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Distribution Area Study

for

Ancaster and Glanbrook Areas

Planning Document for the period between: *2010*-2022

Prepared by: Distribution Business Development Department

1.0 Background and Need

Hydro One Distribution supplies power to the retail customers in the southeastern part of the City of Hamilton. The area is part of the former Town of Ancaster and Township of Glanbrook and is supplied by the Nebo TS and Dundas TS feeders. The Ancaster area is supplied by Nebo TS 157M6, 157M7 & 157M8 and from Dundas TS 2M4 & 2M6 while the Glanbrook area is supplied from the Nebo TS M5 feeder.

According to the Census data available from Statistics Canada the Ancaster and Glanbrook areas saw a population growth of 34% and 85% respectively from year 2001 to year 2011. It is anticipated the substantial load growth will continue in the areas for the study horizon.

The Nebo TS M5 feeder is recommended for a backup supply since it is only one feeder for the supply of Glanbrook areas, specifically for the Binbrook community. Other Nebo TS feeders, M6, M7 and M8 are heavily loaded requiring load relief. As well, Nebo TS loading has reached its summer 10-Day Limited Time Rating (LTR) requiring capacity improvement.

This planning contained in this area study began in 2010. The loading and costing information have been updated with current numbers as they became better known through 2011 and 2012. The 10 year study horizon is 2012 – 2022.

This is a planning document; therefore planning assumptions are made throughout to allow for contingency plans as per HONI's "normal" system conditions.

2.0 Study Area

This study focuses on the Hydro One 27.6 kV supply networks in the town of Ancaster and Glanbrook areas in the City of Hamilton. The study area is currently supplied by Dundas TS (2M4 & 2M6) and Nebo TS (157M5, 157M6, 157M7 & 157M8). There are 6 distribution stations (DS) that are supplied from the feeders and these DSs make up the 8.32kV supply network within the study area. The DSs are Dickenson Road DS, Duff DS, Ancaster West DS, Fiddlers Green DS, Mount Hope DS and Woodburn DS.

The load growth within the study area is assumed to be 1.8% annually from 2014 to 2022 following a step increase in 2013-2014 due to the planned connection of a large load customer.

This study has one distributed generation which has been connected since 2008 on the Nebo TS M5 feeder; 3.2 MW biogas.

An overview of the study area is provided in Figure 1. The time period considered in this study is 10 years- from 2012 to 2022.

3.0 Transmission Lines

Nebo TS is 230/27.6 kV station doubly fed from Middleport TS and Beach TS via circuits Q24HM and Q29HM.

Dundas TS is 115/27.6 kV station doubly fed from Burlington TS and Newton TS via circuits B3 and B4.

4.0 Transformer Station (TS) and Capacity

The summer loading for Nebo TS has reached its summer Limited Time Ratings (LTR)
A summary of station's summer LTR and 10 year load projection are recorded in table 1. The actual peak load on Nebo TS for 2010 and 2011 was 98.8MVA and 109.5MVA respectively.

Table 1: Transmission Stations Capacity and Loading- Existing and Forecast

TS	Summer LTR [MVA]	Summer Peak Existing [MVA] 2012	Present Available Summer Capacity [MVA] 2012	5 Years (2017)*		10 Years (2022)*	
				Growth [MVA]	Projected Available Capacity [MVA]	Growth [MVA]	Projected Available Capacity [MVA]
Nebo TS	106	106	0	49	-49	61	-61
Dundas TS & Dundas TS #2	213	160	53	16	37	35	19

Note: TS loading includes both H1Dx and Horizon Utilities.
Dundas TS #2 was built in 2003 for load relief of Dundas TS.

5.0 TS Feeder Capacity

The existing 27.6 kV feeders of Nebo TS and Dundas TS affecting the study area are listed in the table 2 below. The load projection of each feeder is based on local growth knowledge on any possible future new load connections in addition to the normal growth rate at 1.8%. The table 2 below shows load growth if no corrective action is taken.

Nebo TS M6 and M7 are currently over their Planned Load Limit (PLL) of 350 Amps or 17 MVA for 27.6 kV feeder. These feeders will require load relief soon. Also, Nebo TS M5, M8 and Dundas TS M4 will approach their PLL starting in 2013

Table 2: TS Feeder Capacity and Loading- Existing and 10 year forecast – no additional feeders or load transfers.

TS Feeder	*Present 2012*		*2017*		*2022*	
	Voltage	**Load**	**Voltage**	**Load**	**Voltage**	**Load**
	[%]	**[A]**	**[%]**	**[A]**	**[%]**	**[A]**
Nebo TS M5*	100%	288	95.2%	**850**	95.2%	**926**
Nebo TS M6	98.2%	**430**	98.0%	**470**	97.5%	**514**
Nebo TS M7	97.5%	**494**	97.4%	**540**	96.9%	**590**
Nebo TS M8	97.1%	330	96.5%	**360**	95.9%	**393**
Dundas TS M4	100%	330	99.7%	**360**	99.3%	**393**
Dundas TS M6	101.6%	180	101.3%	197	100.7%	215

Note: The lower permissible voltage limit on each feeder is 94% of the nominal voltage as per Hydro One's system voltage standards.
Red Hill Business Park is estimated to be 26MVA during the study period and is shown on Nebo M5 for the 2017 and 2022.

6.0 TS Feeder Performance

The average TS feeder performance for the past 3 years from 2007 to 2009 is listed in table 3 below.

Table 3: Transmission Station Feeder Performance- Average from 2007 to 2009

	3 Year Average from 2007 to 2009					
TS Feeder	**SAIDI**		**SAIFI**		**CAIDI**	
	SAIDI	**Prov Rank**	**SAIFI**	**Prov Rank**	**CAIDI**	**Prov Rank**
Nebo TS M5	0.0012	1376	0.0005	1146	2.2308	1947
Nebo TS M6	0.0017	1174	0.0014	532	3.1654	1337
Nebo TS M7	0.0083	352	0.0057	115	1.9829	2113
Nebo TS M8	0.0038	706	0.0038	192	0.8814	2599
Dundas TS M4	0.0146	**198**	0.0050	**143**	2.8382	1524
Dundas TS M6	0.0001	2356	0.0003	1423	0.4638	2725

Note: There are no significant distribution feeder reliability or performance issues in the study area except Dundas TS M4; this feeder is considered in the "worst performer" category

in the province in terms of customer interruptions duration and outage frequencies. The feeder was reconfigured in 2011 so that a half of its feeder is transferred to Dundas M6. The feeder performance is expected to improve as a result.

7.0 Distribution Station (DS) Capacity

The Planning Load Limit (PLL) of the Distribution Stations (DS) in the study area, along with existing, 5 and 10 years load forecast are summarized in Table 4.

Table 4: Distribution Station Summer Capacity- Existing, 5 and 10 years forecast.

DS	Summer PLL [MVA]	Summer Peak 2012 [MVA]	Present Summer Available Capacity [MVA]	5 Year (2017) Growth [MVA]	5 Year (2017) Projected Available Capacity [MVA]	10 Year (2022) Growth (2^{nd} 5 yrs) [MVA]	10 Year (2022) Projected Available Capacity [MVA]
Dickenson Road DS	6.3	4.9	1.4	0.5	0.9	0.6	0.3
Duff DS	6.3	4.0	2.3	0.4	1.9	0.5	1.52
Ancaster West DS	6.3	7.0	**-0.7**	0.7	**-1.4**	0.8	**-2.2**
Fiddlers Green DS	6.3	5.8	0.5	0.6	**-0.1**	0.6	**-0.7**
Mount Hope DS	6.3	5.4	0.9	0.5	0.4	0.6	**-0.2**
Woodburn DS	6.3	3.3	3.0	0.3	2.7	0.4	2.3

Note: Duff DS, Woodburn DS, and Dickenson Road DS will have surplus capacity by the end of the study period. Ancaster West DS is currently over its PLL while Fiddlers Green DS is expected to be over its PLL in 2017 and Mount Hope DS by 2022.

8.0 DS Feeder Capacity

The DS feeders operate at 8.32 kV. A summary of these DS feeders, their existing, 5 and 10 year forecast loading is in Table 5.

Table 5: Distribution Station Feeder Capacity- Existing, 5 and 10 years forecast

DS Feeder	*Max. Load With Overcurrent Protection [A]*	*Present Load (2012) [A]*	*2017 Load [A]*	*2022 Load [A]*
Dickenson RD DS F1	200	5	5.5	6
Dickenson RD DS F2	200	169	185	**202**
Dickenson RD DS F3	280	160	175	191
Duff DS F1	200	185	**202**	**221**
Duff DS F2	200	95	104	114
Ancaster West DS F1	200	111	121	133

Ancaster West DS F2	280	79	86	94
Ancaster West DS F3	280	**290**	**317**	**347**
Fiddlers Green DS F1	280	169	185	202
Fiddlers Green DS F2	280	226	247	270
Mount Hope DS F1	140	**154**	**168**	**184**
Mount Hope DS F3	280	215	235	257
Woodburn DS F1	200	112	122	134
Woodburn DS F2	280	47	51	56
Woodburn DS F3	200	56	61	67

9.0 DS Feeder Performance

The average DS feeder performance from 2007 to 2009 is listed in Table 6 below. There are no significant distribution feeder reliability or performance issues in the study area.

Table 6: Distribution Station Feeder Performance- Average from 2007 to 2009.

DS Feeder		3 Year Average from 2007 to 2009					
		SAIDI		SAIFI		CAIDI	
		SAIDI	Prov Rank	SAIFI	Prov Rank	CAIDI	Prov Rank
Dickenson RD DS	F1	0.00	0	0.00	0	0.00	0
Dickenson RD DS	F2	0.0015	1222	0.0007	896	2.2089	1969
Dickenson RD DS	F3	0.0021	1018	0.0003	1520	6.5029	340
Duff DS	F1	0.0017	1150	0.0004	1354	4.3204	822
Duff DS	F2	0.0003	2109	0.0001	2242	3.6388	1100
Ancaster West DS	F1	0.0012	1369	0.0005	1134	2.1593	2001
Ancaster West DS	F2	0.0002	2287	0.0001	2152	2.2691	1913
Ancaster West DS	F3	0.0033	766	0.0006	960	5.4365	523
Fiddlers Green DS	F1	0.0004	2013	0.0001	2309	3.4762	1180
Fiddlers Green DS	F2	0.0022	993	0.0010	683	2.1038	2045
Mount Hope DS	F1	0.0015	1226	0.0009	762	2.2514	1927
Mount Hope DS	F3	0.0011	1466	0.0004	1232	3.4841	1175

Note: Ancaster West DS F3 had a series of outages in 2010 on its off road sections. As a result corrective actions have undertaken during 2011-2012 and its performance is expected to improve.
Dickenson Rd DS F3 has the worst CAIDI. The plan is in place to convert the section of F3 and provide a loop feed in 2013/2014.

10.0 Summary

This is a 10 year period area study (from 2012 to 2022) concentrating mainly on Town of Ancaster and the Township of Glanbrook where Hydro One serves as Local Distribution Company. The study took into account of the urban Hamilton official plan in estimating the load growth.

The issues identified in this area study were the following:

- Nebo TS was loaded beyond its summer LTR in 2012 (table 1).
- Nebo TS M6 and M7 feeders are over its planning limit of 17 MVA or 350 amps (table 2).
- Nebo TS M5 and M8 will be over its planning limit by early 2014 and 2016 respectively.
- Ancaster West DS, Fiddlers Green DS and Mount Hope DS will be over its PLL (6.25 MVA) within the study period requiring corrective actions to mitigate risks (table 4).
- Mount Hope DS F1 and Ancaster West DS F3 are currently under review for recloser upgrade and/or load transfer between feeders in order to bring the loading within the equipment rating. Dickenson Road DS F2 and Duff DS F1 reclosers will be reviewed as required for upgrades.

Loading in this study area will continue to increase at a steady rate and as a result Nebo TS upgraded capacity will be depleted by the end of the study period and thus further relief will need to be planned for 2023.

A summary of issues identified in this area study are in table 7 below.

Table 7: Summary of issues identified in this area study.

TS/Feeder	Issue	Year
Nebo TS	Over PLL	Now
Nebo TS M6	Over PLL	Now
Nebo TS M7	Over PLL	Now
Ancaster West DS	Over PLL	Now
Mount Hope DS F1 Recloser	Over PLL	Now
Ancaster West DS F3 Recloser	Over PLL	Now
Nebo TS M5	Over PLL	2014
Nebo TS M8	Over PLL	2015
Dundas TS M4	Over PLL	2015
Duff DS F1 Recloser	Over PLL	2017
Fiddlers Green DS	Over PLL	2017
Mount Hope DS	Over PLL	2022

11.0 Description of Alternatives

Based on the findings of this area study, the TS and TS feeder capacity limitation within the study area are a major concern requiring resolution.
Three alternatives were considered for relieving the forecasted Transformer Station Feeder overloads in the study area. Alternative 3 was considered but rejected due to the technical difficulties in building a new TS and running 4 new feeders from the existing Dundas TS site.

The common actions for all three alternatives are listed below:

- Change DS reclosers to higher rated reclosers in the years identified in section 8.
- Maintain Ancaster West DS load below the equipment rating by converting to 27.6kV (2014) and via transformer upgrade from 5MVA to 7.5MVA (2015).
- Maintain Fiddlers Green DS load below the equipment rating via transformer upgrade from 5MVA to 7.5MVA (2017)
- Transfer Ancaster West DS from Nebo M6 to Dundas M6

11.1 Alternative 1 – Increase capacity at Nebo TS

This alternative provides additional capacity at Nebo TS by 64MVA providing load relief to the overloaded feeders 157M5 (2014), 157M6 & 157M7 (currently) & 157M8 (2016). This additional capacity in the study area will be achieved by constructing four new feeders out of Nebo TS (M9. M10, M11 and M12) and transfer load from the overloaded feeders to the new feeders. About 30 km of new 27.6 kV circuits will need to be constructed in this alternative.

The proposed action plans for alternative 1 are summarized as follows (please refer to Figure 3):

- Increase Nebo TS capacity with four new feeder positions and larger transformers with 10 Day LTR of 170MVA in 2013. ($7M capital contribution 2013)
- Build four 27.6 kV underground and overhead egresses from Nebo TS for feeders M9 through M12 ($4M 2013)
- Build approximately 2 km from existing Nebo TS feeders M7 and M8 to enhance system for the Red Hill Business Park. ($0.5M 2013)
- Build approximately 14 km of 27.6 kV feeder, M11 from Nebo TS east on Rymal Rd and on Hwy 56 to provide a backup and load relief for Nebo TS M5 to Binbrook ($2.8M 2013/2014)
- Build approximately 10 km of 27.6 kV feeder, M10, from Nebo TS to Airport Road/Upper James Road and transfer load from Nebo M6 and M7 feeders. ($2.5M, 2014)

11.2 Alternative 2 – Build “New Ancaster” TS on Shaver Rd

This alternative includes the construction of a new station, "New Ancaster" TS, with four feeders (M1, M2, M3 and M4) with two 25/41 MVA transformers, 230/27.6 kV (with maximum station load (LTR) of 57 MVA) on Shaver Rd (between Garner Rd. and Book Rd.) where four 230kV circuits M27B, M28B, Q24HM and Q29HM are located.
The new Ancaster TS would provide relieve to Nebo TS as well as its overloaded feeders, 157M6, 157M7 & 157M8 by load transfers from the Nebo TS to the new TS. Approx 19 km of new 27.6 kV feeder construction will be required in this alternative.

The proposed action plans for alternative 2 are summarized as follows (please refer to Figure 4):

- Build new station with two 25/41 MVA transformers, 230/27.6 kV, 4-feeders, "New Ancaster" TS, that will be supplied from either M27B & M28B or Q24HM & Q29HM circuits. The new TS will be built as typical DESN ($20M capital contribution 2013).
- Build four overhead feeder egresses, M1 through M4, from TS structure ($2M 2013)
- Build approximately 2 km from existing Nebo TS feeders M7 and M8 to enhance system for the Red Hill Business Park. ($0.5M 2013).
- Build approximately 14 km of 27.6 kV feeder overhead, existing M6 from Nebo TS east on Rymal Rd and on Hwy 56 to provide a backup and load relief for Nebo TS M5 to Binbrook ($2.8M 2013/2014).

11.3 Alternative Considered but Rejected - Build Dundas TS #3

Both Dundas TS and TS #2 combined would not have enough capacity to accommodate load growth if the new load were transferred to Dundas TS. To relieve further an additional station, Dundas TS #3 would need to be built in 2013.
This alternative was considered but rejected for the following reasons:

- Difficulty and high costs running feeders across Hamilton/Burlington Bluffs and across Hwy 403 and through already built up city subdivisions.
- Not enough land to add another DESN station where there exists Dundas TS and Dundas TS #2
- Decrease reliability due to long feeders from Dundas TS #3 to load center
- Costly to build Dundas TS #3

12.0 Comparison of Alternatives

12.1 Treatment of Transmission Connection Costs

Under the Transmission System Code, HONI Transmission supports investments in Transmission Connection Facilities for supply to LDC's based on the NPV of future revenue from the LDC over a 25-year horizon. Connection tariff revenues associated with forecast load that is over and above existing available connection capacity is used.

To upgrade Trasnmission connection facilities, HONI Transmission requires Capital Contribution from HONI Distribution for the revenue shortfall.

Hydro One Transmission has determined the budgetary cost estimate for building the additional capacity for Nebo TS and Ancaster TS. The capital contribution required by Hydro One Distribution is about $7M for Nebo TS upgrage (Alternative 1) and $20M for new Ancaster TS option. Dundas TS option was not separately estimated however the contribution amount would be a minimum of $20M due to greater complexity in building a DESN at the current site.

12.2 Cost Comparison of Alternatives

The costs for each of the three alternatives are summarized in Table 8 below. Alternative 1 is the preferred and the lowest cost alternative. Alternative 2 requires $8.5M in additional costs and does not meet the loading requirement for the planning period.

Table 8: Cost table summarizing alternatives 1 and 2 major action items and NPV (2013)

	Alternative 1		**Alternative 2**	
Action Items	**Cost ($M)**	**Year**	**Cost ($M)**	**Year**
Dx Capital Contribution for TS proposed in each Alternative	7	2013	20	2013
New Feeder Egresses from TS (4 feeders)	4	2013	2	2013
New feeder to Binbrook	2.8	2013	2.8	2013
Red Hill Park enhancement	0.5	2013	0.5	2013
New feeder to Airport	2.5	2014		
Cumulative NPV (2013 $M)	**16.8**		**25.3**	

12.3 Capacity

The available TS capacity at the end of the study period is summarized in Table 9 below. Alternative 1 upgrading Nebo TS will see the additional capacity dwindle to 3MVA at the end of the study period requiring further work in as early as 2023. For the alternative 2 of building new Ancaster TS the new capacity would fall short by year 2022. Therefore,

Alternative 1 satisfies the capacity requirement for the study period whereas alternative 2 does not.

Table 9: Summary of available station capacity.

	Available Capacity (MVA)		
Alternative	2014 after upgrade	2017	2022
1	24	15	3
2	17	8	-4

12.4 Reliability

Both alternatives 1 and 2 provide four new feeders. Alternative 1 will build 30km additional feeders whereas Alternative 2 builds 18km. Alt 2 builds less line because Ancaster TS would be located close to the load centre where existing feeders are already there. The shorter line distance provides less line exposure and therefore will help yield an incremental improvement in the feeder performance.

12.5 Line Losses

Alternative 2 would result in smaller line losses than alternative 1 since new feeders from Ancaster TS would sectionalize the Nebo TS feeders and reduce their lengths reducing I^2R losses.

12.6 Recommendations

Alternative 1 – Upgrade Nebo TS is recommended for implementation as it provides a higher capacity and less capital contribution requirement. The advantage of meeting a longer period of capacity requirement at less cost is the deciding factor selecting alternative 1 over the benefits in line losses reduction and line length reduction provided in alternative 2.

The major action items for this recommended alternative are the following:

- All the common action items in Section 11.

- Increase Nebo TS capacity with four new feeder positions and larger transformers with 10 Day LTR of 170MVA in 2013. ($7M capital contribution 2013)
- Build four 27.6 kV underground and overhead egresses from Nebo TS for feeders M9 through M12 ($4M 2013)
- Build approximately 2 km from existing Nebo TS feeders M7 and M8 to enhance system for the Red Hill Business Park. ($0.5M 2013)

- Build approximately 14 km of 27.6 kV feeder, M11 from Nebo TS east on Rymal Rd and on Hwy 56 to provide a backup and load relief for Nebo TS M5 to Binbrook ($2.8M 2013/2014)
- Build approximately 10 km of 27.6 kV feeder, M10, from Nebo TS to Airport Road/Upper James Road and transfer load from Nebo M6 and M7 feeders. ($2.5M, 2014)

Table 10: Feeder Loading & Voltage Conditions – preferred alternative

TS Feeder	*Present 2012*		*2017*		*2022*	
	Voltage	**Load**	**Voltage**	**Load**	**Voltage**	**Load**
	[%]	**[A]**	**[%]**	**[A]**	**[%]**	**[A]**
Nebo TS M5	99.9%	288	99.6%	315	99.3%	344
Nebo TS M6	98.2%	**430**	100.1%	320	99.8%	350
Nebo TS M7	97.5%	**494**	100.1%	318	99.8%	350
Nebo TS M8	97.1%	330	97.8%	300	97.1%	350
Nebo TS M9			101.2%	265	101%	289
Nebo TS M10			98%	295	97.3%	350
Nebo TS M11			101.8%	130	101.6%	142
Nebo TS M12			101.2%	265	101%	289
Dundas TS M4	100%	330	99.8%	350	99.5%	**355**
Dundas TS M6	101.6%	180	99.8%	350	99.5%	**355**

Note: New Nebo feeders M9-M12 to be built in 2013.
Dundas M4 and M6 feeders are kept close to its PLL 350amps via load transfers to Nebo feeders M6/M7/M8/M10.
Lower permissible limit for voltage on feeders is 94 %. Voltage in % is taken from the feeder-end.
Dundas M4 and M6 will need further relief when a new TS is built in Ancaster in 2023 when a new TS is required for the load relief of Nebo TS.

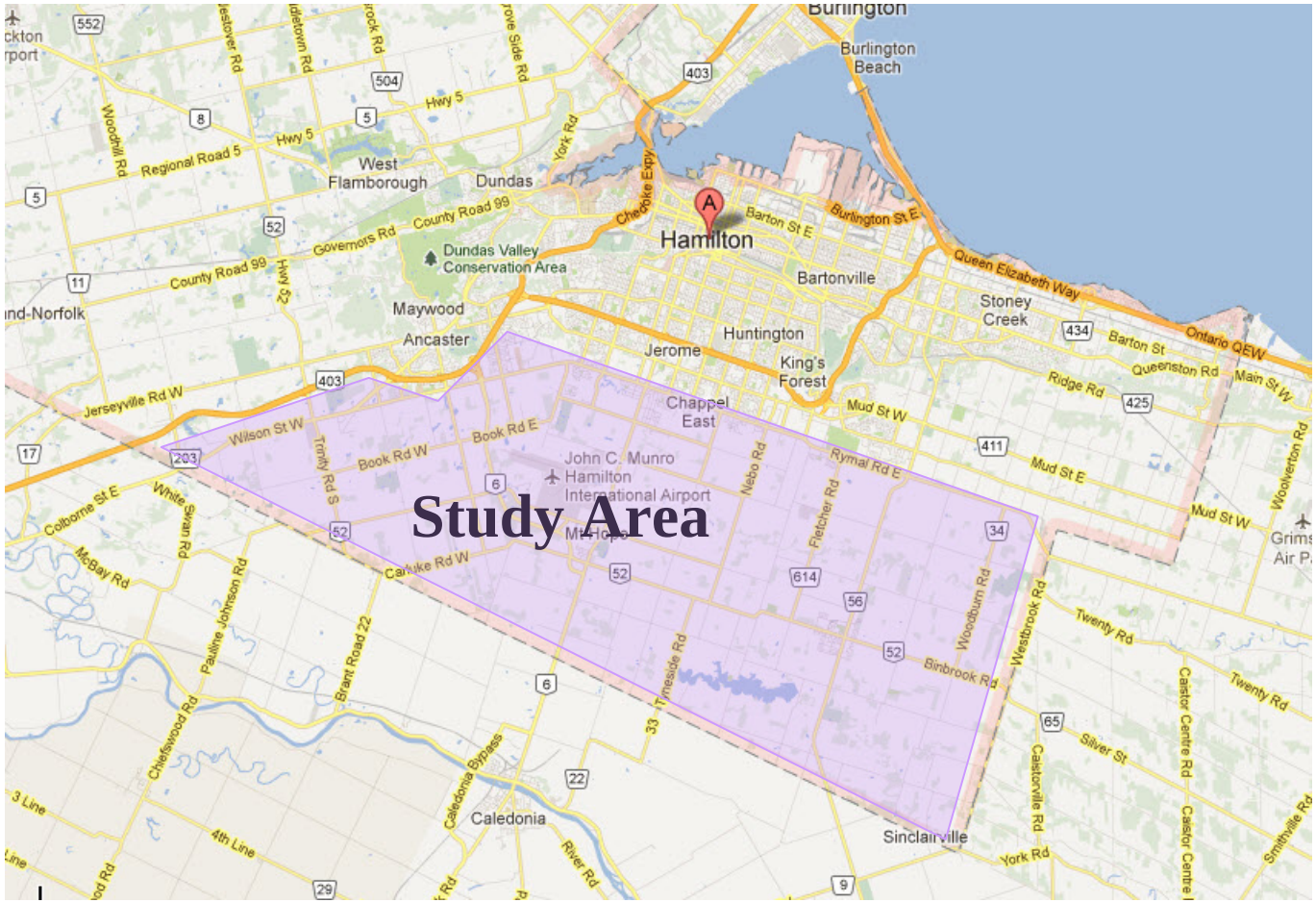

Figure 1: Study Area

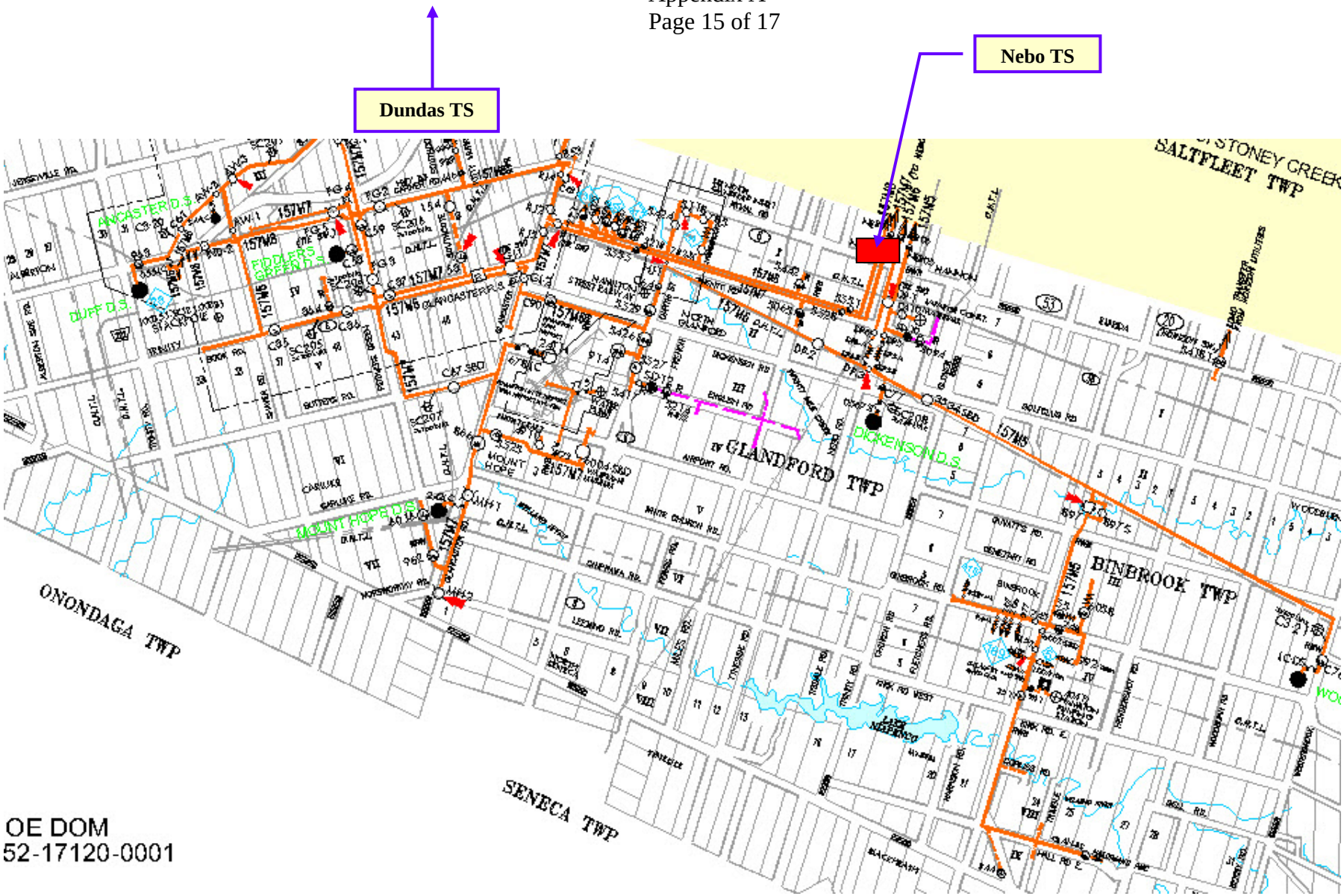

Figure 2: Existing 27.6 kV Facilities

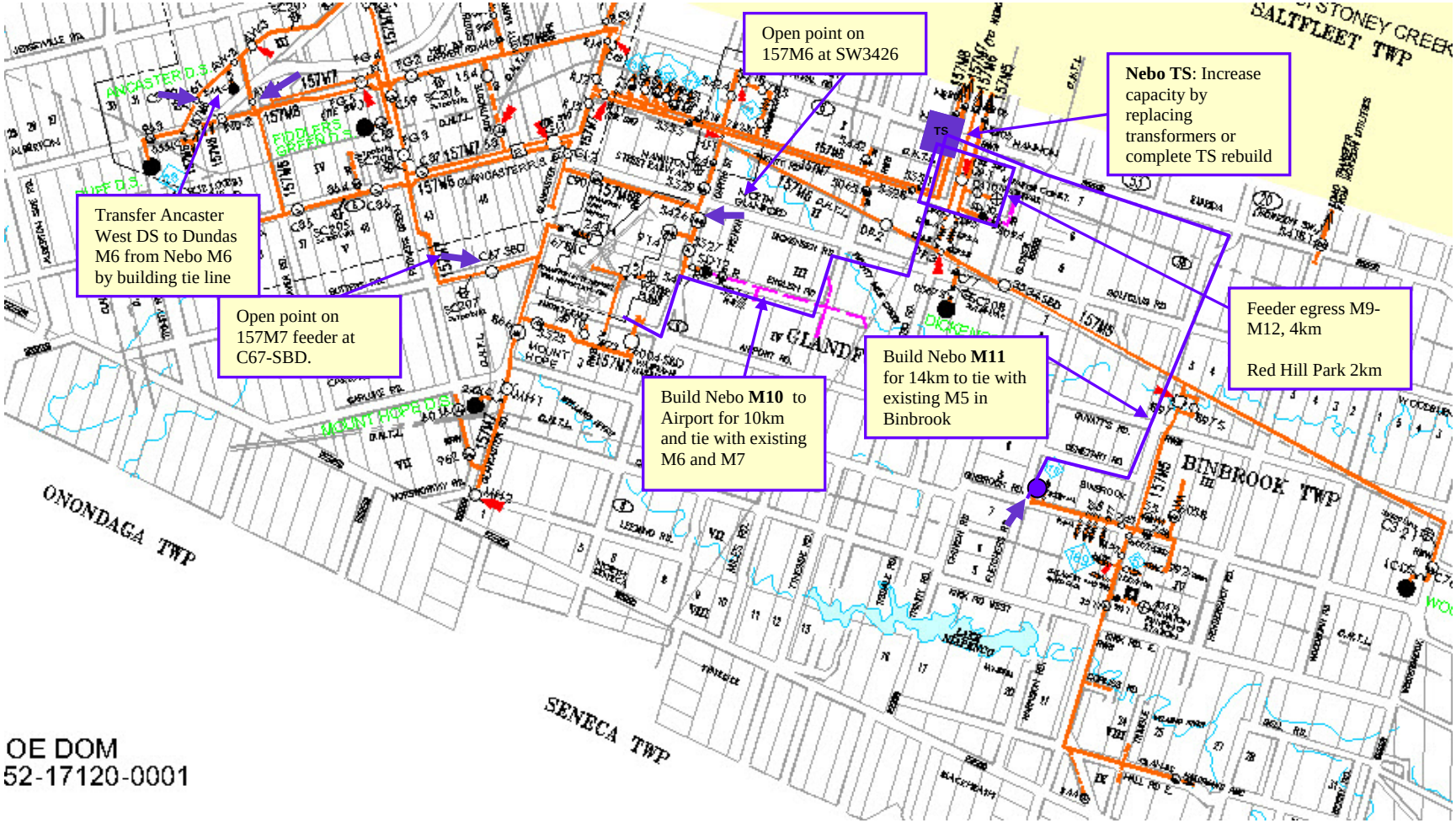

Figure 3 – Alternative 1 – Increase Capacity at Nebo TS

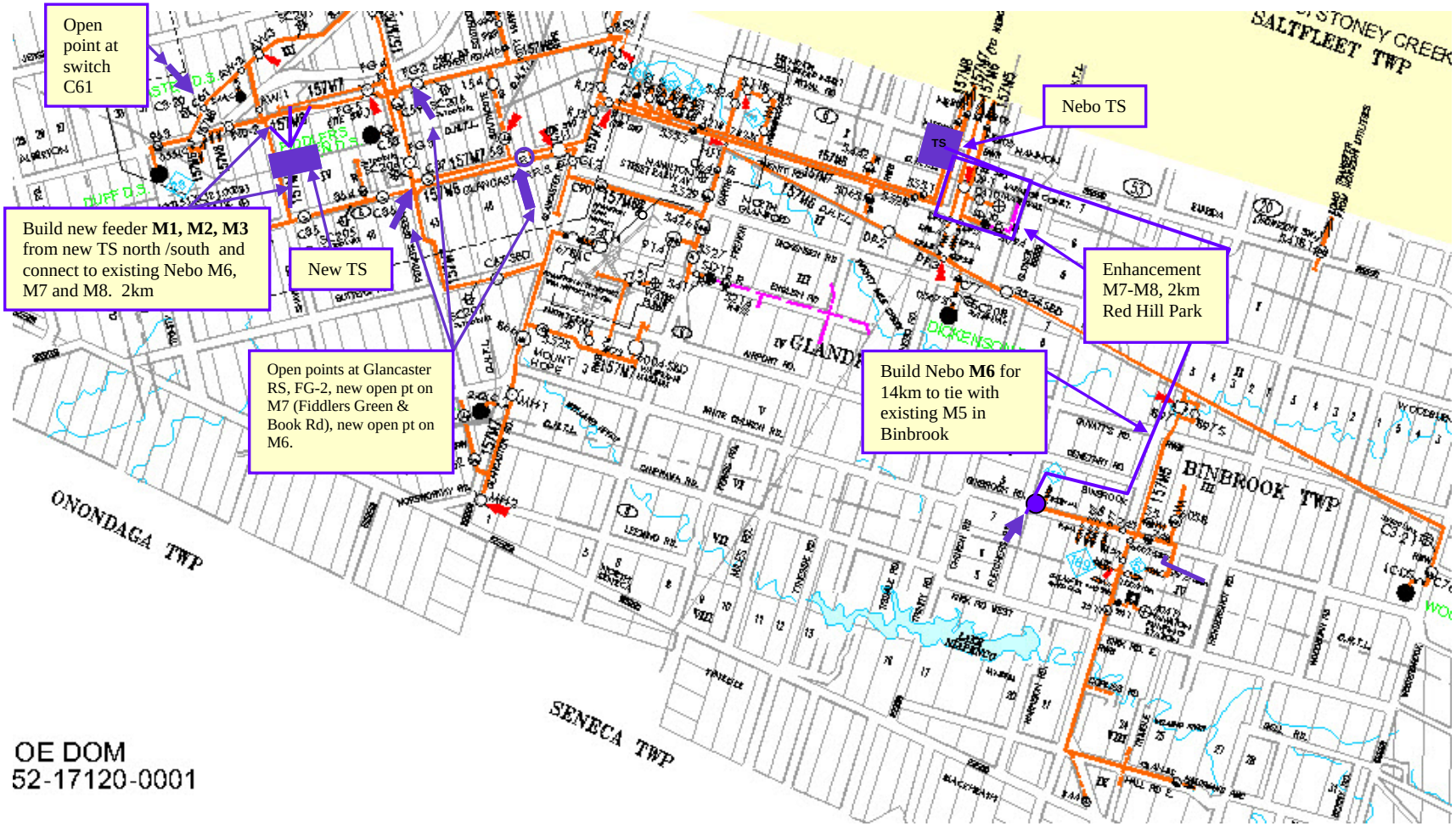

Figure 4 – Alternative 2 – Build "New Ancaster" TS on Shaver Road

Hydro One – Dundas Area

Loop Feed to Binbrook

Need: Binbrook area requires a backup feeder for supply security.

Background:

Binbrook is located in the former Glanbrook Township, which is now part of the amalgamated City of Hamilton. Binbrook and surrounding area in the former Township of Glanbrook has grown substantially over the past several years. The Statistics Canada Census data show the occupied private dwellings in Glanbrook grew by 46.8% from 2006 to 2011.

The City of Hamilton's Planning and Economic Development Department is designating the Binbrook area as part of its urban boundary. There were 2322 Hydro One customers in the Binbrook area at the end of 2012. The existing built-up area within the Binbrook urban boundary is about a third of the space available and there are signs that the growth is going to occur at a steady pace as the subdivision developers have applied for connection of more homes with over 1800 lots. A commercial plaza with a large grocery store has recently applied for connection.

The Binbrook area is currently supplied via Nebo TS M5 feeder which is a radial feeder supplying over 5000 customers. There are no other feeders to back up the M5 feeder to facilitate power restoration. This means that if a planned or unplanned outage occurs on the M5 customers fed from this circuit will be out of power until the feeder is restored. Providing an alternate supply to

Binbrook enables Hydro One to minimize the duration of interruptions regardless of their nature or cause.

Backup feeder:

In determining the route for the backup feeder the following factors were considered See map page 3 showing the preferred and alternative routes considered.

1. Environment: Environmental concerns were taken into consideration to have as little impact on the wildlife and landscape impact within the Glanbrook Township.

2. The new line is proposed in a route that can effectively and efficiently serve Hydro One service area. The feeder route will enable further system reinforcement eastward on Rymal Road from Hwy 56 as required in future. The preferred route will meet this requirement.

3. The cost to build the line in the proposed route is expected to be lower than other alternative due to the fact the much of the route is preframed for 27.6kV conversion. The preframing for future conversion started as far back as 1975. See photos on page 4-7.

4. Reliability: The new line in its route will not only provide a back up for the Binbrook area but also will set up a supply network to the Elfrida industrial complex on Rymal Road at Hwy 56 which is currently supplied from a radial 8.32kV. The 8.32kV system in the industrial complex will be converted to 27.6kV. The poles and the pole frames on Hwy 56 were built to the 27.6kV standards in anticipation of this

conversion. Based on good utility practice the desired distribution system will have as many loop feeds as possible for Hydro One's current and future customers, therefore reducing outage times where car accidents, storms, wildlife contacts and equipment issues may occur.

Map: Preferred Route for Binbrook Backup Feeder


Photo Reference
The arrow/number locations are where the photos are taken illustrating the existing poles are ready for future 27.6kV.
Highland Rd W
Maplewood Park
Hannon South
Eramosa Karst Conservation Area
Rymal Rd E
Leckie Park
St Mark's Catholic Elementary School
Elfrida
Glover Rd
Trinity Church Rd
Edna Ave
Fletcher Rd
Golf Club Rd
614
56
5
4
3
2
1

Photo 1:
Looking North towards Golf Club Road. 27.6kV framing poles dated 1975 1990 2002

Photo 2:
Existing Bell pole line looking East on Rymal Road. Ready for 27.6kV framing

Photo 3:
Existing Bell pole line looking West on Rymal Road. Ready for 27.6kV framing. Poles 2005


70


Photo 5:
New Bell poles.
Rymal Road looking
West from Trinity
Church Road. 27.6kV
framing

Nebo TS

M11

20 RD

NEBO RD

Redhill Industrial Park
Hydro One Service Area

GLOVER RD

TRINITY CHURCH RD

M5

M5

DICKENSON RD

NEW CATHOLIC SCHOOL

Pole line insulated for 27.6kV
1.5 km

RYMAL RD

SUMMIT PARK

2 km

Hydro One Service Area

FLETCHER RD

M5

M5

HWY - 56

3.25 km
Pole line insulated for 27.6kV

HWY - 56

2 km

CEMETERY RD

2 km

1 km

FLETCHER RD

BINBROOK RD

BINBROOK URBAN
DEVELOPMENT AREA

HWY - 56

BINBROOK RD

- Constructed by May 2013
- Constructed by Feb 2013
- Constructed by December 2013
- Constructed by April 2013
- In Construction (2012/2013)
- Constructed by end of 2013
- Constructed in 2014
- Existing Nebo M5 Feeder