REPORT

Tonkin+Taylor

100 Halsey Street

Infrastructure Assessment

Prepared for
RP Financial
Prepared by
Tonkin & Taylor Ltd
Date
March 2026
Job Number
1101937 v1

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Document control

Title: 100 Halsey Street – Infrastructure Assessment					
Date	Version	Description	Prepared by:	Reviewed by:	Authorised by:
5 Mar 2026	0.1	Draft for Client Review	TEKR	CJC	AHH
11 Mar 2026	0.2	Draft for Client Review	CJC	CJC	AHH
18 Mar 2026	1	Final issue	CJC	CJC	AHH

Distribution:

RP Financial	1 PDF copy
Tonkin & Taylor Ltd (FILE)	1 PDF copy

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Executive summary

RP Financial (NZ CRE 100 Halsey) has engaged Tonkin & Taylor Ltd to undertake an infrastructure assessment for 100 Halsey Street to support a referral application for Fast Track Approvals Act 2024. As part of this work Tonkin & Taylor completed a high level desktop assessment for the subject properties using information from public records, geographic information systems (GIS), and architectural drawings provided by the client. The assessment focused on existing infrastructure assets, including wastewater, stormwater, potable water, and dry services.

Overall, this review indicates that the existing infrastructure surrounding the site is considered likely to be capable of servicing the proposed development, pending confirmation and feedback from Auckland Council and Watercare. This is summarised in the table below.

Table E-1: Summary of assessment

Service	Capacity / Condition
Water Supply	The water supply network appears to have capacity to supply water for both potable water and firefighting supply. There may be some limitations regarding the pressure of the network, more investigation is required to understand these constraints. T+T has engaged with Watercare to further investigate.
Wastewater	The local wastewater network appears to possess sufficient capacity. The capacity of the individual pipe connections to the site is limited and these may require local upgrades or additional connections as part of the development. More investigation is required to understand these constraints. T+T has engaged with Watercare to further investigate.
Stormwater	There is no expected change in impervious surface area, therefore the effects of this development on the stormwater are considered negligible. Capacity restraints have been noted in the area. As the site is greater than 5000 m^2, a stormwater management plan is required for the development; further investigation should be undertaken to understand its requirements. Treatment of some stormwater runoff from the site may be required.
Dry Services	The power, communications and gas networks are expected to have sufficient capacity to service the proposed development. Engagement with service providers will be undertaken at subsequent design stages.

As the project progresses through subsequent design stages, this infrastructure assessment should be reviewed and updated to reflect the latest design and available data.

1 Introduction

RP Financial (NZ CRE 100 Halsey) is preparing a referral application to access the Fast-Track consenting process under the Fast-Track Approvals Act (2024) for a proposed development at 100 Halsey Street (the "Project") in Wynyard Quarter, CBD, Auckland.

RP Financial (NZ CRE 100 Halsey) has engaged Tonkin & Taylor Ltd (T+T) to carry out a series of desktop studies in support of the proposed development and intensification of selected properties in the Wynyard Quarter, CBD, Auckland, in accordance with our Letter of Engagement dated 15 January 2026.

Tonkin & Taylor has been engaged to assess infrastructure in this report. Tonkin & Taylor has also been engaged to report on natural hazards, which is covered in a separate report. This report presents the findings of our infrastructure assessment and highlights any significant constraints or opportunities relevant to the Project at this stage of development. The assessment includes background information on existing infrastructure servicing the site, an evaluation of capacity and potential impacts on local networks, conceptual infrastructure connections, and a review of architectural drawings, Auckland Council GeoMaps, BeforeUDig, and Vector Open Data GIS information.

2 Site description

The proposed development site is located within the Wynyard Quarter, to the west of Auckland's CBD, as shown in Figure 2-1.

Figure 2-1: Site location (outlined in yellow)

The development site shown in Figure 2-2 is located directly west of the Viaduct Basin Marina and north of Fanshawe Street. Amey Daldy Park is adjacent to the site and includes a recently developed wastewater pump station, built in 2020. Structures surrounding the site consist of a mix of mid-rise (four-storey and above) apartments, hotels, and offices.

The site is approximately 17142 m^2 and currently has an industrial use as bus depot with accompanying maintenance shed. Industrial use on this land comprises a bus depot and mechanics workshop operated by NZ Bus, with the large majority of site utilised as a parking lot with the workshop located to the south and a refuelling station and bus wash located to the west.

In the northeast corner of site, an eight-storey structure hosts a supermarket, hotel, and a number of restaurants. This structure, the Travelodge building, is expected to remain unaltered and is outside the scope of this assessment.

Land Information New Zealand (LINZ) contour data indicates that the site is generally flat and low-lying, gently sloping toward the marina to the north and east. Ground levels rise more steeply further south, beyond the site, toward the south-east.

Figure 2-2: Site location. Project area shown in yellow. Existing structure shown in red, which is outside of the scope of this assessment.

3 Proposed development

The proposed development is five new buildings on the site, in addition to the existing Travelodge building, as shown in Figure 3-1 and Figure 3-2. The buildings are intended to be commercial land use on the ground floor with offices on the upper floors. Building B3 has a public walkway through the centre of it, and is split into Buildings B3A, B3B and B3Link. The total ground floor area (GFA) is approximately 80,000 m^2. The existing Travelodge has a GFA of approximately 20,000 m^2.

Figure 3-1 : Proposed development (sourced from Peddlethorp Architectural Plans).

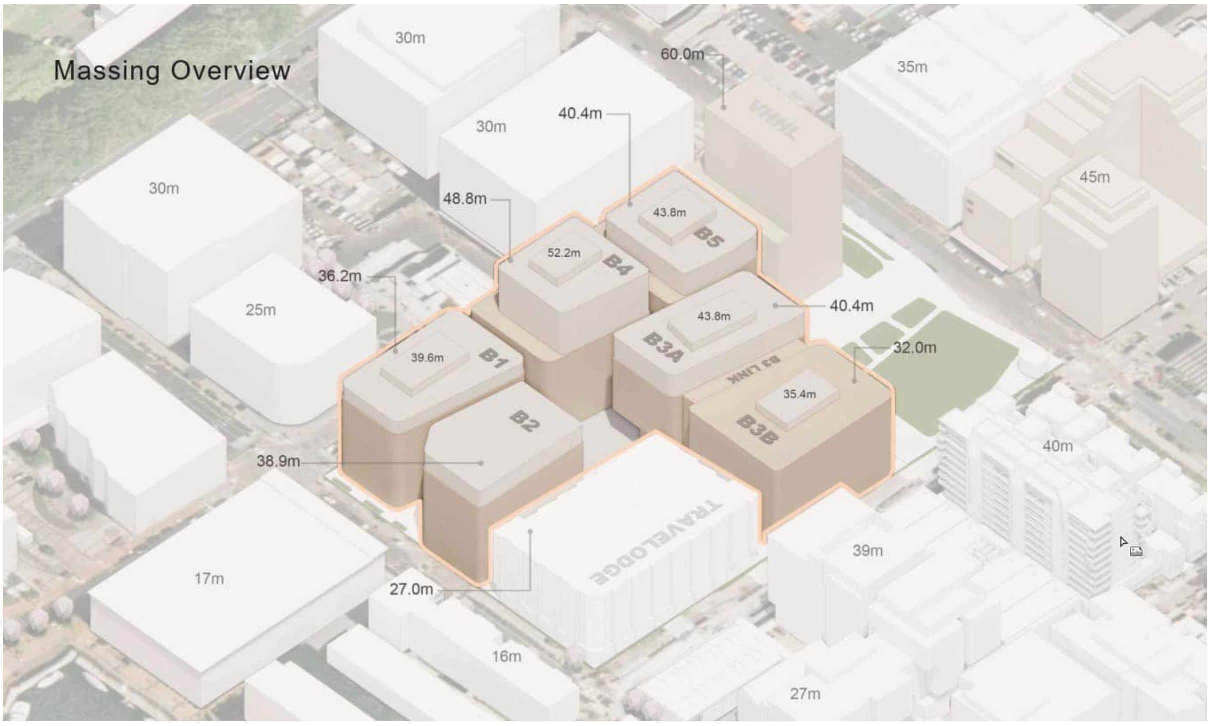

Figure 3-2: Proposed development massing (sourced from Peddlethorp Architectural Plans)

Building 2 has optionality to be premium office or a data centre (with ground floor substation). Both options will fit within the same building envelope as shown in the massing. Effects will be assessed and addressed at the substantive application stage.

It has been assumed that the commercial area will comprise of 50% wet retail (e.g. restaurants, cafes) and 50% dry retail (e.g. shops).

In general, it is assumed that buildings B2 and B3 will discharge to the northwest (i.e. Halsey Street and Pakenham Street), and buildings B1, B4 and B5 discharge to south (i.e. Lower Halsey Street and Gaunt Street). They have been grouped and described as “northern catchment” and “southern catchment” respectively.

4 Water supply

4.1 Existing infrastructure

Auckland Council GeoMaps shows several existing public potable water supply lines in the immediate vicinity of the site, as shown in Figure 4-1. The three primary areas of interest are located adjacent to the development in the road corridors of Gaunt Street, Halsey Street, and Pakenham Street West.

Figure 4-1: Existing water supply services (sourced from Auckland Council GeoMaps) (Operational pipes in dark blue, abandoned pipes in light blue)

Pakenham Street West (refer Figure 4-2):

- A 300 mm ductile iron (DI) main and a 20 mm polyethylene (PE) rider in the southern side of the road.
- A 300 mm asbestos cement (AC) main in the southern side of the corridor has been abandoned.
- A 150 mm DI main in the northern side of the road.
- A 20 mm Poly-Ethelene (PE) pipe connects to the property at the northeastern corner of the site.

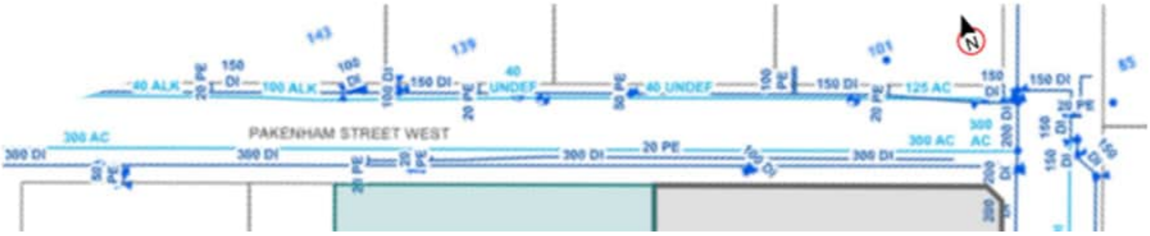

Figure 4-2: Pakenham Street West water supply adjacent to site (Operational pipes in dark blue, abandoned pipes in light blue)

Halsey Street (refer Figure 4-3):

- Adjacent to the site there is a 200 mm DI pipe in the western side of the road. Approximately halfway along the block, the main reduces to a 150 mm DI pipe before returning to 200 mm DI before its connection with Pakenham Street West.
- A 150 mm DI pipe in the eastern side of the road corridor, with property connections to adjacent buildings.
- A 150 mm DI pipe in the connects the eastern and western sides of the corridor near the south-eastern corner of the property.
- A 300 mm asbestos-cement (AC) pipe is abandoned on the western side of the road.
- A 150 mm DI pipe is abandoned on the eastern side of the road.
- A 20 mm PE connection to the 150 mm DI pipe to the Travelodge building.
- A 32 mm PE connection to the existing site, approximately at the location of Building B2.
- A 100 mm PE connection to the existing site, approximately at the location of Building B1.

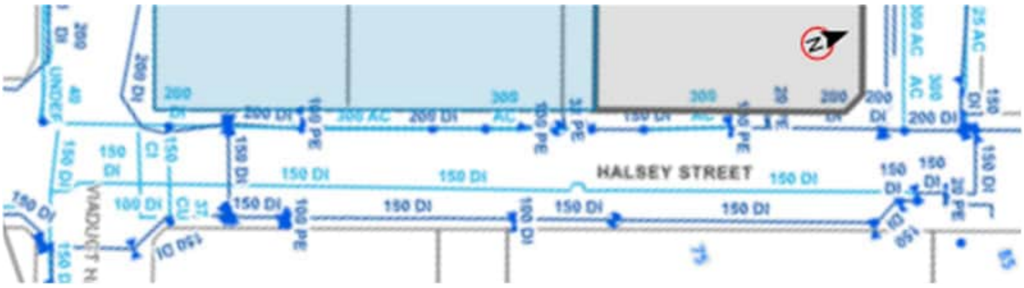

Figure 4-3: Halsey Street water supply adjacent to site (Operational pipes in dark blue, abandoned pipes in light blue)

Gaunt Street (refer Figure 4-4):

- A 150 mm DI pipe adjacent to the site on the northern side of the road. This terminates at beyond the western extent of the site at a dead end.
- A 150 mm DI pipe on the southern side of the road with connections to adjacent properties.
- Abandoned 150 mm and 40 mm pipes on the southern side of the road.
- A 200 mm DI pipe road crossing at the intersection with Halsey Street.

Figure 4-4: Gaunt Street water supply adjacent to site (Operational pipes in dark blue, abandoned pipes in light blue)

The existing potable water network is relatively new, with GeoMaps indicating that most pipelines were installed between 2010 and 2016.

The available records do not show public pipes inside the property boundary.

Several fire hydrants are located around the site. There are three along Pakenham Street West, two within Halsey Street, and three within Gaunt Street.

The existing fire-supply capacity and sprinkler system layout are currently unknown.

Detailed service-location investigations will be required at subsequent design stages to confirm the location of existing services.

4.2 Potable water demand

The existing and proposed potable water demands have been estimated in accordance with the design approach specified in the Water and Wastewater Code of Practice for Land Development and Subdivision[1]. Demand estimates are based on approximate floor areas indicated in the architectural drawings prepared by Peddlethorp Architects. It is assumed each building will contain office space in all floors except the ground floor, which will be half dry retail and half wet retail.

Pre-development potable water demand has been estimated on the apparent floor area and use of the existing structures. The structure located on the southern boundary of site is assumed to be a mechanics office and workshop, which has been assigned a use type of "Medium Industry." The bus wash has conservatively not been included in this assessment as the current water usage of this device is unknown.

Post-development demand calculations have been broken down by buildings One through Five, with Building Three comprising sub-blocks 3A, 3B, and 3 Link. The potable water demand from the data centre and substation option has not been assessed at this stage and consultation with Watercare will be undertaken to confirm requirements.

Pre- and post-development potable water demand is presented in Table 4.1 and Table 4.2.

Calculations are provided in Appendix B.

Table 4.1: Pre-development potable water demand

Pre-Development	Average Dry Weather Flow (ADD) L/s	Peak Dry Weather Flow (PDD) L/s	Peak Wet Weather Flow (PHD) L/s
Total	**0.12**	**0.24**	**0.61***

* Note this does not include the bus wash as we have insufficient information to assess this device.

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[1] Water and Wastewater Code of Practice for Land Development and Subdivision Chapter 6: Water

Table 4.2: Post-development potable water demand

Post-Development	Average Dry Weather Flow (ADD) L/s	Peak Dry Weather Flow (PDD) L/s	Peak Wet Weather Flow (PHD) L/s
Building One	0.60	1.21	3.02
Building Two	0.46	0.92	2.29
Building Three A	0.55	1.10	2.76
Building Three Link	0.05	0.10	0.24
Building Three B	0.62	1.24	3.11
Building Four	0.75	1.49	3.74
Building Five	0.62	1.24	3.10
Total	**3.65**	**7.30**	**18.26**

4.3 Proposed fire supply

The proposed development is to be fully sprinklered, with an associated water-supply classification of FW2, in accordance with the New Zealand Fire Service Firefighting Water Supplies Code of Practice (SNZ PAS 4509:2008, Table 1).

The FW2 demand standard requires hydrant firefighting flows of 12.5 L/s within 135 m and an additional 12.5 L/s within 270 m, with a minimum residual pressure of 100 kPa available to the development.

The internal fire-fighting system will be sprinklers which is likely to require water from the potable water supply network. This will be confirmed by the project fire engineer in subsequent design phases.

4.4 Capacity

Based on the number and size of water mains, fire hydrants and the nature of the surrounding Wynyard Quarter district, it is assumed that the existing wider area supply is adequate to service the potable water and fire flow demands of the proposed development.

At the time of this assessment, no fire-hydrant flow or pressure tests had been undertaken, and no historical test data was available.

A predevelopment application has been lodged with Watercare Services Limited (WSL) to seek feedback on any substantive issues relating to the proposed increase in demand. Confirmation of serviceability is subject to ongoing engagement and assessment with WSL.

4.5 Proposed connections

It is assumed that each new building will have a new connection to the adjacent 150 mm, 200 mm or 300 mm DI main within the road corridor. Existing connections may be reused if appropriate.

4.6 Assessment

The site is located within a well-serviced, well-developed commercial area. The anticipated increases in demand is consistent with the size of pipes and scale of development in the area.

T+T has engaged with WSL to understand any potential constraints on supply. Subject to Watercare engagement and approval, the projected potable water demand is expected to be accommodated by the existing network.

The fire-supply network is expected to meet the FW2 classification requirements.

5 Wastewater

5.1 Existing infrastructure

Auckland Council GeoMaps shows several existing public wastewater pipelines within the immediate vicinity of the site, as shown in Figure 5-1.

Two key wastewater pumping stations located near the site effectively divide the development into northern and southern catchments. Flows from the northern catchment are directed towards the Amey Daldy Park pumping station, and flows from the southern catchment are directed towards the Fanshawe Street pumping station as shown in Figure 5-2.

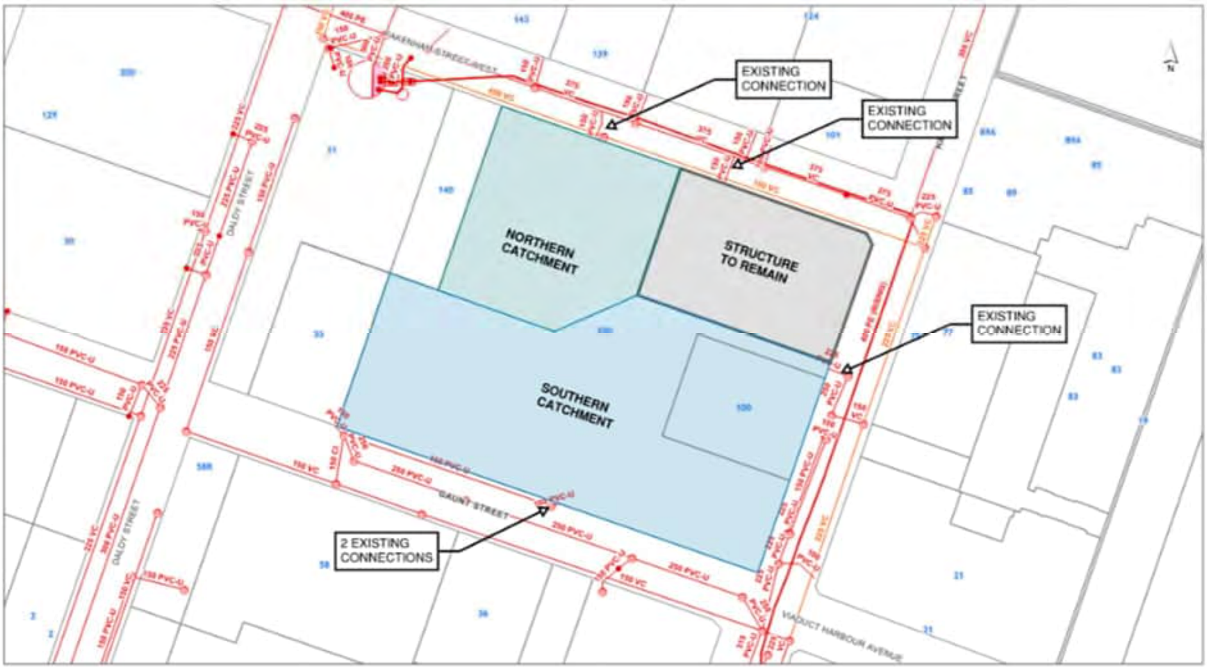

Figure 5-1: Existing wastewater services (sourced from Auckland Council GeoMaps). Thin red lines are gravity pipes in service, thick red lines are rising mains in service, and orange lines are abandoned assets.

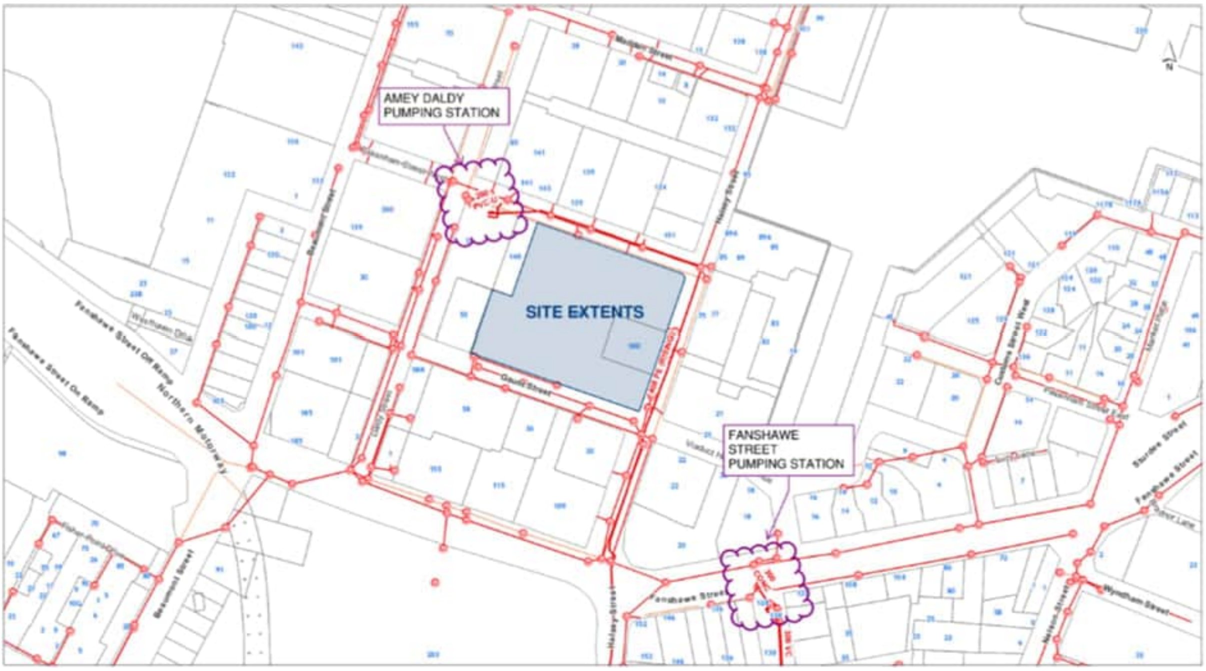

Figure 5-2: Local wastewater pumping stations

Pakenham Street West (refer Figure 5-3):

- 150 mm U-PVC connection to the site, approximately at Building B3. Connection discharges to 375 mm vitrified-clay (VC) pipe on the northern side of the road, draining west.
- 375 mm VC pipe on northern side of road, discharging west to pump station at Amey Daldy Park.
- 400 mm polyethylene (PE) rising main from pump station in centre of road, discharging east along Pakenham Street West before turning south onto Halsey Street
- 150 mm U-PVC connection to Travelodge building to 375 mm VC pipe

Figure 5-3: Pakenham Street West wastewater adjacent to site. (Re Thin red lines are gravity pipes in service, thick red lines are rising mains in service, and orange lines are abandoned assets

Halsey Street (refer Figure 5-4):

- 225 mm U-PVC connection at approximately Building B2. Connection discharges to 250 mm U-PVC line in the western side of the road. This pipe continues southward, into a 150 mm U-PVC dead end pipe with no apparent further connection.
- 225 mm U-PVC pipe without an upstream connection starts adjacent to the dead end noted above. This pipe discharges south toward the Victoria Street pumping station.

- The as-built condition of the pipes on the western side of the road is uncertain, and this unusual arrangement may reflect an error in the source data. CCTV investigations are recommended to confirm the accuracy of this information.
- 225 mm abandoned VC pipe on the eastern side of the road. Property connections on the eastern side of the road appear to discharge to the 225 U-PVC pipe on the western side of the road
- 400 mm PE rising main in the centre of the road, which discharges to the south

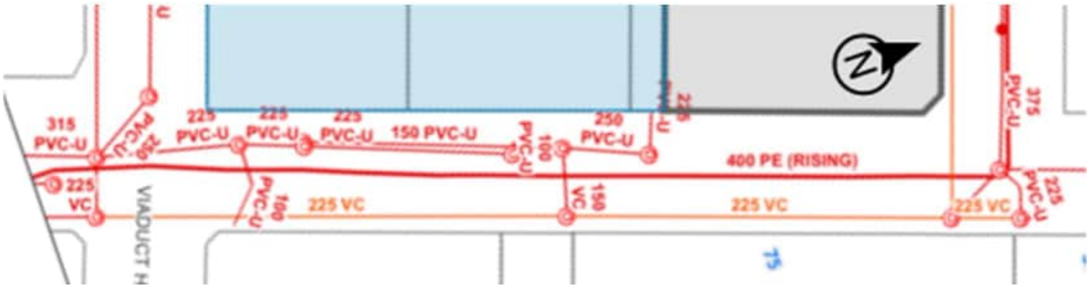

Figure 5-4: Halsey Street wastewater adjacent to site. Thin red lines are gravity pipes in service, thick red lines are rising mains in service, and orange lines are abandoned assets

Gaunt Street: (refer Figure 5-5):

- 150 mm U-PVC pipe in the northern side of the road discharges to the west with two connections to the site. This pipe crosses the road to the east and connects to a 150 mm PVC-U on the southern side of the road
- 250 mm U-PVC pipe connected to the 150 mm pipe at a manhole which is in the western side of the road and discharges to the east
- 150 mm CI pipe branches from the 150 mm U-PVC mentioned above, this line crosses under the road and discharges into a 150 mm U-PVC on the southern side of the road.
- A 150 mm U-PVC pipe on the southern side of the road discharges eastwards, joining with the 250 mm U-PVC mentioned above.
- The three pipes within the roadway ultimately discharge to a manhole at the intersection with Halsey Street and to the Fanshawe Street pump station
- Two 100 mm U-PVC connections to the site at approximately building B4
- 150 mm U-PVC connection to the site at approximately building B5

Figure 5-5: Gaunt Street wastewater adjacent to site. Thin red lines are gravity pipes in service, thick red lines are rising mains in service, and orange lines are abandoned assets.

5.2 Wastewater demand

The existing and proposed wastewater demands have been estimated in accordance with the design approach specified in the *Water and Wastewater Code of Practice for Land Development and*

Subdivision[2]. Demand estimates are based on approximate floor areas shown in the architectural drawings prepared by Peddlethorp Architects.

Post-development demand calculations have been broken down by building, labelled Buildings One through Five, with Building 3 comprising sub-blocks 3A, 3B, and 3 Link.

It is assumed each building will contain office space in all floor except the ground floor, which will be half dry retail and half wet retail i.e. restaurants, cafes, etc.

The wastewater demand from the data centre and substation option has not been assessed at this stage and consultation with Watercare will be undertaken to confirm requirements.

Wastewater demand has been estimated on the apparent floor area and use of the existing structures. The structure located on the southern boundary of site is assumed to be a mechanics office and workshop, which has been assigned a use type of "Medium Industry." The bus wash has conservatively not been included in this assessment as the wastewater generation from this device is unknown.

Pre- and post-development wastewater demands are presented in Table 5.1 and Table 5.2. Calculations are provided in Appendix B.

Table 5.1: Pre-development wastewater demand estimate

Pre-Development	Average Dry Weather Flow (ADWF) L/s	Peak Dry Weather Flow (PDWF) L/s	Peak Wet Weather Flow (PWWF) L/s
Total	0.12	0.61	**0.82***

* Note this does not include the bus wash as we have insufficient information to assess this device.

Table 5.2: Post-development wastewater demand estimate

Post-Development	Average Dry Weather Flow (ADWF) L/s	Peak Dry Weather Flow (PDWF) L/s	Peak Wet Weather Flow (PWWF) L/s
Building One	0.60	1.21	3.19
Building Two	0.46	0.92	2.46
Building Three A	0.55	1.10	2.89
Building Three Link	0.06	0.12	0.31
Building Three B	0.62	1.24	3.34
Building Four	0.75	1.49	3.92
Building Five	0.62	1.24	3.28
Total	**3.65**	**7.30**	**19.36**

5.3 Capacity

The assessment of wastewater-connection and local-network capacity has been undertaken using available invert-level and asset information from Auckland Council GeoMaps. Where network data

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[2] Water and Wastewater Code of Practice for Land Development and Subdivision Chapter 5: Wastewater

were unavailable, pipe grades were assumed to be at the minimum values outlined in the Auckland Council Wastewater Code of Practice for Land Development and Subdivision[3].

The development site is situated between two wastewater pumping stations shown in Figure 5-5. The following capacity assessment assumes that the site is divided into northern and southern sections. Wastewater flows from Buildings 1, 2, 4, and 5 are assumed to *discharge to* the pump station on Victoria Street and its associated pipes, while flows from Buildings 3A, 3B, and 3 Link are expected to *discharge to* the pump station located beneath Amey Daldy Park and its associated pipes.

A summary of pipe capacity is provided in Table 5.3 below.

Table 5.3: Wastewater Network Capacity

Pipe ID	Pipe Diameter (mm)	Pipe Material	Assumed Grade (%)	Pipe Capacity (l/s)	Type	Post Development flow (l/s)	Spare Capacity (L/s)
Amey Daldy Park Pump Station Pipes							
1550243	150	U-PVC	21.96	93.16	Connection: Building 3	6.5	87
81015117	375	VC	0.36	98.03	Main	6.5	92
2617216	375	VC	0.23	78.50	Main	6.5	72
2556699	375	VC	0.40	103.96	Main	6.	97
2559526	375	VC	13.22	594.43	Main	6.50	588
81159301	500	VC	0.300*	193	Main	6.5	186
Fanshawe Street Pump Station Pipes							
1551233	100	U-PVC	1.70*	8.6	Connection: Building 2 and 4	9.6	Over Capacity
1396651	100	U-PVC	1.70*	8.8	Connection: Building 2 and 4	9.6	Over Capacity
2618341	150	U-PVC	0.90	14.0	Main	9.6	4.5
81014428	250	U-PVC	0.90	73.6	Main	12.9	61
81013270	250	U-PVC	1.01	78.1	Main	12.9	65
2611069	250	U-PVC	1.15	83.2	Main	12.9	70
81014333	250	U-PVC	1.08	80.6	Main	12.9	68
81016074	250	U-PVC	0.94	75.2	Main	12.9	62
2563341	315	U-PVC	0.99	143.4	Main	12.9	130
81013519	315	U-PVC	0.98	142.0	Main	12.9	129
2566467	315	U-PVC	0.99	143.1	Main	12.9	130

* Due to missing level information in the Council database these pipes have been assessed assuming the minimum allowable grades in accordance with the Auckland Council Wastewater Code of Practice for Land Development and Subdivision.

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[3] Water and Wastewater Code of Practice for Land Development and Subdivision Chapter 5: Wastewater

The existing connections appear to be undersized for the proposed development. The remainder of the network appears to have capacity for the proposed development, but this is subject to confirmation from Watercare based on assessment of demands on the surrounding network.

5.4 Proposed connections

It is assumed that each building within the development will have a wastewater connection to the public pipe. It is intended that the proposed buildings will utilise existing connections where the existing condition and capacity is suitable. New connections to the adjacent wastewater pipe within the road corridor will be provided where required.

5.5 Assessment

Based on available asset information, the existing wastewater network in the vicinity of the site appears to possess sufficient capacity for the anticipated flows from the proposed development.

A request has been lodged with Watercare for a high-level capacity assessment to identify potential capacity constraints based on their model of the wastewater network. This is particularly relevant for the capacity of the wastewater pump stations. It is noted that the site could direct discharge to a single pump station if there are capacity issues with one of the pump stations.

It is expected that the existing connections may not have adequate capacity for the proposed development and will be replaced as required.

6 Stormwater

6.1 Existing services

Auckland Council GeoMaps shows several existing public stormwater pipelines within the immediate vicinity of the site, as shown in Figure 6-1.

Figure 6-1: Existing stormwater services (sourced from Auckland Council GeoMaps)

Pakenham Street West (refer Figure 6-2):

- 750 mm concrete pipe on the northern side of the road. It starts at the intersection of Halsey Street and Pakenham Street West, running westwards and collecting flows from tree pits and raingardens along the street. The pipe appears to connect to a 2750 mm concrete pipe which discharges into the harbour from the end of Brigham Street. It is noted that the manhole on GeoMaps doesn't connect directly to the pipe, which may be an error in the database.
- There are existing connections to the site, shown in dashed lines

Figure 6-2: Pakenham Street West stormwater adjacent to site

Halsey Street (refer Figure 6-3):

- A 1050 mm concrete pipe in the centre of the road, which discharges to the north. Numerous tree pits and raingardens discharge to this main from both sides of the road. This pipe appears to discharge into the harbour from Madden Street to the north.
- 175 mm U-PVC line extends from midway along the property boundary approximately near building 2 and connects into the 1050 mm concrete main.
- 525 mm concrete pipe on the eastern side of the road discharging to the south, connecting into the 1800 mm concrete pipe on Gaunt Street.
- 450 mm concrete pipe on the eastern side of the road discharging to the north, joining into the 1050 mm concrete line at the Halsey Street-Pakenham Street West intersection.

Figure 6-3: Halsey Street stormwater adjacent to site

Gaunt Street (refer Figure 6-4):

- 600 mm to 675 mm concrete pipe in the centre of Gaunt Street discharging to the east. Numerous tree pits and raingardens discharge to this main from both sides of the road. This pipe turns north at the Gaunt–Halsey Street intersection, where it increases in diameter to 1050 mm.
- 225 mm U-PVC pipe on the northern side of the road corridor discharging to the east, before connecting into the 600 mm concrete pipe previously mentioned.
- 375 mm concrete pipe on the southern side of the road which discharges to the east

- 1800 mm concrete trunk main that receives flow from a 525 mm concrete pipe along Halsey Street and discharges to the west. The 1800 mm main does not collect local drainage from around the site.
- 375 mm concrete pipe in the southern side of Gaunt Street, which discharges to the west. It reduces in size to 225 mm, then connects to the 2750 mm concrete pipe which discharges into the harbour from the end of Brigham Street. This pipe has a connection to the site at approximately building B5.

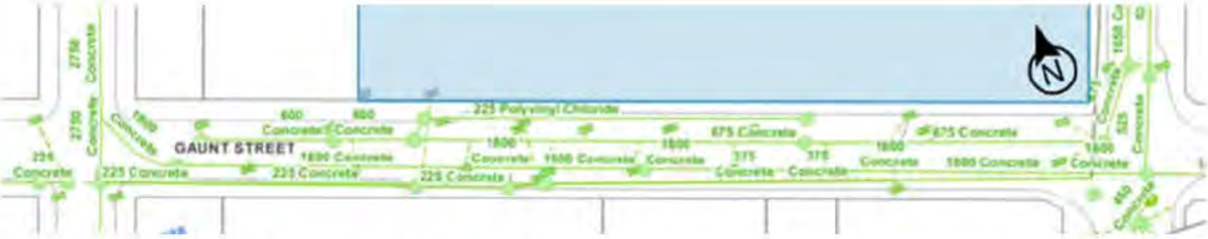

Figure 6-4: Gaunt Street stormwater adjacent to site

6.2 Capacity

The site is currently occupied by an open carpark and mechanics workshop that covers and approximate area of 14,000 m^2. The site consists of entirely paved and sealed surfaces with 0% pervious surfaces.

The stormwater runoff from the existing site and proposed development have been estimated using the TP108. This estimation utilises practices outlined in Auckland Council Guidelines for stormwater runoff modelling in the Auckland region (TP108)[4] for a 1 in 10-year ARI storm event.

The TP108 assessment has been conducted with the following assumptions:

- A weighted runoff curve number (CN) of 98 was adopted for the entirety of the site (i.e. 100% impervious).
- The rainfall data were retrieved from NIWA's High Intensity Rainfall Duration System (HIRDS).
- Time of concentration is 10 minutes for smaller sites

The peak runoff from the site is presented in Table 6.1.

The stormwater runoff calculations can be found in C.

Table 6.1: Existing run-off assessment

Design ARI Storm Event	Pre-Development Demand (L/s)
1 in 10-year	260

Given that the pre and post development scenarios are both considered fully impervious, the only increase to stormwater flow into the network from the proposed development is from the impact of future climate change.

The estimated runoffs from the site can be found below in Table 6.2. The flows in a 1 in 10-year ARI storm event is 459 L/s, which is an increase of 67 litres/second for the proposed development.

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[4] Guidelines for stormwater runoff modelling in the Auckland region, Auckland Council, 1999

Table 6.2: Proposed run-off assessment

Design ARI Storm Event	Post -Development Demand (L/s) (including climate change)
1 in 10-year	305

The pipe capacity assessment is presented in Table 6.3 below.

The assessment of stormwater -connection and local-network capacity has been undertaken using available invert-level and asset information from Auckland Council GeoMaps.

Local network capacity has been assessed at key locations downstream and has not been assessed on all pipes. It is dependent on the upstream connections and recorded grade of pipe, which may be inaccurate. Upstream demand has been estimated from the developments which connect into the network upstream and accounts for climate change.

Table 6.3: Existing stormwater network demand in a 10-year ARI event and capacity

Pipe ID	Pipe Diameter (mm)	Assumed Slope (%)	Pipe Capacity (l/s)	Upstream Demand (l/s)	Post Development flow (l/s)	Spare Capacity (L/s)
3000043588	225	0.997	58.5	0	305	Over Capacity - connection to be upsized or replaced
3000043602	300	0.615	76.1	0	305	Over Capacity - connection to be upsized or replaced
3000043587	675	0.286	451.3	252	305	Over Capacity – some surcharging may occur
3000043586	675	0.583	647.1	252	305	90.1
3000043603	675	0.548	627.3	383	305	Over Capacity – some surcharging may occur
3000043604	1050	0.297	1494.2	383	305	806.2
3000219737	750	0.416	720.8	181	305	234.8
3000216727	750	0.100	353.5	181	305	Over Capacity – some surcharging may occur
3000175287	750	0.903	1062.1	181	305	576.1
3000175288	900	0.408	1160.9	181	305	674.9

Table 6.3 indicates that the local network is already overcapacity for a 10-year ARI event in all areas except the largest of pipes.

Upgrades to the network downstream of the development are not expected to required as a result of this proposed development. We note that the project does not increase the impervious area and associated runoff, and the development is relatively close to the outfall to the coast.

6.3 Proposed connections

It is intended that the proposed buildings will utilise existing connections where the existing condition and capacity is suitable. New connections to the adjacent stormwater pipe within the road corridor will be provided where required.

6.4 Stormwater management and treatment

Auckland Council holds the Regionwide Stormwater Network Discharge Consent (NDC), which authorises the diversion and discharge of stormwater from the current and future public stormwater network in the urban area. Stormwater diversion and discharge from development can be authorised under the council's consent if it meets the NDC requirements, instead of developers needing to obtain a private discharge consent[5].

Schedule 4 sets out the requirements under the NDC for varying development scales. The project classifies as a *Brownfields large* site as it is more than 5000 m^2, and the associated requirements are presented in Figure 6-5.

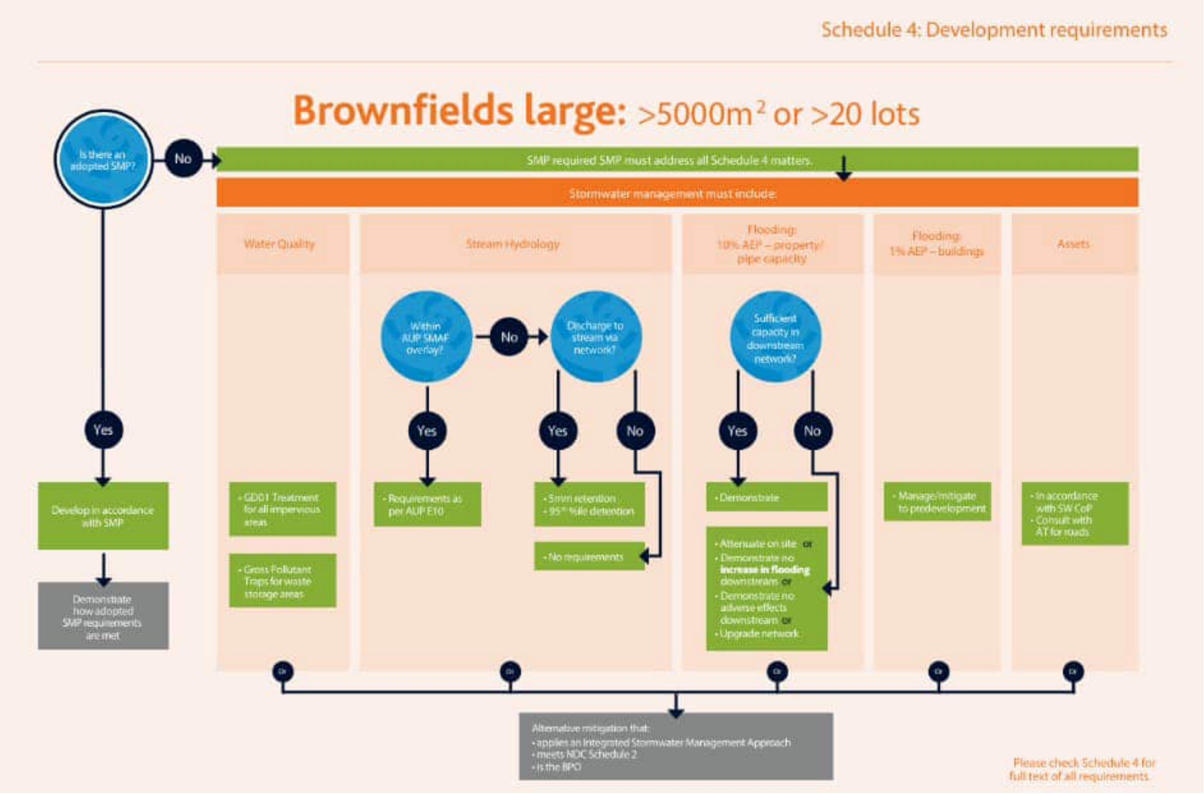

Figure 6-5: Requirements under the NDC for Brownfields large development[6]

The site is not within an AUP SMAF overlay, and does not discharge to a stream via network. The site imperviousness is not being increased, and stormwater retention is not required on site.

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[5] https://www.aucklanddesignmanual.co.nz/en/developing-infrastructure/stormwater-network-discharge-consent-ndc.html

[6] https://www.aucklanddesignmanual.co.nz/content/dam/adm/adm-website/developing-infrastructure/stormwater-network-discharge-consent-(ndc)/Healthy_Waters_NDC_Schedule_4-full_version%20(2).pdf

Flooding impacts are addressed in the T+T report *100 Halsey Street Coastal and Flood Natural Hazard Assessment V3*, dated March 2026.

6.4.1 Stormwater treatment

Under the Auckland Unitary Plan (AUP), treatment of stormwater runoff from High Contaminant Generating Activities (HCGAs) is required. HCGA's are land use activities that generate and discharge contaminants at a level where treatment will result in a substantial reduction in contaminant concentration and load. HCGAs are identified as:

- Parking areas and associated accessways that are exposed to rainfall and carry more than 50 vehicles per day[7].
- Building roofing, spouting, and external walls cladding and architectural features (with a surface area greater than 25 m^2) using materials with an:
  - Exposed surface or coating of metallic zinc or any alloy containing greater than 10% zinc.
  - Exposed surface or coating of metallic copper or any alloy containing greater than 10% copper.
  - Exposed treated timber surface or any roof material with a copper-containing or zinc-containing algaecide.

The proposed development includes vehicle lanes which may have more than 50 vehicles per day. If the vehicle movements necessitate it, stormwater treatment will be provided on site.

All parking associated with the development will be contained within the buildings. We understand that the development does not include any of the above-mentioned building materials at this stage in design.

There is existing stormwater treatment within the site for the bus depot. It is assumed that this will be repurposed, abandoned or removed as required.

6.5 Assessment

The proposed development is not expected to increase demand on the stormwater network beyond climate change as the existing site is 100% impervious.

Consequently, no additional effects on the existing stormwater infrastructure are expected as a result of this development.

It is acknowledged that some limitations may already exist within the local network in regard to capacity.

A stormwater management plan will be required for the development and prepared in accordance with the NDC requirements. This will include stormwater treatment as required.

7 Dry Services

7.1 Electricity

The electricity network has been assessed using data available from Vector's Open Data GIS[8] and BeforeUDig records.

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[7] Auckland Council (August 2013), Auckland Unitary Plan – Stormwater Management Provisions, Technical Report 2013/035

[8] distribution feeder network and zone substations | Open Data Vector Limited

The proposed development lies within the supply area of the Hobson Substation, as shown in Figure 7-1. The Hobson Substation is a 110/22/11 kV facility that functions as a key feeder for the wider Auckland CBD and services a large portion of the downtown wand Viaduct Harbour area.

Figure 7-1: Substation network within Auckland CBD (Sourced from Vector Open Data GIS). Hobson Substation area shown in yellow.

Within the local network, BeforeUDig show the site to be well serviced by several active lines within all surrounding road corridors as shown in Figure 7-2.

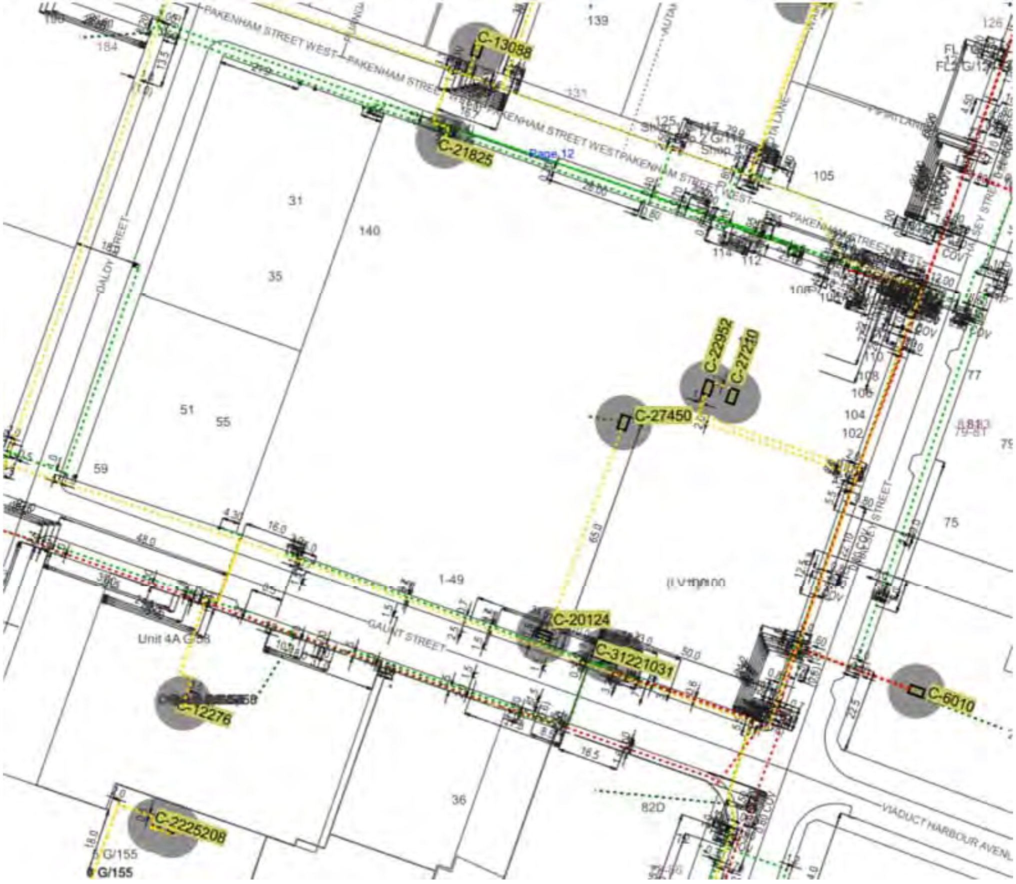

Figure 7-2 Existing electrical network (sourced from Vector BeforeUDig request). Yellow shows 22,000 volt cables, red shows 11,000 – 6,600 volt cables, green shows 400 volt cables and transformers/substations are labelled [C-XXXX].

The existing power network consists of 22 kV, 11 kV – 6 kV, and 400 V underground cables. Several substations are located within the development, their locations are described below. These will be removed or relocated as required following engagement with Vector at future stages.

Gaunt Street:

There are 22 kV, 11 kV-6 kV, and 400 V lines shown in the northern side of Gaunt street adjacent to site. Two 22 kV lines converge at Substation [C-20124] and extend approximately 65 m north toward the centre of the site, linking substation [C-27450] with a 400 V cable .

There are two transformers/substations within the property line of the site on the northern side of Gaunt Street.

There are 11 kV-6 kV and 400 V lines shown in the southern side of Gaunt street.

Halsey Street:

There are 22 kV, 11 kV-6 kV, and 400 V cables shown in the western side of Halsey street. Two 22 kV lines run westwards into the site approximately around B2. These lines extend for 50 m before connecting to Substations [C-22952] and [C-27210] at the centre of site.

400 V lines are shown in the eastern side of Halsey Street, with a 11 kV-6 kV and 400 V line crossing under the road near the Halsey-Gaunt Street intersection.

Pakenham Street West:

400 V cables are shown on the southern side of Pakenham West Street, with 22 kV and 11 kV-6 kV lines shown in the north eastern corner adjacent to site. The 11 kV-6 kV appears to terminate around the Halsey-Pakenham Street West intersection.

22 kV is shown in the northern side of Pakenham Street West, from which a short 22 kV line crosses under the road and connects to transformer [C-21825] near the north-western boundary of the site.

Engagement with Vector will be undertaken during detailed design to confirm servicing capacity, connection points, and any requirements for network upgrades. Refer to Appendix CC for BeforeUDig results.

Infrastructure removal

Of the five substations identified within the site, it appears that two (C-22952 & C-27210) are supplying the existing Travelodge building and the remaining three are supplying the bus depot. For the Travelodge supplies it is expected that the 22 kV cables traversing the site from Halsey Street are within the building footprint or immediately adjacent. This will need to be confirmed at the next stage so that any constraints or protection measures can be allowed for should the cables be locating outside the building footprint.

The three substations supplying the bus depot and associated supply cabling from the street frontages are expected to be made redundant and removed by Vector when the bus depot is decommissioned.

7.2 Communications

Assessment of the existing communications network has been undertaken using information obtained from BeforeUDig service plans.

Telecommunication service plans show infrastructure in the area owned and operated by Chorus New Zealand Limited, Vector Fibre and Eon Fibre.

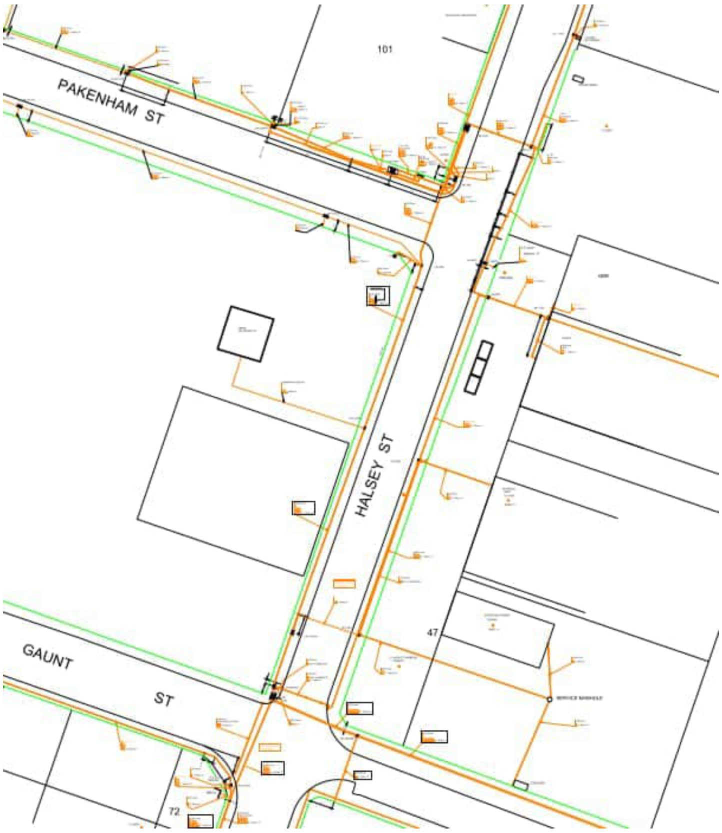

Figure 7-3 Chorus assets at eastern extent of site (sourced from Chorus BeforeUDig response). Chorus assets shown in orange, property boundary shown in green

Figure 7-4: Chorus assets at western extent of site (sourced from Chorus BeforeUDig response). Chorus assets shown in orange, property boundary shown in green

Figure 7-5: Existing Vector Fibre network (sourced from Vector fibre BeforeUDig response). Green shows active underground routes [trenched], Orange shows inactive underground routes [installed in place].

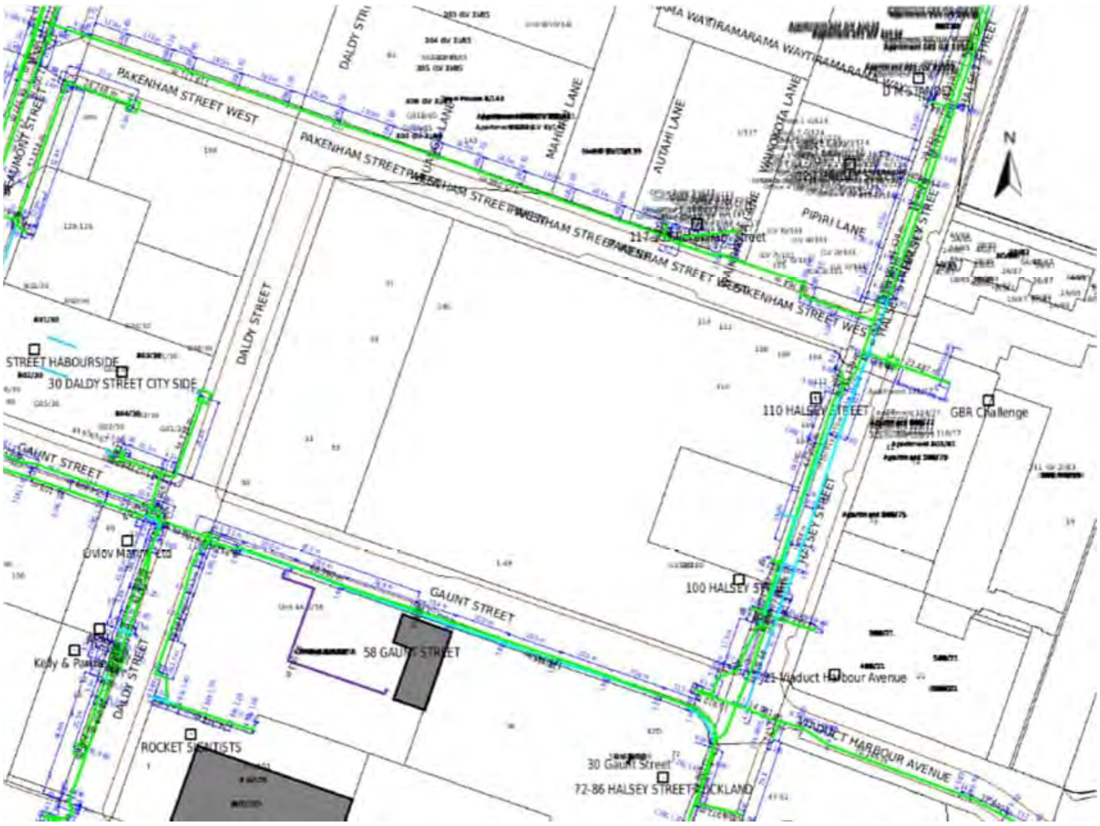

Figure 7-6: Existing Eon Fibre assets (Sourced from EON Fibre BeforeUDig response). Green shows existing network, blue shows proposed networks

Gaunt Street:

Existing Eon Fibre and Chorus services are located in the southern side of the road corridor. No connections extend to site from this road.

Halsey Street:

Existing Vector Fibre, Chorus and Eon Fibre asset within the western side of the road. There is a Vector Fibre and Chorus connection into the site, which appears to be to the transformer within the site.

Pakenham Street West:

Existing Chorus and Vector Fibre on the southern side of the road. Existing Eon Fiber, Vector Fibre and Chorus on the northern side of the road.

Refer to Appendix C for BeforeUDig results.

7.3 Gas

Assessment of the existing gas network has been undertaken using information obtained from BeforeUDig service lans.

All surrounding road corridors contain MP4 pressure gas mains adjacent to the site, with four connections along Gaunt Street and three along Halsey Street. There is one branch extending west from Halsey Street to service the existing structure in the north-eastern corner of the site.

Figure 7-7 Existing gas network (sourced from Vector BeforeUDig response). Green shows MP4 pressure pipes.

Engagement with Vector Gas will be undertaken during detailed design to confirm servicing capacity and connection locations.

Refer to Appendix CC for BeforeUdig results.

7.4 Assessment

There are existing networks within the adjacent streets for electricity, communications, and gas, which are likely to adequately service the proposed development.

8 Summary

On the basis of the above desktop assessment, we infer that the high-level proposed development can primarily be expected to be serviced by existing infrastructure subject to the following:

- All capacity assessments at this phase of the project are high level and will require re-assessment against any developed design and as more information becomes available.

Water supply

- There is an extensive network of moderately large diameter water supply pipes around the site with a number of small diameter existing connection points.
- Water demands as peak hourly demand have increased from 0.61 L/s in predevelopment to 18.26 L/s in post development.
- Engagement with Watercare has commenced and we anticipate comment or capacity checks in due course.

Stormwater

- There is an extensive network of stormwater pipes around the site however these range in size and suitability.
- As the site is presently near 100% impervious, it is assumed that there will be no additional demand from the development.
- Peak run-off generated from site is expected to increase from 260 L/s to 305 L/s as a result of climate change.Stormwater treatment may be required for vehicle accessways
- A Stormwater Management Plan may be required for the site to meet “Brownfields large” requirements in the Auckland Council Network Discharge Consent

Wastewater

- Wastewater demands as peak wet weather flow have increased from 0.82 L/s in predevelopment to 19.36 L/s in post development.
- Desktop assessment of available information has shown the local connections do not sufficient capacity to service the demands of the proposed development. The arrangement and connection points will need to be confirmed in due course. The condition of existing pipes will need to be confirmed.
- We have engaged with Watercare to seek a capacity assessment. Based on our assessment of wastewater demand, we anticipate that the existing network will have capacity to service the development. This is subject to confirmation by Watercare.

Dry services

- The BeforeUdig enquiry indicates that there is fibre network infrastructure within the road corridors adjacent to site

- The BeforeUdig enquiry indicates that there is gas supply infrastructure within the road corridors adjacent to site.
- The BeforeUdig enquiry indicates that there is high and low voltage services within the road corridors adjacent to site.

9 Applicability

This report has been prepared for the exclusive use of our client RP Financial (NZ CRE 100 Halsey), with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

We understand and agree that our client will submit this report as part of an application under the Fast-track Approvals Act 2024 and that an Expert Panel as the consenting authority will use this report for the purpose of assessing that application. We understand and agree that this report will be used by the Expert Panel in undertaking its regulatory functions.

Tonkin & Taylor Ltd
Environmental and Engineering Consultants

Report prepared by:	Authorised for Tonkin & Taylor Ltd by:
	AHope
....	....
Caitlin Cairncross Senior Civil Engineer	Andrew Hope Project Director

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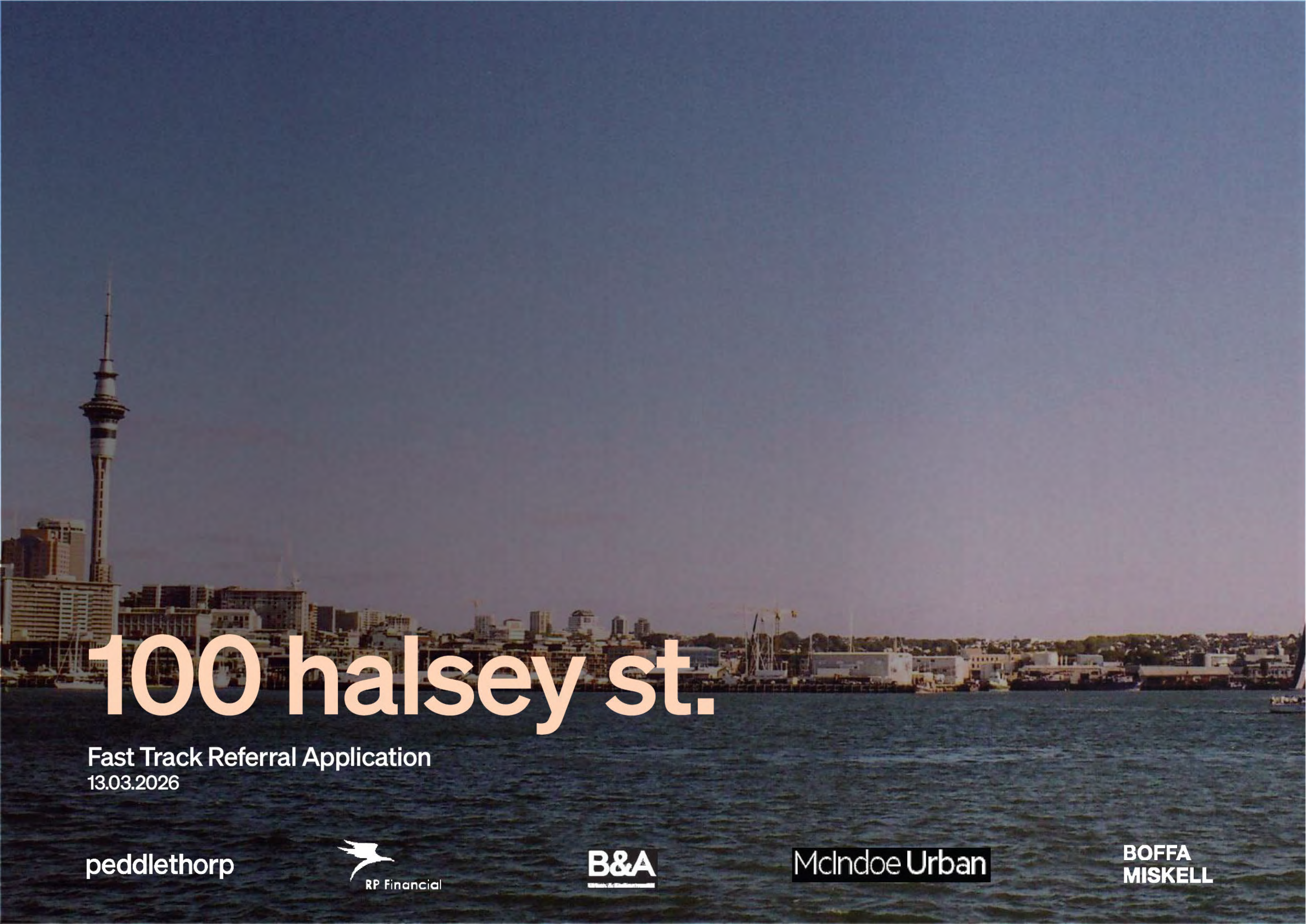
Appendix A Peddlethorp Architectural Plans



100 halsey st.

Fast Track Referral Application

13.03.2026

peddlethorp

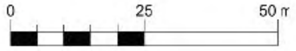
RP Financial

B&A

McIndoe Urban

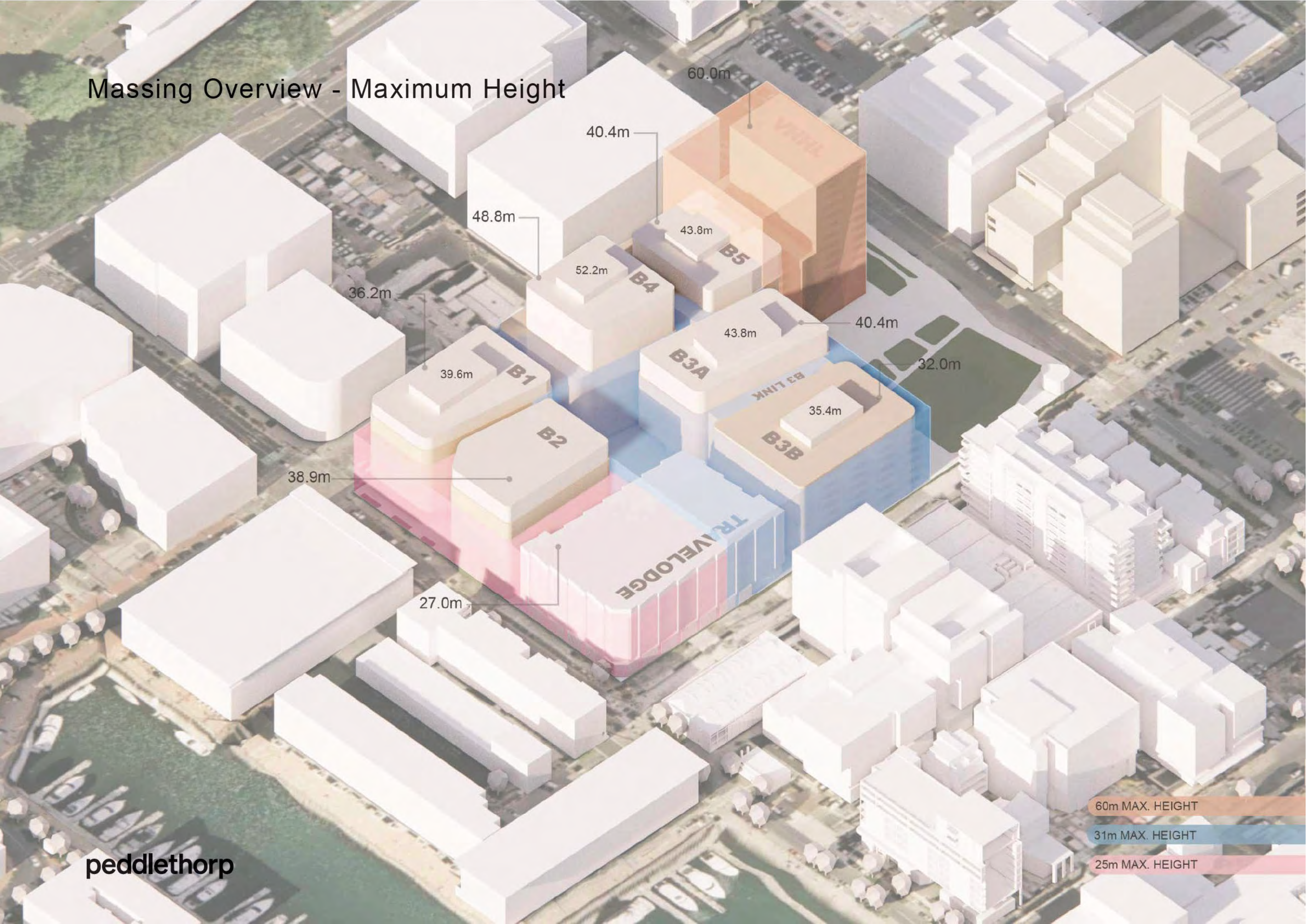
BOFFA
MISKELL

Site Plan



peddlethorp

Massing Overview - Maximum Height



peddlethorp

Appendix B Calculation Sheets

TP108 Pre Method

☐	Drop down list	🟨	Input cell	▨	Key results

Project:	100 Halsey	By:	TEKR	Date:	5/03/2026
Work Package:	Infrastructure assessment - Stormwater	Checked:	AGFE	Date:	5/03/2026
Title:					
Location:	100 Halsey Street				
Stage #:	100000				

Reference: Auckland Regional Council TP108 - Guidelines for stormwater runoff modelling in the Auckland Region (1999)

+ Runoff Curve Number (CN) and Initial Abstraction (Ia)

Soil name and classification	Cover description (cover type, treatment and hydrologic condition)	Curve Number (CN)*	Area (hectares)	Product of CN x Area
Pervious Areas				
Soil Type C	*Woods (good condition)*	70	0.0000	0
	Meadow-continuous grass, protected from grazing and generally mowed for hay	71	0.0000	0
	Brush-brush-weed-grass mixture (good condition)	65	0.0000	0
	Woods-grass combination, orchard or tree farm (poor condition)	82	0.0000	0
Impervious Areas		Subtotal for Pervious Areas:	0.0000	0
Soil Type C	*Paved parking lots, roofs, driveways, etc. (excl. right-of-way)*	98	1.4000	137
	Paved parking lots, roofs, driveways, etc. (excl. right-of-way)	98	0.0000	0
	Paved parking lots, roofs, driveways, etc. (excl. right-of-way)	98	0.0000	0
		Subtotal for Impervious Areas:	1.4000	137
* from Table 3.3		Totals:	1.4000	137
				% Impervious
				100.0%

CN (weighted) :	total product / total area	=	137 / 1.40	=	98	
Ia (weighted) :	5 x pervious area / total area	=	5 x 0.000 / 1.40	=	0.0	mm

+ Time of Concentration (t_c) and Soil Storage (S)

Time of Concentration:

Channelisation Factor :	C	=	0.60	(from Table 4.2)		
Catchment Length :	L	=	0.4	km (along drainage path)		
Catchment Slope :	S_c	=	0.2	m/m (by equal area method)		
Runoff Factor R :	$\frac{CN}{200 - CN}$	=	0.96			
Time of Concentration :	$t_c = 0.14\,C\,L^{0.66}\,R^{-0.55}\,Sc^{-0.30}$	=		0.17 hrs		10.0 mins
SCS Lag for HEC-HMS :	$t_p = 2/3\,t_c$	=		0.11 hrs		6.7 mins

Soil Storage Parameter:

S =	((1000/CN)-10)*25.4	Total	=	5 mm
		Pervious	=	0 mm
		Impervious	=	5 mm

+ Runoff Volume (V_{24}) and Peak Flow Rate (q_p) Calculation

					Storm #1	Storm #2	Storm #3	Storm #4	Storm #5
Average Recurrence Interval, ARI (yr) :					**EDV**	**WQV**	**2**	**10**	**100**
24 hour Rainfall Depth, P_{24} (mm) :								112	
Runoff Index, c* :	=	$\frac{P_{24} - 2Ia}{P_{24} - 2Ia + 2S}$			0.00	0.00	0.00	0.92	0.00
Specific Peak Flow Rate, q*, (from Figure 5.1)					0.000	0.000	0.000	0.166	0.000
Peak Flow Rate, q_p :	=	$q^*\,A\,P_{24}$	(m^3/s)		0.000	0.000	0.000	0.260	0.000
Runoff Depth, Q_{24} :	=	$\frac{(P_{24} - Ia)^2}{(P_{24} - Ia) + S}$	(mm)	Pervious:	-5.0	-5.0	-5.0	107.0	-5.0
				Impervious:	0.0	0.0	0.0	107.0	0.0
Runoff Volume, V_{24} :	=	$1000 \times Q_{24}\,A$	(m^3)	Pervious:	0	0	0	0	0
				Impervious:	0	0	0	1,499	0
				Total:	0	0	0	1,499	0

TP108 2.1C Post Method

▭ Drop down list 🟨 Input cell ▨ Key results

Project:	100 Halsey	**By:**	TEKR	**Date:**	5/03/2026
Work Package:	Infrastructure assessment - Stormwater	**Checked:**	AGFE	**Date:**	5/03/2026
Title:					
Location:	100 Halsey Street				
Stage #:	100000				

Reference: Auckland Regional Council TP108 - Guidelines for stormwater runoff modelling in the Auckland Region (1999)

+ Runoff Curve Number (CN) and Initial Abstraction (Ia)

Soil name and classification	Cover description (cover type, treatment and hydrologic condition)	Curve Number (CN)*	Area (hectares)	Product of CN x Area
Pervious Areas				
Soil Type C	*Woods (good condition)*	70	0.0000	0
	Meadow-continuous grass, protected from grazing and generally mowed for hay	71	0.0000	0
	Brush-brush-weed-grass mixture (good condition)	65	0.0000	0
	Woods-grass combination, orchard or tree farm (poor condition)	82	0.0000	0
Impervious Areas	Subtotal for Pervious Areas:		0.0000	0
Soil Type C	*Paved parking lots, roofs, driveways, etc. (excl. right-of-way)*	98	1.4000	137
	Paved parking lots, roofs, driveways, etc. (excl. right-of-way)	98	0.0000	0
	Paved parking lots, roofs, driveways, etc. (excl. right-of-way)	98	0.0000	0
	Subtotal for Impervious Areas:		1.4000	137
* from Table 3.3		Totals:	1.4000	137
				% Impervious
				100.0%

CN (weighted) : $\frac{\text{total product}}{\text{total area}} = \frac{137}{1.40} = 98$

Ia (weighted) : $\frac{5 \times \text{pervious area}}{\text{total area}} = \frac{5 \times 0.000}{1.40} = 0.0$ mm

+ Time of Concentration (t_c) and Soil Storage (S)

Time of Concentration:

Channelisation Factor : C = 0.60 (from Table 4.2)

Catchment Length : L = 0.4 km (along drainage path)

Catchment Slope : S_c = 0.2 m/m (by equal area method)

Runoff Factor R : $\frac{CN}{200 - CN}$ = 0.96

Time of Concentration : $t_c = 0.14\,C\,L^{0.66}\,R^{-0.55}\,Sc^{-0.30}$ = 0.17 hrs 10.0 mins

SCS Lag for HEC-HMS : $t_p = 2/3\,t_c$ = 0.11 hrs 6.7 mins

Soil Storage Parameter:

$S = ((1000/CN)-10)*25.4$

Total	=	5 mm
Pervious	=	0 mm
Impervious	=	5 mm

+ Runoff Volume (V_{24}) and Peak Flow Rate (q_p) Calculation

			Storm #1	Storm #2	Storm #3	Storm #4	Storm #5
Average Recurrence Interval, ARI (yr) :			EDV	WQV	2	10	100
24 hour Rainfall Depth, P_{24} (mm) :						131.04	
Runoff Index, c* :	= $\frac{P_{24} - 2Ia}{P_{24} - 2Ia + 2S}$		0.00	0.00	0.00	0.93	0.00
Specific Peak Flow Rate, q*, (from Figure 5.1)			0.000	0.000	0.000	0.166	0.000
Peak Flow Rate, q_p :	= $q^*\,A\,P_{24}$ (m^3/s)		0.000	0.000	0.000	0.305	0.000
Runoff Depth, Q_{24} :	= $\frac{(P_{24} - Ia)^2}{(P_{24} - Ia) + S}$ (mm)	Pervious:	-5.0	-5.0	-5.0	126.0	-5.0
		Impervious:	0.0	0.0	0.0	126.1	0.0
Runoff Volume, V_{24} :	= $1000 \times Q_{24}\,A$ (m^3)	Pervious:	0	0	0	0	0
		Impervious:	0	0	0	1,765	0
		Total:	0	0	0	1,765	0

TP108 2.1C Catchment 1 Method

▢ **Drop down list** 🟨 **Input cell** ▨ **Key results**

Project:	100 Halsey	**By:**	TEKR	**Date:**	5/03/2026
Work Package:	Infrastructure assessment - Stormwater	**Checked:**	AGFE	**Date:**	5/03/2026
Title:	Catchment 1				
Location:	100 Halsey Street				
Stage #:	100000				

Reference: Auckland Regional Council TP108 - Guidelines for stormwater runoff modelling in the Auckland Region (1999)

+ Runoff Curve Number (CN) and Initial Abstraction (Ia)

Soil name and classification	Cover description (cover type, treatment and hydrologic condition)	Curve Number (CN)*	Area (hectares)	Product of CN x Area
Pervious Areas				
Soil Type C	*Woods (good condition)*	70	0.0000	0
	Meadow-continuous grass, protected from grazing and generally mowed for hay	71	0.0000	0
	Brush-brush-weed-grass mixture (good condition)	65	0.0000	0
	Woods-grass combination, orchard or tree farm (poor condition)	82	0.0000	0
Impervious Areas		Subtotal for Pervious Areas:	0.0000	0
Soil Type C	*Paved parking lots, roofs, driveways, etc. (excl. right-of-way)*	98	1.1600	114
	Paved parking lots, roofs, driveways, etc. (excl. right-of-way)	98	0.0000	0
	Paved parking lots, roofs, driveways, etc. (excl. right-of-way)	98	0.0000	0
		Subtotal for Impervious Areas:	1.1600	114
* from Table 3.3		Totals:	1.1600	114
				% Impervious
				100.0%

CN (weighted) : $\frac{\text{total product}}{\text{total area}}$ = $\frac{114}{1.16}$ = 98

Ia (weighted) : $\frac{5 \times \text{pervious area}}{\text{total area}}$ = $\frac{5 \times 0.000}{1.16}$ = 0.0 mm

+ Time of Concentration (t_c) and Soil Storage (S)

Time of Concentration:

Channelisation Factor : C = 0.60 (from Table 4.2)

Catchment Length : L = 0.4 km (along drainage path)

Catchment Slope : S_c = 0.2 m/m (by equal area method)

Runoff Factor R : $\frac{CN}{200 - CN}$ = 0.96

Time of Concentration : $t_c = 0.14\,C\,L^{0.66}\,R^{-0.55}\,Sc^{-0.30}$ = 0.17 hrs 10.0 mins

SCS Lag for HEC-HMS : $t_p = 2/3\,t_c$ = 0.11 hrs 6.7 mins

Soil Storage Parameter:

S = ((1000/CN)-10)*25.4

Total	=	5 mm
Pervious	=	0 mm
Impervious	=	5 mm

+ Runoff Volume (V_{24}) and Peak Flow Rate (q_p) Calculation

			Storm #1	Storm #2	Storm #3	Storm #4	Storm #5
Average Recurrence Interval, ARI (yr) :			**EDV**	**WQV**	**2**	**10**	**100**
24 hour Rainfall Depth, P_{24} (mm) :						131.04	
Runoff Index, c* :	= $\frac{P_{24} - 2Ia}{P_{24} - 2Ia + 2S}$		0.00	0.00	0.00	0.93	0.00
Specific Peak Flow Rate, q*, (from Figure 5.1)			0.000	0.000	0.000	0.166	0.000
Peak Flow Rate, q_p :	= $q^* A P_{24}$ (m^3/s)		0.000	0.000	0.000	0.252	0.000
Runoff Depth, Q_{24} :	= $\frac{(P_{24} - Ia)^2}{(P_{24} - Ia) + S}$ (mm)	Pervious:	-5.0	-5.0	-5.0	126.0	-5.0
		Impervious:	0.0	0.0	0.0	126.1	0.0
Runoff Volume, V_{24} :	= $1000 \times Q_{24} A$ (m^3)	Pervious:	0	0	0	0	0
		Impervious:	0	0	0	1,462	0
		Total:	0	0	0	1,462	0

TP108 2.1C Catchment 2 Method

☐	**Drop down list**	🟨	**Input cell**	▨	**Key results**

Project:	100 Halsey	By:	TEKR	Date:	5/03/2026
Work Package:	Infrastructure assessment - Stormwater	Checked:	AGFE	Date:	5/03/2026
Title:	Catchment 1				
Location:	100 Halsey Street				
Stage #:	100000				

Reference: Auckland Regional Council TP108 - Guidelines for stormwater runoff modelling in the Auckland Region (1999)

+ Runoff Curve Number (CN) and Initial Abstraction (Ia)

Soil name and classification	Cover description (cover type, treatment and hydrologic condition)	Curve Number (CN)*	Area (hectares)	Product of CN x Area
Pervious Areas				
Soil Type C	*Woods (good condition)*	70	0.0000	0
	Meadow-continuous grass, protected from grazing and generally mowed for hay	71	0.0000	0
	Brush-brush-weed-grass mixture (good condition)	65	0.0000	0
	Woods-grass combination, orchard or tree farm (poor condition)	82	0.0000	0
Impervious Areas		Subtotal for Pervious Areas:	0.0000	0
Soil Type C	*Paved parking lots, roofs, driveways, etc. (excl. right-of-way)*	98	0.6000	59
	Paved parking lots, roofs, driveways, etc. (excl. right-of-way)	98	0.0000	0
	Paved parking lots, roofs, driveways, etc. (excl. right-of-way)	98	0.0000	0
		Subtotal for Impervious Areas:	0.6000	59
* from Table 3.3		Totals:	0.6000	59
				% Impervious
				100.0%

CN (weighted) :	total product / total area	=	59 / 0.60	=	98	
Ia (weighted) :	5 x pervious area / total area	=	5 x 0.000 / 0.60	=	0.0	mm

+ Time of Concentration (t_c) and Soil Storage (S)

Time of Concentration:

Channelisation Factor :	C	=	0.60	(from Table 4.2)
Catchment Length :	L	=	0.4	km (along drainage path)
Catchment Slope :	S_c	=	0.2	m/m (by equal area method)
Runoff Factor R :	$\frac{CN}{200 - CN}$	=	0.96	

Time of Concentration :	$t_c = 0.14\, C\, L^{0.66}\, R^{-0.55}\, Sc^{-0.30}$	=	0.17 hrs	10.0 mins
SCS Lag for HEC-HMS :	$t_p = 2/3\, t_c$	=	0.11 hrs	6.7 mins

Soil Storage Parameter:

S =	((1000/CN)-10)*25.4	Total	=	5 mm
		Pervious	=	0 mm
		Impervious	=	5 mm

+ Runoff Volume (V_{24}) and Peak Flow Rate (q_p) Calculation

				Storm #1	Storm #2	Storm #3	Storm #4	Storm #5
Average Recurrence Interval, ARI (yr) :				**EDV**	**WQV**	**2**	**10**	**100**
24 hour Rainfall Depth, P_{24} (mm) :							131.04	
Runoff Index, c* :	=	$\frac{P_{24} - 2Ia}{P_{24} - 2Ia + 2S}$		0.00	0.00	0.00	0.93	0.00
Specific Peak Flow Rate, q*, (from Figure 5.1)				0.000	0.000	0.000	0.166	0.000
Peak Flow Rate, q_p :	=	$q^* A P_{24}$ (m^3/s)		0.000	0.000	0.000	0.131	0.000
Runoff Depth, Q_{24} :	=	$\frac{(P_{24} - Ia)^2}{(P_{24} - Ia) + S}$ (mm)	Pervious:	-5.0	-5.0	-5.0	126.0	-5.0
			Impervious:	0.0	0.0	0.0	126.1	0.0
Runoff Volume, V_{24} :	=	$1000 \times Q_{24} A$ (m^3)	Pervious:	0	0	0	0	0
			Impervious:	0	0	0	756	0
			Total:	0	0	0	756	0

TP108 2.1C Catchment 3 Method

☐	**Drop down list**	🟨	**Input cell**	▨	**Key results**

Project:	100 Halsey	By:	TEKR	Date:	5/03/2026
Work Package:	Infrastructure assessment - Stormwater	Checked:	AGFE	Date:	5/03/2026
Title:	Catchment 1				
Location:	100 Halsey Street				
Stage #:	100000				

Reference: Auckland Regional Council TP108 - Guidelines for stormwater runoff modelling in the Auckland Region (1999)

+ Runoff Curve Number (CN) and Initial Abstraction (Ia)

Soil name and classification	Cover description (cover type, treatment and hydrologic condition)	Curve Number (CN)*	Area (hectares)	Product of CN x Area
Pervious Areas				
Soil Type C	*Woods (good condition)*	70	0.0000	0
	Meadow-continuous grass, protected from grazing and generally mowed for hay	71	0.0000	0
	Brush-brush-weed-grass mixture (good condition)	65	0.0000	0
	Woods-grass combination, orchard or tree farm (poor condition)	82	0.0000	0
Impervious Areas		Subtotal for Pervious Areas:	0.0000	0
Soil Type C	*Paved parking lots, roofs, driveways, etc. (excl. right-of-way)*	98	0.8300	81
	Paved parking lots, roofs, driveways, etc. (excl. right-of-way)	98	0.0000	0
	Paved parking lots, roofs, driveways, etc. (excl. right-of-way)	98	0.0000	0
		Subtotal for Impervious Areas:	0.8300	81
* from Table 3.3		Totals:	0.8300	81
				% Impervious
				100.0%

CN (weighted) :	total product / total area	=	81 / 0.83	=	98	
Ia (weighted) :	5 x pervious area / total area	=	5 x 0.000 / 0.83	=	0.0	mm

+ Time of Concentration (t_c) and Soil Storage (S)

Time of Concentration:

Channelisation Factor :	C	=	0.60	(from Table 4.2)		
Catchment Length :	L	=	0.4	km (along drainage path)		
Catchment Slope :	S_c	=	0.2	m/m (by equal area method)		
Runoff Factor R :	$\frac{CN}{200 - CN}$	=	0.96			
Time of Concentration :	$t_c = 0.14\ C\ L^{0.66}\ R^{-0.55}\ Sc^{-0.30}$	=		0.17 hrs		10.0 mins
SCS Lag for HEC-HMS :	$t_p = 2/3\ t_c$	=		0.11 hrs		6.7 mins

Soil Storage Parameter:

S =	((1000/CN)-10)*25.4	Total	=	5	mm
		Pervious	=	0	mm
		Impervious	=	5	mm

+ Runoff Volume (V_{24}) and Peak Flow Rate (q_p) Calculation

					Storm #1	Storm #2	Storm #3	Storm #4	Storm #5
Average Recurrence Interval, ARI (yr) :					**EDV**	**WQV**	**2**	**10**	**100**
24 hour Rainfall Depth, P_{24} (mm) :								131.04	
Runoff Index, c* :	=	$\frac{P_{24} - 2Ia}{P_{24} - 2Ia + 2S}$			0.00	0.00	0.00	0.93	0.00
Specific Peak Flow Rate, q*, (from Figure 5.1)					0.000	0.000	0.000	0.166	0.000
Peak Flow Rate, q_p :	=	$q^*\ A\ P_{24}$	(m^3/s)		0.000	0.000	0.000	0.181	0.000
Runoff Depth, Q_{24} :	=	$\frac{(P_{24} - Ia)^2}{(P_{24} - Ia) + S}$	(mm)	Pervious:	-5.0	-5.0	-5.0	126.0	-5.0
				Impervious:	0.0	0.0	0.0	126.1	0.0
Runoff Volume, V_{24} :	=	$1000 \times Q_{24}\ A$	(m^3)	Pervious:	0	0	0	0	0
				Impervious:	0	0	0	1,046	0
				Total:	0	0	0	1,046	0

Time of Concentration

Project:	100 Halsey	By:	TEKR	Date:	5/03/2026
Work Package:	Infrastructure assessment - Stormwater	Checked:	AGFE	Date:	5/03/2026
Title:					
Location:	100 Halsey Street				
Stage #:	100000				

+ Catchment Characteristics

Catchment (km^2)	0.01
CN	98
Channel Factor	0.6

+ Slope Characteristics

Chainage	Elevation (mRL)	X (m)	dX (m)	h (m)	Avg. h (m)	Δ A (m^2)
53300	63.90	0	0	0.00		
53400	63.90	100	100	0.00	0.00	0
53500	66.11	200	100	2.21	1.10	110
53600	70.54	300	100	6.64	4.42	442
53700	75.99	400	100	12.09	9.37	937
53800	81.40	500	100	17.50	14.79	1479
53900	86.80	600	100	22.90	20.20	2020
54000	92.20	700	100	28.30	25.60	2560
54100	97.60	800	100	33.70	31.00	3100
54200	103.00	900	100	39.10	36.40	3640
54300	108.40	1000	100	44.50	41.80	4180
54400	113.61	1100	100	49.71	47.11	4711
54500	117.97	1200	100	54.08	51.90	5190
54600	121.42	1300	100	57.52	55.80	5580
54700	123.95	1400	100	60.05	58.78	5878
54800	125.68	1500	100	61.78	60.91	6091
54900	127.31	1600	100	63.41	62.60	6260
54950	128.12	1650	50	64.22	63.82	3191
TOTAL	64.23	1650	1650			55367.66249

+ Derived Characteristics

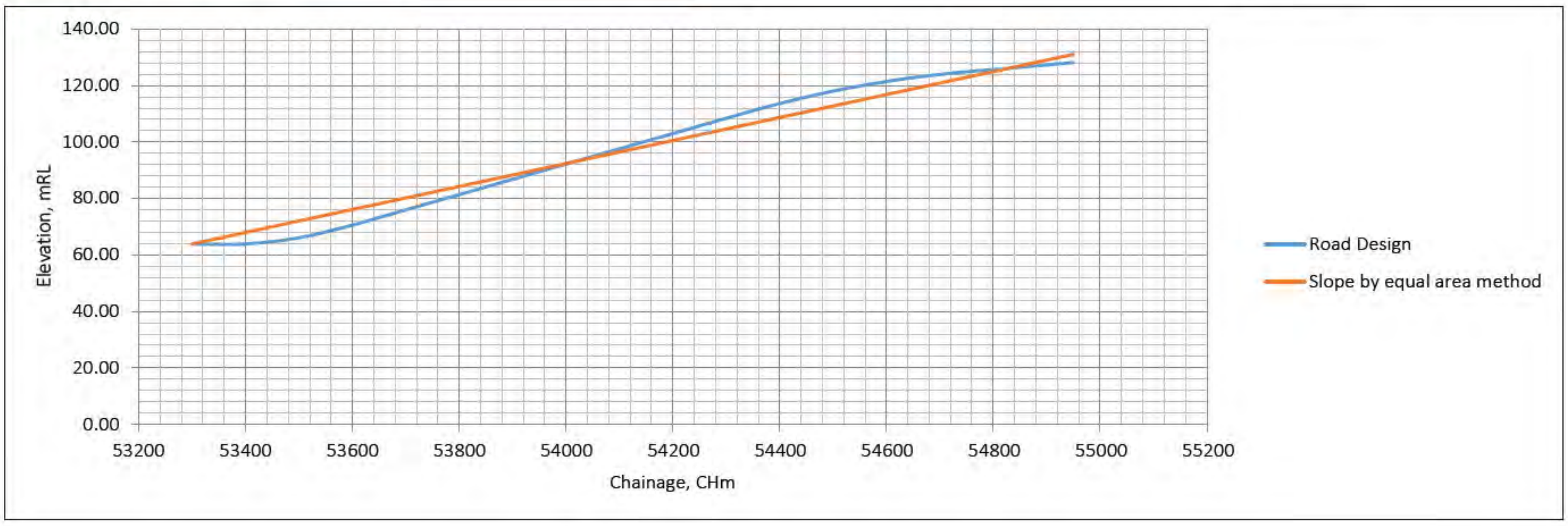
Max Elevation (mRL)	128.12
Min Elevation (mRL)	63.90
Δ Elevation (m)	64.23
Main Channel Slope	0.041
	4.1%

$$Slope = S_c = \frac{2A}{\left(\sum \Delta x\right)^2}$$

Method	Formula	Parameter definitions
Ramser-Kirpich	$T_c = 0.0195\, L^{0.77} S_a^{-0.385}$	S_a = average channel slope (m/m) L = maximum flow length (m)
Bransby - Williams	$T_c = (0.953\, L^{1.2}) / (A^{0.1} H^{0.2})$	A = catchment area (km^2) L = maximum flow length (m) H = the difference in elevation between the highest and lowest points in the study area (m)
Auckland Regional Council TP108	$T_c = 0.14 C L^{0.66} \{CN/(200\text{-}CN)\}^{-0.55} S_c^{-0.30}$	C = channelisation factor L = maximum flow length (km) CN = SCS Curve Number S_c = catchment slope (equal area method) (m/m)
U.S. Soil Conservation Service	$T_c = (0.87\, L^3 / H)^{0.385}$	L = maximum flow length (km) H = the difference in elevation between the highest and lowest points in the study area (m)

+ Time of Concentration

Method	Time (Hours)	Time (Minutes)	Avg. V (m/s)
Ramser-Kirpich	0.33	20.1	1.4
Bransby-Williams	1.16	69.5	0.4
ARC TP108	0.31	18.7	1.5
US Soil Conservation	0.34	20.4	1.3
Selected Time of concentration		18.7	minutes



	100 Halsey St	Computed	[illegible]	[illegible]	Office: Auckland
		Checked	[illegible]	[illegible]	
Job Description	Infrastructure assessment	Revised			Job No: [illegible]
Sheet Description	Pre-Development wastewater demand	Checked			Phase/Task No
File Path	[illegible]				Sheet No: 2

BUILDING ONE :									
Level	Activity Type	Classification	Floor Area (m²)	Occupancy	Usage per unit (L/m² floor) or (L/person/day)	Wastewater demand (ADWF) (L/d)	Average Dry Weather Flow (ADWF) (L/s)	Peak Dry Weather Flow (PDWF) (L/s)	Peak Wet Weather Flow (PWWF) (L/s)
1	Industrial	Medium industry	1760	0	6	10560	0.122	0.011	0.019
					TOTAL	10560	0.12	0.01	0.02

TOTAL ADWF (L/S)	TOTAL PDWF (L/S)	TOTAL PWWF (L/S)
0.12	0.01	0.02

	[illegible]	Computed	[illegible]	[illegible]	Office Auckland
		Checked	[illegible]	[illegible]	
Job Description	[illegible]	Revised			Job No [illegible]
Sheet Description	Post-Development wastewater demand	Checked			Phase/Task No
File Path	[illegible]				Sheet No 1

BUILDING ONE :

Level	Activity Type	Classification	Floor Area (m^2)	Occupancy	Usage per unit (L/m^2/day) or (L/person/day)	Wastewater demand (ADWF) (L/d)	Average Dry Weather Flow (ADWF) (L/s)	Peak Dry Weather Flow (PDWF) (L/s)	Peak Wet Weather Flow (PWWF) (L/s)
G	Commercial	Wet Retail	600.8		15	9012.0	0.104	0.209	0.699
G	Commercial	Dry Retail	600.8		1.3	781.0	0.009	0.018	0.045
1	Commercial	Offices	1088.8		4.3	4718.1	0.055	0.109	0.273
2	Commercial	Offices	1201.6		4.3	5206.9	0.060	0.121	0.301
3	Commercial	Offices	1201.6		4.3	5206.9	0.060	0.121	0.301
4	Commercial	Offices	1201.6		4.3	5206.9	0.060	0.121	0.301
5	Commercial	Offices	1201.6		4.3	5206.9	0.060	0.121	0.301
6	Commercial	Offices	1201.6		4.3	5206.9	0.060	0.121	0.301
7	Commercial	Offices	1201.6		4.3	5206.9	0.060	0.121	0.301
8	Commercial	Offices	1201.6		4.3	5206.9	0.060	0.121	0.301
9	Commercial	Offices	273.6		4.3	1185.6	0.014	0.027	0.069
		TOTAL FLOOR AREA	10975.2		TOTAL	52145	0.60	1.21	3.19

BUILDING TWO :

Level	Activity Type	Classification	Floor Area (m^2)	Occupancy	Usage per unit (L/m^2/day) or (L/person/day)	Wastewater demand (ADWF) (L/d)	Average Dry Weather Flow (ADWF) (L/s)	Peak Dry Weather Flow (PDWF) (L/s)	Peak Wet Weather Flow (PWWF) (L/s)
G	Commercial	Wet Retail	565.2		15	8478.0	0.098	0.196	0.657
G	Commercial	Dry Retail	565.2		1.3	734.8	0.009	0.017	0.043
1	Commercial	Offices	1130.4		4.3	4898.4	0.057	0.113	0.283
2	Commercial	Offices	1130.4		4.3	4898.4	0.057	0.113	0.283
3	Commercial	Offices	1130.4		4.3	4898.4	0.057	0.113	0.283
4	Commercial	Offices	1130.4		4.3	4898.4	0.057	0.113	0.283
5	Commercial	Offices	1130.4		4.3	4898.4	0.057	0.113	0.283
6	Commercial	Offices	1130.4		4.3	4898.4	0.057	0.113	0.283
7	Commercial	Offices	240		4.3	1040.0	0.012	0.024	0.060
		TOTAL FLOOR AREA	8152.8		TOTAL	39642.16	0.46	0.92	2.46

BUILDING THREE A:

Level	Activity Type	Classification	Floor Area (m^2)	Occupancy	Usage per unit (L/m^2/day) or (L/person/day)	Wastewater demand (ADWF) (L/d)	Average Dry Weather Flow (ADWF) (L/s)	Peak Dry Weather Flow (PDWF) (L/s)	Peak Wet Weather Flow (PWWF) (L/s)
1	Commercial	Wet Retail	446.8		15	6702.0	0.078	0.155	0.520
G	Commercial	Dry Retail	446.8		1.3	580.8	0.007	0.013	0.034
2	Commercial	Offices	893.8		4.3	3873.3	0.045	0.090	0.224
3	Commercial	Offices	1168		4.3	5061.3	0.059	0.117	0.293
4	Commercial	Offices	1168		4.3	5061.3	0.059	0.117	0.293
5	Commercial	Offices	1168		4.3	5061.3	0.059	0.117	0.293
6	Commercial	Offices	1168		4.3	5061.3	0.059	0.117	0.293
7	Commercial	Offices	1168		4.3	5061.3	0.059	0.117	0.293
8	Commercial	Offices	1168		4.3	5061.3	0.059	0.117	0.293
9	Commercial	Offices	1168		4.3	5061.3	0.059	0.117	0.293
10	Commercial	Offices	250.4		4.3	1085.1	0.013	0.025	0.063
		TOTAL FLOOR AREA	10213.8		TOTAL	47670	0.55	1.10	2.89

BUILDING THREE LINK:

Level	Activity Type	Classification	Floor Area (m^2)	Occupancy	Usage per unit (L/m^2/day) or (L/person/day)	Wastewater demand (ADWF) (L/d)	Average Dry Weather Flow (ADWF) (L/s)	Peak Dry Weather Flow (PDWF) (L/s)	Peak Wet Weather Flow (PWWF) (L/s)
G	Commercial	Wet Retail	106		15.0	1590.0	0.018	0.037	0.123
G	Commercial	Dry Retail	106		1.3	137.8	0.002	0.003	0.008
2	Commercial	Offices	115.3		4.3	499.5	0.006	0.012	0.029
3	Commercial	Offices	115.3		4.3	499.5	0.006	0.012	0.029
4	Commercial	Offices	115.3		4.3	499.5	0.006	0.012	0.029
5	Commercial	Offices	115.3		4.3	499.5	0.006	0.012	0.029
6	Commercial	Offices	115.3		4.3	499.5	0.006	0.012	0.029
		TOTAL FLOOR AREA	788		TOTAL	4225.3	0.05	0.10	0.28

BUILDING THREE B:

Level	Activity Type	Classification	Floor Area (m^2)	Occupancy	Usage per unit (L/m^2/day) or (L/person/day)	Wastewater demand (ADWF) (L/d)	Average Dry Weather Flow (ADWF) (L/s)	Peak Dry Weather Flow (PDWF) (L/s)	Peak Wet Weather Flow (PWWF) (L/s)
G	Commercial	Wet Retail	771.2		15.0	11568.0	0.134	0.268	0.897
G	Commercial	Dry Retail	771.2		1.3	1002.6	0.012	0.023	0.058
1	Commercial	Offices	1542.4		4.3	6683.7	0.077	0.155	0.387
2	Commercial	Offices	1542.4		4.3	6683.7	0.077	0.155	0.387
3	Commercial	Offices	1542.4		4.3	6683.7	0.077	0.155	0.387
4	Commercial	Offices	1542.4		4.3	6683.7	0.077	0.155	0.387
5	Commercial	Offices	1542.4		4.3	6683.7	0.077	0.155	0.387
6	Commercial	Offices	1542.4		4.3	6683.7	0.077	0.155	0.387
7	Commercial	Offices	250.4		4.3	1085.1	0.013	0.025	0.063
		TOTAL FLOOR AREA	11047.2		TOTAL	53758	0.62	1.24	3.34

BUILDING FOUR :

Level	Activity Type	Classification	Floor Area (m^2)	Occupancy	Usage per unit (L/m^2/day) or (L/person/day)	Wastewater demand (ADWF) (L/d)	Average Dry Weather Flow (ADWF) (L/s)	Peak Dry Weather Flow (PDWF) (L/s)	Peak Wet Weather Flow (PWWF) (L/s)
G	Commercial	Wet Retail	609.2		15.0	9138.0	0.106	0.212	0.709
G	Commercial	Dry Retail	609.2		1.3	792.0	0.009	0.018	0.046
1	Commercial	Offices	1129.6		4.3	4894.9	0.057	0.113	0.283
2	Commercial	Offices	1218.4		4.3	5279.7	0.061	0.122	0.306
3	Commercial	Offices	1218.4		4.3	5279.7	0.061	0.122	0.306
4	Commercial	Offices	1218.4		4.3	5279.7	0.061	0.122	0.306
5	Commercial	Offices	1218.4		4.3	5279.7	0.061	0.122	0.306
6	Commercial	Offices	1218.4		4.3	5279.7	0.061	0.122	0.306
7	Commercial	Offices	1026.4		4.3	4447.7	0.051	0.103	0.257
8	Commercial	Offices	1026.4		4.3	4447.7	0.051	0.103	0.257
9	Commercial	Offices	1026.4		4.3	4447.7	0.051	0.103	0.257
10	Commercial	Offices	1026.4		4.3	4447.7	0.051	0.103	0.257
11	Commercial	Offices	1026.4		4.3	4447.7	0.051	0.103	0.257
12	Commercial	Offices	250.4		4.3	1085.1	0.013	0.025	0.063
		TOTAL FLOOR AREA	13822.4		TOTAL	64547	0.75	1.49	3.92

BUILDING FIVE :

Level	Activity Type	Classification	Floor Area (m^2)	Occupancy	Usage per unit (L/m^2/day) or (L/person/day)	Wastewater demand (ADWF) (L/d)	Average Dry Weather Flow (ADWF) (L/s)	Peak Dry Weather Flow (PDWF) (L/s)	Peak Wet Weather Flow (PWWF) (L/s)
G	Commercial	Wet Retail	633.6		15.0	9504.0	0.110	0.220	0.737
G	Commercial	Dry Retail	633.6		1.3	823.7	0.010	0.019	0.048
1	Commercial	Offices	1165.6		4.3	5050.9	0.058	0.117	0.292
2	Commercial	Offices	1267.2		4.3	5491.2	0.064	0.127	0.318
3	Commercial	Offices	1267.2		4.3	5491.2	0.064	0.127	0.318
4	Commercial	Offices	1267.2		4.3	5491.2	0.064	0.127	0.318
5	Commercial	Offices	1267.2		4.3	5491.2	0.064	0.127	0.318
6	Commercial	Offices	1267.2		4.3	5491.2	0.064	0.127	0.318
7	Commercial	Offices	1088		4.3	4714.7	0.055	0.109	0.273
8	Commercial	Offices	1088		4.3	4714.7	0.055	0.109	0.273
9	Commercial	Offices	292.8		4.3	1268.8	0.015	0.029	0.073
		TOTAL FLOOR AREA	11237.6		TOTAL	53533	0.62	1.24	3.29

TOTAL ADWF (L/S)	TOTAL PDWF (L/S)	TOTAL PWWF (L/S)
3.65	7.30	19.38

Tonkin+Taylor	100 Halsey St	Computed:	TEKR	4/03/2026	Office:	Auckland
		Checked:	AGFE	4/03/2026		
Job Description:	Infrastructure assessment	Revised:			Job No:	1101937.0000
Sheet Description:	Post-Development wastewater capacity	Checked:			Phase/Task No:	
File Path:	[illegible]				Sheet No:	1

+ Design Calculations

Pipe ID	US Invert Level (m)	DS Invert Level (m)	Length of Pipe (m)	Pipe Diameter (mm)	Pipe Material	Mannings (n)	Pipe Area (m^2)	Pipe Slope (%)	Pre Development Flow (l/s)	Post Development Flow (l/s)	Pipe Capacity (l/s)	Spare Capacity (L/s)	Percentage of capacity used	Utilized?	Type
Amey Daldy Park Pump Station Pipelines															
1552613	1.33	-0.64	9.3	150	Un-plasticised polyvinyl chloride	0.01	17671	21.183	-	-	91.51	-	-	N	Connection
1550243	1.2	-0.82	9.2	150	Un-plasticised polyvinyl chloride	0.01	17671	21.957	0	6.50	93.16	86.66	7%	Y	Connection
81015117	-0.58	-0.74	44.5	375	Vitrified clay	0.014	110447	0.360	0	6.50	98.03	91.53	7%	Y	Main
2617216	-0.8	-0.88	34.7	375	Vitrified clay	0.014	110447	0.231	0	6.50	78.50	72.00	8%	Y	Main
2556699	-0.89	-1.04	37.1	375	Vitrified clay	0.014	110447	0.404	0	6.50	103.96	97.45	6%	Y	Main
2559526	-1.08	-3.01	14.6	375	Vitrified clay	0.014	110447	13.219	0	6.50	594.43	587.93	1%	Y	Main
81159301	-3.04	Unknown	19	500	Vitrified clay	0.014	196350	0.300	0	6.50	192.85	186.35	3%	Y	Main
Victoria Street Pump Station Lines															
1551233	Unknown	1.87	3.5	100	Un-plasticised polyvinyl chloride	0.01	7854	1.700	0	9.57	8.79	-0.78	109%	Y	Connection
1396651	Unknown	1.87	4.5	100	Un-plasticised polyvinyl chloride	0.01	7854	1.700	0	9.57	8.79	-0.78	109%	Y	Connection
2618341	1.87	1.5	74.1	150	Un-plasticised polyvinyl chloride	0.01	17671	0.499	0	9.57	14.05	4.48	68%	Y	Main
1397309	X	1.49	4.4	100	Un-plasticised polyvinyl chloride	0.01	7854	1.700	0	9.57	8.79	-0.78	109%	Y	Connection
2401087	1.47	Unknown	16.4	150	Un-plasticised polyvinyl chloride	0.01	17671	1.200	-	-	21.78	-	-	N	Main
81014428	1.47	1.39	8.9	250	Un-plasticised polyvinyl chloride	0.01	49087	0.899	0	12.86	73.60	60.75	17%	Y	Main
81013270	0.84	0.44	39.5	250	Un-plasticised polyvinyl chloride	0.01	49087	1.013	0	12.86	78.12	65.27	16%	Y	Main
2611069	0.39	-0.27	57.5	250	Un-plasticised polyvinyl chloride	0.01	49087	1.148	0	12.86	83.17	70.32	15%	Y	Main
81014333	-0.27	-0.68	38	250	Un-plasticised polyvinyl chloride	0.01	49087	1.079	0	12.86	80.64	67.78	16%	Y	Main
81016074	-0.72	-0.84	12.8	250	Un-plasticised polyvinyl chloride	0.01	49087	0.938	0	12.86	75.17	62.31	17%	Y	Main
2563341	-0.94	-1.31	37.2	315	Un-plasticised polyvinyl chloride	0.01	77931	0.995	0	12.86	143.40	130.54	9%	Y	Main
81013519	-1.35	-1.75	41	315	Un-plasticised polyvinyl chloride	0.01	77931	0.976	1	12.86	142.02	129.16	9%	Y	Main
2566467	-1.78	-2.1	32.3	315	Un-plasticised polyvinyl chloride	0.01	77931	0.991	2	12.86	143.11	130.26	9%	Y	Main

	[illegible]	Computed	[illegible]	[illegible]	Office	[illegible]
		Checked	[illegible]	[illegible]		
Job Description	Infrastructure assessment	Revised			Job No	[illegible]
Sheet Description	Pre-Development water supply demand	Checked			Phase/Task No	
File Path	[illegible]				Sheet No	1

BUILDING ONE :

Level	Activity Type	Classification	Floor Area (m²)	Occupancy	Usage per unit (L/m²/day) or (L/person/day)	Water demand (ADWD) (L/d)	Average Daily Demand (ADD) (L/s)	Peak Daily Demand (PDD) (L/s)	Peak Hourly Demand (PHD) (L/s)
1	Industrial	Medium Industry	1760	0	6	10560	0.122	0.244	0.611
					TOTAL	10560	0.12	0.24	0.61

TOTAL ADD (L/S)	TOTAL PDD (L/S)	TOTAL PHD (L/S)
0.12	0.24	0.61

	100 Halsey St	Computed	TKR	4/03/2024	Office: Auckland
		Checked	ADPE	4/03/2024	
Job Description	Infrastructure assessment	Revised			Job No: 1103837.0000
Sheet Description	Post Development Water Supply Demand - BASED ON OPTION 4A	Checked			Phase/Task No
File Path	[illegible]				Sheet No: 1

BUILDING ONE :

Level	Activity Type	Classification	Floor Area (m²)	Occupancy	Usage per unit (L/m²/day) or (L/occ/day)	Water demand (ADWD) (L/d)	Average Daily Demand (ADD) (L/s)	Peak Daily Demand (PDD) (L/s)	Peak Hourly Demand (PHD) (L/s)
G	Commercial	Wet Retail	600.8		15.0	9012.0	0.104	0.209	0.522
G	Commercial	Dry Retail	600.8		1.3	781.0	0.009	0.018	0.045
1	Commercial	Offices	1088.8		4.3	4718.1	0.055	0.109	0.273
2	Commercial	Offices	1201.6		4.3	5206.9	0.060	0.121	0.301
3	Commercial	Offices	1201.6		4.3	5206.9	0.060	0.121	0.301
4	Commercial	Offices	1201.6		4.3	5206.9	0.060	0.121	0.301
5	Commercial	Offices	1201.6		4.3	5206.9	0.060	0.121	0.301
6	Commercial	Offices	1201.6		4.3	5206.9	0.060	0.121	0.301
7	Commercial	Offices	1201.6		4.3	5206.9	0.060	0.121	0.301
8	Commercial	Offices	1201.6		4.3	5206.9	0.060	0.121	0.301
9	Commercial	Offices	273.6		4.3	1185.6	0.014	0.027	0.069
		TOTAL FLOOR AREA	10975.2		TOTAL	52145	0.60	1.21	3.02

BUILDING TWO :

Level	Activity Type	Classification	Floor Area (m²)	Occupancy	Usage per unit (L/m²/day) or (L/occ/day)	Water demand (ADWD) (L/d)	Average Daily Demand (ADD) (L/s)	Peak Daily Demand (PDD) (L/s)	Peak Hourly Demand (PHD) (L/s)
G	Commercial	Wet Retail	565.2		15.0	8478.0	0.098	0.196	0.491
G	Commercial	Dry Retail	565.2		1.3	734.8	0.009	0.017	0.043
1	Commercial	Offices	1130.4		4.3	4898.4	0.057	0.113	0.283
2	Commercial	Offices	1130.4		4.3	4898.4	0.057	0.113	0.283
3	Commercial	Offices	1130.4		4.3	4898.4	0.057	0.113	0.283
4	Commercial	Offices	1130.4		4.3	4898.4	0.057	0.113	0.283
5	Commercial	Offices	1130.4		4.3	4898.4	0.057	0.113	0.283
6	Commercial	Offices	1130.4		4.3	4898.4	0.057	0.113	0.283
7	Commercial	Offices	240		4.3	1040.0	0.012	0.024	0.060
		TOTAL FLOOR AREA	8152.8		TOTAL	39643	0.46	0.92	2.29

BUILDING THREE A:

Level	Activity Type	Classification	Floor Area (m²)	Occupancy	Usage per unit (L/m²/day) or (L/occ/day)	Water demand (ADWD) (L/d)	Average Daily Demand (ADD) (L/s)	Peak Daily Demand (PDD) (L/s)	Peak Hourly Demand (PHD) (L/s)
1	Commercial	Wet Retail	446.8		15.0	6702.0	0.078	0.155	0.388
G	Commercial	Dry Retail	446.8		1.3	580.8	0.007	0.013	0.034
2	Commercial	Offices	893.6		4.3	3872.3	0.045	0.090	0.224
3	Commercial	Offices	1168		4.3	5061.3	0.059	0.117	0.293
4	Commercial	Offices	1168		4.3	5061.3	0.059	0.117	0.293
5	Commercial	Offices	1168		4.3	5061.3	0.059	0.117	0.293
6	Commercial	Offices	1168		4.3	5061.3	0.059	0.117	0.293
7	Commercial	Offices	1168		4.3	5061.3	0.059	0.117	0.293
8	Commercial	Offices	1168		4.3	5061.3	0.059	0.117	0.293
9	Commercial	Offices	1168		4.3	5061.3	0.059	0.117	0.293
10	Commercial	Offices	250.4		4.3	1085.1	0.013	0.025	0.063
		TOTAL FLOOR AREA	10213.6		TOTAL	47670	0.55	1.10	2.76

BUILDING THREE LINK:

Level	Activity Type	Classification	Floor Area (m²)	Occupancy	Usage per unit (L/m²/day) or (L/occ/day)	Water demand (ADWD) (L/d)	Average Daily Demand (ADD) (L/s)	Peak Daily Demand (PDD) (L/s)	Peak Hourly Demand (PHD) (L/s)
G	Commercial	Wet Retail	106		15.0	1590.0	0.018	0.037	0.092
G	Commercial	Dry Retail	106		1.3	137.8	0.002	0.003	0.008
2	Commercial	Offices	115.2		4.3	499.2	0.006	0.012	0.029
3	Commercial	Offices	115.2		4.3	499.2	0.006	0.012	0.029
4	Commercial	Offices	115.2		4.3	499.2	0.006	0.012	0.029
5	Commercial	Offices	115.2		4.3	499.2	0.006	0.012	0.029
6	Commercial	Offices	115.2		4.3	499.2	0.006	0.012	0.029
		TOTAL FLOOR AREA	788		TOTAL	4224	0.05	0.10	0.24

BUILDING THREE B:

Level	Activity Type	Classification	Floor Area (m²)	Occupancy	Usage per unit (L/m²/day) or (L/occ/day)	Water demand (ADWD) (L/d)	Average Daily Demand (ADD) (L/s)	Peak Daily Demand (PDD) (L/s)	Peak Hourly Demand (PHD) (L/s)
G	Commercial	Wet Retail	771.2		15.0	11568.0	0.134	0.268	0.669
G	Commercial	Dry Retail	771.2		1.3	1002.6	0.012	0.023	0.058
1	Commercial	Offices	1542.4		4.3	6683.7	0.077	0.155	0.387
2	Commercial	Offices	1542.4		4.3	6683.7	0.077	0.155	0.387
3	Commercial	Offices	1542.4		4.3	6683.7	0.077	0.155	0.387
4	Commercial	Offices	1542.4		4.3	6683.7	0.077	0.155	0.387
5	Commercial	Offices	1542.4		4.3	6683.7	0.077	0.155	0.387
6	Commercial	Offices	1542.4		4.3	6683.7	0.077	0.155	0.387
7	Commercial	Offices	250.4		4.3	1085.1	0.013	0.025	0.063
		TOTAL FLOOR AREA	11047.2		TOTAL	53758	0.62	1.24	3.11

BUILDING FOUR :

Level	Activity Type	Classification	Floor Area (m²)	Occupancy	Usage per unit (L/m²/day) or (L/occ/day)	Water demand (ADWD) (L/d)	Average Daily Demand (ADD) (L/s)	Peak Daily Demand (PDD) (L/s)	Peak Hourly Demand (PHD) (L/s)
G	Commercial	Wet Retail	609.2		15.0	9138.0	0.106	0.212	0.529
G	Commercial	Dry Retail	609.2		1.3	792.0	0.009	0.018	0.046
1	Commercial	Offices	1129.6		4.3	4894.9	0.057	0.113	0.283
2	Commercial	Offices	1218.4		4.3	5279.7	0.061	0.122	0.306
3	Commercial	Offices	1218.4		4.3	5279.7	0.061	0.122	0.306
4	Commercial	Offices	1218.4		4.3	5279.7	0.061	0.122	0.306
5	Commercial	Offices	1218.4		4.3	5279.7	0.061	0.122	0.306
6	Commercial	Offices	1218.4		4.3	5279.7	0.061	0.122	0.306
7	Commercial	Offices	1026.4		4.3	4447.7	0.051	0.103	0.257
8	Commercial	Offices	1026.4		4.3	4447.7	0.051	0.103	0.257
9	Commercial	Offices	1026.4		4.3	4447.7	0.051	0.103	0.257
10	Commercial	Offices	1026.4		4.3	4447.7	0.051	0.103	0.257
11	Commercial	Offices	1026.4		4.3	4447.7	0.051	0.103	0.257
12	Commercial	Offices	250.4		4.3	1085.1	0.013	0.025	0.063
		TOTAL FLOOR AREA	13822.4		TOTAL	64547	0.75	1.49	3.74

BUILDING FIVE :

Level	Activity Type	Classification	Floor Area (m²)	Occupancy	Usage per unit (L/m²/day) or (L/occ/day)	Water demand (ADWD) (L/d)	Average Daily Demand (ADD) (L/s)	Peak Daily Demand (PDD) (L/s)	Peak Hourly Demand (PHD) (L/s)
G	Commercial	Wet Retail	633.6		15.0	9504.0	0.110	0.220	0.550
G	Commercial	Dry Retail	633.6		1.3	823.7	0.010	0.019	0.048
1	Commercial	Offices	1165.6		4.3	5050.9	0.058	0.117	0.292
2	Commercial	Offices	1267.2		4.3	5491.2	0.064	0.127	0.318
3	Commercial	Offices	1267.2		4.3	5491.2	0.064	0.127	0.318
4	Commercial	Offices	1267.2		4.3	5491.2	0.064	0.127	0.318
5	Commercial	Offices	1267.2		4.3	5491.2	0.064	0.127	0.318
6	Commercial	Offices	1267.2		4.3	5491.2	0.064	0.127	0.318
7	Commercial	Offices	1088		4.3	4714.7	0.055	0.109	0.273
8	Commercial	Offices	1088		4.3	4714.7	0.055	0.109	0.273
9	Commercial	Offices	292.8		4.3	1268.8	0.015	0.029	0.073
		TOTAL FLOOR AREA	11237.6		TOTAL	53533	0.62	1.24	3.10

TOTAL ADD (L/S)	TOTAL PDD (L/S)	TOTAL PHD (L/S)
3.65	7.30	18.26

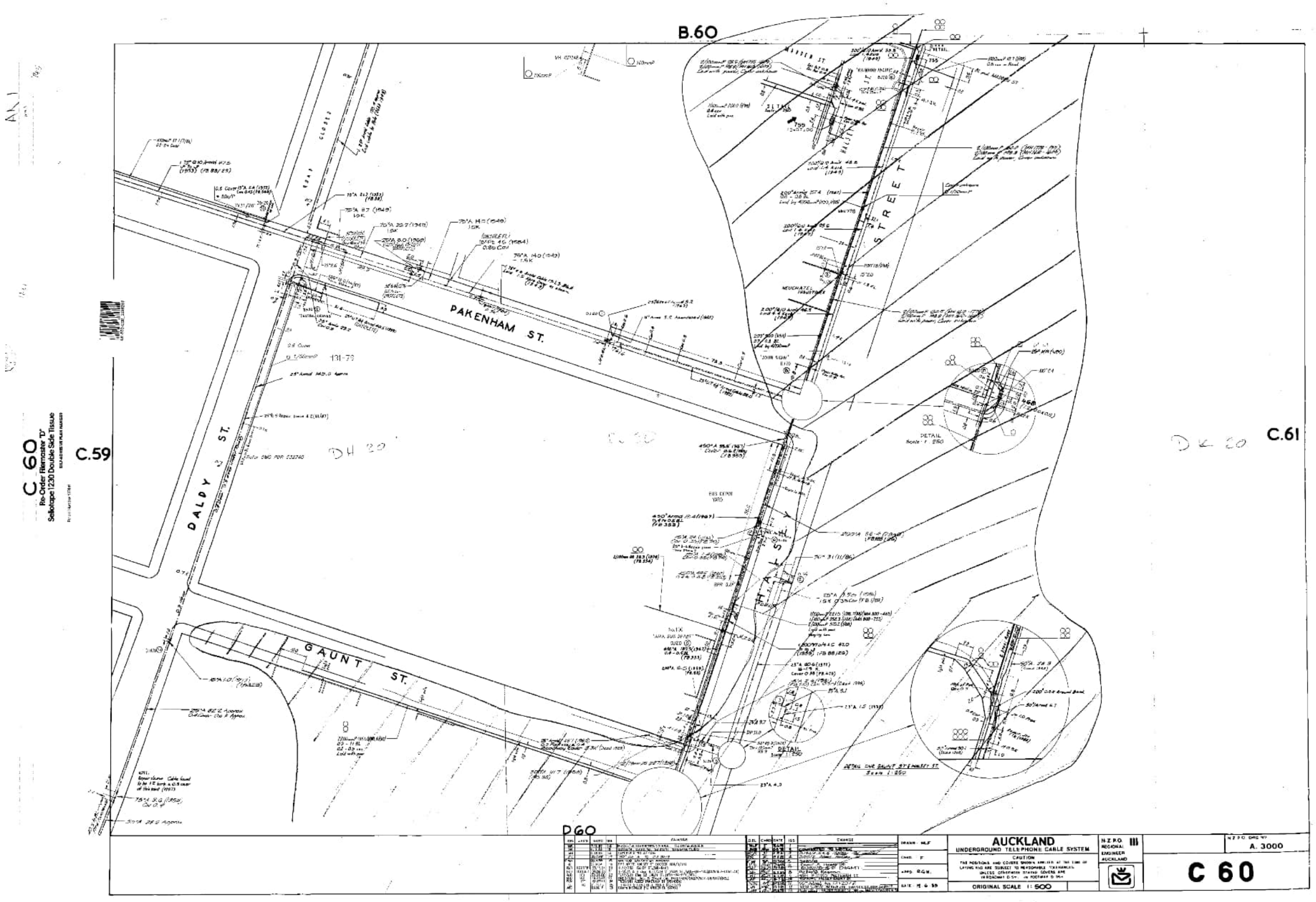
Appendix C BeforeUDig

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	**C60**
Plan ID	**273932**
Version	**BP**
Current at	**13/01/2026**



beforeudig

Enquiry Confirmation Sheet

Job No 2710416

Phone: 0800248344
www.beforeudig.co.nz

Caller Details

Contact: Mr Terry Krause
Company:
Address:

Auckland Auckland 1010

Caller Id:
Mobile: s 9(2)(a)
Email: s 9(2)(a)

Phone: s 9(2)(a)
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: 110 Halsey

Working on Behalf of:
Private

Enquiry Date: 13/01/2026
Start Date: 16/01/2026
End Date: 16/01/2026

Address:
1-49 Gaunt St,
Auckland, Auckland, 1010

For Planning: Yes
Onsite Activity: Utility Locating
Plans Requested Yes
Workplace Location: Private Property
Location in Road: Not Supplied
Locate Requested: No
Preferred Locate Date:

- 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:

Your Responsibilities and Duty of Care

- If plans are **NOT** received within **TWO WORKING DAYS**, do not start work, contact the asset owner(s) 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. Any asset owner name listed below with the status 'Not Notified' is an associate member of beforeUdig, which ONLY NOTIFIES YOU they may have assets present. You will need to contact them directly to obtain information about the location of their assets.

Where an Asset Locate has been requested, asset owners who provide Locate services will endeavour to respond to your preferred locate date, where possible. However, asset owners may complete the Locate at their convenience. **Locates are supplied by individual asset owners, NOT beforeUdig. EACH asset owner may charge a fee for Location services – it is your responsibility to discuss this directly with EACH utility, prior to the service being provided.**
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
16932315	Chorus	0800822003	Notification Sent
16932316	Eon Fibre	05083696374	Notification Sent
16932320	LINZ	0800665463	Notification Sent
16932314	Vector - Communications	093083860	Notification Sent
16932318	Vector - Electricity**	093083860	Notification Sent
16932319	Vector - Gas Distribution	093083860	Notification Sent
16932317	Watercare **	094422222	Notification Sent

END OF UTILITIES LIST

Lodge Your Free Enquiry Online – 24 Hours a Day, Seven Days a Week (V5.0.1)

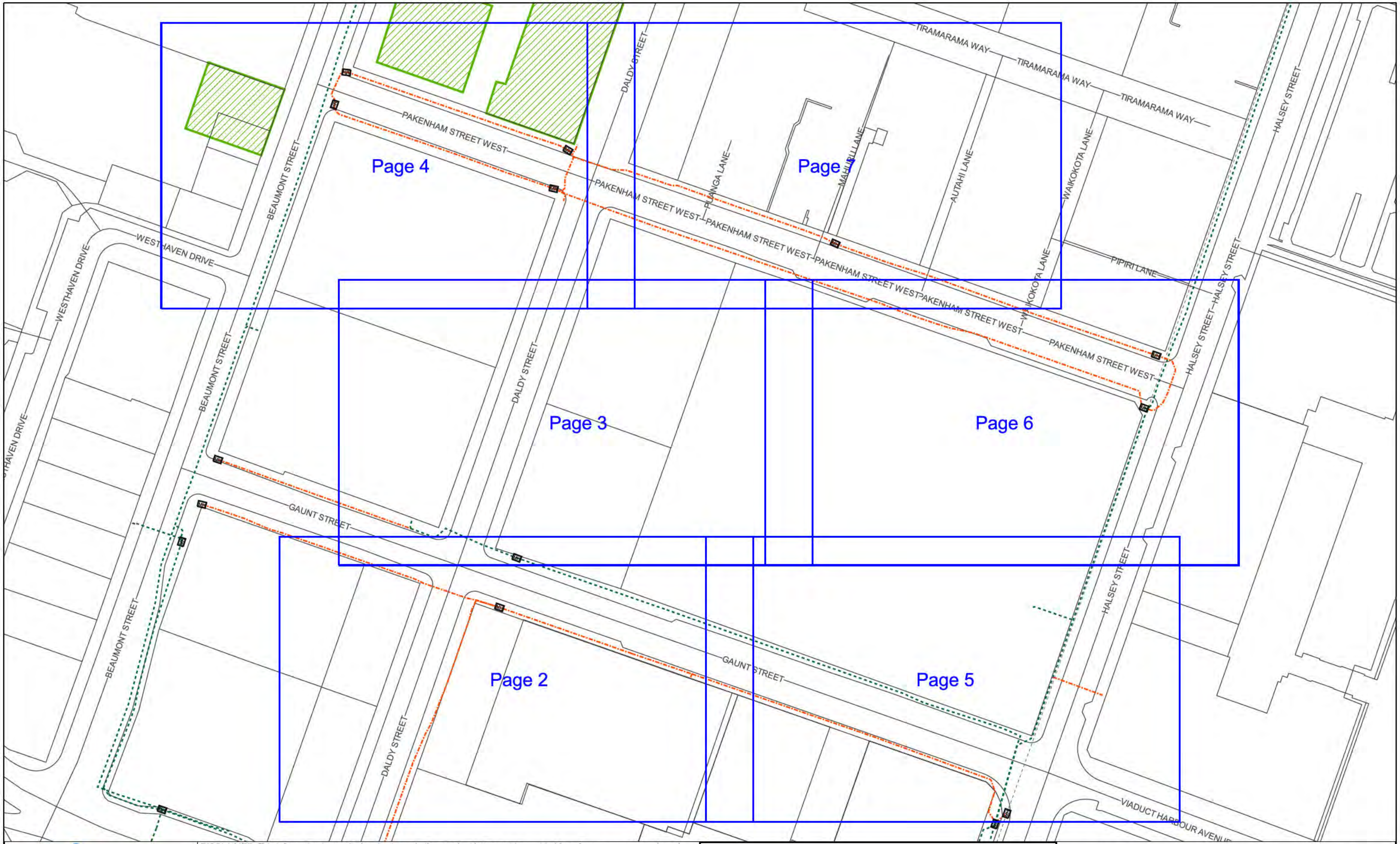
beforeUDig NZ Certified Locators

The following is a list of beforeUdig NZ Certified Locators that provide services within the vicinity or your proposed work site, they have NOT been notified of your works. Please use their contact details if you wish to use their services to assist you in identifying underground assets at your site.

NOTE: Certified locators have been assessed by beforeUdig to confirm a high level of competency at locating underground utility infrastructure, these locators may not be approved to undertake locate works on all asset owner network infrastructure, please check with the asset owner first.

Locator Company	Phone	Email	Website URL	Status
Locate Services	08008722348	admin@locateservices.co.nz	https://www.locateservices.co.nz	Not Notified
Aerialsmiths	s 9(2)(a)	info@aerialsmiths.co.nz	https://www.aerialsmiths.co.nz/	Not Notified
Ground Scan NZ	0800562287	info@groundscannz.co.nz	https://www.groundscannz.co.nz	Not Notified
Locator Man	s 9(2)(a)	s 9(2)(a)	https://locatorman.co.nz/	Not Notified
Locators Ltd	s 9(2)(a)	info@locaters.co.nz	https://www.locaters.co.nz	Not Notified
Locator Worx	0800699679	info@locatorworx.co.nz	https://www.locatorworx.co.nz/	Not Notified
Precision View	s 9(2)(a)	precisionview.info@gmail.com	https://www.beforeudig.co.nz/locator	Not Notified
Reveal	0800240340	admin@reveal.nz	https://www.reveal.nz	Not Notified
Sub Surface Detection	0800500330	admin@subsurfacedetection.co.nz	https://www.subsurfacedetection.co.nz/	Not Notified
ULS Utility Locators	0800885558	office@utilitylocators.co.nz	https://www.uls.nz	Not Notified
Underground Service Locators	0800425622	enquiries@undergroundlocators.co.nz	https://www.undergroundlocators.co.nz/	Not Notified
Utility Scan	0800310031	office@utilityscan.co.nz	https://www.utilityscan.co.nz	Not Notified
Utility Vision Ltd	s 9(2)(a)	s 9(2)(a)	https://www.utilityvision.co.nz	Not Notified

END OF CERTIFIED LOCATORS LIST



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Vector Fibre reminds you of your responsibilities under the Health and Safety at Work Act 2015, whereby you must establish the location of underground services before commencing excavation.

If you hit an electricity cable or overhead line please call us immediately on 0508 VECTOR (0508 832 867). If you hit any gas pipeline call the Fire Service first on 111. If you hit a gas distribution pipe in the Auckland area call us on 0800 764 764. If you hit a gas pipeline in the rest of the North Island call FIRST GAS on 0800 800 393. If you hit a gas transmission pipeline call FIRST GAS on 0800 734 567. If you hit a communications cable (all areas) call us immediately on 0800 826 436 (select option 1).

No associated viewport

A3 FIBRE beforeudig PLAN

Date printed: 13/01/2026

No associated viewport

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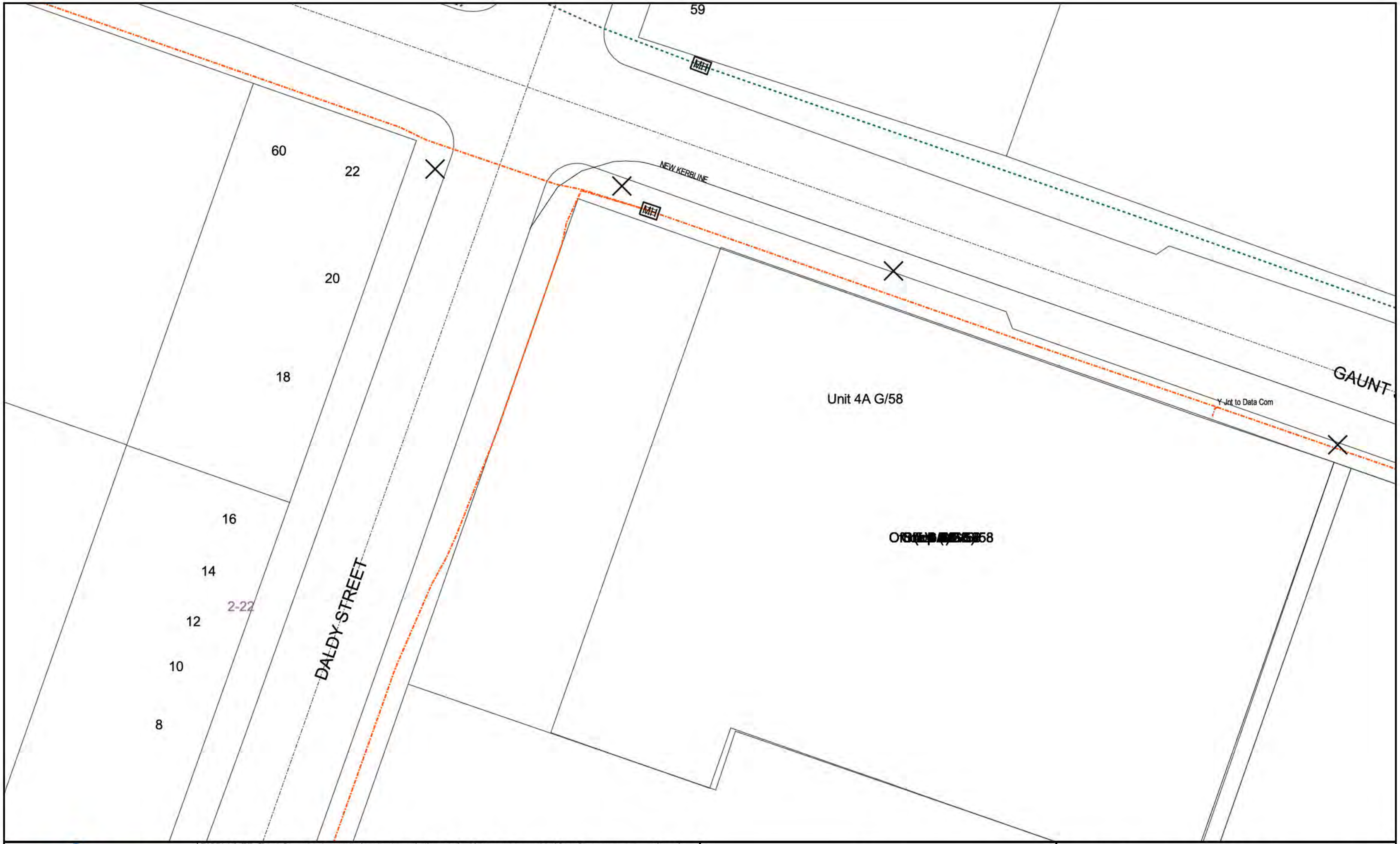

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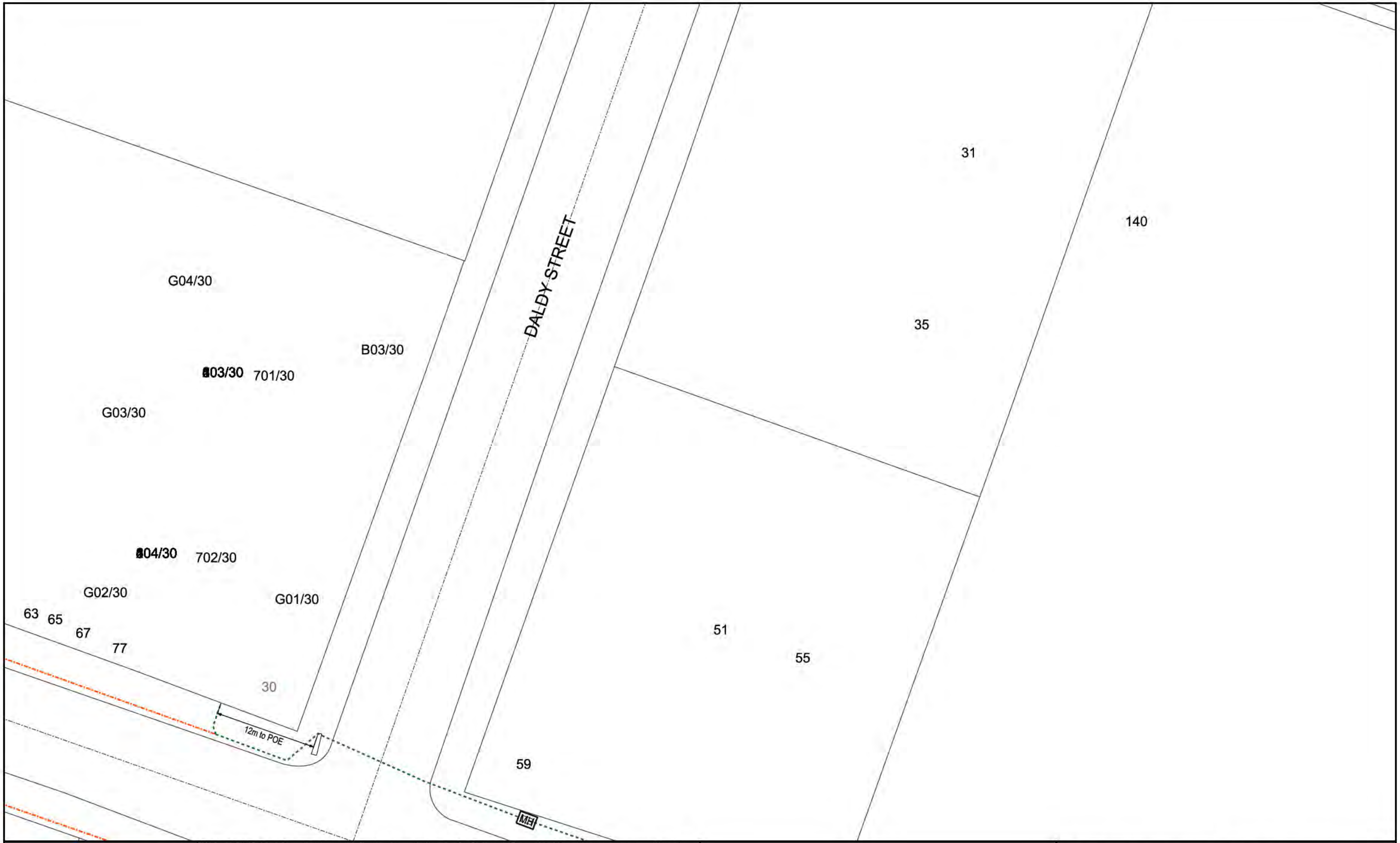
Legend

Strand & Structure [Gis]
✕ Pole.Location Inact., T02
- - - Underground Route.Route Act. - Trench
-·-·- Underground Route.Route Inact. - Installed In-Place
MH Underground Utility Box.Location Act., T03

A3 FIBRE beforeudig PLAN

Date printed: 13/01/2026

Scale: 1:400



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Legend

Strand & Structure [Gis]

- - - - Underground Route.Route Act. - Trench
-·-·-· Underground Route.Route Inact. - Installed In-Place
MH Underground Utility Box.Location Act., T03

A3 FIBRE beforeudig PLAN

Date printed: 13/01/2026

Scale: 1:400

Page: 3 of 7

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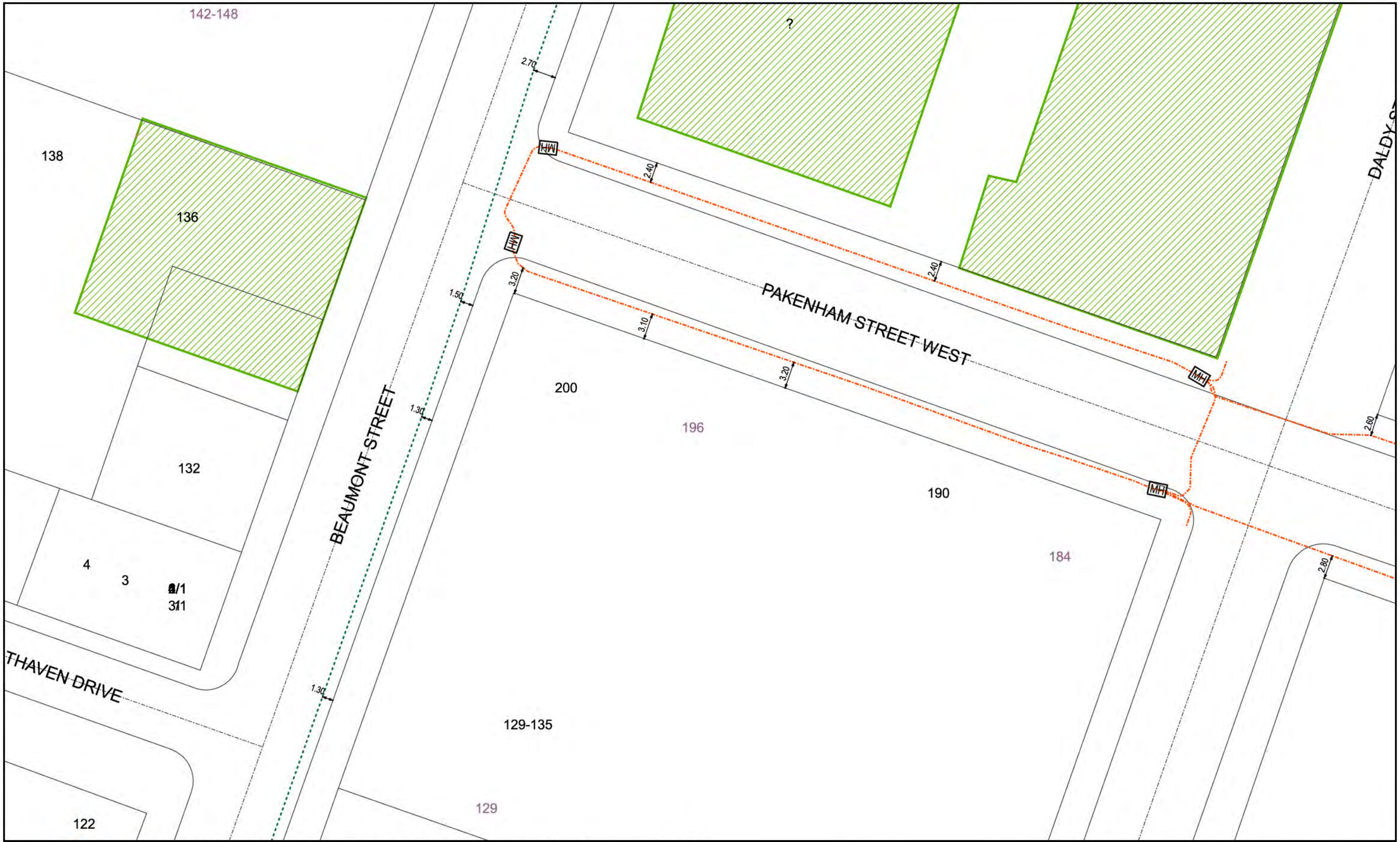

vector
fibre

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Legend

Strand & Structure [Gis]

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- ┄ Underground Route.Route Inact. - Installed In-Place
- MH Underground Utility Box.Location Act., T03

A3 FIBRE beforeudig PLAN

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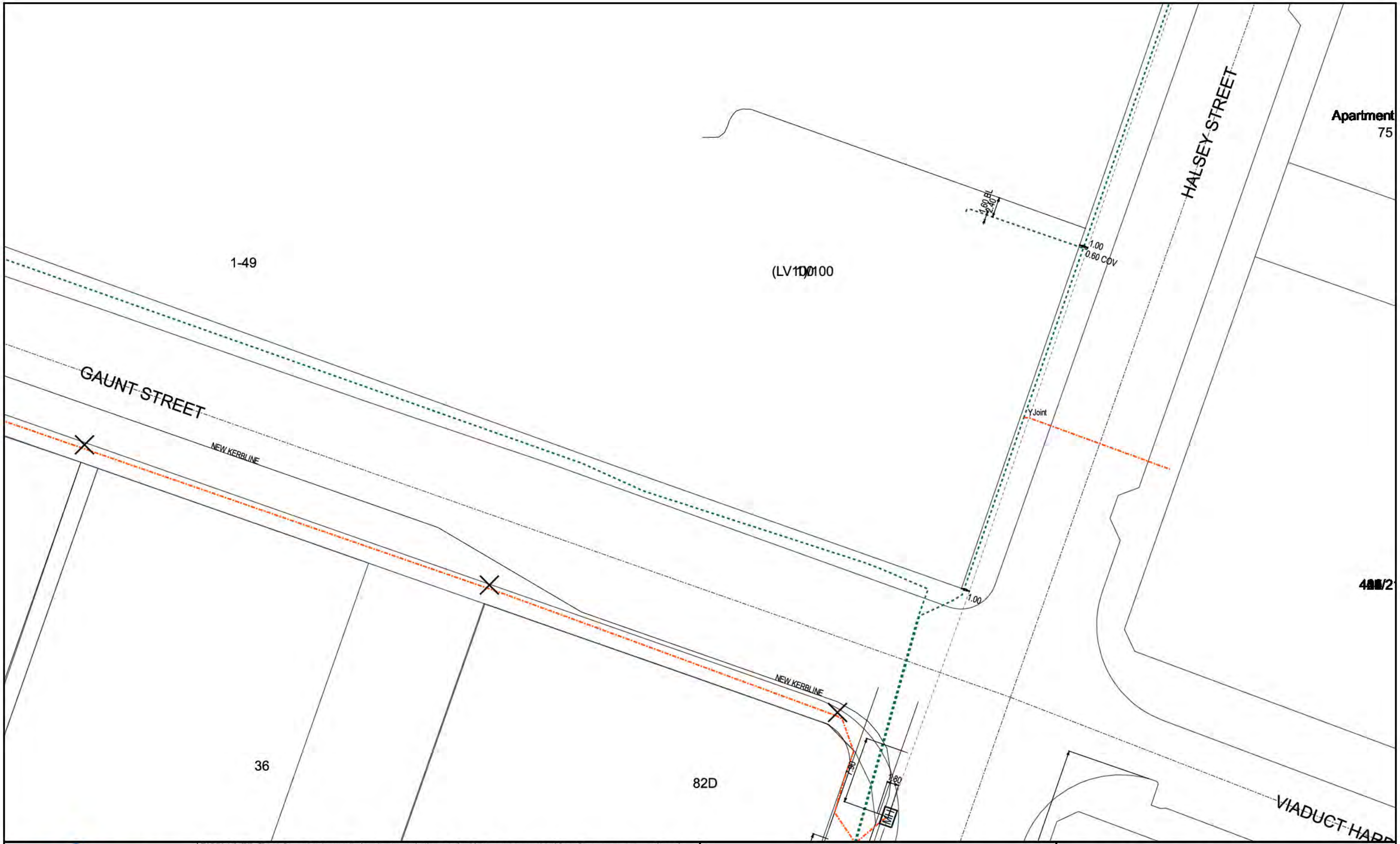
Page: 4 of 7



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Legend

Strand & Structure [Gis]

✕	Pole.Location Inact., T02
- - - -	Underground Route.Route Aband.
▪ ▪ ▪ ▪	Underground Route.Route Act. - Bore
▪ ▪ ▪ ▪	Underground Route.Route Act. - Trench
-·-·-·	Underground Route.Route Inact. - Installed In-Place
MH	Underground Utility Box.Location Act., T03

A3 FIBRE beforeudig PLAN

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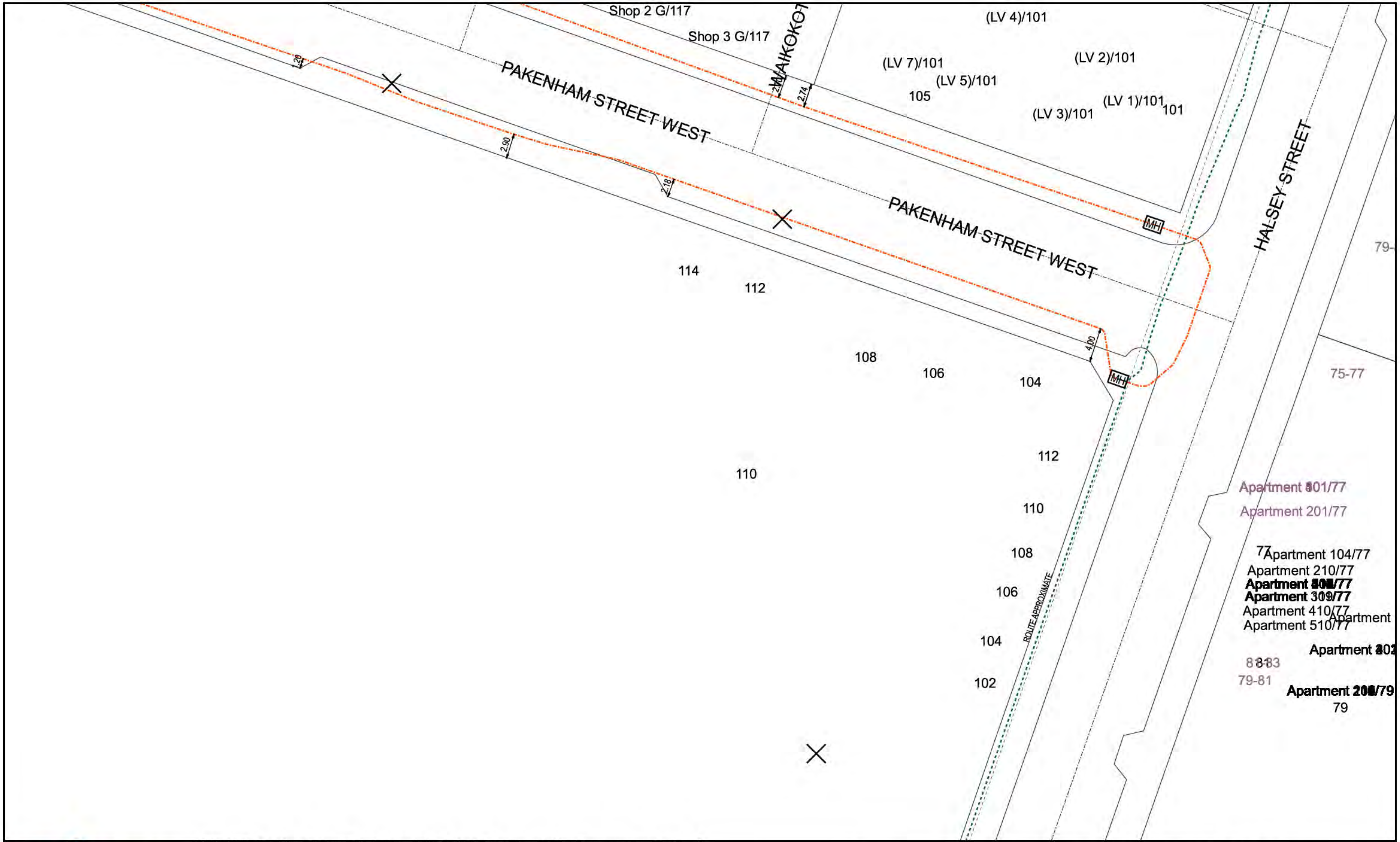

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Legend

Strand & Structure [Gis]

- ✕ Pole.Location Inact., T02
- - - - Underground Route.Route Aband.
- - - - Underground Route.Route Act. - Trench
- -·-·- Underground Route.Route Inact. - Installed In-Place
- MH Underground Utility Box.Location Act., T03

A3 FIBRE beforeudig PLAN

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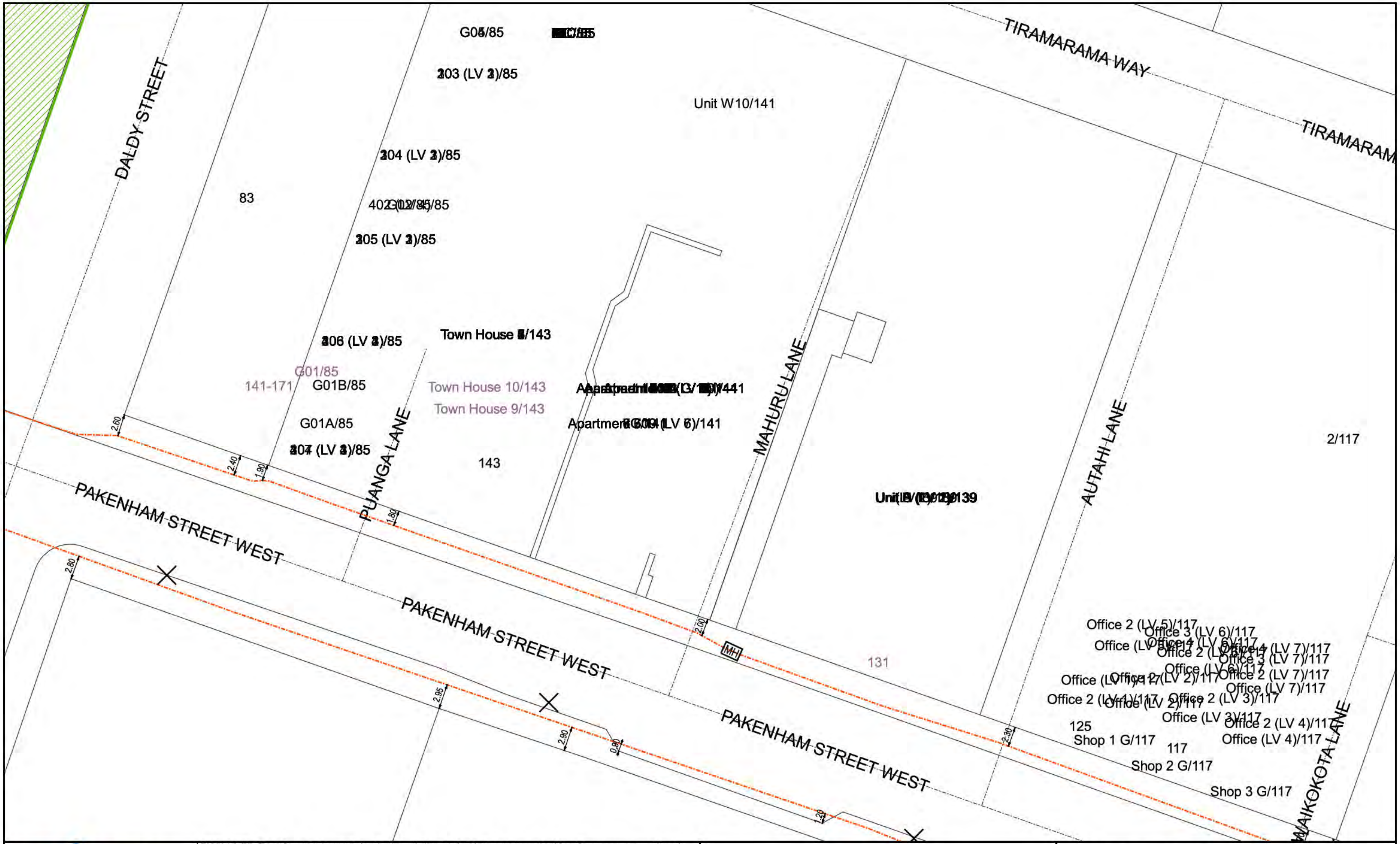

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Legend

Strand & Structure [Gis]

- × Pole.Location Inact., T02
- -·-·- Underground Route.Route Inact. - Installed In-Place
- MH Underground Utility Box.Location Act., T03

A3 FIBRE beforeudig PLAN

Date printed: 13/01/2026

Scale: 1:400

N E S W

CABLE COLOUR CODE

CABLES IN USE
- - - 110,000 - 22,000 volt subtransmission
- - - 22,000 volt
- - - 11,000 - 6,600 volt
- - - 400 volt
- - - Streetlight
- - - Pilot / Fibre Optic

CABLES NOT IN USE
- · - 110,000 - 22,000 volt subtransmission
- · - 22,000 volt
- · - 11,000 - 6,600 volt
- · - 400 volt
- · - Streetlight
- · - Pilot / Fibre Optic

JOINTS & SEALING ENDS
■ ● 110,000 - 22,000 volt subtransmission
■ ● 22,000 volt
■ ● 11,000 - 6,600 volt
■ ● 400 volt
■ ● Streetlight
■ ● Pilot / Fibre Optic
■ ● NOT IN USE

SYMBOL LEGEND

▮▮▮ TUNNEL
DUCT BANK
▬ FIBRE OPTIC DUCT
- - - TRENCH
■ PILLAR ● PIT
■ DISTRIBUTION SUBSTATION
POLES
○ ○ ○ ○ ○
LAMP
CESSPIT Ⓜ MANHOLE
F H FIRE HYDRANT DRAIN
□ FIBRE OPTIC PIT
EARTHWIRE & RODS

DUCT CROSS SECTIONS mm
25 50 80 100 150
200 250 300

WORK MANAGEMENT
▤ IN PROGRESS ▤ FUTURE PLANNED
▤ PLANNED

vector

22kV, 33kV, 110kV SUB TRANSMISSION CABLES-SPECIAL CONDITIONS APPLY:

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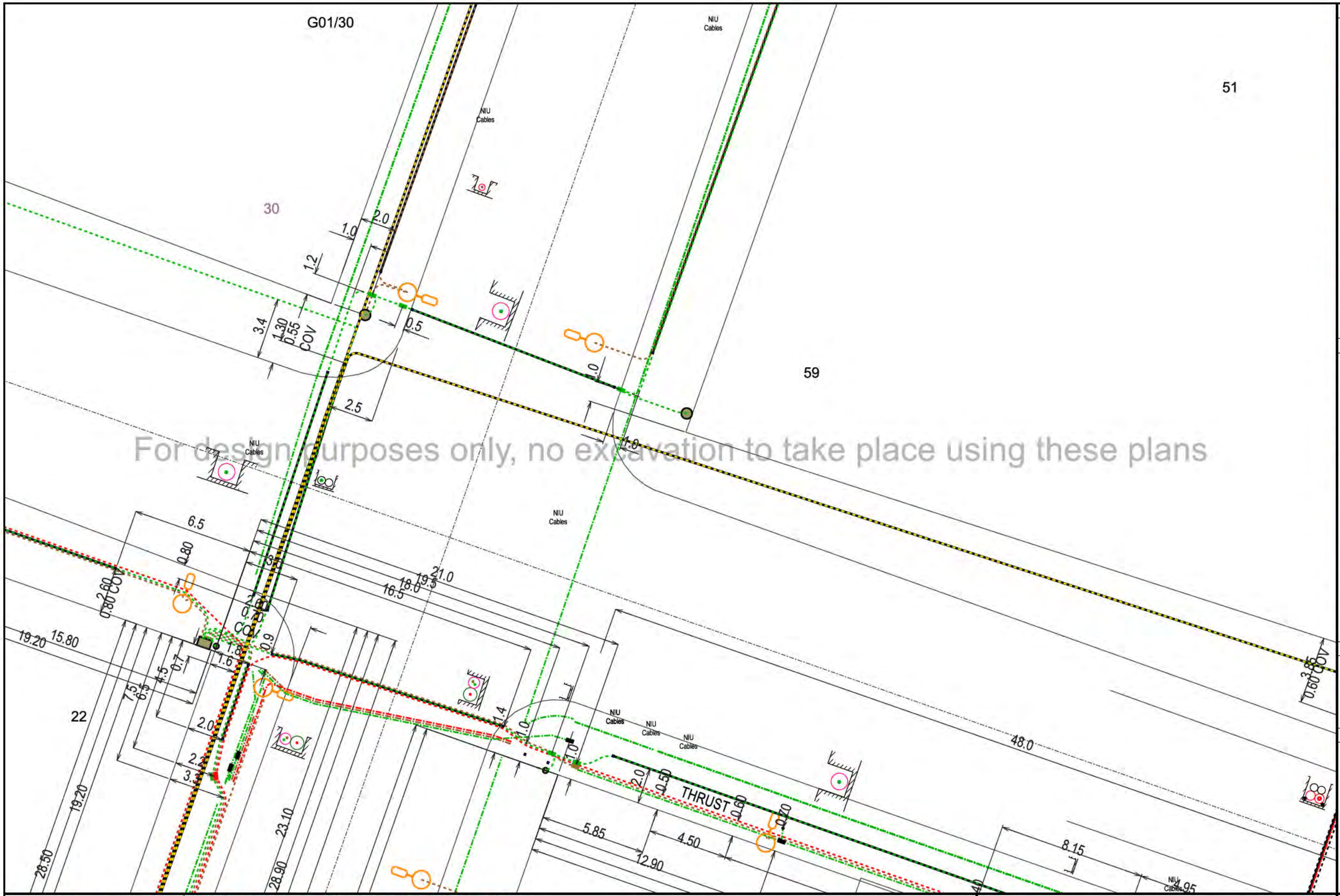
A3 ELECTRICITY beforeudig PLAN

Date printed: 13. January 2026

No associated viewport

Page: 1 of 18



CABLE COLOUR CODE

CABLES IN USE
110,000 - 22,000 volt subtransmission
22,000 volt
11,000 - 6,600 volt
400 volt
Streetlight
Pilot / Fibre Optic

CABLES NOT IN USE
110,000 - 22,000 volt subtransmission
22,000 volt
11,000 - 6,600 volt
400 volt
Streetlight
Pilot / Fibre Optic

JOINTS & SEALING ENDS
110,000 - 22,000 volt subtransmission
22,000 volt
11,000 - 6,600 volt
400 volt
Streetlight
Pilot / Fibre Optic
NOT IN USE

SYMBOL LEGEND

TUNNEL
DUCT BANK
FIBRE OPTIC DUCT
TRENCH
PILLAR
PIT
DISTRIBUTION SUBSTATION
POLES
LAMP
CESSPIT
Ⓜ MANHOLE
F H FIRE HYDRANT
DRAIN
FIBRE OPTIC PIT
EARTHWIRE & RODS

DUCT CROSS SECTIONS mm
25 50 80 100 150
200 250 300

WORK MANAGEMENT
IN PROGRESS
FUTURE PLANNED
PLANNED

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A3 ELECTRICITY beforeudig PLAN

Date printed: 13. January 2026

Scale: 1:200

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A3 ELECTRICITY beforeudig PLAN

Date printed: 13. January 2026

Scale: 1:200

CABLE COLOUR CODE

CABLES IN USE
110,000 - 22,000 volt subtransmission
22,000 volt
11,000 - 6,600 volt
400 volt
Streetlight
Pilot / Fibre Optic

CABLES NOT IN USE
110,000 - 22,000 volt subtransmission
22,000 volt
11,000 - 6,600 volt
400 volt
Streetlight
Pilot / Fibre Optic

JOINTS & SEALING ENDS
110,000 - 22,000 volt subtransmission
22,000 volt
11,000 - 6,600 volt
400 volt
Streetlight
Pilot / Fibre Optic
NOT IN USE

SYMBOL LEGEND

TUNNEL
DUCT BANK
FIBRE OPTIC DUCT
TRENCH
PILLAR
PIT
DISTRIBUTION SUBSTATION
POLES
LAMP
CESSPIT
MANHOLE
FIRE HYDRANT
DRAIN
FIBRE OPTIC PIT
EARTHWIRE & RODS

DUCT CROSS SECTIONS mm
25 50 80 100 150
200 250 300

WORK MANAGEMENT
IN PROGRESS
FUTURE PLANNED
PLANNED

vector

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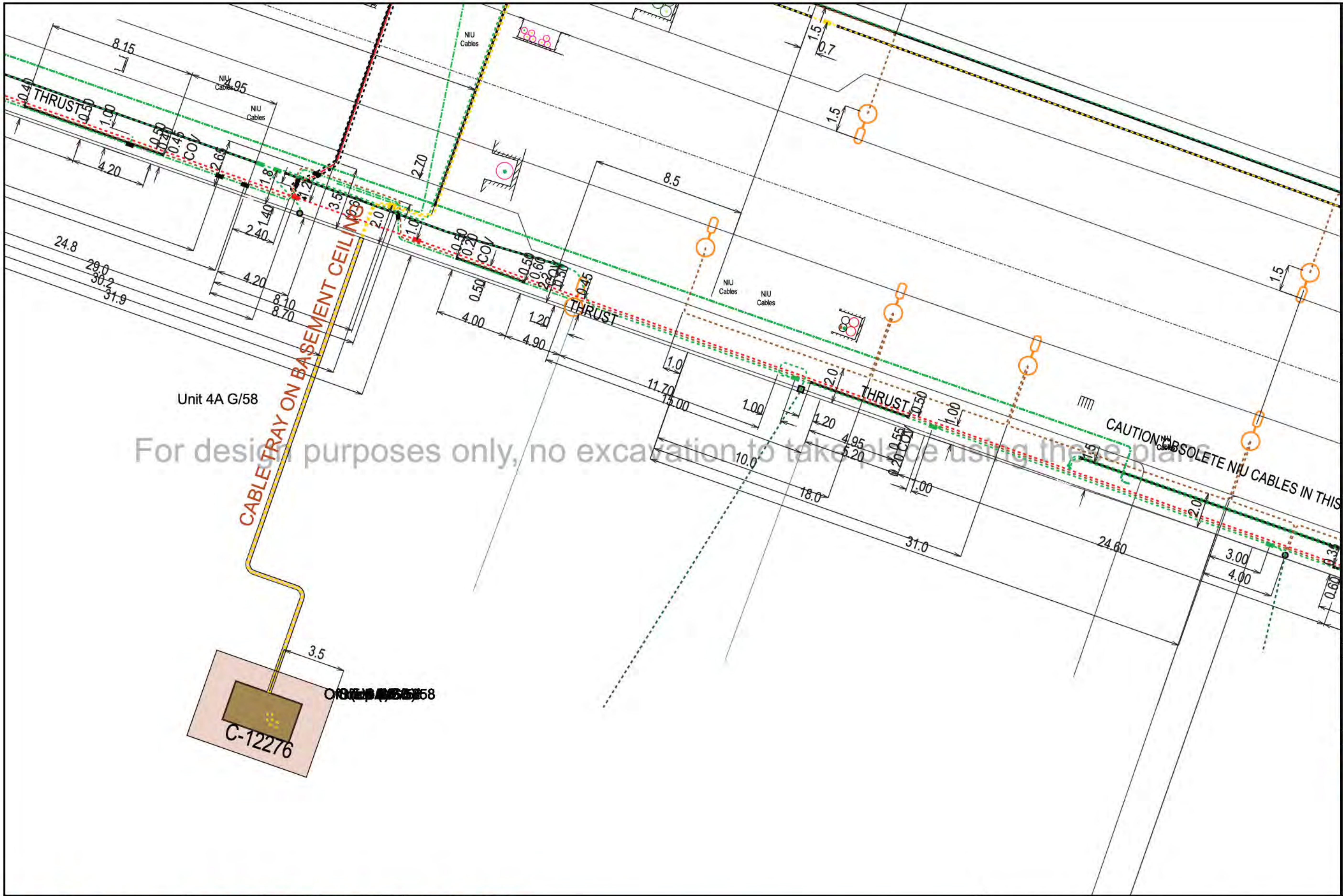

CABLE COLOUR CODE

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- 110,000 - 22,000 volt subtransmission
- 22,000 volt
- 11,000 - 6,600 volt
- 400 volt
- Streetlight
- Pilot / Fibre Optic

CABLES NOT IN USE
- 110,000 - 22,000 volt subtransmission
- 22,000 volt
- 11,000 - 6,600 volt
- 400 volt
- Streetlight
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JOINTS & SEALING ENDS
- 110,000 - 22,000 volt subtransmission
- 22,000 volt
- 11,000 - 6,600 volt
- 400 volt
- Streetlight
- Pilot / Fibre Optic
- NOT IN USE

SYMBOL LEGEND

- TUNNEL
- DUCT BANK
- FIBRE OPTIC DUCT
- TRENCH
- PILLAR
- PIT
- DISTRIBUTION SUBSTATION
- POLES
- LAMP
- CESSPIT
- MANHOLE
- F H FIRE HYDRANT
- DRAIN
- FIBRE OPTIC PIT
- EARTHWIRE & RODS

DUCT CROSS SECTIONS mm

25 50 80 100 150

200 250 300

WORK MANAGEMENT
- IN PROGRESS
- FUTURE PLANNED
- PLANNED

vector

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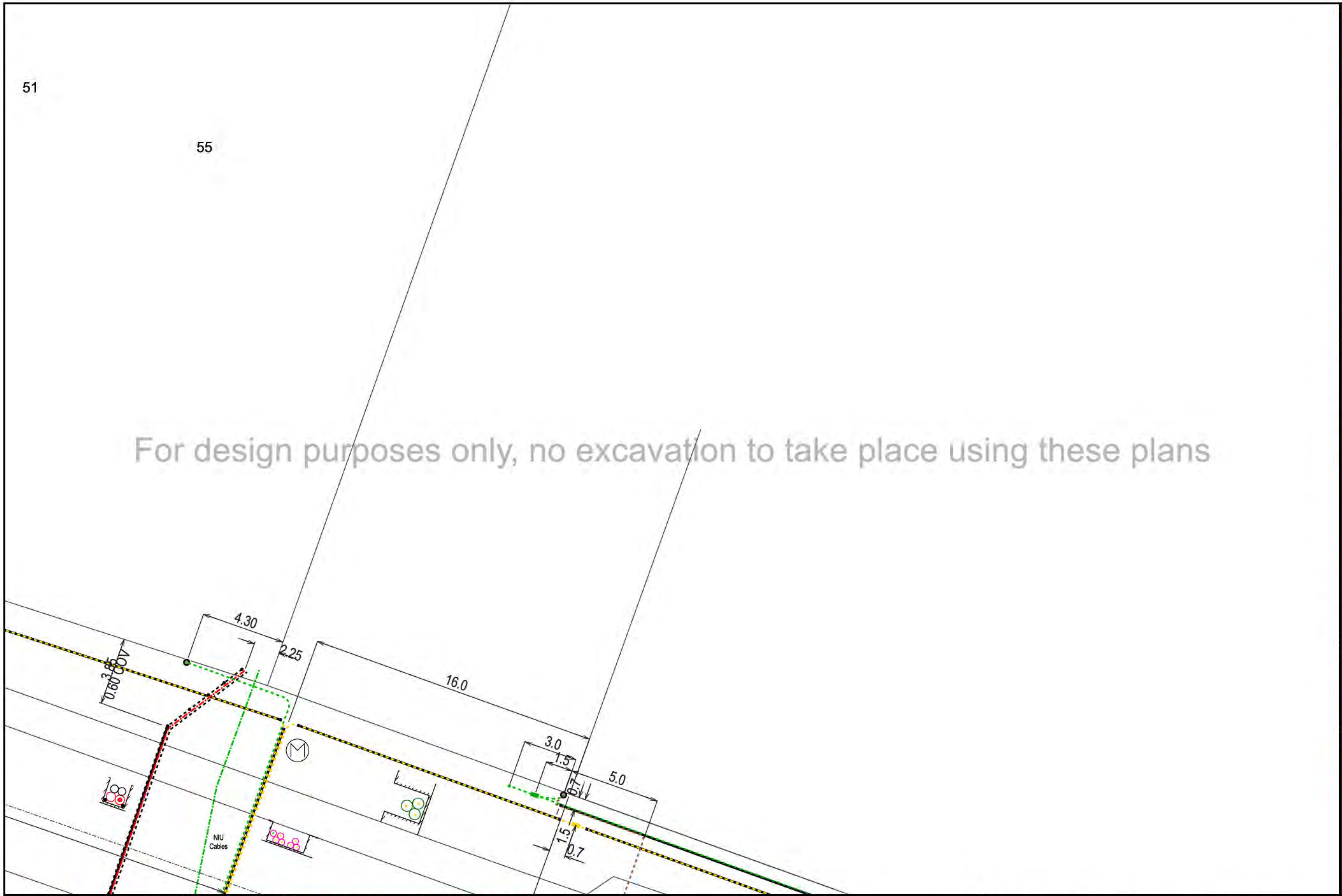

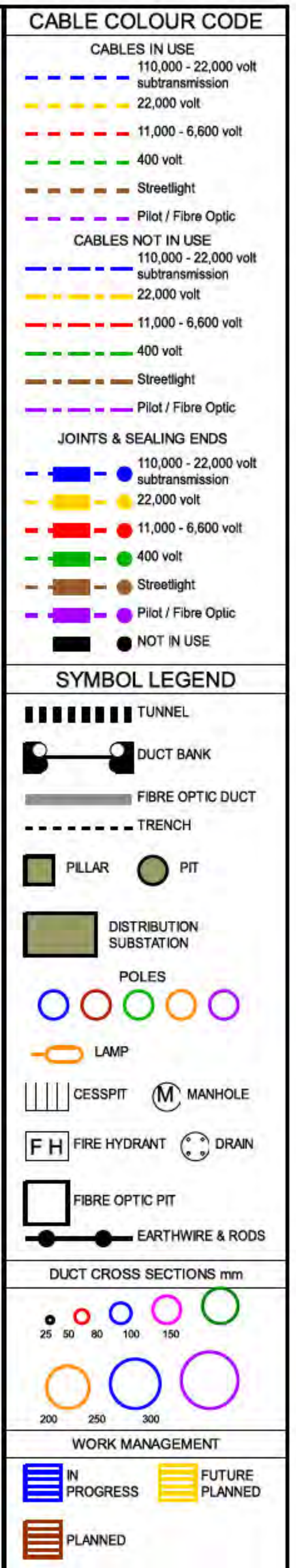

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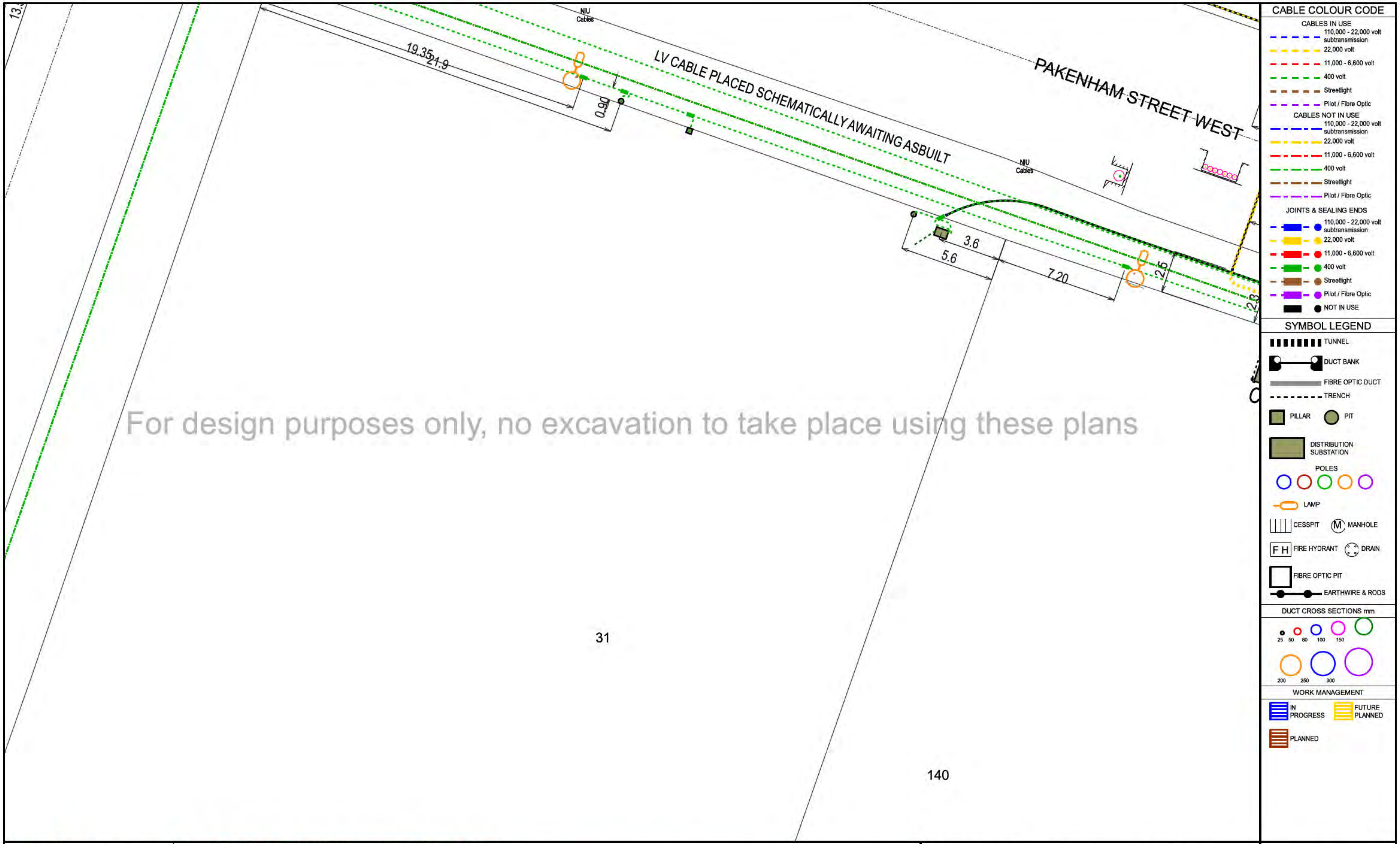

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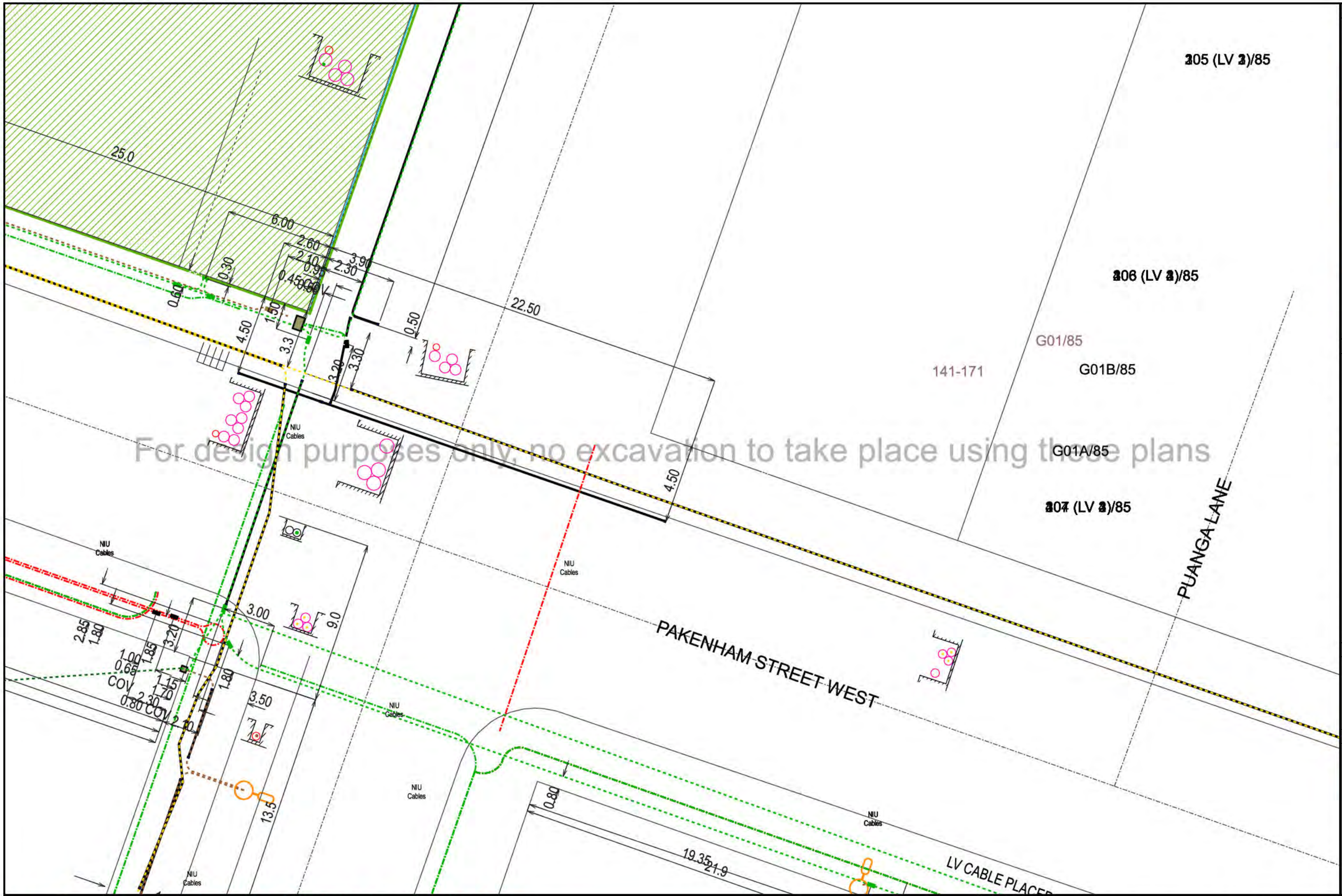

CABLE COLOUR CODE

CABLES IN USE

- – – – 110,000 - 22,000 volt subtransmission
- – – – 22,000 volt
- – – – 11,000 - 6,600 volt
- – – – 400 volt
- – – – Streetlight
- – – – Pilot / Fibre Optic

CABLES NOT IN USE

- – · – 110,000 - 22,000 volt subtransmission
- – · – 22,000 volt
- – · – 11,000 - 6,600 volt
- – · – 400 volt
- – · – Streetlight
- – · – Pilot / Fibre Optic

JOINTS & SEALING ENDS

- ● 110,000 - 22,000 volt subtransmission
- ● 22,000 volt
- ● 11,000 - 6,600 volt
- ● 400 volt
- ● Streetlight
- ● Pilot / Fibre Optic
- ● NOT IN USE

SYMBOL LEGEND

- TUNNEL
- DUCT BANK
- FIBRE OPTIC DUCT
- TRENCH
- PILLAR
- PIT
- DISTRIBUTION SUBSTATION
- POLES ○ ○ ○ ○ ○
- LAMP
- CESSPIT
- Ⓜ MANHOLE
- F H FIRE HYDRANT
- DRAIN
- FIBRE OPTIC PIT
- EARTHWIRE & RODS

DUCT CROSS SECTIONS mm

25 50 80 100 150

200 250 300

WORK MANAGEMENT

- IN PROGRESS
- FUTURE PLANNED
- PLANNED

vector

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A3 ELECTRICITY beforeudig PLAN

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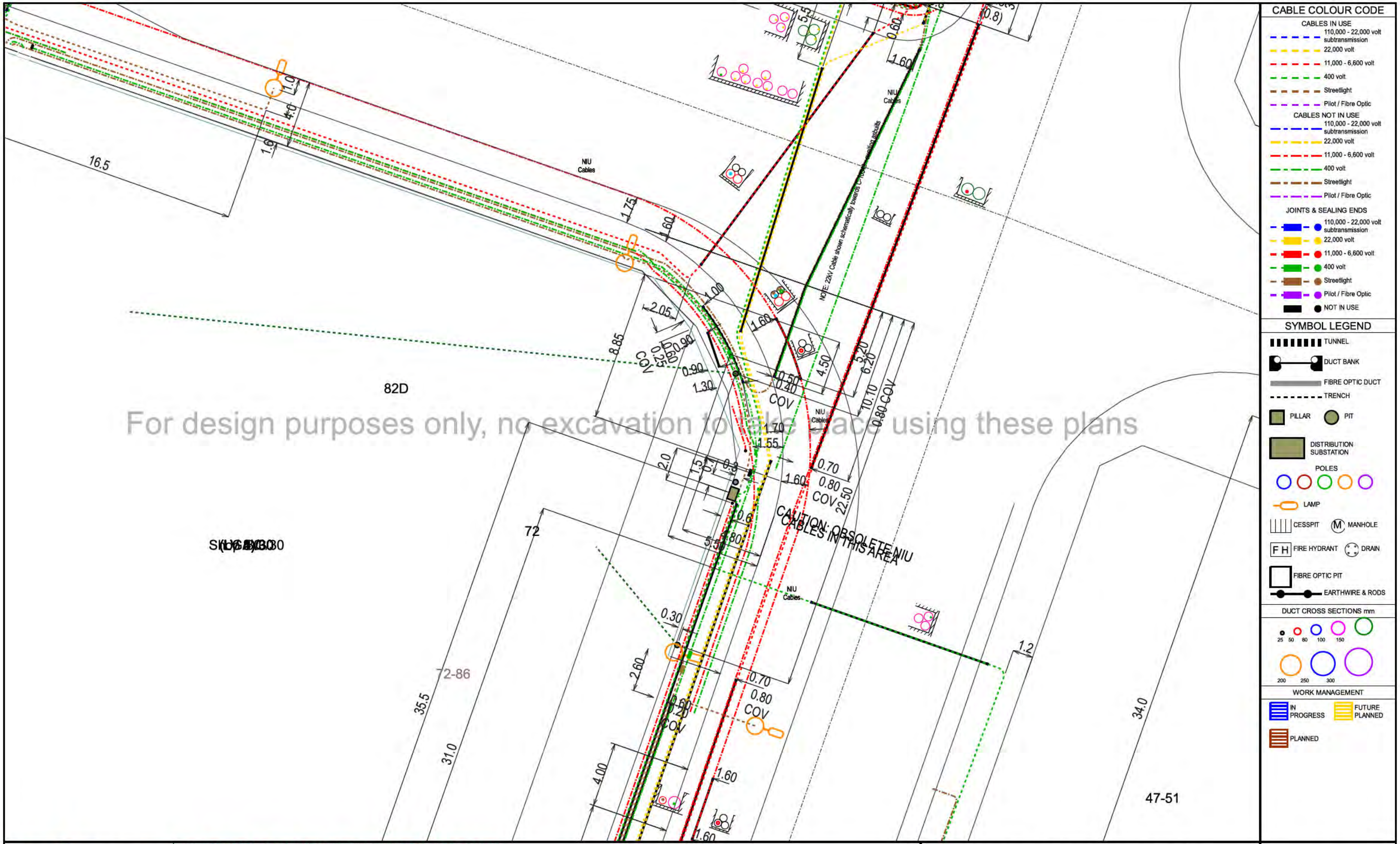

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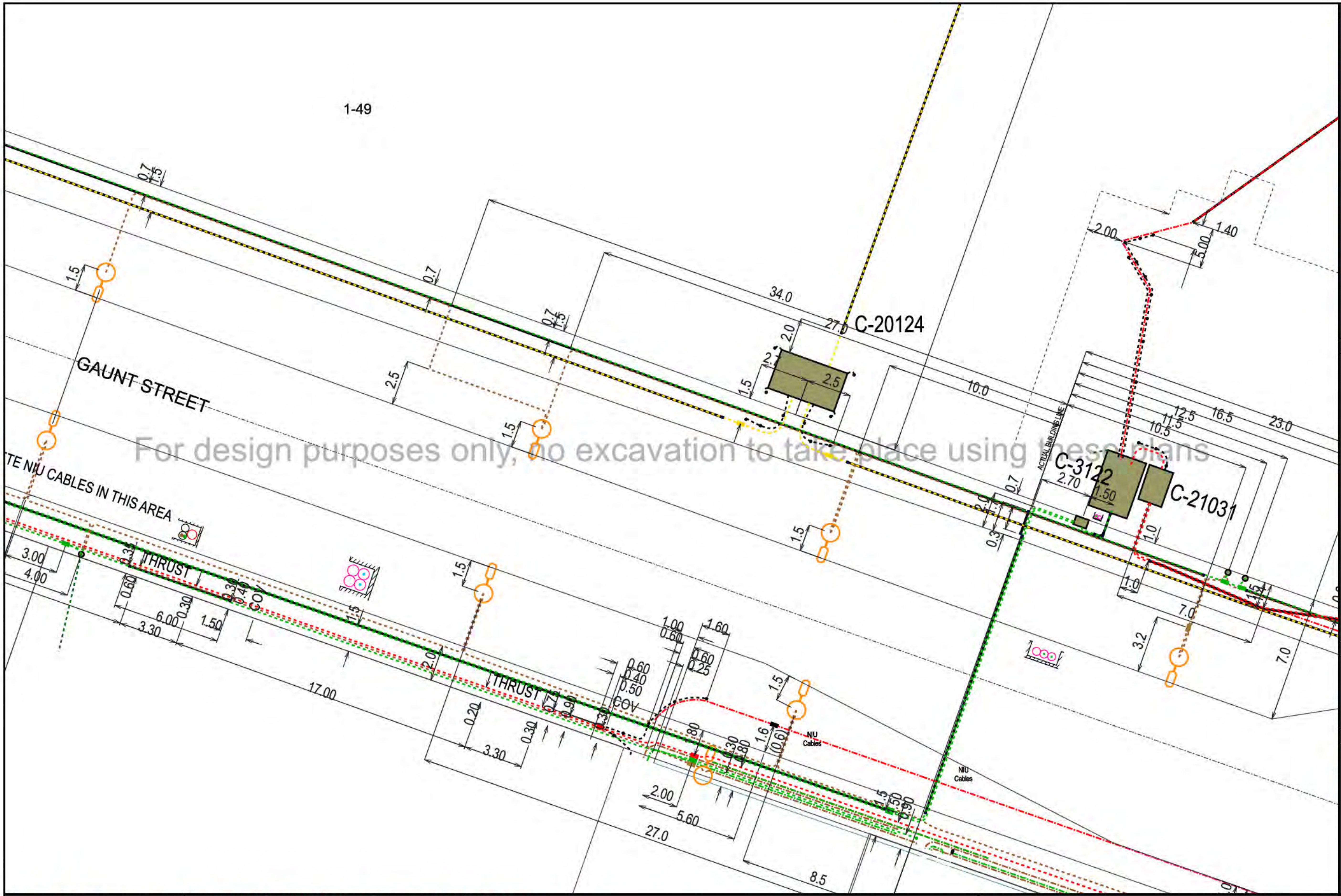

CABLE COLOUR CODE

CABLES IN USE
- 110,000 - 22,000 volt subtransmission
- 22,000 volt
- 11,000 - 6,600 volt
- 400 volt
- Streetlight
- Pilot / Fibre Optic

CABLES NOT IN USE
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- 400 volt
- Streetlight
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JOINTS & SEALING ENDS
- 110,000 - 22,000 volt subtransmission
- 22,000 volt
- 11,000 - 6,600 volt
- 400 volt
- Streetlight
- Pilot / Fibre Optic
- NOT IN USE

SYMBOL LEGEND
- TUNNEL
- DUCT BANK
- FIBRE OPTIC DUCT
- TRENCH
- PILLAR
- PIT
- DISTRIBUTION SUBSTATION
- POLES
- LAMP
- CESSPIT
- MANHOLE
- FIRE HYDRANT
- DRAIN
- FIBRE OPTIC PIT
- EARTHWIRE & RODS

DUCT CROSS SECTIONS mm

25 50 80 100 150 200 250 300

WORK MANAGEMENT
- IN PROGRESS
- FUTURE PLANNED
- PLANNED

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DUCT CROSS SECTIONS mm

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WORK MANAGEMENT
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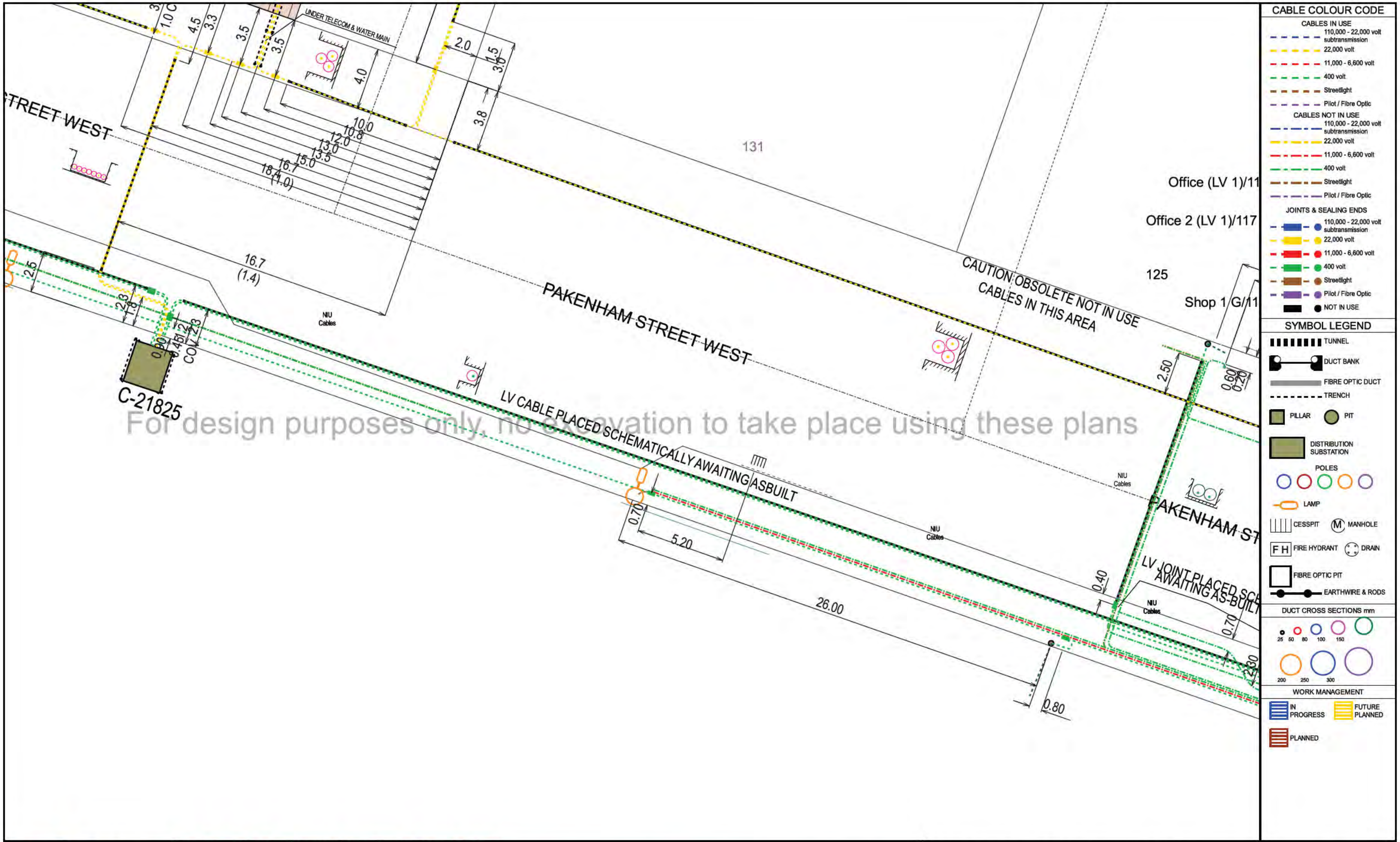

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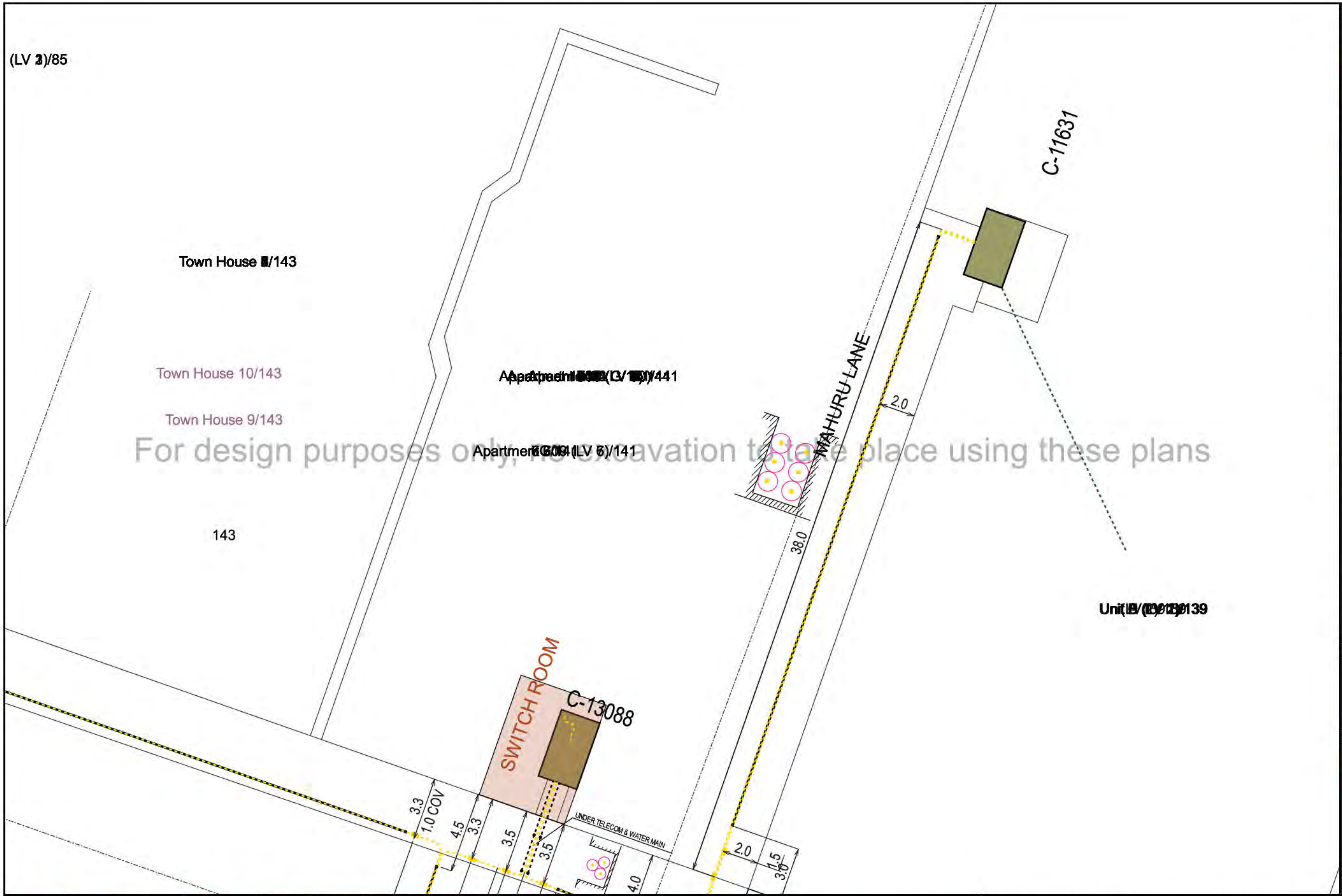

CABLE COLOUR CODE

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- 22,000 volt
- 11,000 - 6,600 volt
- 400 volt
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- 110,000 - 22,000 volt subtransmission
- 22,000 volt
- 11,000 - 6,600 volt
- 400 volt
- Streetlight
- Pilot / Fibre Optic
- NOT IN USE

SYMBOL LEGEND

- TUNNEL
- DUCT BANK
- FIBRE OPTIC DUCT
- TRENCH
- PILLAR
- PIT
- DISTRIBUTION SUBSTATION

POLES

- LAMP
- CESSPIT
- MANHOLE
- F H FIRE HYDRANT
- DRAIN
- FIBRE OPTIC PIT
- EARTHWIRE & RODS

DUCT CROSS SECTIONS mm

25 50 80 100 150

200 250 300

WORK MANAGEMENT
- IN PROGRESS
- FUTURE PLANNED
- PLANNED

vector

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Page: 13 of 18

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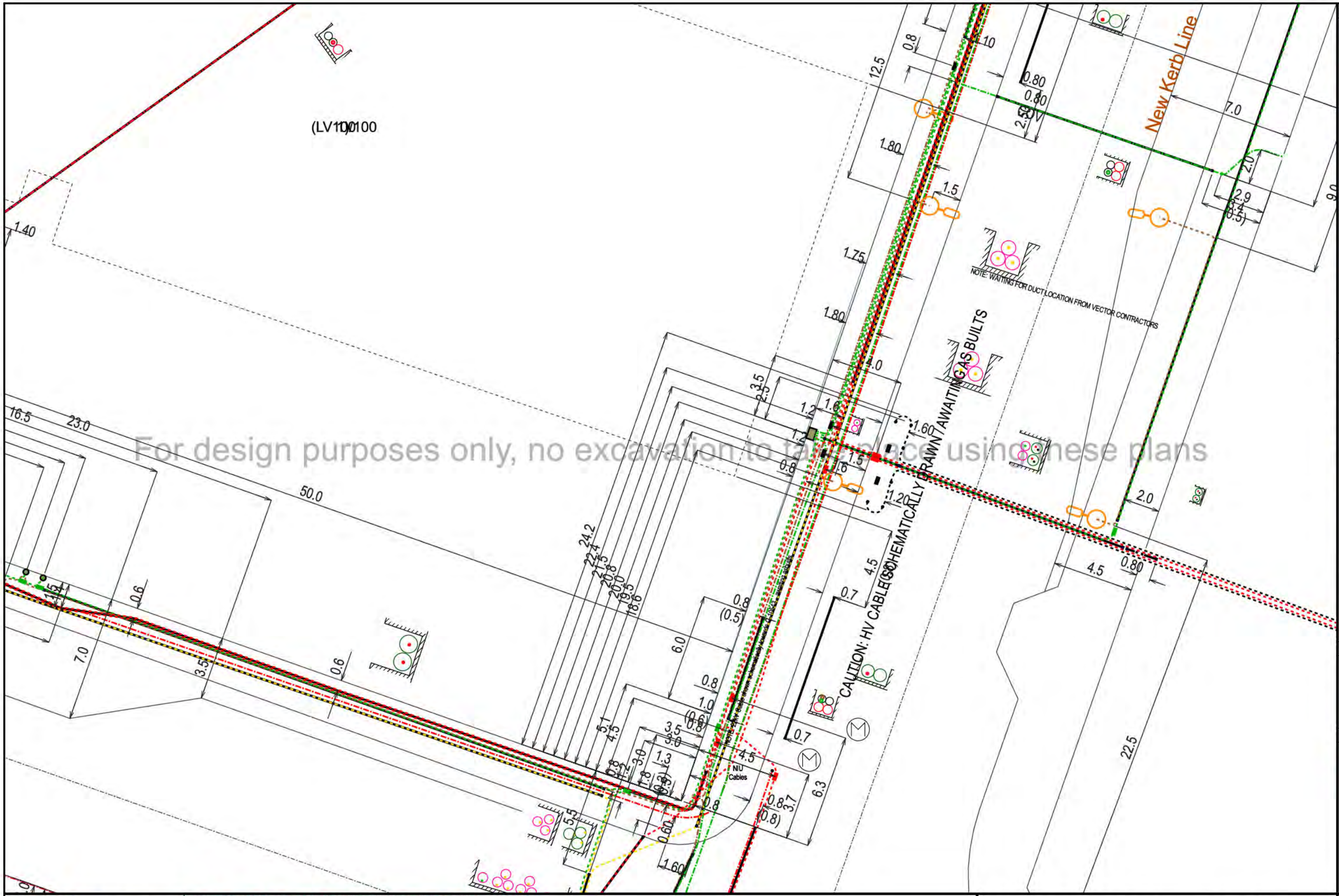

For design purposes only, no excavation to take place using these plans

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DUCT CROSS SECTIONS mm

25 50 80 100 150

200 250 300

WORK MANAGEMENT

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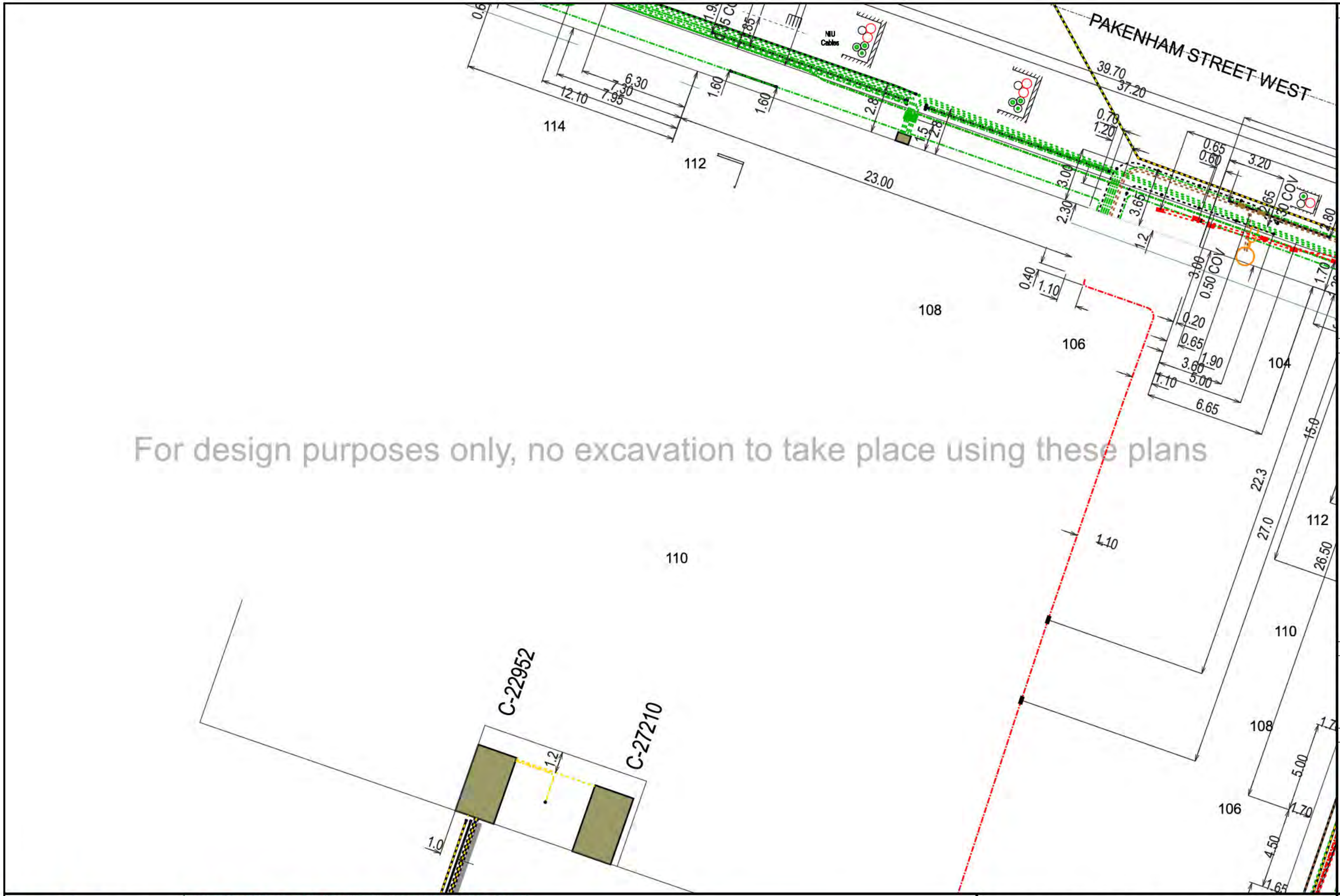

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DUCT CROSS SECTIONS mm

25 50 80 100 150 200 250 300

WORK MANAGEMENT
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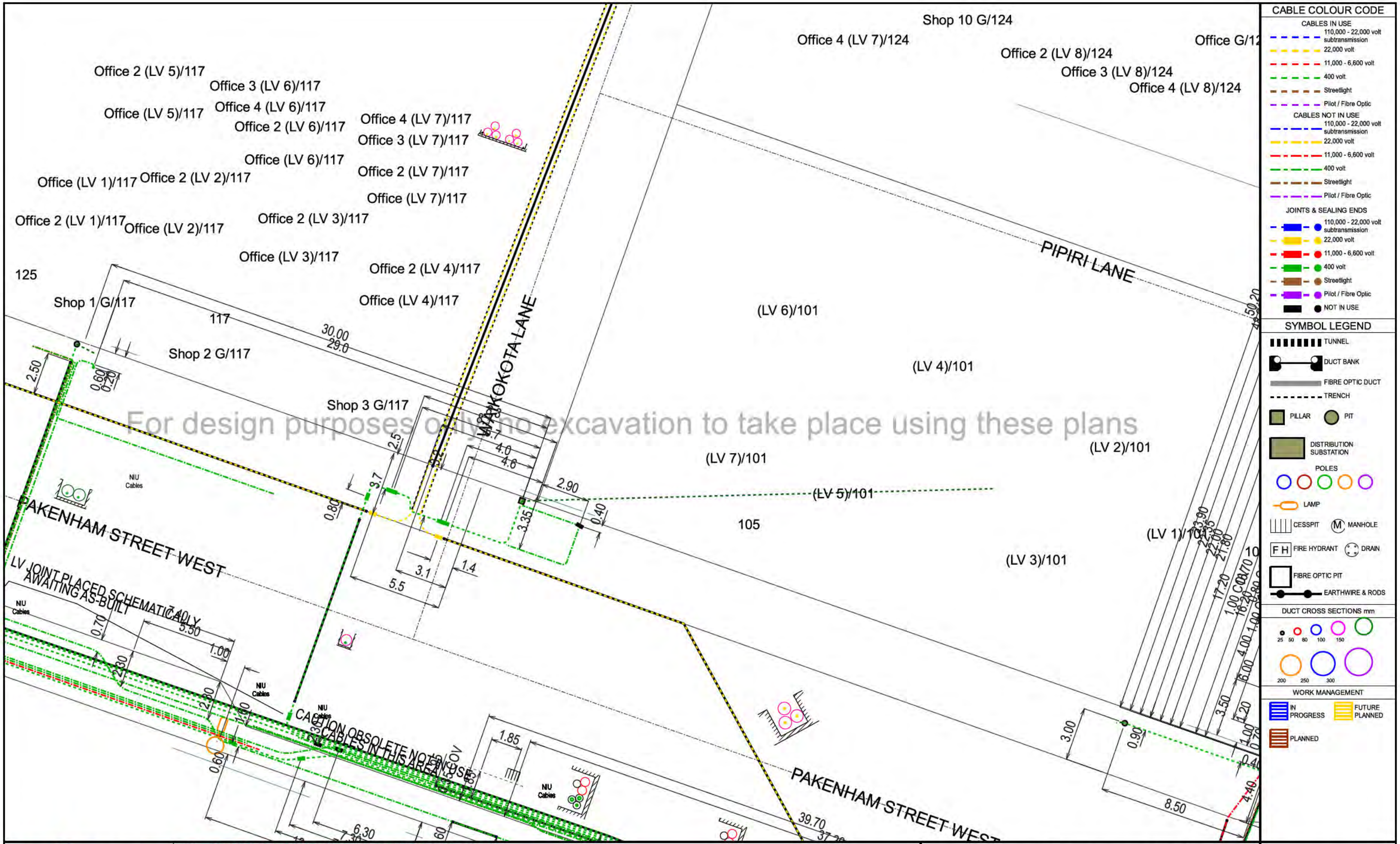

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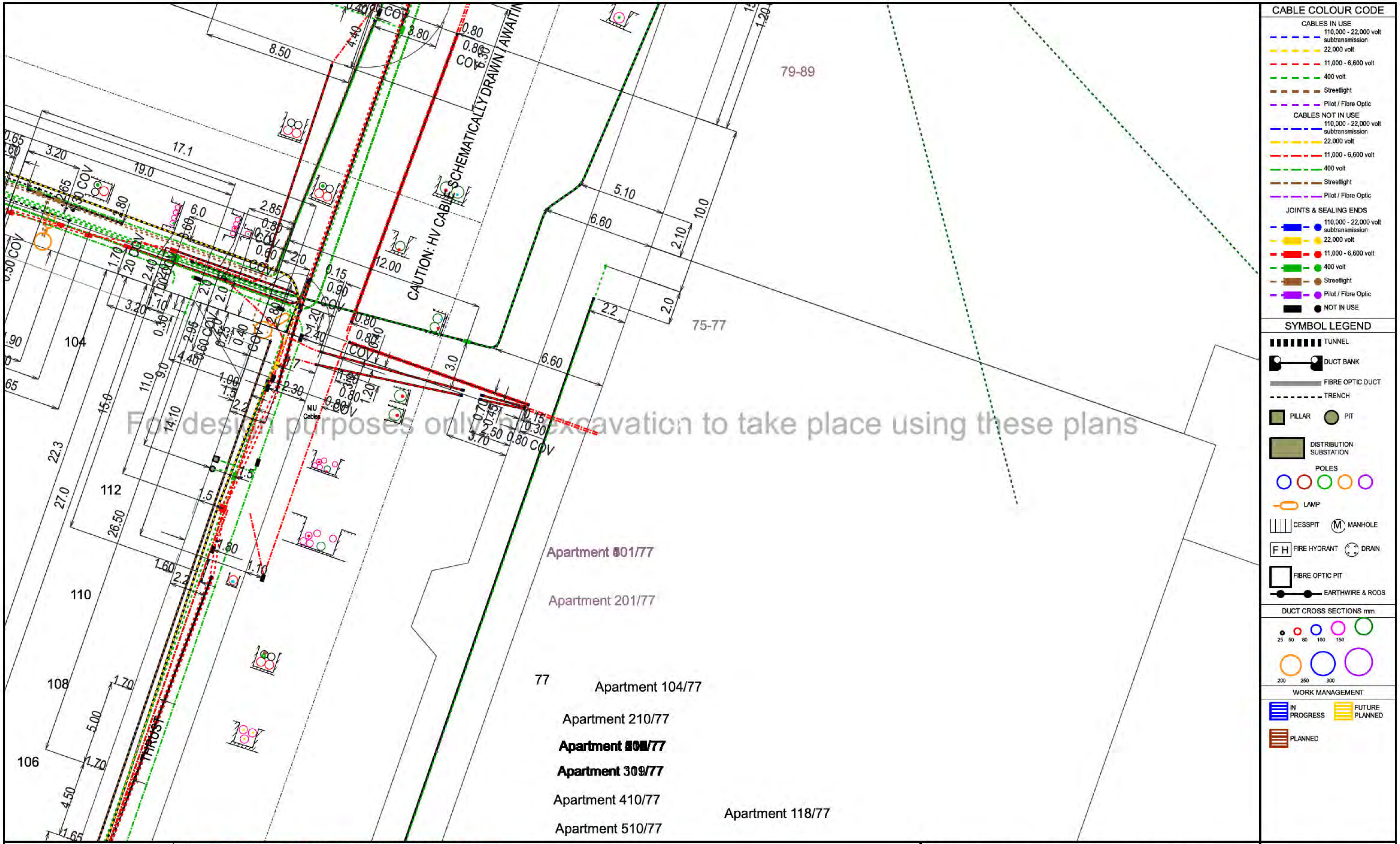

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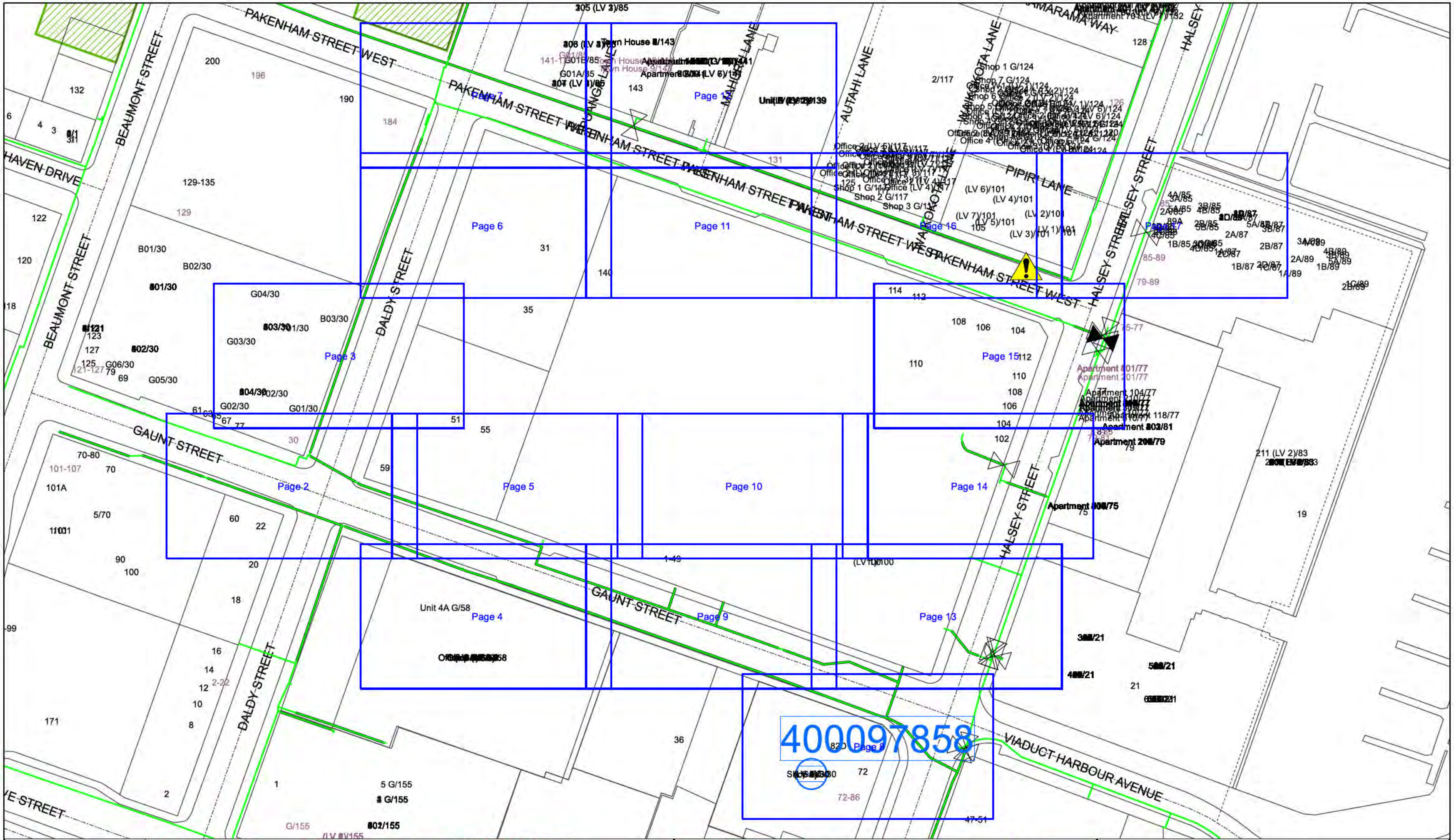

WARNING! Special conditions apply for high pressure gas pipelines (IP20, IP10, MP7, Selected MP4)

A permit/consent is required for any excavation within 2 metres of this pipeline. A MINIMUM of 3 working days notice is required when applying for a permit/consent. Refer to attached covering letter for additional information

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🟥 WARNING! Indication only additional data is required
Transmission Pipeline (ex - NGC):
Please contact Vector - New Plymouth on 0800 734 567 for On-Site Location and Work Permits. A minimum of 48 hours notice is required.

⚠ WARNING! Live service within this property.

PIPE COLOUR BY PRESSURE
- LP Pipe
- LPG Pipe
- MP1 Pipe
- MP2 Pipe
- MP4 Pipe
- MP7 Pipe
- IP10 Pipe
- IP20 Pipe
- 0 kPa

OTHER GAS FEATURES
- Fibre Optic
- ⋈ Closed Valve
- ▶ Gate
- ⋈ Open Valve
- ■ PRS
- ▷ Reducer
- ○ Service Regulator
- ● Riser

WORK MANAGEMENT
- 🟦 In Progress
- 🟫 Planned
- 🟨 Future Planned

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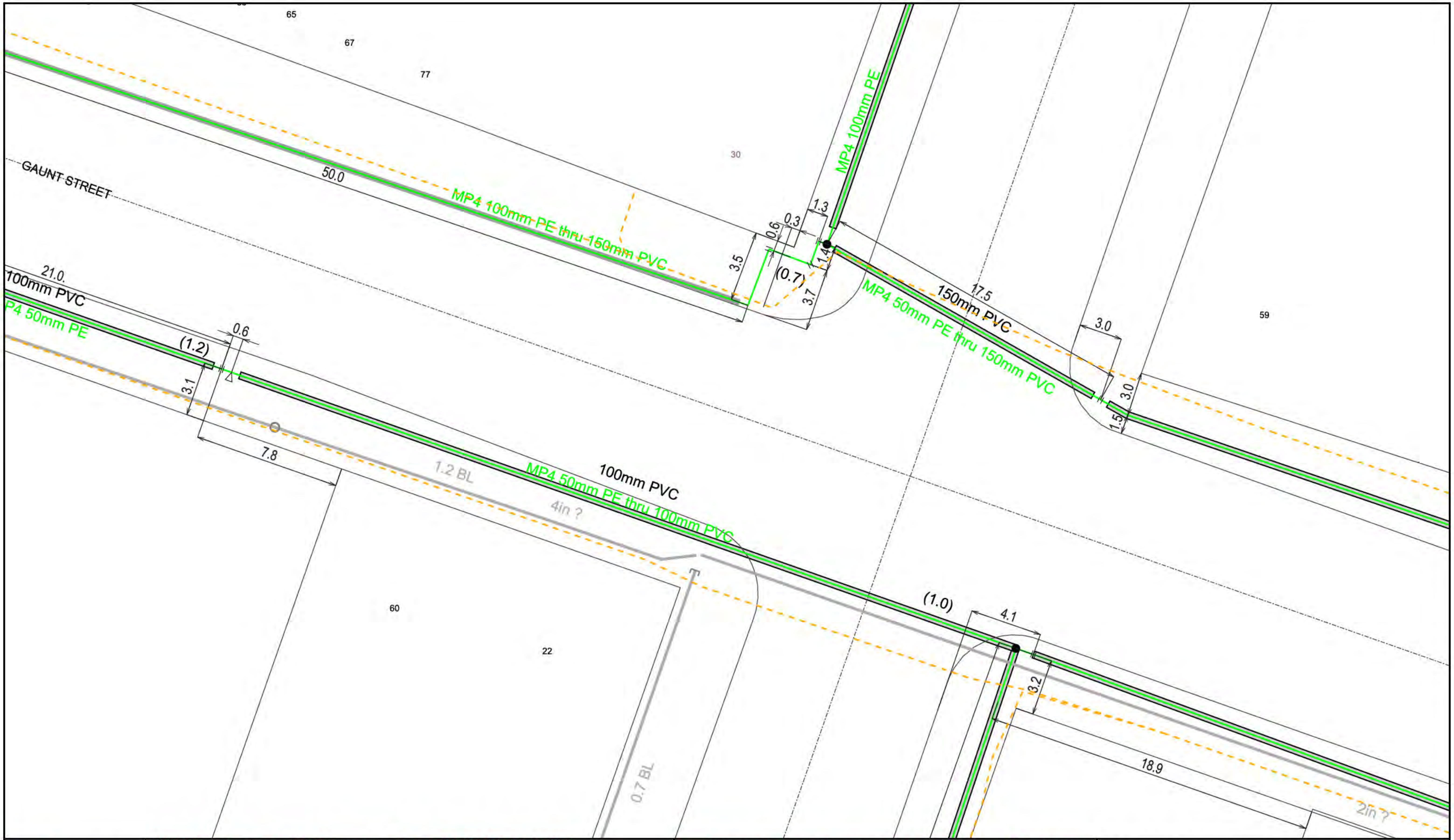
A3 GAS beforeudig PLAN

Date printed: 13. January 2026

No associated viewport

Page: 1 of 17



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⚠ WARNING! Live service within this property.

PIPE COLOUR BY PRESSURE
- LP Pipe
- LPG Pipe
- MP1 Pipe
- MP2 Pipe
- MP4 Pipe
- MP7 Pipe
- IP10 Pipe
- IP20 Pipe
- 0 kPa

OTHER GAS FEATURES
- Fibre Optic
- ⧓ Closed Valve
- ⋈ Open Valve
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WORK MANAGEMENT
- ▤ In Progress
- ▤ Planned
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A3 GAS beforeudig PLAN

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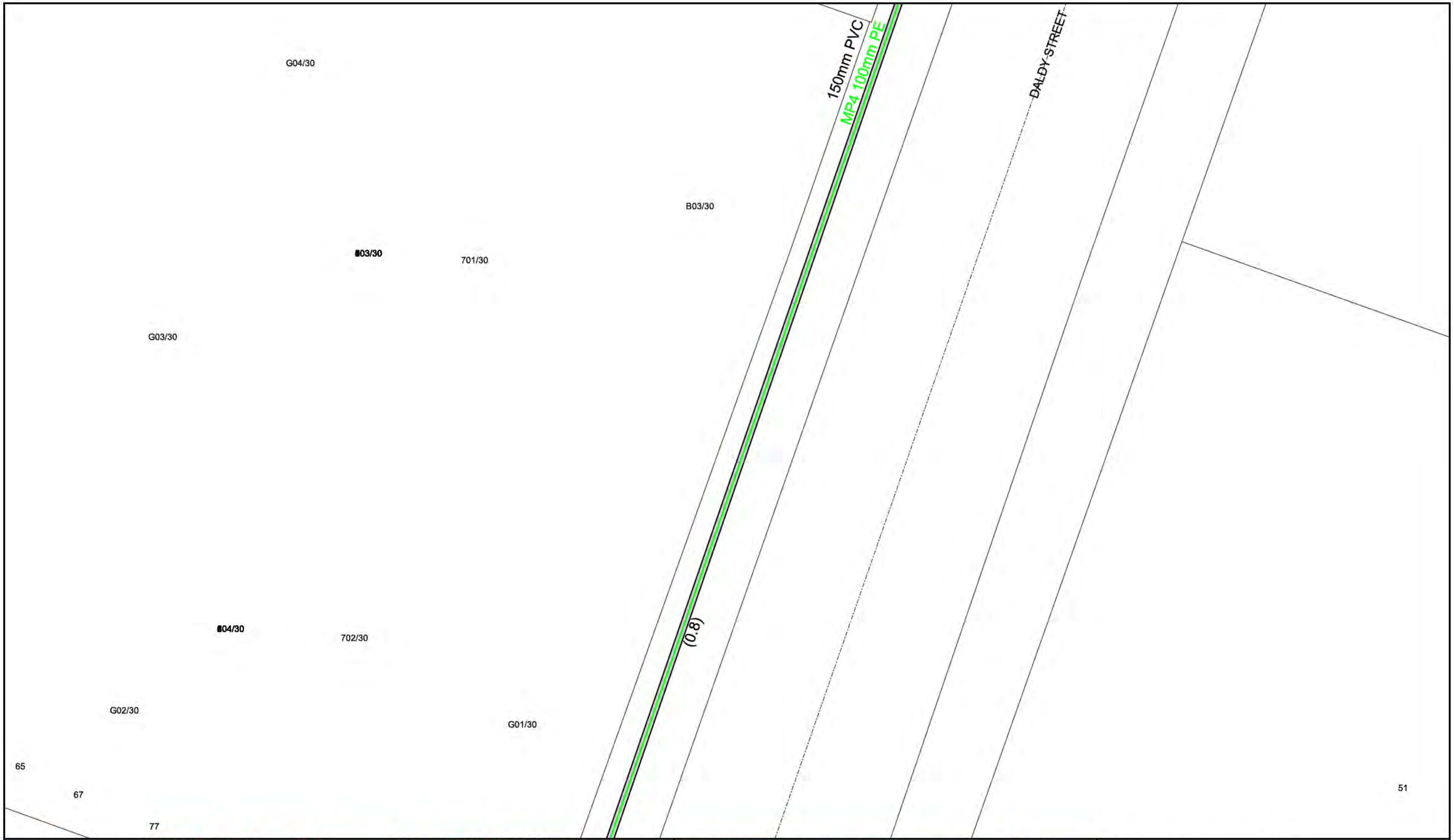

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WORK MANAGEMENT
- In Progress
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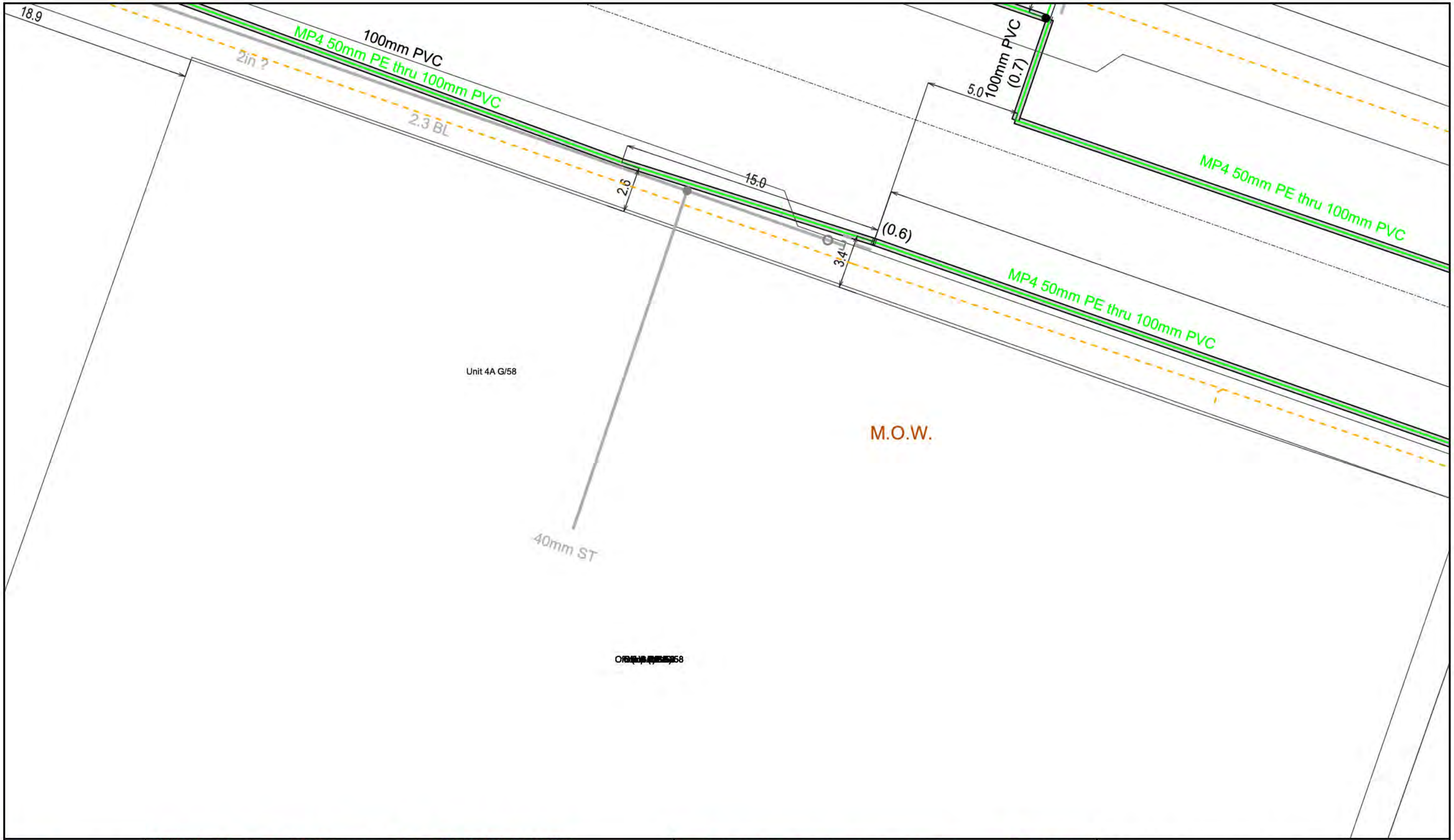

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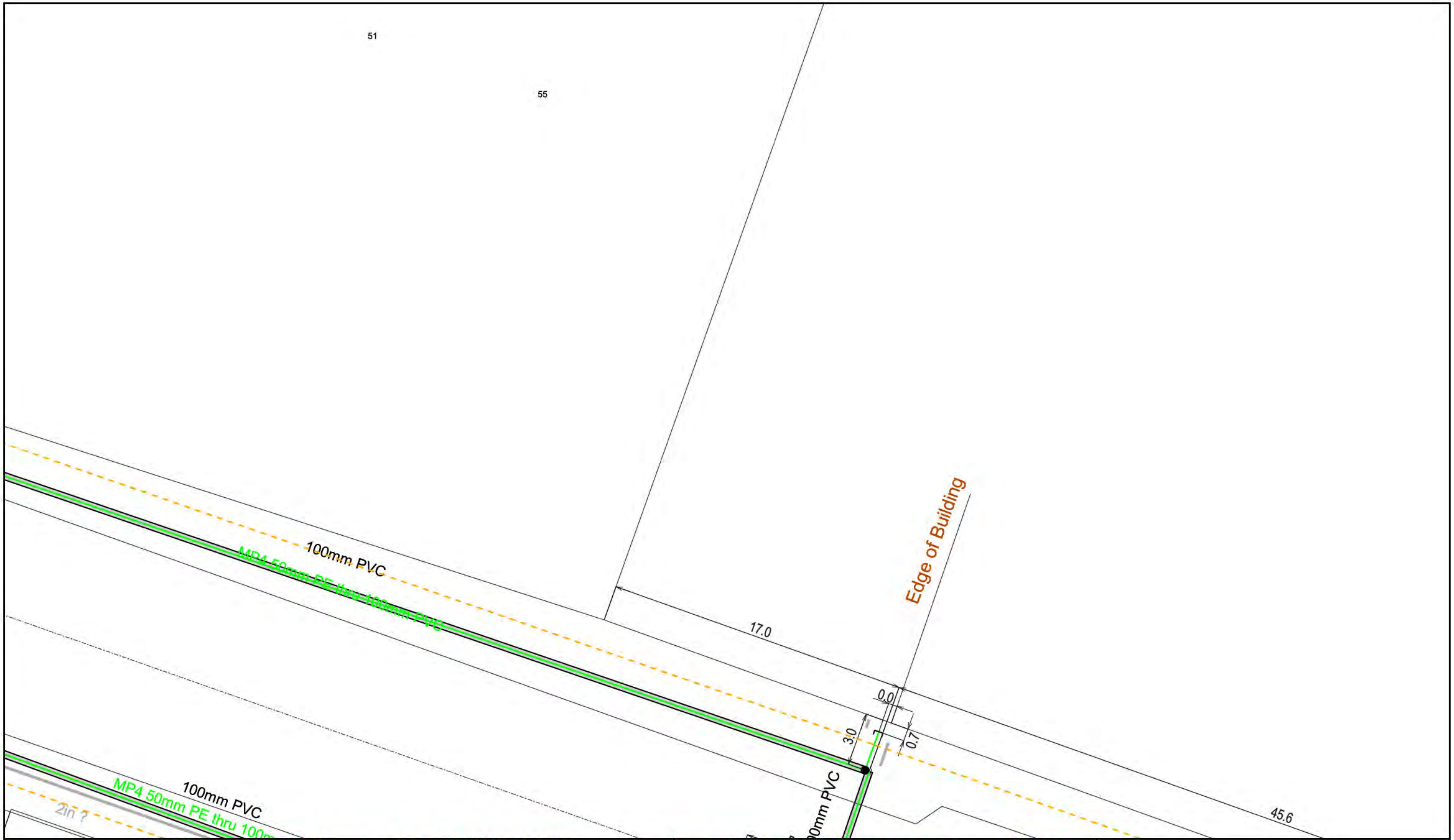

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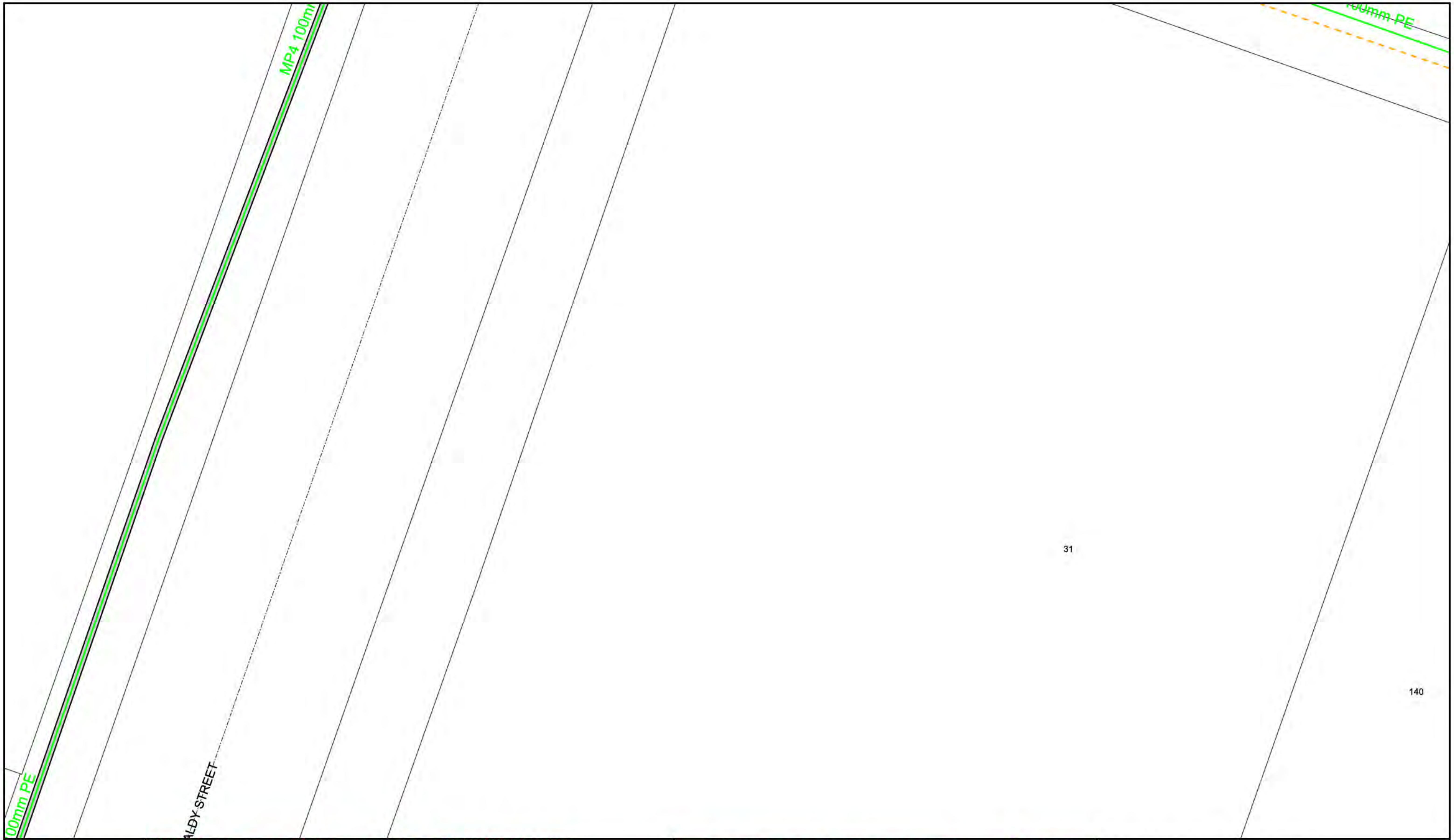

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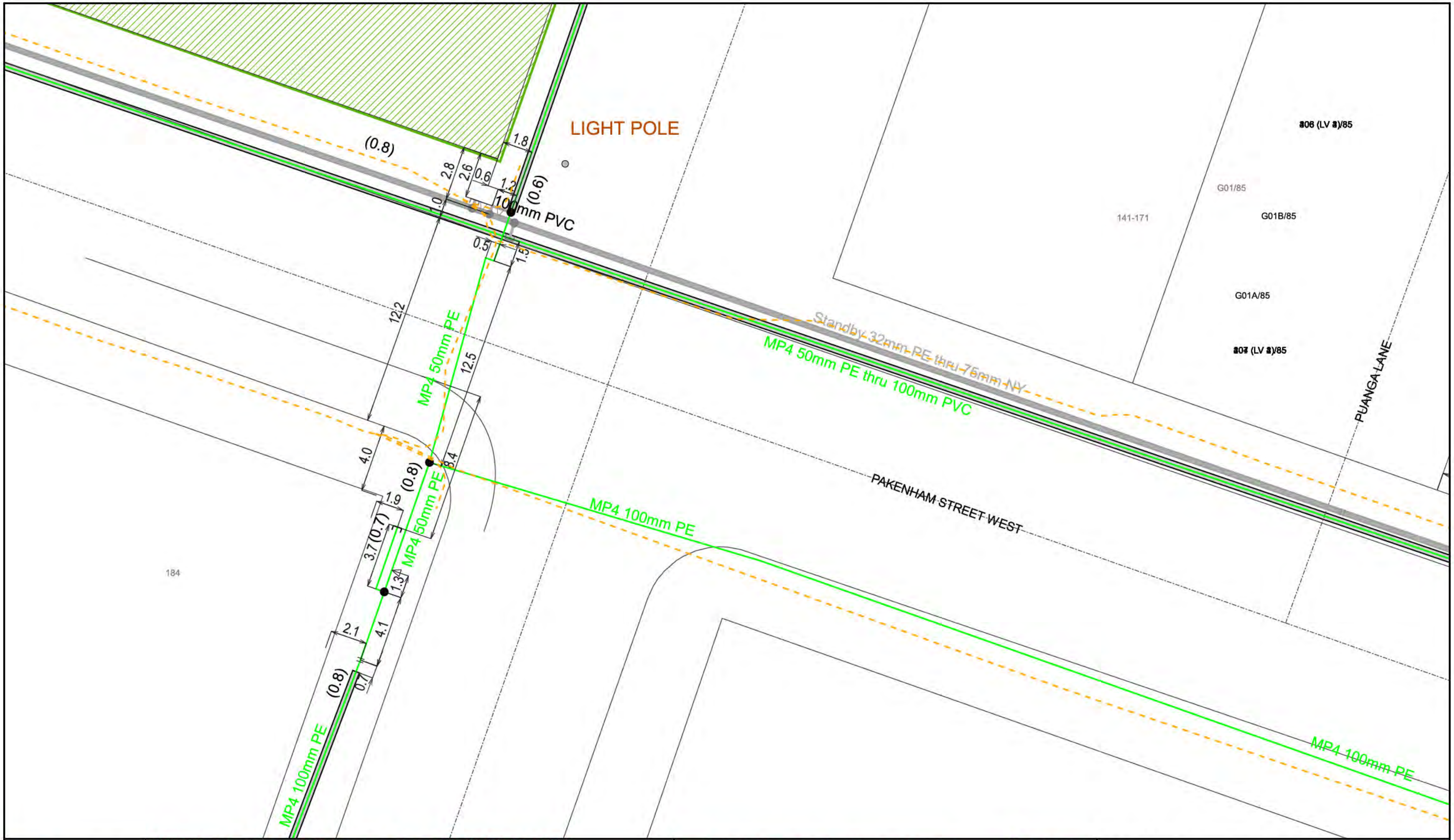

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- MP1 Pipe
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OTHER GAS FEATURES
- Fibre Optic
- Closed Valve
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WORK MANAGEMENT
- In Progress
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A3 GAS beforeudig PLAN

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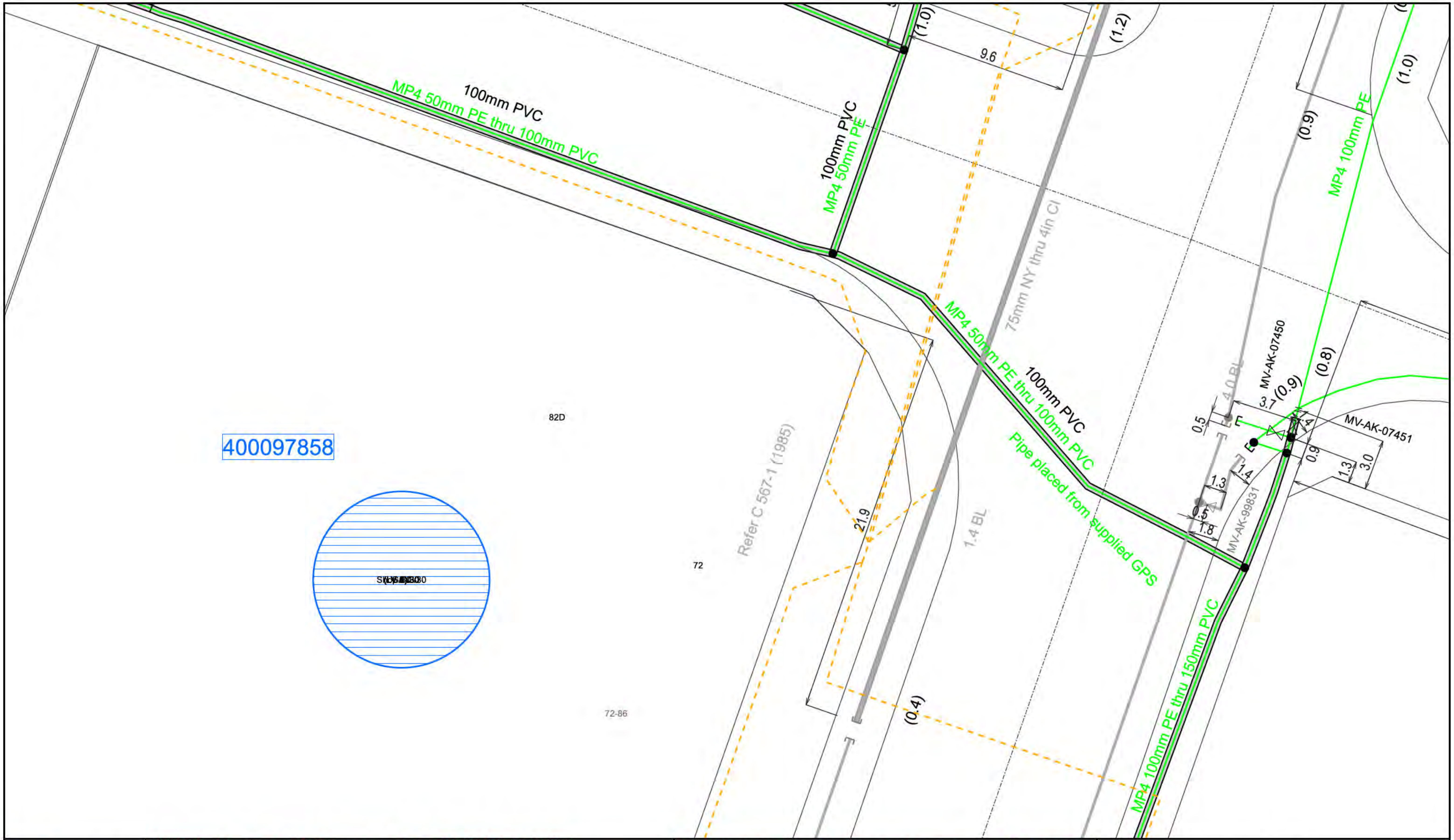

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- IP10 Pipe
- IP20 Pipe
- 0 kPa

OTHER GAS FEATURES
- Fibre Optic
- Closed Valve
- Gate
- Open Valve
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- Reducer
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WORK MANAGEMENT
- In Progress
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A3 GAS beforeudig PLAN

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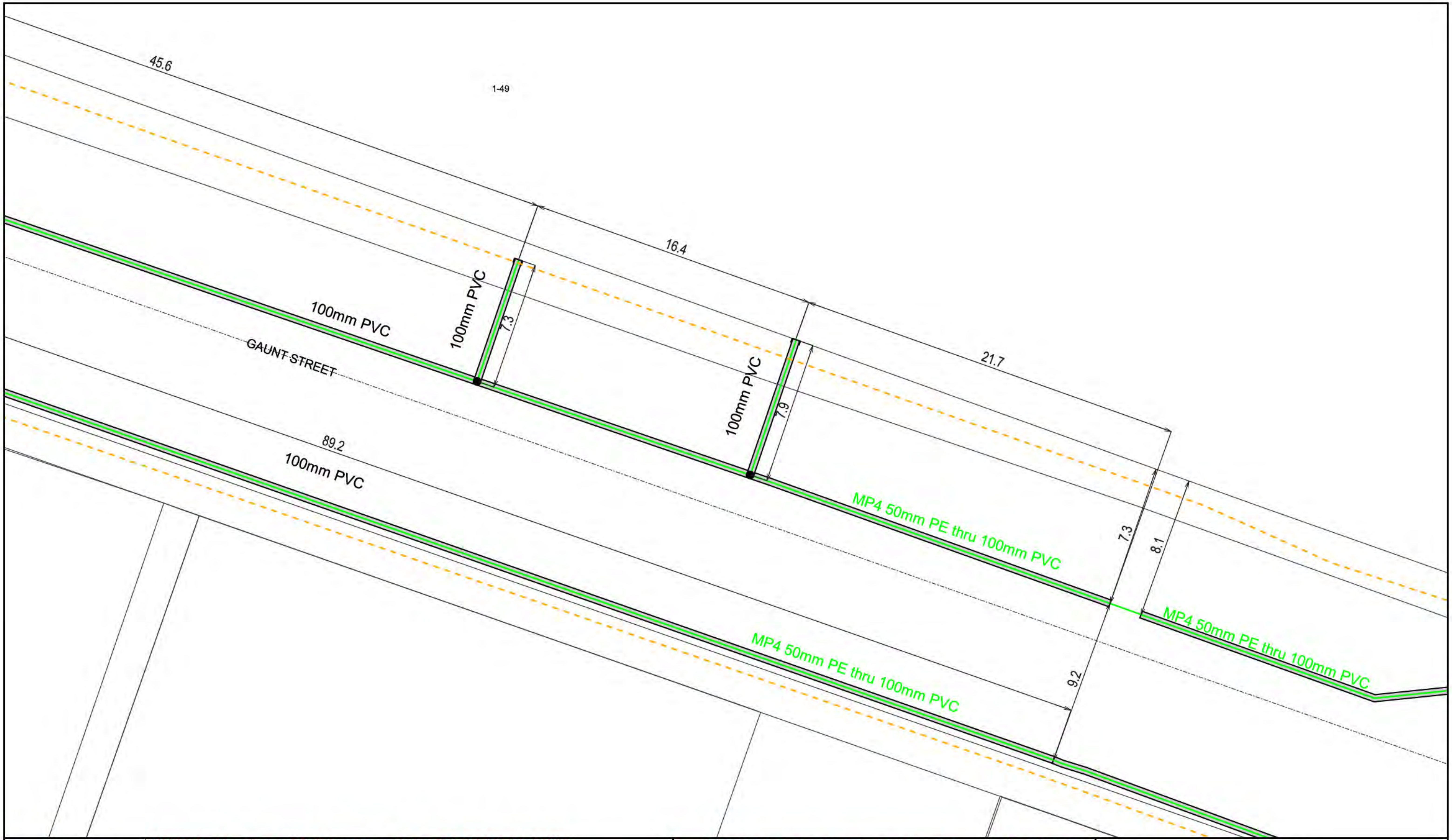

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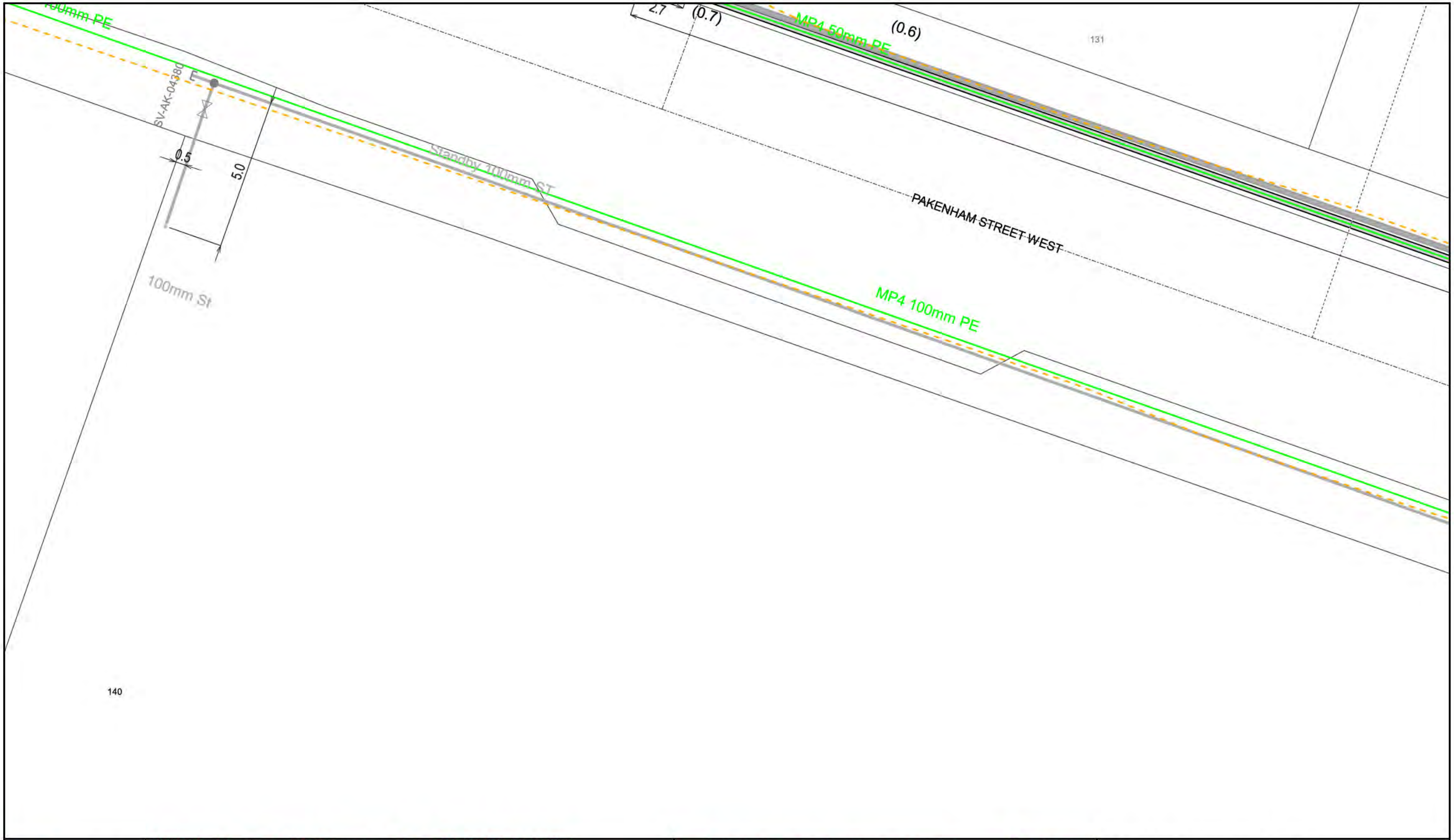

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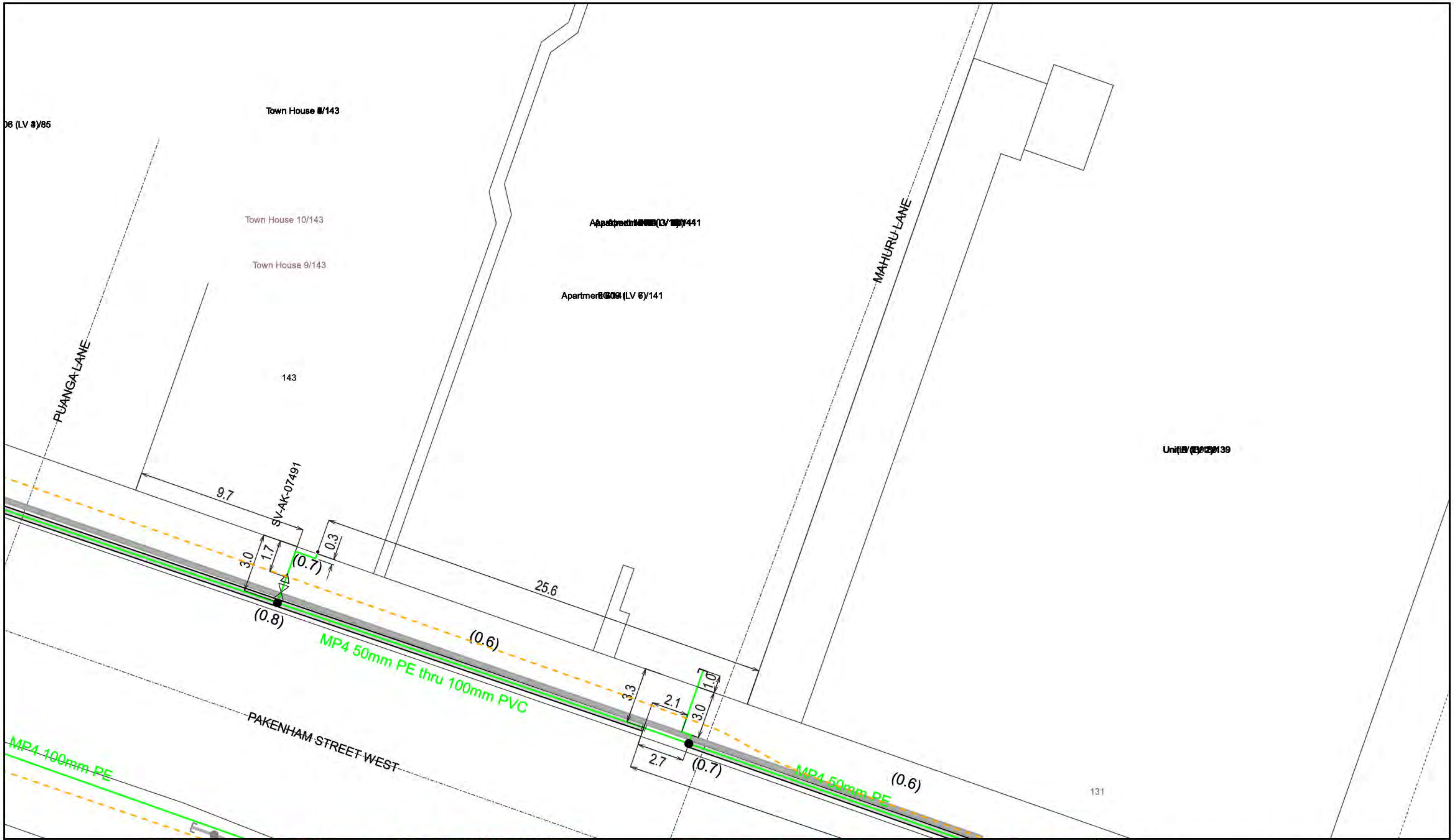

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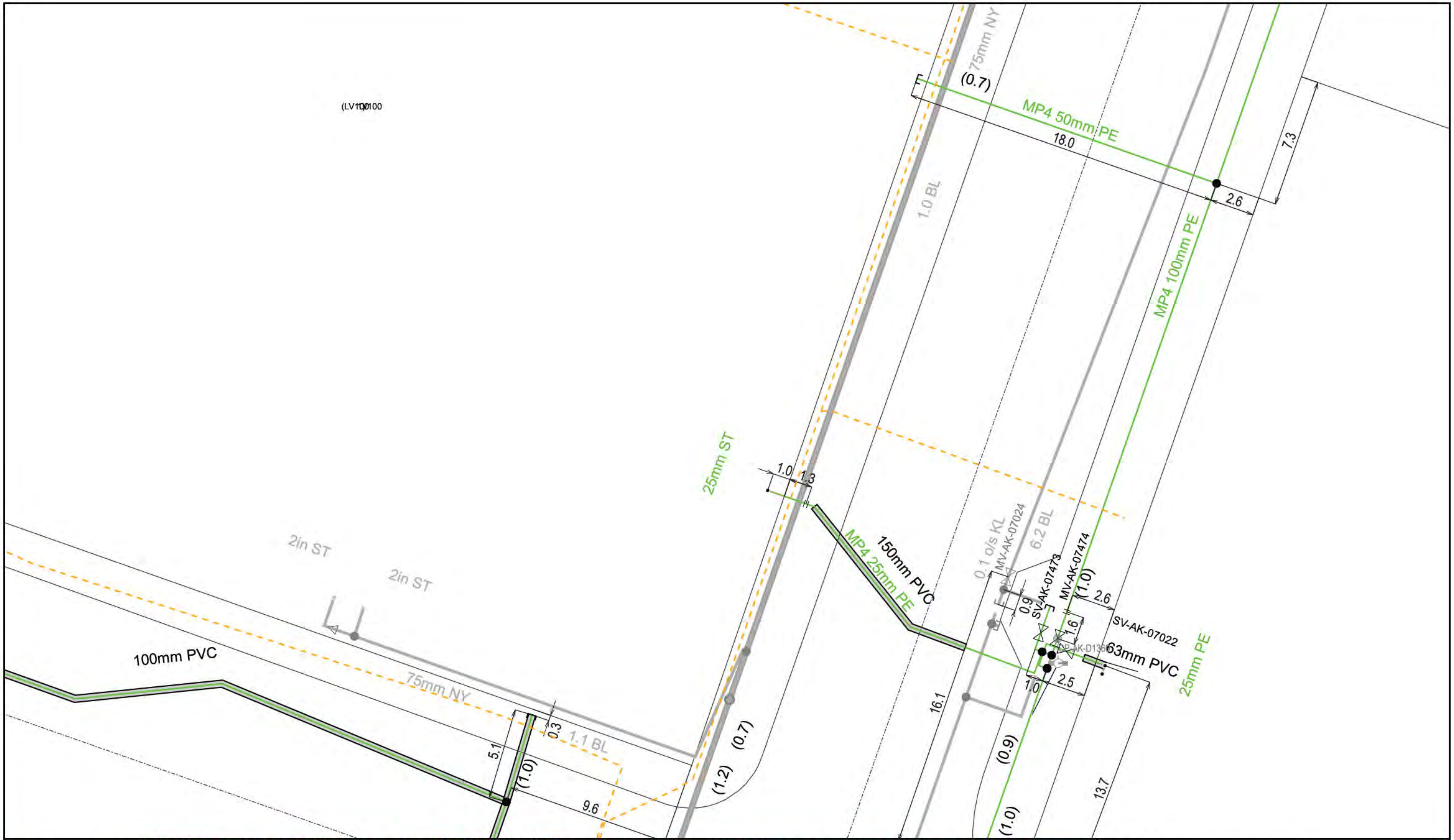

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WARNING! Indication only additional data is required
Transmission Pipeline (ex - NGC):
Please contact Vector - New Plymouth on 0800 734 567 for On-Site Location and Work Permits. A minimum of 48 hours notice is required.

WARNING! Live service within this property.

PIPE COLOUR BY PRESSURE
LP Pipe
LPG Pipe
MP1 Pipe
MP2 Pipe
MP4 Pipe
MP7 Pipe
IP10 Pipe
IP20 Pipe
0 kPa

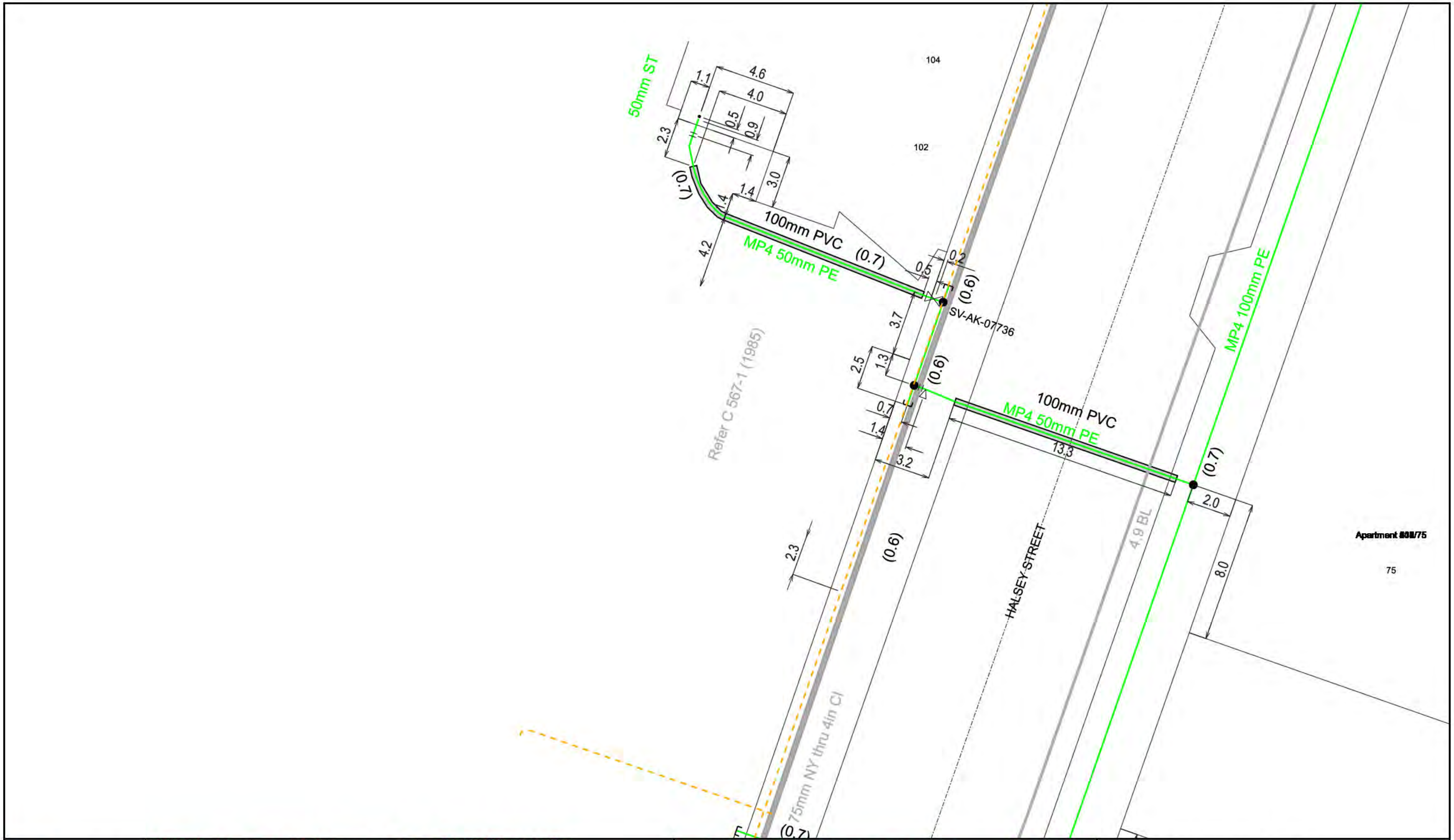
OTHER GAS FEATURES
Fibre Optic
Closed Valve
Gate
Open Valve
PRS
Reducer
Service Regulator
Riser

WORK MANAGEMENT
In Progress
Planned
Future Planned

A3 GAS beforeudig PLAN

Date printed: 13. January 2026

Scale: 1:200



vector

WARNING! Special conditions apply for high pressure gas pipelines (IP20, IP10, MP7, Selected MP4)

A permit/consent is required for any excavation within 2 metres of this pipeline. A MINIMUM of 3 working days notice is required when applying for a permit/consent. Refer to attached covering letter for additional information.

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⚠ WARNING! Live service within this property.

PIPE COLOUR BY PRESSURE
- LP Pipe
- LPG Pipe
- MP1 Pipe
- MP2 Pipe
- MP4 Pipe
- MP7 Pipe
- IP10 Pipe
- IP20 Pipe
- 0 kPa

OTHER GAS FEATURES
- Fibre Optic
- Closed Valve
- Gate
- Open Valve
- PRS
- Reducer
- Service Regulator
- ● Riser

WORK MANAGEMENT
- In Progress
- Planned
- Future Planned

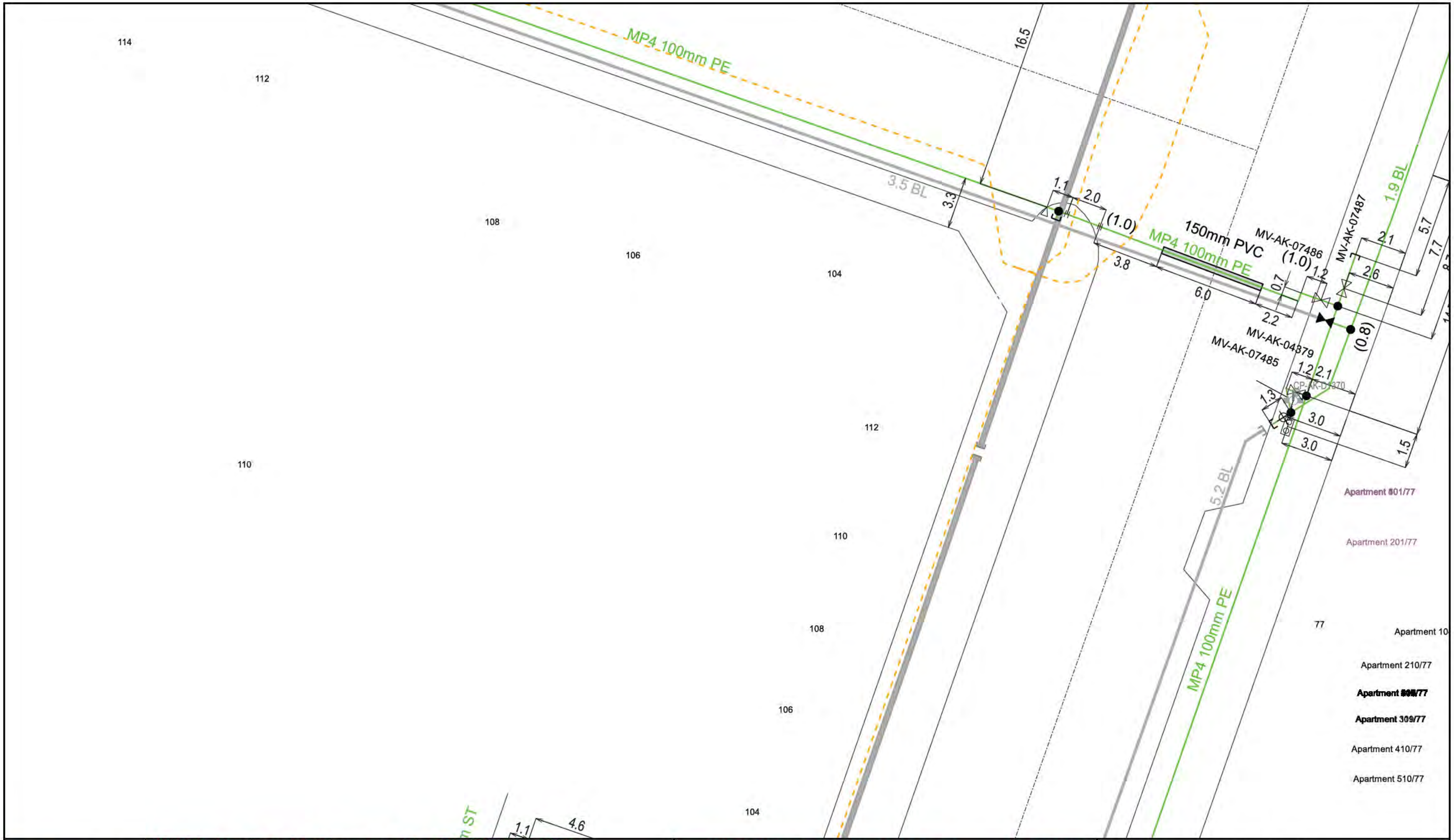
N S W E

A3 GAS beforeudig PLAN

Date printed: 13. January 2026

Scale: 1:200

Page: 14 of 17



vector

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- LP Pipe
- LPG Pipe
- MP1 Pipe
- MP2 Pipe
- MP4 Pipe
- MP7 Pipe
- IP10 Pipe
- IP20 Pipe
- 0 kPa

OTHER GAS FEATURES
- Fibre Optic
- Closed Valve
- Gate
- Open Valve
- PRS
- Reducer
- Service Regulator
- ● Riser

WORK MANAGEMENT
- In Progress
- Planned
- Future Planned

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A3 GAS beforeudig PLAN

Date printed: 13. January 2026

Scale: 1:200

vector

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- LPG Pipe
- MP1 Pipe
- MP2 Pipe
- MP4 Pipe
- MP7 Pipe
- IP10 Pipe
- IP20 Pipe
- 0 kPa

OTHER GAS FEATURES
- Fibre Optic
- Closed Valve
- Gate
- Open Valve
- PRS
- Reducer
- Service Regulator
- ● Riser

WORK MANAGEMENT
- In Progress
- Planned
- Future Planned

N
W
E
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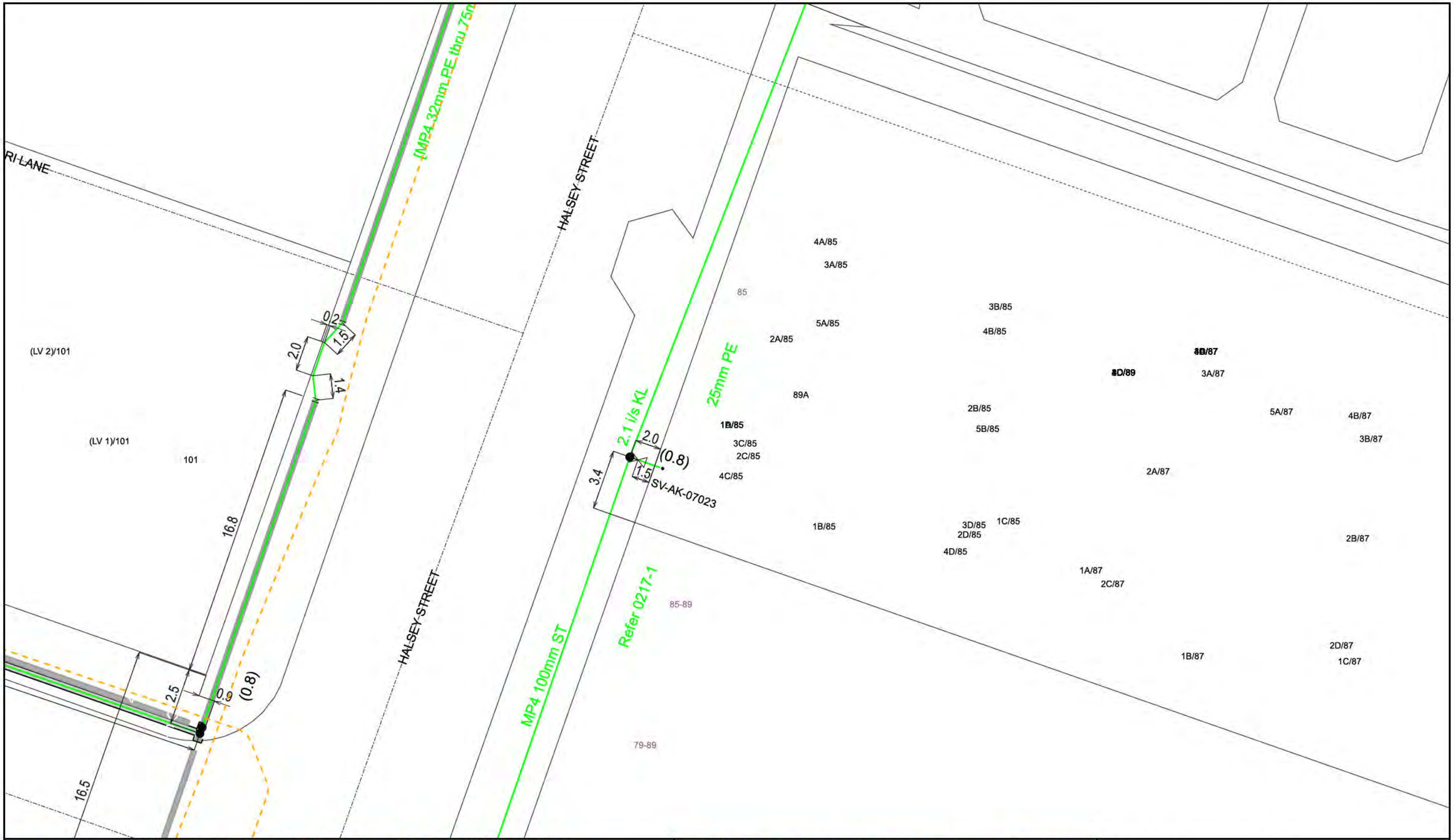
A3 GAS beforeudig PLAN

Date printed: 13. January 2026

Scale: 1:200

Page: 16 of 17



vector

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- LPG Pipe
- MP1 Pipe
- MP2 Pipe
- MP4 Pipe
- MP7 Pipe
- IP10 Pipe
- IP20 Pipe
- 0 kPa

OTHER GAS FEATURES
- Fibre Optic
- Closed Valve
- Gate
- Open Valve
- PRS
- Reducer
- Service Regulator
- ● Riser

WORK MANAGEMENT
- In Progress
- Planned
- Future Planned

N
W E
S

A3 GAS beforeudig PLAN

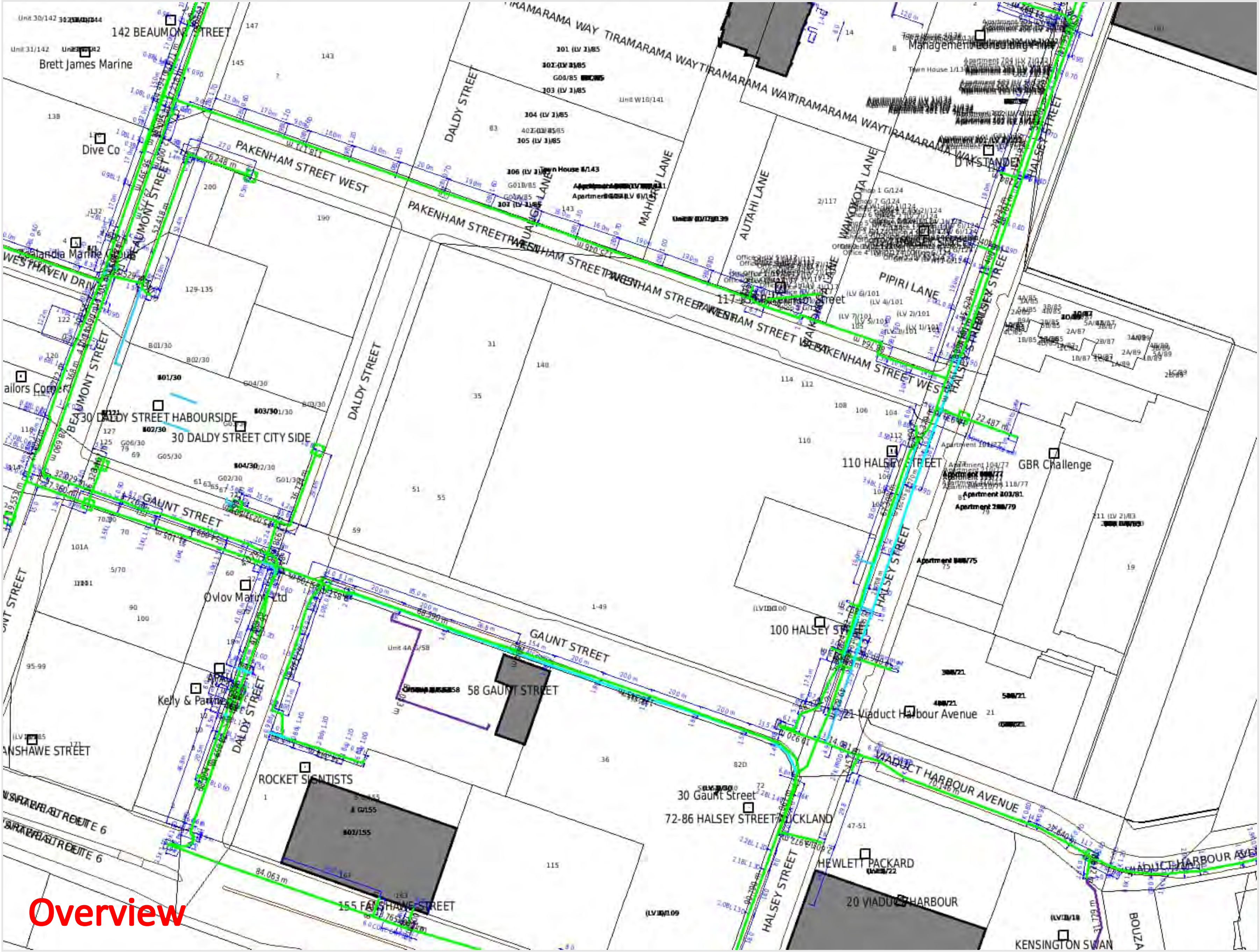
Date printed: 13. January 2026

Scale: 1:200

EonFibre

Sequence No: 16932316
Job No: 2710416
Location: 1-49 Gaunt St, Auckland, Auckland 1010

beforeudig



Legend

Underground Routes

🟩 Existing EonFibre network, marked as:
ONENZ, EONFIBRE,
Vodafone, TelstraClear,
TelstraSaturn, Saturn , Clear

🟦 Proposed, or as stated

🟪 Infrastructure owned by others

Aboveground Routes

- - - - Overhead infrastructure

Other Network Features

Vaults/Chambers

Pedestals / Cabinets

Service Drop Pits/ Hand holes

● Poles

Pipe Branching Junction

Abbreviations Key

ES/EOS	Edge of Seal
PP	Power Pole
K	Kerb
F/L	Fence line
D/Deep	Depth at time of install

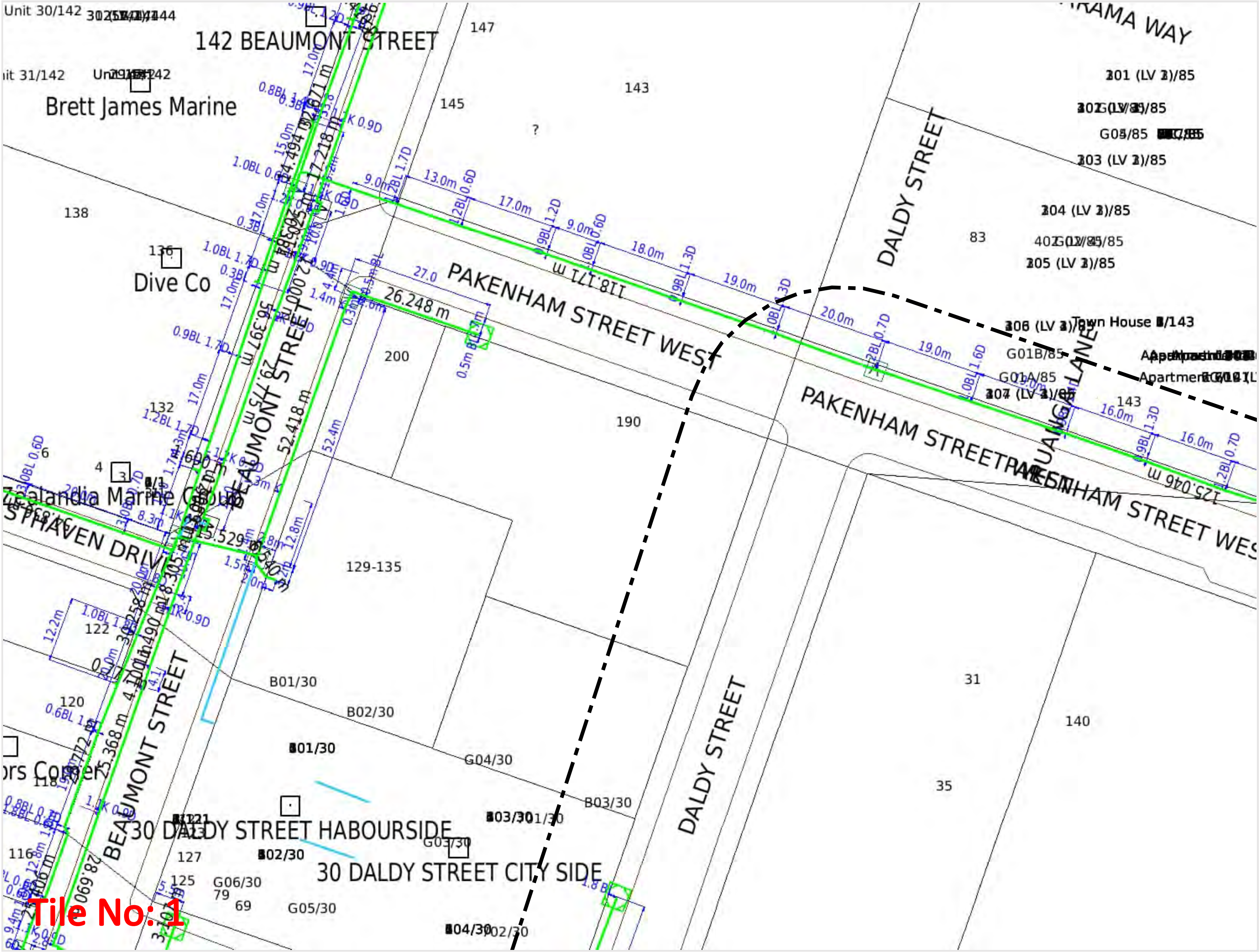
N

Scale: 1:2050
Expires: 10 Feb 2026

EonFibre

Sequence No: 16932316
Job No: 2710416
Location: 1-49 Gaunt St, Auckland, Auckland 1010

beforeudig



Legend

Underground Routes

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ONENZ, EONFIBRE,
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Infrastructure owned by others

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Pipe Branching Junction

Abbreviations Key

ES/EOS	Edge of Seal
PP	Power Pole
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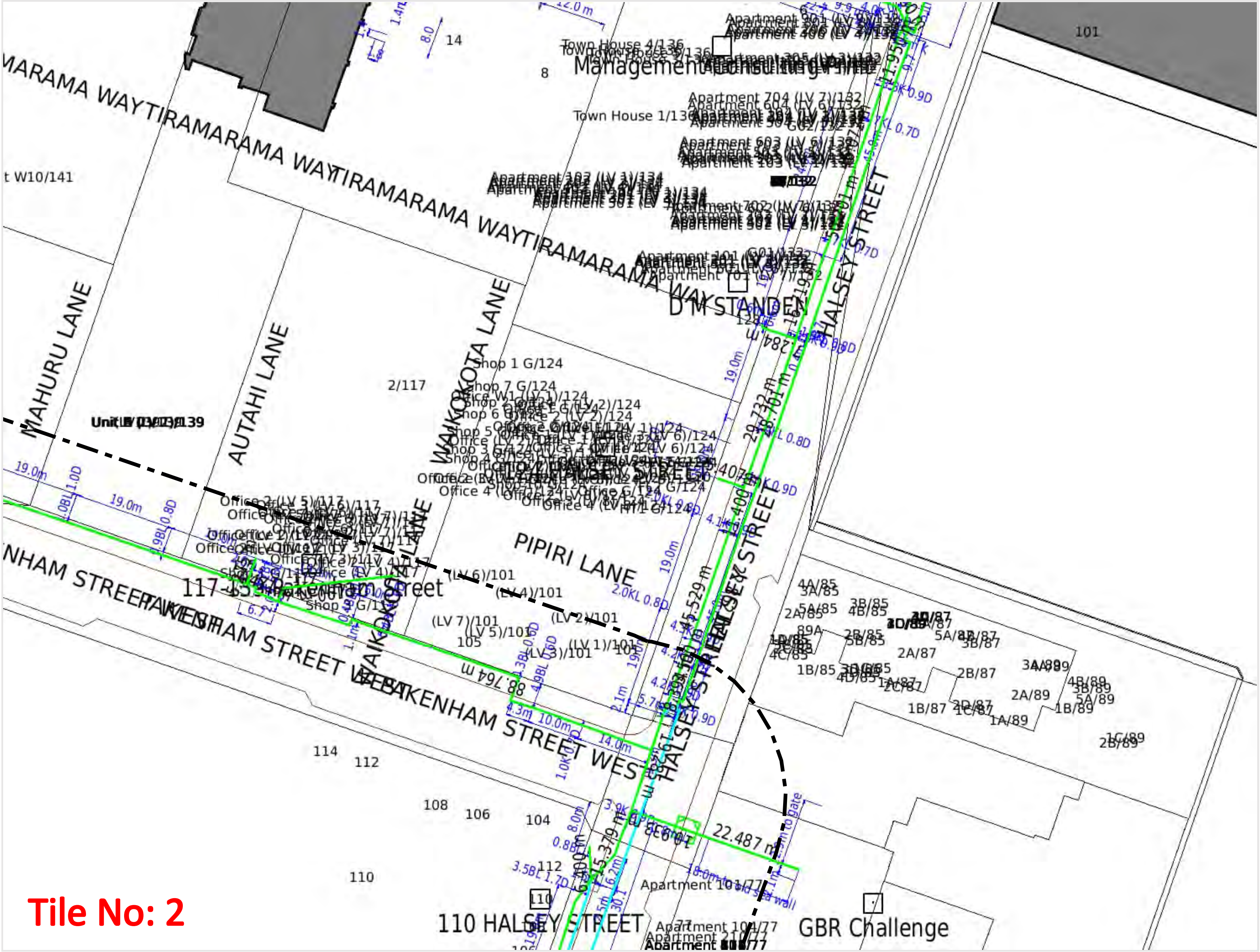
D/Deep	Depth at time of install

N

Scale: 1:1000
Expires: 10 Feb 2026

Sequence No: 16932316
Job No: 2710416
Location: 1-49 Gaunt St, Auckland, Auckland 1010



Legend

Underground Routes

🟩	Existing EonFibre network, marked as: **ONENZ, EONFIBRE,** Vodafone, TelstraClear, TelstraSaturn, Saturn , Clear
🟦	Proposed, or as stated
🟪	Infrastructure owned by others

Aboveground Routes

- - - -	Overhead infrastructure

Other Network Features

CHR1310 MH	Vaults/Chambers
C10A-123	Pedestals / Cabinets
HH	Service Drop Pits/ Hand holes
●	Poles
	Pipe Branching Junction

Abbreviations Key

ES/EOS	Edge of Seal
PP	Power Pole
K	Kerb
F/L	Fence line
D/Deep	Depth at time of install

N

Scale: 1:1000
Expires: 10 Feb 2026

EonFibre

Sequence No: 16932316
Job No: 2710416
Location: 1-49 Gaunt St, Auckland, Auckland 1010

beforeudig

Legend

Underground Routes

🟩	Existing EonFibre network, marked as: **ONENZ, EONFIBRE,** Vodafone, TelstraClear, TelstraSaturn, Saturn , Clear
🟦	Proposed, or as stated
🟪	Infrastructure owned by others

Aboveground Routes

- - - -	Overhead infrastructure

Other Network Features

CHR1310 V MH	Vaults/Chambers
C10A-I23	Pedestals / Cabinets
HH	Service Drop Pits/ Hand holes
●	Poles
◤	Pipe Branching Junction

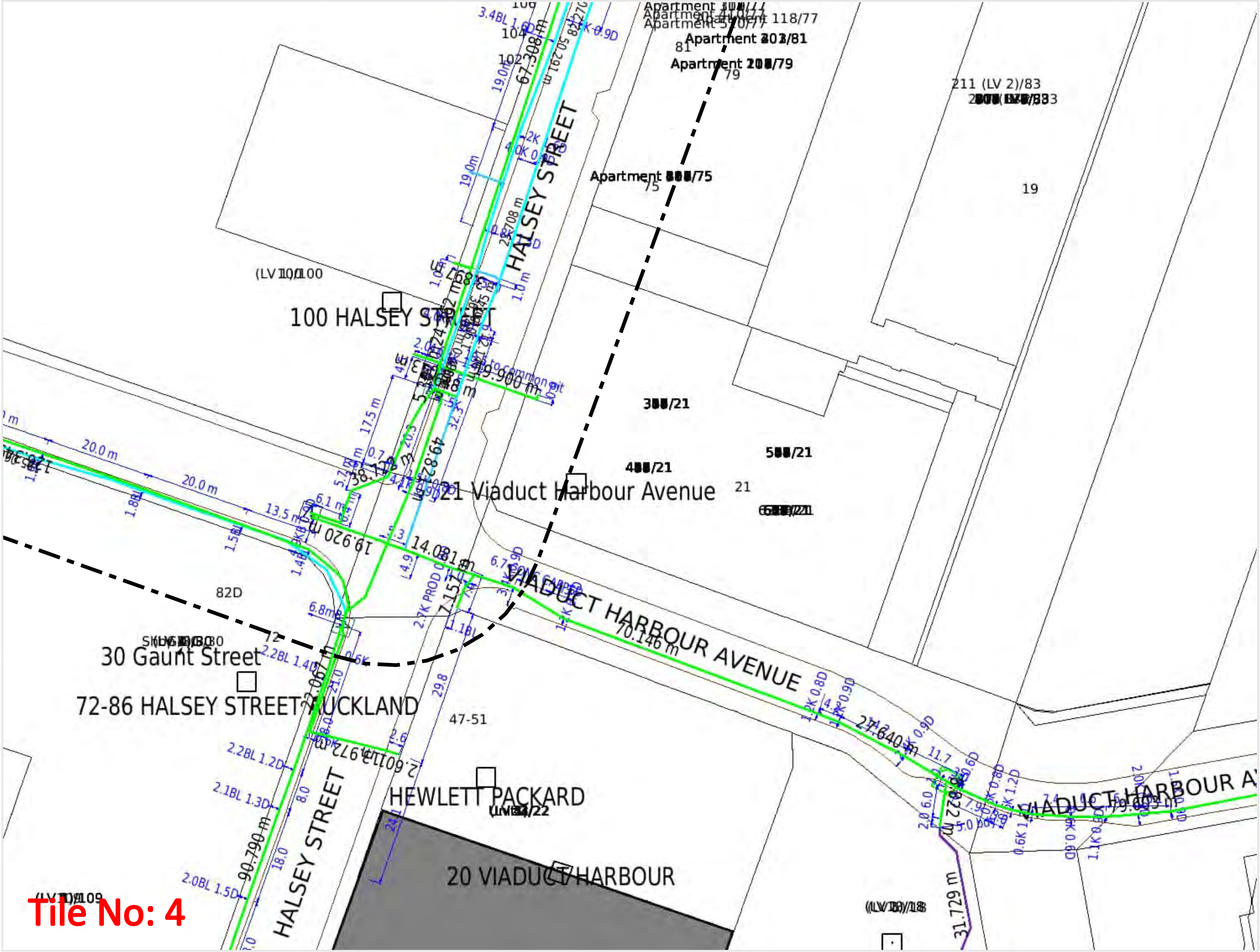
Abbreviations Key

ES/EOS	Edge of Seal
PP	Power Pole
K	Kerb
F/L	Fence line
D/Deep	Depth at time of install

N

Scale: 1:1000
Expires: 10 Feb 2026

Sequence No: 16932316
Job No: 2710416
Location: 1-49 Gaunt St, Auckland, Auckland 1010



Legend

Underground Routes

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Vodafone, TelstraClear,
TelstraSaturn, Saturn , Clear

🟦 Proposed, or as stated

🟪 Infrastructure owned by others

Aboveground Routes

- - - - Overhead infrastructure

Other Network Features

CHR1310 V MH Vaults/Chambers

C10A-I23 Pedestals / Cabinets

HH Service Drop Pits/ Hand holes

● Poles

Pipe Branching Junction

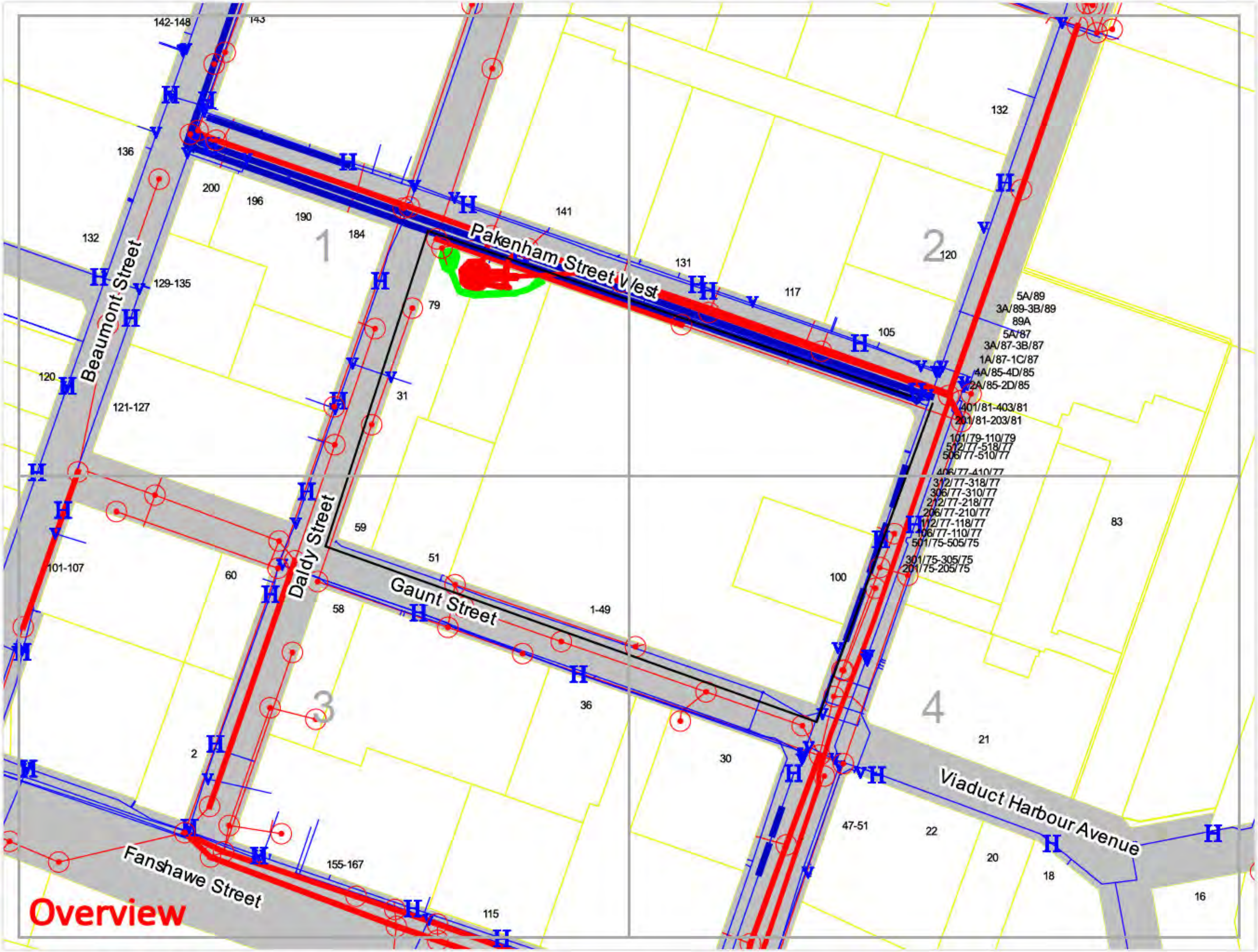
Abbreviations Key

ES/EOS	Edge of Seal
PP	Power Pole
K	Kerb
F/L	Fence line
D/Deep	Depth at time of install

N

Scale: 1:1000
Expires: 10 Feb 2026

Sequence No: 16932317
Job No: 2710416
Location: 1-49 Gaunt St



Legend

- 🟥 Waste Water
- 🟦 Water
- 🟩 Electrical/Cathodic Protection
- V Valve
- H Hydrant
- M Water Meter
- ⊙ Manhole

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Scale: 1:2050
Expires: 10 Feb 2026

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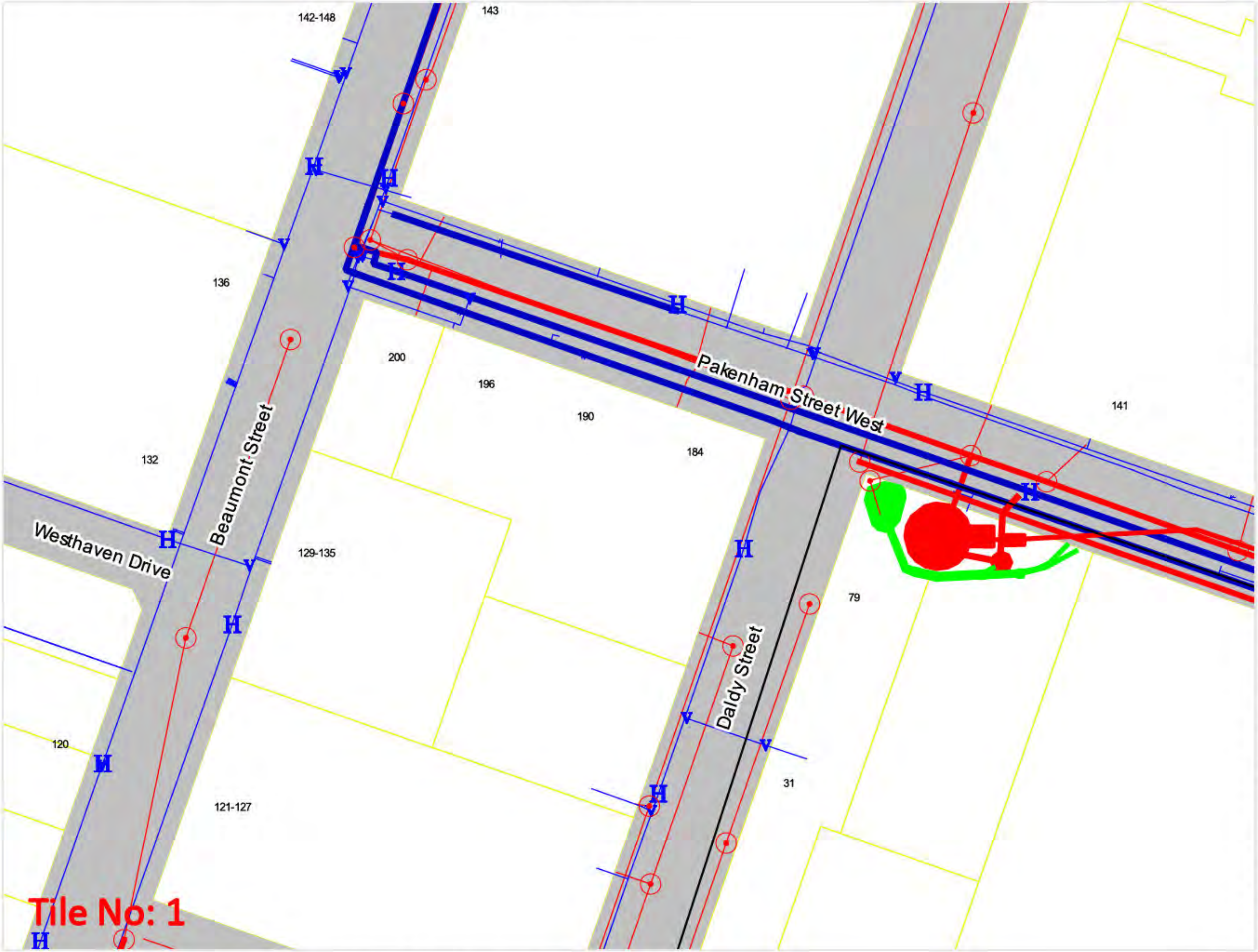
Watercare
An Auckland Council Organisation

Sequence No: 16932317
Job No: 2710416
Location: 1-49 Gaunt St

beforeudig.co.nz



Legend

🟥 Waste Water
🟦 Water
🟩 Electrical/Cathodic Protection
V Valve
H Hydrant
M Water Meter
⊙ Manhole

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N

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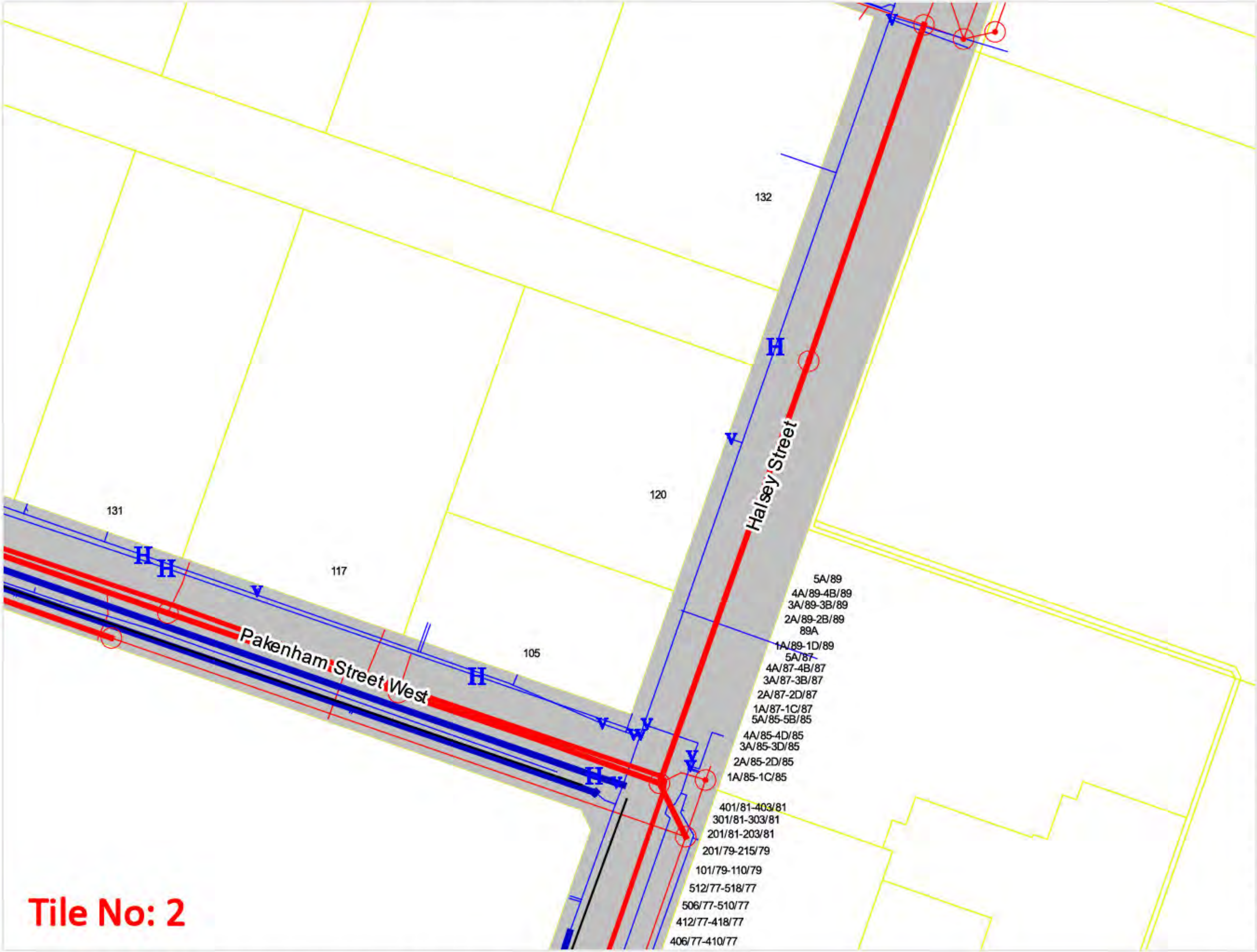
Sequence No: 16932317
Job No: 2710416
Location: 1-49 Gaunt St



Legend

🟥	Waste Water
🟦	Water
🟩	Electrical/Cathodic Protection
V	Valve
H	Hydrant
M	Water Meter
⊙	Manhole

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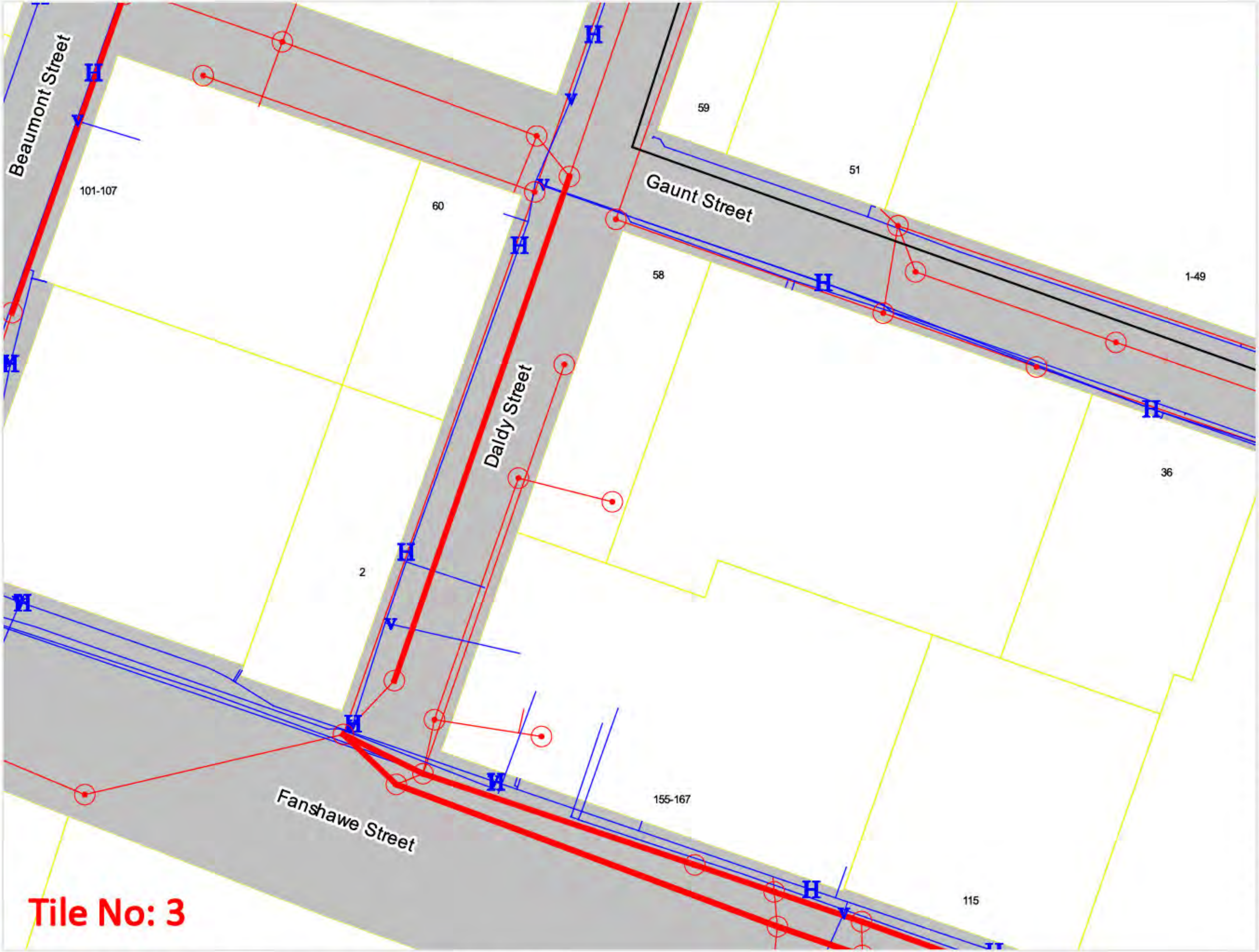
Sequence No: 16932317
Job No: 2710416
Location: 1-49 Gaunt St

beforeudig.co.nz



Legend

🟥 Waste Water
🟦 Water
🟩 Electrical/Cathodic Protection
V Valve
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M Water Meter
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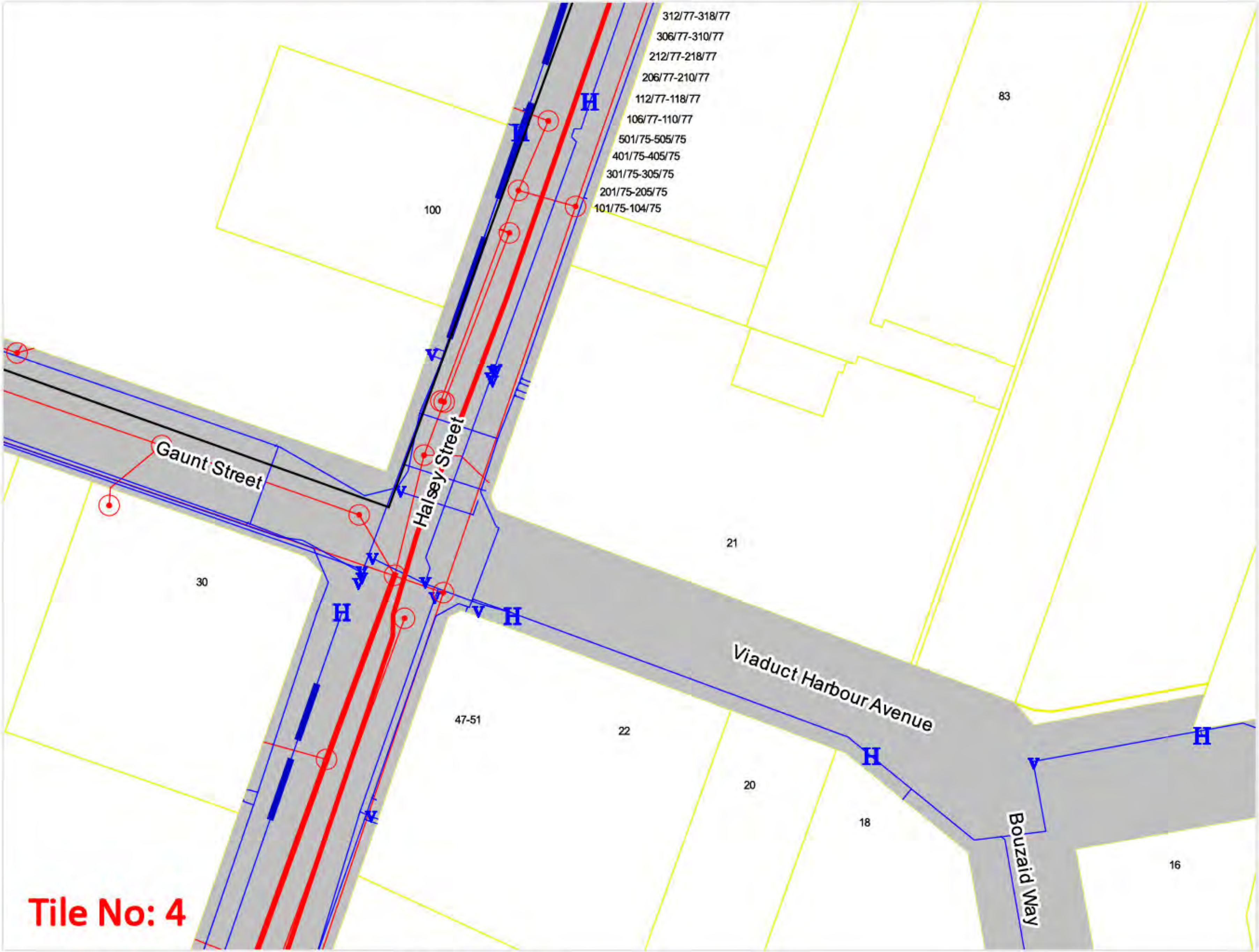
Sequence No: 16932317
Job No: 2710416
Location: 1-49 Gaunt St



Legend

🟥	Waste Water
🟦	Water
🟩	Electrical/Cathodic Protection
V	Valve
H	Hydrant
M	Water Meter
⊙	Manhole

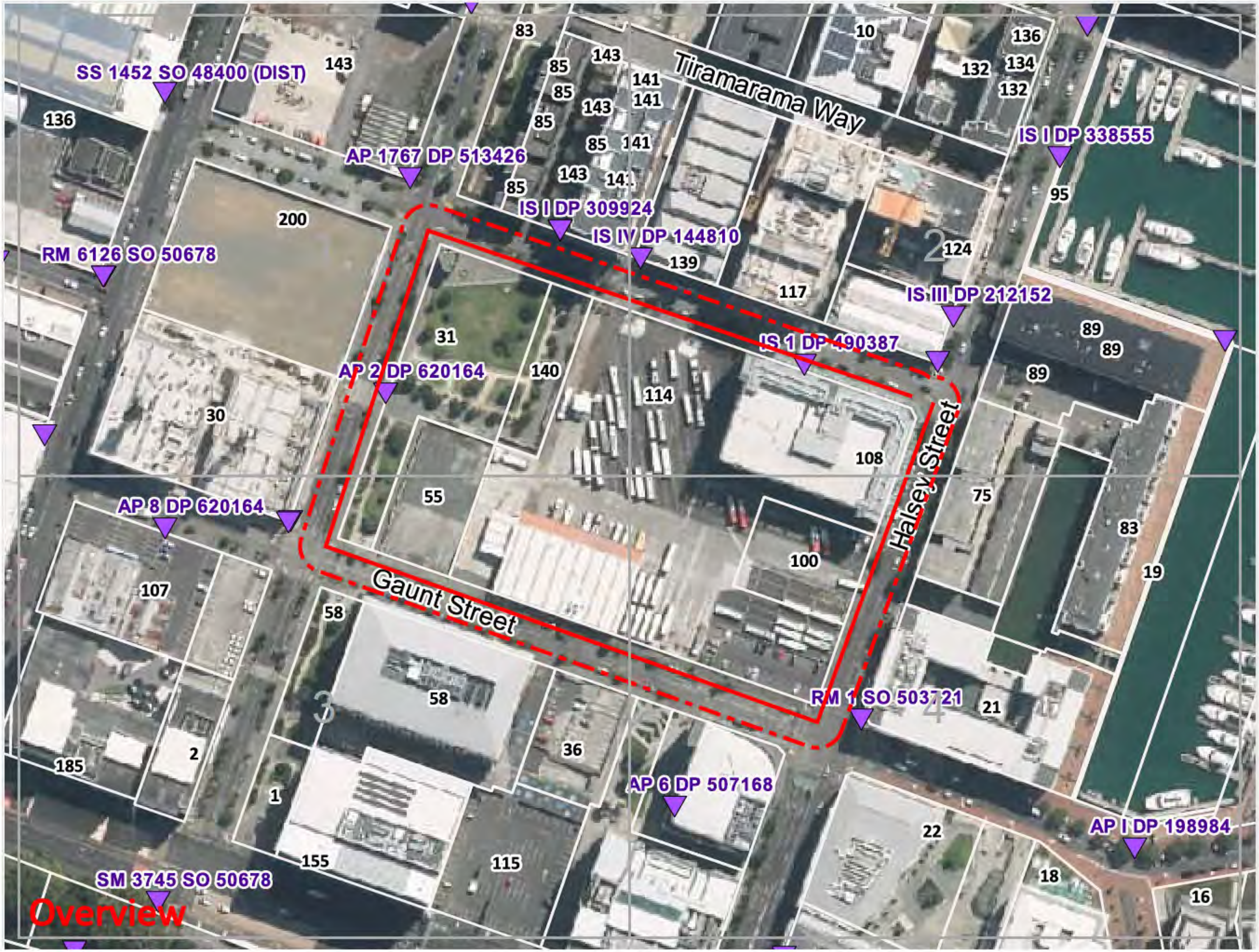
N

Scale: 1:1000
Expires: 10 Feb 2026

Land Information New Zealand
Toitū te whenua

Sequence No: 16932320
Job No: 2710416
Location: 1-49 Gaunt St, Auckland, Auckland 1010

beforeudig



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N

Scale: 1:2050
Expires: 10 Feb 2026

Sequence No: 16932320
Job No: 2710416
Location: 1-49 Gaunt St, Auckland, Auckland 1010

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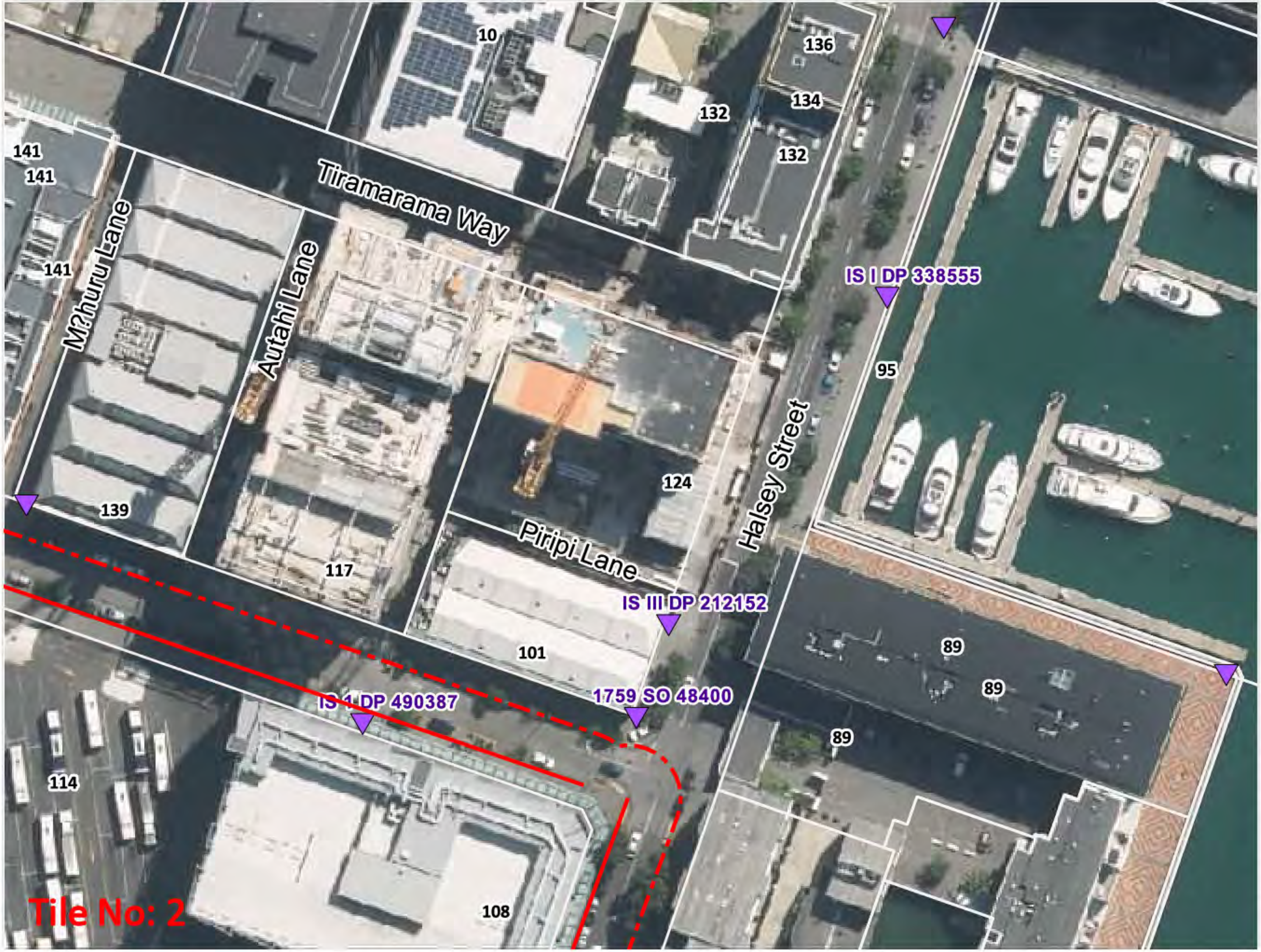
N

Scale: 1:1000
Expires: 10 Feb 2026

Land Information New Zealand
Toitū te whenua

Sequence No: 16932320
Job No: 2710416
Location: 1-49 Gaunt St, Auckland, Auckland 1010

beforeudig



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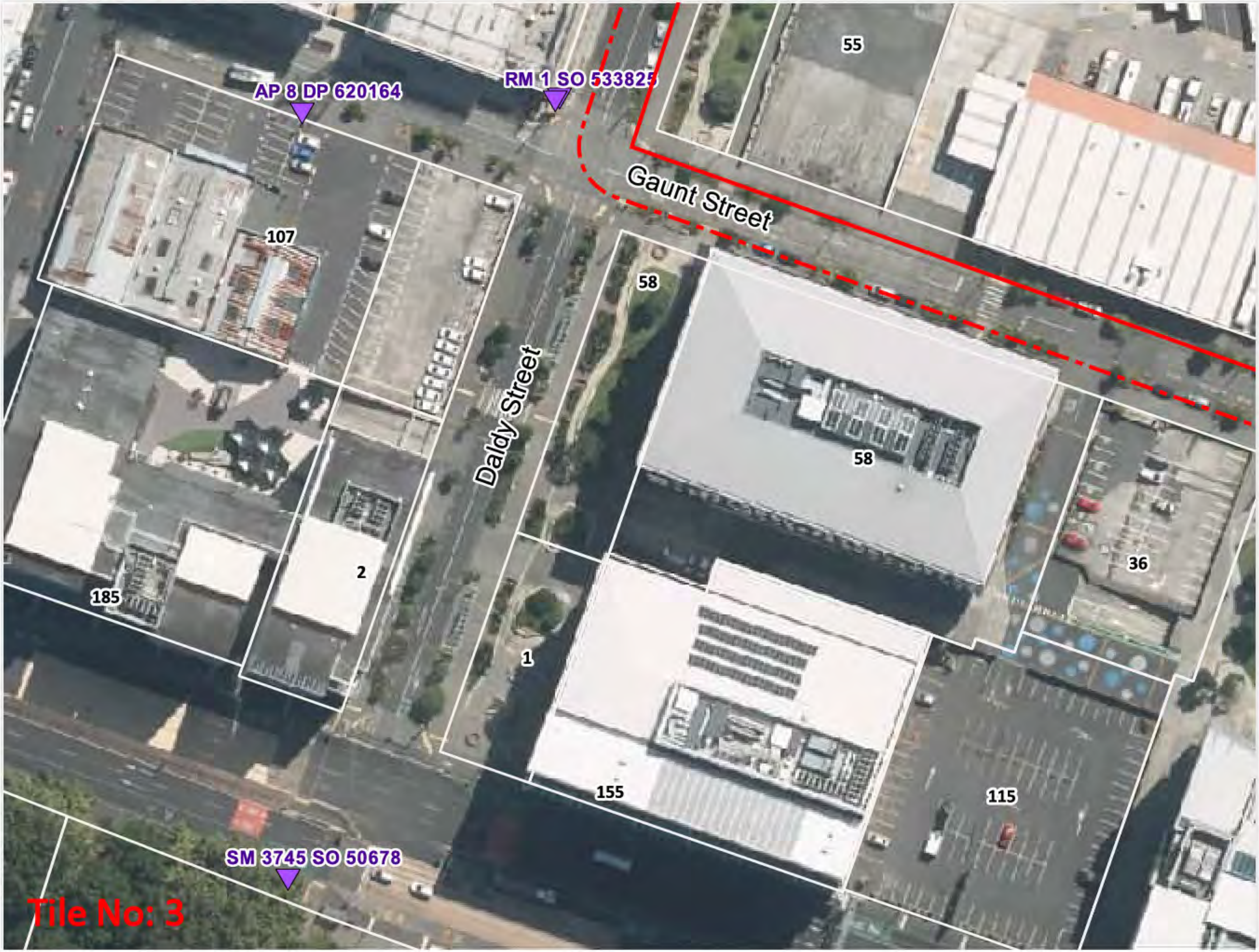
Land Information New Zealand
Toitū te whenua

Sequence No: 16932320
Job No: 2710416
Location: 1-49 Gaunt St, Auckland, Auckland 1010

beforeudig



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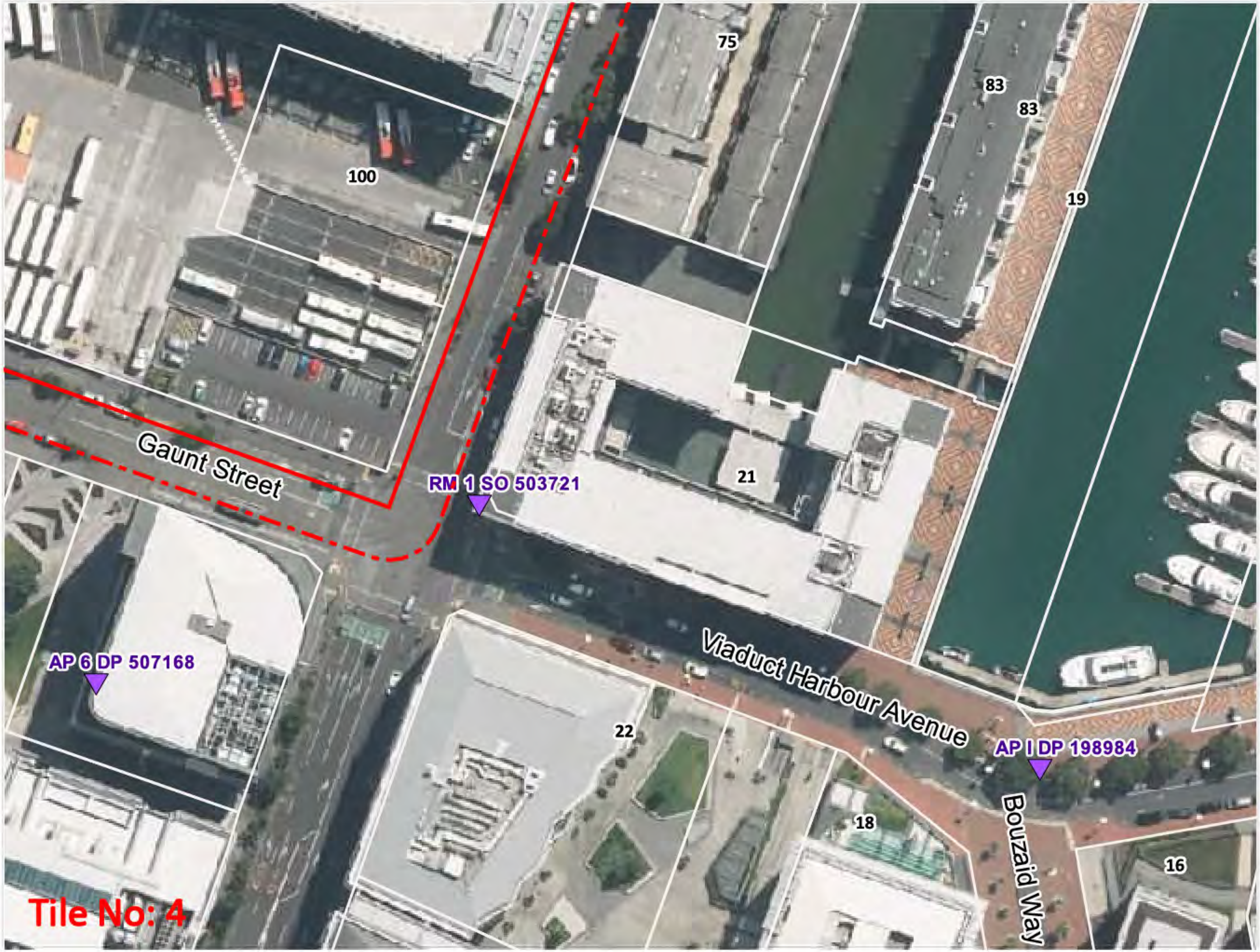
Scale: 1:1000
Expires: 10 Feb 2026

Land Information New Zealand
Toitū te whenua

Sequence No: 16932320
Job No: 2710416
Location: 1-49 Gaunt St, Auckland, Auckland 1010

beforeudig



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Scale: 1:1000
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