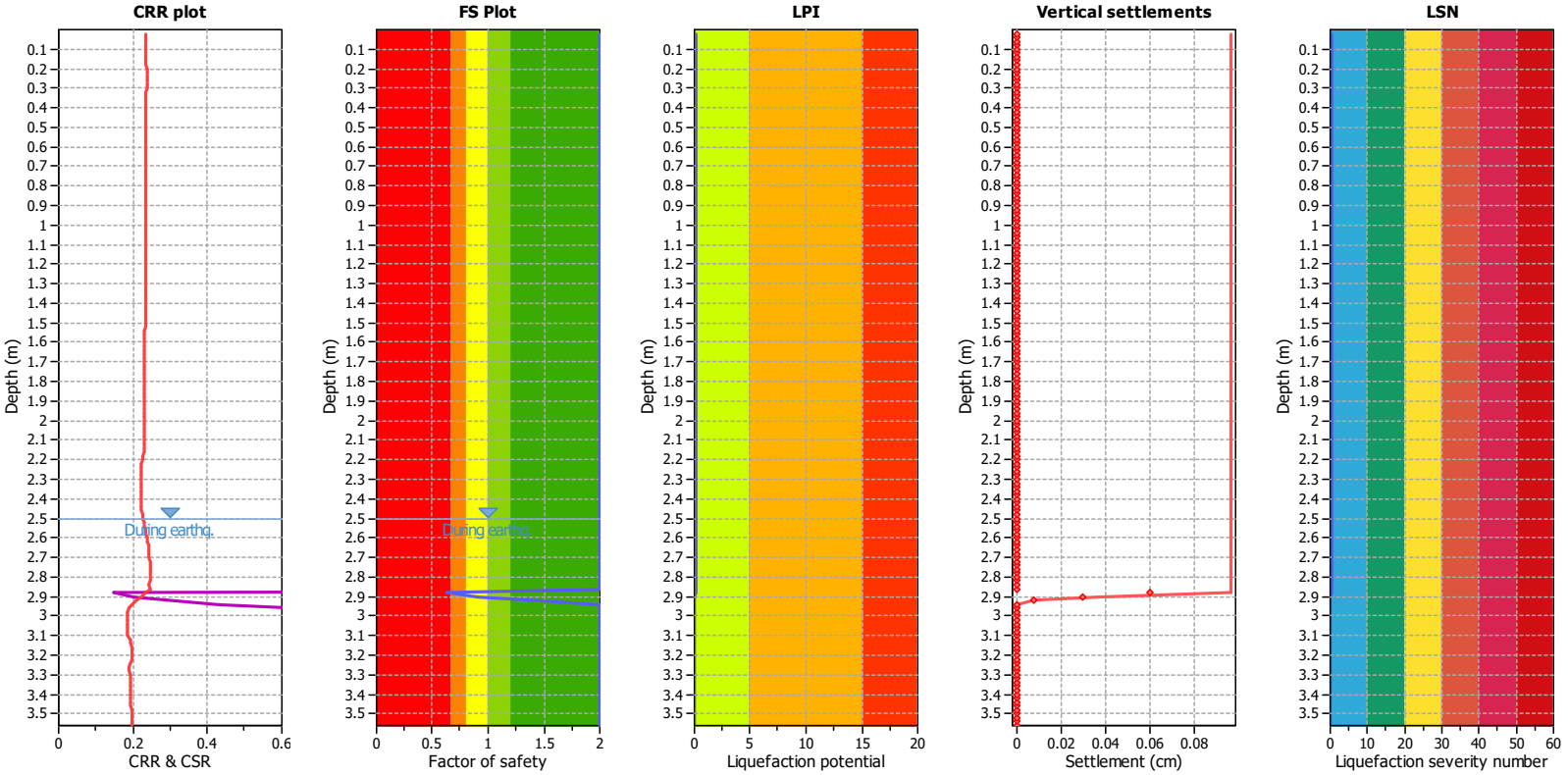
Project: **Brookvale Residential**
Location: **55 Brookvale Road, Havelock North**

CPT: CPT13
Total depth: 3.56 m



Analysis method:	B&I (2014)	G.W.T. (in-situ):	2.50 m	Use fill:	No	Clay like behavior applied:	.
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	2.50 m	Fill height:	N/A		
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth applied:	No
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	Limit depth:	N/A
Peak ground acceleration:	0.42	Unit weight calculation:	Based on SBT	K_σ applied:	Yes	MSF method:	Method based

CLiq v.3.0.3.4 - CPTU data presentation & interpretation software - Report created on: 25/01/2021, 10:50:44 AM 26
Project file: C:\Users\Andrew Klahn\Initia Limited\Initia Limited Team Site - Projects\P-001006 - Brookvale Residential\Working Material\3. Liquefaction\ULS_Class D_IL2_PGA=0.42g_M=6.5_GWL=2.5m.clq

Attachment H