Report

Lincoln Road Flood Risk Assessment

Prepared for Carterton District Council

2 July 2021

Calibre Consulting Ltd
149025

QUALITY ASSURANCE STATEMENT

TASK	NAME	SIGNATURE
Project Manager	Francois Basson	
Prepared by	Swastika Mishra	
Reviewed by	Ian Steer	IS
Approved for Issue by	Derek Roberts	

DOCUMENT CONTROL

ISSUE	DATE	ISSUE DETAILS	AUTHOR	CHECKED	APPROVED
0	02/07/2021	Technical Report – First Issue	Swastika Mishra	IS	DR

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Contents

1. Background

The carriageway in Lincoln Road between Pembroke Street and Victoria Street was widened in 2020/2021 by the contractor Fulton Hogan as part of the Carterton District Council's development works plan.

Widening of the carriageway was primarily in an eastward direction and involved the construction of kerb and channel, a grassed berm, and alterations to the driveways to properties. The centre point of the road, or crown, has been shifted horizontally eastward to ensure that it defines the centreline of the road. The surface level of the road was also raised by approximately 150mm.

The culvert that crosses under the road near No.42 Lincoln Road is at the high point of the kerb and channel. The kerb and channel to the north of the culvert falls from the high point toward Pembroke Road, and the kerb and channel to the south falls toward Victoria Street.

The existing footpath has been left undisturbed, except where localised reshaping was required to tie-in with the new concrete driveways.

Based on Calibre's discussions with the Council, we understand that the road widening, and the associated works have caused some concerns to residents who believe their properties are at a higher risk of flooding. To address these concerns a preliminary study was undertaken, and a range of mitigation measures proposed.

Photograph - The above photograph shows the driveways falling back into properties. This can result in surface water flows entering properties from the footpath, and surface water from within the properties being unable to flow out. The net result is likely to be localised flooding at the property entrances.

2. Consideration of Stormwater Catchments and Mitigation Options

There are three distinct stormwater catchments within the widened length of road each with their own flowpaths for discharge to the Waikakariki Stream. These catchments are:

- Footpath, Grass Berm and Property Catchment.
- Western Road Catchment.
- Eastern Road Catchment.

Of these catchments, the first two are relevant when considering resident concerns,

The Eastern Road Catchment takes surface water from Lincoln Road east of the crown of the road and channels it along the newly constructed kerb and channel to a discharge into the Waikakariki Stream. This catchment operates without any impact on properties and can therefore be disregarded in this discussion.

2.1 Footpath, Grass Berm and Property Catchment

This catchment comprises the new grass berm, the existing footpaths, the new concrete driveways, and those portions of private property that drain toward the existing footpaths. All rainfall (surface water) flowing from the surfaces within this catchment collects in the short valleys formed by the interface of the berms and footpaths. Due to the presence of the new concrete driveways these valleys are “dammed” at intervals along the property frontages with Lincoln Road.

There is currently no outlet for surface water trapped in these valleys so there is a potential for localised flooding.

In the event of prolonged rainfall leading to overtopping of these valleys, the relative heights of the adjoining property boundaries and concrete driveways will determine the flowpath for this surface water. Where the property boundaries are above the height of the driveway, water will flow over the driveway and into the next valley, potentially exacerbating the problem further downstream. Where the driveways are above the level of the property boundaries surface water will overtop the boundary and flow into private property.

For reference, the newly constructed kerb and channel is above the property boundaries and the levels of the driveways so it is unlikely that any of the trapped surface water will flow onto the road.

Calibre undertook a high level survey to record heights of the road, footpaths and kerb and channel on the eastern side of the road, and to record edge of seal, property, and floor level heights for properties on the western side of Lincoln Road. This work does not comprise a survey of sufficient detail to undertake any assessments of stormwater flowpaths for individual properties, however, this information has allowed us to consider a number of corrective measures.
These are as follows:

- *Removal and Reconstruction of Driveways*

  This comprises:

  - Construction of a concrete dish channel and/or a slotted drains (100mm to 150mm wide) along the valley at the interface of the footpath and the grassed berms,
  - Construction of a sump at the southern end of the site near Victoria Street to collect and discharge water from the dish channel/slot drains to the Waikakariki Stream,
  - Reconstruction of the concrete driveways so that there is positive fall away from the property boundaries to the dish channel and/or slot drain, and fall away from the kerb and channel to the dish channel and/or slot drain, and

  The longitudinal fall along the valley created by the footpath/grass berm interface generally follows the natural fall of the land, this being a slope from north to south from the culvert (at approximately No.42 Lincoln Road) of 1 in 130 or 0.8%. This slope is sufficient to adequately drain surface water from areas within this catchment.

The decision whether to install dish channel or slot drains will be dictated by the relative heights of the property boundaries and the kerb and channel. If the height difference is too great a very steep valley would be created that vehicles accessing properties would be required to negotiate.

If the changes of grade are too abrupt the front and rear sections of vehicles may scrape the concrete, or the centre sections of vehicles may bottom out. Careful analysis and reference to design guides for vehicle access to property would need to be referenced.

A dish channel could be installed at driveways if the changes of grade (slope) are within guidelines and are not too abrupt. If these changes are outside of acceptable guidelines a slot drain with a steel grating over the top for drainage may be required.

- *Slot Channels Through the Existing Driveways*

  This comprises

  - Saw cutting and removal of a section of driveway, perhaps 100mm to 150mm wide, and
  - Installation of a slotted drain with a steel mesh grate. ACO drains or similar.

  This option would alleviate the build-up of water in the valley created by the grassed berm and footpath; however, site observations show that the slope on the existing driveways is from the kerb and channel to the property boundaries. As such the section of the driveway on the property side of the slot drain would still discharge surface water into private property, as well as potentially damming water inside properties that would otherwise have flowed across the concrete footpaths.

  For the above reasons this option is not recommended as it may lead to ongoing complaints from property owners.

- *A Piped System*

  This comprises:

  - installing small yard sumps just prior to each driveway,
  - construction of a 225mm diameter stormwater system within the grass berm or along the edge of the carriageway, and connection of the sumps to this system, and
  - construction of a discharge from the stormwater system to the Waikakariki Stream near the corner of Lincoln Road and Victoria Street.

  This option would require excavation through the newly formed driveways or within the newly constructed carriageway and would create weak points in both surfaces. From an asset management perspective this is not desirable.

  This option would also be expensive and a reasonably maintenance intensive option as the yard sumps would need to be cleaned regularly to prevent detritus build-up that could restrict the ability of the sumps to function. The net effect of lack of maintenance would the damming effect that currently exists.

  For the above reasons this option is not recommended.

- *Removal and Reconstruction of the Kerb and Channel*

  The kerb and channel could be removed and reconstructed at levels that do not cause flooding or property access issues, but associated with this would be reconstruction and lowering of the road pavement to ensure there is no scraping or bottoming out at driveways.

  Given the expense and disruption to properties that would result, as well as possible negative public reaction, this is not considered to be a viable option.

2.2 Summary and Recommendation for Footpath, Grass Berm and Property Catchment

In summary the *Removal and Reconstruction of Driveways* is the recommended option, noting that a topographical survey will be required to provide sufficient information for the detailed design.

No costings have been provided for the above options as Calibre is not party to the rates submitted for the Ruamahanga Roads Maintenance Contract.

3. Western Road Catchment

This catchment comprises the Waikakariki Stream floodway*, the road surface of Lincoln Road from the crown of the road westward to the property boundaries and the surface areas of the properties on the western side of the road from No. 42 Lincoln Road to the Waikakariki Stream where it crosses back under Lincoln Road near Victoria Street.

*The Waikakariki Stream is piped under Lincoln Road near No. 42 with this culvert intended to channel surface water from the catchment comprising the farmland and properties to the northwest of Lincoln Road. Calibre has not analysed the size of the culvert and the contributing catchment to determine the level of flood protection afforded by this culvert. Nevertheless, in extreme flood events the culvert may surcharge, and flood water will flow out onto the adjoining properties.

Calibre understands that the flood risk posed by the culvert surcharging is the issue that concerns residents, particularly given the 150mm increase in height of the crown of the road.

3.1 Understanding the Catchment

The question to be answered is: does the raising of the crown of the road by 150mm (approximately) increase the risk of flooding for properties on the western side of the road, and specifically No.'s 42 and 48 Lincoln Road?

Before addressing this question, it is important to understand the topography of the land on the western side of Lincoln Road and the effect that this has on the overland flowpaths for flood water. The construction of dwellings, driveways and fences, and the landscaping of properties affects the natural overland flowpaths of flood waters, however, unless these features are in the form of solid structures fully encircling properties, floodwaters will follow the low points in the land toward the natural drainage point.

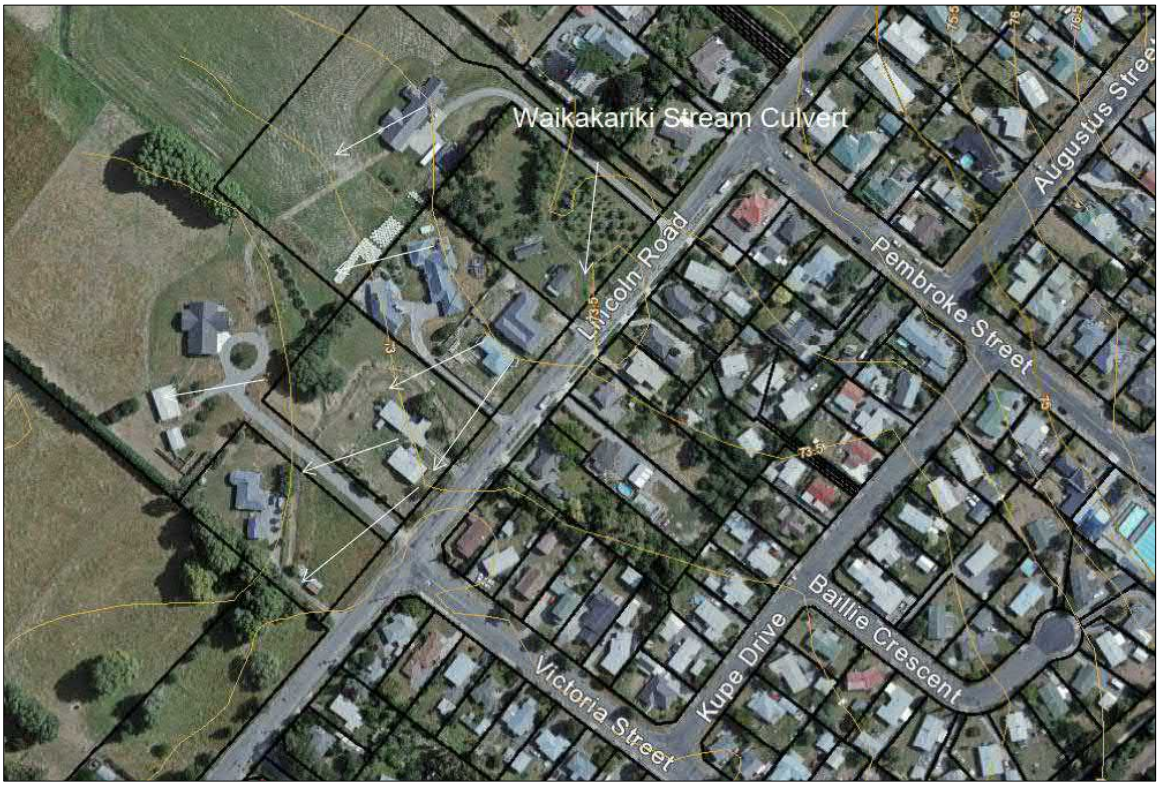
A review of site photographs for Lincoln Road shows that there are no solid structures that are likely to affect the passage of floodwater, although there are depressions in the land and raised driveways that are likely to cause localised flooding.

The aerial photograph below shows the recently widened section of Lincoln Road, prior to the widening, with contour lines extending east and west of the road. This aerial photograph is oriented with north at the top of the page.

The contours indicate that the slope of the surrounding land is generally from north to south-west. The location of the culvert under Lincoln Road near No. 42 is shown.

The major factor affecting the potential for a flood event that affects properties on the western side of Lincoln Road, is the Waikakariki Stream and the culvert under Lincoln Road. If this culvert is blocked or if a storm event exceeds the design capacity of the culvert, there will be flooding in the local area.

The contours, show that there is a "basin" at the entrance to the culvert, roughly defined by the contour line of elevation 73.5 metres. In a flood event and if the culvert is blocked, or where the storm event exceeds the capacity of the culvert, the basin will overtop, and floodwater will spread out across the adjoining land. This floodwater will take the preferential flowpath, that is, it will travel down slope at right angles to the contours of the land. The white arrows shown on the aerial photograph are perpendicular to the contour lines and indicate the preferential flowpaths for floodwaters.



Flowpaths for Floodwater from the Culvert Near No. 42 Lincoln Road

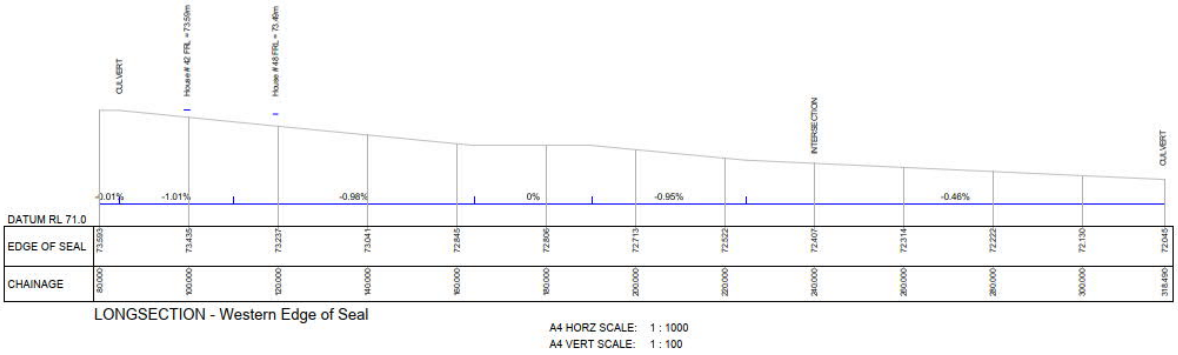
In general and based on the contours shown on the aerial photograph, it can be expected that floodwaters will spread out south-westward and follow the contours of the land toward the Waikakariki Stream.

Surface water from Lincoln Road previously flowed westward from the crown of the road, to a shallow swale drain/table drain that was probably formed when the road was constructed, see the photograph directly below. The purpose of this drain was to collect and channel surface water from the road and adjoining land south to the Waikakariki Stream.

Photograph - The swale drain/table drain referred to above is evident along the current fenceline. Further south of this location it enters undulating land and is not visible.

Some of the floodwater from a blockage of the culvert would follow the route of the swale drain/table drain southwards toward the Waikakariki Stream. Localised flooding would occur due to the undulating nature of the ground and due to raised driveways that cross the flood route.

Calibre undertook a high-level survey to record heights of the crown of the road, the edge of seal and the floor levels (top of step) of numbers 42 and 48 Lincoln Road. These levels are shown below.



Detail 1 - Longsection of the Western Side of Lincoln Road from North to South

The grey line shows the edge of seal, approximately 150mm above adjoining property levels, and the short blue dashes the relative heights of the floor levels of No.'s 42 and 48 Lincoln Road in relation to the edge of seal.

At the right-hand end of the longsection is the ground level at the edge of the Waikakariki Stream after it crosses back to the western side of Lincoln Road, near Victoria Street. The height differential between this level and the ground level at the edge of the culvert by No. 42 Lincoln Road, assuming the shoulder height is 150mm, is approximately 1.2 metres. The crown of the road is approximately 90mm above the edge of seal.

Calibre's survey shows that the average longitudinal fall is 1 in 125 or 0.8% from north to south. This is the route that floodwaters would follow.

3.2 Effect of Widening of Lincoln Road on Freeboard within Properties

As above, the preferential flowpath for floodwater from the road, the high-level overflow from a blocked/backed up culvert, and from the properties adjoining the road will be north to south along the shallow swale and south-west across adjoining farmland.

It is unlikely that floodwater would backup and flow across the crown of the road in front of No.'s 42 and 48 Lincoln Road given the natural slope of the land, and unless there was a very significant obstruction affecting not only the swale, but overland flow to the south-west.

For clarity, such an obstruction could only be a structure fully encircling these properties and built to a height at or above that of the crown of the road. This is highly unlikely.

Nevertheless, and to determine whether the crown of the road could backup floodwater to the point where it enters these properties, we provide the following table. This shows the levels of the top of the steps at each dwelling (assumed to be floor level), the edge of seal and the crown of the road. For flood water to enter dwellings, assuming a significant obstruction in the flowpaths, the crown level of the road would need to be at or above the floor level.

Once water reaches the crown of the road it would spill over and flow down the kerb and channel on the eastern side of the road.

Location	Floor Level (RL metres)	Edge of Seal (RL metres)	Crown of Road (RL metres)	Freeboard from Crown to Floor Level (metre)
No. 42 Lincoln Road	73.59	73.44	73.53	+0.06
No. 48 Lincoln Road	73.49	73.24	73.33	+0.16

Table – Freeboard Between Floor Levels and the Crown of the Road

The last column on the right of the table shows the "freeboard" or height of the floors of the two dwellings **above** the crown level of the road. In both instances this is "positive" meaning that the floor levels are above the crown, although not by the 200mm mentioned in correspondence by one of the property owners as being required for insurance purposes.

The figures shown above must be taken in the context in which they are provided, this being that unless there is a significant obstruction damming floodwater from following the natural falls of the land, it is extremely unlikely for such a build-up to occur.

3.3 Addressing Residents' Concerns

Notwithstanding the above, it is understandable that residents have been concerned by the raising of the crown of the road. Although the land adjoining the road has a positive north to south slope, the swale drain at the edge of the road is poorly defined due to the undulating nature of the land. Localised flooding may occur. The swale drain is also crossed by vehicle crossings that will block flows and cause localised flooding.

If Council wished to alleviate resident concerns, it is suggested that the swale drain/table drain be reformed as a wide shallow "V" drain within properties, at perhaps 2 to 3 metres in width and 100mm to 150mm in depth, and that culverts be installed beneath driveways to ensure that flows are unimpeded for the full length of the widened road. A swale will provide a defined channel for floodwater to follow, and if culverts are provided, this water can be channelled to the Waikakariki Stream near Victoria Street.

A wide shallow swale of the dimensions above and regrown in grass will have little, if any visible impact, on the landform.

The effectiveness of a reformed swale and new culverts depends very much on ongoing maintenance. If obstructions such as trees and other features are placed in the swale, or if silt accumulates in the culverts, localised flooding will occur.

The requirement for, and creation of, easements for a swale drain and culverts has not been addressed as this is an issue for Council to consider.

4. Summary Western Road Catchment

Given the natural slope of the land between the culvert near No. 42 Lincoln Road and the Waikakariki Stream near Victoria Street, it is unlikely that the raising of the crown by 150mm during the widening of Lincoln Road has increased the flood risk to properties on the western side of the road. For flooding to occur, a significant impediment to overland surface water flows would be required to the south-west of these properties. This would need to raise the retained floodwaters to a height of or above the crown of the road. Even if this were to occur, the crown of the road opposite No.'s 42 and 48 Lincoln Road is below the floor levels of these dwellings by 60mm and 160mm respectively, and so flood water would overtop the road and flow down the eastern kerb and channel before inundating these dwellings.

The land on the western side of Lincoln Road was shaped, possibly when the road was constructed, to include a swale drain/table drain to cater for road drainage. This is now poorly formed, and its route is undulating and crossed at intervals by driveways. Localised flooding in heavy rainfall is likely to occur.

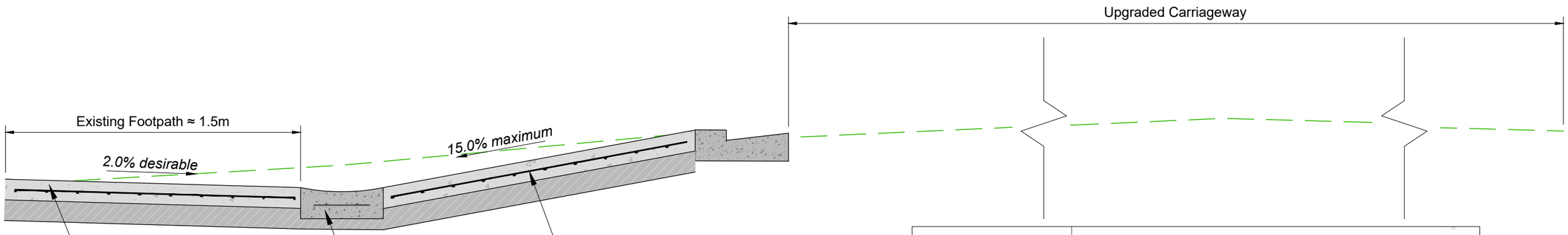
To alleviate resident concerns, it is suggested that this swale drain/table drain be reformed as a low, shallow "V" drain within properties and that culverts be installed at vehicle crossings to provide an unimpeded flowpath for floodwater.

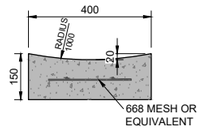
No costings have been provided for the above options as Calibre is not a party to the rates submitted for the Ruamahanga Roads Maintenance Contract.

The requirement for, and creation of, easements for a swale drain and culverts has not been addressed as this is an issue for Council to consider.

Please note we have not considered the presence of underground services and identified whether they are likely to have an impact on the options outlined above. This will need detailed work and is beyond the scope of this flood risk assessment.

Appendix A Option 1





STD FOOTPATH DISHED CHANNEL

Scale 1:10

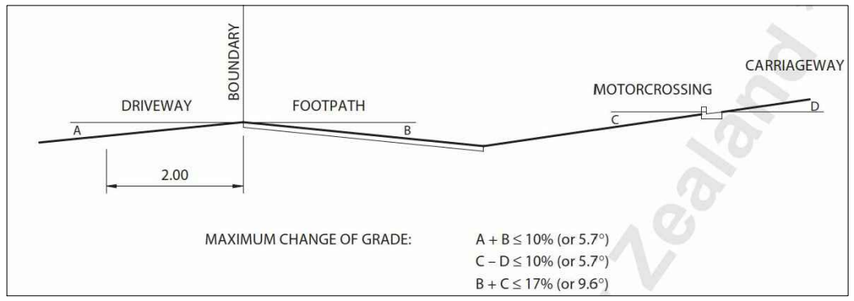
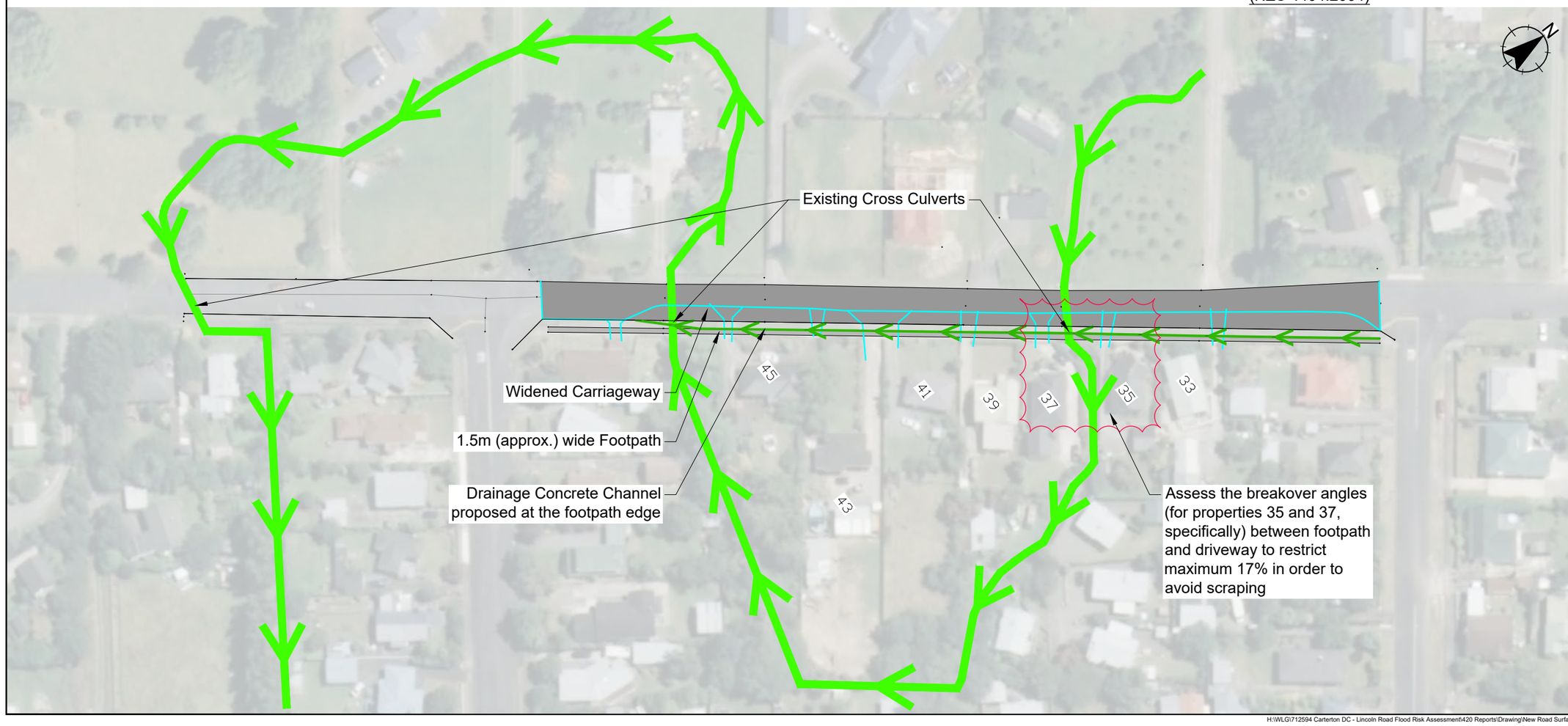


FIGURE 3.9 - MAXIMUM BREAKOVER ANGLE FOR VEHICULAR ACESS TO PROPERTY (NZS 4404:2004)



INFORMATION ONLY
NOT FOR ISSUE

Revision		App	Date
A FOR INFORMATION ONLY		FB	21.06.21
Surveyed	DR		05/21
Designed	SM		06/21
Drawn	SM		06/21
Reviewed	FB		06/21
Approved	FB		06/21

Client

TE KAUNIHERA-Ā-ROHE O TARATAHI CARTERTON DISTRICT COUNCIL

Project Title

LINCOLN ROAD
FLOOD RISK ASSESSMENT

Sheet Title

LAYOUT AND SECTION
OPTION 1
(PREFERRED OPTION)

Level 13, Kordia House
109-125 Willis Street, Wellington 6011
calibregroup.com
+64 4 384 2029

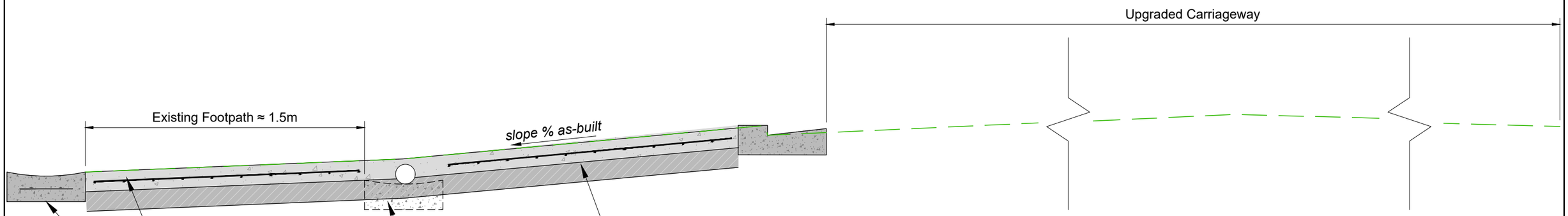
calibre

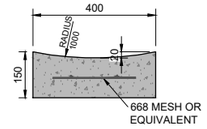
Scale (A1 Original) 1:600 **(A3)** 1:1200

12 6 0 12 24 36 m

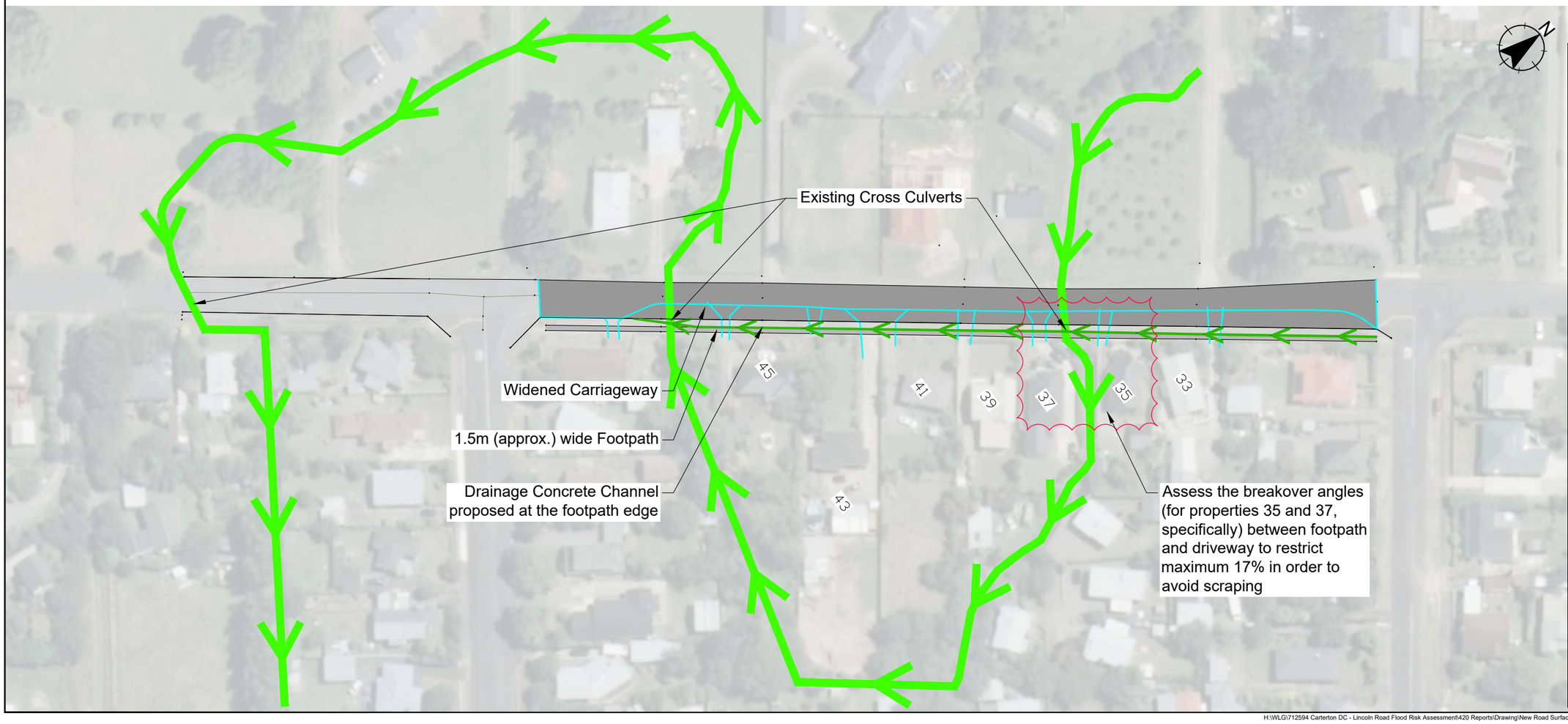
Project No	Sheet	Revision
712594	C01	A

Appendix B Option 2





STD FOOTPATH
DISHED CHANNEL
Scale 1:10



INFORMATION ONLY
NOT FOR ISSUE

Revision		App	Date
A FOR INFORMATION ONLY		FB	21.06.21
Surveyed	DR		05/21
Designed	SM		06/21
Drawn	SM		06/21
Reviewed	FB		06/21
Approved	FB		06/21

Client
TE KAUNIHERA-Ā-ROHE O TARATAHI
CARTERTON DISTRICT COUNCIL

Project Title
LINCOLN ROAD
FLOOD RISK ASSESSMENT

Sheet Title
LAYOUT AND SECTION
OPTION 2
(IF DRIVEWAY SCRAPING ISSUE PERSISTS)

Level 13, Kordia House
109-125 Willis Street, Wellington 6011
calibregroup.com
+64 4 384 2029

calibre

Scale (A1 Original) 1:600 **(A3)** 1:1200

12 6 0 12 24 36 m

Project No	Sheet	Revision
712594	C02	A

Appendix C GIS Contour Map

LocalMaps Print

April 21, 2021

1:4,000

0 90 180 360 Metres

Appendix D Existing Services

Enquiry Confirmation Sheet

Job No 1841606

Phone: 0800248344
www.beforeudig.co.nz

Caller Details

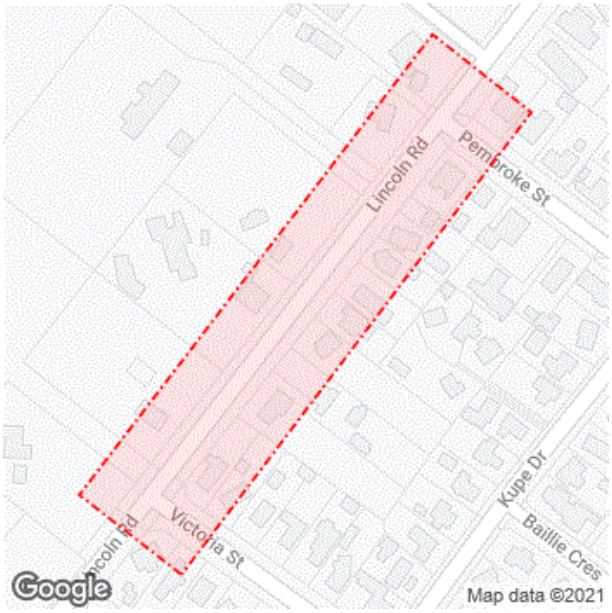
Contact: Ms Swastika Mishra
Company: Calibre
Address: Calibre Te Aro, Kordia House, Level 13/109/1
Te Aro Wellington City 6011

Caller Id: 148705
Mobile: Not Supplied
Email: Swastika.Mishra@calibregroup.com

Phone: 048947822
Fax: Not Supplied

Dig Site and Enquiry Details

WARNING: The map below only displays the location of the proposed dig site and does not display any asset owners' pipe or cables.
The area highlighted has been used only to identify the participating asset owners, who will send information to you directly.



User Reference: Lincoln Road
Working on Behalf of:
Carterton District Council

Enquiry Date: 26/05/2021
Start Date: 29/05/2021
End Date: 31/05/2021

Address:
Lincoln Road
Carterton Carterton 5713

For Planning: Yes
Onsite Activity: Major Earthworks Cutting/Filling
Plans Requested Yes
Workplace Location: Both
Location in Road: CarriageWay,Footpath,Berm
Locate Requested: No
Preferred Locate Date: Not Supplied

- Check that the location of the dig site is correct. If not you must submit a new enquiry.
- Should the scope of works change, or plan validity dates expire, you must submit a new enquiry.
- Do NOT dig without plans. Safe excavation is your responsibility. If you do not understand the plans or how to proceed safely, please contact the relevant asset owners.

Notes/Description of Works:
Please provide the pdfs for the underground and overhead utilities in the marked area.

Your Responsibilities and Duty of Care

- If plans are **not** received within **2 working days**, contact the asset owners directly & quote their Sequence No.
- ALWAYS perform an onsite inspection for the presence of assets. Should you require an onsite location, contact the asset owners directly. Please remember, plans do not detail the exact location of assets.
- Pothole to establish the exact location of all underground assets using a hand shovel, before using heavy machinery.
- Ensure you adhere to any legislative requirements regarding Duty of Care and safe digging requirements.
- If you damage an underground asset you MUST advise the asset owner immediately.
- By using the beforeUdig service, you agree to our privacy policy and the terms and conditions set out at **www.beforeudig.co.nz**
- **For more information about the beforeUdig service, visit www.beforeudig.co.nz**

Asset Owner Details

The assets owners listed below have been requested to contact you with information about their asset locations within 2 working days.
Additional time should be allowed for information issued by post. It is **your responsibility** to identify the presence of any underground assets in and around your proposed dig site. Please be aware, that not all asset owners are registered with the beforeUdig service, this confirmation will not provide details of those asset owners so it is **your responsibility** to identify and contact directly any asset owners not listed here. Known Non-Member Utilities are listed on the beforeUdig website under the 'Utilities & Members' Tab.
Any asset owner name listed below with the status 'Not Notified' is an associate member of beforeUdig which only notifies you of their presence and you will need to contact them directly.

Where an Asset Locate has been requested, Utilities will endeavour to respond to your Preferred Locate Date, where possible. Asset owners highlighted by asterisks ** **Do Not** supply plans and/or information regarding the existence of underground assets on private property. # Asset owners highlighted with a hash request you reference their attachment for further instructions on how to obtain plans.

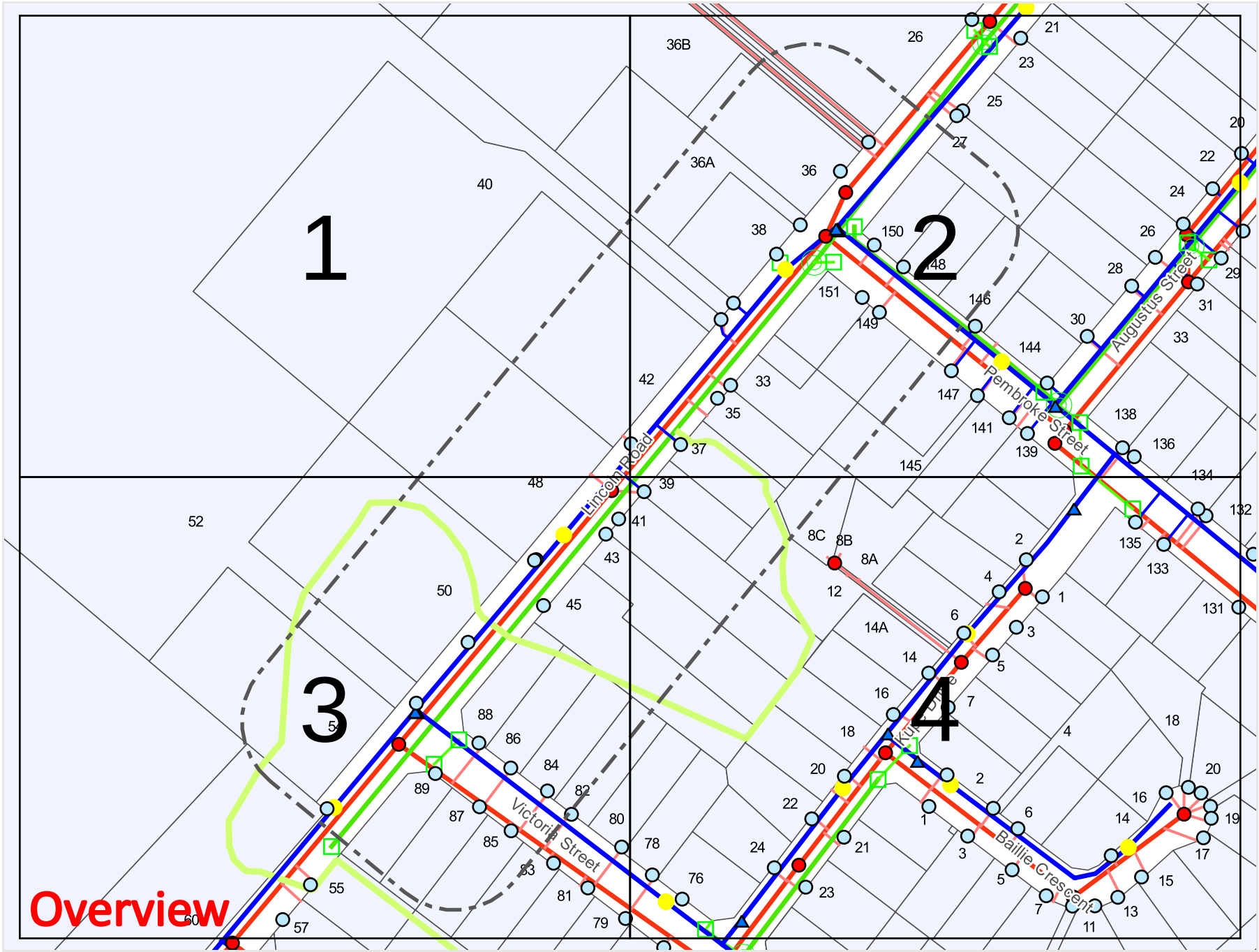
Seq. No.	Authority Name	Phone	Status
9400637	Carterton District Council - CAR Only	0277525666	CAR Not Required
9400638	Carterton District Council - Water & Waste	0272806281	Notification Sent
9400640	Chorus **	0800822003	Notification Sent
9400641	LINZ	044983835	Notification Sent
9400639	Powerco Electricity - Detect Services	0274454860	Notification Sent

END OF UTILITIES LIST

CARTERTON DISTRICT COUNCIL

Sequence No: 9400638
Job No: 1841606
Location: Lincoln Road, Carterton, Wellington 5713

beforeUdig .co.nz



Legend

Utility points
- Gabion basket
- Manhole
- Soakpit
- Sump
- Inspection point
- Sewer valve
- Lamphole
- Manhole
- Water valve
- Water toby
- Air valve
- Hydrant

Utility lines
- Open channel
- Crossing
- Cutoff drain
- Main
- Lateral
- Sump lead
- Rising main
- Rising lateral
- Sewer main
- Lateral
- Water main
- Rider main
- Lateral

Water race - Taratahi
- Pipe
- Stream
- Water Race

Water race - Carrington
- Pipe
- Stream
- Water Race
- Wooden Box

N

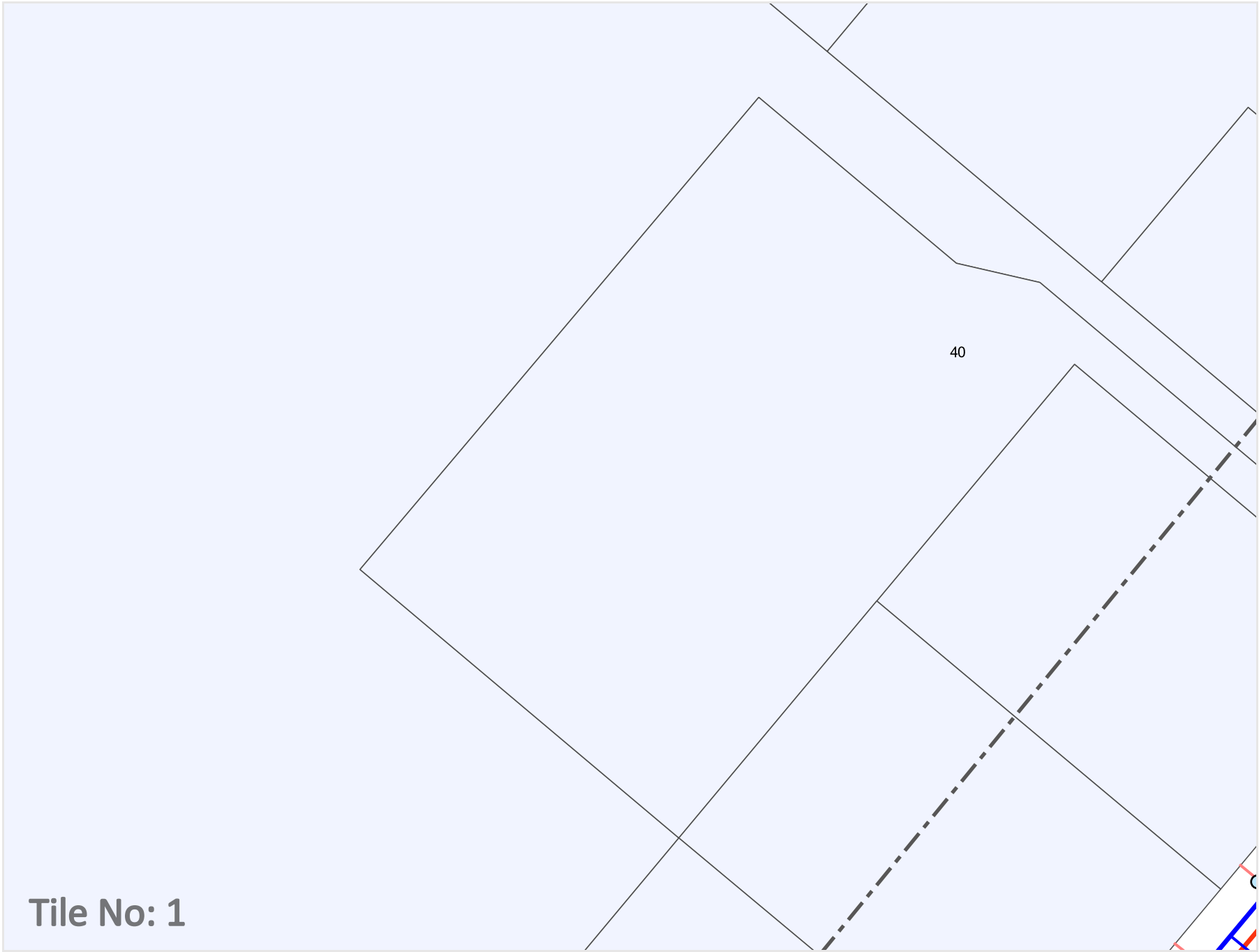
Scale: 1:2050
Expires: 23 Jun 2021

DISCLAIMER: While reasonable measures have been taken to ensure the accuracy of the information contained in this plan response, neither Carterton District Council nor PelicanCorp shall have any liability whatsoever in relation to any loss, damage, cost or expense arising from the use of this plan response or the information contained in it or the completeness or accuracy of such information. Use of such information is subject to and constitutes acceptance of these terms.

CARTERTON DISTRICT COUNCIL

Sequence No: 9400638
Job No: 1841606
Location: Lincoln Road, Carterton, Wellington 5713

beforeUdig.co.nz



Legend

Utility points
- Gabion basket
- Manhole
- Soakpit
- Sump
- Inspection point
- Sewer valve
- Lamphole
- Manhole
- Water valve
- Water toby
- Air valve
- Hydrant

Utility lines
- Open channel
- Crossing
- Cutoff drain
- Main
- Lateral
- Sump lead
- Rising main
- Rising lateral
- Sewer main
- Lateral
- Water main
- Rider main
- Lateral

Water race - Taratahi
- Pipe
- Stream
- Water Race

Water race - Carrington
- Pipe
- Stream
- Water Race
- Wooden Box

N

Scale: 1:1000
Expires: 23 Jun 2021

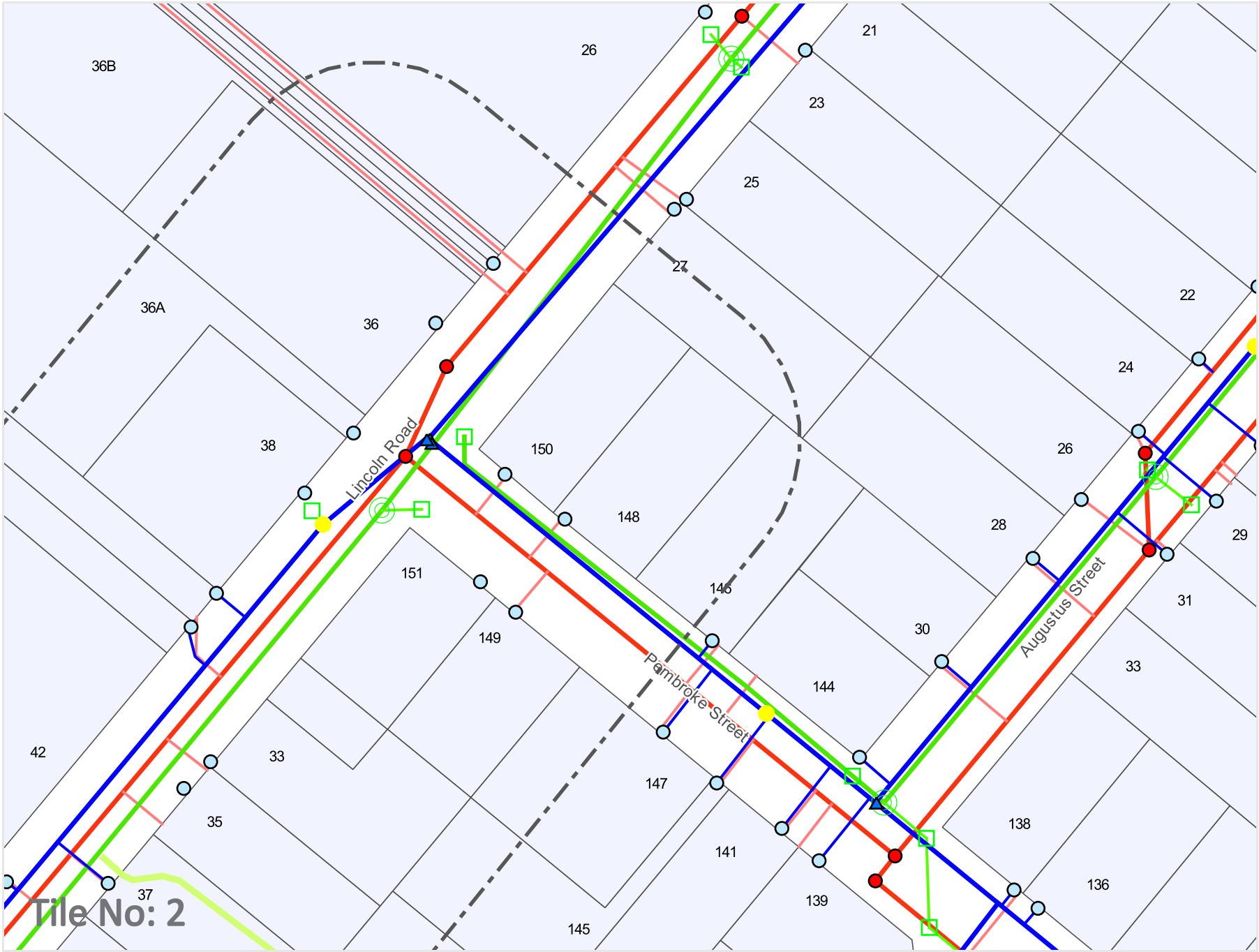
DISCLAIMER: While reasonable measures have been taken to ensure the accuracy of the information contained in this plan response, neither Carterton District Council nor PelicanCorp shall have any liability whatsoever in relation to any loss, damage, cost or expense arising from the use of this plan response or the information contained in it or the completeness or accuracy of such information. Use of such information is subject to and constitutes acceptance of these terms.

Tile No: 1

CARTERTON DISTRICT COUNCIL

Sequence No: 9400638
Job No: 1841606
Location: Lincoln Road, Carterton, Wellington 5713

beforeUdig.co.nz



Legend

Utility points
- Gabion basket
- Manhole
- Soakpit
- Sump
- Inspection point
- Sewer valve
- Lamphole
- Manhole
- Water valve
- Water toby
- Air valve
- Hydrant

Utility lines
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N

Scale: 1:1000
Expires: 23 Jun 2021

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CARTERTON DISTRICT COUNCIL

Sequence No: 9400638
Job No: 1841606
Location: Lincoln Road, Carterton, Wellington 5713

beforeUdig.co.nz

Tile No: 3

Legend

Utility points
- Gabion basket
- Manhole
- Soakpit
- Sump
- Inspection point
- Sewer valve
- Lamphole
- Manhole
- Water valve
- Water toby
- Air valve
- Hydrant

Utility lines
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- Crossing
- Cutoff drain
- Main
- Lateral
- Sump lead
- Rising main
- Rising lateral
- Sewer main
- Lateral
- Water main
- Rider main
- Lateral

Water race - Taratahi
- Pipe
- Stream
- Water Race

Water race - Carrington
- Pipe
- Stream
- Water Race
- Wooden Box

N

Scale: 1:1000
Expires: 23 Jun 2021

CARTERTON DISTRICT COUNCIL

Sequence No: 9400638
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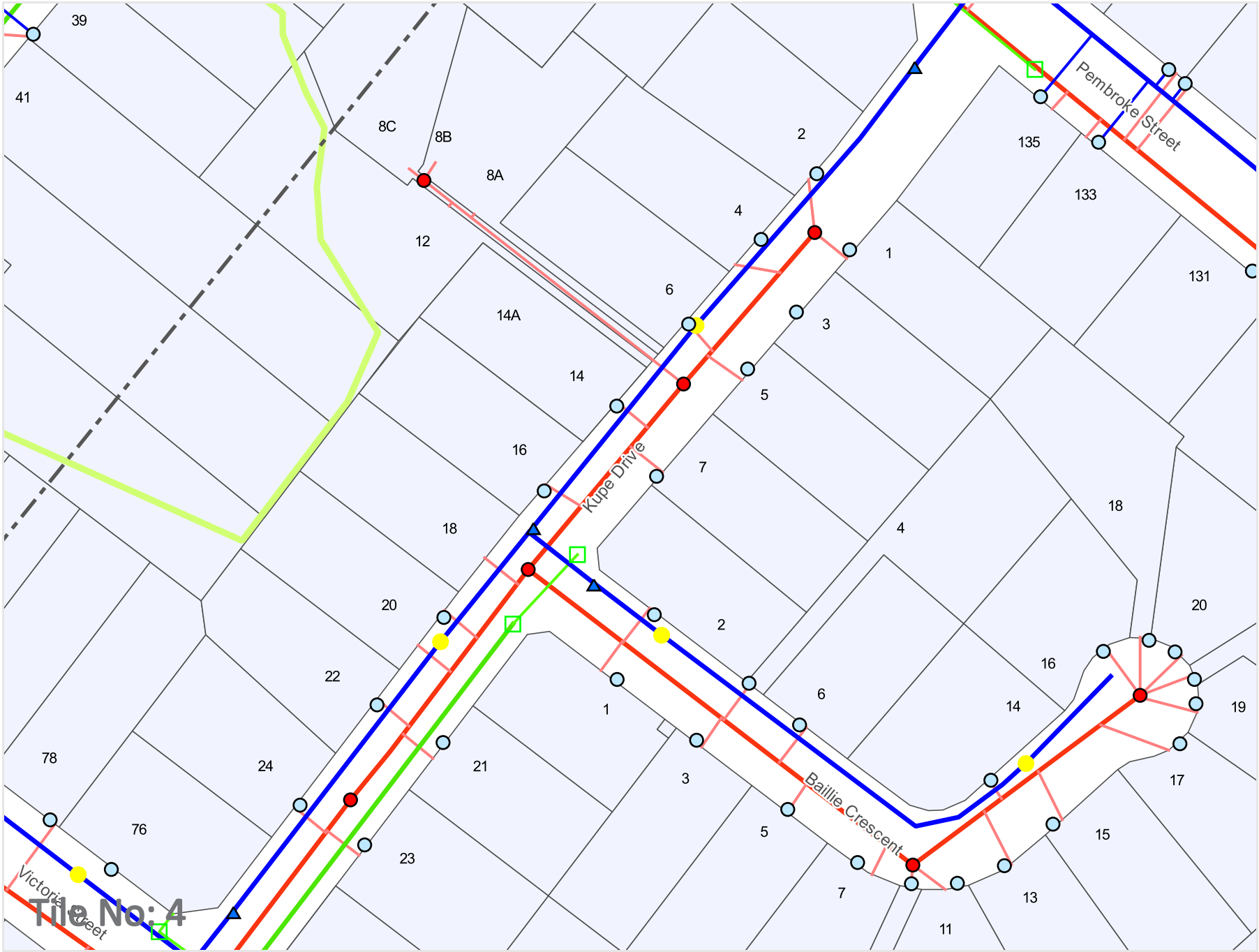
Location: Lincoln Road, Carterton, Wellington 5713

beforeUdig.co.nz



Legend

Utility points
- Gabion basket
- Manhole
- Soakpit
- Sump
- Inspection point
- Sewer valve
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- Water valve
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Utility lines
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Water race - Taratahi
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Water race - Carrington
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N

Scale: 1:1000
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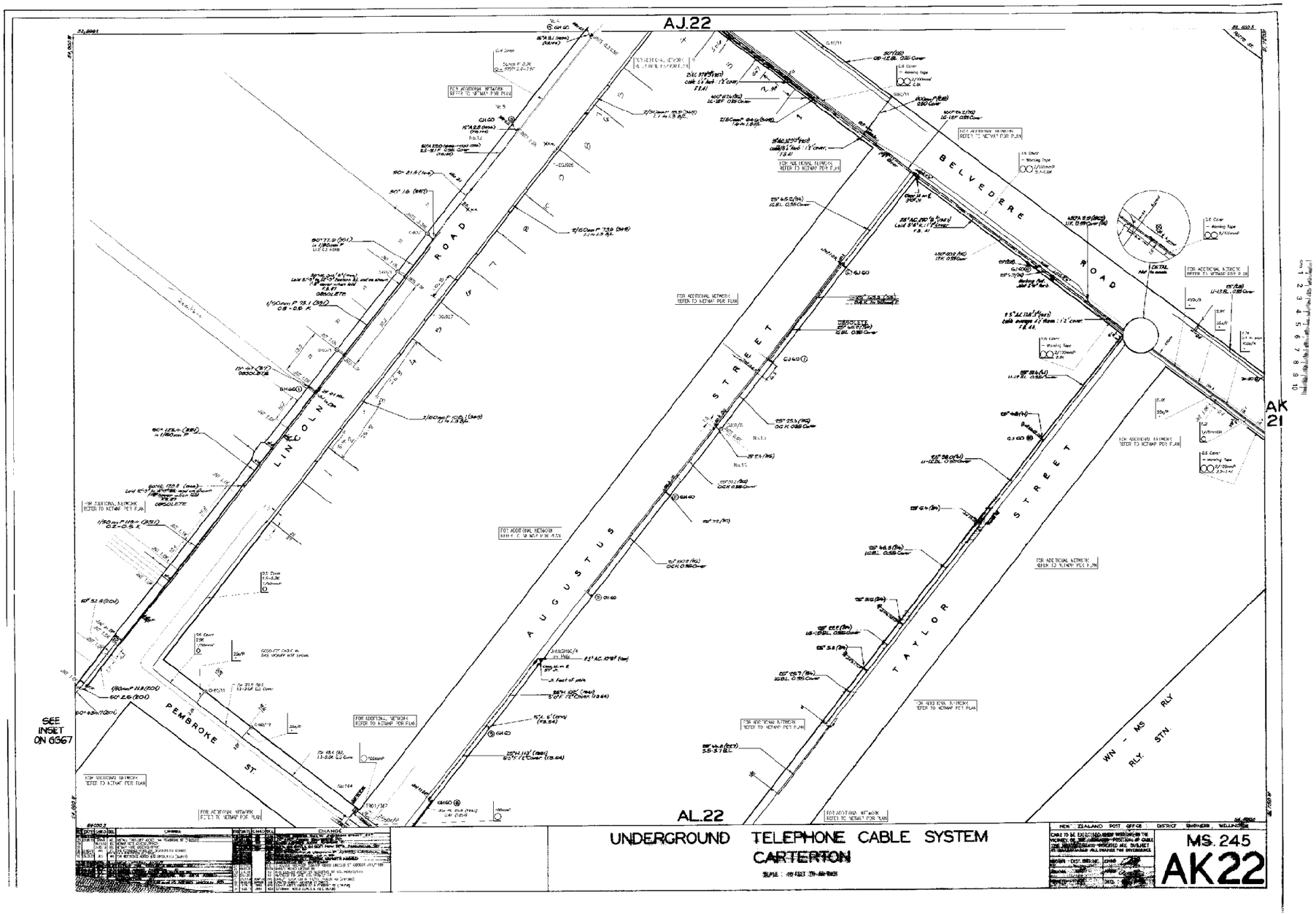
CHORUS

WARNING: Buried services are widespread and it should be assumed that they are present until it is proven otherwise.
Cables should be expected to be found at ANY depth.
In most instances Chorus plans do NOT show house service feeds on private property.
Refer to cover letter provided with your request for additional information - use all plans provided in conjunction with each other
You are responsible for interpreting the information provided and should refer to Worksafe.govt.nz for the 'Guide for safety with underground services'
For assistance contact Chorus Network Protection on 0800 822 003 or if you suspect damage has occurred contact 0800 463 896 opt 2

N

Plan Name	AK22
Plan ID	168494
Version	GV
Current at	26/05/2021



CHORUS

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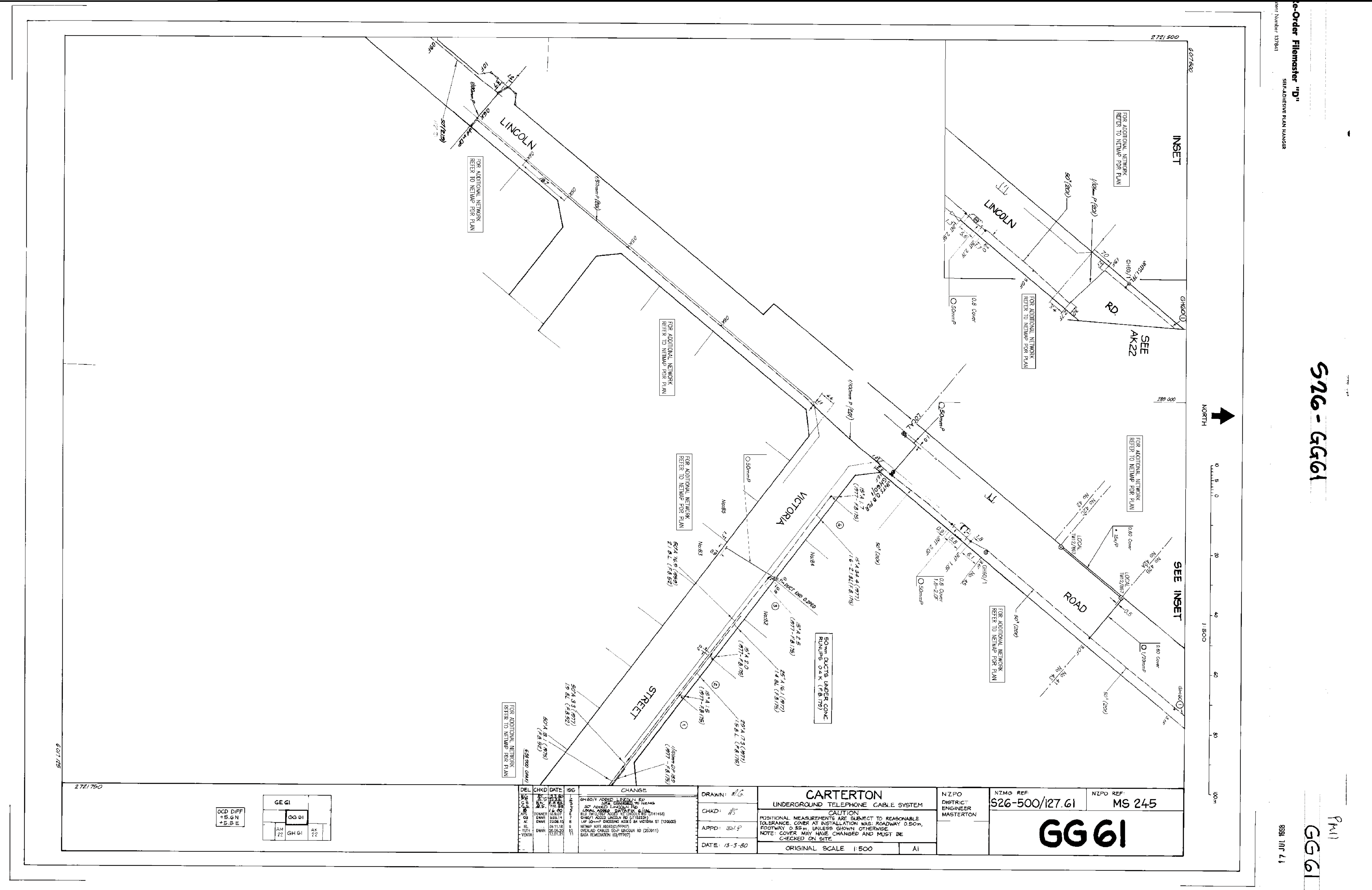
N

Plan Name	GG61
Plan ID	169015
Version	GL
Current at	26/05/2021



Underground Electricity Enquiry Sheet

Date/Time Recd: 26/05/2021 6:22:00 p.m. **Sequence No:** 9400639 **Enquiry No:** 550367

Enquiry Type: ☐ Personal ☐ Mail ☐ Fax ☐ Phone ☑ E Mail

Company: Calibre **Phone:** 048947822

Contact Name: Swastika Mishra **Mobile:** 048947822

Location of Work: Lincoln Road; Carterton

Additional Info on Property: Lincoln Road. Please provide the pdfs for the underground and overhead utilities in the marked area.

Description of Work: Major Earthworks Cutting/Filling

Proposed Commencement Date: 29/05/2021

Information Provided

Electrical Record Plans Showing Cables

☑ 230/400V ☐ 11kV ☐ 22kV ☐ 33kV ☐ 66kV ☐ Comms ☐ Fibre Optic

☐ NO ELECTRICITY IN AREA

Plan	550367 - Lincoln Road Plans.pdf

Strategic Cables in Area? Yes: ☐ No: ☑

Standover may be required: Yes: ☐ No: ☑

Plans Issued to: Swastika Mishra **Date/Time:** 27/05/2021 11:08 AM

On-Site Location Required: Yes: ☐ No: ☑ **Date:** **Time:**

General Comments: GENERATED: 8/8 Plans

Processed By: Nehaa Shah

Conditions

- The purpose of this document is to outline conditions that apply and precautions that should be taken when undertaking excavation work in the vicinity of underground power cables and gas pipes. It must be read in conjunction with the Department of Labour Occupational Safety & Health Service booklet – Guide for Safety with Underground Services
- Information concerning the location of underground Powerco owned electrical cables, gas mains and services is freely available from Powerco and *must* be obtained *prior* to commencing any excavation work
- The information shown on the plans provided relate only to Powerco's *electricity and gas* reticulation. Other relevant service authorities should be contacted to obtain information concerning their services
- The plans provided may not necessarily indicate all earth wires, streetlight cables, redundant cables and pipes or all service cables and pipes (e.g. cables and pipes, in road reserve, connecting the Consumer to Powerco's reticulation system)
- The record plans must be kept on site while excavations are in progress
- On-site cable and pipe location marking carried out by Powerco is to be used as a guide only and no warranty as to its accuracy is given or implied
- It must be noted that it is the *Contractors*' responsibility to determine the exact location of the underground electrical cables and gas pipes by hand-digging. In the event of being unable to locate the power cable or gas pipe, Powerco should be contacted for further assistance prior to commencing any further excavation work

Underground Electricity Enquiry Sheet

Damage to Powerco Underground Plant:

Any accidental damage to power cables or gas pipes, however slight, must be reported to Powerco immediately. This will enable prompt and cost efficient repairs to be carried out and will avoid subsequent complications and more expensive remedial work being undertaken should a fault develop at a later date.

- **To report any damage to power cables, contact the Powerco Help Desk on 0800 769 372 immediately**
- **To report any damage to gas pipes contact, the Powerco Help Desk on 0800 111 848 immediately**

Clearances:

It is the responsibility of the person in charge of the work to ensure that the minimum clearances shown below are maintained at all times during the progress of the work. This person is also responsible for compliance with the requirements of the relevant Acts and Regulations, Codes of Practice as well as the relevant WorkSafe New Zealand booklet "*Guide for Safety with Underground Services*".

Electricity Regulations 2010 Regulation 17 (1) – A person who carries out any construction, building, excavation, or other work on or near an electric line must maintain safe distances in accordance with ECP 34.

NZ Electrical Code Of Practice No 34 : 2001 for Electrical Safe Distances - Section 2 - Minimum Safe Distances for Excavation and Construction Near Overhead Electric Line Supports.

Underground Power Cables:

1. Machine digging

(a) **Cables not classed as strategic:** Machine digging is not permitted closer than 500mm from any 11,000 Volt, 6,600 Volt, 400/230 Volt or communication cable (not classed as strategic) unless the position of the cables has been verified by hand digging and exposing them first

(b) **Strategic Cables:** Machine digging is not permitted closer than 1.5m from any Strategic power cable or communication cable. This includes 33,000 Volt Pressure Assisted Oil Filled Power Cables, 66,000 Volt 33,000 Volt and 22,000 Volt solid power cables, 11,000 feeder cables from zone substations and fibre optic communication cables. Any excavation work within this distance must be performed by hand digging and under the observation of a Powerco Approved Works Protection Observer including the backfilling operation

(c) Please refer to the Powerco Standard *"Excavation Works in the Vicinity of Strategic Cables and Pipes"* before commencing excavation work in the vicinity of Strategic Cables

2. Personnel on-site

(a) It will be necessary for a Powerco Approved Works Protection Observer to be on-site where any strategic power cable is to be exposed or crossed

3. Notification of work near Strategic Power Cables

(a) At least *2 working days*' notice must be given to Powerco prior to any excavation work taking place near any solid 66,000 Volt, 33,000 Volt and 22,000 Volt power cables including 11,000 Volt feeder cables from zone substations and fibre optic communication cables. Depending on the extent of the excavation work, Powerco may require these cables to be de-energised prior to any excavation work taking place around them. This may involve additional time to arrange for the isolation and possible notification to Consumers

(b) At least *10 working days*' notice must be given to Powerco prior to any excavation work taking place near any 33,000 Volt Pressure Assisted Oil Filled Power Cables. This is due to Powerco requiring these cables to be de-energised prior to any excavation work taking place around them. This may involve an additional 5 working days if notification to Consumers is required

(c) It is the Excavation Contractor's responsibility to contact the Powerco Help Desk 0800 769 372 for the above notifications

4. Location of other services

(a) No service shall be laid closer than 300mm from any 11,000 Volt, 6,600 Volt cable, or closer than 200mm from any 400/230 Volt or communication cable

Underground Electricity Enquiry Sheet

No service shall be laid closer than 500mm from any 66,000 Volt, 33,000 Volt or 22,000 Volt cable

Sequence No 9400639

Ph: 0800248344
www.beforeudig.co.nz

Utility Details

Please be advised the person below has requested information about underground assets in your jurisdiction. You are required to respond within 2 working days and reference the Job Number, Sequence Number and the User Reference (where supplied).

To: Graham Mist
Utility ID: 51355
Utility Name: Powerco Electricity - Detect Services
Email: b4udig_MastertonElect@powerco.co.nz

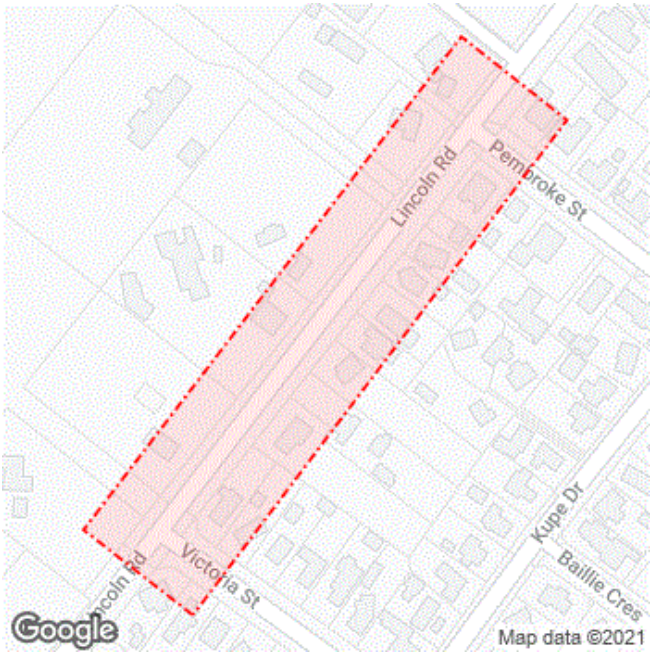
Enquiry Date: 26/05/2021
Priority Type: Normal
Enquiry Medium: Web

Customer Details

Customer ID: 148705
Company: Calibre
Address: Calibre Te Aro, Kordia House, Level 13/1
Te Aro Wellington City 6011
Email: Swastika.Mishra@calibregroup.com

Contact: Ms Swastika Mishra
Phone: 048947822
Mobile: Not Supplied
Fax: Not Supplied

Proposed Site Location



WARNING: The adjacent map displays the extent of the proposed dig site as specified and confirmed by the beforeUdig customer.

User Reference:
Lincoln Road
Working on Behalf of:
Carterton District Council
Start Date: 29/05/2021
End Date: 31/05/2021
Address:
Lincoln Road
Carterton Carterton 5713

For Planning: Yes
Plans Requested: Yes
Asset Locate: No
Preferred Locate Date: Not Supplied
Workplace Location: Both
Location in Road: CarriageWay,Footpath,Berm
Nature of Works: Major Earthworks Cutting/Fil

Additional Work Site Notes:
Please provide the pdfs for the underground and overhead utilities in the marked area.

END OF TRANSMISSION – V4.5.0

Job No 1841606

Electricity Network

- Customer Location
- Distribution Transformer
- Switch (Underground)
- Fuse (Underground)
- Circuit Breaker
- Recloser | Sectionalizer
- Pad or Vault (Ground Mounted)
- Pole

Boxes

Distribution	Service	Meter	Control

Lines

UG	Voltage	Function	OH
	110kV		
	33kV to 66kV		
	22kV		
	11kV		
	3.3kV to 6.6kV		
	Unknown		
	Proposed		
	LV Distribution	Service	
	Streetlight		
	Water Heater Pilot		
	Communications		
	Out of Service		
	Oil Filled		
	Oil Filled Out of Service		
	Traffic Light		
	Verandah Light		
	Duct		

Reference Features

- Building
- Fire Hydrant
- Manhole
- Survey Peg
- Sump
- Post | Other
- Box
- Easement
- Bank
- Treeline
- Fence
- Unusual Depth
- Kerb/Path

Locate/markout before you dig

Hand dig before excavating

Can't find it? In a different place? Call 0800 769 372 for help

POWERCO

ELECTRICITY NETWORK - PLANNING AND DESIGN

550367 - Lincoln Road - Overview - Aerial

For design or planning purposes only. This plan expires 3 months from this date 27/05/2021 For more information go to www.powerco.co.nz

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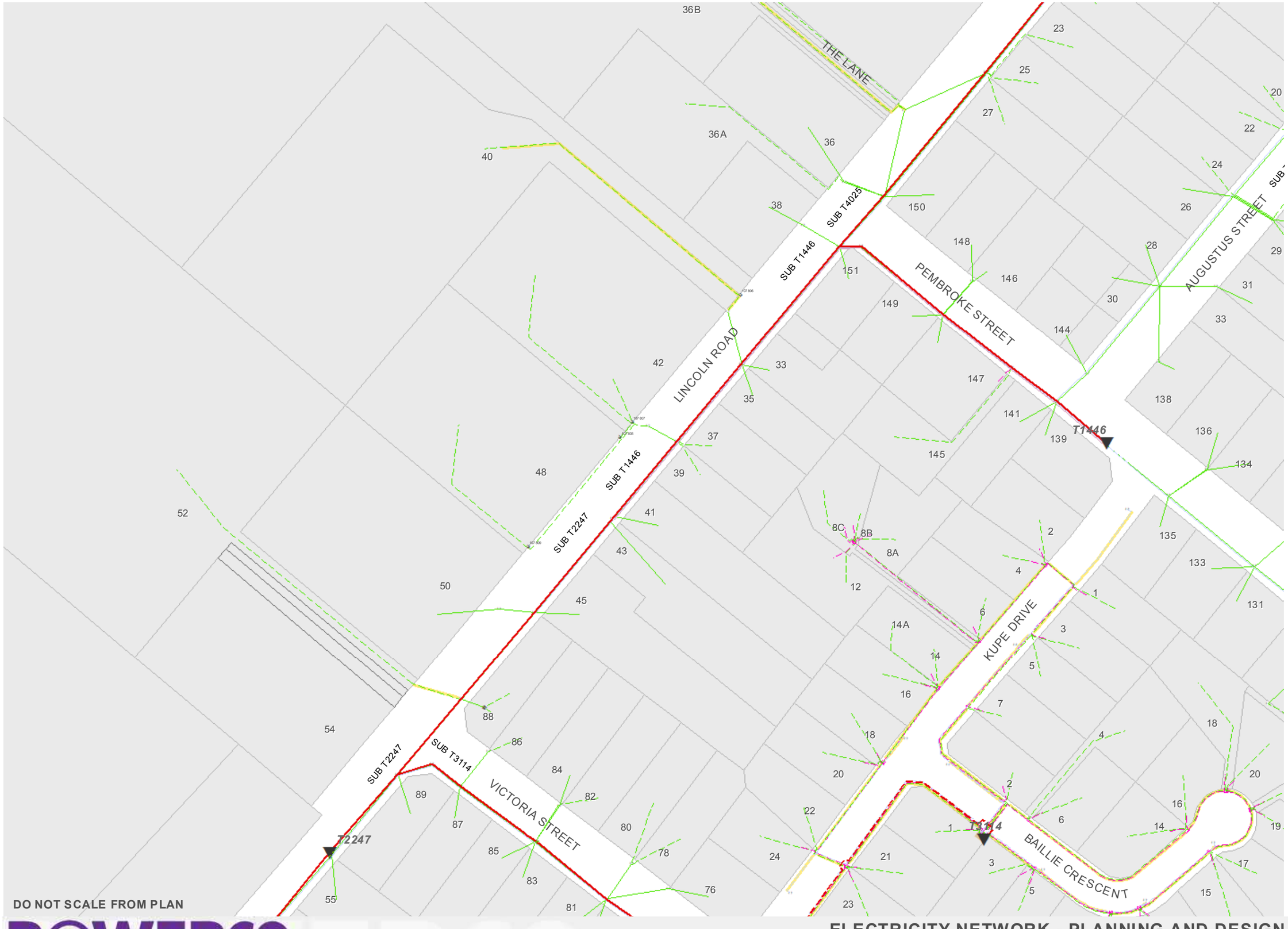

Electricity Network

- Customer Location
- Distribution Transformer
- Switch (Underground)
- Fuse (Underground)
- Circuit Breaker
- Recloser | Sectionalizer
- Pad or Vault (Ground Mounted)
- Pole

Boxes

Distribution	Service	Meter	Control

Lines

UG	Voltage | Function	OH
	110kV	
	33kV to 66kV	
	22kV	
	11kV	
	3.3kV to 6.6kV	
	Unknown	
	Proposed	
	LV Distribution | Service	
	Streetlight	
	Water Heater Pilot	
	Communications	
	Out of Service	
	Oil Filled	
	Oil Filled Out of Service	
	Traffic Light	
	Verandah Light	
	Duct	

Reference Features

- Building
- Fire Hydrant
- Manhole
- Survey Peg
- Sump
- Post | Other
- Box
- Easement
- Bank
- Treeline
- Fence
- Unusual Depth
- Kerb/Path

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DO NOT SCALE FROM PLAN

POWERCO

ELECTRICITY NETWORK - PLANNING AND DESIGN

550367 - Lincoln Road - Overview

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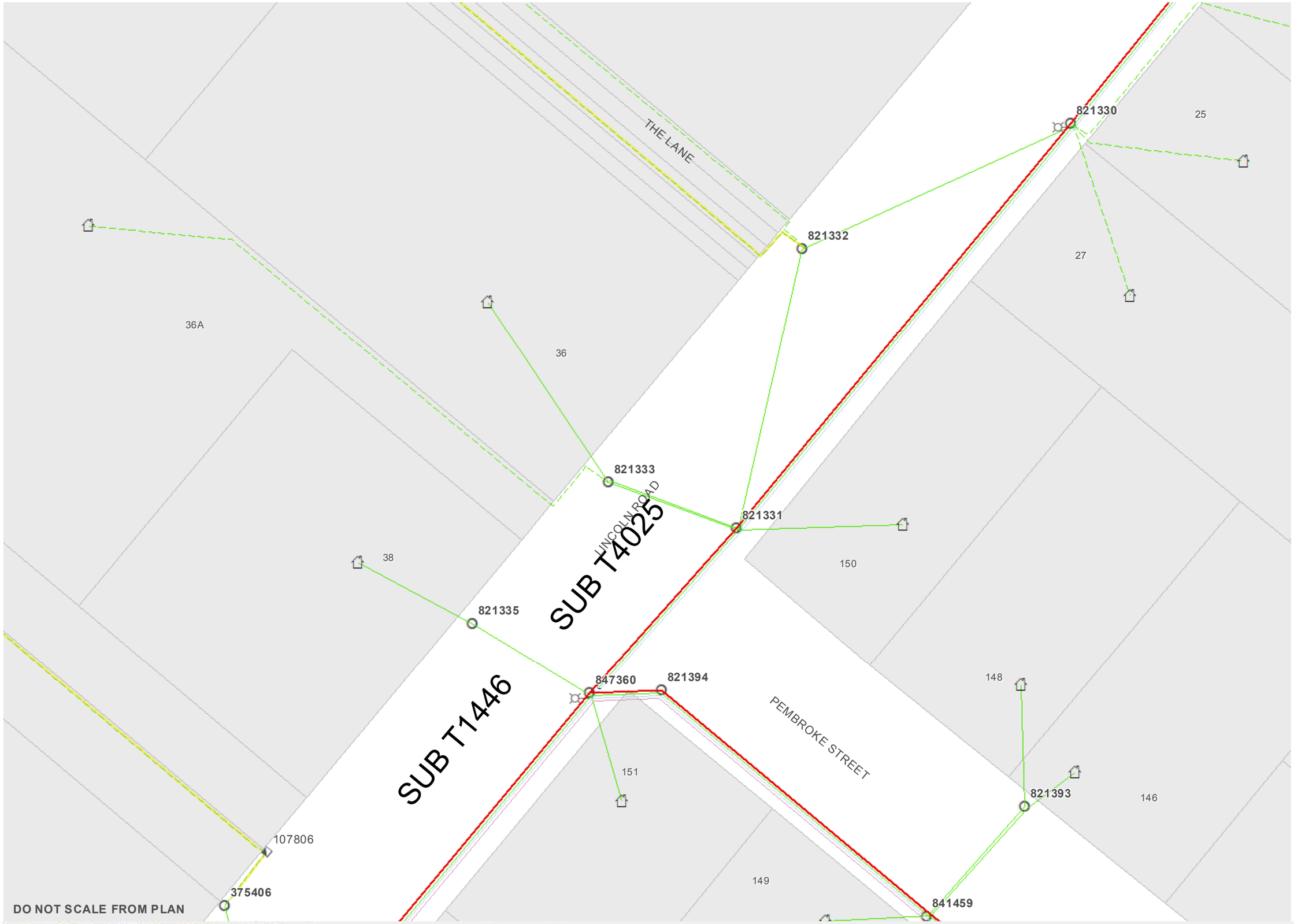

Electricity Network

- Customer Location
- Distribution Transformer
- Switch (Underground)
- Fuse (Underground)
- Circuit Breaker
- Recloser | Sectionalizer
- Pad or Vault (Ground Mounted)
- Pole

Boxes

Distribution	Service	Meter	Control

Lines

UG	Voltage | Function	OH
	110kV	
	33kV to 66kV	
	22kV	
	11kV	
	3.3kV to 6.6kV	
	Unknown	
	Proposed	
	LV Distribution | Service	
	Streetlight	
	Water Heater Pilot	
	Communications	
	Out of Service	
	Oil Filled	
	Oil Filled Out of Service	
	Traffic Light	
	Verandah Light	
	Duct	

Reference Features

- Building
- Fire Hydrant
- Manhole
- Survey Peg
- Sump
- Post | Other
- Box
- Easement
- Bank
- Treeline
- Fence
- Unusual Depth
- Kerb/Path

Locate/markout before you dig

Hand dig before excavating

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DO NOT SCALE FROM PLAN

POWERCO

ELECTRICITY NETWORK - PLANNING AND DESIGN

550367 - Lincoln Road - Sheet 1

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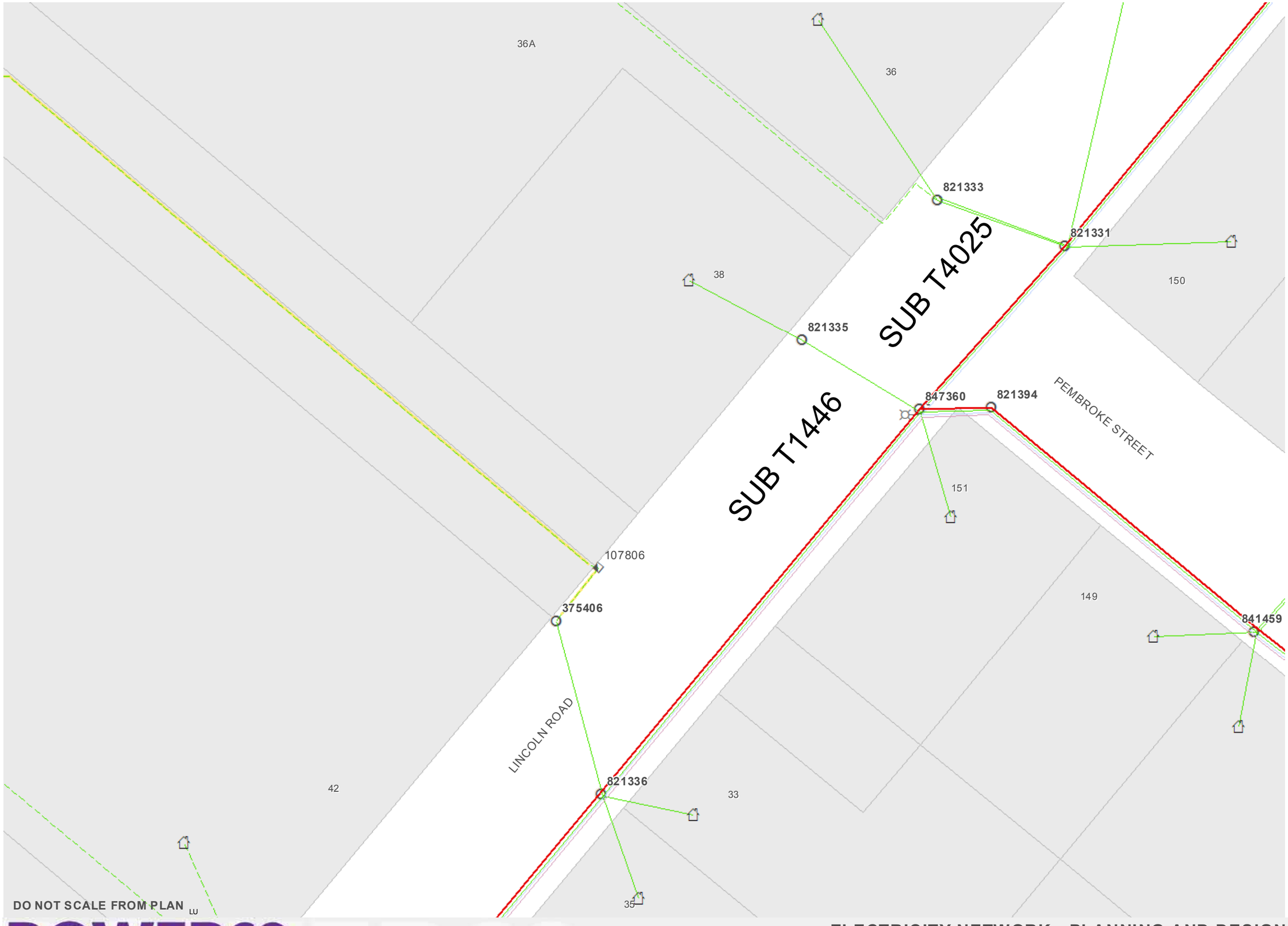

Electricity Network

- Customer Location
- Distribution Transformer
- Switch (Underground)
- Fuse (Underground)
- Circuit Breaker
- Recloser | Sectionalizer
- Pad or Vault (Ground Mounted)
- Pole

Boxes

Distribution	Service	Meter	Control

Lines

UG	Voltage | Function	OH
	110kV	
	33kV to 66kV	
	22kV	
	11kV	
	3.3kV to 6.6kV	
	Unknown	
	Proposed	
	LV Distribution | Service	
	Streetlight	
	Water Heater Pilot	
	Communications	
	Out of Service	
	Oil Filled	
	Oil Filled Out of Service	
	Traffic Light	
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	Duct	

Reference Features

- Building
- Fire Hydrant
- Manhole
- Survey Peg
- Sump
- Post | Other
- Box
- Easement
- Bank
- Treeline
- Fence
- Unusual Depth
- Kerb/Path

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DO NOT SCALE FROM PLAN

POWERCO

ELECTRICITY NETWORK - PLANNING AND DESIGN

550367 - Lincoln Road - Sheet 2

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Electricity Network

- Customer Location
- Distribution Transformer
- Switch (Underground)
- Fuse (Underground)
- Circuit Breaker
- Recloser | Sectionalizer
- Pad or Vault (Ground Mounted)
- Pole

Boxes

Distribution	Service	Meter	Control

Lines

UG	Voltage | Function	OH
	110kV	
	33kV to 66kV	
	22kV	
	11kV	
	3.3kV to 6.6kV	
	Unknown	
	Proposed	
	LV Distribution | Service	
	Streetlight	
	Water Heater Pilot	
	Communications	
	Out of Service	
	Oil Filled	
	Oil Filled Out of Service	
	Traffic Light	
	Verandah Light	
	Duct	

Reference Features

- Building
- Fire Hydrant
- Manhole
- Survey Peg
- Sump
- Post | Other
- Box
- Easement
- Bank
- Treeline
- Fence
- Unusual Depth
- Kerb/Path

Locate/markout before you dig

Hand dig before excavating

Can't find it? In a different place?
Call 0800 769 372 for help

DO NOT SCALE FROM PLAN

POWERCO

ELECTRICITY NETWORK - PLANNING AND DESIGN

550367 - Lincoln Road - Sheet 3

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Electricity Network

- Customer Location
- Distribution Transformer
- Switch (Underground)
- Fuse (Underground)
- Circuit Breaker
- Recloser | Sectionalizer
- Pad or Vault (Ground Mounted)
- Pole

Boxes

Distribution	Service	Meter	Control

Lines

UG	Voltage | Function	OH
	110kV	
	33kV to 66kV	
	22kV	
	11kV	
	3.3kV to 6.6kV	
	Unknown	
	Proposed	
	LV Distribution | Service	
	Streetlight	
	Water Heater Pilot	
	Communications	
	Out of Service	
	Oil Filled	
	Oil Filled Out of Service	
	Traffic Light	
	Verandah Light	
	Duct	

Reference Features

- Building
- Fire Hydrant
- Manhole
- Survey Peg
- Sump
- Post | Other
- Box
- Easement
- Bank
- Treeline
- Fence
- Unusual Depth
- Kerb/Path

Locate/markout before you dig

Hand dig before excavating

Can't find it? In a different place? Call 0800 769 372 for help

DO NOT SCALE FROM PLAN

POWERCO

ELECTRICITY NETWORK - PLANNING AND DESIGN

550367 - Lincoln Road - Sheet 4

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Electricity Network

- Customer Location
- Distribution Transformer
- Switch (Underground)
- Fuse (Underground)
- Circuit Breaker
- Recloser | Sectionalizer
- Pad or Vault (Ground Mounted)
- Pole

Boxes

Distribution	Service	Meter	Control

Lines

UG	Voltage | Function	OH
	110kV	
	33kV to 66kV	
	22kV	
	11kV	
	3.3kV to 6.6kV	
	Unknown	
	Proposed	
	LV Distribution | Service	
	Streetlight	
	Water Heater Pilot	
	Communications	
	Out of Service	
	Oil Filled	
	Oil Filled Out of Service	
	Traffic Light	
	Verandah Light	
	Duct	

Reference Features

- Building
- Fire Hydrant
- Manhole
- Survey Peg
- Sump
- Post | Other
- Box
- Easement
- Bank
- Treeline
- Fence
- Unusual Depth
- Kerb/Path

Locate/markout before you dig

Hand dig before excavating

Can't find it? In a different place? Call 0800 769 372 for help

DO NOT SCALE FROM PLAN

POWERCO

ELECTRICITY NETWORK - PLANNING AND DESIGN

550367 - Lincoln Road - Sheet 5

For design or planning purposes only. This plan expires 3 months from this date 27/05/2021 For more information go to www.powerco.co.nz

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Electricity Network

- Customer Location
- Distribution Transformer
- Switch (Underground)
- Fuse (Underground)
- Circuit Breaker
- Recloser | Sectionalizer
- Pad or Vault (Ground Mounted)
- Pole

Boxes

Distribution	Service	Meter	Control

Lines

UG	Voltage | Function	OH
	110kV	
	33kV to 66kV	
	22kV	
	11kV	
	3.3kV to 6.6kV	
	Unknown	
	Proposed	
	LV Distribution | Service	
	Streetlight	
	Water Heater Pilot	
	Communications	
	Out of Service	
	Oil Filled	
	Oil Filled Out of Service	
	Traffic Light	
	Verandah Light	
	Duct	

Reference Features

- Building
- Manhole
- Sump
- Box
- Bank
- Fence
- Kerb/Path
- Fire Hydrant
- Survey Peg
- Post | Other
- Easement
- Treeline
- Unusual Depth

Locate/markout before you dig

Hand dig before excavating

Can't find it? In a different place?
Call 0800 769 372 for help

DO NOT SCALE FROM PLAN

POWERCO

ELECTRICITY NETWORK - PLANNING AND DESIGN

550367 - Lincoln Road - Sheet 6

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Contact Us

Calibre Consulting Ltd
149025

Level 13, Kordia House, 109-125 Willis Street
Wellington 6011
PO Box 6643, Wellington 6141
+64 4 384 2029