From: Chwaklinski, David
Sent: 2024, March 04 4:12 PM
To: Gadhok, Satwant; Wong, Daniel (BCH); Lee, Johnson; Armstrong, Tyler
Cc: Maloney, Tracy; Manurung, Cynthia; Chwaklinski, David; Zeng, Ken; Jiang, Kally
Subject: approximate size for 230/69/25 kV station for Willoughby
Attachments: CAMP-E05-SK002-2_R0A_Option 2 _revised_for_60 kV.pdf; CAMP-E05-SK002-2_R0A_Option 2.pdf

Willoughby Substation property requirements

Recently, Station Planning noted that the requirements for Willoughby and Campbell Heights stations have changed, and a 60 kV yard is to be added to the original plan of 230 kV 25 kV.

To date Planning has not provided a consolidated one-line diagram that includes 230 kV/ 60 kV /25 kV sections. This makes it difficult to determine the appropriate size of a property required.
However, Planning has provided a One-Line for the 230 kV/25 kV station that includes provisions for 2 initial and 4 ultimate 230 kV line positions a 6- breaker ring bus and up to 24- 25 kV feeder positions. Stations electrical has developed conceptual layouts based on this One-Line. This is identified as CAMP-E05_SK0002-2 (attached).

A careful review of the layout, CAMP-E05-SK00002-2, along with the one-line diagram as well as 60 kV installations at other stations suggests a solution. If we look at the CAMP-E05-SK00002-2 the initial stage work is shown in red. If this portion of the work is mirror imaged across a line (shown in Blue) on the attached sketch it appears that this layout could accommodate the following:

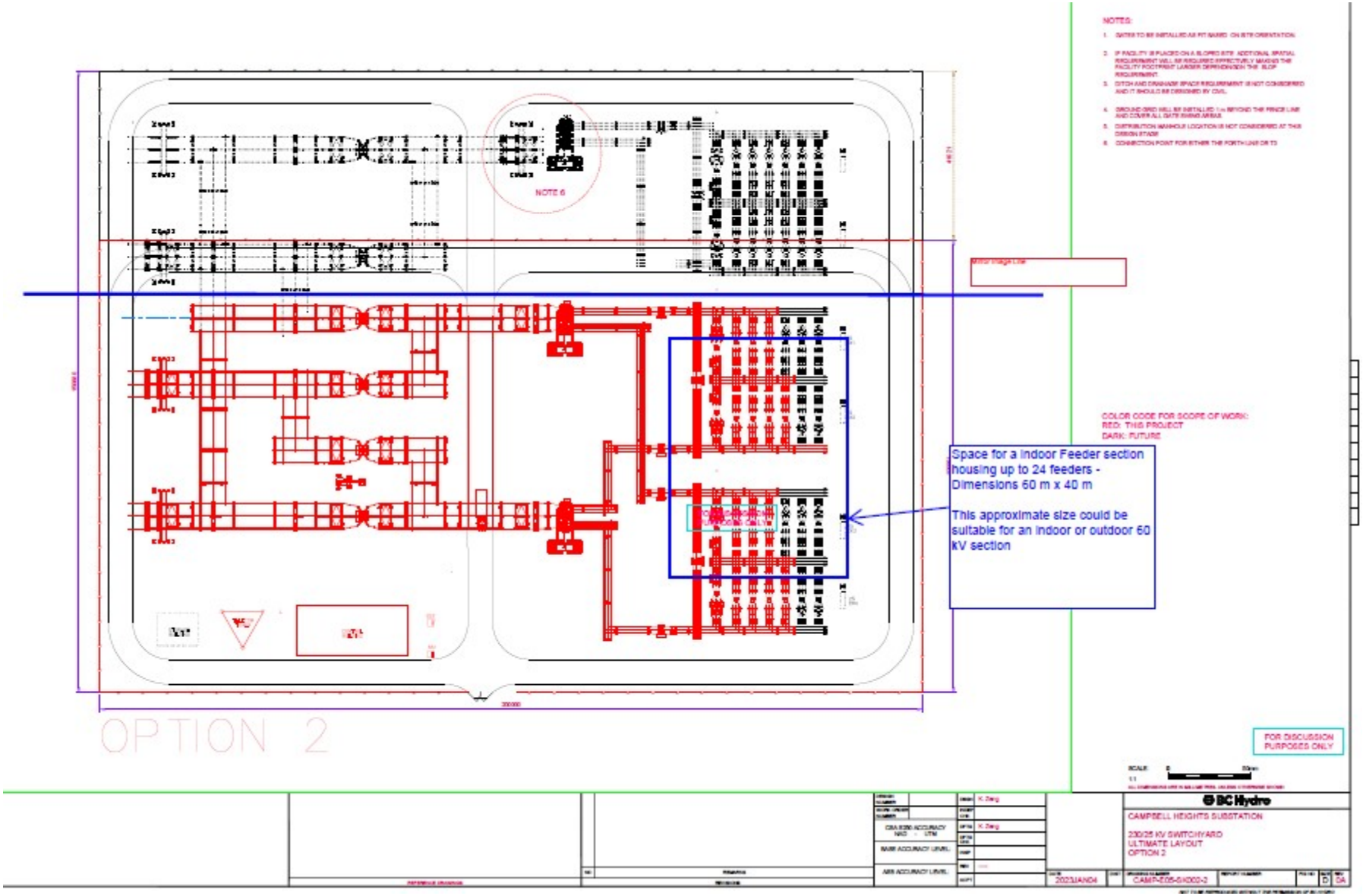
- 4 - 230 kV line positions
- 2 – 230 kV/69 kV transformers
- 2 – 230 kV/25 kV transformers
- 1 – 8 to 12 - 230 kV breaker ring
- 1 – control building and telecommunications tower
- 1 – 25 kV indoor feeder building with 24 feeders
- 1 – 60 kV indoor GIS building or;
- 1 – 60 kV outdoor structure

The size of property required for this would be approximately 240 m x 220 m (52,800 m^2) or 787ft x 721 ft (568,000 SF).

Please note this is a rough layout has not been reviewed by electrical design or planning. This is a rough calculation intended to guide the discussion with planning and initial talks with Township of Langley. I believe that this would be the largest space that would be required and it could be reduced when the one-line is available and the electrical design team has some time to optimize the design

Please let me know if you have any questions.

Ken and Kally, I have sent this to you as you will likely be dealing with this in the next while for Campbell Heights and Willoughby



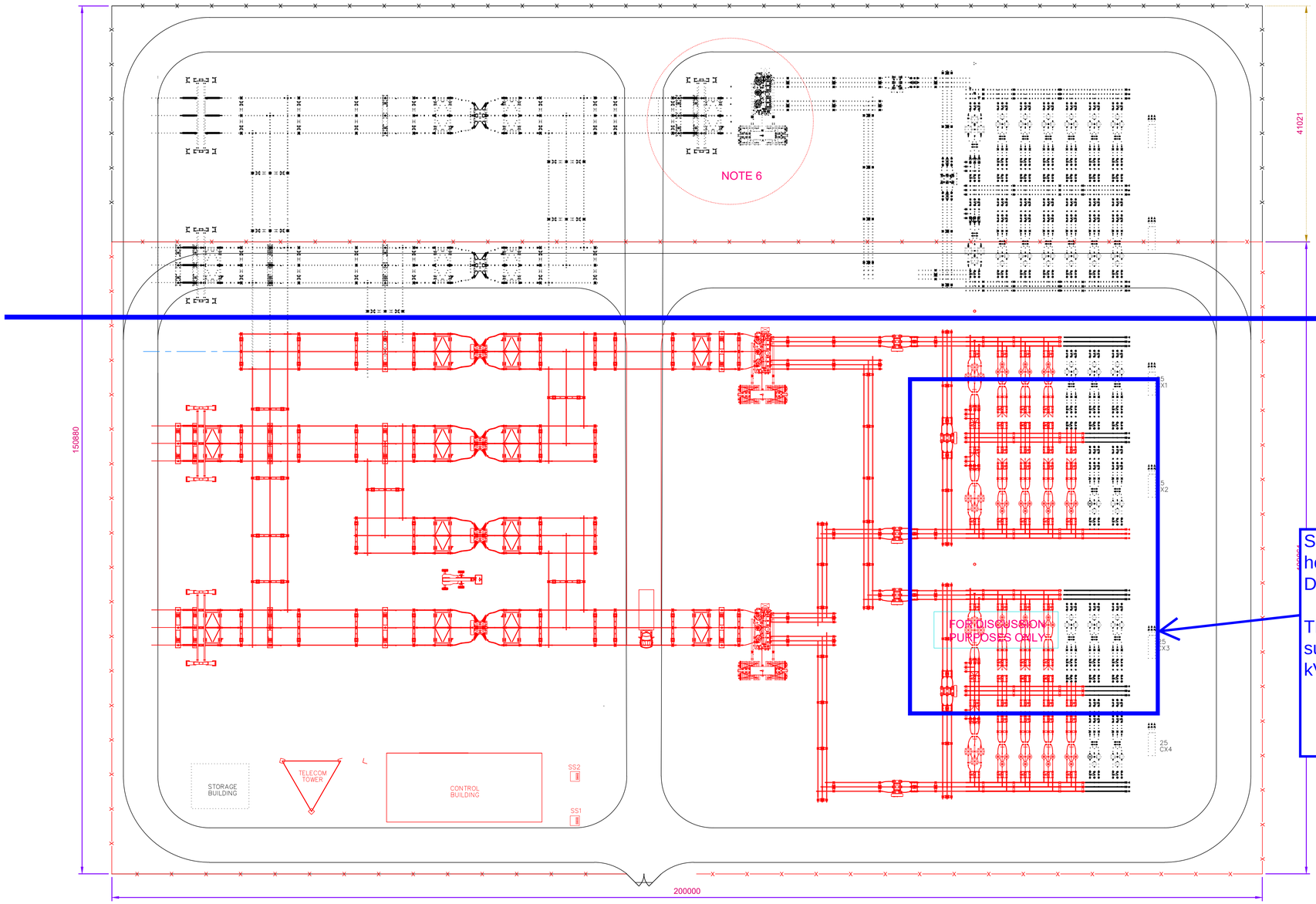
David Chwaklinski, P. Eng., FEC., PMP | Project Engineer Specialist
Lines and Interconnections

BC Hydro
6911 Southpoint Drive, E08
Burnaby, BC V3N 4X8

M 778 833 3740
E david.chwaklinski@bchydro.com

NOTES:

1. GATES TO BE INSTALLED AS FIT BASED ON SITE ORIENTATION.
2. IF FACILITY IS PLACED ON A SLOPED SITE ADDTIONAL SPATIAL REQUIREMENT WILL BE REQUIRED EFFECTIVELY MAKING THE FACILITY FOOTPRINT LARGER DEPENDINGON THE SLOP REQUIREMENT.
3. DITCH AND DRAINAGE SPACE REQUIREMENT IS NOT CONSIDERED AND IT SHOULD BE DESIGNED BY CIVIL.
4. GROUND GRID WILL BE INSTALLED 1 m BEYOND THE FENCE LINE AND COVER ALL GATE SWING AREAS.
5. DISTRIBUTION MANHOLE LOCATION IS NOT CONSIDERED AT THIS DESIGN STAGE
6. CONNECTION POINT FOR EITHER THE FORTH LINE OR T3



Space for a indoor Feeder section housing up to 24 feeders - Dimensions 60 m x 40 m

This approximate size could be suitable for an indoor or outdoor 60 kV section

COLOR CODE FOR SCOPE OF WORK:
RED: THIS PROJECT
DARK: FUTURE

OPTION 2

FOR DISCUSSION PURPOSES ONLY

SCALE: 1:1 0 50mm

ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS OTHERWISE SHOWN

DESIGN NUMBER		DSGN	K. Zeng
WORK ORDER NUMBER		INDEP CHK	
CSA S250 ACCURACY NAD - UTM		DFTG	K. Zeng
BASE ACCURACY LEVEL:		DFTG CHK	
ASB ACCURACY LEVEL:		INSP	
		REV	-----
		ACPT	

BC Hydro

CAMPBELL HEIGHTS SUBSTATION

230/25 KV SWITCHYARD
ULTIMATE LAYOUT
OPTION 2

NO	REMARKS

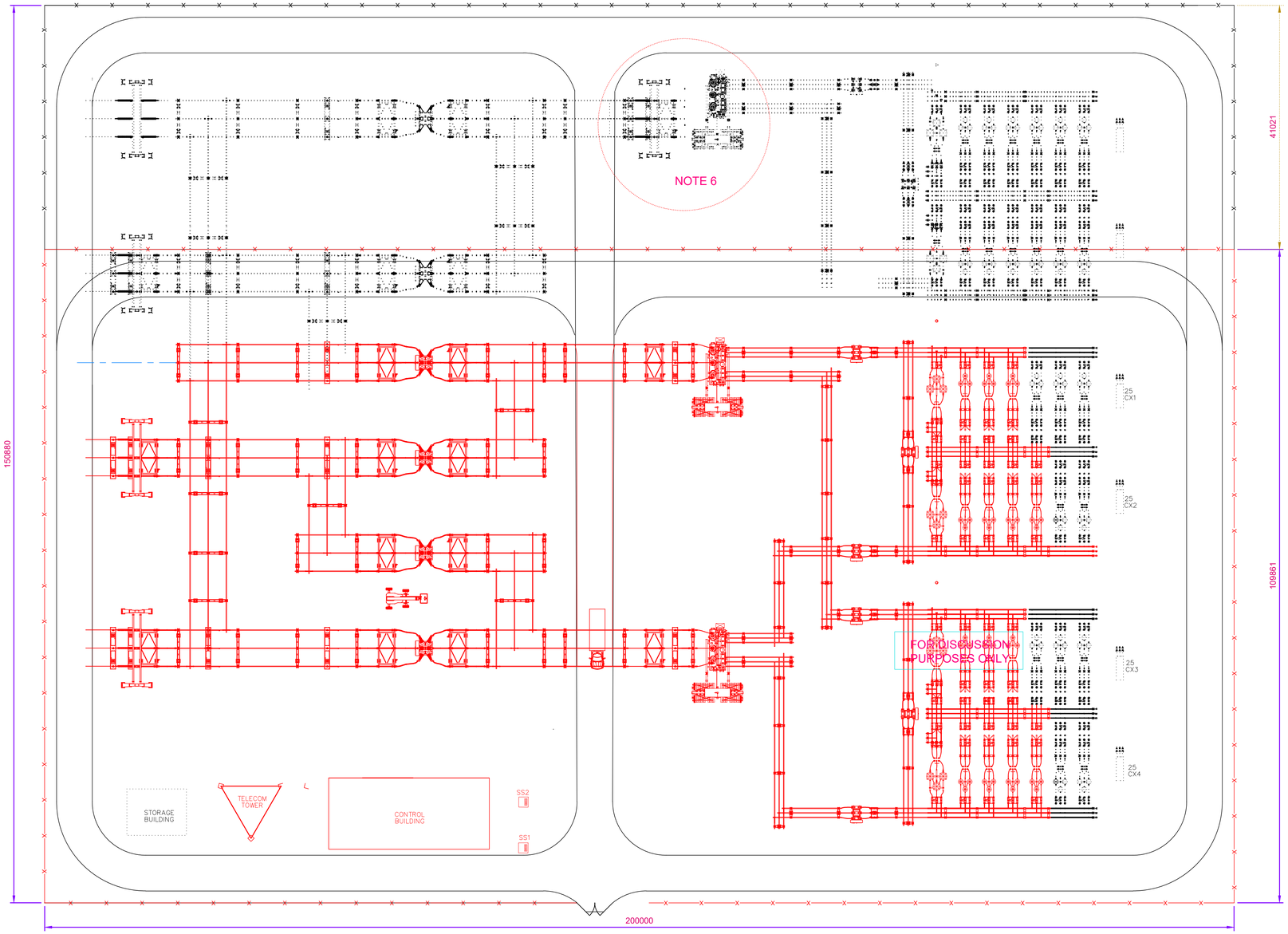
REFERENCE DRAWINGS

REVISIONS

DATE	DIST	DRAWING NUMBER	REPORT NUMBER	FIG NO	SIZE	REV
2023JAN04		CAMP-E05-SK002-2			D	0A

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C:\Users\kenzeng\OneDrive - BC Hydro\Projects\CAMP_Campell Heights Langley\CAMP-E05-SK002-R0A - MB-idea.dwg
Drawing Unit = Metric (4)
Plotted by:
14/02/24 11:42 AM



OPTION 2

NOTES:

1. GATES TO BE INSTALLED AS FIT BASED ON SITE ORIENTATION.
2. IF FACILITY IS PLACED ON A SLOPED SITE ADDTIONAL SPATIAL REQUIREMENT WILL BE REQUIRED EFFECTIVELY MAKING THE FACILITY FOOTPRINT LARGER DEPENDINGON THE SLOP REQUIREMENT.
3. DITCH AND DRAINAGE SPACE REQUIREMENT IS NOT CONSIDERED AND IT SHOULD BE DESIGNED BY CIVIL.
4. GROUND GRID WILL BE INSTALLED 1 m BEYOND THE FENCE LINE AND COVER ALL GATE SWING AREAS.
5. DISTRIBUTION MANHOLE LOCATION IS NOT CONSIDERED AT THIS DESIGN STAGE
6. CONNECTION POINT FOR EITHER THE FORTH LINE OR T3

COLOR CODE FOR SCOPE OF WORK:
RED: THIS PROJECT
DARK: FUTURE

FOR DISCUSSION
PURPOSES ONLY

SCALE: 1:1 — 0 — 50mm

ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS OTHERWISE SHOWN

REFERENCE DRAWINGS

NO	REMARKS

REVISIONS

DESIGN NUMBER	
WORK ORDER NUMBER	
CSA S250 ACCURACY NAD - UTM	
BASE ACCURACY LEVEL:	
ASB ACCURACY LEVEL:	

DSGN	K. Zeng
INDEP CHK	
DFTG	K. Zeng
DFTG CHK	
INSP	
REV	-----
ACPT	

BC Hydro

CAMPBELL HEIGHTS SUBSTATION

230/25 KV SWITCHYARD
ULTIMATE LAYOUT
OPTION 2

DATE	DIST	DRAWING NUMBER	REPORT NUMBER	FIG NO	SIZE	REV
2023JAN04		CAMP-E05-SK002-2			D	0A

NOT TO BE REPRODUCED WITHOUT THE PERMISSION OF BC HYDRO

C:\Users\kenzeng\OneDrive - BC Hydro\Projects\CAMP_Campell Heights Langley\CAMP-E05-SK002-R0A - MB-idea.dwg
Drawing Unit = Metric (4)
Plotted by: Ken Zeng
1/4/2024 11:42 AM

From: Chwaklinski, David
Sent: 2024, September 16 3:57 PM
To: Jiang, Kally
Cc: Chwaklinski, David; Hepple, Robert
Subject: Bosa property Confirmation
Attachments: Bosa_Kang_Property.pdf

Hi Kally, I have reviewed the Bosa property and confirmed that the Bosa parcels are 7508 196th St. and 7528 194th St. The Kang property is 7451 196th St. These are shown in the attached PDF. Please revise your layout so that there are two options to consider. Option 1 is to reverse the layout you showed me so that the 25 kV yard is on the Kang property and the 60 kV yard is on the eastern portion of the Bosa Property . Option 2 is to leave the 25 kV at the top and use cables to connect the 60 kV Yard located on the west portion of the Bosa property to the 230/60 kV transformers that will be located on the Kang Property.

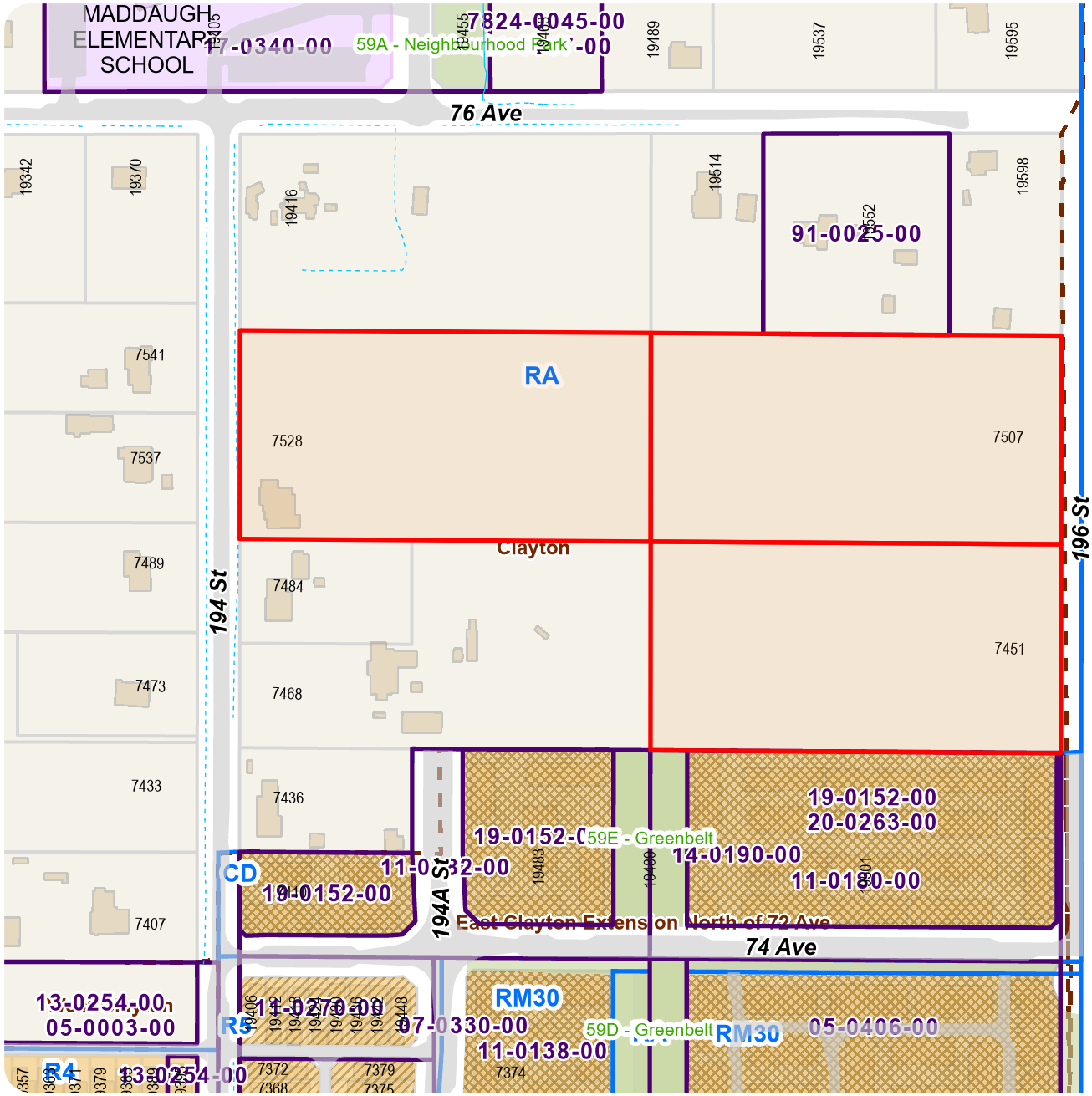
Please let me know if you need any more clarification.

David Chwaklinski, P. Eng., FEC., PMP | Project Engineer Specialist
Lines and Interconnections

BC Hydro
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Burnaby, BC V3N 4X8

M 778 833 3740
E david.chwaklinski@bchydro.com

City of Surrey Mapping Online System



Legend

Water Courses
- Creek
- Ditch
- Road Surface
- Dev Apps - All
- Zoning Boundaries

East Clayton Extension North of 72 Ave
- 6-10 u.p.a. Low Density
- 10-15 u.p.a. Medium Density
- 15-25 u.p.a. Medium-High Density
- Public Open Space/Park
- Secondary Plan Boundaries

Buildings (labels)

Building
- Other
- School

Bosa and Kang Property

Scale: 1:3,000

The data provided is compiled from various sources and is NOT warranted as to its accuracy or sufficiency by the City of Surrey. This information is provided for information and convenience purposes only. Lot sizes, legal descriptions and encumbrances must be confirmed at the Land Title Office. Use and distribution of this map is subject to all copyright and disclaimer notices at cosmos.surrey.ca

0 0.02 0.04 0.08 0.12
km

Map created on: 2024-09-12

From: Lee, Dylan
Sent: 2025, January 13 5:10 PM
To: Sherevkulov, Dmitry; Cormier, Matthew
Cc: Hepple, Robert; Chwaklinski, David
Subject: FW: [External] Willoughby Substation Geotechnical Investigation
Attachments: Willoughby Substation Geotechnical Investigation 01132025.pdf

Hi Matt, Thanks for putting this proposed test hole plan so quickly. If you can please proceed with a BC 1 Call, that would be great. I am curious where the Fortis Line on 196th Street is located and how much off set we have before we have to daylight their line.

Dmitry, there are some follow up actions we could use your help with:

- For 7528 194 Street (BOSA) we are planning to drill beside the house in the back (AH25-C). We spoke with Tyler Lowe and his delegate Ryan on site about this; and they are amenable to allowing us to drill at this location. However, this will require crossing a septic connection line and it's close to the septic tank. We requested the septic tank design to confirm we can safely drive over the line and to confirm the tank limits. If you can follow up with Ryan at BOSA on this, that would be great. We are planning to do a locate here prior to drilling and depending on the septic drawings. But we may decide to move the hole or delete the hole depending on locates, and timing. Please check with Ryan to confirm if there are blackout days where the tenant would prefer us to not to drill given the proximity to the building.
- For 7507 196 street (BOSA) we are planning to drill outside the road allowance outside the shoulder (AH25-B). The BOSA team (Ryan and Tyler) seem amenable to prepping the site for us to level the grade and install a small gravel pad so we don't have to work near the road and hopefully will not have conflict with a nearby Fortis main – it would also make things run faster so we can attempt to target 3 test holes for the day we have the auger drill truck. It was mentioned they may be able to do this at their cost or it could be an item that is dealt with during negotiation with final property sale. Can you please reach out to your BOSA lead contact to see if they can facilitate this scope for us (Ryan and Tyler are aware of the scope and waiting to hear back from us and their management) and to see if there are cost impacts in final negotiation? There could be cost savings for us in the Geotech program if the gravel pad and clearing was completed as that mean we may not need traffic control and permits from the City.
- For 7468 194 Street (KOOL) we are planning to drill off the gravel driveway (see AH25-A) towards the barn out back from the primary resident building. The owner was not home when we were on site but I did speak with the realtor and told him we will follow up with him once we have a plan. Can you please forward the proposed test hole location to the owner and realtor to review and confirm if there are any known buried services in that area.

The expected drilling date is in the first week of Feb. Matt will give us a firm date after confirmation with the driller. For the HA test holes (shallow hand auger test holes), that will be completed on a different date from the truck mounted auger drilling. The owners can expect Klohn geotechnical staff to be on these properties for a full day to hand dig the HA days. Matt will confirm dates at a later time for that investigation.

Thank you,

_____

Dylan Lee, P. Eng. | Senior Geotechnical Engineer, Transmission Lines Engineering

BC Hydro
7th Floor - 6911 Southpoint Drive, A02
Burnaby, BC V3N 4X8

P 604 528 2318
M 604 809 2666
E dylan.lee@bchydro.com

bchydro.com

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From: Cormier, Matthew
Sent: 2025, January 13 3:25 PM
To: Lee, Dylan
Subject: [External] Willoughby Substation Geotechnical Investigation

Don't click on links or open attachments unless you trust the sender and are expecting the link or attachment. If you suspect this message to be phishing, please report it by clicking the Report Message button in the Outlook toolbar and select "Phishing."

Hi Dylan,

I've put together the following planview figure for the planned drill hole and hand auger locations for the Willoughby Substation.

Please let me know if you have any comments.

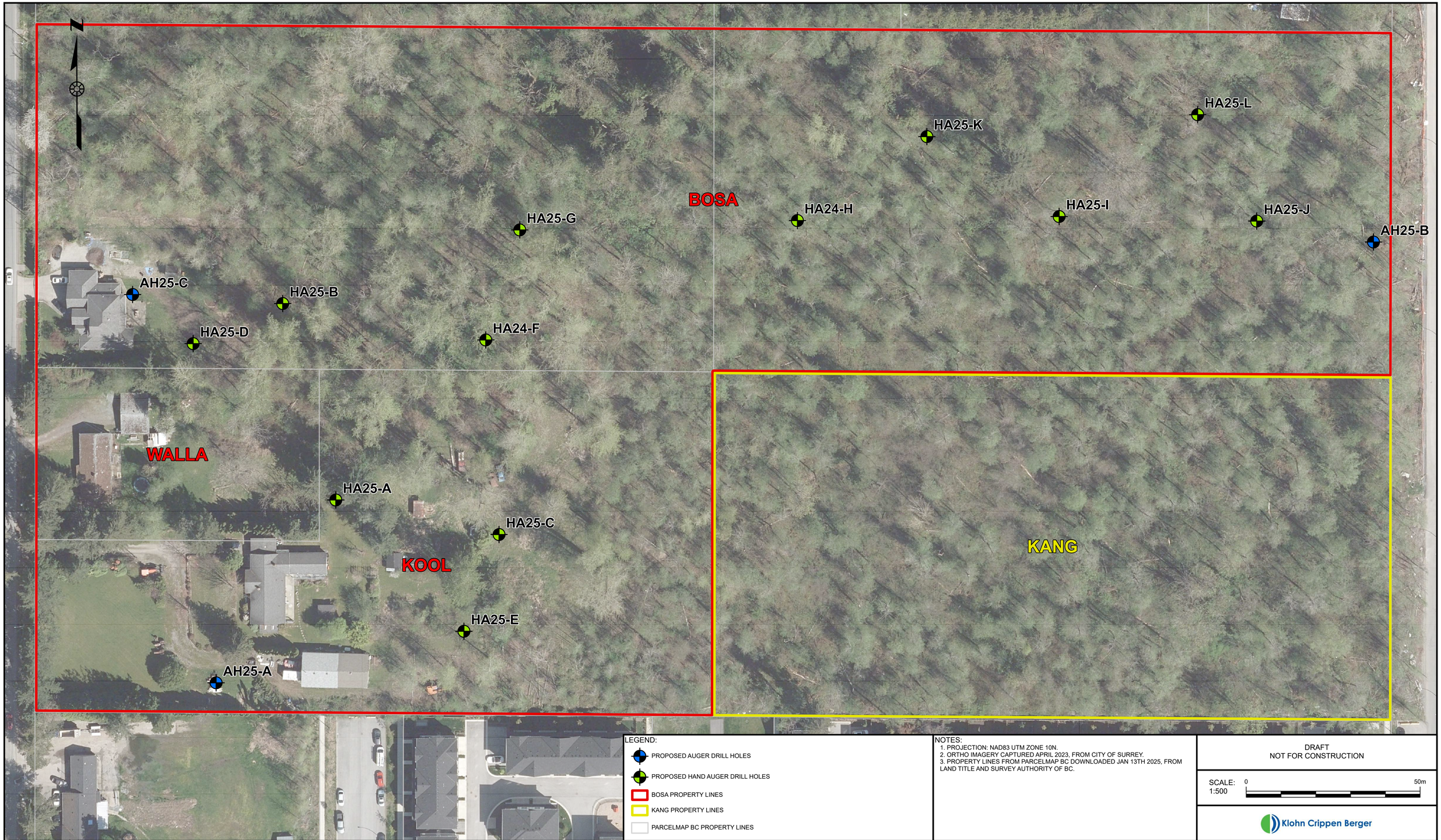
Thanks
Matt

Matthew Cormier, P.Eng.
Geological Engineer

Klohn Crippen Berger 500-2955 Virtual Way, Vancouver BC V5M 4X6, CANADA
T +1 604 251 8557 | C +1 778 229 9241 | mcormier@klohn.com | www.klohn.com

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If you have received this e-mail in error, please delete the original message.



LEGEND:

- PROPOSED AUGER DRILL HOLES
- PROPOSED HAND AUGER DRILL HOLES
- BOSA PROPERTY LINES
- KANG PROPERTY LINES
- PARCELMAP BC PROPERTY LINES

NOTES:
1. PROJECTION: NAD83 UTM ZONE 10N.
2. ORTHO IMAGERY CAPTURED APRIL 2023, FROM CITY OF SURREY.
3. PROPERTY LINES FROM PARCELMAP BC DOWNLOADED JAN 13TH 2025, FROM LAND TITLE AND SURVEY AUTHORITY OF BC.

DRAFT
NOT FOR CONSTRUCTION

SCALE: 1:500 (0 – 50m)

Klohn Crippen Berger

BC Hydro

P10600A140
WILLOUGHBY SUBSTATION

GEOTECHNICAL SITE INVESTIGATION PLAN

DESIGN NUMBER	
WORK ORDER NUMBER	
CSA S250 ACCURACY NAD - UTM	
BASE ACCURACY LEVEL:	
ASB ACCURACY LEVEL:	

DSGN	M. CORMIER
INDEP CHK	
DFTG	A. WIEBE
DFTG CHK	K. WHITLOCK
INSP	
REV	
ACPT	

NO	REMARKS

REFERENCE DRAWINGS

REVISIONS

DATE	DIST	DRAWING NUMBER	REPORT NUMBER	FIG NO	SIZE	REV
13JAN2025				01	D	

Z:\P\BC\HCEO\P10600A140 BCH - Willoughby Substation Geotechnical Investigation\400 Drawings\GIS\02_Mapping\ArcGISPro Main\Willoughby Substation\Willoughby Substation.aprx
Drawing Units: Metric
Layout: Layout1
1/13/2025 3:17 PM

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From: Chwaklinski, David
Sent: 2024, June 27 9:14 AM
To: Clark, Heather; Singh, Ajitpal; Simpson, Lauren; Chaisson, Rob; Steels, Craig; Chan, David Y.M.; Watson, Stephen; Meshkinfar, Shokooh; Piscociu, Mihai; del Barrio, Romy
Cc: Chwaklinski, David
Subject: FW: Property Acquisition for various projects Willoughby
Attachments: TM544_Goldstream_Site_19.pdf; TM544_Goldstream_Site_21.pdf; TM544_Goldstream_Site_1.pdf; TM544_Goldstream_Site_15.pdf

Hi folks, I had Photogrammetry prepare some contour maps of the sites we were interested in. It looks like only Site 15 is still in the running but you may find a use for the other images.

Design team please have a look at the map for Alternative 15 specifically. I will be touching base with the PM shortly to get a better understanding of where we are with the properties and ill get back to you.

Ajitpal, please forward on to anyone on the project team I may have missed if you think it necessary. Thanks

---

From: Urosevic, Dusanka
Sent: Tuesday, June 25, 2024 3:41 PM
To: Chwaklinski, David
Subject: RE: Property Acquisition for various projects Willoughby

David,

Attached are detail maps for properties.

For this one I am displaying 2m Contour. The scale is smaller so it is too busy for 0.5 m.

Thanks
Dusanka

Dusanka Urosevic (CP1280) Photogrammetrist
Quality & Geomatics, Integrated Planning

BC Hydro

6911 Southpoint Drive, 8th floor
Burnaby, BC V3N 4X8

P 604 528 2325
E dusanka.urosevic@bchydro.com

To make an internal BC Hydro Geomatics request click here

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From: Chwaklinski, David <David.Chwaklinski@bchydro.com>
Sent: 2024, June 21 4:50 PM
To: Urosevic, Dusanka <Dusanka.Urosevic@bchydro.com>
Subject: RE: Property Acquisition for various projects Willoughby

Thanks Very Much Dusanka. I look forward to getting the individual maps from you1

From: Urosevic, Dusanka <Dusanka.Urosevic@bchydro.com>
Sent: Friday, June 21, 2024 2:29 PM
To: Chwaklinski, David <David.Chwaklinski@bchydro.com>
Subject: RE: Property Acquisition for various projects Willoughby

Hi David,

Attached id overview map of Goldstream properties.

I am creating contour files (hopefully it will be completed over weekend) and will start on detail maps on Monday.

Thanks
Dusanka

Dusanka Urosevic (CP1280) Photogrammetrist
Quality & Geomatics, Integrated Planning

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6911 Southpoint Drive, 8th floor
Burnaby, BC V3N 4X8

P 604 528 2325
E dusanka.urosevic@bchydro.com

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From: Chwaklinski, David <David.Chwaklinski@bchydro.com>
Sent: 2024, June 20 2:52 PM
To: Urosevic, Dusanka <Dusanka.Urosevic@bchydro.com>
Subject: RE: Property Acquisition for various projects Willoughby

Campbell Heights is less urgent as I think we have a property lined up. The mapping would be confirmation information only. Goldstream is something still up in the air.

From: Urosevic, Dusanka <Dusanka.Urosevic@bchydro.com>
Sent: Thursday, June 20, 2024 2:50 PM
To: Chwaklinski, David <David.Chwaklinski@bchydro.com>
Subject: RE: Property Acquisition for various projects Willoughby

I started on the cadastral data, but I can start on that instead of Campbell Heights. I have everything for Campbell sites, just need detail maps.
Dusanka

From: Chwaklinski, David <David.Chwaklinski@bchydro.com>
Sent: 2024, June 20 2:47 PM
To: Urosevic, Dusanka <Dusanka.Urosevic@bchydro.com>
Cc: Chwaklinski, David <David.Chwaklinski@bchydro.com>
Subject: RE: Property Acquisition for various projects Willoughby

Thank you! Much appreciated.

If you have not started could you please start on the Goldstream mapping although Alternate 17 is now off the table.

From: Urosevic, Dusanka <Dusanka.Urosevic@bchydro.com>
Sent: Thursday, June 20, 2024 1:54 PM
To: Chwaklinski, David <David.Chwaklinski@bchydro.com>
Subject: RE: Property Acquisition for various projects Willoughby

Hi David,

Attached is revised Overview and 3 sites property detail map.

Dusanka

Dusanka Urosevic (CP1280) Photogrammetrist
Quality & Geomatics, Integrated Planning

BC Hydro
6911 Southpoint Drive, 8th floor
Burnaby, BC V3N 4X8

P 604 528 2325
E dusanka.urosevic@bchydro.com

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From: Chwaklinski, David <David.Chwaklinski@bchydro.com>
Sent: 2024, June 20 10:10 AM
To: Urosevic, Dusanka <Dusanka.Urosevic@bchydro.com>
Cc: Chwaklinski, David <David.Chwaklinski@bchydro.com>
Subject: RE: Property Acquisition for various projects

Hi Dusanka, Thanks for this. For your information things have changed a bit. For Willoughby, please delete Alternate 14 a, 14 c, 17 a and 17 b. Also please change alternate 16 to Alternate 18. There are no changes to the Campbell heights alternatives

---

From: Urosevic, Dusanka <Dusanka.Urosevic@bchydro.com>
Sent: Wednesday, June 19, 2024 2:31 PM
To: Chwaklinski, David <David.Chwaklinski@bchydro.com>
Subject: RE: Property Acquisition for various projects

Hi David,

Attached is overview maps for Willoughby and Campbell Heights properties.

I am creating contours and will send you detail map for each site once completed.

Please review the site numbers, it looks like these are repeating and let me know if you would like to change site numbers.

I am downloading cadastre for VI sites and will send the maps once completed

Thanks
Dusanka

Dusanka Urosevic (CP1280) Photogrammetrist
Quality & Geomatics, Integrated Planning

BC Hydro
6911 Southpoint Drive, 8th floor
Burnaby, BC V3N 4X8

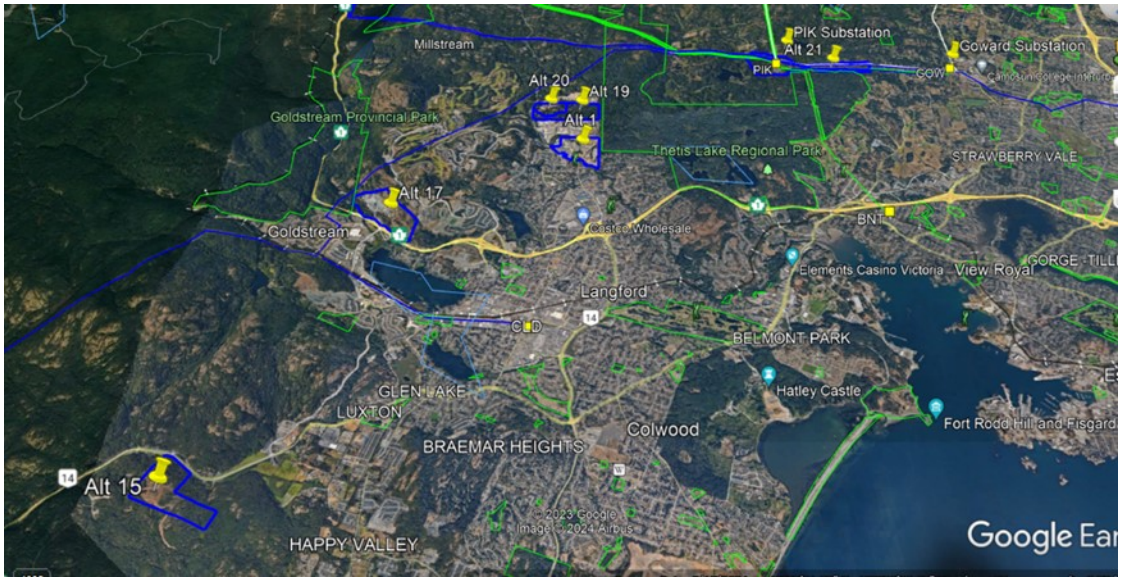
P 604 528 2325
E dusanka.urosevic@bchydro.com

To make an internal BC Hydro Geomatics request click here

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From: Chwaklinski, David <David.Chwaklinski@bchydro.com>
Sent: 2024, June 10 4:16 PM
To: Urosevic, Dusanka <Dusanka.Urosevic@bchydro.com>
Cc: Chwaklinski, David <David.Chwaklinski@bchydro.com>
Subject: RE: Property Acquisition for various projects

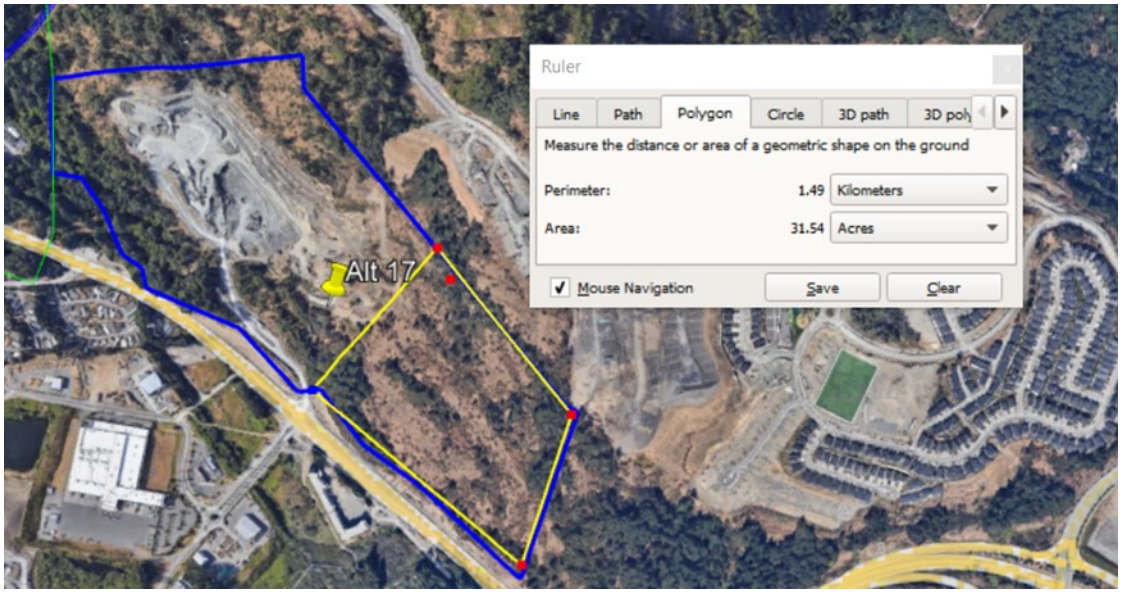
HI Dusanka, Please see the general mapping for Goldstream and the areas of interest below. The properties are listed in order of preference with the first image being a general area map.



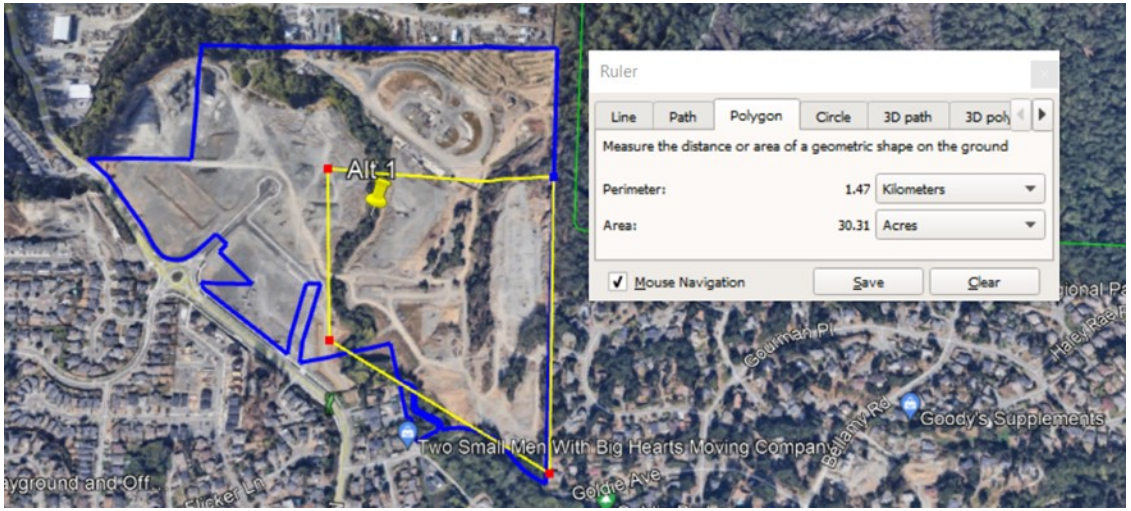
Alternative 19 – 2001 Millstream Road (PID 024-710-270)



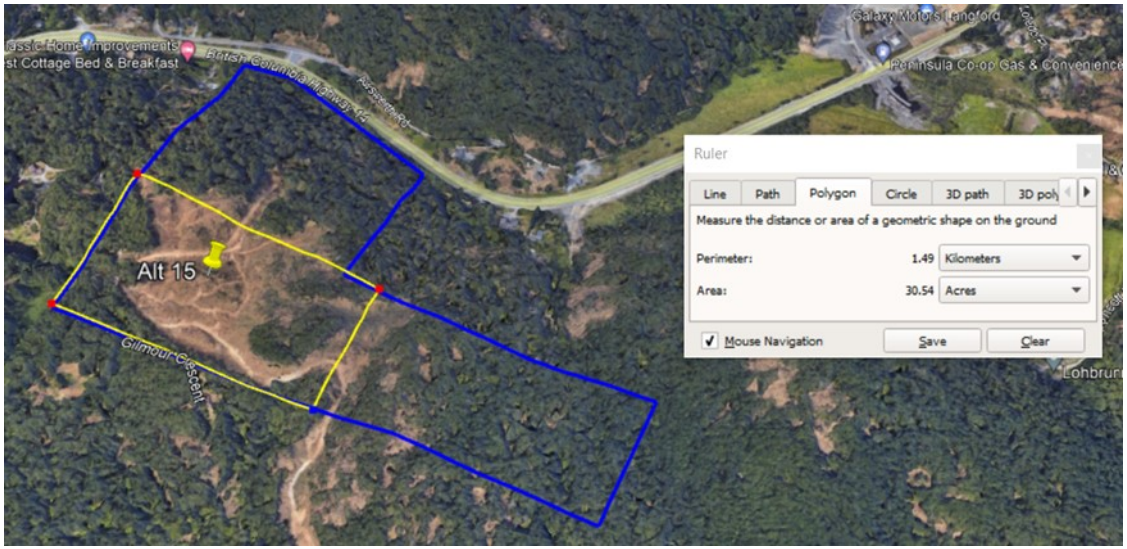
Alternative 17 – 2800 & 2820 Amy Road (PID 024-550-469 & 027-219-851)



Alternative 1 – 2207 Millstream Road (PID 017-612-675)



Alternative 15 - 3021, 3005 Sooke Rd and 3261 Woodruff Rd (PID 001-703-374/251/277)



I have attached the KMZ file for Willoughby. The properties we are interested in are alternate 15 (Near Trans Canada Highway), and alternates 14 B and 14D. There may be another parcel at 78th and 195B which I show below:



This is a last minute addition.

For Campbell Heights we are focused on two properties from the Township of Langley

They are shown as Alternate 14 and 15 (Shown in Blue). Alternate 8 is a possibility but Alt 14 seems to be the most realistic as TOL is willing to sell it to BCH.

I know I asked for Surrey City Center as well but that project is a bit in Flux right now. I will let you know more when you return.

From: Urosevic, Dusanka <Dusanka.Urosevic@bchydro.com>
Sent: Friday, June 7, 2024 8:56 AM
To: Chwaklinski, David <David.Chwaklinski@bchydro.com>
Subject: Property Acquisition for various projects

Hi David,

I am working on a few property mapping request for you.

Do you have closer locations for Township of Langley - Willoughby substation?
and Location for 1L143 Goldstream?

I will do mapping for 196 ST/32 AV mapping. I have 2017 Lidar for Lover Mainland and I will also request city of Surrey Lidar. I will see if Township of Langley have any Lidar that they want to share. This might take some times to get though.

Please pass the locations of the interested properties directly to me.

I will be on vacation next week and will continue after my return on June 17.

Thanks
Dusanka

Dusanka Urosevic (CP1280) Photogrammetrist
Quality & Geomatics, Integrated Planning

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6911 Southpoint Drive, 8th floor
Burnaby, BC V3N 4X8

P 604 528 2325
E dusanka.urosevic@bchydro.com

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LEGEND

Cadastral Boundaries

Preliminary Block Selection Location

Contour Index/Intermediate

DIGITAL ORTHOPHOTO MAP
UTM ZONE 10, NAD83
NTS SHEET REFERENCE: 92G

MAPPING SOURCES:

ORTHO: BING IMAGE
CONTOUR: GEO BC 2018/2019 LIDAR; CONTOUR INTERVAL 2 m

BC GOVERNMENT CADASTRE VARIABLE ACCURACY.

125 0 125 250 m

SCALE AS IS

DSGN		BC Hydro	ENGINEERING GEOMATICS SERVICES
INDEP CHK			
DFTG	DU		
DFTG CHK			
INSP			
REV			
ACPT			

TM0544 GOLDSTREAM
PREFERRED PROPERTIES
SITE 1

DATE Jun 20, 2024 | DISTR'N | DWG NO CAD TM-0544 - SITE 1 | R 0

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LEGEND

Cadastral Boundaries

Preliminary Block Selection Location

Contour Index/Intermediate

DIGITAL ORTHOPHOTO MAP
UTM ZONE 10, NAD83
NTS SHEET REFERENCE: 92G

MAPPING SOURCES:

ORTHO: BING IMAGE
CONTOUR: GEO BC 2018/2019 LIDAR; CONTOUR INTERVAL 2 m

BC GOVERNMENT CADASTRE VARIABLE ACCURACY.

150 0 150 300 m

SCALE AS IS

DSGN			
INDEP CHK			
DFTG	DU		
DFTG CHK			
INSP			
REV			
ACPT			

BC Hydro ENGINEERING
GEOMATICS SERVICES

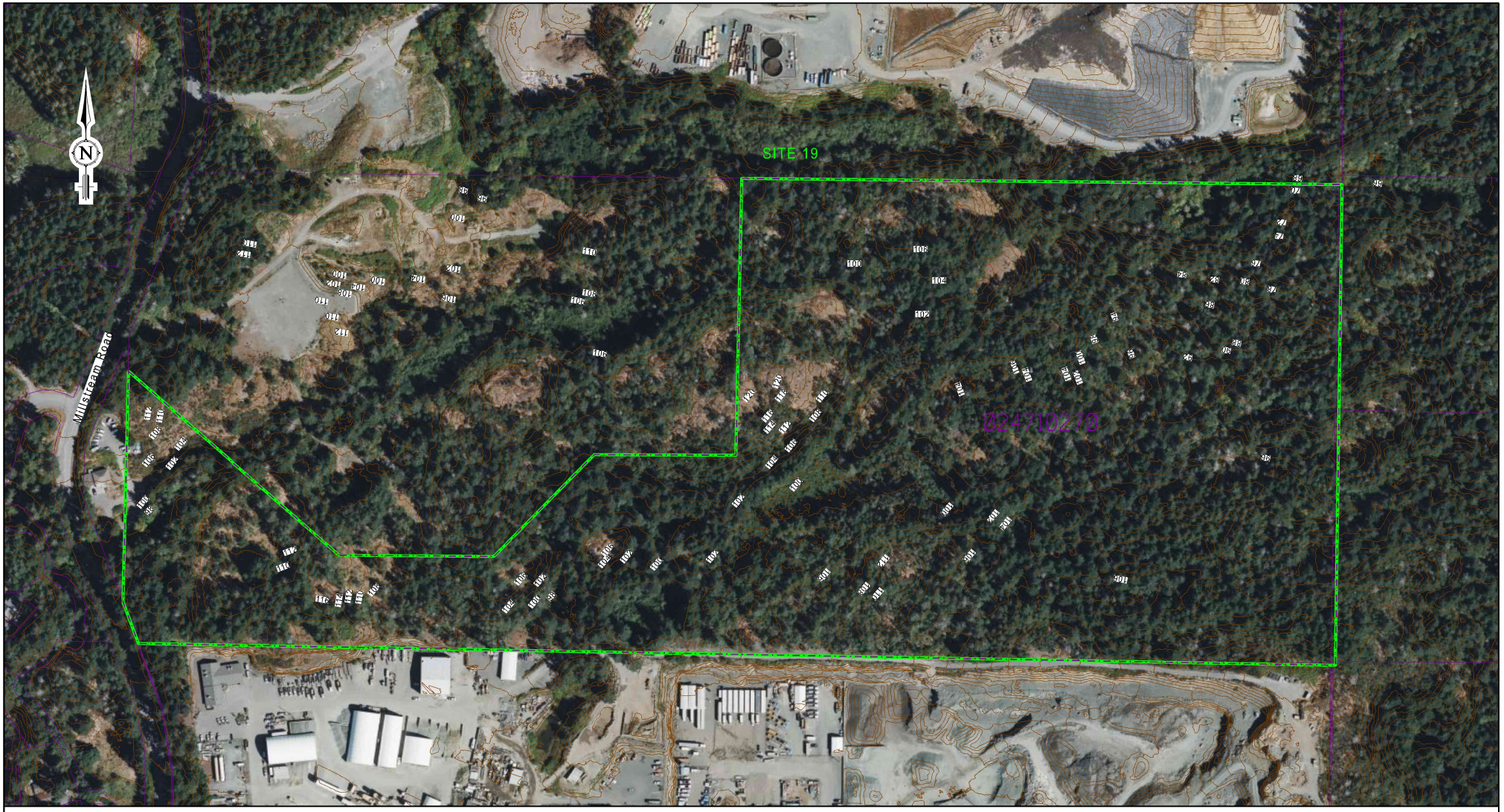
TM0544 GOLDSTREEM
PREFERRED PROPERTIES
SITE 15

DATE Jun 20, 2024 DISTR

DWG NO TM-0544 - SITE 15 R 0
CAD

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LEGEND

Cadastral Boundaries

Preliminary Block Selection Location

Contour Index/Intermediate

DIGITAL ORTHOPHOTO MAP
UTM ZONE 10, NAD83
NTS SHEET REFERENCE: 92G

MAPPING SOURCES:

ORTHO: BING IMAGE
CONTOUR: GEO BC 2018/2019 LIDAR; CONTOUR INTERVAL 2 m

BC GOVERNMENT CADASTRE VARIABLE ACCURACY.

100 0 100 200 m

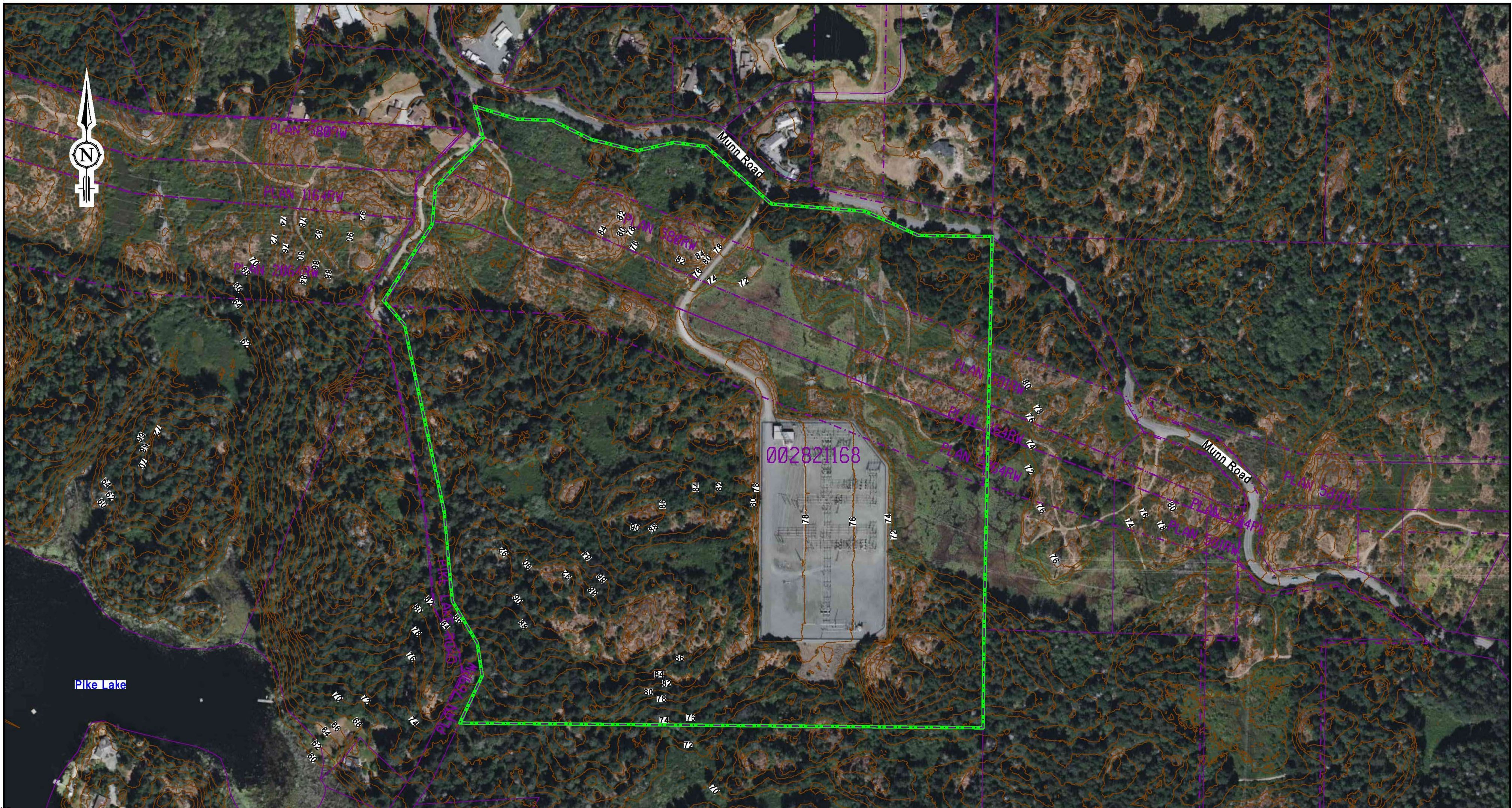
SCALE AS IS

DSGN		BC Hydro	ENGINEERING GEOMATICS SERVICES
INDEP CHK			
DFTG	DU		
DFTG CHK			
INSP			
REV			
ACPT			

TM0544 GOLDSTREAM
PREFERRED PROPERTIES
SITE 19

DATE Jun 20, 2024 | DISTR | DWG NO TM-05144-SITE 19 | CAD | R 0

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LEGEND

Cadastral Boundaries	
BC HYDRO ROW	
Preliminary Block Selection Location	
Contour Index/Intermediate	

DIGITAL ORTHOPHOTO MAP
UTM ZONE 10, NAD83
NTS SHEET REFERENCE: 92B

MAPPING SOURCES:

ORTHO: BING IMAGE
CONTOUR: GEO BC 2018/2019 LIDAR; CONTOUR INTERVAL 2m

BC GOVERNMENT CADASTRE, VARIABLE ACCURACY.

DSGN	
INDEP CHK	
DFTG	DU
DFTG CHK	
INSP	
REV	
ACPT	

BC Hydro
ENGINEERING
GEOMATICS SERVICES

TM0592 GOLDSTREAM
PREFERRED PROPERTIES
SITE 21

DATE	DISTR	DWGNO / CAD	R
Jun 20, 2024		TM-0544 - SITE 21	0

NOT TO BE REPRODUCED WITHOUT PERMISSION

From: Chwaklinski, David
Sent: 2024, September 17 1:21 PM
To: Hepple, Robert
Cc: Chwaklinski, David
Subject: FW: TM0592 - Willoughby Heights Sub, Alt 20
Attachments: WIB-E05-SK004-Outdoor 230 +GIS 60n25-To Fit Bosa Property-20240719.pdf; WIB-E05-SK003-Option 3-Outdoor 230 +GIS 60n25-To Fit Qualico Property-20240719.pdf

Robert, please see the e-mail from Kally to us from back in July. She notes her concerns with the Bosa property (I already informed her that the house on the lot is irrelevant to our discussions). I point out that they did not have accurate dimensions at the time and used 100 m when it is 325 ft (99.974 m) according to the legal plan. I also note that this requires the use of GIS for the 25 kV and 60 kV and the terminal positions are shown going overhead across lots 10 and 11. I have asked if we can conduct a layout with 230 entering from 194th and 196th but that will still require GIS for 60 and 25. I have asked if there is a way to make the 230 kV connection using cables to the terminal positions as shown or if there is another way to layout the terminal positions for simpler cable connections. I don't see any way that we can make the 60 kV or 25 kV AIS on the Bosa Property.

Also, for completeness I included her layout for the Qualico parcel. But that seems to be Moot now.

From: Jiang, Kally
Sent: Tuesday, September 17, 2024 11:56 AM
To: Chwaklinski, David
Subject: FW: TM0592 - Willoughby Heights Sub, Alt 20

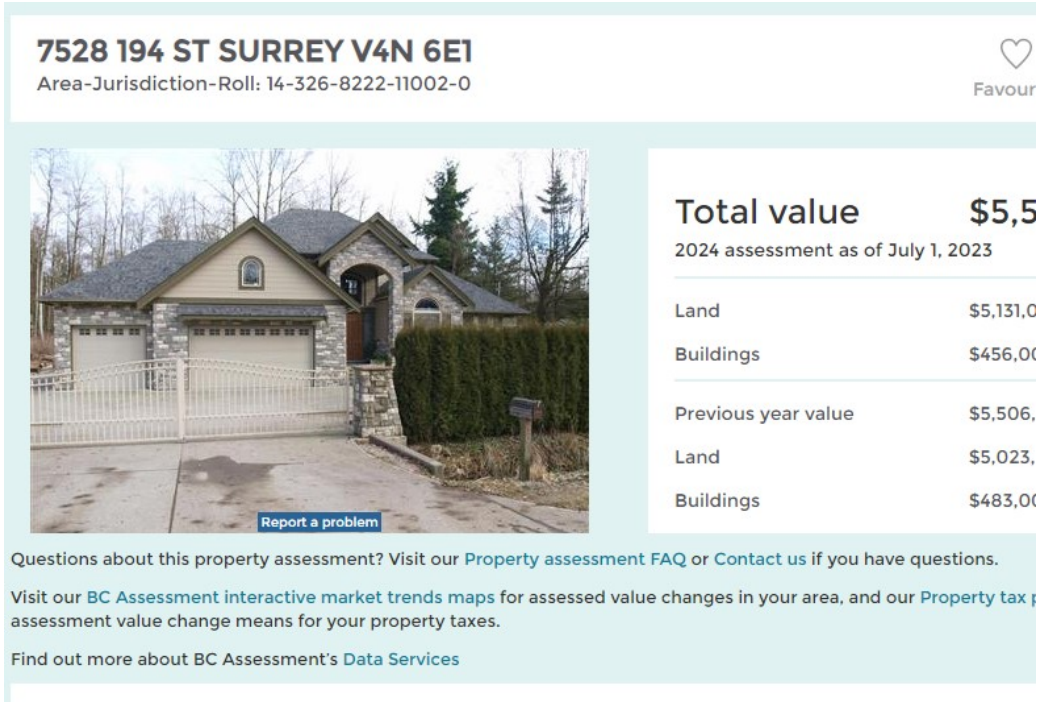
FYI as requested.

From: Jiang, Kally
Sent: 2024, July 19 4:51 PM
To: Chwaklinski, David <David.Chwaklinski@bchydro.com>; Hepple, Robert <Robert.Hepple@bchydro.com>; Sherevkulov, Dmitry <Dmitry.Sherevkulov@bchydro.com>
Subject: RE: TM0592 - Willoughby Heights Sub, Alt 20

Good afternoon, All,

The station layout has been barely fitted onto the Bosa's properties of 100m x 391m lot. This Alternative 20 is not preferable from Station Electrical Design perspective with the reasons below.

1. The 100m width is extremely tight for layout.
2. How the 230kV transmission Lines enter the station would be a concern.
3. The connection between 230kV bus ring would be very long and costly.
4. The high voltage power cables run from TX to both 60/25kV GIS buildings would be complicated and costly.
5. Low voltage cables run from switchyard to the control building would be quite long and costly.
6. There is a beautiful house on Bosa's property of 7528 194 ST SURREY as picture below. It was built in year 2003 and relatively new. What a regret and waste if we have to demolish the house to build our station on the lot.



I also looked into the Qualico property further. The station layout could be squeezed onto that property as attached Option 3. Compare these two options, the layout on Qualico's property is much better than the one on Bosa's properties.

Hope above info helps and have a great weekend!
Kally

Kally Jiang (She/Her/Hers) | P. Eng.

Senior Engineer, Electrical Design
Stations Division, Transmission Engineering

BC Hydro
6911 Southpoint Drive, E06th Floor
Burnaby, B.C. V3N 4X8

T 604 528 2605
F 604 528 1600
E Kally.Jiang@bchydro.com

bchydro.com

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From: Chwaklinski, David <David.Chwaklinski@bchydro.com>
Sent: 2024, July 18 9:56 AM
To: Jiang, Kally <Kally.Jiang@bchydro.com>
Cc: Hepple, Robert <Robert.Hepple@bchydro.com>; Sherevkulov, Dmitry <Dmitry.Sherevkulov@bchydro.com>; Chwaklinski, David <David.Chwaklinski@bchydro.com>
Subject: FW: TM0592 - Willoughby Heights Sub, Alt 20

Hi Kally, a new set of properties has arisen for consideration. Please refer to the e-mail string below. The two properties together are 100 m wide by 391 m long. Can you have a quick look and see whether we could accommodate all the requirements on this parcel> That would dbe the 4 linepositions, the 25 kV section and potentially a 69 kV section? Can you respond back directly to Robert, Dmitry as well as me? I will be on vacation for two weeks so will not be able to respond after mid day tomorrow.

From: Hepple, Robert <Robert.Hepple@bchydro.com>
Sent: Wednesday, July 17, 2024 2:12 PM
To: Sherevkulov, Dmitry <Dmitry.Sherevkulov@bchydro.com>
Cc: Chan, David Y.M. <David.Chan@bchydro.com>; Chwaklinski, David <David.Chwaklinski@bchydro.com>
Subject: RE: TM0592 - Willoughby Heights Sub, Alt 20

Hi Dmitry,
We will need planning and engineering to look at it.
Problem that I see is that there is not two areas of access.
We are landlocked.

But let's brighter minds than mine make that decision.
Robert

Robert Hepple P.Eng.

Project Manager, Stations
Capital Infrastructure Project Delivery
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6911 Southpoint Drive, B02
C 925.967.5880
W 604.528.3433
E Robert.Hepple@BCHydro.com

Web: BCHydro.com

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From: Sherevkulov, Dmitry <Dmitry.Sherevkulov@bchydro.com>
Sent: 2024, July 17 1:12 PM
To: Hepple, Robert <Robert.Hepple@bchydro.com>
Cc: Chan, David Y.M. <David.Chan@bchydro.com>
Subject: TM0592 - Willoughby Heights Sub, Alt 20

Hi Robert,

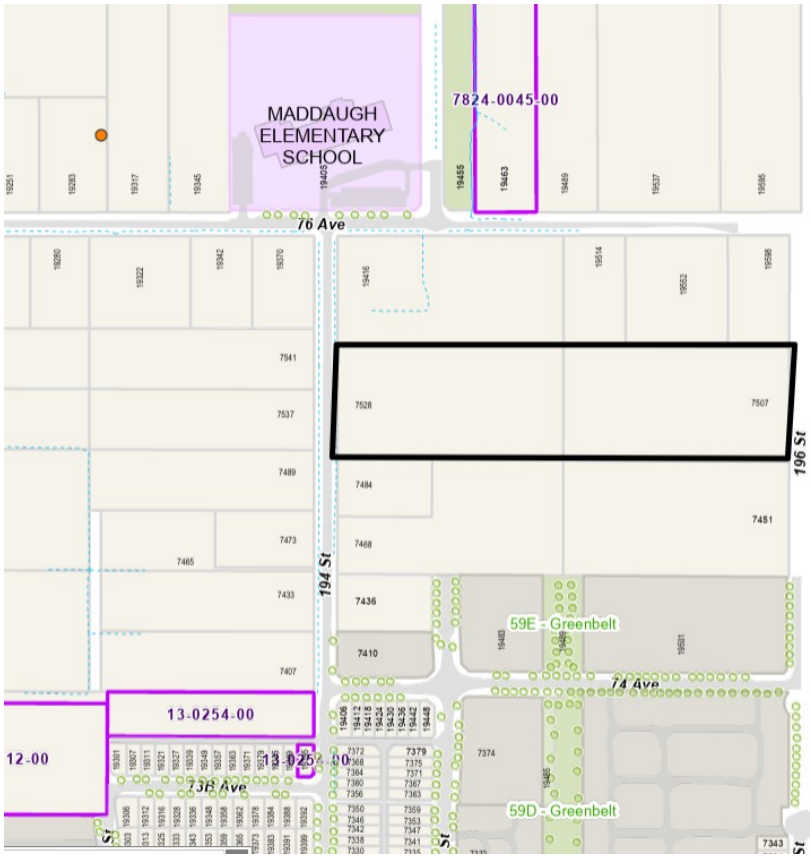
I have an update regarding Alternative 20. I spoke to both owners today and looks like both will be willing to sell at the right price. Here are the details of our conversation:

1) 7451 196 ST SURREY – private owner, wants to develop a townhouse. The owner will talk to the rest of the owners to see what price may work for them. I expect it to be $3M+ per acre.

2) 7507 196 ST SURREY – owned by Bosa Properties, they also own a property to the west (7528 194 ST SURREY). I spoke to the Director of Acquisitions and Bosa is currently talking to someone who is

seriously interested in buying both properties. The price they are looking to get for both is $2.5-$3M per acre. Bosa is interested in selling both lots, less interested in selling only one. From the design perspective, is it feasible to build a substation on such a long narrow lot (just over 9 acres) fronting 196 St and 194 St? Please refer to the snip below.

If it is feasible then we should probably pursue the 2 Bosa lots instead and act fast.



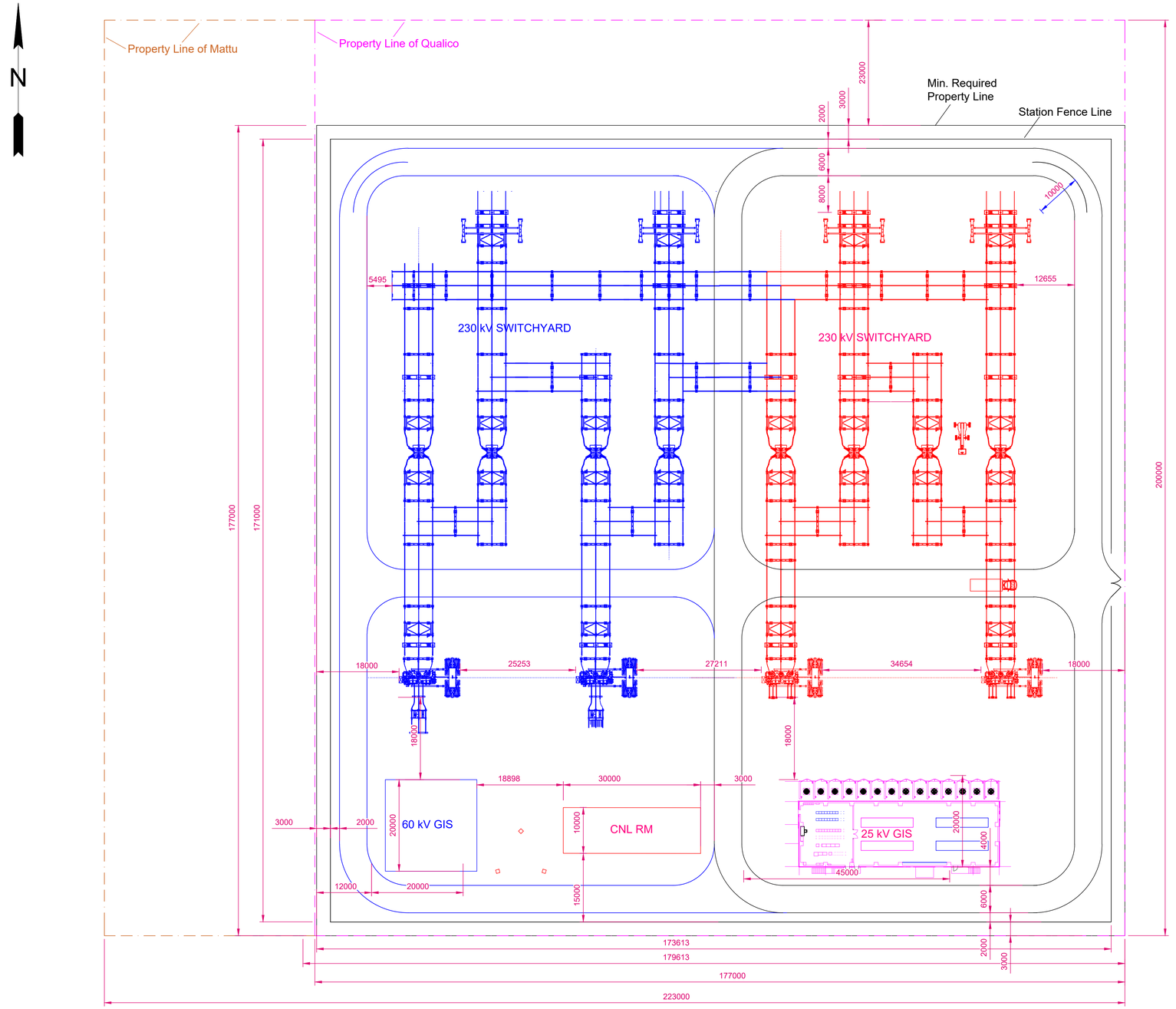
Dmitry Sherevkulov | Property Representative – Acquisitions and Sales

BC Hydro
333 Dunsmuir St, 12th floor
Vancouver, BC V6B 5R3

P 604 623 3566
M 604 690 9836
E dmitry.sherevkulov@bchydro.com

bchydro.com

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NOTES:

1. GATES TO BE INSTALLED AS FIT BASED ON SITE ORIENTATION.
2. IF FACILITY IS PLACED ON A SLOPED SITE ADDTIONAL SPATIAL REQUIREMENT WILL BE REQUIRED EFFECTIVELY MAKING THE FACILITY FOOTPRINT LARGER DEPENDINGON THE SLOP REQUIREMENT.
3. DITCH AND DRAINAGE SPACE REQUIREMENT IS NOT CONSIDERED AND IT SHOULD BE DESIGNED BY CIVIL.
4. GROUND GRID WILL BE INSTALLED 1 m BEYOND THE FENCE LINE AND COVER ALL GATE SWING AREAS.
5. DISTRIBUTION MANHOLE LOCATION IS NOT CONSIDERED AT THIS DESIGN STAGE

COLOR CODE FOR SCOPE OF WORK:
RED: THIS PROJECT
BLUE/BLACK DOTS: FUTURE

FOR DISCUSSION PURPOSES ONLY

SCALE: 1:1 — 0 — 50mm

ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS OTHERWISE SHOWN

REFERENCE DRAWINGS

NO | REMARKS | REVISIONS

DESIGN NUMBER	
WORK ORDER NUMBER	
CSA S250 ACCURACY NAD - UTM	
BASE ACCURACY LEVEL:	
ASB ACCURACY LEVEL:	

DSGN	K. JIANG
INDEP CHK	
DFTG	K.JIANG
DFTG CHK	
INSP	
REV	K. ZENG
ACPT	

BC Hydro

WILLOUGHBY SUBSTATION

230/60/25 KV SWITCHYARD
ULTIMATE LAYOUT

DATE	DIST	DRAWING NUMBER	REPORT NUMBER	FIG NO	SIZE	REV
2024JUL10		WIB-E05-SK003-Option 2			D	0A

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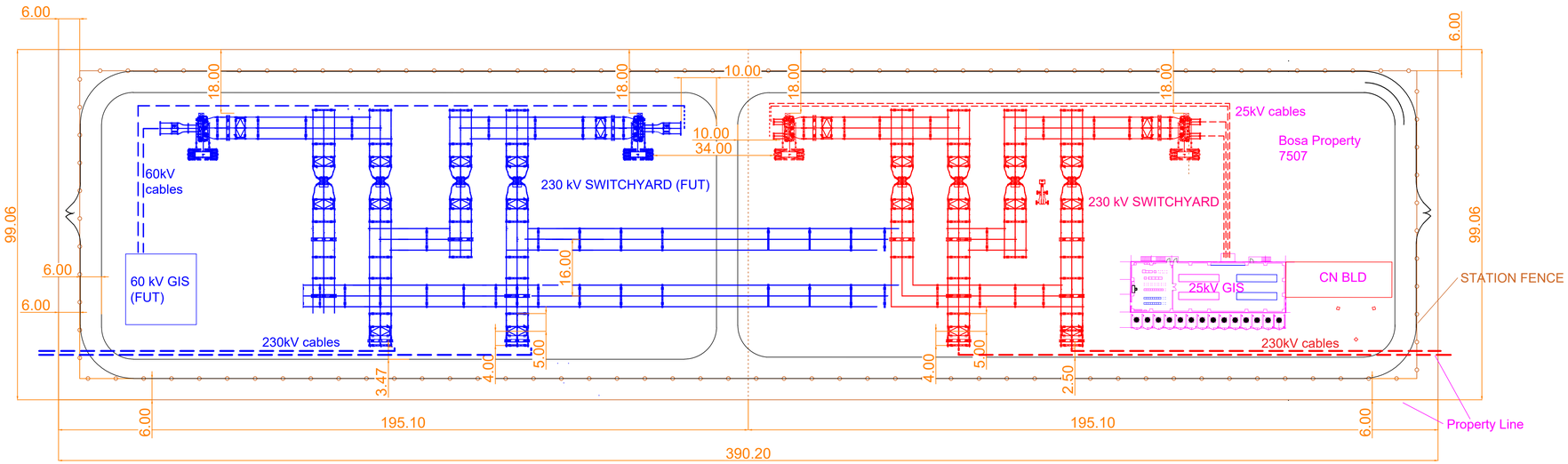
C:\Users\kjiang\OneDrive - BC Hydro\F25 Projects\1-CIPD\2023-11-21_Willoughby Purchase Project\Design\Conceptual\20240705-Qualico\3rd set\WIB-E05-SK003-Option 3-2-Outdoor 230 +GIS 60in25-To Fit Qualico Property-20240710.dwg
Drawing Unit = Metric (4)
Model Space, 1:1
7/15/2024 4:03 PM

N

NOTES:

1. GATES TO BE INSTALLED AS FIT BASED ON SITE ORIENTATION.
2. IF FACILITY IS PLACED ON A SLOPED SITE ADDTIONAL SPATIAL REQUIREMENT WILL BE REQUIRED EFFECTIVELY MAKING THE FACILITY FOOTPRINT LARGER DEPENDINGON THE SLOP REQUIREMENT.
3. DITCH AND DRAINAGE SPACE REQUIREMENT IS NOT CONSIDERED AND IT SHOULD BE DESIGNED BY CIVIL.
4. GROUND GRID WILL BE INSTALLED 1 m BEYOND THE FENCE LINE AND COVER ALL GATE SWING AREAS.
5. DISTRIBUTION MANHOLE LOCATION IS NOT CONSIDERED AT THIS DESIGN STAGE

COLOR CODE FOR SCOPE OF WORK:
RED: THIS PROJECT
BLUE/BLACK DOTS: FUTURE



FOR DISCUSSION
PURPOSES ONLY

C:\Users\kjiang\OneDrive - BC Hydro\P25 Projects1-CIPD\2023-11-21_Willoughby Purchase Project\Design\Conceptual\20240916-New for Bosa\7-WIB-E05-SK006-Op5-Outdoor AIS-To Fit Bosa+Kang Properties-20240918.dwg
Drawing Unit = Metric (4)
LWMS: Model_V1
9/19/2024 3:16 PM

REFERENCE DRAWINGS	NO	REMARKS	DESIGN NUMBER		DSGN K. JIANG
			WORK ORDER NUMBER		INDEP CHK
			CSA S250 ACCURACY NAD - UTM		DFTG K. JIANG
			BASE ACCURACY LEVEL:		DFTG CHK
			ASB ACCURACY LEVEL:		INSP
		REVISIONS			REV K. ZENG
					ACPT

BC Hydro

WILLOUGHBY SUBSTATION

230/60/25 KV SWITCHYARD
ULTIMATE LAYOUT

DATE	DIST	DRAWING NUMBER	REPORT NUMBER	FIG NO	SIZE	REV
2024SEP19		WIB-E05-SK006-OP7			D	0

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From: Chwaklinski, David
Sent: 2025, February 10 3:29 PM
To: Hepple, Robert
Cc: Chwaklinski, David
Subject: FW: Willoughby Geotech Investigation Draft report

Hi Robert, I have communicated with Dylan regarding getting a draft report on the drilling activities at Willoughby. He tells me the absolute earliest we could get the draft report is Feb 19th. He can provide an assessment as soon as he sees the draft report but it wont be any earlier than the 19th. but

---

From: Lee, Dylan
Sent: Monday, February 10, 2025 2:57 PM
To: Chwaklinski, David
Subject: RE: Willoughby Geotech Investigation Draft report

Hi David,

Hope your holiday went well. I did badger KCB this morning and got a response a few minutes ago. Matt can commit to getting me a draft report by mid next week (19th at the earliest). The draft report will not include laboratory soil sampling results as those samples will take some time to test and transcribe to report format. I can make my draft assessment based on the draft factual results (visual descriptors and SPT values) when I receive the draft next week. We are not going to get a draft report any sooner (one to two weeks after field program to get draft report and logs is already consider expedited). Our original date of agreement with KCB was to get the draft report before the end of Feb as it was mentioned that falls within the decision timeline. As you know we couldn't have move these dates any earlier due to driller's availability and there was a lag with coordinating with the land owner for planning works until there was signed agreement.

Unfortunately, you are going to have to push this another week for the due diligence decision.

Informally I have been made aware of the ground conditions during the program and they are consistent with my desktop assessment.

Feel free to call if you want to chat further.

Thanks
Dylan

From: Chwaklinski, David <David.Chwaklinski@bchydro.com>
Sent: 2025, February 10 2:41 PM
To: Lee, Dylan <Dylan.Lee@bchydro.com>
Cc: Chwaklinski, David <David.Chwaklinski@bchydro.com>
Subject: Willoughby Geotech Investigation Draft report

Hi Dylan, I understand the site investigation went pretty well. I know Robert has asked you this already but now he is asking me to f=lean on you to get a draft version of the report by the 14th so we can make our due diligence decision. Can you badger KCB to see if they can get at least some form of draft to us by that date? Thanks

From: Hepple, Robert
Sent: 2025, January 29 2:17 PM
To: Chan, David Y.M.
Cc: Sherevkulov, Dmitry; Parmar, Surinder; Chwaklinski, David
Subject: FW: Willoughby New Substation Project (TM-0637) - Kick Off Meeting
Attachments: Bosa-Kool-Walia_2025-01-29.pdf; WIB-E05-SK006-Outdoor AIS-To Fit Bosa-Kool Properties_2025-01-29.pdf

David and Surinder,
Conceptually WIB substation project is feasible without Walia property.
I would expect to revise this layout in Definition Construction phase.
Robert

Robert Hepple P.Eng.

Project Manager, Stations
Capital Infrastructure Project Delivery
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C 360.410.2244
W 604.528.3433
E Robert.Hepple@BCHydro.com

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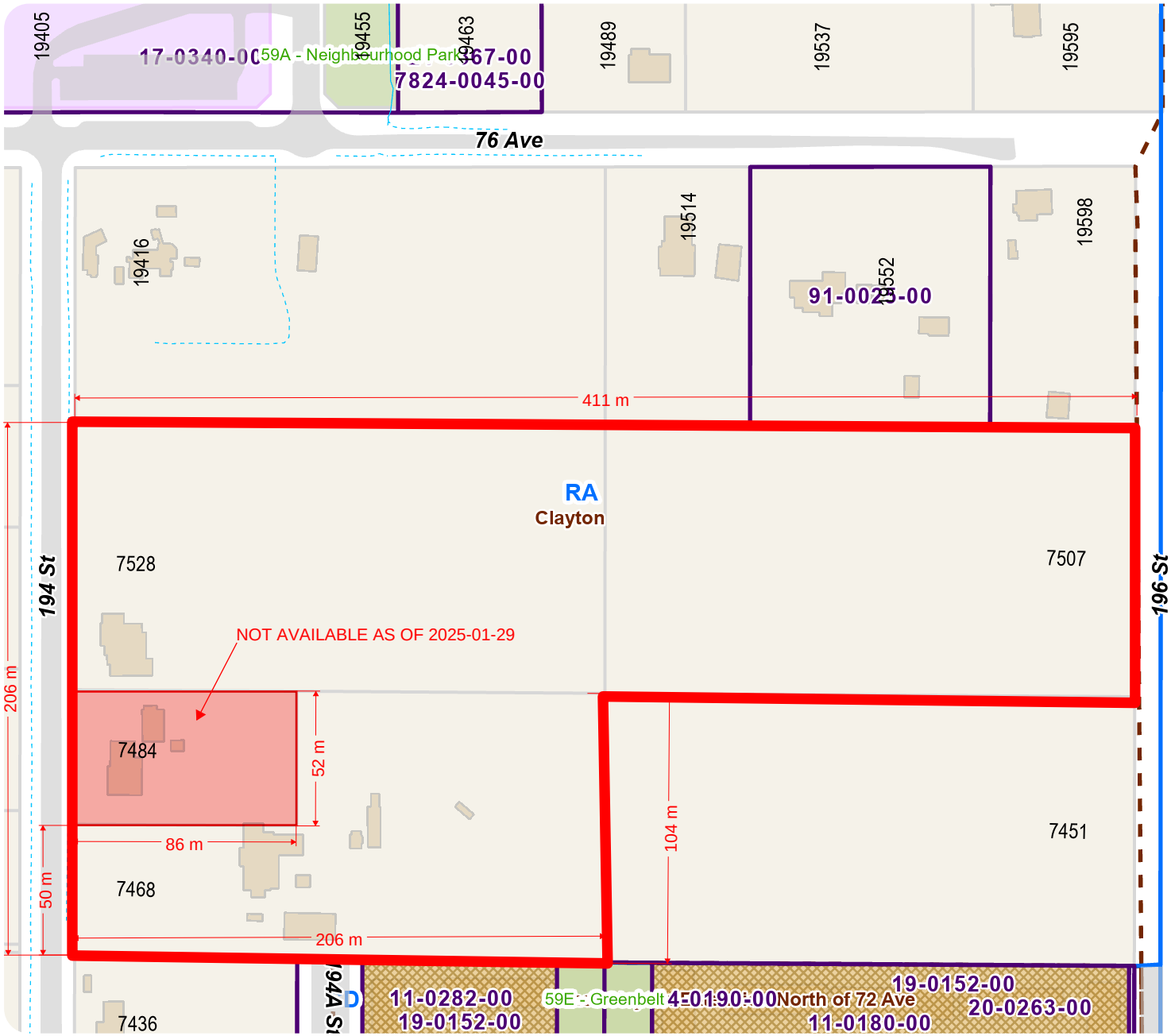
Subject: RE: Willoughby New Substation Project (TM-0637) - Kick Off Meeting

Hussien/Robert – conceptually, I can see that fitting the revised station general arrangement into the (reduced by W&S property) property envelope still remains feasible (attached revised).

Regards,

Dmitri Sydorov PE, P.Eng | Sr. Engineer,T-Stations Engineering
Office: 604.528.1519

City of Surrey Mapping Online System



Bosa-Kool-Walia

Scale: 1:2,209

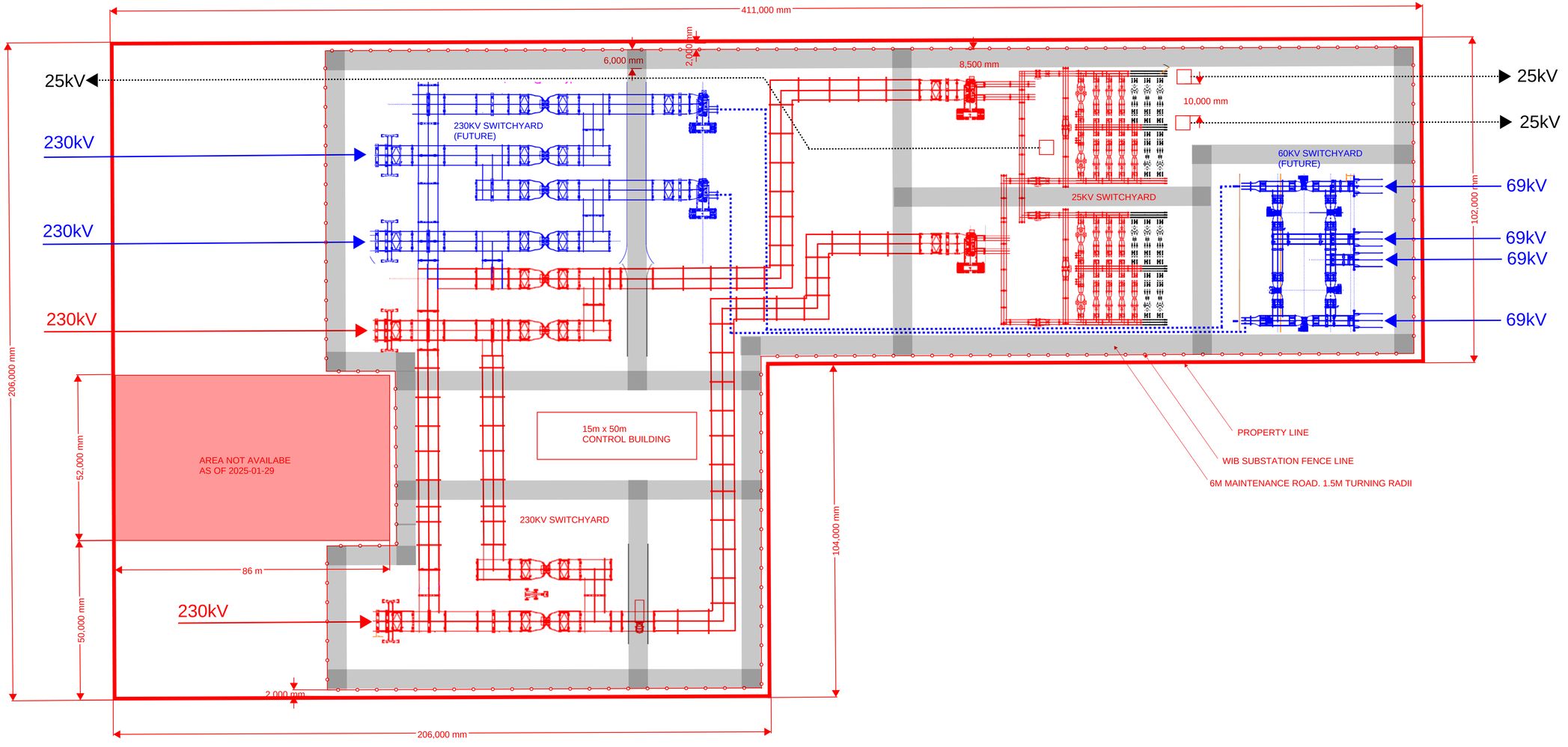
The data provided is compiled from various sources and is NOT warranted as to its accuracy or sufficiency by the City of Surrey.
This information is provided for information and convenience purposes only. Lot sizes, legal descriptions and encumbrances must be confirmed at the Land Title Office. Use and distribution of this map is subject to all copyright and disclaimer notices at cosmos.surrey.ca

0 0.01 0.03 0.05 0.08
km

Map created on: 2024-12-05

80 m

N



NOTES

1. GENERAL ARRAGMENT DESIGN BASED ON THE FEEDBACK RECEIVED FROM TRANSMISSION LINE AND DISTRIBUTION PROJECT LEADS IN TERMS OF 230KV, 60KV, 25KV SUBSTATION ENTRY/EXIST.

DESIGN NUMBER		DSGN	D. SYDOROV	BC Hydro	
WORK ORDER NUMBER		INDEP CHK		WILLOUGHBY SUBSTATION	
CSA S250 ACCURACY NAD - UTM		DFTG	TBD	230/60/25 KV SWITCHYARD ULTIMATE LAYOUT	
		DFTG CHK			
BASE ACCURACY LEVEL:		INSP			
		REV	M. BALEA		
ASB ACCURACY LEVEL:		ACPT			
		DATE	2025JAN29	DRAWING NUMBER: WIB-E05-SK006-OP2	REPORT NUMBER:
		DIST		FIG NO	SIZE D / REV 0

From: Hepple, Robert
Sent: 2024, September 19 2:18 PM
To: Parmar, Surinder
Cc: Chwaklinski, David; Jiang, Kally
Subject: FW: Willoughby Property - WIB - Bosa Property
Attachments: WIB-E05-SK006-Op1-Outdoor AIS-To Fit Bosa+Kang Properties-20240916.pdf

Hi Surinder,
I know you would like to purchase all 4 parcels for future BCH purposes but the engineering Team would be remis if we did not mention that Kally has a layout with the Kang property and the eastern Bosa property that works.
Please see attached layout.
We would not need the western Bosa property or it could be purchased for future battery installation.
In that case we would not need parcel #4.
Let me know your thoughts.
Robert

Robert Hepple P.Eng.

Project Manager, Stations
Capital Infrastructure Project Delivery
BC Hydro
6911 Southpoint Drive, B02
C 360.410.2244
W 604.528.3433
E Robert.Hepple@BCHydro.com

Web: BCHydro.com

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From: Jiang, Kally
Sent: 2024, September 19 2:04 PM
To: Hepple, Robert
Cc: Chwaklinski, David
Subject: RE: Willoughby Property - WIB - Bosa Property

Hi, Robert,

Thanks for the updates! I stopped working on station layouts for the Bosa-Kang Property until getting further notice from you and David.

Regards,
Kally

From: Hepple, Robert <Robert.Hepple@bchydro.com>
Sent: 2024, September 19 12:12 PM
To: Chwaklinski, David <David.Chwaklinski@bchydro.com>; Jiang, Kally <Kally.Jiang@bchydro.com>
Subject: FW: Willoughby Property - WIB - Bosa Property

David/Kally,
Please stop work on station layouts for the Bosa-Kang Property.
If properties is successful in acquiring all 4 parcels, we would have a traditional layout with room to spare.
I will keep you informed.
Robert,

Robert Hepple P.Eng.

Project Manager, Stations
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C 360.410.2244
W 604.528.3433
E Robert.Hepple@BCHydro.com

Web: BCHydro.com

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From: Parmar, Surinder <Surinder.Parmar@bchydro.com>
Sent: 2024, September 19 11:46 AM
To: Lee, Tony S.C. (BCH) <Tony.Lee@bchydro.com>; Chan, David Y.M. <David.Chan@bchydro.com>; Sherevkulov, Dmitry <Dmitry.Sherevkulov@bchydro.com>; Hepple, Robert <Robert.Hepple@bchydro.com>

Cc: Pradhan, Anil <Anil.Pradhan@bchydro.com>
Subject: FW: Willoughby Property - WIB - Bosa Property

Gents:

See string of emails below.

In summary – we have IP management consent to buy the Parcel #4 (south-west of Bosa) along with our earlier plan to buy Parcels 1, 2 and 3.

I will leave it with our Properties SMEs to review/decide on when to approach the owners of Parcel 3 and Parcel 4 owner and start these negotiations.

Let me know if any questions/clarifications that you need from me.



Surinder Parmar, P.Eng., PMP
BC Hydro
6911 Southpoint Drive

P 604.528.7731
M 604.561.2702
E Surinder.Parmar@bchydro.com

bchydro.com

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From: Kumar, Ajay <Ajay.Kumar@bchydro.com>
Sent: 2024, September 19 11:19 AM
To: Parmar, Surinder <Surinder.Parmar@bchydro.com>; Holland, Melissa <Melissa.Holland@bchydro.com>
Cc: Kelly, Neil <Neil.Kelly@bchydro.com>
Subject: RE: Willoughby Property - WIB - Bosa Property

Hi Surinder,

Thanks for the update. I am supportive of acquiring Parcel 4.

Regards,

Ajay

From: Parmar, Surinder <Surinder.Parmar@bchydro.com>
Sent: 2024, September 16 3:05 PM
To: Holland, Melissa <Melissa.Holland@bchydro.com>; Kumar, Ajay <Ajay.Kumar@bchydro.com>
Cc: Kelly, Neil <Neil.Kelly@bchydro.com>
Subject: Willoughby Property - WIB - Bosa Property

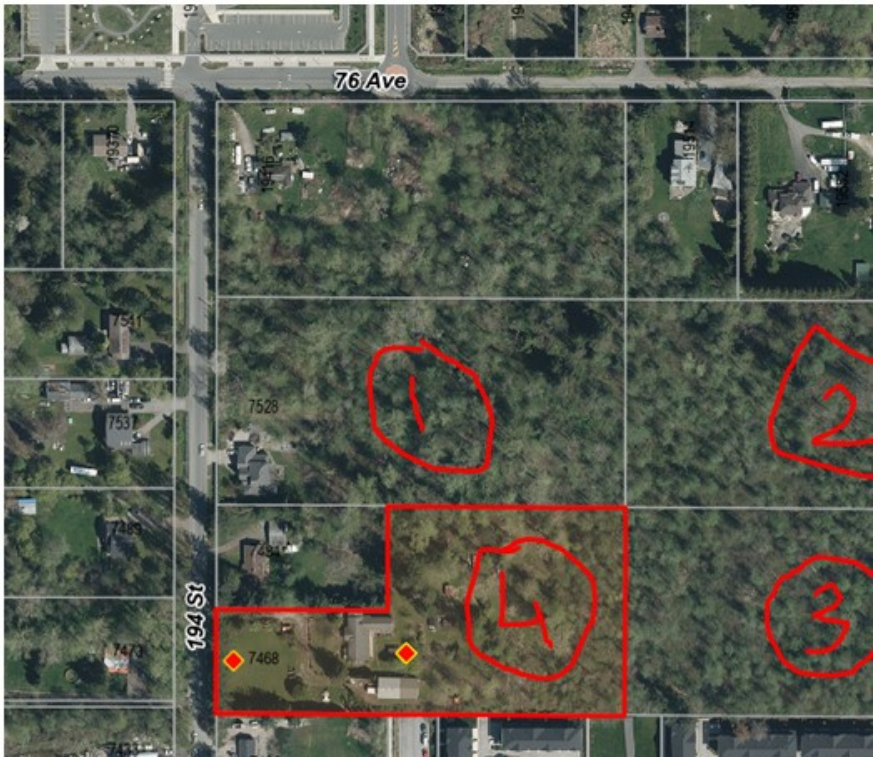
Melissa / Ajay: Quick heads up to both of you so that you are upto speed on the latest.

See the Map below

Properties marked 1 and 2 are owned by Bosa. Each property is around 4.766 Acres. Total Bosa property = 9.5 acres.

With Al's consent – we have a tentative agreement with Bosa to buy these two parcels for $20.5M (around $2.15M / acre).

Properties team will be drawing up agreement with Bosa and get it signed off in the next week or so.



Next steps:

- With the Bosa deal almost made, Properties will be talking with the owner of Parcel 3 (Mr Kang), who also owns the 4.766 acre parcel.
- We are hoping to have the deal made for a similar $2M to $2.2M per acre range.
- Hopefully in the next week or so, we will find out how successful we are going to be in making deal with Mr Kang.

Assuming we have these 3 parcels (around 14.3 acres) we should be able to build our outdoor substation (which requires min 12 acres) .

Ajay:

This is a question for you.

In the figure above – Parcel 4 is currently up for sale also.

Since onetime you had mentioned to Neil, that IP may be looking to install battery banks in the future - I think it will be good idea for BCH to try to secure this parcel also.

This will give us lot of flexibility to accommodate any future plans that IP may have for this area.

What are your thoughts on that?

If you agree, we can ask Properties to approach the owner of Parcel 4 also and secure it – of course, we will be trying to make a deal for similar $/acre that we are agreeing with Bosa.

Surinder Parmar, P.Eng., PMP
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Smart about power in all we do.

From: Chan, David Y.M. <David.Chan@bchydro.com>
Sent: 2024, September 13 3:16 PM
To: Leonard, Allan <Allan.Leonard@bchydro.com>; Lee, Tony S.C. (BCH) <Tony.Lee@bchydro.com>; Dunn, Hilary <Hilary.Dunn@bchydro.com>; Kelly, Neil <Neil.Kelly@bchydro.com>; Parmar, Surinder <Surinder.Parmar@bchydro.com>
Cc: Hepple, Robert <Robert.Hepple@bchydro.com>; Sherevkulov, Dmitry <Dmitry.Sherevkulov@bchydro.com>
Subject: RE: WIB - Bosa Property

Thanks Al and great call on going back at $20M first.

We will now work with the team and Bosa to prepare the Purchase and Sale Agreement.

Regards,

David

David Y. M. Chan | Manager – Acquisitions and Sales

Real Estate Services, Properties

BC Hydro
333 Dunsmuir St, 12th floor
Vancouver, BC V6B 5R3

P 604-623-3998
M 604-328-8678
E david.chan@bchydro.com

bchydro.com

From: Leonard, Allan <Allan.Leonard@bchydro.com>
Sent: 2024, September 13 2:31 PM
To: Lee, Tony S.C. (BCH) <Tony.Lee@bchydro.com>; Chan, David Y.M. <David.Chan@bchydro.com>; Dunn, Hilary <Hilary.Dunn@bchydro.com>; Kelly, Neil <Neil.Kelly@bchydro.com>; Parmar, Surinder <Surinder.Parmar@bchydro.com>
Cc: Hepple, Robert <Robert.Hepple@bchydro.com>; Sherevkulov, Dmitry <Dmitry.Sherevkulov@bchydro.com>
Subject: RE: WIB - Bosa Property

Thanks Tony – I am comfortable with the $20.5M offer and agree that it would be a good acquisition for the reasons outlined below.

Thanks David – good outcome.

AL

From: Lee, Tony S.C. (BCH) <Tony.Lee@bchydro.com>
Sent: 2024, September 13 2:02 PM
To: Chan, David Y.M. <David.Chan@bchydro.com>; Leonard, Allan <Allan.Leonard@bchydro.com>; Dunn, Hilary <Hilary.Dunn@bchydro.com>; Kelly, Neil <Neil.Kelly@bchydro.com>; Parmar, Surinder <Surinder.Parmar@bchydro.com>
Cc: Hepple, Robert <Robert.Hepple@bchydro.com>; Sherevkulov, Dmitry <Dmitry.Sherevkulov@bchydro.com>
Subject: RE: WIB - Bosa Property

Al,

I support accepting the counteroffer of $20.5M or $2.15M per acre. It's a reasonable price and within the realm of market value.

We are not considering expropriation at this stage, but I wanted you to be aware of the following:

Under an expropriation scenario, despite any appraisal evidence a taking authority submits to the courts to defend it position, we have seen recent examples where the Courts have gone out of their way to side with the landowner. In addition to exposure to additional compensation as part of a court ruling, this are potential hundreds of thousands of dollars that would be incurred as part of the expropriation process.

Having the Bosa property under contract, would provide additional leverage with adjacent owners in future negotiations and likely lead to an expedited timeframe for land acquisition for this project.

Regards,

Tony

_____

Tony S.C. Lee | Senior Manager, Real Estate Services, Properties

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M 604 838 1020
E tony.lee@bchydro.com

Smart about power in all we do.

From: Chan, David Y.M. <David.Chan@bchydro.com>
Sent: 2024, September 13 10:39 AM
To: Leonard, Allan <Allan.Leonard@bchydro.com>; Dunn, Hilary <Hilary.Dunn@bchydro.com>; Lee, Tony S.C. (BCH) <Tony.Lee@bchydro.com>; Kelly, Neil <Neil.Kelly@bchydro.com>; Parmar, Surinder <Surinder.Parmar@bchydro.com>
Cc: Hepple, Robert <Robert.Hepple@bchydro.com>; Sherevkulov, Dmitry <Dmitry.Sherevkulov@bchydro.com>
Subject: RE: WIB - Bosa Property

Hi Al,

My contact (Director of Acquisitions) at Bosa phoned me and we spent some time discussing BC Hydro's counter offer.

As anticipated, he wanted to counter at $21,000,000 and I said no, that won't work. He has replied to my email countering at $20,500,000 or $2.15M per acre.

Please let me know your thoughts/instructions.

Regards,

David

David Y. M. Chan | Manager – Acquisitions and Sales

Real Estate Services, Properties

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M 604-328-8678
E david.chan@bchydro.com

bchydro.com

From: Leonard, Allan <Allan.Leonard@bchydro.com>
Sent: 2024, September 13 9:09 AM
To: Chan, David Y.M. <David.Chan@bchydro.com>; Dunn, Hilary <Hilary.Dunn@bchydro.com>; Lee, Tony S.C. (BCH) <Tony.Lee@bchydro.com>; Kelly, Neil <Neil.Kelly@bchydro.com>; Parmar, Surinder <Surinder.Parmar@bchydro.com>
Cc: Hepple, Robert <Robert.Hepple@bchydro.com>; Sherevkulov, Dmitry <Dmitry.Sherevkulov@bchydro.com>
Subject: RE: WIB - Bosa Property

Thanks David

From: Chan, David Y.M. <David.Chan@bchydro.com>
Sent: 2024, September 13 9:08 AM
To: Leonard, Allan <Allan.Leonard@bchydro.com>; Dunn, Hilary <Hilary.Dunn@bchydro.com>; Lee, Tony S.C. (BCH) <Tony.Lee@bchydro.com>; Kelly, Neil <Neil.Kelly@bchydro.com>; Parmar, Surinder <Surinder.Parmar@bchydro.com>
Cc: Hepple, Robert <Robert.Hepple@bchydro.com>; Sherevkulov, Dmitry <Dmitry.Sherevkulov@bchydro.com>
Subject: RE: WIB - Bosa Property

Thanks Al, I'll counter at $2.1M per acre or $20M and report back.

Regards,

David

David Y. M. Chan | Manager – Acquisitions and Sales

Real Estate Services, Properties

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E david.chan@bchydro.com

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From: Leonard, Allan <Allan.Leonard@bchydro.com>
Sent: 2024, September 13 8:55 AM
To: Chan, David Y.M. <David.Chan@bchydro.com>; Dunn, Hilary <Hilary.Dunn@bchydro.com>; Lee, Tony S.C. (BCH) <Tony.Lee@bchydro.com>; Kelly, Neil <Neil.Kelly@bchydro.com>; Parmar, Surinder <Surinder.Parmar@bchydro.com>
Cc: Hepple, Robert <Robert.Hepple@bchydro.com>; Sherevkulov, Dmitry <Dmitry.Sherevkulov@bchydro.com>
Subject: RE: WIB - Bosa Property

Thanks David, Given the original offer and counteroffer of $1.8M and $2.4M, wondering why we wouldn't go back at $2.1M as it would see both parties adjust by $300K/acre?

AL

From: Chan, David Y.M. <David.Chan@bchydro.com>
Sent: 2024, September 13 8:35 AM
To: Leonard, Allan <Allan.Leonard@bchydro.com>; Dunn, Hilary <Hilary.Dunn@bchydro.com>; Lee, Tony S.C. (BCH) <Tony.Lee@bchydro.com>; Kelly, Neil <Neil.Kelly@bchydro.com>; Parmar, Surinder <Surinder.Parmar@bchydro.com>
Cc: Hepple, Robert <Robert.Hepple@bchydro.com>; Sherevkulov, Dmitry <Dmitry.Sherevkulov@bchydro.com>
Subject: WIB - Bosa Property

Hello everyone,

After our meeting yesterday afternoon, I wrote to Bosa and they replied shortly after.

I provide details below and the map attached.

Bosa Properties (2 parcels – 9.53 acres)	Dates	Offer Amounts
First contact	July 17, 2024	
BC Hydro Business Case Approved	August 26, 2024	
BC Hydro Initial Offer at Appraised Value	September 5, 2024	$17.5M or $1.8M per acre
Bosa Counter Offer	September 6, 2024	$22.9M or $2.4M per acre
BC Hydro Counter Offer (per our meeting)	September 12, 2024	$19.1M or $2M per acre
Bosa Counter Offer	September 12, 2024	$22M or $2.3M per acre
BC Hydro Proposed Counter Offer	**September 13, 2024**	**$21M or $2.2M per acre**

Based on interactions and negotiations to date, I believe Bosa will agree to $21M or $2.2M per acre ($400K per acre/23% over appraised value). I believe this is good price for BC Hydro's substation use.

The Kang property to the south is 4.766 acres, appraised at $8.1M or $1.7M per acre. If we project a similar per acre value for its acquisition or $8M-$10M, the site could be assembled at around $30M.

Please let me know your thoughts.

I am seeking your approval to respond to Bosa at $21M or $2.2M per acre.

Thank you everyone for your iput.

David

_____

David Y. M. Chan | Manager – Acquisitions and Sales

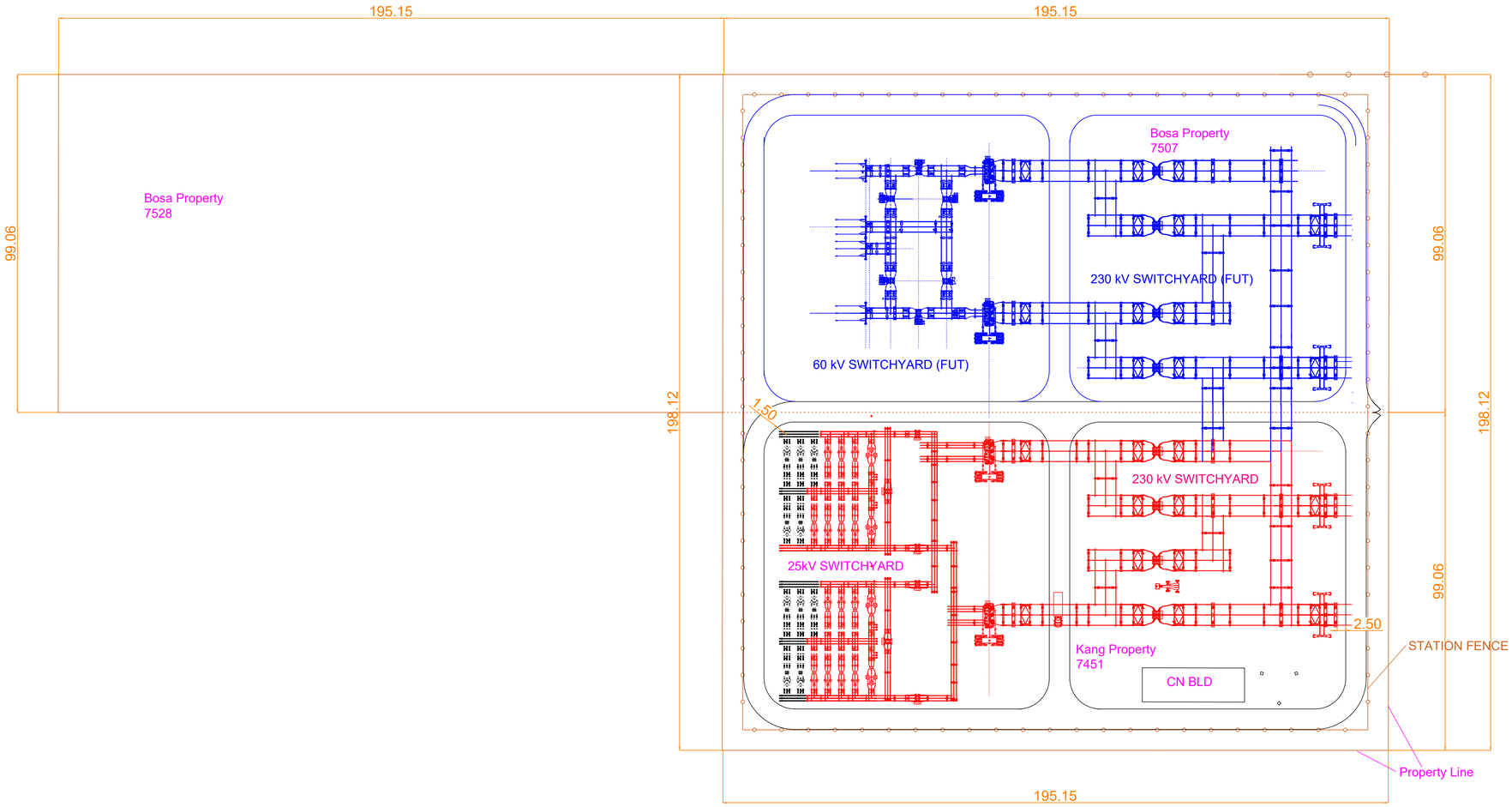
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N



NOTES:

1. GATES TO BE INSTALLED AS FIT BASED ON SITE ORIENTATION.
2. IF FACILITY IS PLACED ON A SLOPED SITE ADDTIONAL SPATIAL REQUIREMENT WILL BE REQUIRED EFFECTIVELY MAKING THE FACILITY FOOTPRINT LARGER DEPENDINGON THE SLOP REQUIREMENT.
3. DITCH AND DRAINAGE SPACE REQUIREMENT IS NOT CONSIDERED AND IT SHOULD BE DESIGNED BY CIVIL.
4. GROUND GRID WILL BE INSTALLED 1 m BEYOND THE FENCE LINE AND COVER ALL GATE SWING AREAS.
5. DISTRIBUTION MANHOLE LOCATION IS NOT CONSIDERED AT THIS DESIGN STAGE

COLOR CODE FOR SCOPE OF WORK:
RED: THIS PROJECT
BLUE/BLACK DOTS: FUTURE

FOR DISCUSSION PURPOSES ONLY

REFERENCE DRAWINGS

NO	REMARKS

REVISIONS

DESIGN NUMBER	
WORK ORDER NUMBER	
CSA S250 ACCURACY NAD - UTM	
BASE ACCURACY LEVEL:	
ASB ACCURACY LEVEL:	

DSGN	K. JIANG
INDEP CHK	
DFTG	K. JIANG
DFTG CHK	
INSP	
REV	K. ZENG
ACPT	

BC Hydro

WILLOUGHBY SUBSTATION

230/60/25 KV SWITCHYARD
ULTIMATE LAYOUT

DATE	DIST	DRAWING NUMBER	REPORT NUMBER	FIG NO	SIZE	REV
2024SEP16		WIB-E05-SK006-OP1			D	0

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C:\Users\kjiang\OneDrive - BC Hydro\F25 Projects\1-CIPD\2023-11-21_Willoughby Purchase Project\Design\Conceptual\20240913-New for Bosa+Kang\WIB-E05-SK006-Opb-Outdoor AIS-To Fit Bosa+Kang Properties-20240916.dwg
Drawing Unit = Metric (4)
JIANG, KAI
9/16/2024 4:30 PM

From: Chwaklinski, David
Sent: 2024, March 08 4:27 PM
To: Gadhok, Satwant; Simpson, Lauren; Armstrong, Tyler; Lee, Johnson; Manurung, Cynthia
Cc: Chwaklinski, David
Subject: FW: Willoughby/Campbell heights Substation Layouts
Attachments: CAMP-E05-SK003(2024-03-05_OneLIne)--Tight_R0B-All-GIS-INDOOR.pdf

Hi folks, I have an early layout plan for a GIS station where the transformers are outside and the 230 kV, 69 kV and 25 kV switchgear is located within their own buildings. There is a significant reduction in the space required. We are meeting on Tuesday to discuss this further an to consider outdoor GIS. I hope to have some more information by the end of next week. I am not sure about getting an estimate any time soon however. Hopefully we can generate that once the sketches are complete.

Please note that we are treating Campbell Heights and Willoughby as the same requirements for the time being. Once we get a bit more settled we will create a separate set of sketches for Willoughby

---

From: Zeng, Ken
Sent: Friday, March 8, 2024 4:10 PM
To: Chwaklinski, David
Cc: Jiang, Kally ; Fajber, William ; Carr, Arthur ; Khan, Jahangir
Subject: RE: Willoughby/Campbell heights Substation Layouts

David/Artur,
Thanks for the HSY reference.
Based on HSY and the space needed for an 8-CB 230kV indoor GIS and its cabling/termination, the ideal layout for a green field all GIS type layout might look like the attached, but could be smaller and the 230kV incoming lines space and orientation might not work for current concept.

In general, compared with the all-open low profile type, the all indoor-GIS type takes less than half of the property size.

We need outdoor GIS dimensions to see how it will look. I do not think there is a big difference.

Regards
Ken

From: Carr, Arthur <Arthur.Carr@bchydro.com>
Sent: 2024, March 08 10:27 AM
To: Chwaklinski, David <David.Chwaklinski@bchydro.com>

Cc: Jiang, Kally <Kally.Jiang@bchydro.com>; Fajber, William <Will.Fajber@bchydro.com>; Zeng, Ken <Ken.Zeng@bchydro.com>
Subject: RE: Willoughby/Campbell heights Substation Layouts

Dave,

I'm going to say for 69kV, the size of an indoor GIS system is comparable to an outdoor AIS system but this is not true for the higher voltages such as 230kV.

For comparison purposes, I suggest you look at what was built at HSY in 2013 (7 Bay indoor 230kV GIS system). For Campbell Heights, it looks like we would need to have a building large enough for an 8 bay system but only build out 4 bays at this time. It would be a bit more complex in the future to build the GIS out to the full 8 bays compared to an AIS system but still doable.

Arthur.

From: Chwaklinski, David <David.Chwaklinski@bchydro.com>
Sent: 2024, March 08 9:49 AM
To: Carr, Arthur <Arthur.Carr@bchydro.com>; Zeng, Ken <Ken.Zeng@bchydro.com>
Cc: Jiang, Kally <Kally.Jiang@bchydro.com>; Fajber, William <Will.Fajber@bchydro.com>; Chwaklinski, David <David.Chwaklinski@bchydro.com>
Subject: RE: Willoughby/Campbell heights Substation Layouts

No, the intent is to stay AIS but given that the availability of suitable properties is very low I am just thinking out loud if you will of how to make it work. For an AIS 230/69/25 station we need about 10 acres. There are almost no properties that large near the load center and the ones that exist have been tagged for residential development which means big dollars even if we could purchase. There are some smaller properties of 4 to 6 acres that may be available but I need to understand how much space is required if we use GIS equipment. The township made it clear that they are not in favour of an AIS station in their residential area so I am considering all options at this time.

From: Carr, Arthur <Arthur.Carr@bchydro.com>
Sent: Friday, March 8, 2024 9:23 AM
To: Zeng, Ken <Ken.Zeng@bchydro.com>; Chwaklinski, David <David.Chwaklinski@bchydro.com>
Cc: Jiang, Kally <Kally.Jiang@bchydro.com>; Fajber, William <Will.Fajber@bchydro.com>
Subject: RE: Willoughby/Campbell heights Substation Layouts

Are we considering 25kV indoor MVGIS for this project?

Going from a fully AIS design to a fully GIS design is extreme on both ends of the spectrum (biggest area and lowest cost versus smallest area and highest cost).

Arthur.

From: Zeng, Ken <Ken.Zeng@bchydro.com>
Sent: 2024, March 08 9:02 AM
To: Chwaklinski, David <David.Chwaklinski@bchydro.com>

Cc: Carr, Arthur <Arthur.Carr@bchydro.com>; Jiang, Kally <Kally.Jiang@bchydro.com>; Fajber, William <Will.Fajber@bchydro.com>
Subject: RE: Willoughby/Campbell heights Substation Layouts

Hi David,
Based on the rough sketch I've attached (the first PDF), which reflects the latest one-line diagram (the second PDF), it appears that we'll need a 190m x 175m fenced yard for the substation. I recommend focusing our search on properties that can accommodate this size, rather than looking for a larger property.

If you have a specific property in mind with approximate dimensions and orientation, we can develop a layout that fits into it. This will allow us to determine which portions could utilize GIS (indoor or outdoor). It's important to have a physical idea of both the HV line incoming and LV line outgoing orientation from a system perspective. For instance, could we consider a layout comprising 230kV outdoor, 25kV indoor GIS, and 60kV outdoor GIS.

Equipment might be able to provide some samples from vendors for outdoor GIS, for 230 and 60kV. I did a few projects with 60kV, 25kV indoor GIS, or Hybrid only and I have never done an outdoor GIS.

We are all in the office on Tuesday and Thursday as required by the department.

Regards,
Ken

From: Fajber, William <Will.Fajber@bchydro.com>
Sent: 2024, March 07 5:29 PM
To: Chwaklinski, David <David.Chwaklinski@bchydro.com>; Zeng, Ken <Ken.Zeng@bchydro.com>; Jiang, Kally <Kally.Jiang@bchydro.com>
Cc: Carr, Arthur <Arthur.Carr@bchydro.com>
Subject: RE: Willoughby/Campbell heights Substation Layouts

It is mostly correct, although it is complicated.

We have used outdoor GIS at BC Hydro– one of the early versions was installed at HSY. It had some issues but nothing related to being outside.
We have also installed pieces of outdoor GIS recently, except that we call it hybrid breakers instead of outdoor GIS. We have that at Ingledow and Meridian in the 500 KV yard, and a new 230kv one at Camosun. We also have a small 138 KV GIS installation at Douglas Rd.

I would say that the opinions from the equipment team are mixed. An analogy would be whether you park a car on the street or park a car in the garage. If your card never leaves the garage, you would expect that it will last longer without the exposure from the elements. But it doesn't mean that you should not have a car that drives on the street.

As recently as yesterday, there is discussion about outdoor GIS as a possibility for use at Lougheed substation and Scott Rd. substation. That application is different than the ones above. It is potentially a very small footprint. The importance factor of the switch yard is lower in that a grid level station. And it is small enough that if the GIS needed to be disassembled, scaffolding and shrink wrapping can be applied to provide a clean work environment. Since it is outdoor, a mobile crane can reach everything pretty easily.

CIGRE reports that there are three times more problems with outdoor GIS than indoor GIS. That number came from their published reports on reliability. However, three times a very small number is still a small number.

And we have to consider whether the risk would outweigh the advantages of a small footprint. I am generally supportive of the idea.

I note that a small indoor 60 kV GIS in a building has almost the same footprint as an 60kv air insulated compact structure such as Newell, so it is less compelling. However an outdoor GIS would still have to be some distance from the fenceline, while a building could be at the edge of the property.

I will loop in Arthur in this conversation.

From: Chwaklinski, David <David.Chwaklinski@bchydro.com>
Sent: 2024, March 07 4:20 PM
To: Zeng, Ken <Ken.Zeng@bchydro.com>; Jiang, Kally <Kally.Jiang@bchydro.com>
Cc: Fajber, William <Will.Fajber@bchydro.com>; Chwaklinski, David <David.Chwaklinski@bchydro.com>
Subject: Willoughby/Campbell heights Substation Layouts

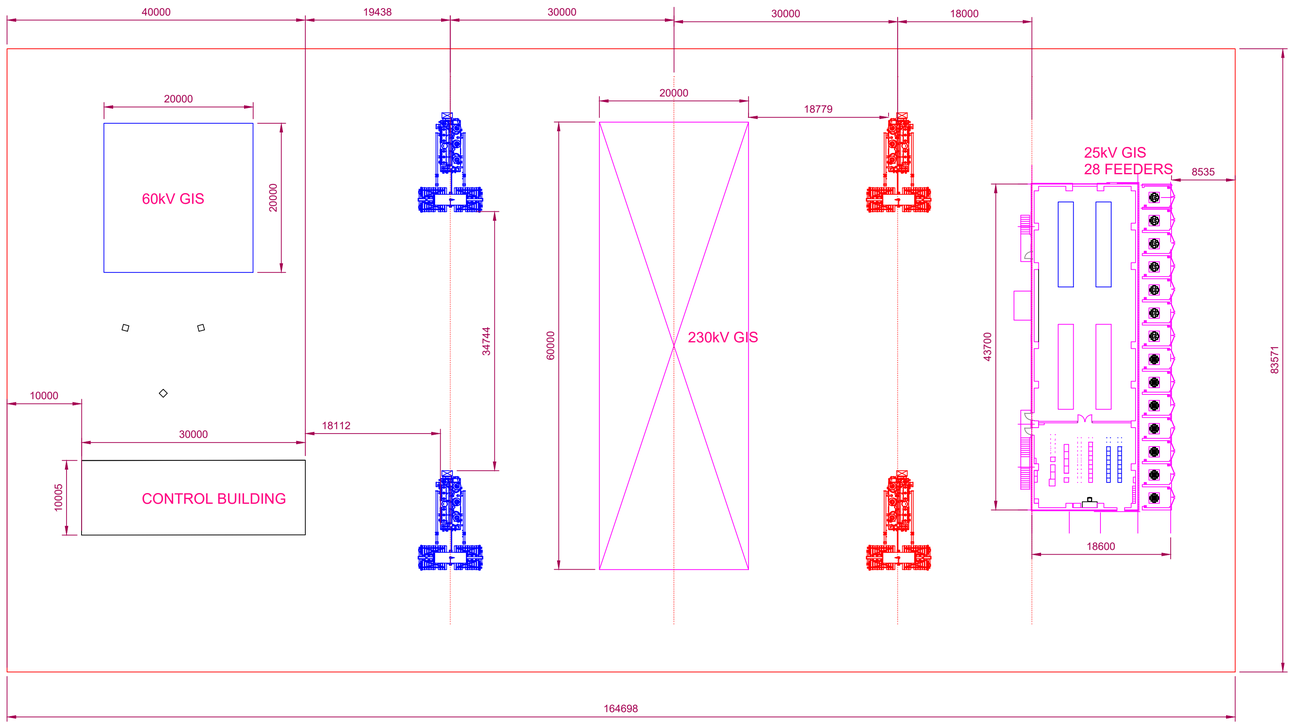
Ken and Kally, in a meeting with Township of Langley today they noted that properties suitable for a full outdoor station are few and far between, I am wondering if there is a middle ground between a full outdoor station and an indoor station. Can you also consider what decrease in property sizes would be (if any) if we considered an outdoor GIS station. I will set up a meeting for next week to discuss in more detail. Which days do you come into the office. I think this meeting will be better face to face.

Will my recollection in talking to you some years ago is that we don't use outdoor GIS due to reliability. Im not sure If that is correct but if you could comment on it I would appreciate it.

David Chwaklinski, P. Eng., FEC., PMP | Project Engineer Specialist
Lines and Interconnections

BC Hydro
6911 Southpoint Drive, E08
Burnaby, BC V3N 4X8

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E david.chwaklinski@bchydro.com



NOTES:

1. GATES TO BE INSTALLED AS FIT BASED ON SITE ORIENTATION.
2. IF FACILITY IS PLACED ON A SLOPED SITE ADDTIONAL SPATIAL REQUIREMENT WILL BE REQUIRED EFFECTIVELY MAKING THE FACILITY FOOTPRINT LARGER DEPENDINGON THE SLOP REQUIREMENT.
3. DITCH AND DRAINAGE SPACE REQUIREMENT IS NOT CONSIDERED AND IT SHOULD BE DESIGNED BY CIVIL.
4. GROUND GRID WILL BE INSTALLED 1 m BEYOND THE FENCE LINE AND COVER ALL GATE SWING AREAS.
5. DISTRIBUTION MANHOLE LOCATION IS NOT CONSIDERED AT THIS DESIGN STAGE

COLOR CODE FOR SCOPE OF WORK:
RED: THIS PROJECT
DARK/BLUE: FUTURE

FOR DISCUSSION PURPOSES ONLY

SCALE: 1:1 — 0 — 50mm

ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS OTHERWISE SHOWN

REFERENCE DRAWINGS

NO	REMARKS

REVISIONS

DESIGN NUMBER	
WORK ORDER NUMBER	
CSA S250 ACCURACY NAD - UTM	
BASE ACCURACY LEVEL:	
ASB ACCURACY LEVEL:	

DSGN	K. Zeng
INDEP CHK	
DFTG	K. Zeng
DFTG CHK	
INSP	
REV	K. JIANG
ACPT	

BC Hydro

CAMPBELL HEIGHTS SUBSTATION

230/60/25 KV SWITCHYARD
ULTIMATE LAYOUT ALL GIS-INDOOR

DATE	DIST	DRAWING NUMBER	REPORT NUMBER	FIG NO	SIZE	REV
2024MAR07		CAMP-002-E05-SK003B			D	0A

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\\bchydro.adroot.bchydro.bc.ca\DATA\Engineering\Transmission\Stations\Projects\TM-0539\Campbell Heights and Willoughby\CAMP-E05-SK003\[2024-03-05_OneLine]~Tight_RGB.dwg
Drawing Unit = Metric (4)
Plotted: 5 Mar 2024 - 4:05 PM

From: Wong, Felix
Sent: 2024, January 18 5:20 PM
To: Chwaklinski, David
Subject: Fwd: Willoughby and Campbell Heights PA - 200 MVa or 400 MVa

FYI

Begin forwarded message:

> **From:** "Lin, Lynn" <Lynn.Lin@bchydro.com>
> **Date:** January 18, 2024 at 5:10:16 PM PST
> **To:** "Wong, Felix" <Felix.Wong2@bchydro.com>
> **Cc:** "Parmar, Surinder" <Surinder.Parmar@bchydro.com>, "Pradhan, Anil" <Anil.Pradhan@bchydro.com>
> **Subject: FW: Willoughby and Campbell Heights PA - 200 MVa or 400 MVa**
>
> Hi Felix,
>
> Campbell Heights Substation (CBS) and Willoughby Substation (WIB) are both outdoor 230/25kV substations with an ultimate capacity of 200MVA. The SNs for these two property purchase projects are SN5080 and SN5096. Please refer to the SNs for ultimate one lines and detailed requirements. The SNs will be issued soon.
>
> Thanks,
>
> Lynn
>
> ---
>
> **From:** Wong, Felix <Felix.Wong2@bchydro.com>
> **Sent:** 2024, January 18 4:43 PM
> **To:** Lin, Lynn <Lynn.Lin@bchydro.com>
> **Cc:** Parmar, Surinder <Surinder.Parmar@bchydro.com>
> **Subject:** Willoughby and Campbell Heights PA - 200 MVa or 400 MVa
>
> Good Afternoon
>
> During our project meeting today our Project engineer brought up a question about both Wiloughby and Campbell Heights substations.
> Can I get a confirmation that we are still expecting them to be 200MWa stations and not 400MWa stations?

It will be extremely difficult to take this unknown into the next phase.

Based on some of our evaluation there is a lot that will skew the search and even the approach for both indoor or outdoor based on the available properties.

Can you and your team please confirm?
Thanks for your time and help

Felix Wong
Project Manager
Generation Project Delivery

BC Hydro
6911 Southpoint Drive, B02
Burnaby, B.C. V3N 4X8

Office: 604.528.2641
Mobile: 604.828.7199
Fax: 604.528.2635
Email: felix.wong2@bchydro.com

bchydro.com

From: Chwaklinski, David <David.Chwaklinski@bchydro.com>
Sent: 2024, January 18 4:12 PM
To: Wong, Felix <Felix.Wong2@bchydro.com>; Simpson, Lauren <Lauren.Simpson@bchydro.com>
Cc: Armstrong, Tyler <Tyler.Armstrong@bchydro.com>; Lee, Johnson <Johnson.Lee@bchydro.com>; Chwaklinski, David <David.Chwaklinski@bchydro.com>
Subject: Willoughby and Campbell Heights PA - 200 MVa or 400 MVa

Hi Felix as I noted in our meeting today, Ajitpal told me that Planning is suggesting that they may require Surrey Central to be a 400 MVa station as opposed to a 200 MVa station. I am wondering if this same requirement may be put on the Willoughby or Campbell Heights stations. If there is any consideration to make either station a 400 MVa station, now is the time to factor that into our property search. Based on the 4 line positions Planning has requested they may be unconsciously backdoor planning for an ultimate 400 MVa station. Based on the current one line (4 line positions) the additional property requirements may not need be more than 25% to 40% larger than our current search. We will need Electrical to confirm that based on a one line, however.

Another consideration is will we consider indoor stations for these two? Based on what we heard from Tyler a lot of the area we are looking at is designated for housing and Langley and surrey are probably going to ask for indoor stations. I don't have any hard data on the difference

between and outdoor vs an indoor station but I would suggest that discounting land costs it could be a as much as a $200 million dollar premium for a 400 MVa station and not that much less for 200 MVa.

We can ask the estimating team for some base information on this if you need that data.

If you can confirm one way or the other if we need to plan for 400 MVa and Indoor station that would be appreciated. I can then discuss with electrical for new layouts.

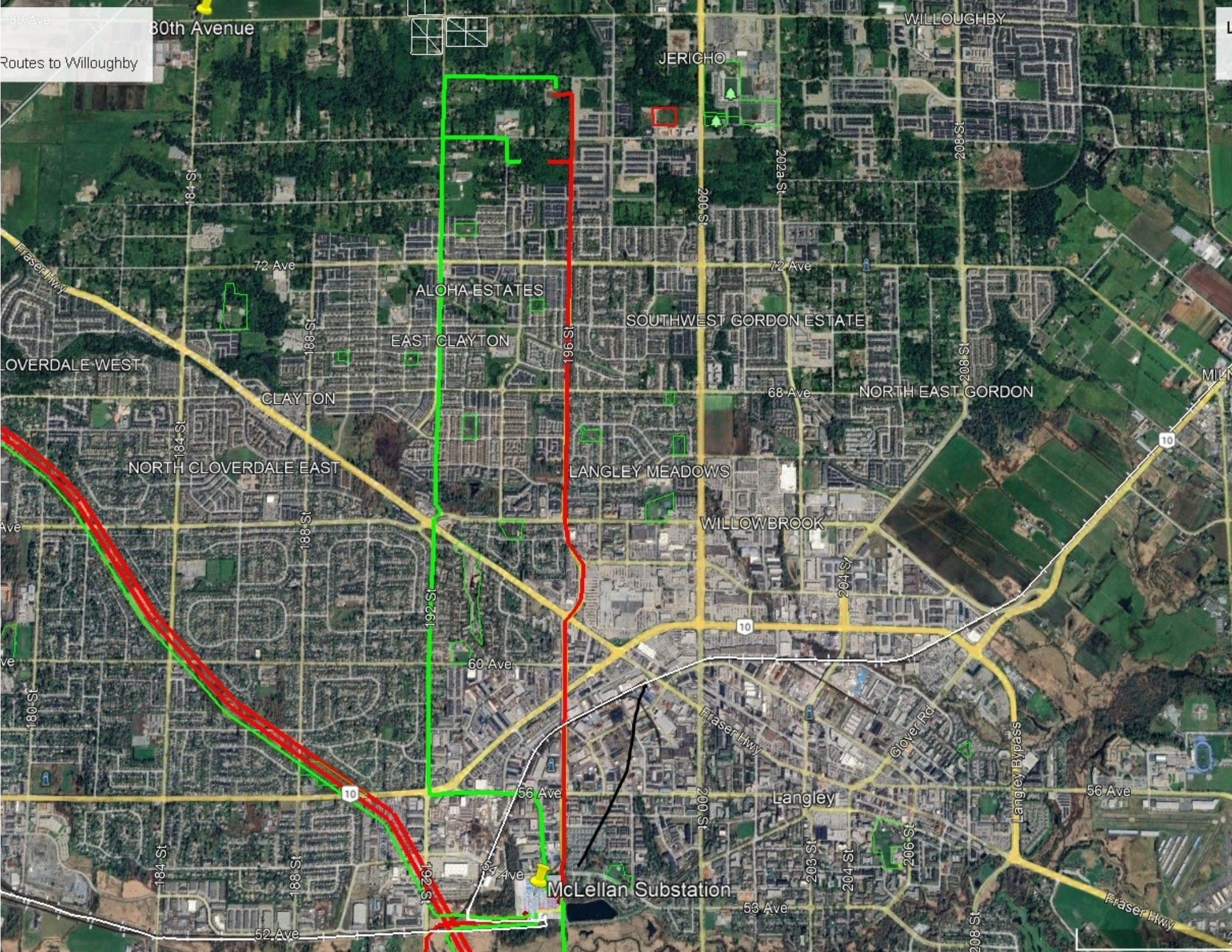
I will finalize my work package by adding in some $ for Survey and photogrammetry to develop contour mapping of our three or for preferred sites for the next stage.

Let me know if you have any other questions or concerns. Thanks

David Chwaklinski, P. Eng., FEC., PMP | Project Engineer Specialist
Lines and Interconnections

BC Hydro
6911 Southpoint Drive, E08
Burnaby, BC V3N 4X8

M 778 833 3740
E david.chwaklinski@bchydro.com


Routes to Willoughby
80 Ave
30th Avenue
JERICHO
WILLOUGHBY
184 St
202a St
200 St
208 St
Fraser Hwy
72 Ave
ALOHA ESTATES
SOUTHWEST GORDON ESTATE
EAST CLAYTON
188 St
196 St
LOVERDALE WEST
CLAYTON
68 Ave
NORTH EAST GORDON
NORTH CLOVERDALE EAST
LANGLEY MEADOWS
WILLOWBROOK
192 St
204 St
60 Ave
180 St
10
Glover Rd
Langley Bypass
56 Ave
Langley
206 St
203 St
McLellan Substation
53 Ave
52 Ave

From: Chwaklinski, David
Sent: 2024, September 18 10:25 AM
To: Fajber, William; Balea, Marian; Stewart, Dennis
Cc: Chwaklinski, David
Subject: Potential Senior review of a Willoughby substation layout.
Attachments: WIB-E05-SK006-Op2-Outdoor AIS-To Fit Bosa+Kang Properties-20240916.pdf; WIB-E05-SK006-Op1-Outdoor AIS-To Fit Bosa+Kang Properties-20240916.pdf; WIB-E05-SK004-Outdoor 230 +GIS 60n25-To Fit Bosa Property-20240719.pdf; Bosa_Kang_Property.pdf

Gentlemen, we are working on Layouts for the Willoughby Substation and we have run into a small problem. Senior management made a decision to purchase a property before engineering had completed a review to determine if it was viable. We need to determine if it is feasible to construct a station on the Bosa properties alone (7528 and 7507 in the attached Bosa_Kang pdf) or do we need to purchase the Kang property as well to make it work. We know that if we use part of the Bosa property and the Kang property we can make it work although there would be egress issues for distribution (see SK006-Op1). We can make partial use of all the properties (See SK006_Op2) but it is not efficient use of space. So now management wants to know if we can avoid purchasing the Kang property and we need to revisit SK004 and rework it using cables and other methods to get T/L in and D/L out. Kally is currently doing this but is insisting a Senior Peer review. I agree a peer review is necessary, but I am hoping to avoid a major review exercise as we are only trying to determine if it is possible at this time. I don't want to interfere with your prerogative of senior review but as Kally is very focused on the standard layout SK006 Op1 I want to make sure that you understand what I am trying to accomplish when she asks for your input. If you have any questions or concerns, please let me know. Thanks.

Ps if I have crossed the line here please accept my apologies, as I said I am not trying to interfere in your role but to make sure we are doing the appropriate level of work at the appropriate time

David Chwaklinski, P. Eng., FEC., PMP | Project Engineer Specialist
Lines and Interconnections

BC Hydro
6911 Southpoint Drive, E08
Burnaby, BC V3N 4X8

M 778 833 3740
E david.chwaklinski@bchydro.com

From: Chwaklinski, David
Sent: 2024, October 07 10:52 AM
To: Lee, Dylan
Cc: Chwaklinski, David
Subject: Preparing for Confirmatory Geotechnical Investigation for Willoughby Substation
Attachments: Bosa_Kang_Kool_properties.pdf

Hi Dylan, just got off the weekly project call for Willoughby. The PM tells me that there is a tentative sale agreement for the Bosa properties, and they are working on negotiating with two other properties adjacent to the Bosa properties. As part of our due diligence the PM wants to conduct a confirmatory investigation on all the properties. I understand that once the conditional agreement is signed BCH has 90 days, plus a 30 day extension to make a decision. It is expected that the agreement with Bosa may be signed as early as this week but more likely at the end of the month. Given that can you begin looking into a scope of work for a confirmatory Investigation with the possibility of adding work at the other two properties should a conditional agreement be signed in close order? The Bosa properties are

7507 196 street and 7528 194 street Surrey
PID: 012-828-670, 012-828-696
The other properties are:
Kang
7451 196th St. Surrey
PID: 012-828-661

Kool
7468 194 St Surrey
PID: 001-787-993

I have included an excerpt of the COSMOS mapping system showing the area.

Have a look and then we should discuss our options.

David Chwaklinski, P. Eng., FEC., PMP | Project Engineer Specialist
Lines and Interconnections

BC Hydro
6911 Southpoint Drive, E08
Burnaby, BC V3N 4X8

M 778 833 3740
E david.chwaklinski@bchydro.com

From: Zhang, Fan
Sent: 2024, February 22 9:21 AM
To: Lin, Lynn; Pradhan, Anil; Zou, Ming; Shafi, Shehzad; Kwan, John
Cc: Guite, Mike; Burt, Ed
Subject: RE: Follow up: Willoughby and Campbell Height transmission interconnection
Attachments: RE: Campbell Heights and Willoughby Substations

Hi Everyone,

Thank you for your attendance. Please see my notes for our meeting from February 15th, 2024.

Topic 1: MLN Substation fourth 230 kV circuit

- The team discussed the attached email. There are three 230 kV line positions in the one-line that are independent. A fourth 230 kV line position that would be shared with a transformer.
- The location marked by the blue circle would be acceptable to Transmission Planning on the condition that BCH will not be installing MLN T4.
- Currently no need has been identified to install MLN T4, based on current forecasts or on current placemat projects.
- The team agrees that since there's no current need for MLN T4, we can place the fourth 230 kV line position at the blue circle. We assume MLN T4 will not be installed. This would be the high-level transmission solution to interconnect Willoughby and Campbell Heights Substations with N-1 transmission supply.
- Once the fourth 230 kV line position is allocated at the blue circle, it will not be possible to upgrade MLN Substation to include MLN T4. The (230 kV portion of the) substation will have reached its ultimate size.
- The team discussed the four 230 kV circuits that will be allocated for Willoughby and Campbell Heights Substations. The team agrees that the transmission circuits will be positioned such that no single breaker failure would result in loss of both circuits to a substation (e.g., no single breaker failure will result in the loss of both 230 kV circuits to Willoughby Substation). The team agrees that the transmission circuits can be positioned such that a single breaker failure would result in loss of one circuit to both substations (e.g., a single breaker failure results in the loss of one 230 kV circuit to Willoughby and one 230 kV circuit to Campbell Heights).
- The team agrees that Stations Planning and Transmission Planning will issue their scope notes at the same time. Drafts will be sent to each other for comment prior to issuing scope note.
- Stations Planning scope note is already in draft.
- At this stage, the team would request planning allowance based on the underground option (expected to be the costlier option).

Topic 2: Property for the future Willoughby and Campbell Height Substations

- At this time, the plan for Willoughby and Campbell Height Substation does not include a 60 kV switchyard.
- Properties is currently looking at land for these two substations.
- The team discussed if we should ask Properties to also look at land that is large enough to fit a 60 kV switchyard at both substations.
- It is challenging to determine how much land a 60 kV switchyard would require at Willoughby and Campbell Heights Substations without creating a new one-line, which will be a lot of effort.
- The team agrees that we will need to bring Ajay into this discussion to endorse the idea. (Post-meeting update: this idea was discussed with Ajay and he does agree that we should bring forward the option for 60 kV).

- Stations Planning will submit the update to CIPD to include the station property size requirements that would allow future 60 kV service at the Willoughby and Campbell Heights Substations. The request is also to update the station property selection Structured Decision Making Matrix, with the ability to accommodate future 60 kV service being one of the selection criteria identified by CIPD.

Please let me know if there's anything you'd like to add or correct.

Thank you,
Fan

Fan Zhang
Transmission Planning

BC Hydro
Edmonds A03
Smart about power in all we do.

-----Original Appointment-----
From: Zhang, Fan
Sent: 2024, February 13 12:53 PM
To: Zhang, Fan; Lin, Lynn; Pradhan, Anil; Zou, Ming; Shafi, Shehzad; Kwan, John
Cc: Guite, Mike; Burt, Ed
Subject: Follow up: Willoughby and Campbell Height transmission interconnection
When: 2024, February 15 2:30 PM-3:30 PM (UTC-08:00) Pacific Time (US & Canada).
Where: EDMA03, Mtg Rm 1 -Teams Room

Hi Everyone,

I set up this meeting to discuss Transmission Planning's comments on the 3 line terminals at MLN.

Thank you,
Fan

Fan Zhang
Transmission Planning

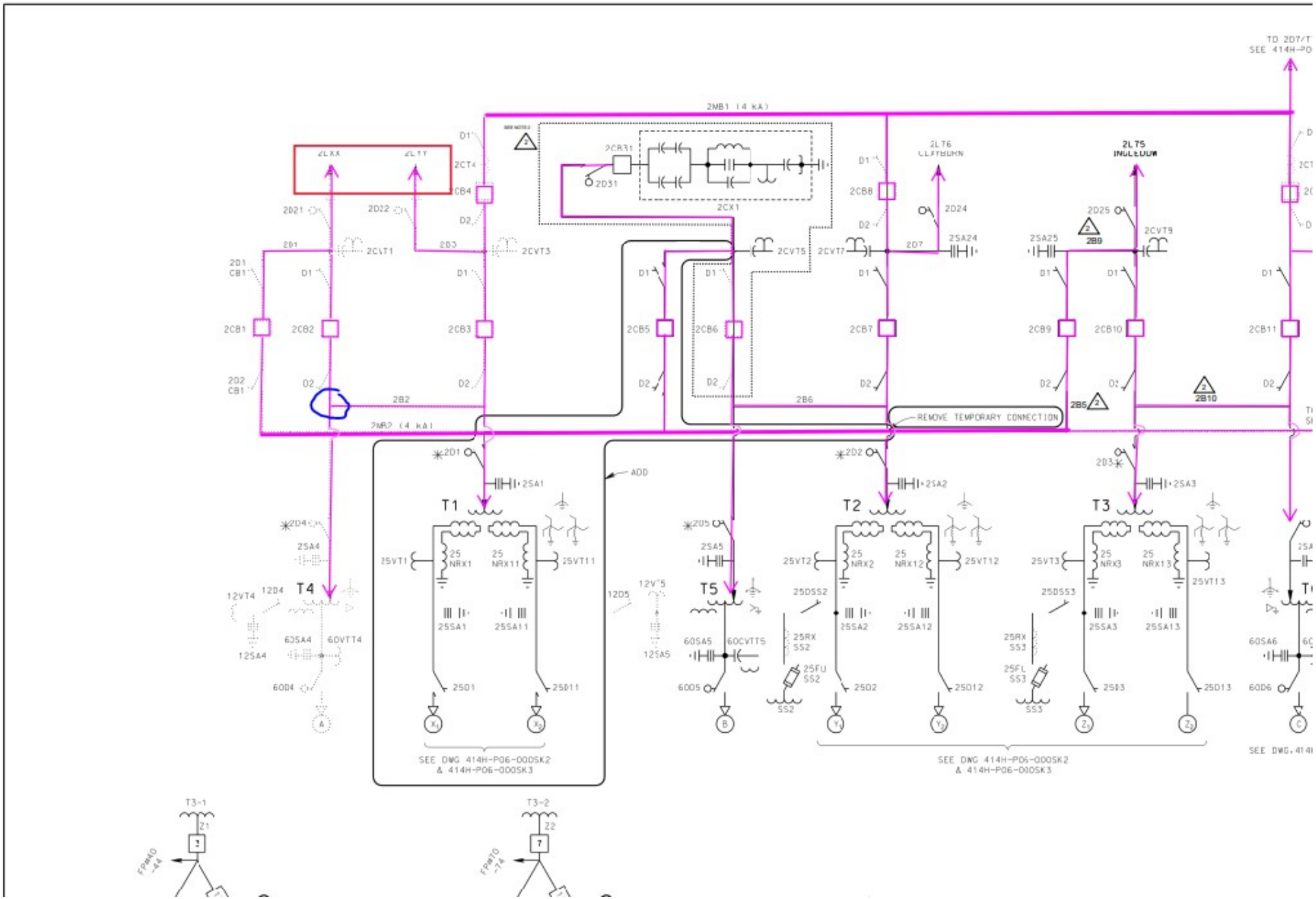
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Edmonds A03
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From: Zhang, Fan
Sent: 2024, February 14 11:45 AM
To: Lin, Lynn
Cc: Zou, Ming; Kwan, John; Shafi, Shehzad
Subject: RE: Campbell Heights and Willoughby Substations

Hi Lynn,

We took a look at the one-line you sent us. Does Stations Planning have any plans for MLN T4?

We are considering having the fourth 230 kV circuit where MLN T4 is located (blue circle), but that assumes BCH has no plans to put in MLN T4. What are your thoughts?



Thank you,
Fan

Fan Zhang
Transmission Planning

BC Hydro
Edmonds A03
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From: Lin, Lynn <Lynn.Lin@bchydro.com>
Sent: 2024, February 13 9:54 AM
To: Kwan, John <John.Kwan@bchydro.com>
Cc: Zhang, Fan <Fan.Zhang@bchydro.com>
Subject: FW: Campbell Heights and Willoughby Substations

Hi John,

Please see the MLN one line attached for your reference.

Thanks,

Lynn

From: Lin, Lynn
Sent: 2024, February 13 9:52 AM
To: Pradhan, Anil <Anil.Pradhan@bchydro.com>; Guite, Mike <Mike.Guite@bchydro.com>; Burt, Ed <Ed.Burt@bchydro.com>; Zhang, Fan <Fan.Zhang@bchydro.com>; Shafi, Shehzad <Shehzad.Shafi@bchydro.com>
Cc: Zou, Ming <Ming.Zou@bchydro.com>
Subject: RE: Campbell Heights and Willoughby Substations

Hi all,

Thanks for attending the meeting and sharing your valuable opinions. The brief summary of the meeting discussion regarding the Campbell Heights and Willoughby Substations construction projects is as follows:

1. Up to three 230kV line positions can be added at MLN. please see the MLN one line sketch attached. TP will study the transmission solution for Campbell Heights Substation and Willoughby Substation and inform SP. Fan will provide the timeline of the study after the meeting.
2. The construction of transmission lines/cables supplying Campbell Heights Substation and Willoughby Substation will not be included in the work scope of the Campbell Heights Substation construction project and the Willoughby Substation construction project.

3. Expansion of MLN will be necessary and included in the Campbell Heights Substation construction project if additional 230kV line positions are added at MLN to supply Campbell Heights Substation and Willoughby Substation, as requested by TP.

Please feel free to add your comments.

Thanks,

Lynn
-----Original Appointment-----
From: Lin, Lynn
Sent: 2024, January 25 3:55 PM
To: Lin, Lynn; Pradhan, Anil; Guite, Mike; Burt, Ed; Zhang, Fan; Zou, Ming
Cc: Shafi, Shehzad
Subject: Campbell Heights and Willoughby Substations
When: 2024, February 07 9:30 AM-11:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: EDMB02, Meeting Room 5

Hi all,

I would like to invite you to a meeting that has been called to discuss the transmission solution for Campbell Heights Substation (CBS) and Willoughby Substation (WIB), along with related topics.

Thanks,

Lynn

From: Pradhan, Anil <Anil.Pradhan@bchydro.com>
Sent: 2024, January 24 3:29 PM
To: Guite, Mike <Mike.Guite@bchydro.com>; Burt, Ed <Ed.Burt@bchydro.com>
Cc: Zou, Ming <Ming.Zou@bchydro.com>; Lin, Lynn <Lynn.Lin@bchydro.com>; Zhang, Fan <Fan.Zhang@bchydro.com>
Subject: RE: Campbell Heights and Willoughby Substations

Hi Mike:

Thank you for your response. I will organize a meeting to discuss further on this topic. SGS stands for Stations Growth and Sustainment, it's our department name led by Ed Burt. Thanks.

Regards,

Anil

From: Guite, Mike <Mike.Guite@bchydro.com>
Sent: 2024, January 24 2:49 PM
To: Pradhan, Anil <Anil.Pradhan@bchydro.com>; Burt, Ed <Ed.Burt@bchydro.com>
Cc: Zou, Ming <Ming.Zou@bchydro.com>; Lin, Lynn <Lynn.Lin@bchydro.com>; Zhang, Fan <Fan.Zhang@bchydro.com>
Subject: RE: Campbell Heights and Willoughby Substations

Thanks Anil,

Please go ahead and book some time with us to discuss the Langley/Surrey plan in greater detail. My outlook calendar is up-to-date.

With today's announcement from the BCUC rejecting the Lower Mainland Reactive Power Project we may have some of our area plans also having to change, and could impact our plans here also.

I have a few comments/questions:

- Yes, I agree we have to update Copperleaf and the Investment Summary to include the transmission component to each of the substation plans. I'm unclear why we would want to raise these as separate projects, because one without the other would not make any sense. Precedent from prior projects is that a new substation project includes the transmission to interconnect that substation.

- Do we have the prospective station locations for both Campbell Heights and for Willoughby? I'm not clear on how you arrived at the 22km distance. We can help look at prospective costs to factor in to the site selection decision making. I agree that if we can select sites that are closer to McLellan we will save considerable transmission costs; once we see the proposed sites we can offer some additional feedback and this can be weighed against the other site selection factors.

- These almost certainly will be underground cables. The Project Delivery cost estimates for 230kV cables back in 2019 was at $9.6M/km (2L146); however this has grown on our 2L51 partial replacement project to $20M/km (but we don't expect it will go that high for these greenfield projects). For reference when we build VCCT we were at $5M/km, and that included drilling under False Creek and the Mount Pleasant Sub interconnection costs.

- I tend to agree that a stronger system design would be to supply the new stations from the McLellan bus, especially seeing as we plan to add the 500kV step-down also. We would likely run into system loading issues trying to loop these off 2L76; that former 360kV line from Rosedale to Ingledow is already heavily chopped and loaded; we will create future problems for ourselves if we keep trying to hang more load off it. Some diagrams of ultimate station layout would be helpful.

- Sorry, I don't know what the SGS stands for… is that the code for one of the proposed new substations?

Regards,
Mike

From: Pradhan, Anil <Anil.Pradhan@bchydro.com>
Sent: 2024, January 24 2:01 PM
To: Burt, Ed <Ed.Burt@bchydro.com>; Guite, Mike <Mike.Guite@bchydro.com>
Cc: Zou, Ming <Ming.Zou@bchydro.com>; Lin, Lynn <Lynn.Lin@bchydro.com>; Zhang, Fan <Fan.Zhang@bchydro.com>
Subject: Campbell Heights and Willoughby Substations

Hi Ed/Mike:

As you know we are working Campbell Heights and Willoughby 230/25kV, 200MVA substations in Langley area. The ISD is in F2032. They also have transmission components. In order to coordinate among us (SP &TP) we had a meeting this morning and following is the summary.

1. During Placemat session there was an understanding that these 2 substations will get 230kV supply by looping in 2L76. However, now, considering the locations of the substations TP has requested SP to consider supply from MLN. It requires 4 line positions in MLN 230kV bus and substation extension. **SP is looking into its feasibility. It will also increase the stations scope and cost.**
2. In the SGS capital plan, only cost of the stations scope has been included considering there will be separate transmission projects to connect these stations- this was an understanding during Placemat session. Now, we found that there is no separate transmission line projects in capital plan to connect these two stations. **This issue needs to be discussed and resolved as soon as possible.**

If we connect these stations with 230kV cables (~22km), the transmission cost will be substantially more than the substation cost. Please suggest how we can move forward. Thanks.

Regards,

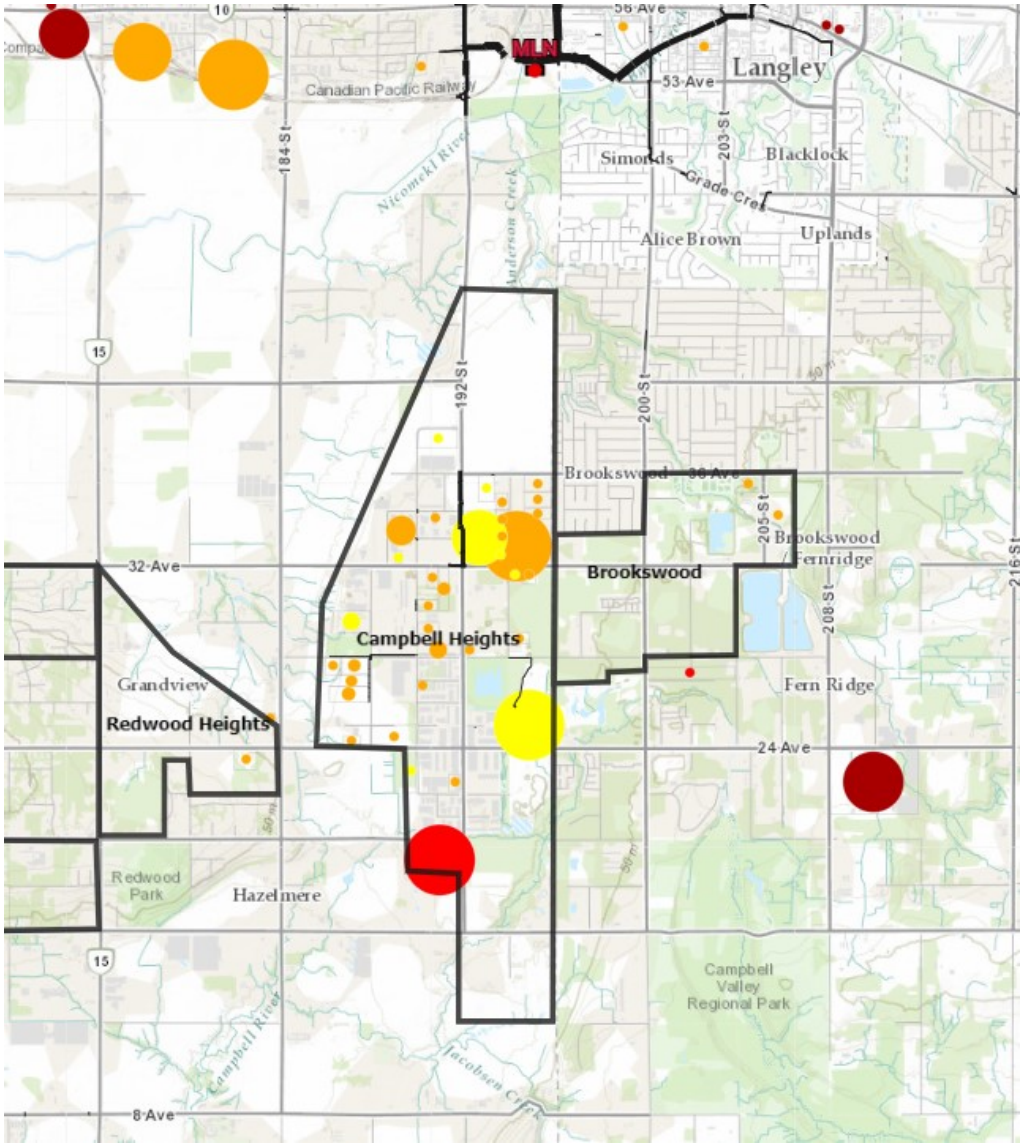
Anil

From: Manurung, Cynthia
Sent: 2023, December 05 5:13 PM
To: Chwaklinski, David
Cc: Ellis, Aaron
Subject: RE: Load growth Mapping for Campbell Heights/Willoughby

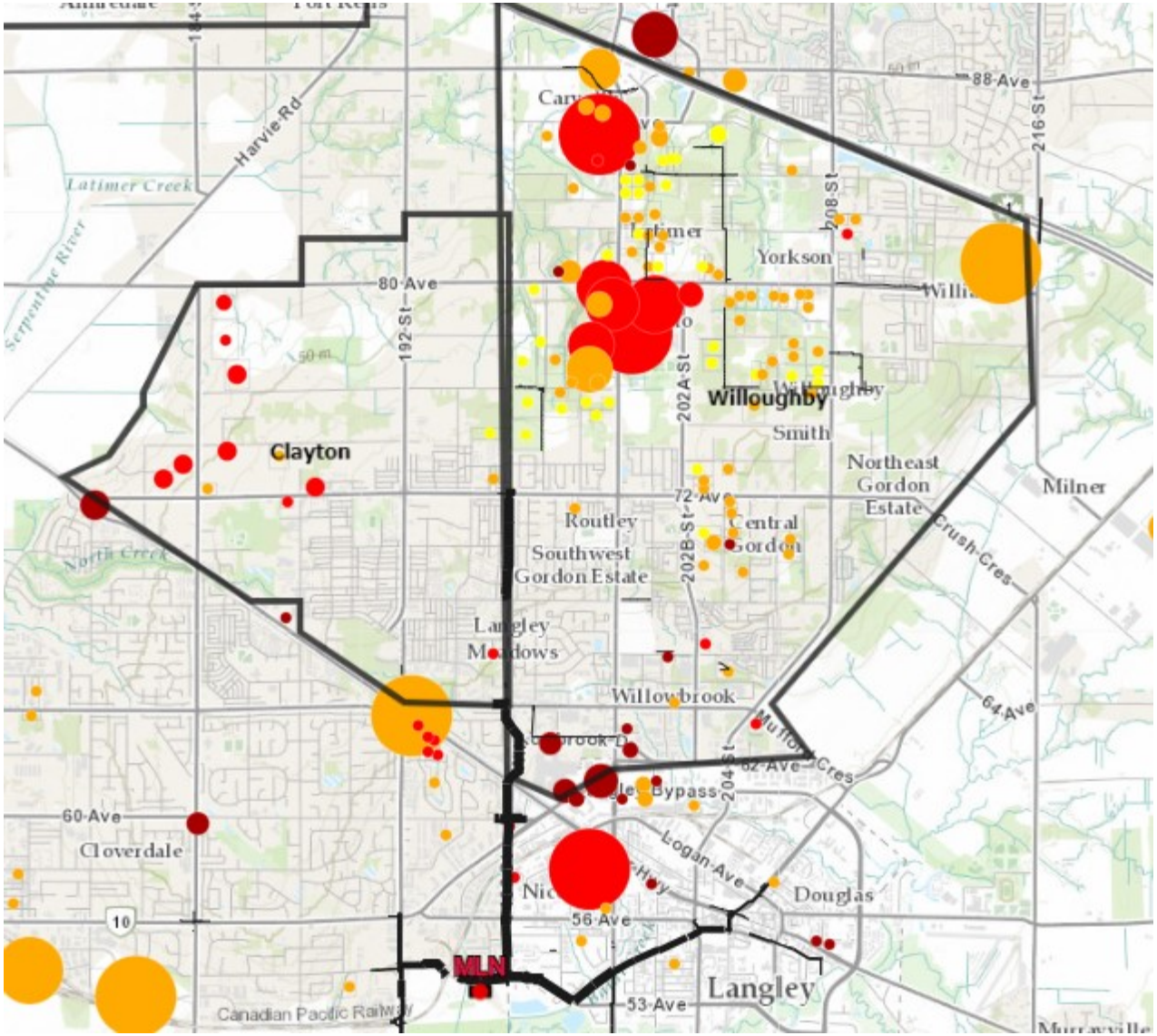
Hi David,

196 St is the border between Surrey and Langley. Campbell Heights neighborhood is within City of Surrey jurisdiction.

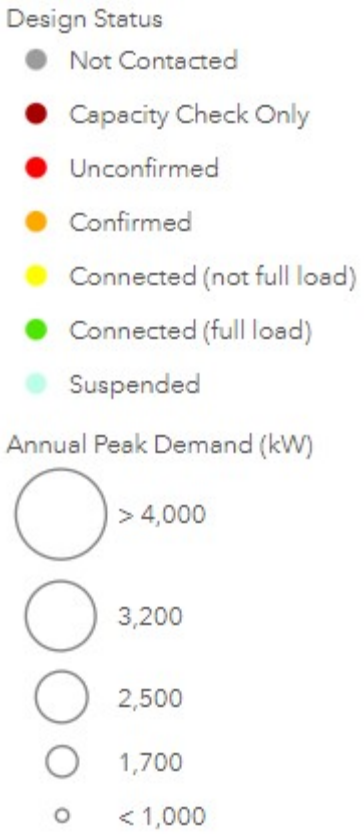
- Campbell Heights (CBM) substation service area is planned to support growth in Campbell Heights, Brookswood, and support Redwood Heights.



- Willoughby (WLB) substation service area is planned to support growth in Willoughby and Clayton


Harvie Rd
Latimer Creek
Serpentine River
88 Ave
216 St
208 St
Latimer
Yorkson
80 Ave
192 St
202A St
Willoughby
Smith
Clayton
Northeast Gordon Estate
Milner
72 Ave
Routley
Southwest Gordon Estate
202B St
Central Gordon
Crush Cres
North Creek
Langley Meadows
Willowbrook
64 Ave
Mufford Cres
62 Ave
204 St
Bypass
60 Ave
Cloverdale
Logan Ave
Douglas
10
56 Ave
MLN
Langley
53 Ave
Canadian Pacific Railway

Legend:



Cynthia Manurung, P.Eng
Regional Distribution Planner – Surrey/Langley/White Rock

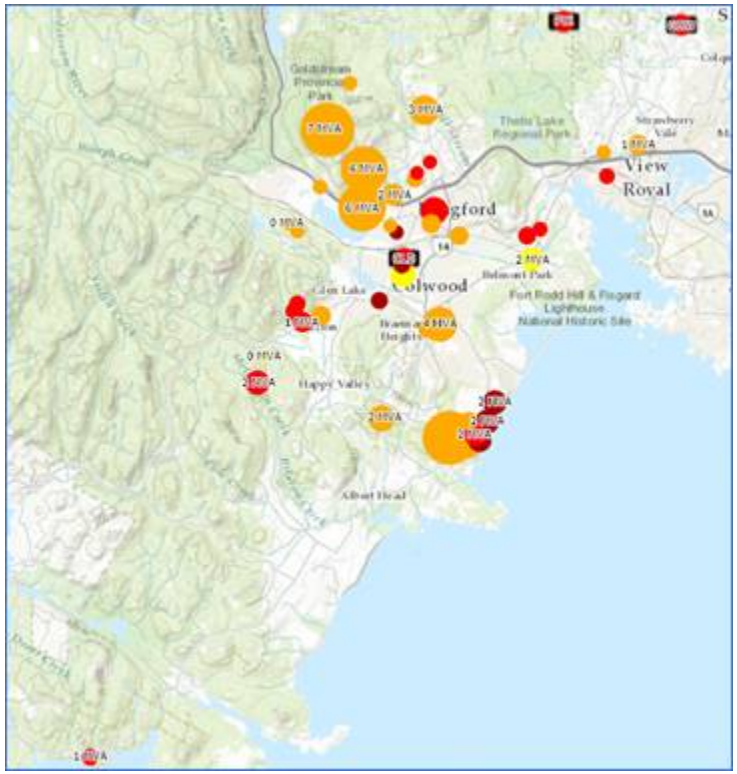
M 604 812 4322

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From: Chwaklinski, David <David.Chwaklinski@bchydro.com>
Sent: 2023, December 05 11:26 AM
To: Manurung, Cynthia <Cynthia.Manurung@bchydro.com>
Cc: Ellis, Aaron <Aaron.Ellis@bchydro.com>
Subject: Load growth Mapping for Campbell Heights/Willoughby

Good Morning Cynthia, I am the PE for the New Willoughby and Campbell Heights substations and I am coming to you as you are shown as the FV West Distribution planner. If this is not the case could you let me know who I should be talking to?

This morning a question came up related to the siting of the stations and the projected load growth in the langley area. It was pointed out that while the Campbell Heights load growth information is noted to be in the Langley area the actual substation (Campbell Heights) is located in Surrey. This could cause some challenges in stakeholder engagement when we ultimately talk to Surrey about constructing the station along the lines of " why are you building in surrey when the load is in langley?". Is it possible to get a map of some sort showing the potential load growth in the both areas similar to the map below which is for Goldstream? This would make it much easier for us to conduct our stakeholder engagement if we can show that most of the load increase is on the Surrey side of the border.



If you could provide this for the Campbell Heights and Willoughby areas it would be very helpful. If you have any questions please give me a call. Thanks

David Chwaklinski, P. Eng., FEC., PMP | Project Engineer Specialist
Lines and Interconnection

BC Hydro
6911 Southpoint Drive, E08
Burnaby, BC V3N 4X8

M **778 833 3740**
E david.chwaklinski@bchydro.com

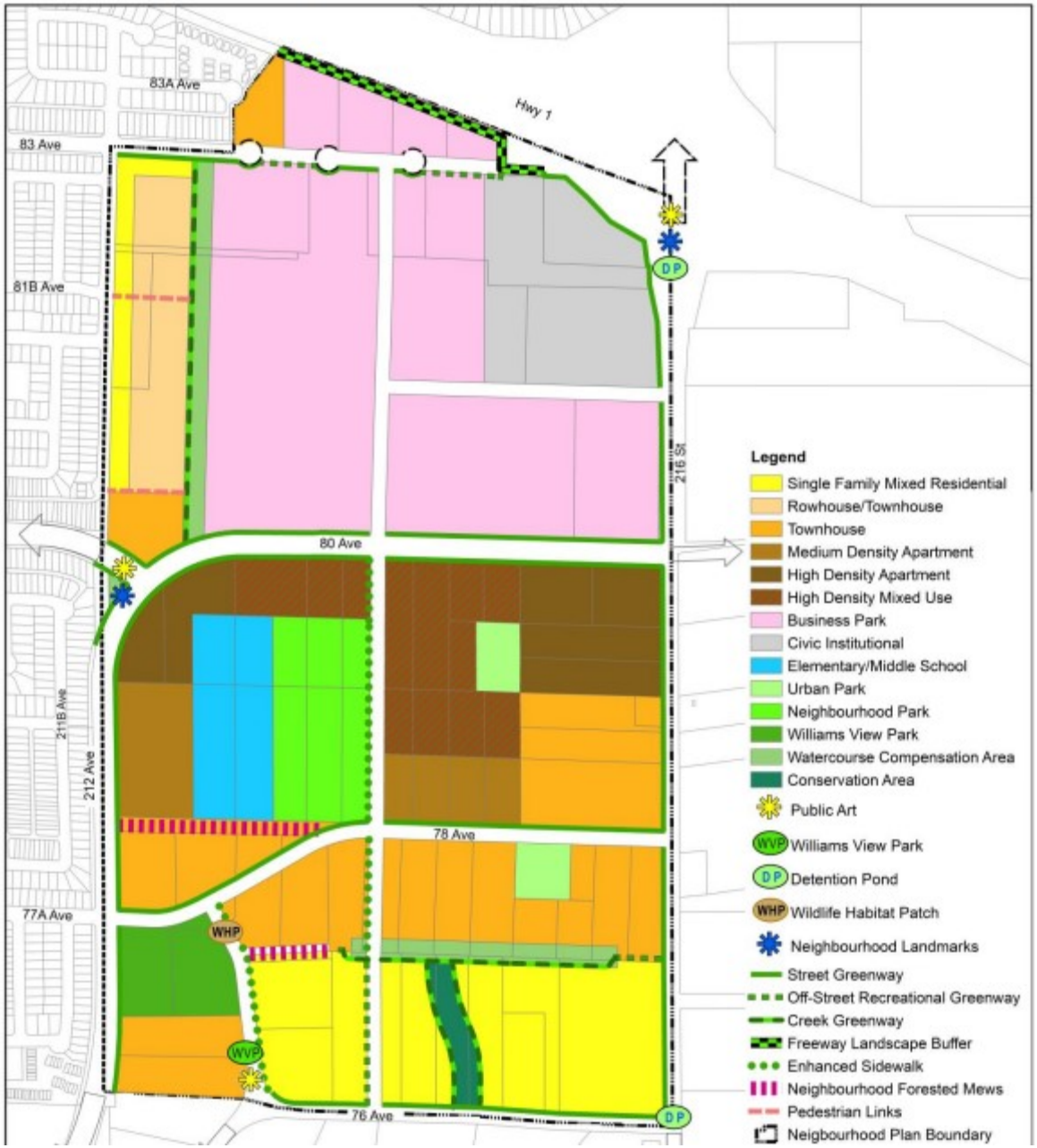
From: Nick Hosseinzadeh <nhosseinzadeh@tol.ca>
Sent: 2024, May 22 11:22 AM
To: Hepple, Robert
Cc: Sherevkulov, Dmitry; Chwaklinski, David
Subject: RE: [EXTERNAL] CONFIDENTIAL Willoughby Substation Site Alternatives

Don't click on links or open attachments unless you trust the sender and are expecting the link or attachment. If you suspect this message to be phishing, please report it by clicking the Report Message button in the Outlook toolbar and select "Phishing."

Hi Robert,

Thanks for sharing. The Township would strongly recommend against the site proposed. It is square in a neighbourhood plan that is currently going under revisions to increase densities. As outlined in the below chart, it would significantly compromise the neighbourhood plan, and would constitute a significant lost opportunity to provide housing stock. This plan is proceeding for final adoption this summer, as well.

Map 2 | Integrated Neighbourhood Concept



From: Hepple, Robert Robert.Hepple@bchydro.com
Sent: Wednesday, May 22, 2024 9:04 AM
To: Nick Hosseinzadeh
Cc: Sherevkulov, Dmitry ; Chwaklinski, David
Subject: [EXTERNAL] CONFIDENTIAL Willoughby Substation Site Alternatives

Hello Nick,
Attached are the sites under consideration.
Please treat this information as CONFIDENTIAL.
We need 12 acres close to the Willoughby area load.
Robert

Robert Hepple P.Eng.

Project Manager, Stations
Capital Infrastructure Project Delivery
BC Hydro
6911 Southpoint Drive, B02
C 925.967.5880
W 604.528.3433
E Robert.Hepple@BCHydro.com

Web: BCHydro.com

Smart about power in all we do.

From: Nick Hosseinzadeh <nhosseinzadeh@tol.ca>
Sent: 2024, May 21 3:01 PM
To: Hepple, Robert <Robert.Hepple@bchydro.com>
Subject: [External] Willoughby Substation

Hi Robert,

As per our conversation, if you can provide some detail of the addresses for the Willoughby potential locations that would be appreciated, in confidence, of course.

Nick Hosseinzadeh
Intergovernmental Relations

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From: Cormier, Matthew <MCormier@klohn.com>
Sent: 2025, January 31 1:36 PM
To: Matthew Brock; Lee, Dylan
Cc: Sherevkulov, Dmitry; Will Markey; Chwaklinski, David; Ryan Lowe
Subject: RE: [External] RE: Willoughby Substation Geotechnical Investigation - BOSA property
Attachments: Willoughby Substation Geotechnical Investigation 01302025.pdf

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Hi Matt,

See attached updated site investigation figure.

Thanks
Matt

Matthew Cormier, P.Eng.
Geological Engineer

Klohn Crippen Berger 500-2955 Virtual Way, Vancouver BC V5M 4X6, CANADA
T +1 604 251 8557 | C +1 778 229 9241 | mcormier@klohn.com | www.klohn.com

ISO 9001 ▪ ISO 14001 ▪ ISO 45001

If you have received this e-mail in error, please delete the original message.

From: Matthew Brock
Sent: January 30, 2025 2:07 PM
To: Cormier, Matthew ; Lee, Dylan
Cc: Sherevkulov, Dmitry ; Will Markey ; Chwaklinski, David ; Ryan Lowe
Subject: RE: [External] RE: Willoughby Substation Geotechnical Investigation - BOSA property

Matt, thanks for the update. Will let the tenant know of the schedule below.

I understand AH25-C may be moving based on attached. If so, can you please provide an updated site plan indicating the new location.

Best,

Matt

--
Matthew Brock
Director, Acquisitions
O: 604.299.1363 | C: 778.886.7440

From: Cormier, Matthew <MCormier@klohn.com>
Sent: Thursday, January 30, 2025 2:04 PM
To: Lee, Dylan <Dylan.Lee@bchydro.com>; Matthew Brock <mbrock@bosaproperties.com>
Cc: Sherevkulov, Dmitry <Dmitry.Sherevkulov@bchydro.com>; Will Markey <wmarkey@bosaproperties.com>; Chwaklinski, David <David.Chwaklinski@bchydro.com>; Ryan Lowe <rlowe@bosaproperties.com>
Subject: RE: [External] RE: Willoughby Substation Geotechnical Investigation - BOSA property

Hi Matt,

I realize I haven't responded with a time. I anticipate it will be around 2 pm on Feb 5th and we'll be around the whole day Feb 6th.

We are going to start with the hole on the other side of the property off of 196 St and then moving over to the adjacent property, and if we have time we'll drill AH25-C.

On Feb 6th, we are using hand tools so there shouldn't be any noise, but our staff will be walking in the woods around the property all day.

Thanks

Matt
Matthew Cormier, P.Eng.
Geological Engineer

Klohn Crippen Berger 500-2955 Virtual Way, Vancouver BC V5M 4X6, CANADA
T +1 604 251 8557 | C +1 778 229 9241 | mcormier@klohn.com | www.klohn.com

ISO 9001 ▪ ISO 14001 ▪ ISO 45001

If you have received this e-mail in error, please delete the original message.

From: Lee, Dylan <Dylan.Lee@bchydro.com>
Sent: January 22, 2025 4:28 PM
To: Matthew Brock <mbrock@bosaproperties.com>
Cc: Sherevkulov, Dmitry <Dmitry.Sherevkulov@bchydro.com>; Will Markey <wmarkey@bosaproperties.com>; Cormier, Matthew <MCormier@klohn.com>; Chwaklinski, David <David.Chwaklinski@bchydro.com>; Ryan Lowe <rlowe@bosaproperties.com>
Subject: RE: [External] RE: Willoughby Substation Geotechnical Investigation - BOSA property

Thanks Matt for getting back. Yup, Understood you are only commenting on the BOSA properties. We have engaged the owner owners for test holes outside BOSA's land.

Matt C., can you please let me know if you have a rough time when you will tackle the test hole (AH-25C) by the dwelling. I understand this one might be time dependent and we will probably save this for last.

Cheers
Dylan

_____

Dylan Lee, P. Eng. | Senior Geotechnical Engineer, Transmission Lines Engineering

BC Hydro
7th Floor - 6911 Southpoint Drive, A02
Burnaby, BC V3N 4X8

P 604 528 2318
M 604 809 2666
E dylan.lee@bchydro.com

bchydro.com

Smart about power in all we do.

From: Matthew Brock <mbrock@bosaproperties.com>
Sent: 2025, January 22 4:02 PM

To: Lee, Dylan <Dylan.Lee@bchydro.com>
Cc: Sherevkulov, Dmitry <Dmitry.Sherevkulov@bchydro.com>; Will Markey <wmarkey@bosaproperties.com>; Cormier, Matthew <MCormier@klohn.com>; Chwaklinski, David <David.Chwaklinski@bchydro.com>; Ryan Lowe <rlowe@bosaproperties.com>
Subject: [External] RE: Willoughby Substation Geotechnical Investigation - BOSA property

You don't often get email from mbrock@bosaproperties.com. Learn why this is important

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Dylan, confirming the dates for Feb 5 & 6. The tenant is curious on the schedule/times as they are trying to be absent for any loud periods.

Best,

Matt

--
Matthew Brock
Director, Acquisitions
O: 604.299.1363 | C: 778.886.7440

From: Matthew Brock
Sent: Monday, January 20, 2025 10:06 AM
To: Lee, Dylan <Dylan.Lee@bchydro.com>
Cc: Sherevkulov, Dmitry <Dmitry.Sherevkulov@bchydro.com>; Will Markey <wmarkey@bosaproperties.com>; Cormier, Matthew <MCormier@klohn.com>; Chwaklinski, David <David.Chwaklinski@bchydro.com>; Ryan Lowe <rlowe@bosaproperties.com>
Subject: RE: Willoughby Substation Geotechnical Investigation - BOSA property

Hi Dylan, nice to meet you.

Back to you shortly on confirmation for the dates but don’t anticipate any issues, and will confirm if we have any septic design drawings.

Just wanted to point out the plan shows the Bosa Properties lines in Red, but we only own the northern 2 lots at 7507 196th and 7528 194 st. The lots labeled ‘Walla’ and ‘Kool’ in the red outline are outside of our ownership, so we can’t sign off on those drill locations.

Best,

Matt

--
Matthew Brock
Director, Acquisitions
O: 604.299.1363 | C: 778.886.7440

From: Ryan Lowe <rlowe@bosaproperties.com>
Sent: Friday, January 17, 2025 11:15 AM
To: Lee, Dylan <Dylan.Lee@bchydro.com>; Will Markey <wmarkey@bosaproperties.com>; Matthew Brock <mbrock@bosaproperties.com>
Cc: Sherevkulov, Dmitry <Dmitry.Sherevkulov@bchydro.com>; Cormier, Matthew <MCormier@klohn.com>; Chwaklinski, David <David.Chwaklinski@bchydro.com>
Subject: RE: Willoughby Substation Geotechnical Investigation - BOSA property

Hey Dylan,
Including our acquisitions team.

We'll review the below and get back to you ASAP.

Have a great weekend.

😊

--
Ryan Lowe,

Operations Manager, IPP

Bosa Properties
1201 - 838 West Hastings St
Vancouver, BC V6C 0A6

Mobile 604. 619. 4073

From: Lee, Dylan <Dylan.Lee@bchydro.com>
Sent: Friday, January 17, 2025 11:00 AM
To: Ryan Lowe <rlowe@bosaproperties.com>
Cc: Sherevkulov, Dmitry <Dmitry.Sherevkulov@bchydro.com>; Cormier, Matthew <MCormier@klohn.com>; Chwaklinski, David

<David.Chwaklinski@bchydro.com>
Subject: Willoughby Substation Geotechnical Investigation - BOSA property

Hi Ryan,

Thanks for meeting us on site with Matt and I the other day. I have attached Matt's plan on where we will be targeting our geotechnical investigation (AH series indicates machine auger drilling and the HA series indicate the hand auger).
We are planning to be drill on Feb 5 for the machine dig, and Feb 6 for the hand digging. Please let us know if those dates work with the tenants and that they should keep the access along the driveway to the backyard clear.

With regards to the test hole off of 196th street, I have been given a directive not to utilize BOSA for land clearing and pad building work. We will be doing our test hole just off the road shoulder. Thanks for the offer though.

Can you please check with the tenant or your record if you have the septic design beside the dwelling as we want to check if it's suitable to drive over the connection and the extent of the tank. We may decide to relocate the test hole AH25-C after review and locates of the connection.

Matt (1 778 229 9241) is also CC'd to this email, in case you need to reach out to him directly closer to the date.

Thanks

_____

Dylan Lee, P. Eng**.** | Senior Geotechnical Engineer, Transmission Lines Engineering

BC Hydro
7th Floor - 6911 Southpoint Drive, A02
Burnaby, BC V3N 4X8

P 604 528 2318
M 604 809 2666
E dylan.lee@bchydro.com

bchydro.com

Smart about power in all we do.

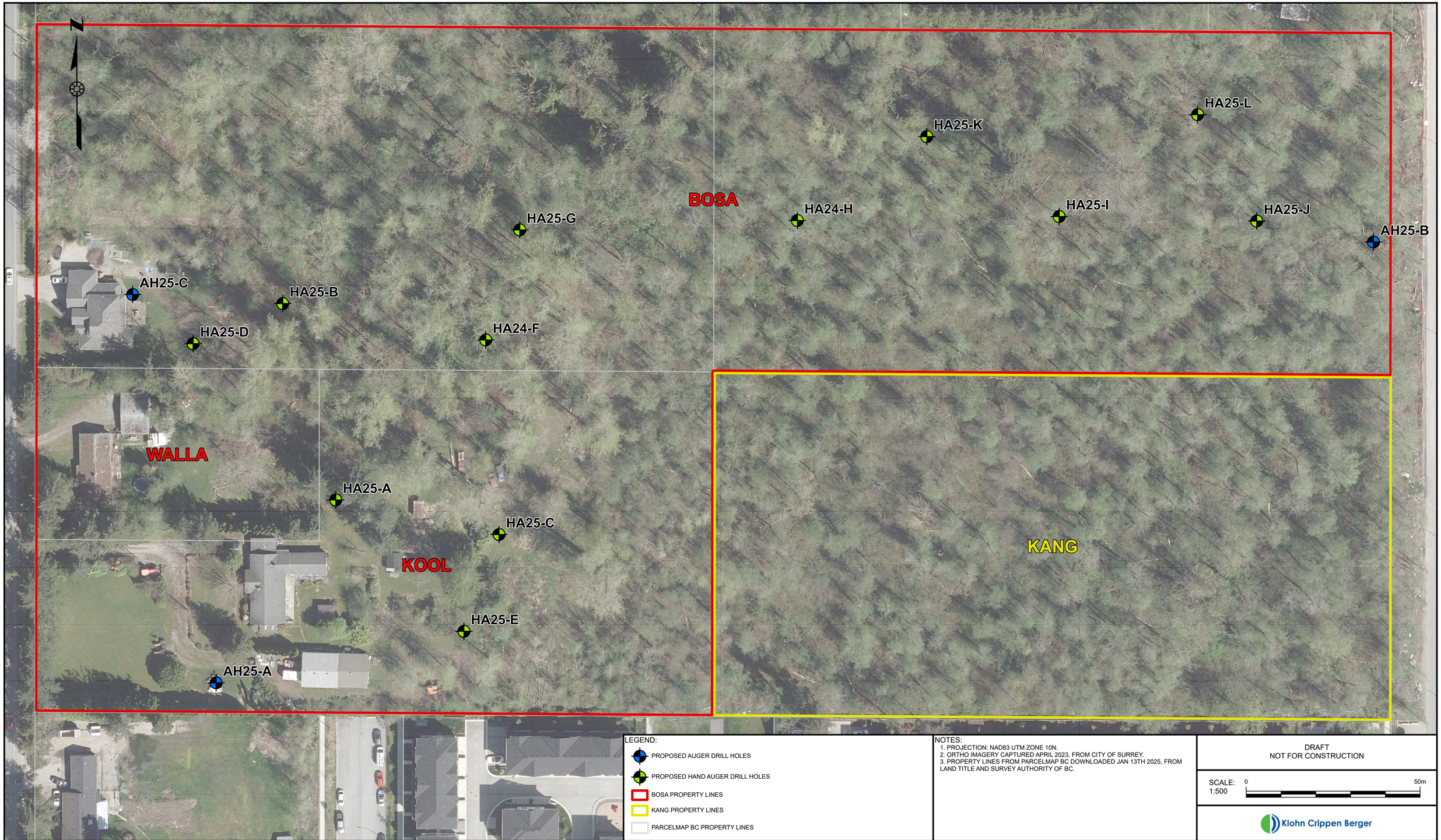
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LEGEND:

- PROPOSED AUGER DRILL HOLES
- PROPOSED HAND AUGER DRILL HOLES
- BOSA PROPERTY LINES
- KANG PROPERTY LINES
- PARCELMAP BC PROPERTY LINES

NOTES:
1. PROJECTION: NAD83 UTM ZONE 10N.
2. ORTHO IMAGERY CAPTURED APRIL 2023, FROM CITY OF SURREY.
3. PROPERTY LINES FROM PARCELMAP BC DOWNLOADED JAN 13TH 2025, FROM LAND TITLE AND SURVEY AUTHORITY OF BC.

DRAFT
NOT FOR CONSTRUCTION

SCALE: 1:500 (0 – 50m)

Klohn Crippen Berger

BC Hydro

P10600A140
WILLOUGHBY SUBSTATION

GEOTECHNICAL SITE INVESTIGATION PLAN

DESIGN NUMBER	
WORK ORDER NUMBER	
CSA S250 ACCURACY NAD - UTM	
BASE ACCURACY LEVEL:	
ASB ACCURACY LEVEL:	

DSGN	M. CORMIER
INDEP CHK	
DFTG	A. WIEBE
DFTG CHK	K. WHITLOCK
INSP	
REV	
ACPT	

NO	REMARKS

REFERENCE DRAWINGS

REVISIONS

DATE	DIST	DRAWING NUMBER	REPORT NUMBER	FIG NO	SIZE	REV
13JAN2025				01	D	

Z:\P\BC\HCEO\P10600A140 BCH - Willoughby Substation Geotechnical Investigation\400 Drawings\GIS\02_Mapping\ArcGISPro Main\Willoughby Substation\Willoughby Substation.aprx
Drawing Units: Metric
Layout: Layout1
1/13/2025 3:17 PM

NOT TO BE REPRODUCED WITHOUT THE PERMISSION OF BC HYDRO

From: Chwaklinski, David
Sent: 2024, December 12 2:26 PM
To: Lee, Dylan
Cc: Hansen, Adrian; Hepple, Robert; Chwaklinski, David
Subject: RE: [External] RE: Willoughby Substation

Dylan, we will only be investigating one location and that will occur after a conditional purchase agreement is in place. We would only make on conditional agreement at a time. Based on everything I have heard to date we will be investigating the Bosa/Kool Property. IF that changes we will need to pivot in short order (but I doubt it). If it is determined that other properties need to be investigated that would be a separate mobilization (unlikely). If we need to spend the $80 k it would be available however, lets focus on a single site at this time.

From: Lee, Dylan
Sent: Thursday, December 12, 2024 9:22 AM
To: Chwaklinski, David
Cc: Hansen, Adrian
Subject: FW: [External] RE: Willoughby Substation

Hi David,

See cost break down below:

If we do Group 1 and 2 together (same mobilization): $43.3k all in ($22k per group)

If we do each group separately (different mobilization): $40k per Group, so two Group different mobilization is $80 k.
There might be some cost savings (ex. I am not entirely sure we need 10 hours of traffic control for this scope but we are planning for it until we can confirm site access and whether we will be off the road).

Let me know if the project can approve the 80k amount as I am thinking one can only do one group at a time due to property agreement constraints.

Cheers
Dylan

From: Cormier, Matthew <MCormier@klohn.com>
Sent: 2024, December 11 5:08 PM

To: Lee, Dylan <Dylan.Lee@bchydro.com>
Subject: RE: [External] RE: Willoughby Substation

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Hi Dylan,

To be honest, your costs don't really decrease much from what's shown. The auger, traffic management, and lab testing costs wouldn't change. I assumed 2 people for a half or 1 person for a full day for test pitting and reduced some of the drill log and report hours assuming they're separate reports. Unfortunately they don't really cut in half because your field time and sub-contractor costs don't change for the scope which is the real cost driver.

The most cost effective way would be to do a truck mounted hole at each site in one day. That has significant efficiencies for the cost of the project.

Let me know which way you want me to go and I'll put in a formal proposal.

Prepared By: **M. Cormier**

	PROJECT BUDGET WORK BREAKDOWN STRUCTURE (WBS)			Project Manager/ Geotechnical Engineer (E3) M. Cormier	Project (Senior) Reviewer (E7) A. Aboutalebi	Junior Geotechnical Engineer (E2) J. Mah	GIS Technician (T2) A. Weibe	Total Hours	KCB Labour Fees	KCB Expe
			Fee per hour:	$158	$270	$140	$110			
				Hours	Hours	Hours	Hours			
01	Project Management		Subtotals:	4	0	0	0	4	$632.00	
	Subtask 01 (Level 3)	Project Management		4				4	$632.00	
02	Geotechnical Investigation		Subtotals:	34	7	76	3	120	$18,232.00	$3,5
	Subtask 01 (Level 3)	Initial Site Visit		4				4	$632.00	$
	Subtask 02 (Level 3)	Field Prep and Coordination		12		4		16	$2,456.00	
	Subtask 03 (Level 3)	Field Investigation		2		24		26	$3,676.00	$5
	Subtask 04 (Level 3)	Soil Logs and Laboratory Testing		4	2	16		22	$3,412.00	$2,9
	Subtask 05 (Level 3)	Draft Geotechnical Factual Report		8	4	24	2	38	$5,924.00	
	Subtask 06 (Level 3)	Final Geotechnical Factual Report		4	1	8	1	14	$2,132.00	
TOTALS				38	7	76	3	124	$18,864.00	$3,5

Matthew Cormier, P.Eng.
Geological Engineer

Klohn Crippen Berger 500-2955 Virtual Way, Vancouver BC V5M 4X6, CANADA
T +1 604 251 8557 | C +1 778 229 9241 | mcormier@klohn.com | www.klohn.com

ISO 9001 ▪ ISO 14001 ▪ ISO 45001

If you have received this e-mail in error, please delete the original message.

From: Lee, Dylan <Dylan.Lee@bchydro.com>
Sent: December 11, 2024 2:28 PM
To: Cormier, Matthew <MCormier@klohn.com>
Subject: RE: [External] RE: Willoughby Substation

Thanks Matt but can you include the cost for just one Group please. For the augering just assume a full day. We can do more than one auger hole in areas where we can get easy access.

Cheers
Dylan

From: Cormier, Matthew <MCormier@klohn.com>
Sent: 2024, December 11 12:08 PM
To: Lee, Dylan <Dylan.Lee@bchydro.com>
Subject: [External] RE: Willoughby Substation

Don't click on links or open attachments unless you trust the sender and are expecting the link or attachment. If you suspect this message to be phishing, please report it by clicking the Report Message button in the Outlook toolbar and select "Phishing."

Hi Dylan,

Thanks for the call yesterday and going over the scope with me. Based on our discussion, I've updated the high level project cost and have included a screenshot of our budget breakdown below which is inclusive of both proposed site (Group 1 and Group 2). The assumptions for this budget are as follows, but these will need to be confirmed with the drillers:

- 1 day of auger drilling on the gravel shoulder of the road to complete a single 15 m auger hole at each site (half day per hole). I've assumed $14,000 for the drilling but this will need to be confirmed with Geotech (I haven't gotten them to update their quote yet).
- Traffic Management Plans, Permit submissions, and traffic control for the auger scope (one 10hr day on site).

- Assuming both drill holes will be completed during the same mobilization (i.e. same day).
- 1 day for handaugers/ shovel test pits for both sites (half day each). I've include costs for 2 junior engineers to do the handauger/shovel test pits for safety purposes and reducing the physical workload for that if you're okay with that.
- Assuming hand auger/testpits will be completed during the same day for both sites.
- Lab testing to be completed only on samples recovered from the auger drilling.
- 1 geotechnical factual report which encompasses both sites (no separate reports).

Prepared By: **M. Cormier**

	PROJECT BUDGET WORK BREAKDOWN STRUCTURE (WBS)			Project Manager/ Geotechnical Engineer (E3) M. Cormier	Project (Senior) Reviewer (E7) A. Aboutalebi	Junior Geotechnical Engineer (E2) J. Mah	GIS Technician (T2) A. Weibe	Total Hours	KCB Labour Fees	KCB Exp
			Fee per hour:	$158	$270	$140	$110			
				Hours	Hours	Hours	Hours			
01	Project Management		Subtotals:	4	0	0	0	4	$632.00	
	Subtask 01 (Level 3)	Project Management		4				4	$632.00	
02	Geotechnical Investigation		Subtotals:	34	7	100	3	144	$21,592.00	$3,
	Subtask 01 (Level 3)	Initial Site Visit		4				4	$632.00	
	Subtask 02 (Level 3)	Field Prep and Coordination		12		4		16	$2,456.00	
	Subtask 03 (Level 3)	Field Investigation		2		32		34	$4,796.00	$
	Subtask 04 (Level 3)	Soil Logs and Laboratory Testing		4	2	24		30	$4,532.00	$2,
	Subtask 05 (Level 3)	Draft Geotechnical Factual Report		8	4	32	2	46	$7,044.00	
	Subtask 06 (Level 3)	Final Geotechnical Factual Report		4	1	8	1	14	$2,132.00	
TOTALS				38	7	100	3	148	$22,224.00	$3,

Please let me know if you have any changes to the scope presented and I can formalize a proposal for you.

Thanks
Matt

Matthew Cormier, P.Eng.
Geological Engineer

Klohn Crippen Berger 500-2955 Virtual Way, Vancouver BC V5M 4X6, CANADA
T +1 604 251 8557 | C +1 778 229 9241 | mcormier@klohn.com | www.klohn.com

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-----Original Appointment-----
From: Lee, Dylan <Dylan.Lee@bchydro.com>
Sent: December 10, 2024 12:12 PM
To: Lee, Dylan; Cormier, Matthew
Subject: Willoughby Substation
When: December 10, 2024 4:00 PM-4:30 PM (UTC-08:00) Pacific Time (US & Canada).
Where: Microsoft Teams Meeting

Hi Matt,

Thanks for sending me the estimate. Let's talk it through. Hopefully this time works. If not feel free to suggest a timeslot.

Microsoft Teams Need help?

Join the meeting now

Meeting ID: 239 863 963 212

Passcode: XU9WQ2Q6

Dial in by phone

+1 604-343-0415,,487067686# Canada, Vancouver

Find a local number

Phone conference ID: 487 067 686#

For organizers: Meeting options | Reset dial-in PIN

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From: Hepple, Robert
Sent: 2024, May 28 8:05 AM
To: Sherevkulov, Dmitry; Chan, David Y.M.; Parmar, Surinder; Chwaklinski, David; Simpson, Lauren
Subject: RE: Alternative Willoughby Locations
Attachments: Willoughby Final 4 Options.jpg

Dmitry,
Let's replace it with the first property and see what we can do with it.
Robert

From: Sherevkulov, Dmitry
Sent: 2024, May 27 2:15 PM
To: Hepple, Robert ; Chan, David Y.M. ; Parmar, Surinder ; Chwaklinski, David ; Simpson, Lauren
Subject: RE: Alternative Willoughby Locations

Hi Robert,

The second property below is off the table now. There is an Option to Purchase on the title and according to the document the option can be exercised until November 2025.

Regarding the ALR property, it also has an Option to Purchase registered on the title. However, it expired in March 2024 and it is unclear whether the Purchaser is proceeding with an acquisition. I will find out when I contact the owner.

_____

Dmitry Sherevkulov | Property Representative – Acquisitions and Sales

BC Hydro
333 Dunsmuir St, 12th floor
Vancouver, BC V6B 5R3

P 604 623 3566
M 604 690 9836
E dmitry.sherevkulov@bchydro.com

bchydro.com

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From: Sherevkulov, Dmitry
Sent: 2024, May 22 3:04 PM
To: Hepple, Robert <Robert.Hepple@bchydro.com>; Chan, David Y.M. <David.Chan@bchydro.com>; Parmar, Surinder <Surinder.Parmar@bchydro.com>; Chwaklinski, David <David.Chwaklinski@bchydro.com>; Simpson, Lauren <Lauren.Simpson@bchydro.com>
Subject: RE: Alternative Willoughby Locations

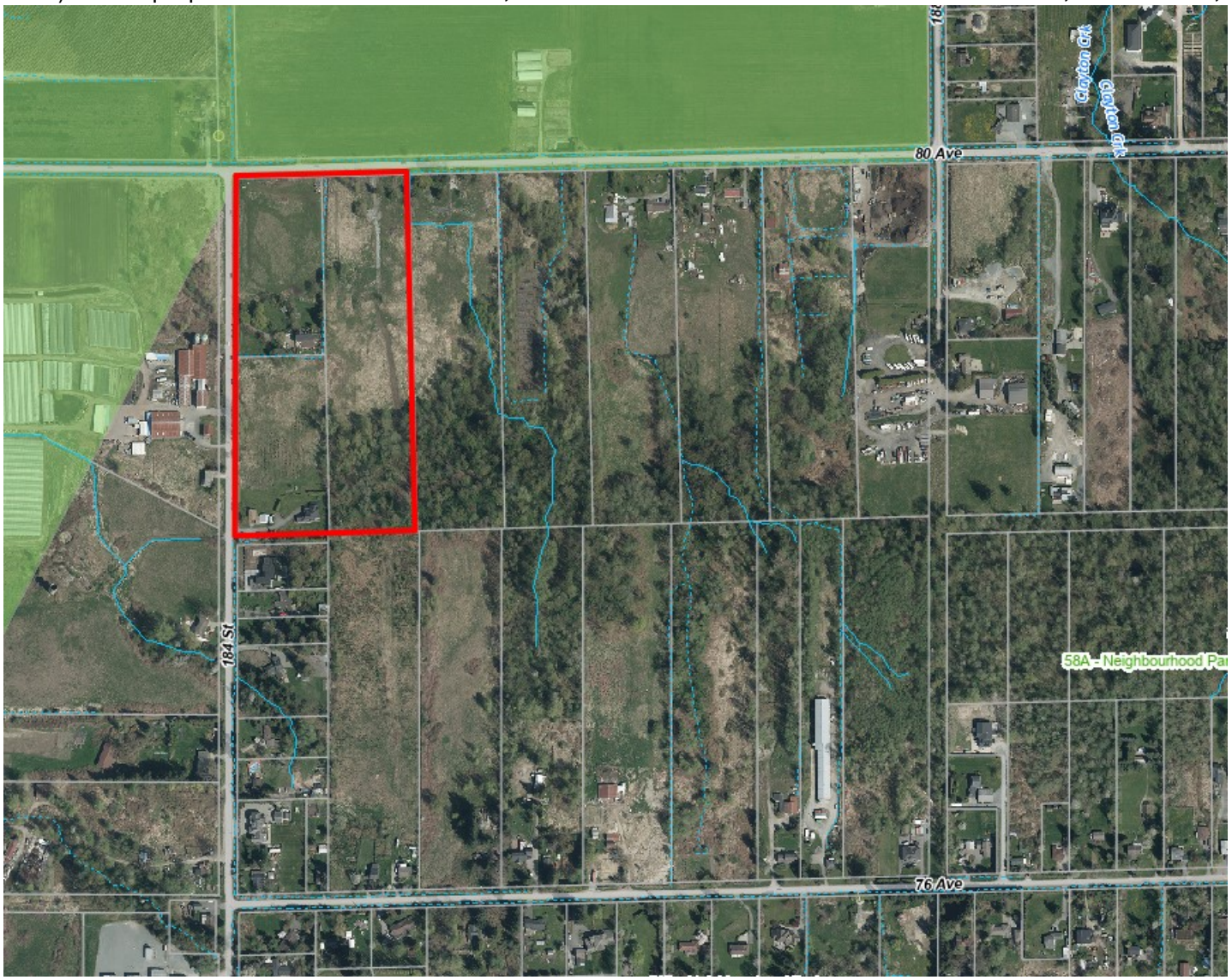
Hi Robert,

There are a couple of options I found in this area. The problem is that most properties north of 80Ave are in ALR. Also, this area has numerous creeks. Tyler previously identified 4 options at 192St & 80Ave, properties on the west side of 192St have multiple creeks so only east of 192St is suitable. However, it would require an assembly of 5-6 lots.

1) Two properties near 184St and 76Ave – 10 acre and 8 acres. PID: 010-996-001, 010-996-028



2) Three properties near 184St and 80Ave, 4.7 acres + 4.9 acres + 9.5 acres. PID: 002-904-977, 011-175-842, 011-175-869



Dmitry Sherevkulov | Property Representative – Acquisitions and Sales

BC Hydro
333 Dunsmuir St, 12th floor
Vancouver, BC V6B 5R3

P 604 623 3566
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E dmitry.sherevkulov@bchydro.com

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From: Hepple, Robert <Robert.Hepple@bchydro.com>
Sent: 2024, May 22 2:23 PM
To: Sherevkulov, Dmitry <Dmitry.Sherevkulov@bchydro.com>; Chan, David Y.M. <David.Chan@bchydro.com>; Parmar, Surinder <Surinder.Parmar@bchydro.com>; Chwaklinski, David <David.Chwaklinski@bchydro.com>; Simpson, Lauren <Lauren.Simpson@bchydro.com>
Subject: RE: Alternative Willoughby Locations

Dmitry,
Attached is a map indicating the area we should focus on.
See if you can find 10 to 12 acres with minimum assembly.
We can include it in our site tour.
Robert

Robert Hepple P.Eng.

Project Manager, Stations
Capital Infrastructure Project Delivery
BC Hydro
6911 Southpoint Drive, B02
C 925.967.5880
W 604.528.3433
E Robert.Hepple@BCHydro.com

Web: BCHydro.com

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From: Sherevkulov, Dmitry <Dmitry.Sherevkulov@bchydro.com>
Sent: 2024, May 22 1:02 PM
To: Hepple, Robert <Robert.Hepple@bchydro.com>; Chan, David Y.M. <David.Chan@bchydro.com>; Parmar, Surinder <Surinder.Parmar@bchydro.com>; Chwaklinski, David <David.Chwaklinski@bchydro.com>; Simpson, Lauren <Lauren.Simpson@bchydro.com>
Subject: RE: Alternative Willoughby Locations

Hi Robert,

Sounds good, I will search for another alternative in that area.

_____

Dmitry Sherevkulov | Property Representative – Acquisitions and Sales

BC Hydro
333 Dunsmuir St, 12th floor
Vancouver, BC V6B 5R3

P 604 623 3566
M 604 690 9836
E dmitry.sherevkulov@bchydro.com

bchydro.com

Smart about power in all we do.

From: Hepple, Robert <Robert.Hepple@bchydro.com>
Sent: 2024, May 22 12:22 PM
To: Sherevkulov, Dmitry <Dmitry.Sherevkulov@bchydro.com>; Chan, David Y.M. <David.Chan@bchydro.com>; Parmar, Surinder <Surinder.Parmar@bchydro.com>; Chwaklinski, David <David.Chwaklinski@bchydro.com>; Simpson, Lauren <Lauren.Simpson@bchydro.com>
Subject: Alternative Willoughby Locations

Dmitry,
Nick from ToL is not supportive on land over by the University on the east side where we had identified the Realtor Joe Varing site.
Let's look on west of 196th along 80th ave to identify 12 acres of non-ALR land.
Lauren please delete the Varing site as an alternative.

Robert

Robert Hepple P.Eng.

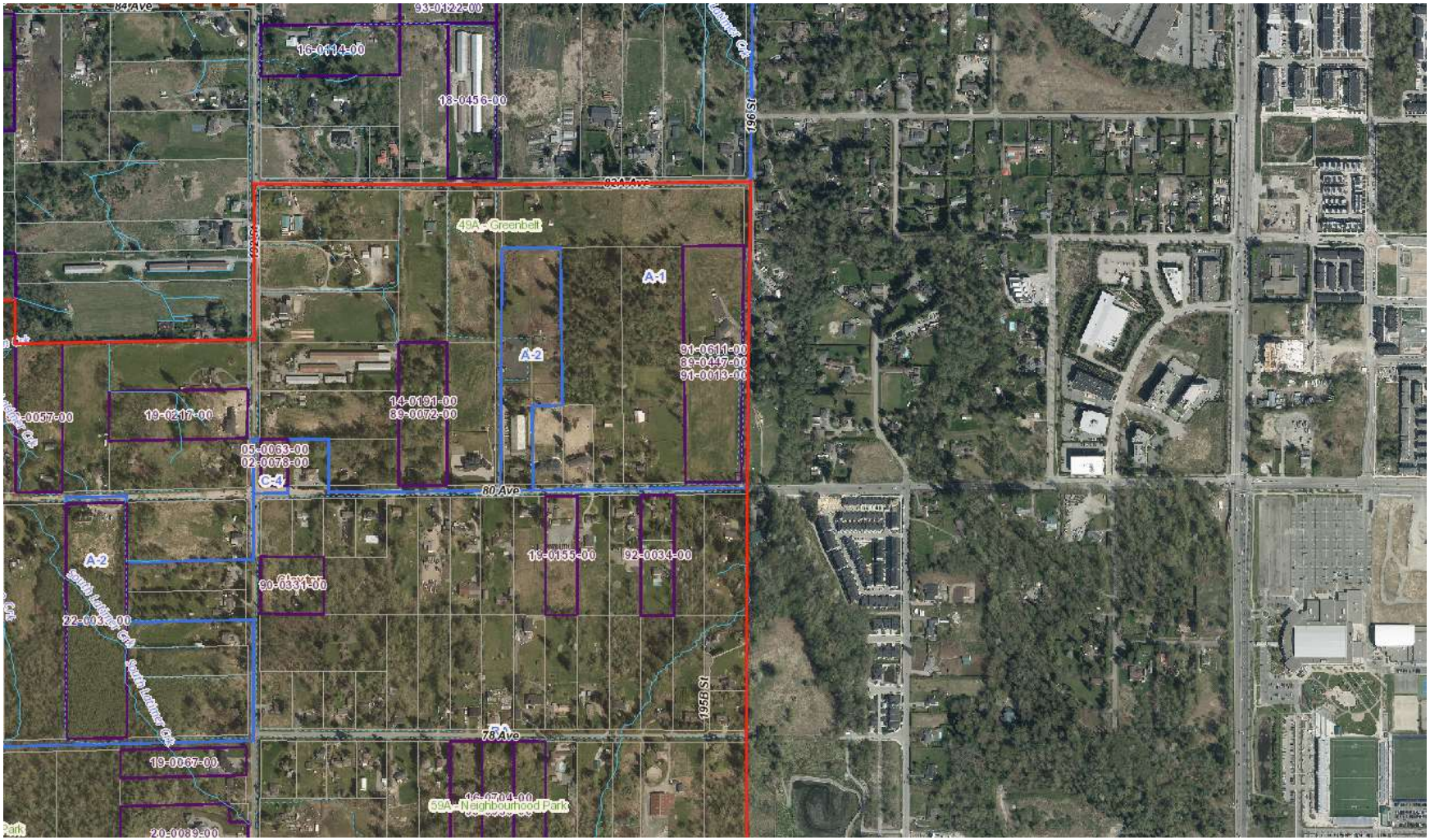
Project Manager, Stations
Capital Infrastructure Project Delivery
BC Hydro
6911 Southpoint Drive, B02
C 925.967.5880
W 604.528.3433
E Robert.Hepple@BCHydro.com

Web: BCHydro.com

Smart about power in all we do.

From: Nick Hosseinzadeh <nhosseinzadeh@tol.ca>
Sent: 2024, May 22 12:13 PM
To: Hepple, Robert <Robert.Hepple@bchydro.com>
Subject: [External] As discussed

As discussed, best bet may likely be on the Surrey side of the border.
As you can see, there are many large, undeveloped parcels ranging from 2.5-10 acres in size just down 80th Ave across the Surrey border.
Although they are generally acreages / being farmed today, they are NOT within the ALR. This is future, currently unserviced, future development land.
Additionally, land values in N Clayton were ~$2.5MM/A-$3MM/A a couple years ago. Compared to ~$6MM/A+ in Willougby where neighbourhood services have been installed.


84 Ave
93-0122-00
16-0114-00
18-0456-00
196 St
49A - Greenbelt
A-1
A-2
91-0611-00
89-0447-00
91-0013-00
14-0191-00
89-0072-00
19-0217-00
05-0063-00
02-0078-00
C-4
80 Ave
A-2
19-0155-00
92-0084-00
90-0331-00
22-0033-00
South Ladner Crk
195B St
78 Ave
19-0067-00
59A - Neighbourhood Park
20-0089-00


tions
PKP
HRD
ANNIEDALE
PORT KELLS
CARVOLTH
JERICHO
EAST CLAYTON NORTH
Willoughby ALR 1
Option 2
Option 3
Option 4
Art's Nursery Garden & Home
Cineplex Cinemas Langley
Extreme Air Park
MVP Athletic Supplies Ltd
Langley Events Centre
Willoughby Community Park
Honeybee Centre
Fraser Hwy
Harvie Rd
88 Ave
92 Ave
96 Ave
86 Ave
80 Ave
72 Ave
200 St
202a St
192 St
184 St
Golden Ears Wy

From: Jiang, Kally
Sent: 2024, September 16 4:35 PM
To: Chwaklinski, David
Cc: Hepple, Robert
Subject: RE: Bosa property Confirmation
Attachments: WIB-E05-SK006-Op1-Outdoor AIS-To Fit Bosa+Kang Properties-20240916.pdf; WIB-E05-SK006-Op2-Outdoor AIS-To Fit Bosa+Kang Properties-20240916.pdf

Hi, Dave,

As requested, please check attached options for info and let me know if there is any concern.

Thanks,
Kally

From: Chwaklinski, David
Sent: 2024, September 16 3:57 PM
To: Jiang, Kally
Cc: Chwaklinski, David ; Hepple, Robert
Subject: Bosa property Confirmation

Hi Kally, I have reviewed the Bosa property and confirmed that the Bosa parcels are 7508 196th St. and 7528 194th St. The Kang property is 7451 196th St. These are shown in the attached PDF. Please revise your layout so that there are two options to consider. Option 1 is to reverse the layout you showed me so that the 25 kV yard is on the Kang property and the 60 kV yard is on the eastern portion of the Bosa Property . Option 2 is to leave the 25 kV at the top and use cables to connect the 60 kV Yard located on the west portion of the Bosa property to the 230/60 kV transformers that will be located on the Kang Property.

Please let me know if you need any more clarification.

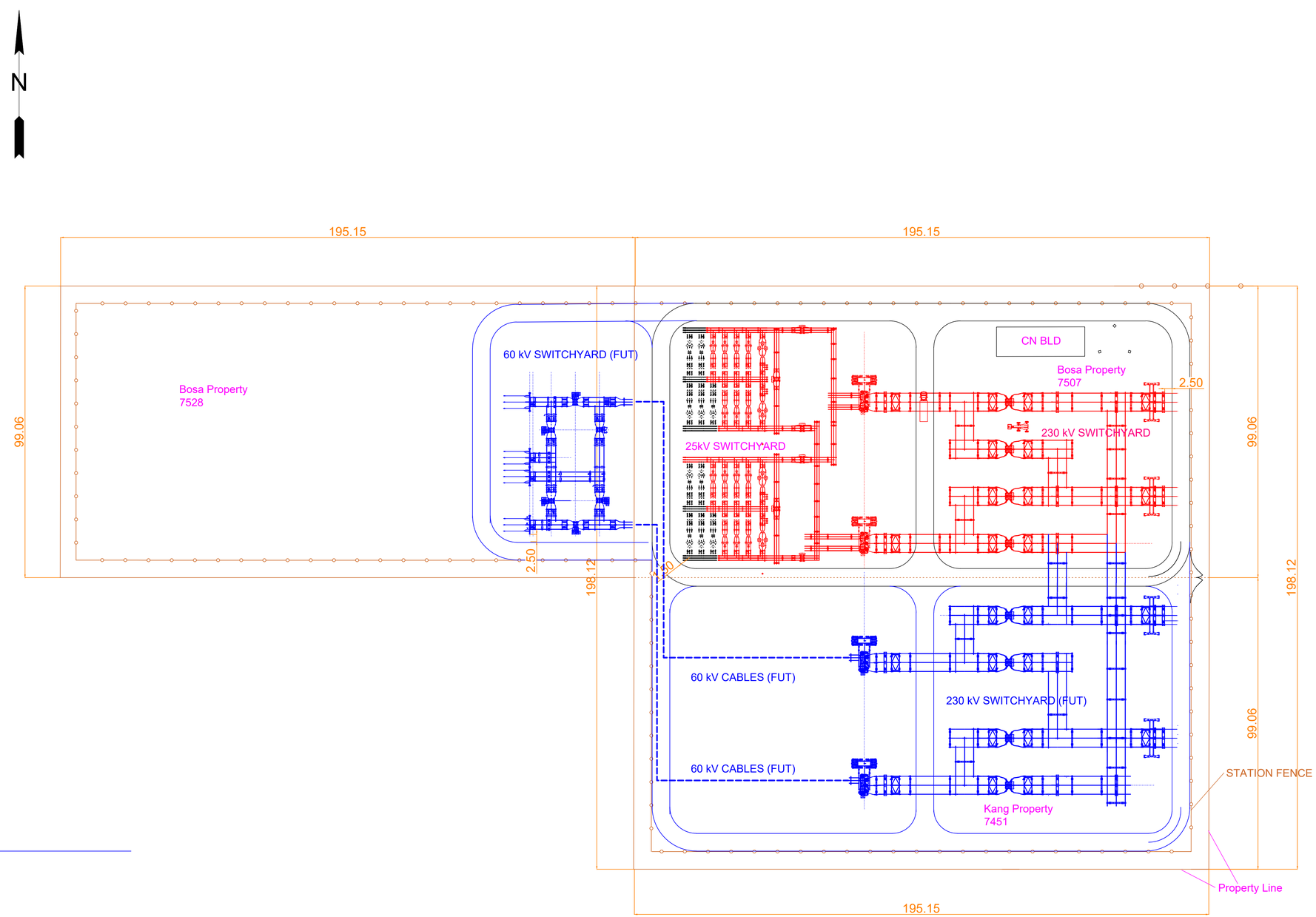
David Chwaklinski, P. Eng., FEC., PMP | Project Engineer Specialist
Lines and Interconnections

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NOTES:

1. GATES TO BE INSTALLED AS FIT BASED ON SITE ORIENTATION.
2. IF FACILITY IS PLACED ON A SLOPED SITE ADDTIONAL SPATIAL REQUIREMENT WILL BE REQUIRED EFFECTIVELY MAKING THE FACILITY FOOTPRINT LARGER DEPENDINGON THE SLOP REQUIREMENT.
3. DITCH AND DRAINAGE SPACE REQUIREMENT IS NOT CONSIDERED AND IT SHOULD BE DESIGNED BY CIVIL.
4. GROUND GRID WILL BE INSTALLED 1 m BEYOND THE FENCE LINE AND COVER ALL GATE SWING AREAS.
5. DISTRIBUTION MANHOLE LOCATION IS NOT CONSIDERED AT THIS DESIGN STAGE



COLOR CODE FOR SCOPE OF WORK:
RED: THIS PROJECT
BLUE/BLACK DOTS: FUTURE

FOR DISCUSSION PURPOSES ONLY

C:\Users\kjiang\OneDrive - BC Hydro\F25 Projects\1-CIP\D2023-11-21_Willoughby Purchase Project\Design\Conceptual\20240913-New for Bosa+Kang\WIB-E05-SK006-Op5-Outdoor AIS-To Fit Bosa+Kang Properties-20240916.dwg
Drawing Unit = Metric (4)
JIANG, KAI
9/16/2024 4:30 PM

REFERENCE DRAWINGS

NO	REMARKS
	REVISIONS

DESIGN NUMBER	
WORK ORDER NUMBER	
CSA S250 ACCURACY NAD - UTM	
BASE ACCURACY LEVEL:	
ASB ACCURACY LEVEL:	

DSGN	K. JIANG
INDEP CHK	
DFTG	K. JIANG
DFTG CHK	
INSP	
REV	K. ZENG
ACPT	

BC Hydro

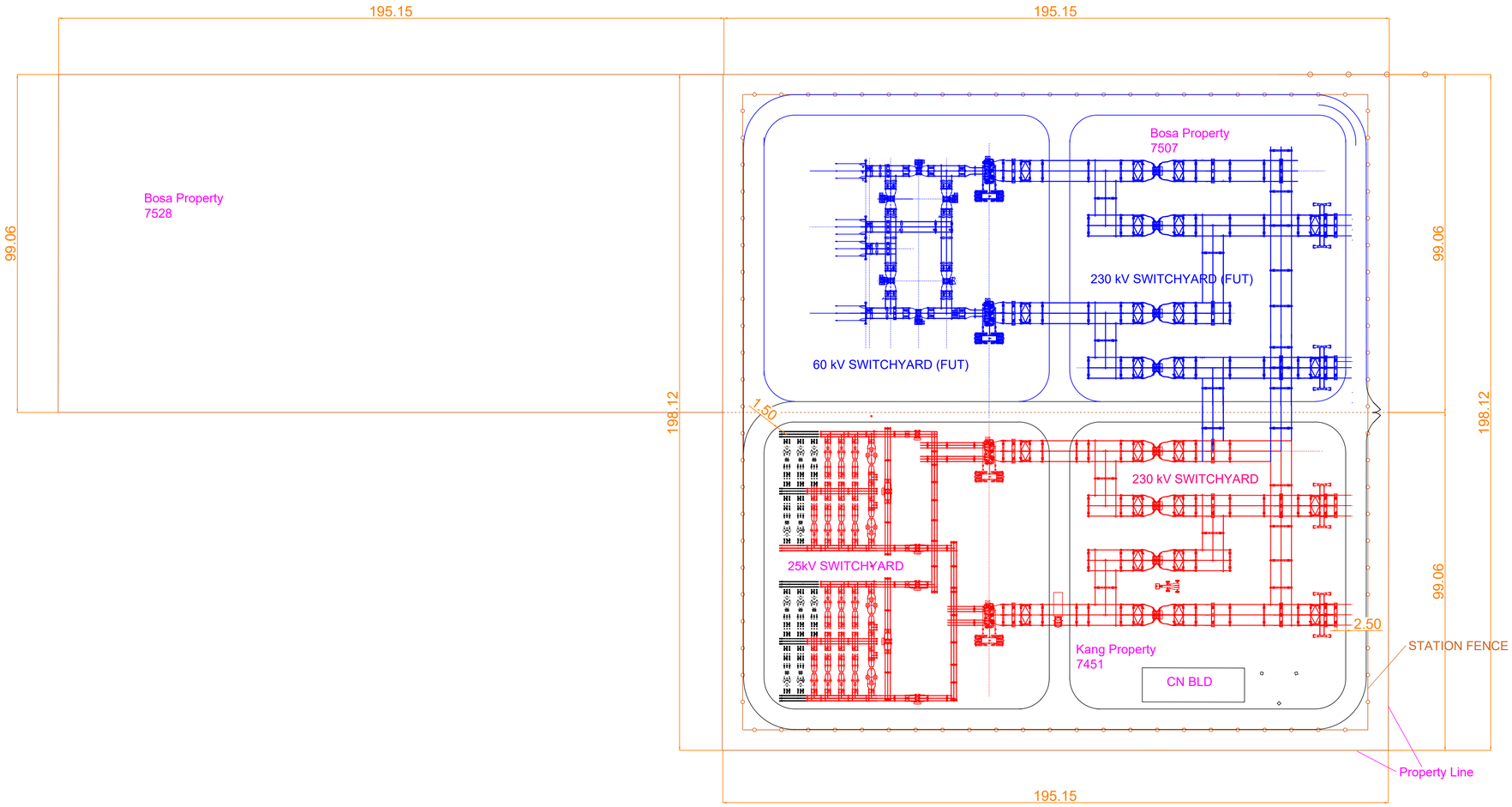
WILLOUGHBY SUBSTATION

230/60/25 KV SWITCHYARD
ULTIMATE LAYOUT

DATE	DIST	DRAWING NUMBER	REPORT NUMBER	FIG NO	SIZE	REV
2024SEP16		WIB-E05-SK006-OP2			D	0

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N



NOTES:

1. GATES TO BE INSTALLED AS FIT BASED ON SITE ORIENTATION.
2. IF FACILITY IS PLACED ON A SLOPED SITE ADDTIONAL SPATIAL REQUIREMENT WILL BE REQUIRED EFFECTIVELY MAKING THE FACILITY FOOTPRINT LARGER DEPENDINGON THE SLOP REQUIREMENT.
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BLUE/BLACK DOTS: FUTURE

FOR DISCUSSION PURPOSES ONLY

REFERENCE DRAWINGS

NO	REMARKS

REVISIONS

DESIGN NUMBER	
WORK ORDER NUMBER	
CSA S250 ACCURACY NAD - UTM	
BASE ACCURACY LEVEL:	
ASB ACCURACY LEVEL:	

DSGN	K. JIANG
INDEP CHK	
DFTG	K. JIANG
DFTG CHK	
INSP	
REV	K. ZENG
ACPT	

BC Hydro

WILLOUGHBY SUBSTATION

230/60/25 KV SWITCHYARD
ULTIMATE LAYOUT

DATE	DIST	DRAWING NUMBER	REPORT NUMBER	FIG NO	SIZE	REV
2024SEP16		WIB-E05-SK006-OP1			D	0

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C:\Users\kjiang\OneDrive - BC Hydro\F25 Projects\1-CIPD\2023-11-21_Willoughby Purchase Project\Design\Conceptual\20240913-New for Bosa+Kang\WIB-E05-SK006-Opb-Outdoor AIS-To Fit Bosa+Kang Properties-20240916.dwg
Drawing Unit = Metric (4)
JIANG, KAI
9/16/2024 4:30 PM

From: Chwaklinski, David
Sent: 2024, December 12 8:46 AM
To: Steels, Craig
Cc: Chwaklinski, David
Subject: RE: Property Purchase Projects - Draft Transmission Line route memos

All the properties are relevant as listed. I need you to reevaluate your routing discussion. While the request is for overhead I need you to address the issue of U/G routing if O/H is not practical. This specifically applies to Willoughby as it is not likely we can get O/H to the station efficiently AS we discussed in the pas there are practical U/G routs up 192 and 196th. Campbell heights smay be simpler for O/H provided crossing the existing lines can be managed. If not then we need to discuss U/G as well. The key message then is where to transition? Inside or outside the station. Again we don't need to solve the routing just provide practical suggetstions. I would only include the Connection to Fleetwood as an optional rout rather than primary because it looks as if management (Surinder) has locked on to MLN as the supply point

From: Steels, Craig
Sent: Tuesday, December 10, 2024 12:53 PM
To: Chwaklinski, David
Subject: RE: Property Purchase Projects - Draft Transmission Line route memos

Hi David,

I sent you a meeting invite for Thursday.

Please take a look at Wolloughby and Campbell heights drafts and comment. I think I sent these to you a while back. I'm not sure which properties are still relevant.

Kind regards,

Craig Steels, P.Eng. | Consultant, Transmission Lines Engineering, BC Hydro

C 825 437 6575 craig.steels@bchydro.com

From: Chwaklinski, David <David.Chwaklinski@bchydro.com>
Sent: Tuesday, December 10, 2024 12:35 PM

To: Steels, Craig <Craig.Steels@bchydro.com>
Cc: Chwaklinski, David <David.Chwaklinski@bchydro.com>
Subject: Property Purchase Projects - Draft Transmission Line route memos

Hi Craig, can you tell me when you will have a draft ready for the transmission assessment memos for Campbell Heights and Willoughby? I am working on my report and I want to make sure that I am not making any incorrect statements. As well I am getting some pressure regarding determining if the alignment ROW for 1l146 for Goldstream is large enough to accept a second and third 230 Line. Have you had any luck with that? In a meeting this morning it looks as if we are shifting towards Alternate 1 for Goldstream. We discussed T/L routing and the possibility of avoiding new ROW through Thetis Lake park. I doubt we can unless the 1L146 ROW is wide enough. I would like to chat with you about this but I wont be available today or tomorrow. Will you have some time on Thursday? I have a doctor appointment that will occupy me until about 11:00 but any time after that should be good. Please let me know. thanks

From: Crockett, Shawn
Sent: 2024, October 10 2:11 PM
To: Hepple, Robert; Chwaklinski, David; Berisso, Hussien
Cc: Manurung, Cynthia; Zeng, Ken; Zhang, Michael
Subject: RE: Quick question: new WIB & CBS stations

Hi All,

Thanks for helping me get up to speed on these projects.
One item I've heard that some existing stations have challenges with are egress routes constrained by environmental sensitive areas, properly lines, other land use, etc. Distribution ductbanks need to extend several kilometers and branch out in multiple directions to reach load centers. There is always risk of certain area blocking or constraining the ductbank. I also totally understand the challenge of finding a suitable property and mitigating the highest risks in priority to others (and D egress could be one of the lower priorities).

I don't want to offend anyone by being over basic here – just passing on experiences of my colleagues. For my own learning about the Stations side of the business, if anyone has a document outlining strategy or risk management for property selection, I would definitely appreciate that!

Thanks,
Shawn

From: Hepple, Robert
Sent: 2024, October 08 2:48 PM
To: Chwaklinski, David ; Berisso, Hussien
Cc: Crockett, Shawn ; Awan, Yasir ; Szutoo, Raymond ; Manurung, Cynthia ; Zeng, Ken ; Nazer, Mohammad
Subject: RE: Quick question: new MLN T lines ??

Thank you, David for your response.
I will forward it to the T&D design team.
We will focus on securing the property before getting into design details.
Otherwise we waste budget and spin our wheels.
Robert
Robert Hepple P.Eng.

Project Manager, Stations

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C 360.410.2244
W 604.528.3433
E Robert.Hepple@BCHydro.com

Web: BCHydro.com

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From: Chwaklinski, David <David.Chwaklinski@bchydro.com>
Sent: 2024, October 08 9:07 AM
To: Berisso, Hussien <Hussien.Berisso@bchydro.com>
Cc: Hepple, Robert <Robert.Hepple@bchydro.com>; Chwaklinski, David <David.Chwaklinski@bchydro.com>
Subject: RE: Quick question: new MLN T lines ??

Hussien, I am not clear on what you are asking here. It appears to me that Shawn is identifying what is being done and is not asking for anything. I am fully aware of the issue of duct bank proximity and the potential for derating if they are too close. While we take this into consideration during the property search, we are limited as to the properties available and ultimately to how we can bring transmission and distribution in and out. Detailed coordination of T and D design will need to occur as soon as the property is selected. This will require D planning and engineering to be involved much earlier than they typically are.

From: Berisso, Hussien <Hussien.Berisso@bchydro.com>
Sent: Tuesday, October 8, 2024 7:36 AM
To: Chwaklinski, David <David.Chwaklinski@bchydro.com>
Cc: Hepple, Robert <Robert.Hepple@bchydro.com>
Subject: FW: Quick question: new MLN T lines ??

Hi David,

Below comments are crucial to capture and coordinate before the SNS are issued.

Regards,

Hussien Berisso, MSc, P. Eng | Project Engineer Specialist, Stations Project Engineering

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bchydro.com

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From: Crockett, Shawn <Shawn.Crockett@bchydro.com>
Sent: 2024, October 07 4:25 PM
To: Berisso, Hussien <Hussien.Berisso@bchydro.com>; Awan, Yasir <Yasir.Awan@bchydro.com>; Zeng, Ken <Ken.Zeng@bchydro.com>
Cc: Hepple, Robert <Robert.Hepple@bchydro.com>; Szutoo, Raymond <Raymond.Szutoo@bchydro.com>; Lam, Anthony <Anthony.Lam@bchydro.com>; Chwaklinski, David <David.Chwaklinski@bchydro.com>; Zhang, Michael <Michael.Zhang@bchydro.com>; Vrecko, Bradley <bradley.vrecko@bchydro.com>; Nazer, Mohammad <Mohammad.Nazer@bchydro.com>; Manurung, Cynthia <Cynthia.Manurung@bchydro.com>
Subject: RE: Quick question: new MLN T lines ??

Hi All,

D Planning has yet to release scope notes (I understand all disciplines waiting Stations Planning Official release of scope notes to release theirs).
Yasir in T-Line Eng is looking into including an item in SNs for T Eng to coordinate with D Eng about thermal de-rating of cables.

Having underground T lines too close will de-rate both T and D lines. On the T side, there is also an MRS component. BCH Executive are keenly aware of capacity constraints D feeders (particularly thermal ampacity limitations at station egress points).

D planning reached out to D-Eng to help coordinate the new 230kV lines being added to MLN to connect the new stations especially if the new T-lines will connect to MLN underground. Moreover, there is TM-006 plus another F25 D project connecting new D feeders to MLN as well as new egress ductbanks. Coordination will be essential.

Thanks,
Shawn

From: Berisso, Hussien <Hussien.Berisso@bchydro.com>
Sent: 2024, October 07 10:20 AM
To: Awan, Yasir <Yasir.Awan@bchydro.com>; Crockett, Shawn <Shawn.Crockett@bchydro.com>; Zeng, Ken <Ken.Zeng@bchydro.com>

Cc: Hepple, Robert <Robert.Hepple@bchydro.com>; Szutoo, Raymond <Raymond.Szutoo@bchydro.com>; Lam, Anthony <Anthony.Lam@bchydro.com>; Chwaklinski, David <David.Chwaklinski@bchydro.com>
Subject: RE: Quick question: new MLN T lines ??

Hi,

These projects are currently in property purchase phase. @Zeng, Ken is a station designer working on a layout for a property purchase.

@Crockett, Shawn Yes, we are considering underground options if we proceed with the second property for TM-0593 (Campbell Heights). We'll keep you updated once the property acquisition is complete. If you have any concerns at this stage, please let us know.

Regards,

Hussien Berisso, MSc, P. Eng | Project Engineer Specialist, Stations Project Engineering

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From: Awan, Yasir <Yasir.Awan@bchydro.com>
Sent: 2024, October 04 3:28 PM
To: Crockett, Shawn <Shawn.Crockett@bchydro.com>
Cc: Hepple, Robert <Robert.Hepple@bchydro.com>; Berisso, Hussien <Hussien.Berisso@bchydro.com>; Szutoo, Raymond <Raymond.Szutoo@bchydro.com>; Lam, Anthony <Anthony.Lam@bchydro.com>
Subject: RE: Quick question: new MLN T lines ??

Hi Shawn,

Thanks for reaching out. Hussein Berisso is the PE and Robert Hepple is the PM. There was a resource request which we have already responded to but haven't heard from the project team since. I had sent an email to Hussein a couple of weeks ago with no response. Your questions below are best answered by Robert and Hussein and I have copied them here. Project numbers are TM-0637 and TM-0632. Scope Note ID's are 5077 & 5078.

Regards,
Yasir

From: Crockett, Shawn <Shawn.Crockett@bchydro.com>
Sent: 2024, October 04 2:39 PM
To: Awan, Yasir <Yasir.Awan@bchydro.com>; Szutoo, Raymond <Raymond.Szutoo@bchydro.com>; Lam, Anthony <Anthony.Lam@bchydro.com>
Subject: Quick question: new MLN T lines ??

Hi Transmission Eng Team Leads,

What is the project status of the ~4 new 230kV T lines connecting MLN to the two newly proposed stations (Campbell Heights and Willoughby)?

- How many projects will there be and what TY-##s?
- Have any of the projects kicked off yet or are they still with Planning?
    - Note: I am writing same email to T-Planning
- What stage/phase are they in?
- Who are the PE and PM?

D-Planning asked me to find out and suggested one or more projects were currently weighing UG vs OH egress options for the T-lines.

The reason I am asking is to ensure EARLY coordination with existing and new (TM-006 + other project being kicked off in F26) distribution egress ductbanks. Key driver for these stations are maxed out distribution feeders so the last thing we want is to be forced into derating D feeders (thereby decreasing the value of the new stations from day 1).

Thanks,
Shawn

From: Chwaklinski, David
Sent: 2024, January 25 12:10 PM
To: Simpson, Lauren; Wong, Felix; Lee, Johnson; Evans, Jen
Cc: Chwaklinski, David
Subject: RE: Re: TM-0592 - Willoughby SDM
Attachments: 200 MVA Station Layout Drawings _Campbell Heights and Willoughby; CAMP-E05-SK002-1_R0A_Option 1A.pdf; CAMP-E05-SK002-2_R0A_Option 2.pdf; CAMP-E05-SK002-1_R0A_Option 1.pdf

Hi Lauren, I had to do a bit of digging to sort this out. Back in December I asked Engineering to provide an estimate of the increased size (from the original station layout) that would meet the requirements of a 4 line positions and a six breaker ring. In my discussions with Dennis Stewart, he suggested the dimensions of 176 m x 242 m (see attached e-mail) which was included in the SDM table. I was supposed to update the SDM when I received a revised Layout. I received the revised layout in early January but never got around to updating the property requirements. Engineering has provided 3 layouts (attached) for consideration. They are roughly the same size but with a different configuration. Based on these layouts my recommendations is to search for a property with the approximate dimensions of 171 m x 216 m or 36,936 m^2. This should give us the ability to fit any of the three alternative layouts on the site with enough cushion around the property for any setbacks for slopes or landscaping that the city may require. I would caution however that this assumes that we can fit the 4 line positions as laid out by engineering. If this must change due to site constraints it may change things. This will apply to the Campbell Heights station as well.

Let me know if you wish to discuss further. I can update the SDM to reflect this revision

---

From: Simpson, Lauren <Lauren.Simpson@bchydro.com>
Sent: Thursday, January 25, 2024 10:24 AM
To: Chwaklinski, David <David.Chwaklinski@bchydro.com>
Subject: FW: Re: TM-0592 - Willoughby SDM

Hi David,

I was just reviewing email and I need you to confirm the Station size for Willoughby

In your email below you note a minimum **32,136 m^2** based on 206 m x 156 m based on the new layout. We currently have **42,492 m^2** in the SDM with a note that this needs to be confirmed with electrical (4 line 6 breaker ring station)

From: Chwaklinski, David <David.Chwaklinski@bchydro.com>
Sent: 2024, January 11 12:01 PM
To: Simpson, Lauren <Lauren.Simpson@bchydro.com>; Armstrong, Tyler <Tyler.Armstrong@bchydro.com>

Cc: Chwaklinski, David <David.Chwaklinski@bchydro.com>; Wong, Felix <Felix.Wong2@bchydro.com>
Subject: RE: Re: TM-0592 - Willoughby SDM

Hi everyone. For some background Planning initially said they need a site of about 221,00 SF or 20, 500 M^2. This was not based on a prepared layout but on some educated guesswork. The engineering group reviewed the one line and came up with a layout of approximately 213.5 m x 123.5m (26, 367 m^2). This was not confirmed with the planners who noted the layout did not include the 2 extra line positions and 2 extra breakers they requested. This size was used in our initial evaluations of the properties (See line 20 of the SVA table). After engineering developed a new layout, the space required was increase to a minimum 32,136 m^2 based on 206 m x 156 m. These dimensions include an 8.0 m buffer around the fence line. This can be seen in Line 22 of the SVA table. We have decided to carry both sets of dimensions in case a higher level tells us to not go with Plannings wishes.

So having provided the background I had a look at the alternate properties 10 and 11. As considered individually 10 and 11 are too small for an outdoor station based on both sets of requirements (not long enough for either layout). If we added the property directly to the North of Property 10 that would provide a site of approximately 242 m x 181 m or 43621 m^2 . This is more than enough for our requirements based on the latest layout drawing provided by Engineering .

For Property 11 if about 70 m could be acquired this would allow us to build the station based on the most recent layout.

If property 10 and 11 could be combined then there would be more than enough property 301 m x 180 m or 54180 m^2 for the station although as previously mentioned Langley ay object to losing the roadway of 78 B ave.

I hope this helps

From: Simpson, Lauren <Lauren.Simpson@bchydro.com>
Sent: Tuesday, January 9, 2024 9:28 AM
To: Armstrong, Tyler <Tyler.Armstrong@bchydro.com>; Chwaklinski, David <David.Chwaklinski@bchydro.com>
Subject: RE: Re: TM-0592 - Willoughby SDM

Yes this would be a better option. David please let Tyler know if we should add the adjacent properties.

From: Armstrong, Tyler <Tyler.Armstrong@bchydro.com>
Sent: 2024, January 09 9:21 AM
To: Simpson, Lauren <Lauren.Simpson@bchydro.com>; Chwaklinski, David <David.Chwaklinski@bchydro.com>
Subject: RE: Re: TM-0592 - Willoughby SDM

If they are too small we could add the adjacent properties in the image below if that helps. Let me know.



Regards,

_____

Tyler Armstrong | Property Representative – Acquisitions and Sales

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From: Simpson, Lauren <Lauren.Simpson@bchydro.com>
Sent: 2024, January 09 9:17 AM
To: Armstrong, Tyler <Tyler.Armstrong@bchydro.com>; Chwaklinski, David <David.Chwaklinski@bchydro.com>
Subject: RE: Re: TM-0592 - Willoughby SDM

Thanks Tyler,

David can you confirm if Properties 10 and 11 are of sufficient size individually. Also if you concur we can merge prop 8 and 9.

Cheers, Lauren

From: Armstrong, Tyler <Tyler.Armstrong@bchydro.com>
Sent: 2024, January 09 9:01 AM
To: Simpson, Lauren <Lauren.Simpson@bchydro.com>
Subject: RE: Re: TM-0592 - Willoughby SDM

Hi Lauren,

I think there is some confusion on the property dimensions for 10 & 11

- # 10 and #11 measure about 599ftx 450 feet each, which I thought was within our requirements.
- I agree #8 & #9 can be merged.
- I will address the missing fields today.

Regards,

_____

Tyler Armstrong | Property Representative – Acquisitions and Sales

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From: Simpson, Lauren <Lauren.Simpson@bchydro.com>
Sent: 2024, January 08 1:41 PM
To: Armstrong, Tyler <Tyler.Armstrong@bchydro.com>
Subject: Re: TM-0592 - Willoughby SDM

Hi Tyler,

I reviewed the Willoughby SDM today. It looks like all we need is to populate some of the new fields that we added before the holiday. Once you have updated the remaining fields we can have a project meeting to rank the properties.

I was also wondering if:

- We can merge Prop 8 and 9 – they are undersized individually but look to be good candidates if merged
- We can merge Prop 10 and 11 - they are undersized individually but look to be good candidates if merged. There is an road running between these properties which could preclude merging. Please advise
- Properties 1, 2, 3 and 4 are all associated with the Langley event centre complex and adjacent schools. I think these can reasonably be excluded.

Thanks, Lauren

Lauren Simpson (she/her) PMP, RPBio | Commercial Manager, CIPD

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From: Chwaklinski, David
Sent: 2023, December 14 2:11 PM
To: Khan, Jahangir; Zeng, Ken
Cc: Wong, Felix; Chwaklinski, David
Subject: 200 MVA Station Layout Drawings _Campbell Heights and Willoughby
Attachments: CAMP-E05-SK001-R00.pdf; Campbell Heights One line.pdf

Thanks for meeting with me this afternoon gentlemen. To summarize the meeting, I have requested that Transmission Engineering (Stations design) prepare a new station layout for the 230/25 kV distribution stations based on the one line I have attached. The one line includes provision for up to 4 – 230 kV line positions and a 6-breaker ring. This is different from the original assumption of two, line positions and 4 breakers. We have the layout for that design.

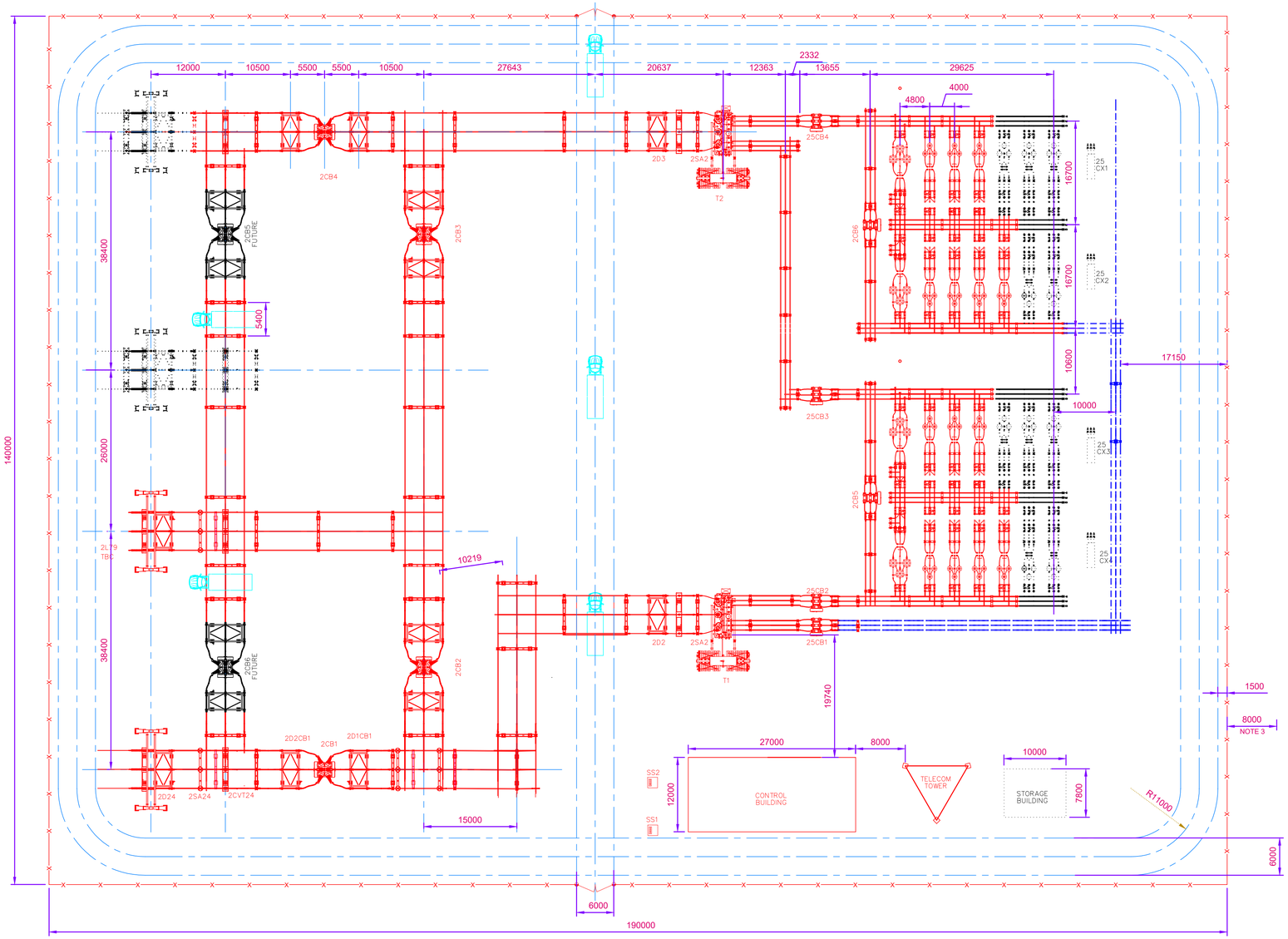
Based on discussions with Dennis Stewart we think that adding 20 m to the length and 50 m to the width to the layout in hand would be sufficient for the larger station. To be conservative I have added 10% to those dimensions giving us a potential property size of 176 m x 242 m. As we are advancing the property purchase project with a plan to complete the bulk of our review by the end of March 2024 I am asking for your team to a) provide a high-level review of our estimated property size to confirm if stations believe it to be sufficient and to b) provide a new layout based on the attached one line. My request is that you provide the high-level review of the estimate and confirm back to me via e-mail in mid January and provide the new layout by the end of March. As discussed, you need time to review your workload and resources and you will provide me with an estimated date of when you can provide my two asks before the end of December. If there are any errors in my summary, please let me know and we can clarify as soon as possible.

I have asked that planning provide the most up to date one line drawing. I don't expect it to change from what I have attached but I will inform you ASAP if it does change. Thanks again.

David Chwaklinski, P. Eng., FEC., PMP | Project Engineer Specialist
Lines and Interconnections

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E david.chwaklinski@bchydro.com



OPTION 1

NOTES:

1. GATES TO BE INSTALLED AS FIT BASED ON SITE ORIENTATION.
2. IF FACILITY IS PLACED ON A SLOPED SITE ADDTIONAL SPATIAL REQUIREMENT WILL BE REQUIRED EFFECTIVELY MAKING THE FACILITY FOOTPRINT LARGER DEPENDINGON THE SLOP REQUIREMENT.
3. DITCH AND DRAINAGE SPACE REQUIREMENT IS NOT CONSIDERED AND IT SHOULD BE DESIGNED BY CIVIL.
4. GROUND GRID WILL BE INSTALLED 1 m BEYOND THE FENCE LINE AND COVER ALL GATE SWING AREAS.
5. DISTRIBUTION MANHOLE LOCATION IS NOT CONSIDERED AT THIS DESIGN STAGE

COLOR CODE FOR SCOPE OF WORK:
RED: THIS PROJECT
BLUE: THIS PROJECT(CABLE OR AIR BUS OPTION)
DARK: FUTURE

FOR DISCUSSION PURPOSES ONLY

SCALE: 1:1 0 50mm

ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS OTHERWISE SHOWN

REFERENCE DRAWINGS

NO	REMARKS

REVISIONS

DESIGN NUMBER	
WORK ORDER NUMBER	
CSA S250 ACCURACY NAD - UTM	
BASE ACCURACY LEVEL:	
ASB ACCURACY LEVEL:	

DSGN	K. Zeng
INDEP CHK	
DFTG	K. Zeng
DFTG CHK	
INSP	
REV	D.STEWART/ M.BALEA
ACPT	

BC Hydro

CAMPBELL HEIGHTS SUBSTATION

230/25 KV SWITCHYARD
ULTIMATE LAYOUT
OPTION 1

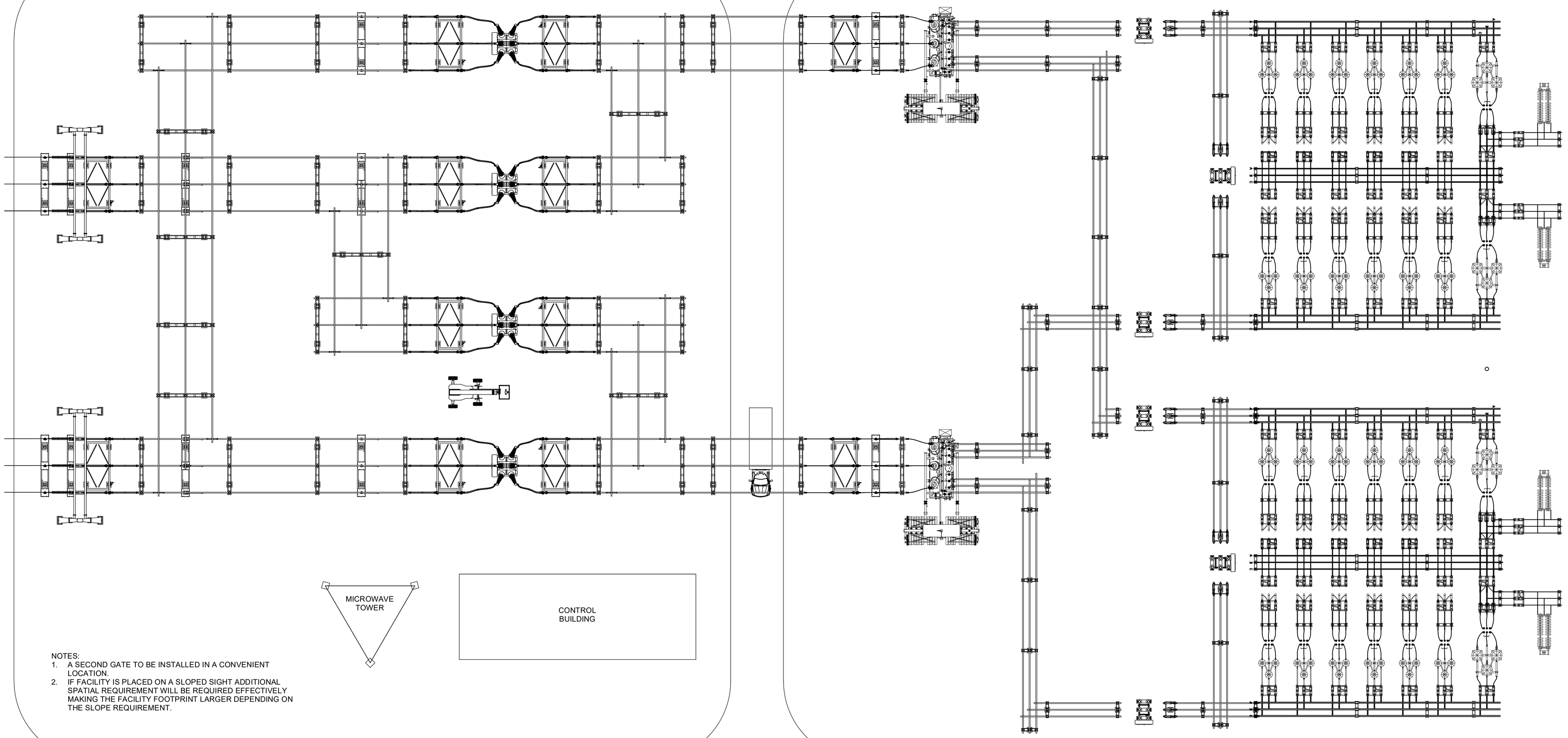
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2024 JAN 04		CAMP-E05-SK002-1			D	0A

NOT TO BE REPRODUCED WITHOUT THE PERMISSION OF BC HYDRO

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Drawing Unit = Metric (d)
Plot Scale = 1:1
14/02/2024 11:44 AM

198500

110000



NOTES:
1. A SECOND GATE TO BE INSTALLED IN A CONVENIENT LOCATION.
2. IF FACILITY IS PLACED ON A SLOPED SIGHT ADDITIONAL SPATIAL REQUIREMENT WILL BE REQUIRED EFFECTIVELY MAKING THE FACILITY FOOTPRINT LARGER DEPENDING ON THE SLOPE REQUIREMENT.

SCALE: 1:250 0 10m

DISCLAIMER:
THIS DRAWING HAS BEEN PREPARED BY BC HYDRO STATIONS ENGINEERING FOR THE SOLE PURPOSE OF DEVELOPING A CONSENSUS LAYOUT AND REQUIRES VETTING BY ALL STAKEHOLDERS PRIOR TO INSTALLATION. THIS DRAWING AND FEATURES ARE BASED ON PRELIMINARY INFORMATION ONLY AND SHOULD NOT BE CONSTRUED AS FINAL LOCATIONS OR DIMENSIONS. FINAL LOCATION AND DIMENSIONS OF THIS DRAWING WILL BE DEPENDANT ON FINAL DESIGN AND CONSTRUCTION DETAILS.

NO	DRAWING NUMBER	DRAWING TITLE
REFERENCE DRAWINGS		

NO	REMARKS
REVISIONS	

FOR DISCUSSION PURPOSES ONLY

DESIGN NUMBER	
WORK ORDER NUMBER	
CSA S250 ACCURACY NAD - UTM	
BASE ACCURACY LEVEL:	
ASB ACCURACY LEVEL:	

DSGN	D. STEWART
INDEP CHK	
DFTG	D. STEWART
DFTG CHK	
INSP	
REV	M. BALEA
ACPT	

BC Hydro

CAMPBELL HEIGHTS SUBSTATION

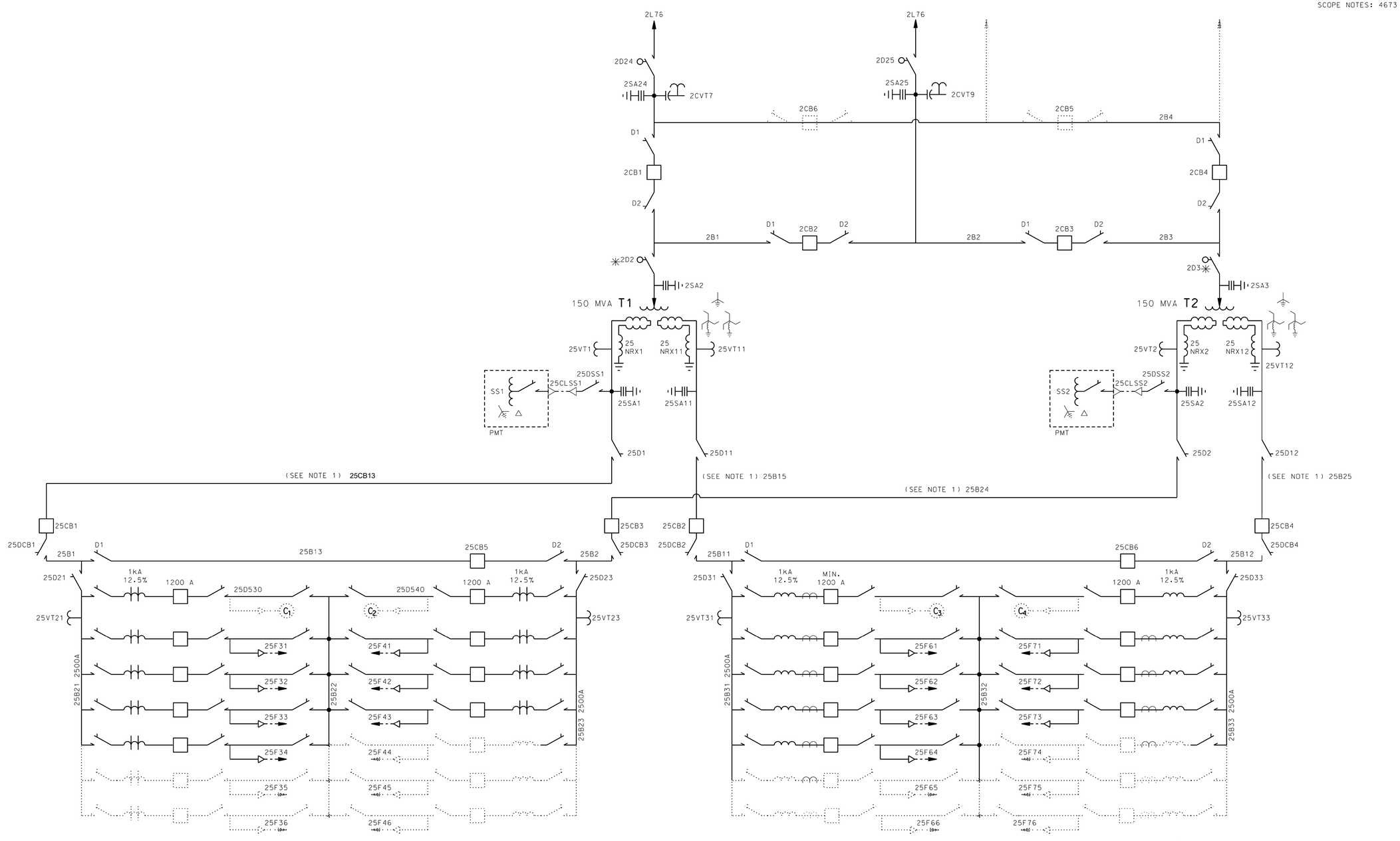
230/25 SWITCHYARDS
PROPOSED ULTIMATE ARRANGEMENT
PRE-NEEDS STAGE
PLAN

DATE	DIST	DRAWING NUMBER	REPORT NUMBER	FIG NO	SIZE	REV
9 JUN 2023		CAMP-E05-SK001			D	-

NOT TO BE REPRODUCED WITHOUT THE PERMISSION OF BC HYDRO

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Drawing Unit = Metric
Z: ST5104R
06-Jun-2023 10:00 AM

SCOPE NOTES: 4673



*QUICK BREAK ATTACHMENT

RATINGS OF MAJOR EQUIPMENT:

2B1, 2B2 BUS RATING 2000 A
2CB1, 2CB2, 2CB3, 2CB4 2000 A
25CB1, 25CB2, 25CB3, 25CB4, 25CB5, 25CB6 2500 A
THE REST OF 25 KV CIRCUIT BREAKERS 1200 A

NOTE:

1. CABLE OR BUS WILL BE DETERMINED BY ENGINEERING IN THE DETAILED DESIGN. IF BUS WILL BE USED, THE CAPACITOR MIGHT BE NEEDED IN THIS LOCATION.

NO	DATE	DWN	PLN	CHK	REV	ACPT
2						
1						

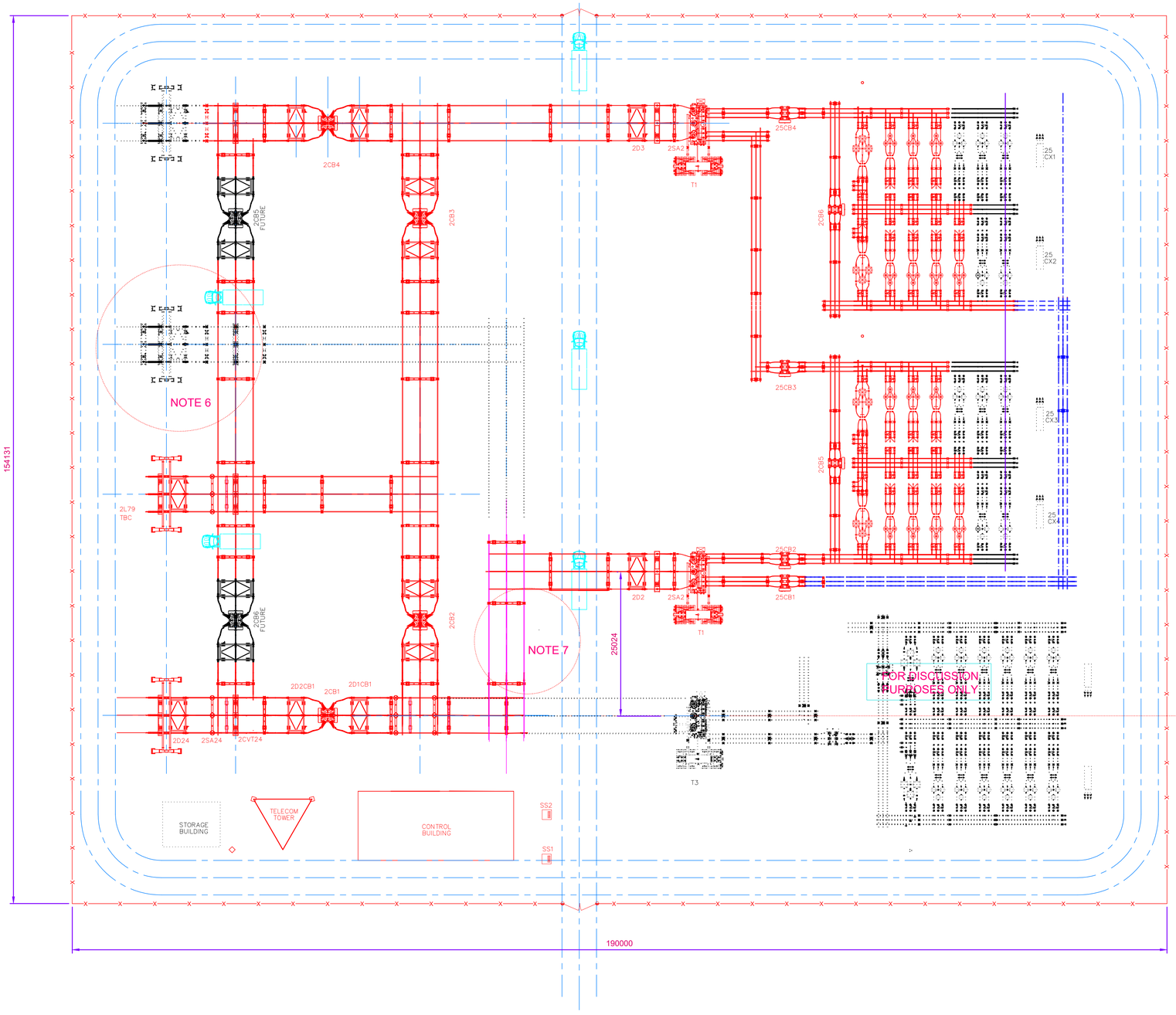
REVISIONS

DRAWN KLR
PLANNED LL
CHECKED
REVIEWED
ACCEPTED

BC Hydro
SUBSTATIONS GROWTH AND SUSTAINMENT

CAMPBELL HEIGHTS (CLH)
230/25 KV
ONE-LINE DIAGRAM
2032 STAGE

DATE 18 SEP 23 | SHEET 1 | DWG NO XXX-P06-SK1 | R 0



NOTES:

1. GATES TO BE INSTALLED AS FIT BASED ON SITE ORIENTATION.
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4. GROUND GRID WILL BE INSTALLED 1 m BEYOND THE FENCE LINE AND COVER ALL GATE SWING AREAS.
5. DISTRIBUTION MANHOLE LOCATION IS NOT CONSIDERED AT THIS DESIGN STAGE
6. CONNECTION POINT FOR EITHER THE FORTH LINE OR T3
7. SWITCH CONNECTION WHEN T3 IS INSTALLED

COLOR CODE FOR SCOPE OF WORK:
RED: THIS PROJECT
DARK: FUTURE

FOR DISCUSSION PURPOSES ONLY

SCALE: 1:1 — 0 — 50mm

ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS OTHERWISE SHOWN

REFERENCE DRAWINGS

NO	REMARKS

REVISIONS

DESIGN NUMBER	
WORK ORDER NUMBER	
CSA S250 ACCURACY NAD - UTM	
BASE ACCURACY LEVEL:	
ASB ACCURACY LEVEL:	

DSGN	K. Zeng
INDEP CHK	
DFTG	K. Zeng
DFTG CHK	
INSP	
REV	-----
ACPT	

BC Hydro

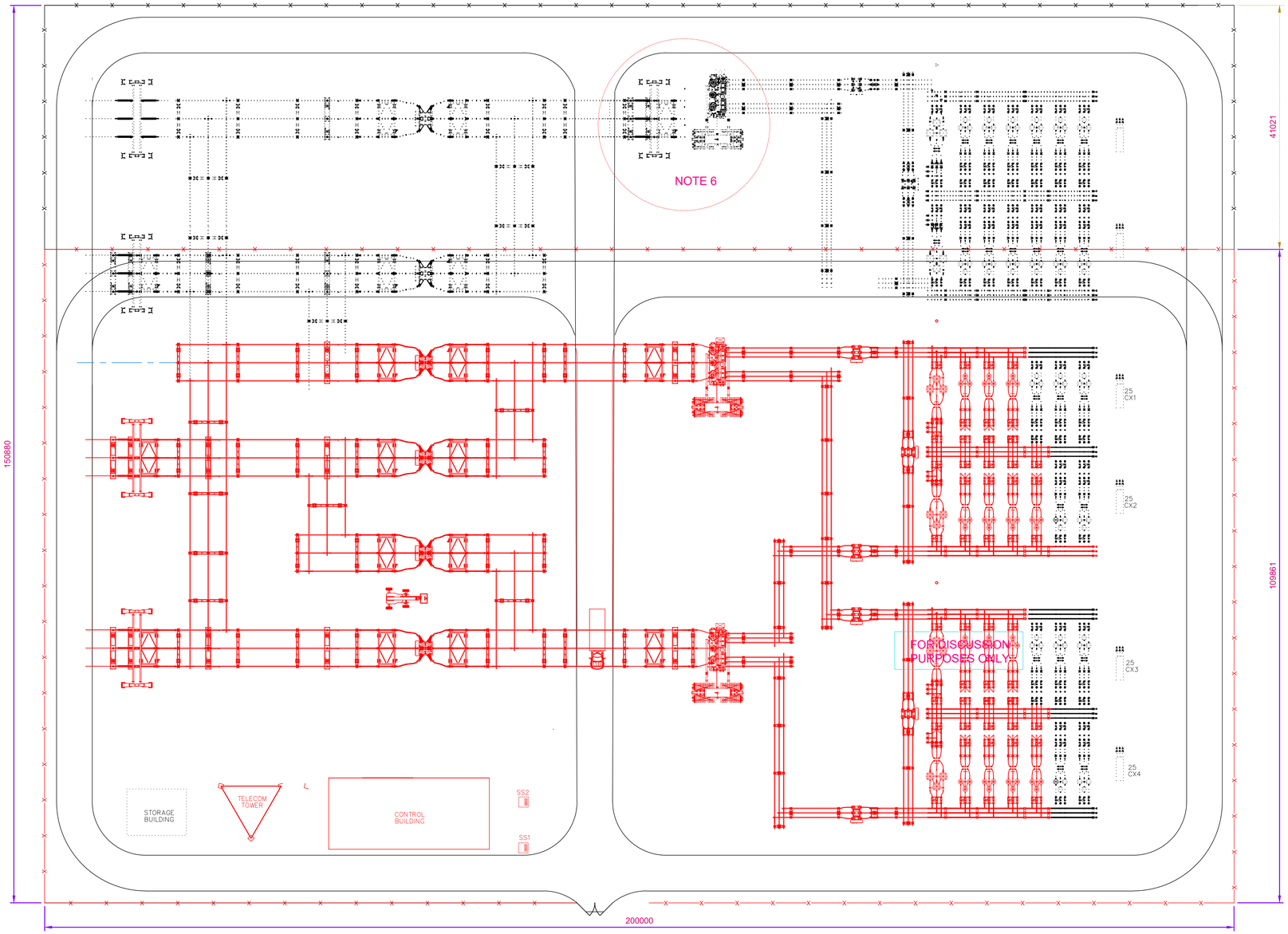
CAMPBELL HEIGHTS SUBSTATION

230/25 KV SWITCHYARD
ULTIMATE LAYOUT
OPTION 1a

DATE	DIST	DRAWING NUMBER	REPORT NUMBER	FIG NO	SIZE	REV.
2023JAN04		CAMP-E05-SK002-1a			D	0A

NOT TO BE REPRODUCED WITHOUT THE PERMISSION OF BC HYDRO

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2SC5 - Kris
1/4/2024 2:55 PM



OPTION 2

NOTES:

1. GATES TO BE INSTALLED AS FIT BASED ON SITE ORIENTATION.
2. IF FACILITY IS PLACED ON A SLOPED SITE ADDTIONAL SPATIAL REQUIREMENT WILL BE REQUIRED EFFECTIVELY MAKING THE FACILITY FOOTPRINT LARGER DEPENDINGON THE SLOP REQUIREMENT.
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COLOR CODE FOR SCOPE OF WORK:
RED: THIS PROJECT
DARK: FUTURE

FOR DISCUSSION
PURPOSES ONLY

SCALE: 1:1 — 0 — 50mm

ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS OTHERWISE SHOWN

REFERENCE DRAWINGS

NO	REMARKS

REVISIONS

DESIGN NUMBER	
WORK ORDER NUMBER	
CSA S250 ACCURACY NAD - UTM	
BASE ACCURACY LEVEL:	
ASB ACCURACY LEVEL:	

DSGN	K. Zeng
INDEP CHK	
DFTG	K. Zeng
DFTG CHK	
INSP	
REV	-----
ACPT	

BC Hydro

CAMPBELL HEIGHTS SUBSTATION

230/25 KV SWITCHYARD
ULTIMATE LAYOUT
OPTION 2

DATE	DIST	DRAWING NUMBER	REPORT NUMBER	FIG NO	SIZE	REV
2023JAN04		CAMP-E05-SK002-2			D	0A

NOT TO BE REPRODUCED WITHOUT THE PERMISSION OF BC HYDRO

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Drawing Unit = Metric (4)
Plotted by: Ken Zeng
1/4/2024 11:42 AM

From: Jiang, Kally
Sent: 2024, March 27 12:17 PM
To: Chwaklinski, David
Cc: Zeng, Ken; Khan, Jahangir
Subject: RE: Relabelling Campbell Heights Drawings for Willoughby
Attachments: WIB-E05-SK002-1_R0A_Option 1.pdf; WIB-E05-SK002-1_R0A_Option 1A.pdf

Hi, Dave,

Please check attached for info and let me know if ther is any concern.

Thanks,
Kally

From: Chwaklinski, David
Sent: 2024, March 25 9:51 AM
To: Jiang, Kally
Cc: Zeng, Ken ; Khan, Jahangir ; Chwaklinski, David
Subject: RE: Relabelling Campbell Heights Drawings for Willoughby

Thanks Kally, Can you also update the two attached sketches for WIB. These would be the “Original” 200 MVa layout without the 6o kV section. This will allow us to track the changes in the sizes we are considering. Thanks

---

From: Jiang, Kally <Kally.Jiang@bchydro.com>
Sent: Friday, March 22, 2024 4:17 PM
To: Chwaklinski, David <David.Chwaklinski@bchydro.com>
Cc: Zeng, Ken <Ken.Zeng@bchydro.com>; Khan, Jahangir <Jahangir.Khan@bchydro.com>
Subject: RE: Relabelling Campbell Heights Drawings for Willoughby

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Thanks,
Kally

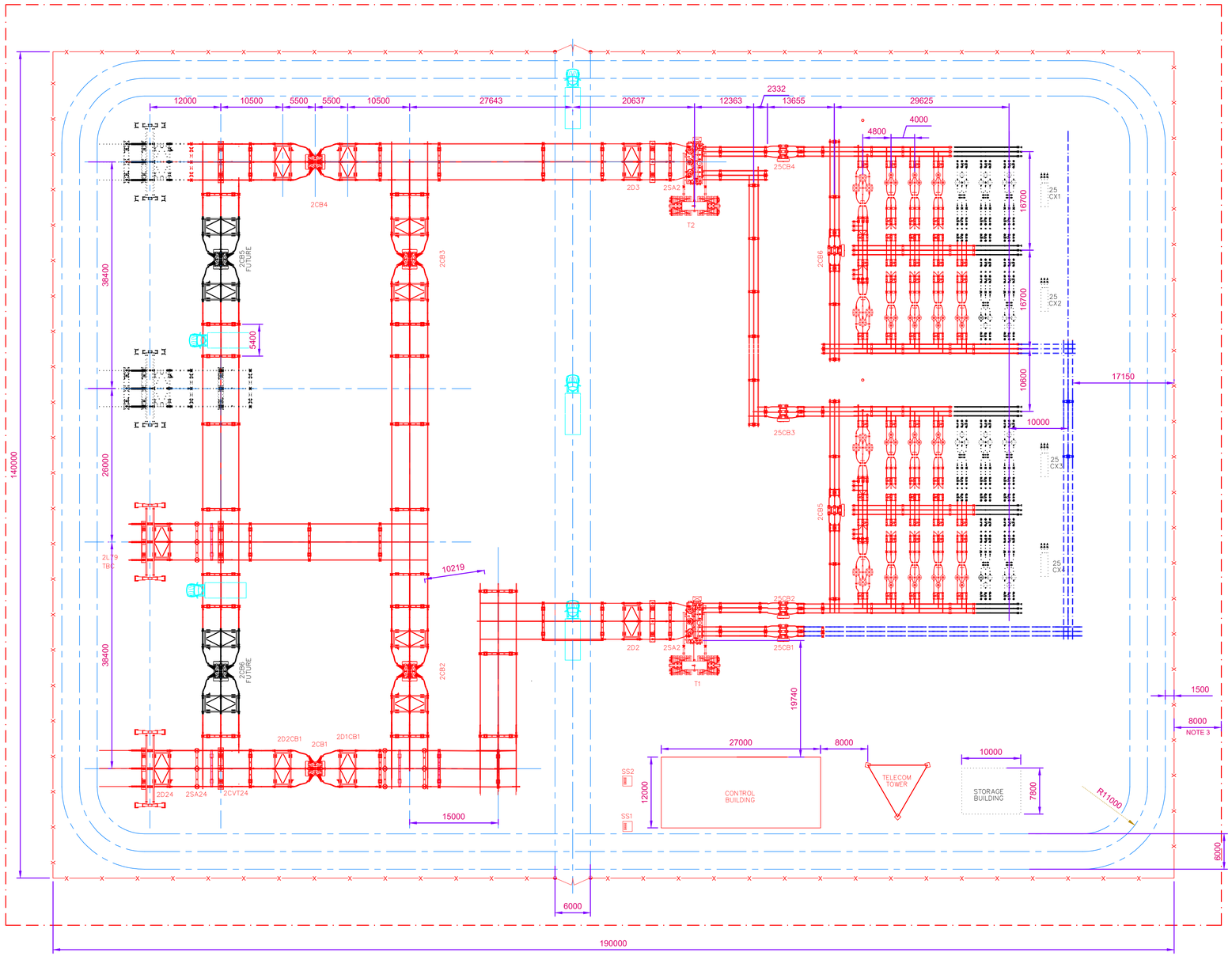
From: Chwaklinski, David <David.Chwaklinski@bchydro.com>
Sent: 2024, March 21 4:12 PM
To: Jiang, Kally <Kally.Jiang@bchydro.com>
Cc: Chwaklinski, David <David.Chwaklinski@bchydro.com>
Subject: Relabelling Campbell Heights Drawings for Willoughby

Hi Kally, are you able to relabel the drawings that were created for Campbell Heights for Willoughby? I would like to add the preliminary layouts to the workspace with the crrect names.

David Chwaklinski, P. Eng., FEC., PMP | Project Engineer Specialist
Lines and Interconnections

BC Hydro
6911 Southpoint Drive, E08
Burnaby, BC V3N 4X8

M 778 833 3740
E david.chwaklinski@bchydro.com



OPTION 1

NOTES:

1. GATES TO BE INSTALLED AS FIT BASED ON SITE ORIENTATION.
2. IF FACILITY IS PLACED ON A SLOPED SITE ADDTIONAL SPATIAL REQUIREMENT WILL BE REQUIRED EFFECTIVELY MAKING THE FACILITY FOOTPRINT LARGER DEPENDINGON THE SLOP REQUIREMENT.
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COLOR CODE FOR SCOPE OF WORK:
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BLUE: THIS PROJECT(CABLE OR AIR BUS OPTION)
DARK: FUTURE

FOR DISCUSSION PURPOSES ONLY

SCALE: 1:1 0 50mm

ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS OTHERWISE SHOWN

REFERENCE DRAWINGS

NO | REMARKS

REVISIONS

DESIGN NUMBER	
WORK ORDER NUMBER	
CSA S250 ACCURACY NAD - UTM	
BASE ACCURACY LEVEL:	
ASB ACCURACY LEVEL:	

DSGN	K. Zeng
INDEP CHK	
DFTG	K. Zeng
DFTG CHK	
INSP	
REV	D STEWART / M.BALEA
ACPT	

BC Hydro

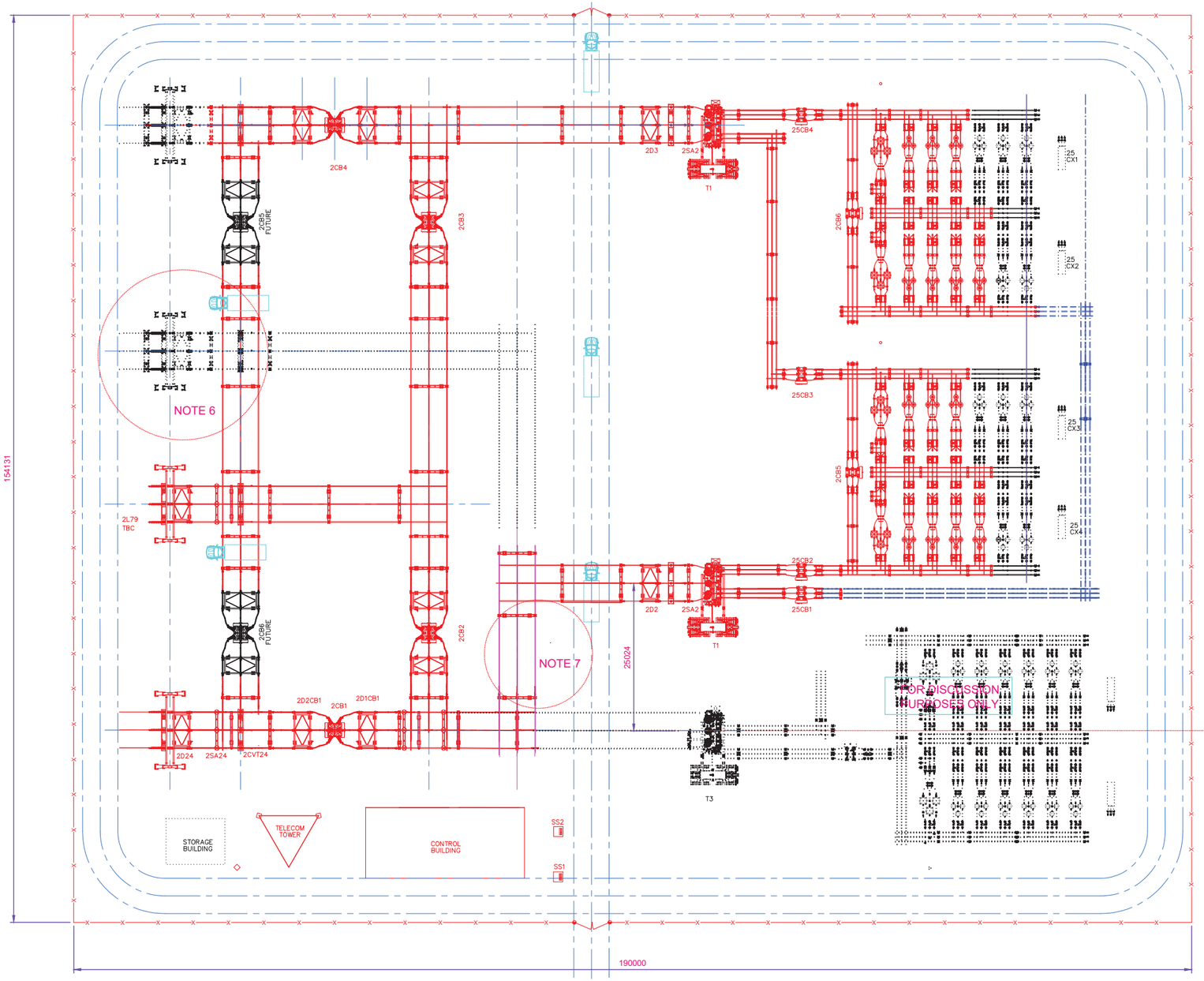
WILLOUGHBY SUBSTATION

230/25 KV SWITCHYARD
ULTIMATE LAYOUT
OPTION 1

DATE	DIST	DRAWING NUMBER	REPORT NUMBER	FIG NO	SIZE	REV
2024 JAN 04		WIB-E05-SK002-1			D	0A

NOT TO BE REPRODUCED WITHOUT THE PERMISSION OF BC HYDRO

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3/27/2024 11:56 AM



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SCALE: 1:1 — 0 — 50mm

ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS OTHERWISE SHOWN

REFERENCE DRAWINGS

NO	REMARKS

REVISIONS

DESIGN NUMBER		DSGN	K. Zeng
WORK ORDER NUMBER		INDEP CHK	
CSA S250 ACCURACY NAD - UTM		DFTG	K. Zeng
		DFTG CHK	
BASE ACCURACY LEVEL:		INSP	
ASB ACCURACY LEVEL:		REV	-----
		ACPT	

BC Hydro

WILLOUGHBY SUBSTATION

230/25 KV SWITCHYARD
ULTIMATE LAYOUT
OPTION 1a

DATE	DIST	DRAWING NUMBER	REPORT NUMBER	FIG NO	SIZE	REV
2023JAN04		WIB -E05-SK002-1a			D	0A

NOT TO BE REPRODUCED WITHOUT THE PERMISSION OF BC HYDRO

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2500 x 1676
1/4/2024 2:55 PM

From: Jiang, Kally
Sent: 2024, March 27 12:17 PM
To: Chwaklinski, David
Cc: Zeng, Ken; Khan, Jahangir
Subject: RE: Relabelling Campbell Heights Drawings for Willoughby
Attachments: WIB-E05-SK002-1_R0A_Option 1.pdf; WIB-E05-SK002-1_R0A_Option 1A.pdf

Hi, Dave,

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Thanks,
Kally

From: Chwaklinski, David
Sent: 2024, March 25 9:51 AM
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Cc: Zeng, Ken ; Khan, Jahangir ; Chwaklinski, David
Subject: RE: Relabelling Campbell Heights Drawings for Willoughby

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---

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Sent: Friday, March 22, 2024 4:17 PM
To: Chwaklinski, David <David.Chwaklinski@bchydro.com>
Cc: Zeng, Ken <Ken.Zeng@bchydro.com>; Khan, Jahangir <Jahangir.Khan@bchydro.com>
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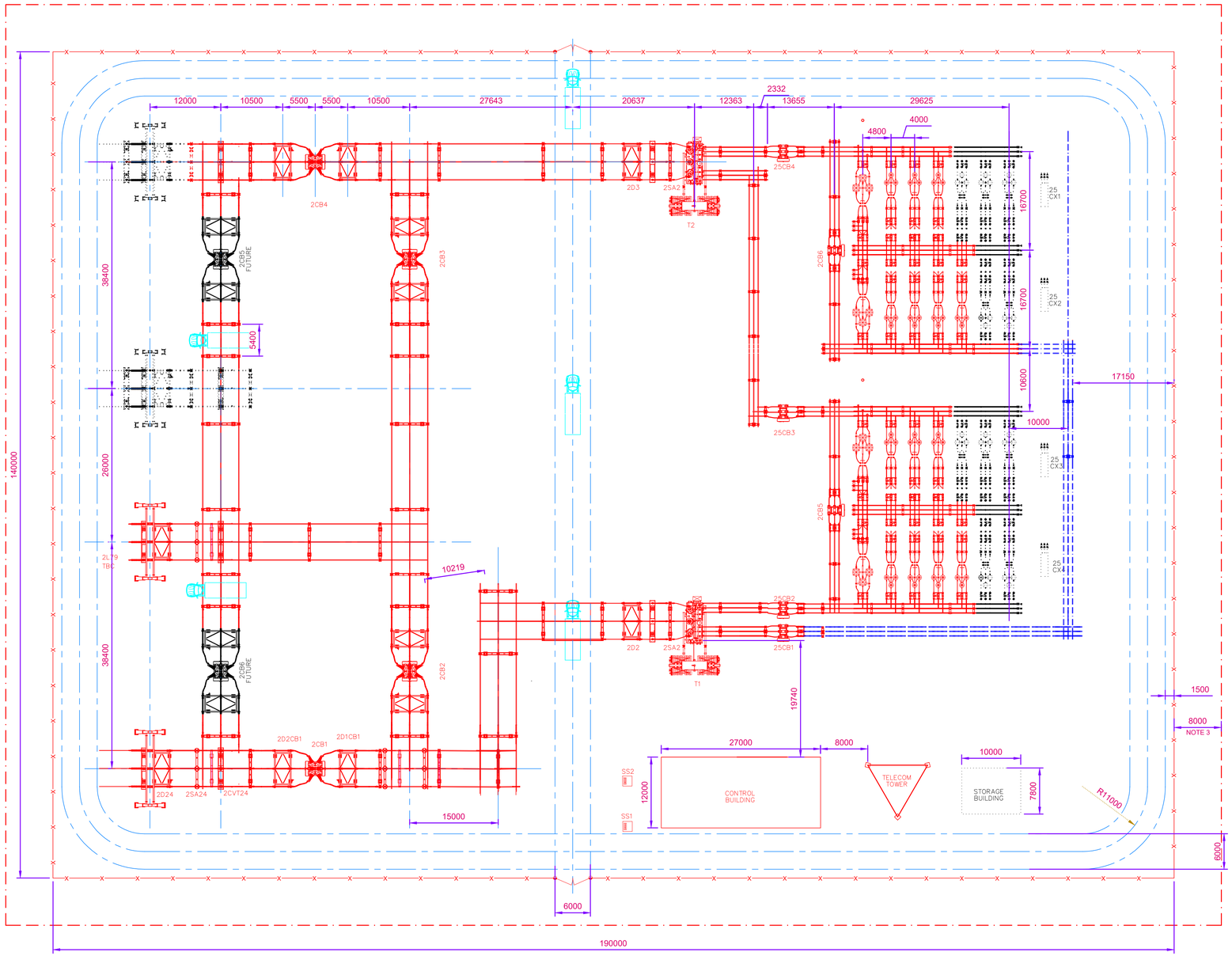
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Sent: 2024, March 21 4:12 PM
To: Jiang, Kally <Kally.Jiang@bchydro.com>
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David Chwaklinski, P. Eng., FEC., PMP | Project Engineer Specialist
Lines and Interconnections

BC Hydro
6911 Southpoint Drive, E08
Burnaby, BC V3N 4X8

M 778 833 3740
E david.chwaklinski@bchydro.com



OPTION 1

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FOR DISCUSSION PURPOSES ONLY

SCALE: 1:1 0 50mm

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REFERENCE DRAWINGS

NO | REMARKS

REVISIONS

DESIGN NUMBER	
WORK ORDER NUMBER	
CSA S250 ACCURACY NAD - UTM	
BASE ACCURACY LEVEL:	
ASB ACCURACY LEVEL:	

DSGN	K. Zeng
INDEP CHK	
DFTG	K. Zeng
DFTG CHK	
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BC Hydro

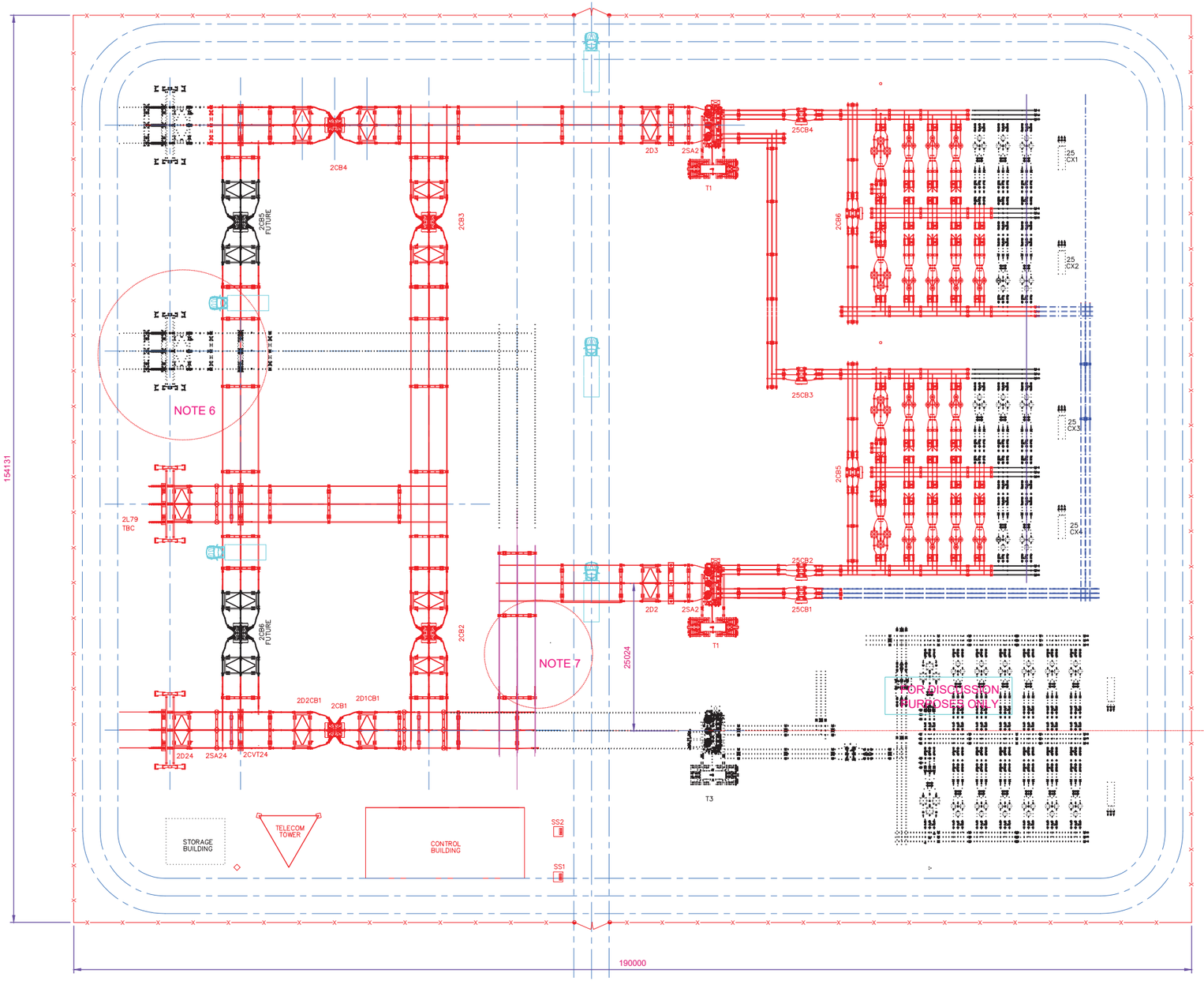
WILLOUGHBY SUBSTATION

230/25 KV SWITCHYARD
ULTIMATE LAYOUT
OPTION 1

DATE	DIST	DRAWING NUMBER	REPORT NUMBER	FIG NO	SIZE	REV
2024 JAN 04		WIB-E05-SK002-1			D	0A

NOT TO BE REPRODUCED WITHOUT THE PERMISSION OF BC HYDRO

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REFERENCE DRAWINGS

NO	REMARKS

REVISIONS

DESIGN NUMBER		DSGN	K. Zeng
WORK ORDER NUMBER		INDEP CHK	
CSA S250 ACCURACY NAD - UTM		DFTG	K. Zeng
		DFTG CHK	
BASE ACCURACY LEVEL:		INSP	
ASB ACCURACY LEVEL:		REV	-----
		ACPT	

BC Hydro

WILLOUGHBY SUBSTATION

230/25 KV SWITCHYARD
ULTIMATE LAYOUT
OPTION 1a

DATE	DIST	DRAWING NUMBER	REPORT NUMBER	FIG NO	SIZE	REV
2023JAN04		WIB -E05-SK002-1a			D	0A

NOT TO BE REPRODUCED WITHOUT THE PERMISSION OF BC HYDRO

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Drawing Unit = Metric (4)
2500 x 1676
1/4/2024 2:55 PM

From: Chwaklinski, David
Sent: 2024, April 08 11:02 AM
To: Hepple, Robert R
Cc: Parmar, Surinder; Chwaklinski, David
Subject: RE: TM0502 Willoughby and TM0593 Campbell Heights
Attachments: Willoughby_Search_April_8_2024.jpg; Willoughby Search March 27-2024.kmz; TM0593_Campbell_PreferredProperties_20240405.kmz; TM0592_Willoughby_PreferredProperties_20240405.kmz; Willoughby Property Acquisition - Background for discussion with Township of Langley.; RE: Load growth Mapping for Campbell Heights/Willoughby; Campbell_Heights_Search_Area.jpg

Hi Robert, attached, please find the preferred property KMZ's for Campbell Heights and Willoughby. I have also included an email from Cynthia Manurung that included the load growth projection maps for both areas. Finally, I in included some images showing the overall picture for Willoughby and Campbell Heights. Let me know if I can provide any more information.

From: Hepple, Robert R
Sent: Friday, April 5, 2024 12:25 PM
To: Chwaklinski, David
Cc: Parmar, Surinder
Subject: TM0502 Willoughby and TM0593 Campbell Heights

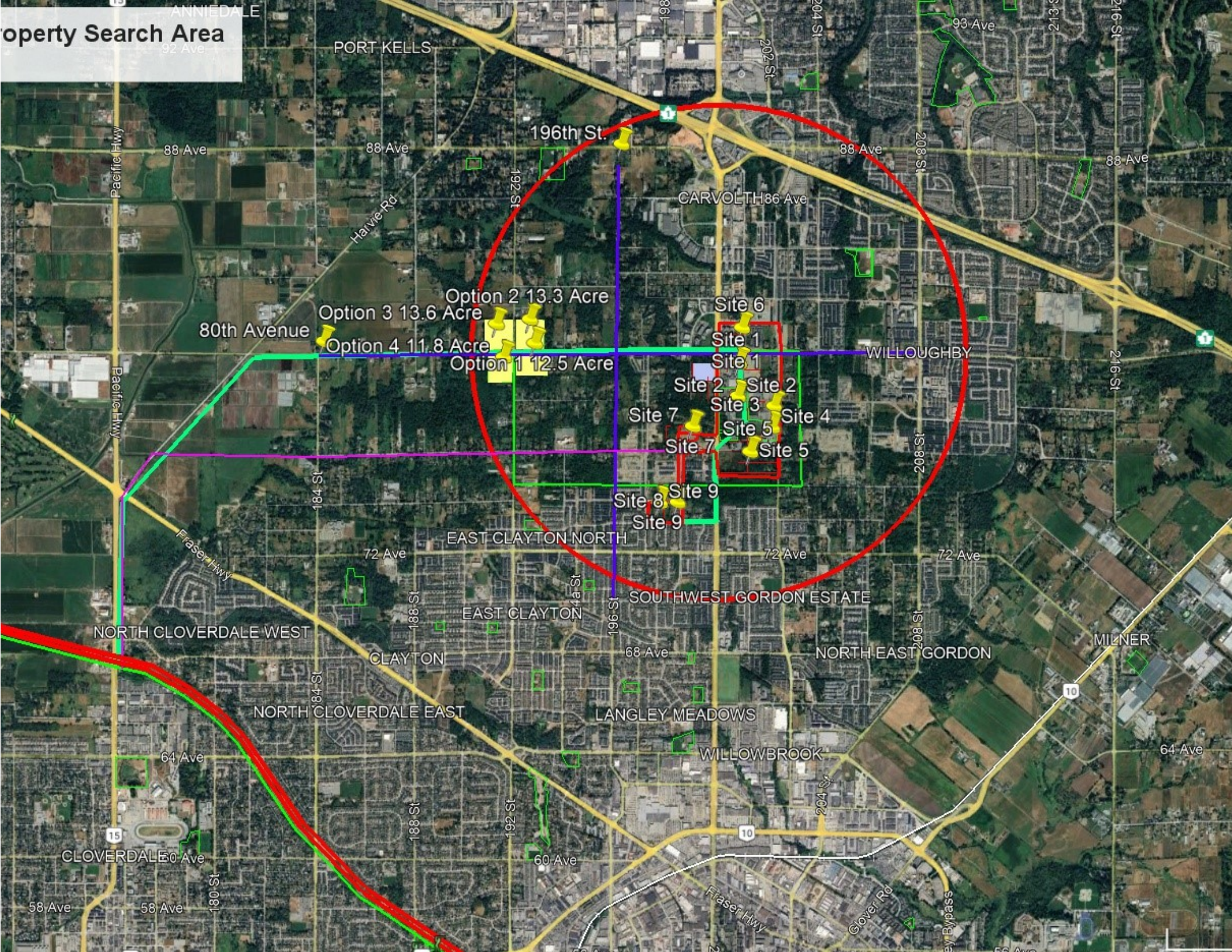
Hi Dave,
Looks like my request for Google Maps did not require approval and Telus is starting to download now.
So KMZ files would be great.
Can I also request the Distribution maps for the above two projects?
I am seeing land to the west of the load centres and want to see the Distribution system.

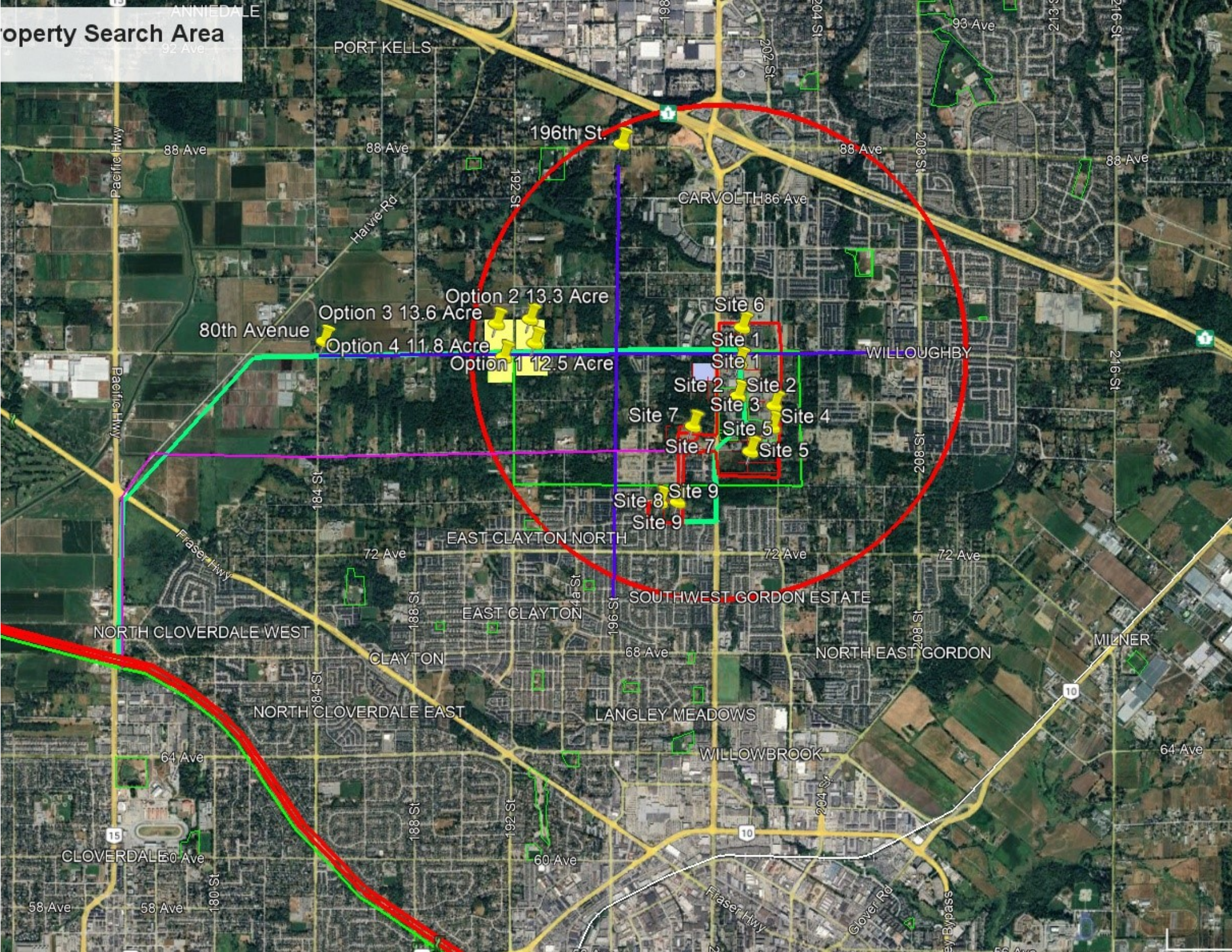
Robert Hepple P.Eng.

Project Manager, Stations
Capital Infrastructure Project Delivery
BC Hydro
6911 Southpoint Drive, B02
C 925.967.5880
E Robert.Hepple@BCHydro.com

Web: BCHydro.com

Smart about power in all we do.


roperty Search Area
ANNIEDALE
92 Ave
PORT KELLS
196th St.
88 Ave
Pacific Hwy
Harve Rd
192 St
CARVOLTH
86 Ave
202 St
204 St
208 St
93 Ave
213 St
216 St
Option 2 13.3 Acre
Option 3 13.6 Acre
80th Avenue
Option 4 11.8 Acre
Option 1 12.5 Acre
Site 6
Site 1
Site 1
WILLOUGHBY
Site 2
Site 2
Site 3
Site 4
Site 7
Site 5
Site 7
Site 5
Site 9
Site 8
Site 9
184 St
EAST CLAYTON NORTH
72 Ave
Fraser Hwy
188 St
EAST CLAYTON
SOUTHWEST GORDON ESTATE
NORTH CLOVERDALE WEST
CLAYTON
68 Ave
NORTH EAST GORDON
MILNER
NORTH CLOVERDALE EAST
LANGLEY MEADOWS
WILLOWBROOK
64 Ave
CLOVERDALE
60 Ave
180 St
58 Ave
Glover Rd
Fraser Hwy
10
15


roperty Search Area
ANNIEDALE
92 Ave
PORT KELLS
196th St.
88 Ave
Pacific Hwy
Harve Rd
192 St
CARVOLTH
86 Ave
202 St
204 St
208 St
93 Ave
213 St
216 St
Option 2 13.3 Acre
Option 3 13.6 Acre
80th Avenue
Option 4 11.8 Acre
Option 1 12.5 Acre
Site 6
Site 1
Site 1
WILLOUGHBY
Site 2
Site 2
Site 3
Site 4
Site 7
Site 5
Site 7
Site 5
Site 9
Site 8
Site 9
184 St
EAST CLAYTON NORTH
72 Ave
Fraser Hwy
188 St
EAST CLAYTON
SOUTHWEST GORDON ESTATE
NORTH CLOVERDALE WEST
CLAYTON
68 Ave
NORTH EAST GORDON
MILNER
NORTH CLOVERDALE EAST
LANGLEY MEADOWS
WILLOWBROOK
64 Ave
CLOVERDALE
60 Ave
180 St
58 Ave
Glover Rd
Fraser Hwy
10
15

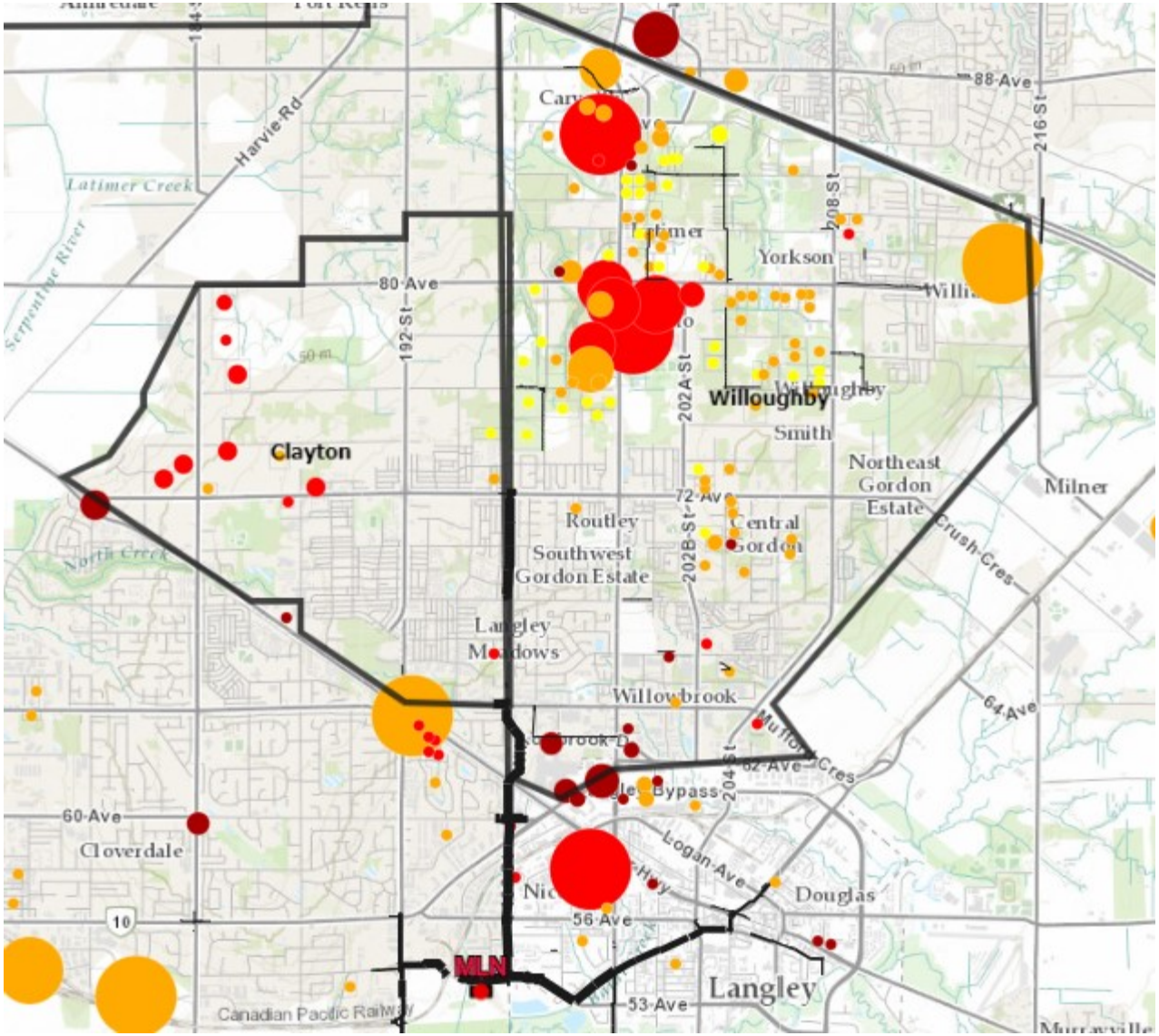

Untitled Map
Write a description for your map.
Legend
Buddhist Vihara Society in BC
Feature 1
Option
Option
SP Earthmovers
The Campus Hub
Azure Properties Group, Sivia House
Option 2 13.3 Acre
n 3 13.6 Acre
80 Ave
Option 1 12.5 Acre
Google Earth
Image Landsat / Copernicus
N
700 ft
192 St
Plant nursery
Option 4 11.8 Acre
192 St


Untitled Map
Write a description for your map.
Legend
Alt
Feature 1
Feature 2
Feature 3
Mercana Furniture and Decor
Tim Hortons
Silver Icing
Jax & Lennon
Van Gogh Designs
Bothwell-Accurate
32 Ave
Alternate 8
194 St
Google Earth
Image Landsat / Copernicus
Robust Transport Services
1000 ft
N
Alternate 7
Freshslice Pizza
A&W Canada
192 St
Tim Hortons
Latimer Park
27 Ave

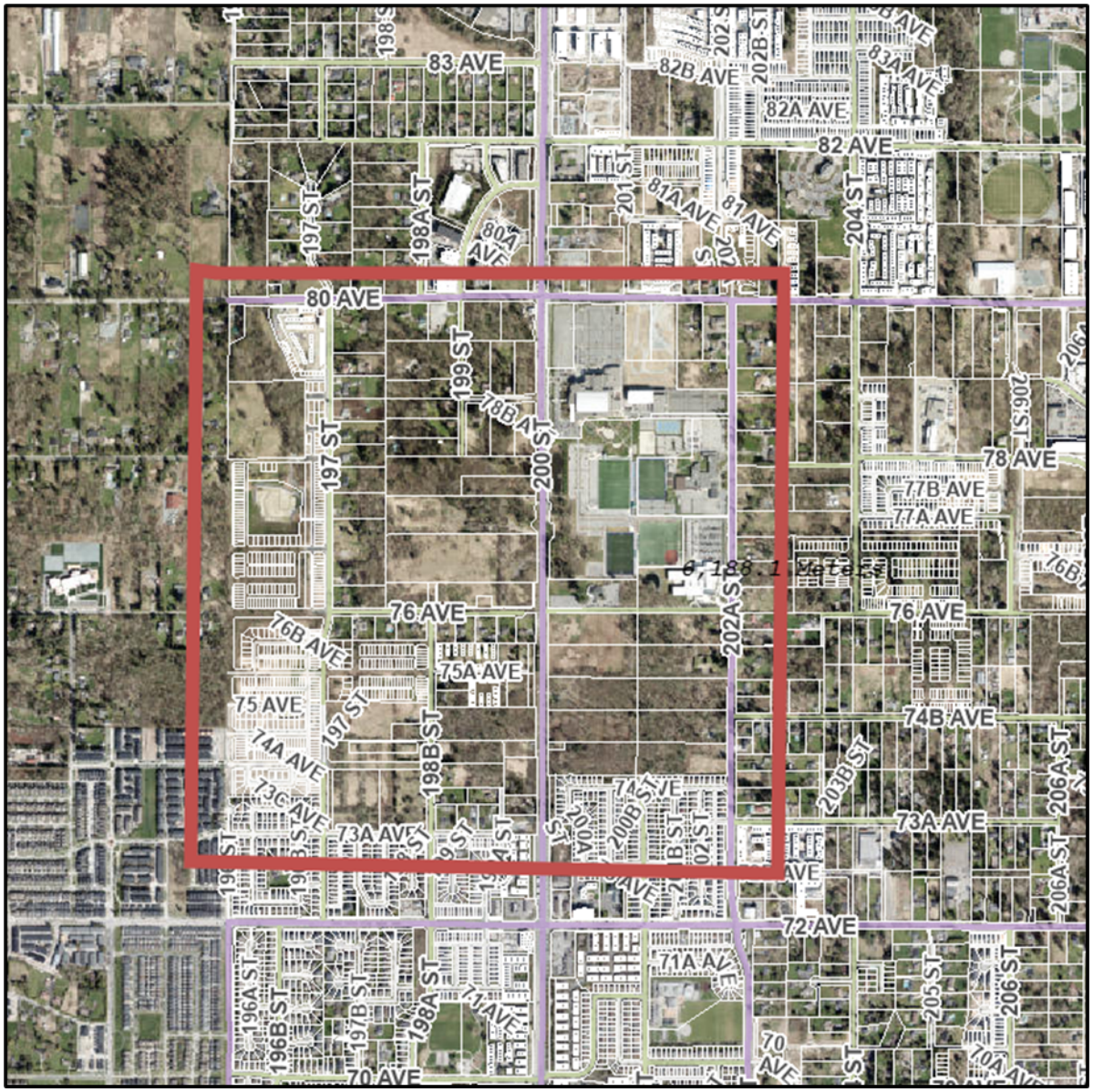
From: Chwaklinski, David
Sent: 2024, January 25 2:41 PM
To: Lee, Johnson; Simpson, Lauren; Wong, Felix; Armstrong, Tyler
Cc: Chwaklinski, David
Subject: Willoughby Property Acquisition - Background for discussion with Township of Langley.
Attachments: TM-0592 Project Intro and Meeting Request_2024-01.docx

Importance: High

On December 5th, 2023, Planning provided the map below that shows the expected future load growth areas in Willoughby. As you can see the bulk of the growth in Willoughby is centered around 200th below 80th avenue. These planning estimates are based on known and expected development in the Willoughby area of Langley.



Based on the map above the Planning preferred load center for Willoughby is geographically located approximately around 200th and 76th avenue. This information was used to develop the preferred area for a substation. The preferred boundaries are shown in the map below (roughly a 1200 m circle around the geographical center). These boundaries are based on initial review of developed sites and the requirement to keep distribution costs as low as practical. The further from the center of load the more cost incurred in developing the Distribution system.



There was a question this morning as to the possibility of placing the new station in other areas away from the load center. To be brief it will be challenging (but not impossible) for the following reasons:

- The boundary between Surrey and Langley is 196th st. This does not give very much room to look at proerties to the west as it is unlikley Surrey wants to host a station that primarily supplies Langley (we had the same discussion for Campbell Heights).

- North of the Freeway is not practical as as this would require two 230 kV crossings of the Trans Canada highway to supply the station as there is no 230 KV supply North of the Highway. It would also require multiple highway crossings for distribution to get to the load center. The costs would add up very quickly and introduce the challenge of working with MOTI to cross the highway.
- Moving further to the east is possible however the further east we go the further away the potential transmission connection gets which requires longer Rights of Way. If the station must move to the east it might work out that a Tap station could be combined for Willoughby and Campbell Heights stations but this would require a new double circuit ROW around the east side and through the south of Langley City
- Moving to the South brings us closer to Willowbrook which might require an Indoor station to fit in one of the Commercial/Industrial Properties

Finally on to Cost, I had conversations with Nasim Shoja and Man-Hin lo of the project estimating team this afternoon. I asked them about the latest estimates for various versions of outdoor, indoor and Underground substations. Please keep in mind that these are Conceptual Level esitmates at best with accuracy of +100%/-35% so they should only be considered as order of magnitude estiamtes only. There also is some variability to be expected because the Indoor and underground station estimates are for 400 MVa stations as opposed to 200 MVa which we expect Willoughby and Campbell Heights to be.

200 MVa Outdoor station $225,000,000 to $250,000,000
400 MVa Indoor station $415,000,000 to $456,000,000
400 MVa Underground station $600,000,000 to $650,000,000

Please note that these estimates do not include bare land costs. Note that these are not official numbers and should not be distributed externally. They should only be used in preparing for a question as to why we are not going indoor or undergroound.

I make one observation regarding locating an outdoor vs Indoor station for Willoughby. If the Langley City load is factored in does it suggest that locating an indoor station expandable to 400 MVa to serve the load of the entire area make sense?

I hope this helps in your preparation for any meetng with the Township of Langley. Let me know if you have any quesitons.

Also I have attached a marked up copy of your draft letter for consideration.

David Chwaklinski, P. Eng., FEC., PMP | Project Engineer Specialist
Lines and Interconnections

BC Hydro
6911 Southpoint Drive, E08
Burnaby, BC V3N 4X8

M 778 833 3740
E david.chwaklinski@bchydro.com

BC Hydro
Power smart

February 1, 2024

Departments of Community Development and Engineering
Township of Langley
20338 – 65 Avenue
Langley, BC V2Y 3J1
Sent by email: cdinfo@tol.ca, enginfo@tol.ca

Hello,

Langley is one of the fast-growing areas in Lower Mainland. Langley area is presently supplied by three substations – Port Kells (PKL), Harvey Road (HRD) and McLellan (MLN) substations. PKL and HRD are at their ultimate capacities and we're currently upgrading MLN to meet the area load growth and customers' requirement. We're seeing a need for a new substation to supply load in the Langley area as there will be no capacity available in the existing substations to supply the new area loads in around the next 10 years.

Willoughby Substation
One of the areas with significant growth is the community of Willoughby within the Township of Langley. We are looking to acquire a property for a 200MVA substation to service the growth expected in this area. This substation will take the higher voltage 230kV transmission power down to 25kV distribution to provide power to the community. The substation needs to be as close to the load centre as possible around the intersection of 200 Street and 80th Avenue and be around ~~43,000m²~~37,000 m² (399,000~~463,000~~ sq. ft.). We looked at the Willoughby Community Plan and noted the dense residential and commercial zoning plans for the areas being consider~~ation~~. Preferably, we rather not take property slated for dense residential development from the market and are open to other areas. However, we also have limits with regards to the distance away from the load centre and other operational considerations.

Commented [CD1]: Please note that this reduction in size is based on the three alternate layouts I received January 4th but forgot to update the SDM table with.

Request for meeting to discuss
We would like to meet with Community Planning and Engineering to discuss sites for a new substation to service Willoughby community growth around middle of February. Please contact me at johnson.lee@bchydro.com to arrange a mutually convenient time with our project team.

Sincerely,

Johnson Lee
Stakeholder Engagement Advisor

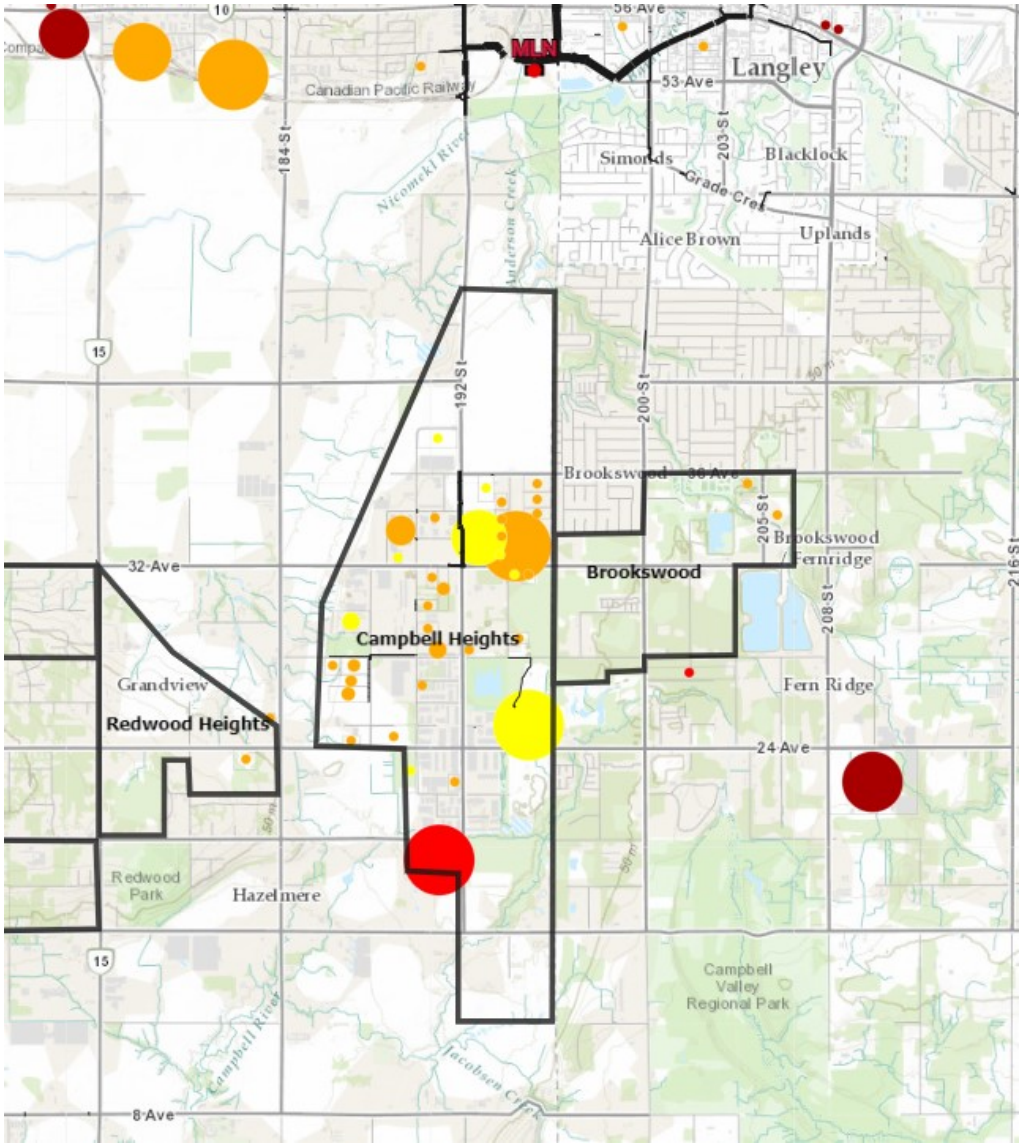
CC: Felix Wong, Project Manager, Willoughby Substation Acquisition Project
Sabrina Locicero, Community Relations Lower Mainland

From: Manurung, Cynthia
Sent: 2023, December 05 5:13 PM
To: Chwaklinski, David
Cc: Ellis, Aaron
Subject: RE: Load growth Mapping for Campbell Heights/Willoughby

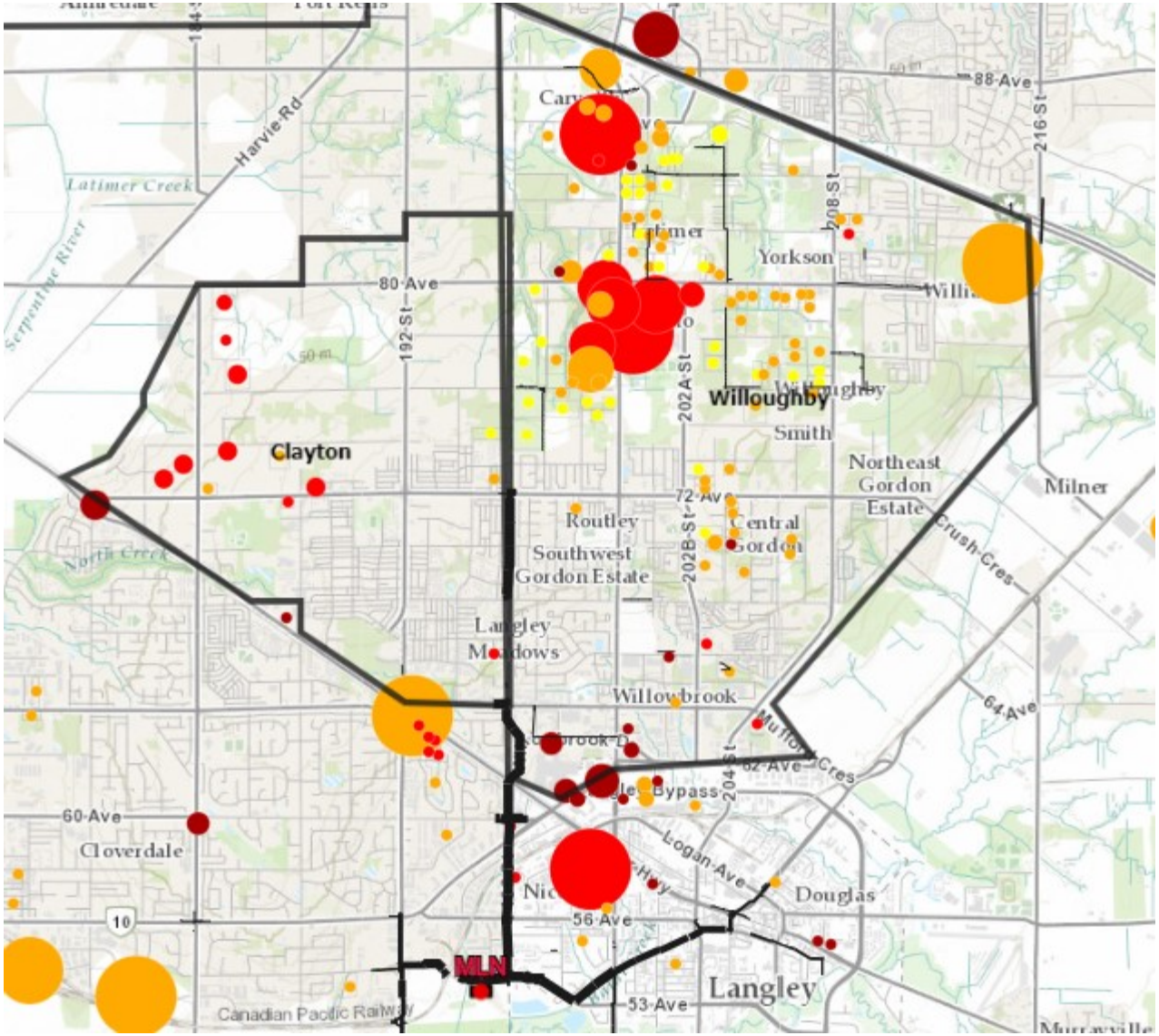
Hi David,

196 St is the border between Surrey and Langley. Campbell Heights neighborhood is within City of Surrey jurisdiction.

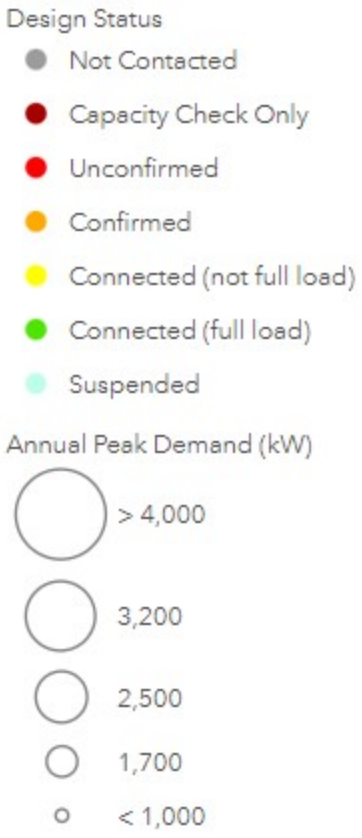
- Campbell Heights (CBM) substation service area is planned to support growth in Campbell Heights, Brookswood, and support Redwood Heights.



- Willoughby (WLB) substation service area is planned to support growth in Willoughby and Clayton


Harvie Rd
Latimer Creek
Serpentine River
88 Ave
216 St
208 St
Latimer
Yorkson
80 Ave
192 St
202A St
Willoughby
Smith
Clayton
Northeast Gordon Estate
Milner
72 Ave
Routley
Southwest Gordon Estate
202B St
Central Gordon
Crush Cres
North Creek
Langley Meadows
Willowbrook
64 Ave
62 Ave
Mufford Cres
204 St
Bypass
60 Ave
Cloverdale
Logan Ave
Douglas
10
56 Ave
MLN
Langley
53 Ave
Canadian Pacific Railway

Legend:



Cynthia Manurung, P.Eng
Regional Distribution Planner – Surrey/Langley/White Rock

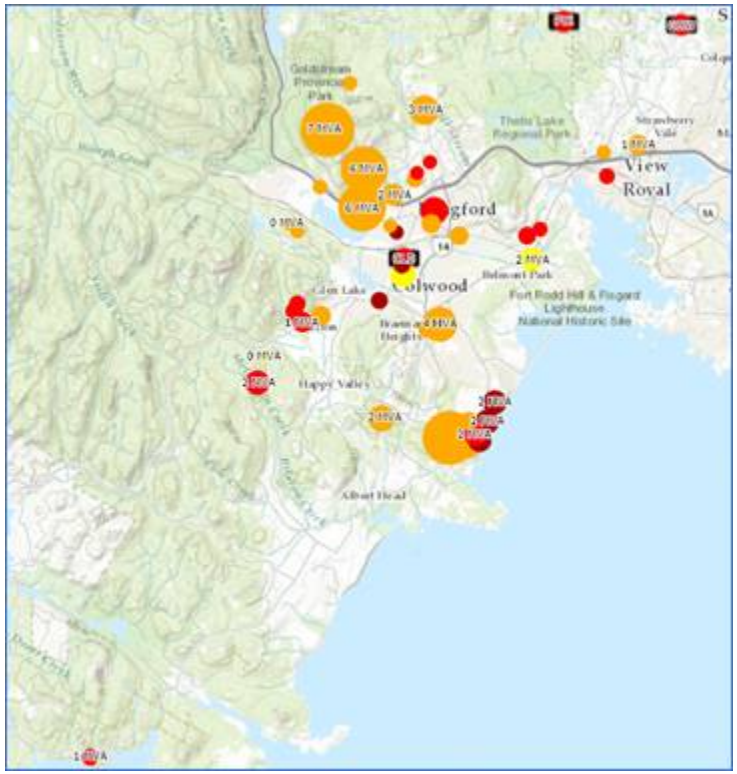
M 604 812 4322

Smart about power in all we do.

From: Chwaklinski, David <David.Chwaklinski@bchydro.com>
Sent: 2023, December 05 11:26 AM
To: Manurung, Cynthia <Cynthia.Manurung@bchydro.com>
Cc: Ellis, Aaron <Aaron.Ellis@bchydro.com>
Subject: Load growth Mapping for Campbell Heights/Willoughby

Good Morning Cynthia, I am the PE for the New Willoughby and Campbell Heights substations and I am coming to you as you are shown as the FV West Distribution planner. If this is not the case could you let me know who I should be talking to?

This morning a question came up related to the siting of the stations and the projected load growth in the langley area. It was pointed out that while the Campbell Heights load growth information is noted to be in the Langley area the actual substation (Campbell Heights) is located in Surrey. This could cause some challenges in stakeholder engagement when we ultimately talk to Surrey about constructing the station along the lines of " why are you building in surrey when the load is in langley?". Is it possible to get a map of some sort showing the potential load growth in the both areas similar to the map below which is for Goldstream? This would make it much easier for us to conduct our stakeholder engagement if we can show that most of the load increase is on the Surrey side of the border.

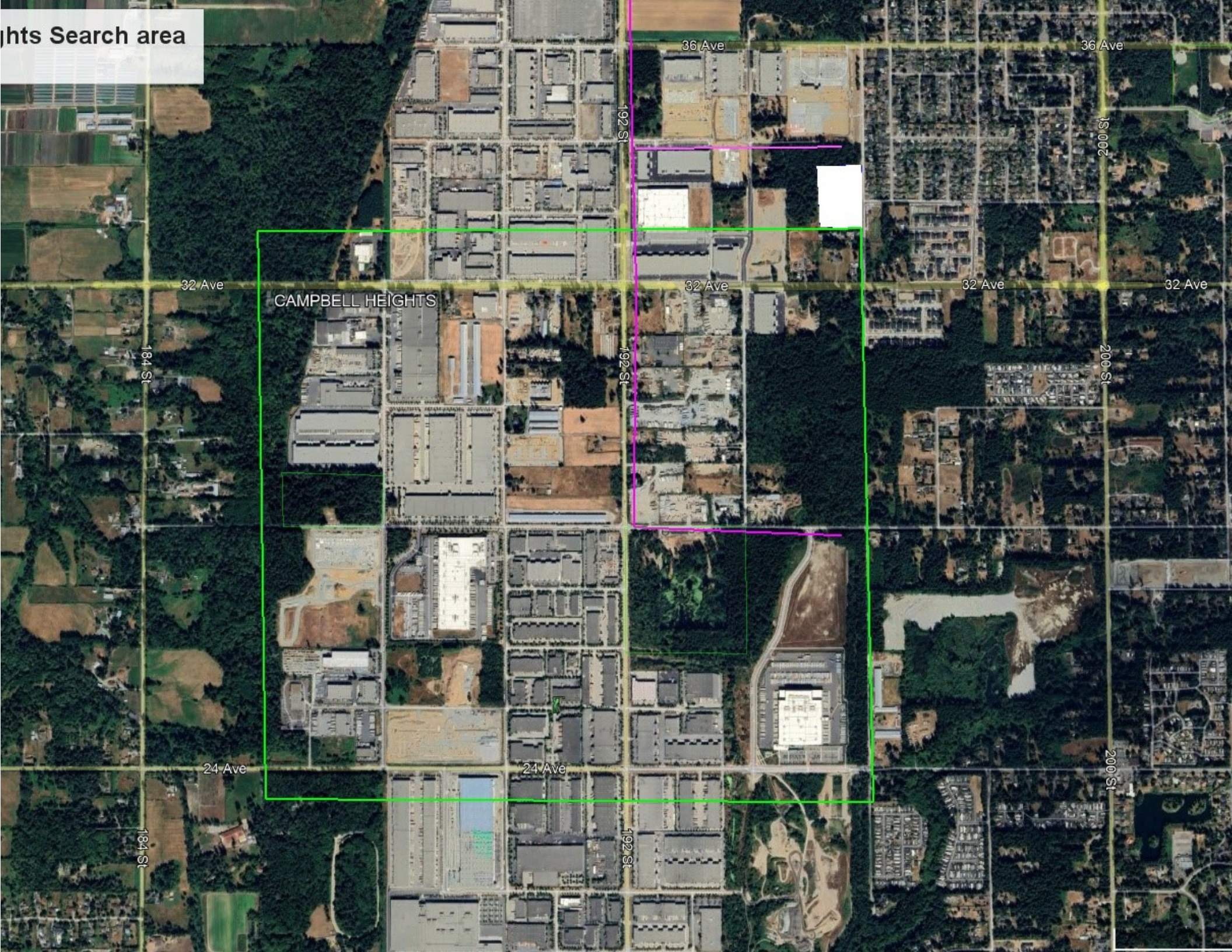


If you could provide this for the Campbell Heights and Willoughby areas it would be very helpful. If you have any questions please give me a call. Thanks

David Chwaklinski, P. Eng., FEC., PMP | Project Engineer Specialist
Lines and Interconnection

BC Hydro
6911 Southpoint Drive, E08
Burnaby, BC V3N 4X8

M **778 833 3740**
E david.chwaklinski@bchydro.com


ghts Search area
36 Ave
36 Ave
192 St
200 St
32 Ave
CAMPBELL HEIGHTS
32 Ave
32 Ave
32 Ave
184 St
192 St
200 St
24 Ave
24 Ave
184 St
192 St
200 St

From: Brady, Karen
Sent: 2024, October 01 4:41 PM
To: Evans, Jen; van Oort, Harry; Heritage
Cc: Chaisson, Rob; Knighton, Mykol
Subject: RE: TM-0592 - ALT 20 - Bosa - Kang UPDATED AGAIN - ENV screening
Attachments: Willoughby High Level Arch Review V8 TM0592.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Jen

Please see attached for the high-level review of ALT20. It was pretty fast to do since it's adjacent to the previous property. Please note that for the previous memo (V7), the historic sites information was omitted. This was my oversight. The Archaeology Branch has now removed all the historic site data from its online web application and I didn't catch that. It's available, but from a different online web application. Regardless, it shouldn't factor into the review, but thought you should know.

Cheers, Karen.

_____

Karen Brady | Environmental Professional (Heritage)

BC Hydro
P 778-256-5770

From: Evans, Jen
Sent: 2024, October 01 3:34 PM
To: van Oort, Harry ; Heritage ; Brady, Karen
Cc: Chaisson, Rob
Subject: FW: TM-0592 - ALT 20 - Bosa - Kang UPDATED AGAIN - ENV screening

Hi everyone,

We've been requested to review TM-0592 Alternative 20 (Bosa, Kang) property again. We reviewed the Bosa-Kang property shown in the attached Bosa-Kang jpg. The new request is to add in the Kool property to the southwest (shown in the attached Picture 1 image). Revised Alt 20 kmz is attached.