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May 9, 2018
Our File: 18-1000

Minto Communities
200-180 Kent Street
Ottawa, ON
K1P 0B6

Attention: Hugo Lalonde, Land Development Manager

Re: SNTC Lands Preliminary Servicing Assessment for Official Plan Amendment

David Schaeffer Engineering Ltd. has completed the following brief servicing assessment for the South Nepean Town Center (SNTC) development area. The following letter is provided in support of the proposed Official Plan Amendment (OPA) and summarizes preliminary municipal servicing for the Official Plan land uses and the proposed land use plan.

Background

The following documents have been referenced in the development of this assessment:

- Ottawa Sewer Design Guidelines, City of Ottawa, *SDG002,* October 2012. *(City Sewer Design Guidelines)*
  - Technical Bulletin ISDTB-2014-01, Revisions to Ottawa Design Guidelines – Sewer, City of Ottawa, February 5, 2014. *(ISDTB-2014-01)*
  - Technical Bulletin PIEDTB-2016-01, Revisions to Ottawa Design Guidelines – Sewer, City of Ottawa, September 6, 2016. *(PIEDTB-2016-01)*
  - Technical Bulletin ISTB-2018-01, Revisions to Ottawa Design Guidelines – Sewer, City of Ottawa, March 21, 2018 *(ISTB-2018-01)*
- Ottawa Design Guidelines – Water Distribution, City of Ottawa, July 2010. *(Water Supply Guidelines)*
  - Technical Bulletin ISD-2010-2, City of Ottawa, December 15, 2010. *(*ISDTB-2010-2*)*

- Technical Bulletin ISDTB-2014-02, City of Ottawa, May 27, 2014. *(*ISDTB-2014-02*)*
- Technical Bulletin ISTB-2018-02, City of Ottawa, March 21, 2018. *(*ISTB-2018-02*)*

- Design Guidelines for Drinking-Water Systems, Ministry of the Environment, 2008. *(MOE Water Guidelines)*
- South Nepean Town Centre Community Design Plan, City of Ottawa, July 2006. *(CDP)*
- Appendix 1 South Nepean Town Centre Community Design Plan, Preliminary Serviceability Report, Cumming Cockburn Limited, December 2005.
- Kennedy Burnett Potable Water Master Servicing Study, Stantec Consulting Ltd, April 29, 2014.
- South Nepean Collector: Phase 2, Hydraulics Review, Technical Memorandum, Novatech, August 20, 2015.
- Kennedy-Burnett Stormwater Management Facility Functional Design Report, CH2M, February 17, 2017.
- Nepean South Chapman Mills Stormwater Management Servicing, Fourth Addendum, IBI Group, February 16, 2018.
- South Nepean Town Centre – Updated Land Use Plan and Stats, Fotenn, April 26, 2018 (Updated Land Use Stats)

The South Nepean Town Centre is approximately 165 hectares of land in the City of Ottawa's south end community of Barrhaven. The subject lands are generally bound by Strandherd Drive to the north, Longfields Drive to the east, the Jock River to the south and the existing Kennedy-Burnett Stormwater Management Facility to the west. The preliminary municipal servicing for the SNTC was originally considered in the *South Nepean Town Centre Community Design Plan* (2006 CDP) (City of Ottawa, July 2006).

The 2006 CDP indicates a mix of residential, mixed-use, park, school and civic complex land uses for the SNTC. The 2006 CDP's land use plan for the SNTC can be seen in ***Appendix A.*** The excerpted land use breakdown and corresponding development statistics from the 2006 CDP are also included in ***Appendix A***, and summarized in ***Table 1*** below. The population for the SNTC is reported as 22,500 persons in the 2006 CDP. The per unit populations from the City Sewer Design Guidelines were applied to the 2006 CDP's projected unit count of 11,050 units, and dwelling type distribution (see ***Appendix A*** for details) to produce a population of 21,482 persons.

The proposed land use plan for the SNTC can be seen in ***Figure 1***. The plan indicates a mix of residential, mixed-use, park, school and civic complex land uses. A summary of the OPA's proposed land use breakdown and corresponding development statistics can be found in ***Table 1*** below. The population for the SNTC is reported as 16,211 persons in the Updated Land Use Stats. Similar to the 2006 CDP development stats, the per unit populations from the City Sewer Design Guidelines were applied to the Updated Land Use Stats projected unit count of 8,313 units, and dwelling type distribution (see ***Appendix A*** for details) to produce a population of 20,575 persons.

Table 1: Summary of Land Uses and Population Projections

	SNTC CDP July 2006				SNTC OPA MAY 2018				
Land Use	**Net Area (ha)[1]**	**Anticipated Units**	**Pop.[1] (2006 CDP)**	**Pop.[2] (City Servicing Rates)**	**Gross Area (ha)[1]**	**Net Area (ha)[1]**	**Anticipated Units**	**Pop.[3] (Planning Rates)[2]**	**Pop.[4] (City Servicing Rates)**
High-Rise M.U.	26.50	11050	22500	21482	18.49	16.64	3328	16211	20575
Mid-Rise M.U.	34.20				33.24	29.92	3590		
High-Rise Res	3.40				-	-	-		
Mid-Rise Res	21.90				39.86	27.90	1395		
Mid-Rise Res / School	-				1.48				
Neighborhood Park	4.50				4.19				
District Park	21.60				17.46				
School	7.90				7.98				
Civic Complex	2.20				1.98				
Other	42.80				40.32				
Total	165.00	11050	22500	21482	165.00		8313	16211	20575

[1]Population taken directly from South Nepean Town Centre Community Design Plan, City of Ottawa, July 2006.

[2]Population calculated by applying the per unit population values from Table 4.2 of the City of Ottawa Sewer Design Guidelines (1.8 persons per unit for apartments and 2.7 persons per unit for townhomes) to the CDP Unit count (11050 units), CDP unit distribution (84% apt. & 16% townhomes).

[3]Population taken directly from South Nepean Town Centre – Updated Land Use Plan and Stats, Fotenn, April 26, 2018.

[4]Population calculated by applying the per unit population values from Table 4.2 of the City of Ottawa Sewer Design Guidelines (1.8 persons per unit for apartments and 2.7 persons per unit for townhomes) to the Updated Land Use Stats Unit count (8313 units), CDP unit distribution (25% apt. & 75% townhomes).

For the purposes of this OPA, the populations calculated using City Sewer Design Guidelines' per unit populations will be used for comparison. As shown in ***Table 1***, the proposed OPA indicates a lower population for the SNTC than what was considered in the 2006 CDP.

Water Supply Servicing

Per the 2006 CDP, the SNTC lands were considered to be serviced with potable water through the reservoir and pumping station on Fallowfield Road and the watermain network displayed in ***Appendix A***. More recently, the subject lands' water supply servicing was considered as a part of the *Kennedy Burnett Potable Water Master Servicing Study* (Stantec 2014), where portions of the proposed watermain infrastructure have been relocated, as shown in ***Appendix B***. Despite the changes to the pipe layout, the general water supply servicing strategy remains consistent with the strategy laid out in the 2006 CDP. The proposed land use plan presents no apparent constraints to the 2006 CDP and the Stantec 2014 water supply servicing strategy for the area.

As shown in ***Table 2*** below, the average daily water demand for the proposed OPA is estimated to be only 91% and 81% of the 2006 CDP and Stantec 2014 water demands respectively.

Table 2: Summary of Water Demands

	Avg. Daily Water Demand (L/s)
SNTC CDP JULY 2006	63.24
KENNEDY-BURNETT WATER MSS APRIL 2014	71.20
SNTC OPA MAY 2018	57.55

The water demand for the SNTC lands was reported directly in the Stantec 2014 report. The water demands for the 2006 CDP land use plan and the proposed OPA land use plan were calculated using consumption rates recommended by the City in 2013 during a high level water demand analysis for a project of a similar size. The design parameters can be seen summarized in ***Table 3*** below. The consumption rates differ from those presented in the Water Supply Guidelines, as the Water Supply Guidelines are intended for the design for developments less than 50 ha. See ***Appendix B*** for a summary of the correspondence and the water demand calculation sheets.

Table 3: Recommended Consumption Rates

Design Parameter		Value
City of Ottawa – Email Correspondence (February 2018)		
Residential – Single Family	Average Day	570 L/unit/day
	Outdoor Water Demand	1050 L/unit/day
	Max Day	Average + OWD (L/unit/day)
	Peak Hour	1.5 x Avg Day + 2.1 x Max Day (L/unit/day)
Residential – Multi-Family	Average Day	560 L/unit/day
	Outdoor Water Demand	0
	Max Day	Average (L/unit/day)
	Peak Hour	1.6 x Max Day (L/unit/day)
Residential - Apartment	Average Day	400 L/unit/day
	Outdoor Water Demand	0 L/unit/day
	Max Day	Average (L/unit/day)
	Peak Hour	1.6 x Max Day (L/unit/day)
Institutional / Commercial/ Industrial	Average Day	8500 L/ha/day
	Outdoor Water Demand	0 L/ha/day
	Max Day	Average (L/ha/day)
	Peak Hour	1.3 x Max Day (L/ha/day)
Total Average Day		Sum of Average Day for all land uses
Total Max Day		Sum Max Day for all land uses
Total Peak Hour		Sum of Peak Hour for all land uses
High Pressure Check		Minimum Hour = Average Day

Per the Stantec 2014 report, fire flows upwards of 15,000 L/min @ 20 psi are available to the subject lands. As the design process advances within the SNTC, these fire flows will be further analyzed

and respected through the use of fire walls, sprinklers and/or other means to ensure the fire flow requirement does not exceed the rate of supply.

Table 2 indicates that the anticipated water demands for the proposed OPA are lower than both the projected 2006 CDP water demands and the demand considered in the Stantec 2014 report for the SNTC area. This and the understanding that the SNTC area can be supplied with adequate fire flow leads to the conclusion that the water supply infrastructure designed to support the 2006 CDP concept should adequately service the land use plan within the proposed OPA.

Wastewater Servicing

In accordance with the 2006 CDP, the entirety of the SNTC sanitary sewer system will ultimately discharge to the existing South Nepean Collector (SNC) sanitary sewer near the intersection of Jockvale Road and the Jock River.

Table 4 shows anticipated wastewater flows for the SNTC lands for both the proposed land use plan and the 2006 CDP land use plan using the City Design Guidelines per ISTB-2018-01. Refer to ***Appendix C*** for detailed calculations. The anticipated wastewater flow rate for the proposed land use plan is roughly 96% of the estimated flow rate associated with the 2006 CDP.

Table 4: Comparison of Wastewater Flows to 2006 CDP

		Flow (L/s)			
	Total Area (Ha)	**Res.**	**ICI**	**Infiltration**	**Total**
SNTC CDP JULY 2006	165	159.92	38.63	54.45	253.00
SNTC OPA MAY 2018	165	154.17	34.20	54.45	242.82

The South Nepean Collector: Phase 2, Hydraulics Review, Technical Memorandum (Novatech 2015) more recently considered the wastewater servicing for the SNTC, reporting that the SNTC lands west of Greenbank Road will enter the SNC sewer between nodes 90-80 and the SNTC lands east of Greenbank Road will enter between nodes 80-70.

Wastewater flows were calculated for the proposed land use plan and the land use plan reported in the Novatech 2015 report, using City Design Guidelines per ISTB-2018-01. Results are tabulated in ***Table 5***. Refer to ***Appendix C*** for detailed calculations and supporting information.

Estimated wastewater flow rates for the proposed land use plan are higher than those anticipated by the Novatech 2015 report. It is noted that the Novatech 2015 report considers a maximum unit density of 75 units/ha for the subject lands, which is lower than the approved unit densities in the 2006 CDP. It is also noted that only 148 Ha of the SNTC lands are considered in the Novatech 2015 report.

The SNC sewer conveyance capacity has been reevaluated using upstream drainage areas and unit densities from the Novatech 2015 report, SNTC unit densities and drainage areas from the proposed OPA land use plan, September 2017 SNC Phase 2 sewer as-built drawings provided from the City, and City Design Guidelines per ISTB-2018-01. The modified sewer design sheet is included in ***Appendix C***, illustrating that the SNC contains adequate capacity to convey the proposed OPA development flows within the sewer to the crossing of the Jock River.

Table 5: Comparison of Proposed Wastewater Flows to 2015 Novatech Report

			Flow (L/s)			
	Area I.D.	**Total Area (Ha)**	**Res.**	**ICI**	**Infiltration**	**Total**
NOVATECH AUG 2015	West of Greenbank Rd. (A7)	52.58	53.32	6.62	17.35	77.29
	East of Greenbank Rd. (A8)	95.18	63.58	12.24	21.45	102.00
SNTC OPA MAY 2018	West of Greenbank Rd. (A7)	65	68.31	18.94	31.41	113.93
	East of Greenbank Rd. (A8)	100	101.36	21.97	33.00	156.33

Based on the latest drainage information and existing pipe sizes available from the City, a design sheet was also created for the existing Longfields Drive sewer applying ISTB-2018-01 (refer to ***Appendix C*** for details). While capacity has been reserved in the Longfields sewer for the SNTC lands east of Greenbank Road, there are capacity constraints which could potentially impact the discharge locations for portions of the subject lands. There is sufficient capacity to service the entirety of the SNTC lands east of Greenbank Road further downstream within the Longfields Drive sanitary sewer by directing wastewater flow from the SNTC lands east of Greenbank Road to outlet where the Longfields sewer upsizes to a 1050mm diameter pipe at the Paul Metivier Drive intersection. Whether by the original drainage plan, or any required modifications, the Longfields Drive sewer has the capacity to accommodate the proposed land use plan's wastewater flow.

The proposed OPA remains consistent with the 2006 CDP and Novatech 2015 report's wastewater servicing strategy. The proposed OPA results in a decrease to estimated wastewater flow rates when compared to the 2006 CDP land uses and flows. Both the SNC and Longfields Drive sewers contain sufficient capacity to service the proposed land use plan.

Stormwater Management

Runoff coefficients have been assigned to individual land use types for both the proposed OPA and the 2006 CDP land use plans. The land use runoff coefficients and calculated overall average runoff coefficients are tabulated in ***Table 6*** below. The anticipated overall average runoff coefficient for the proposed land use plan is equivalent to the anticipated runoff for the 2006 CDP land use plan.

Table 6: Comparison of SNTC CDP Runoff

Land Use	C (Runoff Coefficient)	SNTC CDP JULY 2006		SNTC OPA MAY 2018	
		Area (ha)	A*C	Area (ha)	A*C
High Rise Residential	0.83	3.40	2.82	-	0.00
Mid Rise Residential	0.73	21.90	15.99	39.86	29.10
High Rise Mixed-Use	0.85	26.5	22.53	18.49	15.72
Mid Rise Mixed-Use	0.83	34.2	28.39	33.24	27.59
School	0.70	7.90	5.53	9.46	6.62
Civic Complex	0.82	2.2	1.80	1.98	1.62
Park	0.40	26.10	10.44	21.65	8.66
Roads	0.90	42.80	38.52	40.32	36.29
	Total	**165.00**	**126.01**	**165.00**	**125.60**
	Avg C	**0.76**		**0.76**	

[1]Area includes 1.48 Ha area of school / Mid-Rise Residential Block.

The stormwater management plan for the SNTC consists of splitting drainage between the western and eastern areas, with Greenbank Road serving as the dividing boundary. Refer to ***Appendix A*** for an illustration of the 2006 CDP storm servicing network.

Design of the SNTC stormwater management plan has advanced with development within the area, and is separated into the following two distinct stormwater management systems -

- The lands west of Greenbank Road are to be serviced by a redesigned Kennedy-Burnett Stormwater Management Facility (KB SWMF). The proposed stormwater management plan for the KB SWMF is described in the *Kennedy-Burnett Stormwater Management Facility and Functional Design Report* (CH2M 2017). The preferred servicing option in the CH2M 2017 report plans for minor system flows (5-year capture) to be conveyed via trunk storm sewers and passed through individual Hydro Dynamic Separator units for quality control, prior to outletting directly to the main cell of the KB SWMF or Fraser-Clarke Drain or Jock River. Major flows are to be routed overland to the KB SWMF and Jock River. Excerpts from the CH2M 2017 report can be found in ***Appendix D*** for illustration of the preferred plan.

- The remaining development lands within the SNTC to the east of Greenbank Road – with the exception of a 1.54 ha area immediately adjacent to the Jock River, which is included in the KB SWMF plan – are to be serviced by the Chapman Mills Stormwater Management Facility (CM SWMF) east of Longfields Drive and south of Paul Metivier Drive, via an existing trunk sewer within Longfields Drive and an existing secondary interceptor sewer within the future extension of Riocan Avenue. The proposed stormwater management plan for the CM SWMF is described in the *Nepean South Chapman Mills Stormwater Management Servicing, Fourth Addendum* (IBI Group 2018). Minor system capture rates vary and major flow drains towards the Jock River. Excerpts from the IBI Group 2018 report can be found in ***Appendix D***.

Table 6 runoff coefficients have been assigned to the proposed OPA land use plan for the western SNTC lands tributary to the KB SWMF. The land use plan has been divided into areas that are generally consistent with the CH2M 2017 report, and area X runoff coefficient results are tabulated in ***Table 7*** below for comparison to the CH2M 2017 stormwater management plan.

Table 7: Runoff Coefficient Comparison for the Western SNTC Lands

	CH2M FEB 2017			OPA MAY 2018		
Catchment I.D.	Area (ha)	C	A*C	Area	Avg. C	A*C
12	10.90	0.80	8.72	10.22	0.78	7.99
13	2.07	0.80	1.66	2.08	0.90	1.87
14	6.68	0.65	4.34	7.02	0.82	5.74
15	11.83	0.65	7.69	11.73	0.75	8.79
16A/B	9.24	0.65	6.01	9.55	0.80	7.65

Table 6 runoff coefficients have also been assigned to the proposed OPA land use plan for the eastern SNTC lands tributary to the CM SWMF. Similar to above, the land use plan has been divided into areas that are generally consistent with the IBI Group 2018 report, and area X runoff coefficient results are tabulated in ***Table 8*** below for comparison to the IBI Group 2018 stormwater management plan.

Table 8: Comparison of Eastern SNTC Lands' Runoff

	IBI FEB 2018			OPA MAY 2018		
Catchment Area	Area (ha)	C	A*C	Area	Avg. C	A*C
Tributary to Longfields Drive Trunk Sewer	34.25	0.69	23.52	34.96	0.83	29.04
Tributary to Riocan Ave Interceptor Sewer	44.87	0.72	32.41	46.05	0.77	35.60

While there are inconsistencies between the areas and runoff coefficients used in both the CH2M 2017 and IBI Group 2018 reports versus the proposed OPA, resulting in an estimated increase to the overall AxC value for both areas, the general design of these systems will remain consistent with the CH2M 2017 and IBI Group 2018 plans. It is recommended that the pending resolution of the designs for both the KB SWMF and CM SWMF systems proceed on this basis, taking into consideration the proposed OPA land use plan, with the future development of individual parcels within the SNTC to be designed to account for the rates of minor system capture, major system conveyance and onsite stormwater detention storage required to accommodate the limitations of the KB SWMF and CM SWMF system designs.

It is demonstrated above that the proposed land use plan results in an equivalent overall average weighted runoff coefficient and consistent division of stormwater drainage between the KB SWMF and CM SWMF, when compared to the 2006 CDP.

Conclusions

Results of this brief servicing assessment indicate that the proposed land use plan results in reduced or equivalent water supply, wastewater servicing and stormwater management servicing requirements when compared to the SNTC 2006 CDP. Existing and proposed infrastructure planned to support the 2006 CDP lands is considered adequate to service the proposed land use plan.

David Schaeffer Engineering Ltd.

LICENSED PROFESSIONAL ENGINEER
R. M. WINGATE
100069090
May 9/18
PROVINCE OF ONTARIO

Per: Braden Kaminski, EIT.

Per: Matt Wingate, P.Eng.

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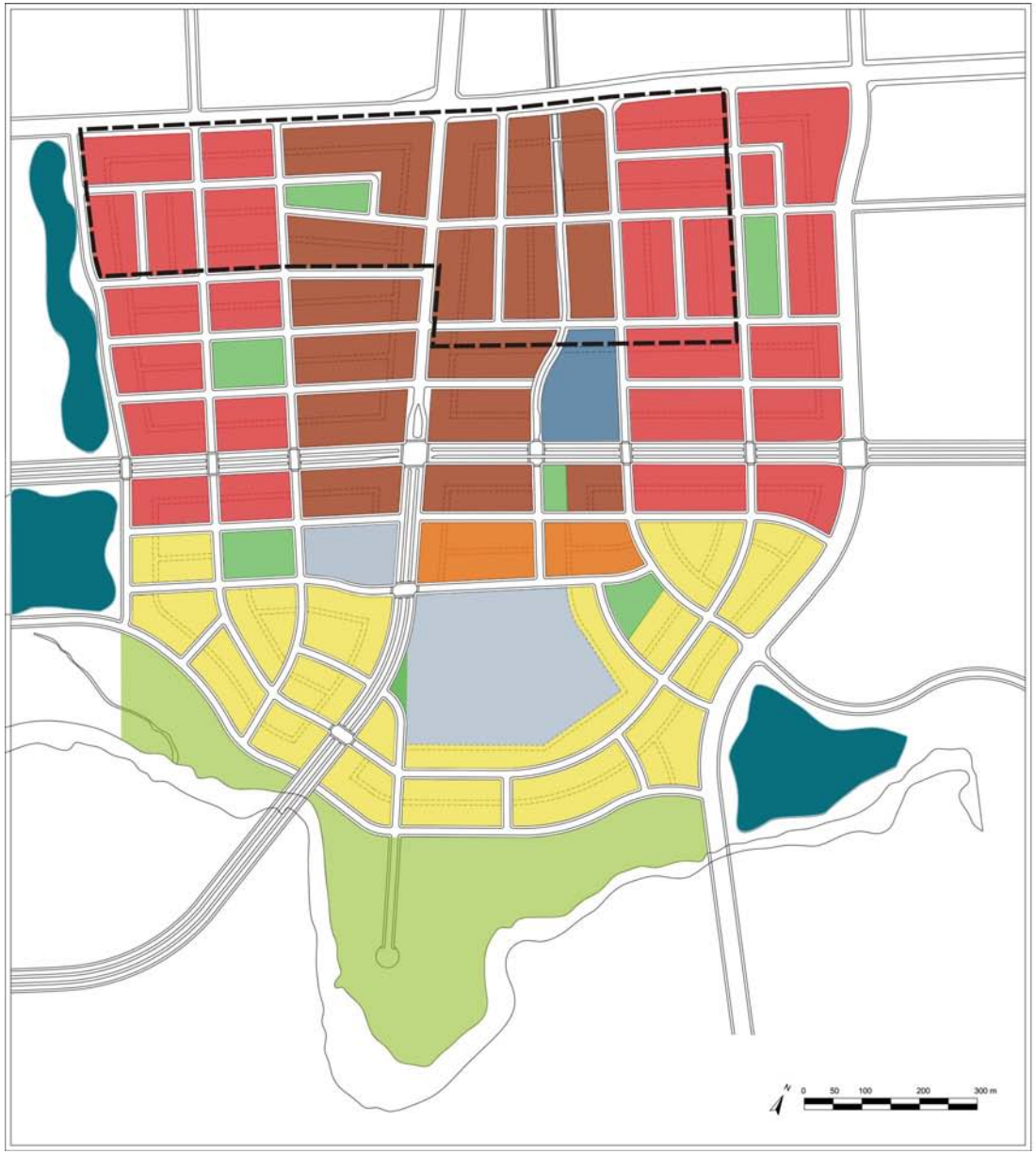
List of Figures:

Figure 1: South Nepean Town Centre Land Use Plan (Fotenn, April 26, 2018)

Appendix A

Excerpts from SNTC CDP & OPA



Schedule 1 - Land Use Plan

- High Rise Mixed-Use
- Mid Rise Mixed-Use
- High Rise Residential
- Mid Rise Residential
- Neighbourhood Park
- District Park
- School
- Civic Complex
- Strandherd Retail District
- Stormwater Management Pond

Land Use

Table 1 – Land Use Distribution

Policy Area	Net Area (hectares)	% of Total Area
High Rise Mixed-Use	26.5	16.1%
Mid Rise Mixed-Use	34.2	20.7%
High Rise Residential	3.4	2.1%
Mid Rise Residential	21.9	13.2%
School	7.9	4.8%
Civic Complex	2.2	1.3%
District Park	21.6	13.1%
Neighbourhood Park	4.5	2.7%
Streets	42.8	25.9%
Total	**165.0**	**100.0%**

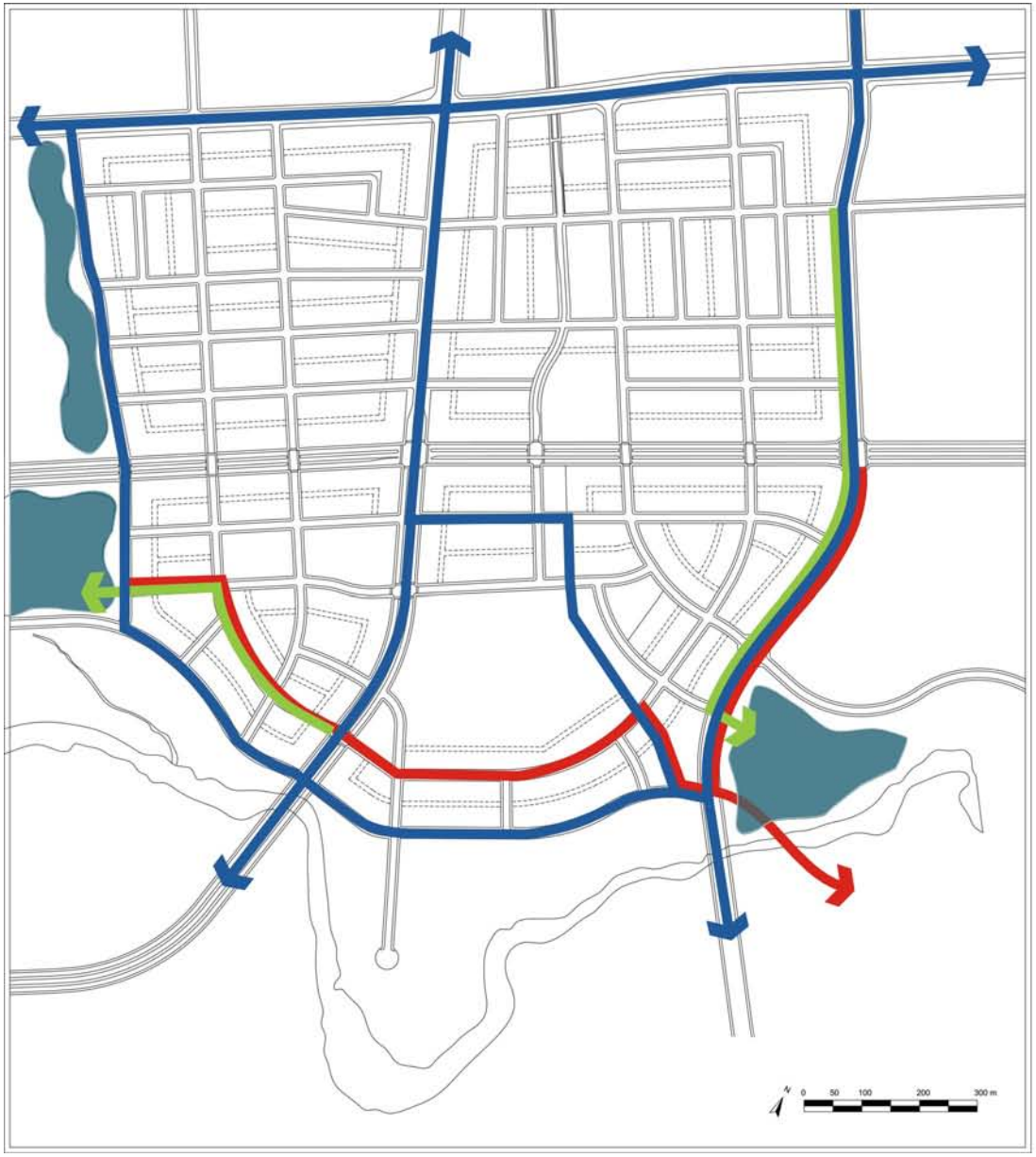
Table 2 – Dwelling Type Distribution

Dwelling Type	# of Dwellings	% of Total Dwellings
Phase 2		
Street Townhouses	1,000	14%
Stacked Townhouses	750	10%
Apartments	5,500	76%
Total	**7,250**	**100%**
Phase 3		
Street Townhouses	1,000	9%
Stacked Townhouses	750	7%
Apartments	9,300	84%
Total	**11,050**	**100%**

Table 3 – Land Use Statistics

Phase	Retail Gross Floor Area (m^2)	Office Gross Floor Area (m^2)	# of Dwelling Units	Population	Employment
Phase 1 – Initial	78,000	1,000	0	0	1,000
Phase 2 – Interim Built Out	208,250	158,250	7,250	14,500	7,300
Phase 3 – Ultimate Build Out	217,000	350,500	11,000	22,500	12,600

Notes:
(1) Tables 2 and 3 indicate projections of different build out scenarios. Given the long-term nature of the scenarios, these figures should only be considered as potential build out projections based on permissions by the policies in this CDP.
(2) Numbers for each phase are total, not cumulative.
(3) Phase 1 does not include the limited residential units currently within the Town Centre.
(4) The type of units identified in Table 2 are intended to only illustrate the intensity of units, and not necessarily limit the form of units.



Schedule 6 Servicing Network Plan

Stormwater Management Pond

Trunk Watermain

Trunk Storm Sewer

Wastewater Collector Sewer

SOUTH NEPEAN TOWN CENTRE
UPDATED LAND USE PLAN AND STATS

The following represents the latest updates to the Town Centre Statistics as of April 26, 2018:

Table 1: Building Height Comparison

Land Use Designation	Current Building Height Ranges	Proposed Building Height Ranges
High-Rise Mixed Use	6 to 12 storeys	6 to 20 storeys
Mid-Rise Mixed Use	4 to 6 storeys	3 to 9 storeys
High-Rise Residential	6 to 12 storeys	6 to 20 storeys
Mid-Rise Residential	2 to 4 storeys	2 to 4 storeys

Table 2: Comparative Net Density Targets

Land Use Designation	Current Net Density Target for Residential Uses (units/ha)	Proposed Net Density Target for Residential Uses (units/ha)
High-Rise Mixed Use	250	200
Mid-Rise Mixed Use	200	120
High-Rise Residential	300	200
Mid-Rise Residential	100	50

Table 3: Dwelling Type Distribution

Dwelling Type	Number of Dwellings	Percentage of Total Dwellings
Townhouses (Street or Stacked)	6,235	75%
Apartments	2,078	25%
Total	**8,313**	**100%**

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Table 4: Land Use Statistics

Land Use Designation	Proposed Gross Area (ha)	Net Area (ha) [A]	Proposed Net Density Target (units/ha)	Anticipated Units	Anticipated Employment Gross Floor Area (m^2)	Projected Population [B]	Projected Employment [C]	Density (people and jobs/ gross hectare)
High-Rise Mixed Use	18.49	16.6	200	3,328	-	16,211	-	**126**
Mid-Rise Mixed Use	33.24	29.9	120	3,590	-		-	
High-Rise Residential	-	-	200	-	-		-	
Mid-Rise Residential	39.86	27.9	50	1,395	-		-	
Other	73.41	-	-	-	208,250	-	4,628	
TOTAL	**165.0**			**8,313**	**208,250**	**16,211**	**4,628**	

[A] Net area equals 70% of gross area (ha) for Mid-Rise Residential areas and 90% of gross area (ha) for all other designations.
[B] Assumes dwelling occupancy rate of 1.62 persons per household for apartments and 2.06 persons per household for townhouses.
[C] Assumes that all employment is retail at a rate of 1 employee per 45 square metres.

Table 6: Greenspace Acquisition

Area	Area Size (ha)	Parkland Yield from Area (ha) [A]	CDP Planned Parkland in Area (ha)	Proposed Planned Parkland in Area (ha)	CDP Surplus/ Deficit of Parkland in Area (ha)	Proposed Surplus/ Deficit of Parkland in Area (ha)
A	29.7	1.49	3.22 [C]	3.04 [C]	-1.74	-1.56
B	8.3 [B]	0.42	-	-	0.42	0.42
C	6.6	0.33	-	-	0.33	0.33
D	3.2	0.16	-	-	0.16	0.16
E	11.7	0.59	-	-	0.59	0.59
F	12.6	0.63	0.97	0.97	-0.34	-0.34
G	8.2	0.41	-	0.50	0.41	-0.09
H	10.6	0.53	0.98	0.50	-0.45	0.03
I	13.6	0.68	0.59	0.59	0.09	0.09
J	25.0	1.25	-	-	1.25	1.25
TOTAL	**129.5**	**6.48**	**5.76 [D]**	**5.59**	**0.72**	**0.88**

[A] At 5% of gross area parkland dedication rate; does not factor in 2% rate for mixed-use developments or commercial buildings, yield may be lower depending on actual build-out
[B] Not including the land for Neighbourhood Park 2, which is currently owned by the City
[C] Includes the Civic Block
[D] Note that the existing CDP incorrectly totals this column as 5.17 hectares

Proposed parkland in each area is as follows:

Neighbourhood Park Number	Location of Park (Area)	CDP Proposed Area (ha)	Proposed Area (ha)
1	A	0.91	0.36
2	B	-	0.58 *
3	F	0.97	0.97
4	G and H	0.98	0.99
5	I	0.59	0.59
6	A	-	0.70
Civic Block	A	2.31	1.98
Total		**5.76**	**5.59**

* This land is already owned by the City of Ottawa – not included in Total

Appendix B

Water Supply Servicing

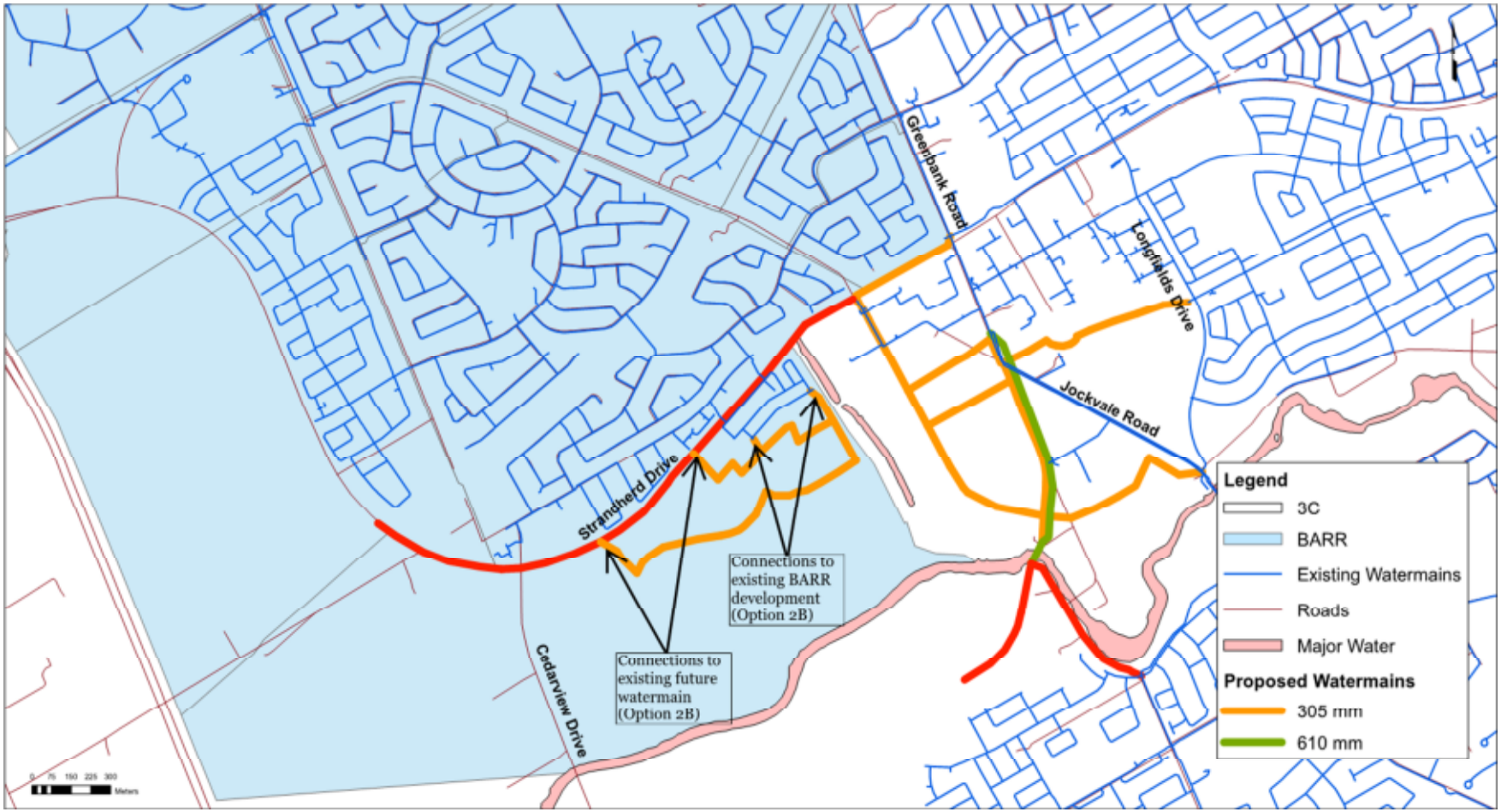

Figure 2-6: Proposed Pipe Layout Post Zone Reconfiguration – Scenario 2B

Table 2-2: Projected Growth Water Demands

Study Area	ID	DEMAND1 (L/s)	PATTERN 1	DEMAND2 (L/s)	PATTERN 2	DEMAND4 (L/s)	PATTERN4	DEMAND8 (L/s)	PATTERN 8	Winter Demand (L/s)	DEMAND9 (L/s)	PATTERN9	Summer Demand (L/s)
KB	F_BARR_24	2.2	SFH	2.2	MLT	0.1	EMP_OGB	0.2	UFW	4.7	4.4	OWD_OGB	9.1
	KB Subtotal:	*2.2*	*SFH*	*2.2*	*MLT*	*0.1*	*EMP_OGB*	*0.2*	*UFW*	*4.7*	*4.4*	*OWD_OGB*	*9.1*

Study Area	ID	DEMAND1 (L/s)	PATTERN 1	DEMAND2 (L/s)	PATTERN 2	DEMAND4 (L/s)	PATTERN4	DEMAND8 (L/s)	PATTERN 8	Winter Demand (L/s)	DEMAND9 (L/s)	PATTERN9	Summer Demand (L/s)
NTC	F_BARR_19	16.3	SFH	16.0	MLT	1.1	EMP_OGB	1.5	UFW	34.8	32.3	OWD_OGB	67.1
NTC	F_BARR_20	13.7	SFH	13.4	MLT	1.2	EMP_OGB	1.2	UFW	29.6	27.1	OWD_OGB	56.7
NTC	F_BARR_41A	3.2	SFH	3.3	MLT	0.0	EMP_OGB	0.3	UFW	6.8	6.4	OWD_OGB	13.1
	NTC Subtotal:	*33.2*	*SFH*	*32.7*	*MLT*	*2.3*	*EMP_OGB*	*3.0*	*UFW*	*71.2*	*65.8*	*OWD_OGB*	*137.0*

Study Area	ID	DEMAND1 (L/s)	PATTERN 1	DEMAND2 (L/s)	PATTERN 2	DEMAND4 (L/s)	PATTERN4	DEMAND8 (L/s)	PATTERN 8	Winter Demand (L/s)	DEMAND9 (L/s)	PATTERN9	Summer Demand (L/s)
	KB+NTC Total:	***35.4***	***SFH***	***34.9***	***MLT***	***2.4***	***EMP_OGB***	***3.2***	***UFW***	***75.9***	***70.2***	***OWD_OGB***	***146.1***

2.4 SERVICE AREA ELEVATIONS & HYDRAULIC GRADE LINES

Figure 2-2 shows the potential future watermain alignments of KB development and the NTC. The background area shaded in blue represents the existing Zone BARR pressure zone. Currently the entire KB and NTC area is serviced by Zone BARR. Existing watermains are shown in red and proposed/ potential watermains are shown in blue.

Existing ground elevations in the entire BARR pressure zone range from approximately 84m to 117m. Ground elevations in the KB lands vary from approximately 91m to 94m and from 90 to 105m in the NTC lands.

The hydraulic grade line in Zone BARR is dependent on water levels in the Moodie Tank, pump discharge and system headloss but it typically varies from approximately 147m to 160m. As such, most of the KB and NTC lands currently fall within the constraints of pressures greater than 80 psi. If development occurs prior to zone reconfiguration consideration for pressure reducing valves on individual services will need to be confirmed.

Braden Kaminski

From: Braden Kaminski
Sent: Wednesday, May 9, 2018 10:37 AM
To: Braden Kaminski
Subject: FW: EUC MUC CDP - MSS Demand Parameters & Water Boundary Request

From: Laura Maxwell
Sent: Thursday, February 22, 2018 11:56 AM
To: Bougadis, John <John.Bougadis@ottawa.ca>
Cc: Fairouz Wahab <FWahab@richcraft.com>; van de Lande, Robin <Robin.vandeLande@ottawa.ca>; Steve Pichette <SPichette@dsel.ca>; Braden Kaminski <BKaminski@dsel.ca>; Joshua.White@ottawa.ca
Subject: RE: EUC MUC CDP - MSS Demand Parameters & Water Boundary Request

Hi John,

Thank you for your call last month where you confirmed that the proposed sanitary parameters described in the email below are appropriate to use in the MSS.

Thank you for also confirming that the proposed water demands in the snapshot below are appropriate to use in the MSS.

City of Ottawa – Email Correspondence (February 2013)		
Residential – Single Family	Average Day	570 L/unit/day
	Outdoor Water Demand	1050 L/unit/day
	Max Day	Average + OWD (L/unit/day)
	Peak Hour	1.5 x Avg Day + 2.1 x Max Day (L/unit/day)
Residential – Multi-Family	Average Day	560 L/unit/day
	Outdoor Water Demand	0
	Max Day	Average (L/unit/day)
	Peak Hour	1.6 x Max Day (L/unit/day)
Residential - Apartment	Average Day	400 L/unit/day
	Outdoor Water Demand	0 L/unit/day
	Max Day	Average (L/unit/day)
	Peak Hour	1.6 x Max Day (L/unit/day)
Institutional / Commercial/ Industrial	Average Day	8500 L/ha/day
	Outdoor Water Demand	0 L/ha/day
	Max Day	Average (L/ha/day)
	Peak Hour	1.3 x Max Day (L/ha/day)

[redacted]

[redacted]

Thanks,

Laura Maxwell, B.Sc.(Civil Eng), M.Pl.
Client Project Manager

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext. 527
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email: lmaxwell@DSEL.ca

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Water Demand Design Flows per Unit Count
ALTERNATE WATER DEMANDS

Domestic Demand

Type of Housing	Average Day L/unit/day	OWD L/unit/day	Units	Avg. Daily m^3/d	Avg. Daily L/min	Max Day m^3/d	Max Day L/min	Peak Hour m^3/d	Peak Hour L/min
Single Family	570	1050		0.0	0.0	0.0	0.0	0.0	0.0
Semi-detached	560								
Townhouse	560		1750	980.0	680.6	980.0	680.6	1568.0	1088.9
Apartment									
Bachelor	400								
1 Bedroom	400								
2 Bedroom	400								
3 Bedroom	400								
Average	400		9300	3720.0	2583.3	3720.0	2583.3	5952.0	4133.3
Total Domestic Demand				4700.0	3263.9	4700.0	3263.9	7520.0	5222.2

Institutional / Commercial / Industrial Demand

Property Type	Unit Rate		Units	Avg. Daily m^3/d	Avg. Daily L/min	Max Day m^3/d	Max Day L/min	Peak Hour m^3/d	Peak Hour L/min
Commercial	8,500.0	L/ha/day	60.70	516.0	358.3	516.0	358.3	670.7	465.8
School	8,500.0	L/gross ha/d	7.90	7.2	5.0	10.8	7.5	14.1	9.8
Civic Complex	8,500.0	L/gross ha/d	2.20	18.7	13.0	18.7	13.0	24.3	16.9
Park w/ Splash Pad*	8,500.0	L/ha/day	26.10	221.9	154.1	221.9	154.1	288.4	200.3
Total I/CI Demand				763.7	530.4	767.3	532.9	997.5	692.7
Total Demand				**5463.7**	**3794.3**	**5467.3**	**3796.8**	**8517.5**	**5915.0**

*Park using the 8500 L/ha/day value like commercial

	L/min	L/s
Avg. Daily	3794.3	63.24
Max Day	3796.8	63.28
Peak Hour	5915.0	98.58

	Max Day Peaking Factors	Peak Hour Peaking Factors
Res - Single Family	Avg. Day + OWD	1.5*Avg. Day + 2.1*Max Day
Res - Multi-Family	Avg. Day	1.6*Max Day
Res - Apartment	Avg. Day	1.6*Max Day
ICI	Avg. Day	1.3*Max Day

Water Demand Design Flows per Unit Count
ALTERNATE WATER DEMANDS

Domestic Demand

Type of Housing	Average Day L/unit/day	OWD L/unit/day	Units	Avg. Daily m^3/d	Avg. Daily L/min	Max Day m^3/d	Max Day L/min	Peak Hour m^3/d	Peak Hour L/min
Single Family	570	1050	0	0.0	0.0	0.0	0.0	0.0	0.0
Semi-detached	560								
Townhouse	560		6235	3491.6	2424.7	3491.6	2424.7	5586.6	3879.6
Apartment									
Bachelor	400								
1 Bedroom	400								
2 Bedroom	400								
3 Bedroom	400								
Average	400		2078	831.2	577.2	831.2	577.2	1329.9	923.6
		Total Domestic Demand		4322.8	3001.9	4322.8	3001.9	6916.5	4803.1

Institutional / Commercial / Industrial Demand

Property Type	Unit Rate		Units	Avg. Daily m^3/d	Avg. Daily L/min	Max Day m^3/d	Max Day L/min	Peak Hour m^3/d	Peak Hour L/min
Commercial	8,500.0	L/ha/day	51.73	439.7	305.4	439.7	305.4	571.6	397.0
School	8,500.0	L/gross ha/d	9.46	8.6	6.0	8.6	6.0	11.2	7.8
Civic Complex	8,500.0	L/gross ha/d	1.98	16.8	11.7	16.8	11.7	21.9	15.2
Park w/ Splash Pad*	8,500.0	L/ha/day	21.65	184.0	127.8	184.0	127.8	239.2	166.1
			Total I/CI Demand	649.2	450.8	649.2	450.8	844.0	586.1
			Total Demand	**4972.0**	**3452.8**	**4972.0**	**3452.8**	**7760.4**	**5389.2**

*Park using the 8500 L/ha/day value like commercial

	L/min	L/s
Avg. Daily	3452.8	57.55
Max Day	3452.8	57.55
Peak Hour	5389.2	89.82

	Max Day Peaking Factors	Peak Hour Peaking Factors
Res - Single Family	Avg. Day + OWD	1.5*Avg. Day + 2.1*Max Day
Res - Multi-Family	Avg. Day	1.6*Max Day
Res - Apartment	Avg. Day	1.6*Max Day
ICI	Avg. Day	1.3*Max Day

Appendix C

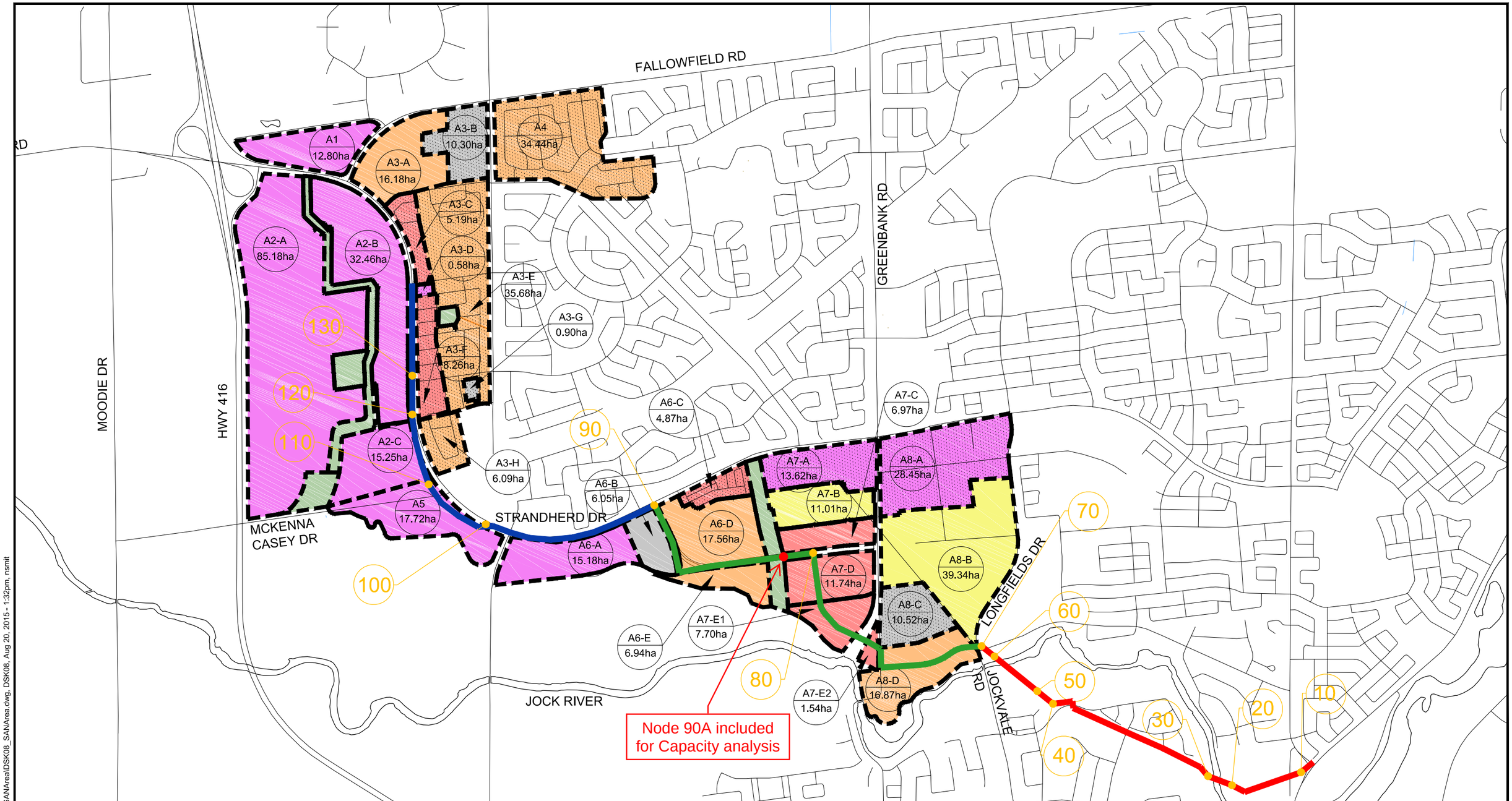
Wastewater Servicing

SANITARY SEWER CALCULATION SHEET

LOCATION:	**Barrhaven OPA**	**NEW PROPOSED DESIGN PARAMETERS**					
FILE REF:	**18-1000**	Avg. Daily Flow Res.	280 L/p/d	Peak Fact Res. Per Harmons: Min = 2.0, Max =4.0		Infiltration / Inflow	0.33 L/s/ha
DATE:	**1-May-18**	Avg. Daily Flow Comm.	28,000 L/ha/d	Peak Fact. Comm.	1.5	Min. Pipe Velocity	0.60 m/s full flowing
		Park Flow	9,300 L/ha/d	Peak Fact. Instit.	1.5	Max. Pipe Velocity	3.00 m/s full flowing
		Avg. Daily Flow Indust.	35,000 L/ha/d	Peak Fact. Indust. per MOE graph		Mannings N	0.013
		Harmens Corr Factor	0.8				

Location			Residential Area and Population										Commercial*		Institutional		Park			Infiltration			
Area ID	INFO		Area	Number of Units				Pop.	Cumulative		Peak.	Q_{res}	Area	Accu.	Area	Accu.	Area	Accu.	Q_{C+I+I}	Total	Accu.	Infiltration	Total
				by type					Area	Pop.	Fact.			Area		Area		Area		Area	Area	Flow	Flow
			(ha)	Singles	MidRise*	Town's	Apt's		(ha)		(-)	(L/s)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(L/s)	(ha)	(ha)	(L/s)	(L/s)
SNTC CDP JULY 2006			25.300					21482.0	25.300	21482.0	2.30	159.92	60.70	60.70	10.10	10.10	26.10	26.10	38.6	165.000	165.000	54.450	**253.00**
															**Includes Civic Complex					*Includes 42.80 ha of infiltration for other land uses			
SNTC OPA MAY 2018			39.860					20575.0	39.860	20575.0	2.31	154.17	51.73	51.73	11.44	11.44	21.65	21.65	34.2	165.000	165.000	54.450	**242.82**
															***Includes Civic Complex, and School/Mid-Rise Residential Bl					*Includes 40.32 ha of infiltration for other land uses			

* Mixed Use areas taken as commercial area to account for commercial & population flows



LEGEND

- EXISTING / PROPOSED HIGH DENSITY RESIDENTIAL
- EXISTING / PROPOSED MEDIUM DENSITY RESIDENTIAL
- EXISTING / PROPOSED LOW DENSITY RESIDENTIAL
- EXISTING / PROPOSED COMMERCIAL
- EXISTING / PROPOSED INSTITUTIONAL
- OTHER LANDS (OPEN SPACE, PARKS, AND SWMFS)
- SOUTH NEPEAN COLLECTOR PHASE 1
- SOUTH NEPEAN COLLECTOR PHASE 2
- SOUTH NEPEAN COLLECTOR PHASE 3
- 80 SOUTH NEPEAN COLLECTOR NODE ID

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SOUTH NEPEAN COLLECTOR SEWER

SANITARY DRAINAGE AREAS AND LAND USE

SCALE		
1:20 000		
DATE	JOB	FIGURE
AUG 2015	115075	FIG. 1

M:\2015\115075\CAD\Design\Figures\DSK\DSK08_SANArea\DSK08_SANArea.dwg, DSK08, Aug 20, 2015 - 1:32pm, nsmit

PROJECT #:	115075
DESIGNED BY:	CMS
CHECKED BY:	MJP
DATE:	August 20, 2015

SANITARY SEWER DESIGN SHEET

South Nepean Collector - Phase 2 & 3

Theoretical Future Full Service Peak Wastewater Flow

NOVATECH
Engineers, Planners & Landscape Architects

Location			Areas				Population				Individual Design Flows			Cumulative Design Flows				
Area I.D.	Existing / Proposed Land Use	Upstream Node	Gross Commercial Area (ha)	Gross Institutional Area (ha)	Gross Residential Area (ha)	Total Gross Area (ha)	Residential Popultation Density (people / ha)	Individual Residential Population	Cumulative Residential Population	Residential Peaking Factor (Harmon Eqn[1])	Commercial Peak Flow Rate[2] (50,000 L/ha/d) (L/s)	Institutional Peak Flow Rate[2] (50,000 L/ha/d) (L/s)	Infiltration / Inflow Rate (0.28 L/s/ha) (L/s)	Commercial (L/s)	Institutional (L/s)	Infiltration / Inflow (L/s)	Residential Peak Flow Rate (350 L/cap/d) (L/s)	Cumulative Peak Design Flow (L/s)
A1	Commercial	130	12.80			12.80					11.1	0.0	3.6	11.1	0.0	3.6	0.0	14.7
A2-A	Commercial	130	85.18			85.18					73.9	0.0	23.9	85.1	0.0	27.4	0.0	112.5
A2-B	Commercial	130	32.46			32.46					28.2	0.0	9.1	113.2	0.0	36.5	0.0	149.8
A3-A	Low Density Residential	130			16.18	16.18	95.2	1540	1540	3.67	0.0	0.0	4.5	113.2	0.0	41.1	22.9	177.2
A3-B	Institutional	130		10.30		10.30			1540	3.67	0.0	8.9	2.9	113.2	8.9	43.9	22.9	189.0
A3-C	Medium Density Residential	130			5.19	5.19	162.0	841	2381	3.53	0.0	0.0	1.5	113.2	8.9	45.4	34.0	201.6
A3-D	Commercial	130	0.58			0.58			2381	3.53	0.5	0.0	0.2	113.7	8.9	45.6	34.0	202.2
A3-E	Low Density Residential	130			35.68	35.68	95.2	3397	5778	3.19	0.0	0.0	10.0	113.7	8.9	55.5	74.6	252.8
A3-F	Medium Density Residential	130			8.26	8.26	162	1338	7116	3.10	0.0	0.0	2.3	113.7	8.9	57.9	89.4	269.9
A3-G	Institutional	130		0.90		0.90			7116	3.10	0.0	0.8	0.3	113.7	9.7	58.1	89.4	270.9
A4	Low Density Residential	130			34.44	34.44	95.2	3279	10395	2.94	0.0	0.0	9.6	113.7	9.7	67.8	123.7	314.9
A2-C	Commercial (ex. snow dump)	120	15.25			15.25			10395	2.94	13.2	0.0	4.3	127.0	9.7	72.0	123.7	332.4
A3-H	Low Density Residential	120			6.09	6.09	95.2	580	10974	2.91	0.0	0.0	1.7	127.0	9.7	73.7	129.6	340.0
A5	Commercial	110	17.72			17.72			10974	2.91	15.4	0.0	5.0	142.4	9.7	78.7	129.6	360.3
A6-A	Commercial	100	15.18			15.18			10974	2.91	13.2	0.0	4.3	155.5	9.7	82.9	129.6	377.8
A6-B	Institutional	100		6.05		6.05			10974	2.91	0.0	5.3	1.7	155.5	15.0	84.6	129.6	384.7
A6-C	Medium Density Residential	90			4.87	4.87	162.0	789	11763	2.88	0.0	0.0	1.4	155.5	15.0	86.0	137.4	393.9
A6-D	Low Density Residential	90			17.56	17.56	95.2	1672	13435	2.83	0.0	0.0	4.9	155.5	15.0	90.9	153.8	415.2
A6-E	Low Density Residential	90			6.94	6.94	95.2	661	14096	2.81	0.0	0.0	1.9	155.5	15.0	92.9	160.2	423.6
A7-A	Commercial	90	13.62			13.62			14096	2.81	11.8	0.0	3.8	167.4	15.0	96.7	160.2	439.2
A7-B	High Density Residential	90			11.01	11.01	135.0	1486	15582	2.76	0.0	0.0	3.1	167.4	15.0	99.8	174.3	456.4
A7-C	Medium Density Residential	90			6.97	6.97	162.0	1129	16711	2.73	0.0	0.0	2.0	167.4	15.0	101.7	184.9	468.9
A7-D	Medium Density Residential	90			11.74	11.74	162.0	1902	18613	2.68	0.0	0.0	3.3	167.4	15.0	105.0	202.4	489.7
A7-E1/E2	Medium Density Residential	90			9.24	9.24	162.0	1497	20110	2.65	0.0	0.0	2.6	167.4	15.0	107.6	215.9	505.8
A8-A	Commercial	80	28.45			28.45			20110	2.65	24.7	0.0	8.0	192.0	15.0	115.5	215.9	538.5
A8-B	High Density Residential	80			39.34	39.34	135.0	5311	25421	2.55	0.0	0.0	11.0	192.0	15.0	126.6	262.4	596.0
A8-C	Institutional	80		10.52		10.52			25421	2.55	0.0	9.1	2.9	192.0	24.1	129.5	262.4	608.1
A8-D	Low Density Residential	80			16.87	16.87	120.9	2040	27461	2.52	0.0	0.0	4.7	192.0	24.1	134.2	279.8	630.2
ROW Along SNC Sewer Alignment	-	80				14.34			27461	2.52	0.0	0.0	4.0	192.0	24.1	138.2	279.8	634.2
TOTAL		***80***	***221.24***	***27.77***	***230.38***	***493.73***	***-***	***27461***	***27461***	***2.52***	***192.0***	***24.1***	***134.2***	***192.0***	***24.1***	***138.2***	***279.8***	***634.2***

SNTC Area

Residential Land Use	Population Density (Units / ha)	Persons per Unit	Persons per ha
Low Density (singles and semis)	26 – 28 (28 used)	2.7 – 3.4 (3.4 used)	95.2
Medium Density (row/townhouse)	50 – 60 (60 used)	2.7	162.0
High Density (apartments)	60 – 75 (75 used)	1.8	135.0

Notes:

1. Harmon Equation = 1 + [14 / (4+(P/1000)$^{1/2}$)] x K

Where: P = population; K = correction factor = 1.0

2. Instituional / Commercial Peaking Factor = 1.5

Reported Design Flows / Assumptions:

1. Area A4: Existing single family units currently serviced by Jockvale pump station to be redirected to SNC

2. Area A8-D: proposed 600 medium density residential units

SANITARY SEWER CALCULATION SHEET

LOCATION:	**Barrhaven OPA**
FILE REF:	**18-1000**
DATE:	**1-May-18**

NEW PROPOSED DESIGN PARAMETERS

Avg. Daily Flow Res.	280	L/p/d	Peak Fact Res. Per Harmons: Min = 2.0, Max =4.0		Infiltration / Inflow	0.33	L/s/ha
Avg. Daily Flow Comm.	28,000	L/ha/d	Peak Fact. Comm.	1.5	Min. Pipe Velocity	0.60	m/s full flowing
Park Flow	9,300	L/ha/d	Peak Fact. Instit.	1.5	Max. Pipe Velocity	3.00	m/s full flowing
Avg. Daily Flow Indust.	35,000	L/ha/d	Peak Fact. Indust. per MOE graph		Mannings N	0.013	
Harmens Corr Factor	0.8						

Location			Residential Area and Population										Commercial*		Institutional		Park			Infiltration			
Area ID	INFO		Area	Number of Units by type				Pop.	Cumulative		Peak.	Q_{res}	Area	Accu.	Area	Accu.	Area	Accu.	Q_{C+I+I}	Total	Accu.	Infiltration	Total
									Area	Pop.	Fact.			Area		Area		Area		Area	Area	Flow	Flow
			(ha)	Singles	MidRise*	Town's	Apt's		(ha)		(-)	(L/s)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(L/s)	(ha)	(ha)	(L/s)	(L/s)
NOVATECH AUG 2015 - Area A7			38.960					6014.0	38.960	6014.0	2.74	53.32	13.62	13.62		0.00		0.00	6.6	52.580	52.580	17.351	**77.29**
SNTC OPA MAY 2018 - Area A7			17.670			2419	806	7981.9	17.670	7981.9	2.64	68.31	21.50	21.50	1.48	1.48	6.61	6.61	12.2	65.000	65.000	21.450	**102.00**
															*Includes Mide rise Res/School Block					*Includes 17.74 ha of infiltration for other land uses			
NOVATECH AUG 2015 - Area A8			56.210					7351.0	56.210	7351.0	2.67	63.58	28.45	28.45	10.52	10.52		0.00	18.9	95.180	95.180	31.409	**113.93**
SNTC OPA MAY 2018 - Area A8			22.190			3816	1272	12592.8	22.190	12592.8	2.48	101.36	30.23	30.23	9.96	9.96	15.04	15.04	22.0	100.000	100.000	33.000	**156.33**
															*Includes School, and Civic Complex					*Includes 22.58 ha of infiltration for other land uses			

* Mixed Use areas taken as commercial area to account for commercial & population flows

SANITARY SEWER CALCULATION SHEET

LOCATION: **Barrhaven OPA**
FILE REF: **18-1000**
DATE: **8-May-18**

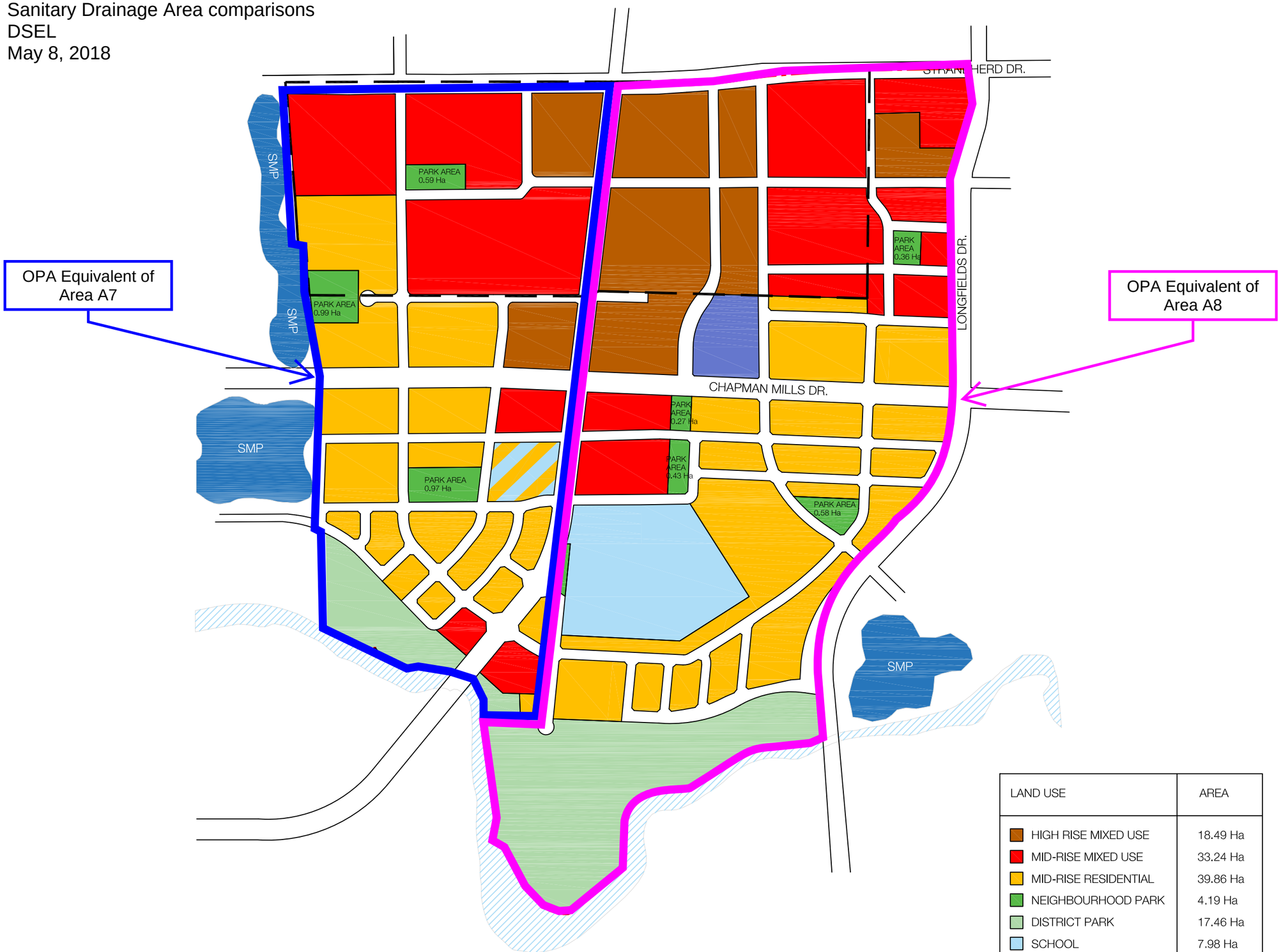
NEW PROPOSED DESIGN PARAMETERS

Avg. Daily Flow Res.	280	L/p/d	Peak Fact Res. Per Harmons: Min = 2.0, Max =4.0		Infiltration / Inflow	0.33	L/s/ha
Avg. Daily Flow Comm/Ins	28,000	L/ha/d	Peak Fact. Comm.	1.5	Min. Pipe Velocity	0.60	m/s full flowing
Park Flow	9,300	L/ha/d	Peak Fact. Instit.	1.5	Max. Pipe Velocity	3.00	m/s full flowing
Avg. Daily Flow Indust.	35,000	L/ha/d	Peak Fact. Indust. per MOE graph		Mannings N	0.013	
Harmens Corr Factor	0.8						

Location			Residential Area and Population										Commercial*		Institutional		Park			Infiltration				Pipe Data**							
Area ID	INFO		Area	Number of Units				Pop.	Cumulative		Peak.	Q_{res}	Area	Accu.	Area	Accu.	Area	Accu.	Q_{C+I+I}	Total	Accu.	Infiltration	Total	DIA	Slope	Length	$A_{hydraulic}$	R	Velocity	Q_{cap}	Q / Q full
	Up	Down		by type					Area	Pop.	Fact.			Area		Area		Area		Area	Area	Flow	Flow								
			(ha)	Singles	MidRise	Town's	Apt's		(ha)		(-)	(L/s)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(L/s)	(ha)	(ha)	(L/s)	(L/s)	(mm)	(%)	(m)	(m^2)	(m)	(m/s)	(L/s)	(-)
NOVATECH 2015 SNC CAPACITY																															
Novatech areas upstream of Node 90	130	90	105.840					10975.0	105.840	10975.0	2.53	90.04	179.17	179.17	17.25	17.25		0.00	95.5	302.260	302.260	99.746	**285.27**								
Novatech Area 6C to 6E	90	90A	29.370					3122.0	135.210	14097.0	2.44	111.67	13.62	192.79		17.25		0.00	102.1	42.990	345.25	113.933	**327.70**	900	0.05	966.0	0.636	0.225	0.64	404.8	0.81
Novatech Area A7	90A	80	38.960					6014.0	174.170	20111.0	2.32	151.21		192.79		17.25		0.00	102.1	38.960	384.21	126.789	**380.10**	900	0.08	166.0	0.636	0.225	0.80	512.0	0.74
Novatech Area A8	80	70	56.210					7351.0	230.380	27462.0	2.21	196.87	28.45	221.24	10.52	27.77		0.00	121.0	109.520	493.73	162.931	**480.85**	1050	0.04	1382.0	0.866	0.263	0.63	546.1	0.88
																				*Includes 14.84 ha of infiltration for ROW along SNC sewer											
OPA MAY 2018 SNC CAPACITY																															
Novatech areas upstream of Node 90	130	90	105.840					10975.0	105.840	10975.0	2.53	90.04	179.17	179.17	17.25	17.25		0.00	95.5	302.260	302.260	99.746	**285.27**								
Novatech Area 6C to 6E	90	90A	29.370					3122.0	135.210	14097.0	2.44	111.67	13.62	192.79		17.25		0.00	102.1	42.990	345.25	113.933	**327.70**	900	0.05	966.0	0.636	0.225	0.64	404.8	0.81
OPA Equivalent of Novatech Area A7	90A	80	17.670			2419	806	7981.9	152.880	22078.9	2.29	163.68	21.50	214.29	1.48	18.73	6.61	6.61	114.3	65.000	410.25	135.383	**413.40**	900	0.08	166.0	0.636	0.225	0.80	512.0	0.81
						*Unit projections calculated using net area calcs per Updated Land Use Statistics														*Includes 17.75 ha of infiltration for other land uses											
OPA Equivalent of Novatech Area A8	80	70	22.190			3816	1272	12592.8	175.070	34671.7	2.13	239.63	30.23	244.52	9.96	28.69	15.04	15.04	135.2	100.000	510.25	168.383	**543.25**	1050	0.04	1382.0	0.866	0.263	0.63	546.1	0.99
						*Unit projections calculated using net area calcs per Updated Land Use Statistics														*Includes 22.58 ha of infiltration for other land uses											

* Mixed Use areas taken as commercial area to account for commercial & population flows
**Based on 28/09/17 As-Built drawings for SNC Sewer Phase 2. Smallest slope within the run assigned to the entire run.

Sanitary Drainage Area comparisons
DSEL
May 8, 2018



LAND USE	AREA
HIGH RISE MIXED USE	18.49 Ha
MID-RISE MIXED USE	33.24 Ha
MID-RISE RESIDENTIAL	39.86 Ha
NEIGHBOURHOOD PARK	4.19 Ha
DISTRICT PARK	17.46 Ha
SCHOOL	7.98 Ha
CIVIC COMPLEX	1.98 Ha

SOUTH NEPEAN TOWN CENTRE
LAND USE PLAN

- HIGH RISE MIXED-USE
- MID-RISE MIXED-USE
- MID-RISE RESIDENTIAL
- NEIGHBOURHOOD PARK
- DISTRICT PARK
- SCHOOL
- CIVIC COMPLEX
- STRANDHERD RETAIL DISTRICT
- STORMWATER MANAGEMENT POND (SMP)
- SUBJECT AREA

0 100m 200m 400m

No.	REVISION	DATE	BY
6	LAND USE	2018.04.26	CB
5	LAND USE	2018.04.16	CB
4	LAND USE	2018.04.13	CB
3	FOR REVIEW	2018.03.22	BL
2	FOR REVIEW	2018.03.09	BL

CLIENT

RICHCRAFT Group of Companies
minto

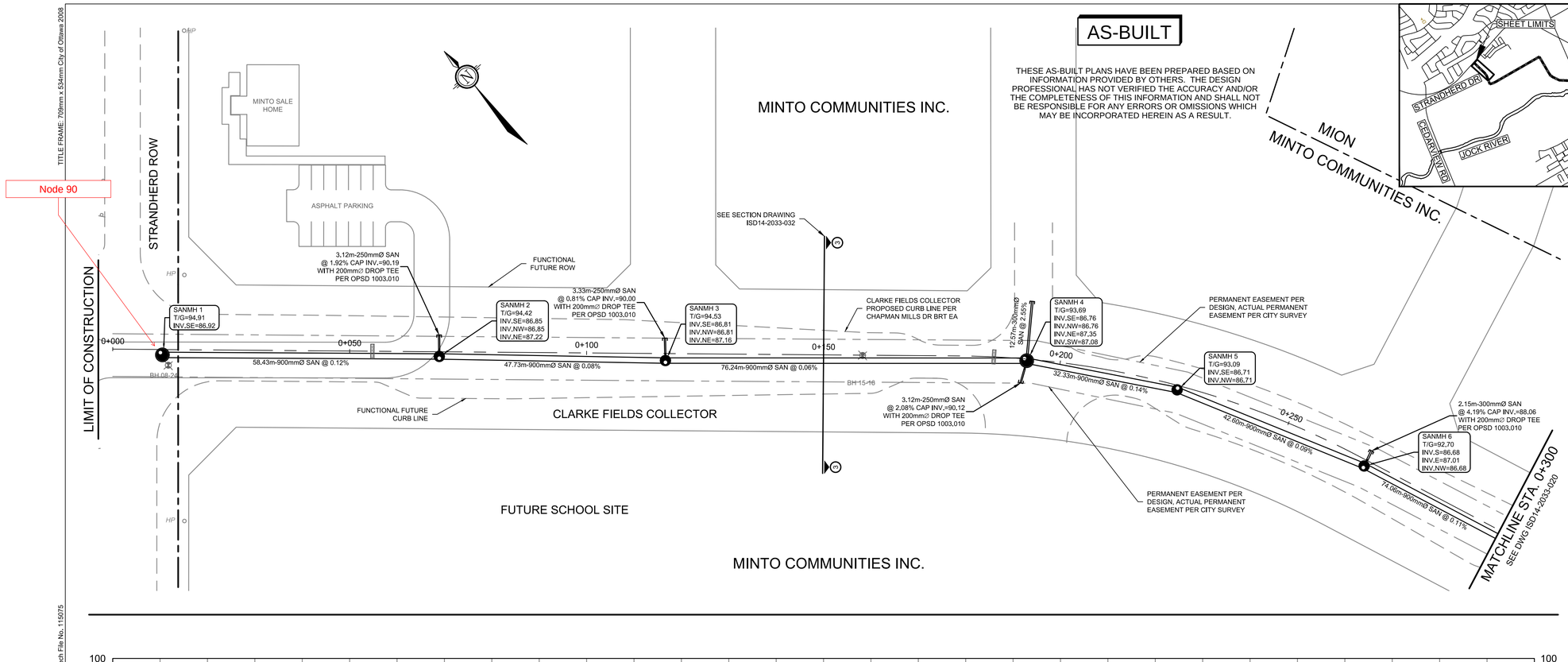
FOTENN Planning + Design

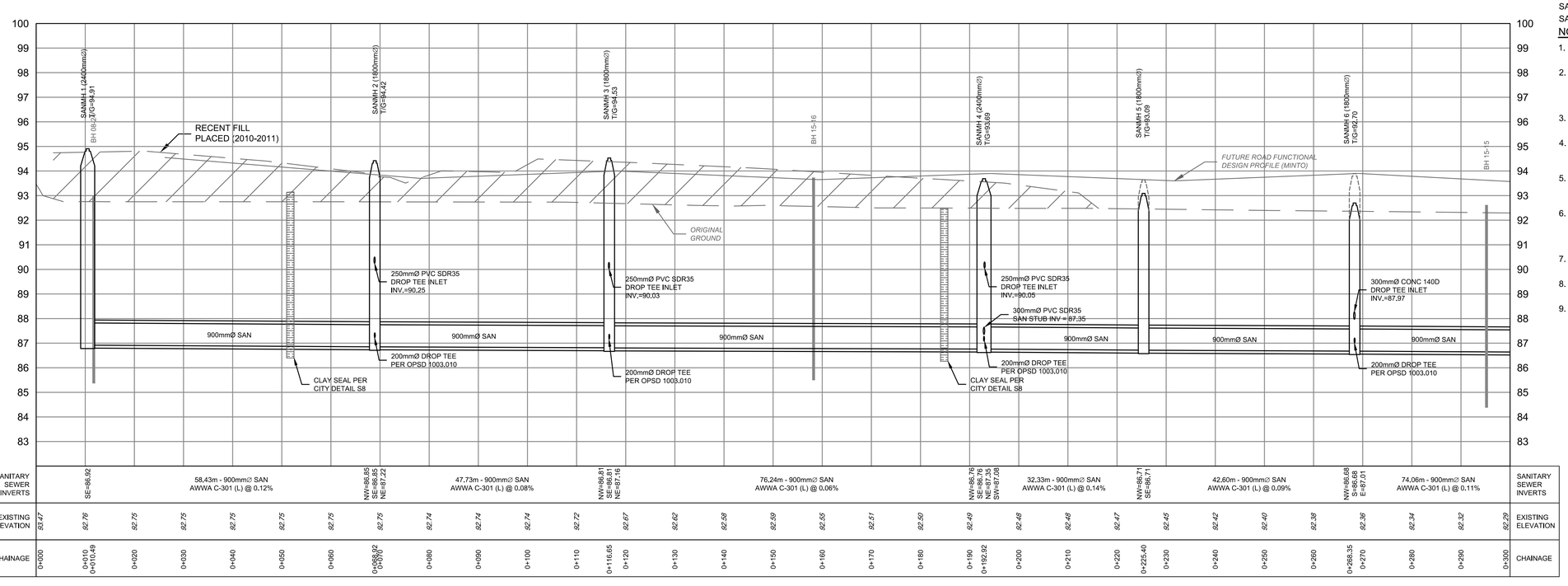
223 McLeod Street Ottawa ON K2P 0Z8
613 730 5709 www.fotenn.com

DESIGNED	CB
REVIEWED	MS
DATE	2018.03.09

DRAWING No. P1

TITLE FRAME: 709mm x 534mm City of Ottawa 2008





CITY OF OTTAWA
SOUTH NEPEAN COLLECTOR (SNC)
SEWER PHASE 2 - STRANDHERD DRIVE TO JOCKVALE ROAD

PLAN AND PROFILE

STA. 0+000 TO 0+300

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Ottawa

Contract No. ISD14-2033	Dwg. No. 019
Sheet 19 of 51	
Asset No.	
Asset Group ISD	
Des. RJD	Chk'd. ERD
Dwn. NCS	Chk'd. RJD
Utility Circ. No.	Index No.
Const. Inspector	

Scale: HORIZONTAL 1:500 (0, 5, 10, 15, 20 / 0, 1, 2, 3, 4) VERTICAL 1:100

NOTE: The location of utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned. The contractor shall prove the location of utilities and shall be responsible for adequate protection from damage.

REVISIONS

No.	Description	By	Date (dd/mm/yy)
1.	ISSUED FOR PRELIMINARY DESIGN CIRCULATION	ERD	21/12/15
2.	CHANGES TO ORIENTATION ACROSS KB SWM FACILITY	ERD	16/02/16
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7.	ISSUED FOR CONSTRUCTION	ERD	30/08/16
8.	SEWER ALIGNMENT SHIFT ON GREENBANK	ERD	16/09/16
9.	REVISED PER MION SERVICING	ERD	08/12/16
10.	SAN MH 2 SHIFT & SAN MH 6 DROP STRUCTURE ADDED	ERD	30/03/17
11.	MINTO LANDS MANHOLE UPDATE	ERD	24/04/17
12.	ISSUED FOR AS-BUILT	ERD	28/09/17

LEGEND

EXISTING ITEMS
- WATERMAIN
- WATERMAIN VALVE
- STORM SEWER
- STORM MH (STM)
- CATCH BASIN & LEAD (CB)
- CULVERT
- STORM STRUCTURE
- SANITARY SEWER
- SANITARY MH (SAN)

PROPOSED ITEMS
- SANITARY SEWER
- SANITARY MH & LID
- CULVERT
- FUTURE STRUCTURE T/G ADJUSTMENT

NOTES:

1. CONCRETE PRESSURE PIPE SHALL BE AWWA C301 (L) CL-16. FITTING SHALL BE DESIGNED TO THE SAME CRITERIA AS THE ADJACENT PIPE.
2. CONTRACTOR TO PROVIDE PIPE CLASS CALCULATIONS, AS PER AWWA C304 (DESIGN OF PRESTRESSED CONCRETE CYLINDER PIPE), BY THE PIPE MANUFACTURER, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE PROVINCE OF ONTARIO.
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9. SEE MANHOLE DETAIL DRAWINGS ISD14-2033-36 TO ISD14-2033-45 FOR ADDITIONAL DETAILS

MAINTENANCE HOLE DATA

MH ID	STATION	OFFSET	STRUCTURE	COVER	T/G ELEV	LOW. INV.
1	0+010.49	1.13R	OPSD 701.013	S24/S25	94.91	86.92
2	0+068.92	0.99R	OPSD 701.012	S24/S25	94.42	86.85
3	0+116.65	1.48R	OPSD 701.012	S24/S25	94.53	86.81
4	0+192.92	0.35R	OPSD 701.013	S24/S25	93.69	86.76
5	0+225.40	0.94R	OPSD 701.012	S24/S25	93.09	86.71
6	0+268.35	1.30R	OPSD 701.012	S24/S25	92.70	86.68

SANITARY SEWER PIPE DATA

CONNECTED STRUCTURES & INVERTS	DIA (mm)	LENGTH (m)	MATERIAL
SANMH 1 = 86.92 SANMH 2 = 86.85	900	58.43	AWWA C-301 (L)
SANMH 2 = 86.85 SANMH 3 = 86.81	900	47.73	AWWA C-301 (L)
SANMH 3 = 86.81 SANMH 4 = 86.76	900	76.24	AWWA C-301 (L)
SANMH 5 = 86.71 SANMH 6 = 86.68	900	32.33	AWWA C-301 (L)
SANMH 5 = 86.71 SANMH 6 = 86.68	900	42.60	AWWA C-301 (L)
SANMH 6 = 86.68 SANMH 7 = 86.59	900	74.06	AWWA C-301 (L)

Novatech File No. 115075

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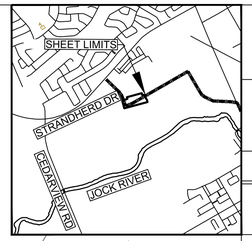
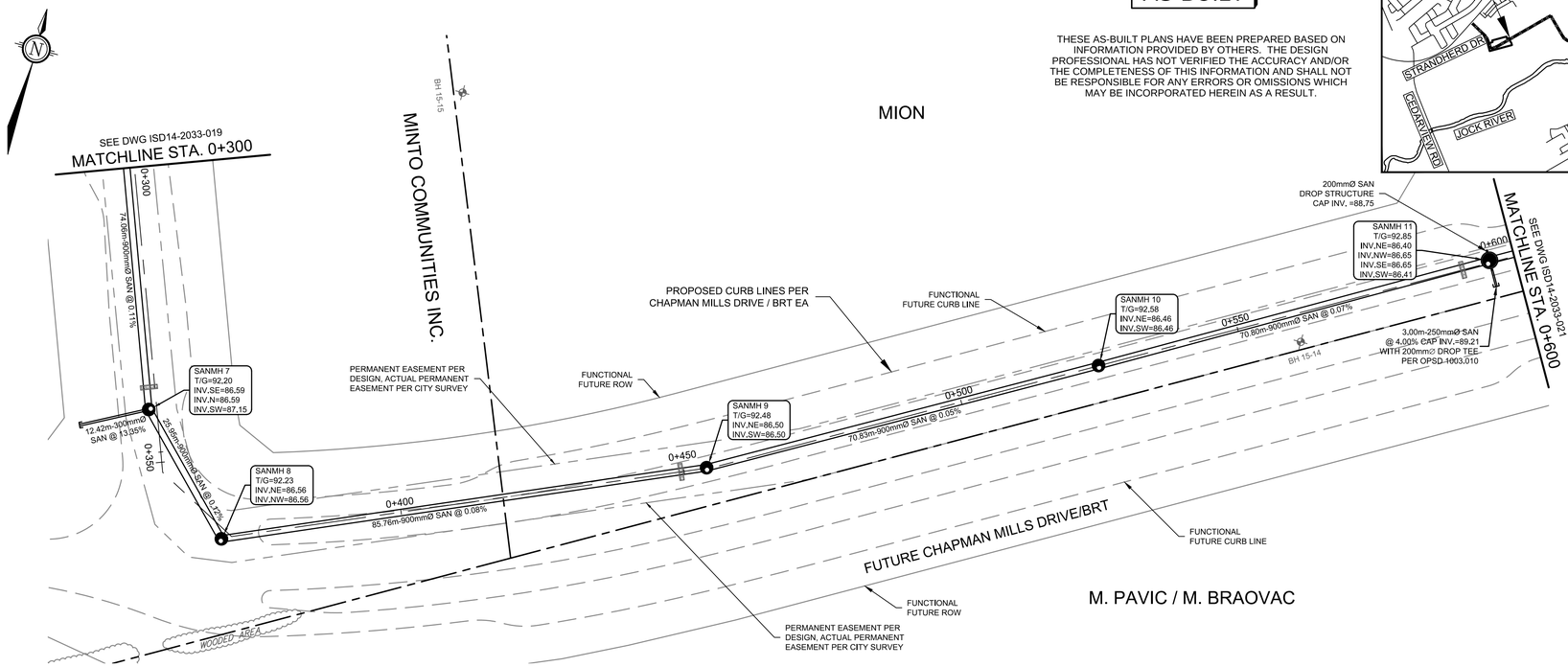
CITY OF OTTAWA
SOUTH NEPEAN COLLECTOR (SNC)
SEWER PHASE 2 - STRANDHERD DRIVE TO JOCKVALE ROAD

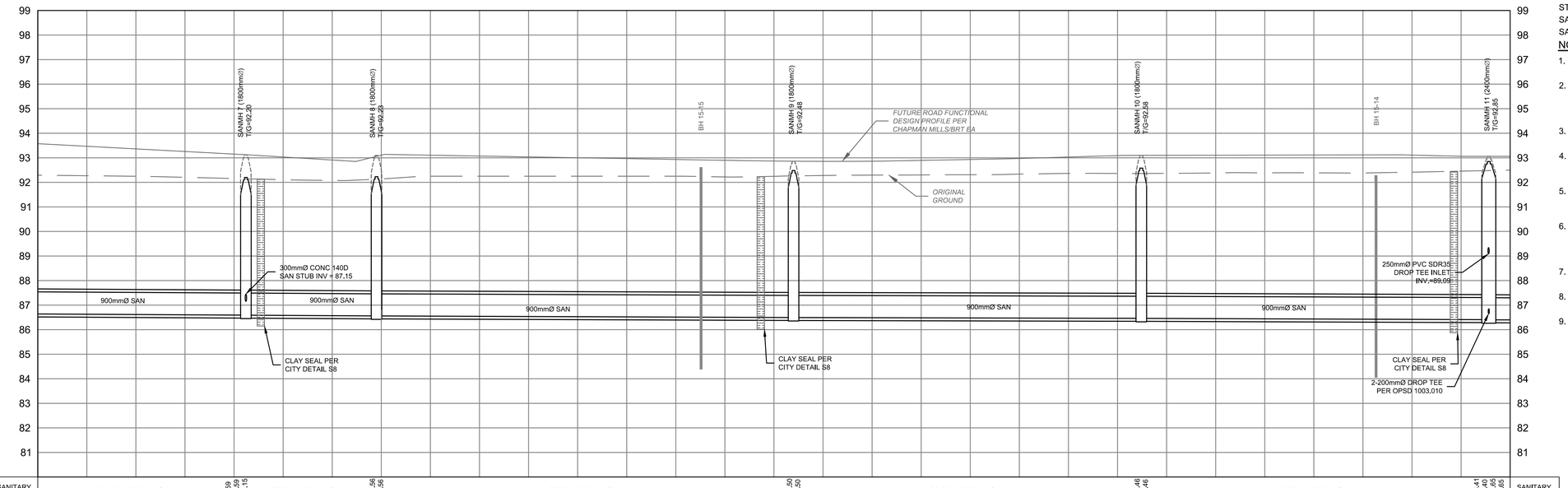
PLAN AND PROFILE
STA. 0+300 TO 0+600

AS-BUILT

THESE AS-BUILT PLANS HAVE BEEN PREPARED BASED ON INFORMATION PROVIDED BY OTHERS. THE DESIGN PROFESSIONAL HAS NOT VERIFIED THE ACCURACY AND/OR THE COMPLETENESS OF THIS INFORMATION AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.







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TITLE FRAME: 709mm x 534mm City of Ottawa 2008

Novatech File No. 115075

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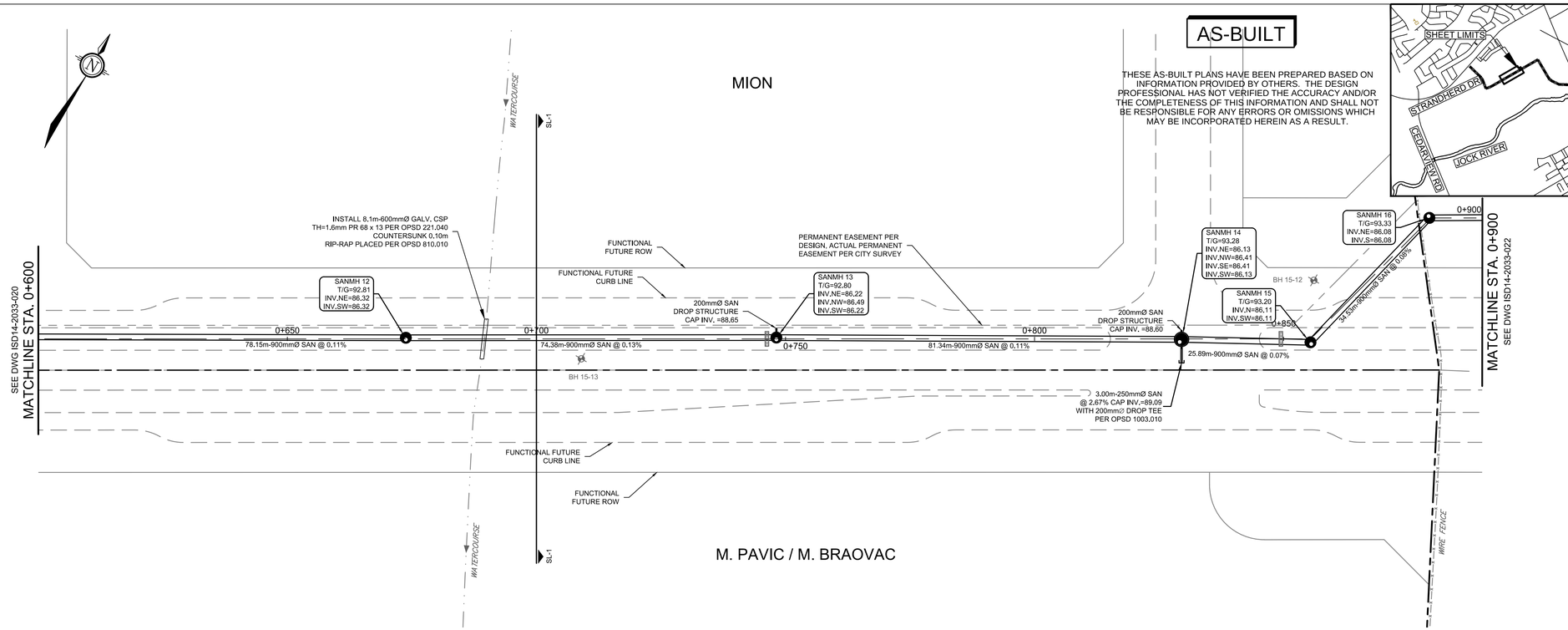

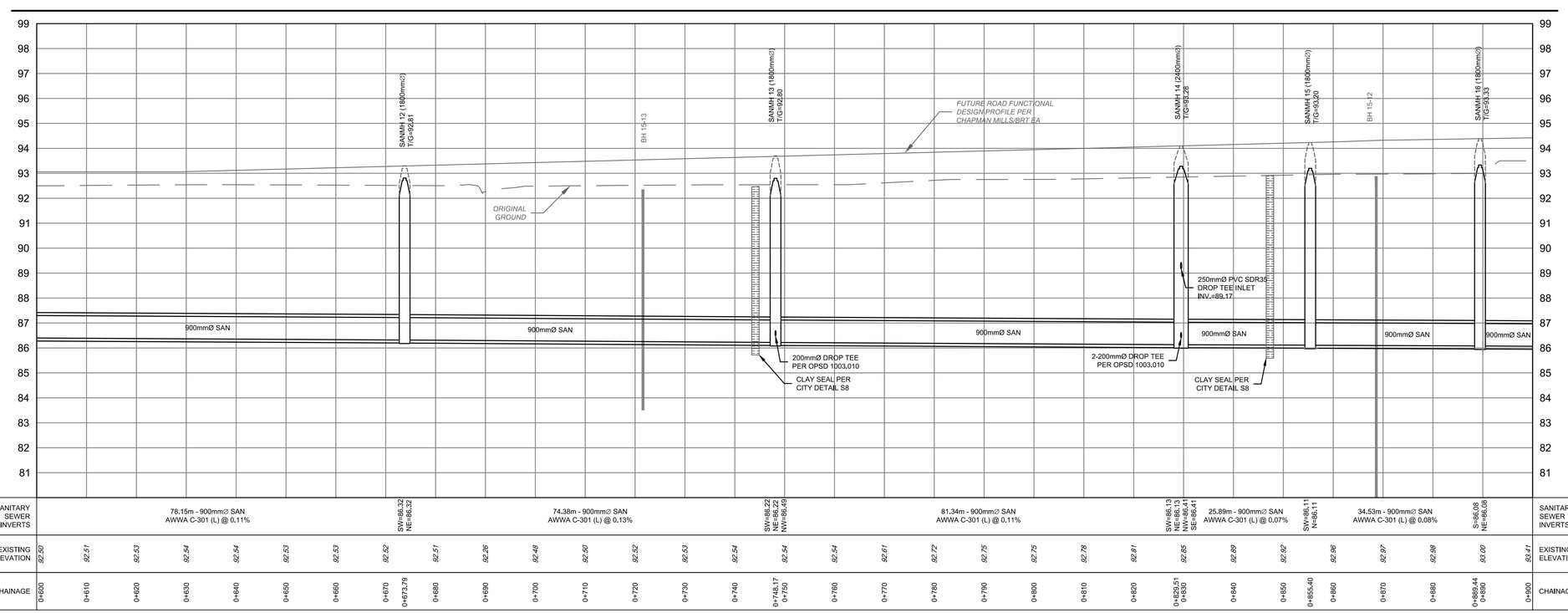

CITY OF OTTAWA
SOUTH NEPEAN COLLECTOR (SNC) SEWER PHASE 2 - STRANDHERD DRIVE TO JOCKVALE ROAD

PLAN AND PROFILE
STA. 0+600 TO 0+900

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JONATHAN KNOYLE, P.Eng.
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Ottawa

Contract No.	Dwg. No.
ISD14-2033	021

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Asset No.

Asset Group: ISD

Des.	Chk'd.
RJD	ERD
Dwn.	Chk'd.
NCS	RJD

Utility Circ. No. | Index No.

Const. Inspector

Scale: HORIZONTAL 1:500 (0, 5, 10, 15, 20 / 0, 1, 2, 3, 4)
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9.	REVISED PER MION SERVICING	ERD	08/12/16
10.	ISSUED FOR AS-BUILT	ERD	28/09/17

LEGEND

EXISTING ITEMS
- WATERMAIN
- WATERMAIN VALVE
- STORM SEWER
- STORM MH — STM
- CATCH BASIN & LEAD — CB
- CULVERT
- STORM STRUCTURE
- SANITARY SEWER
- SANITARY MH — SAN

PROPOSED ITEMS
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- SANITARY MH & LID
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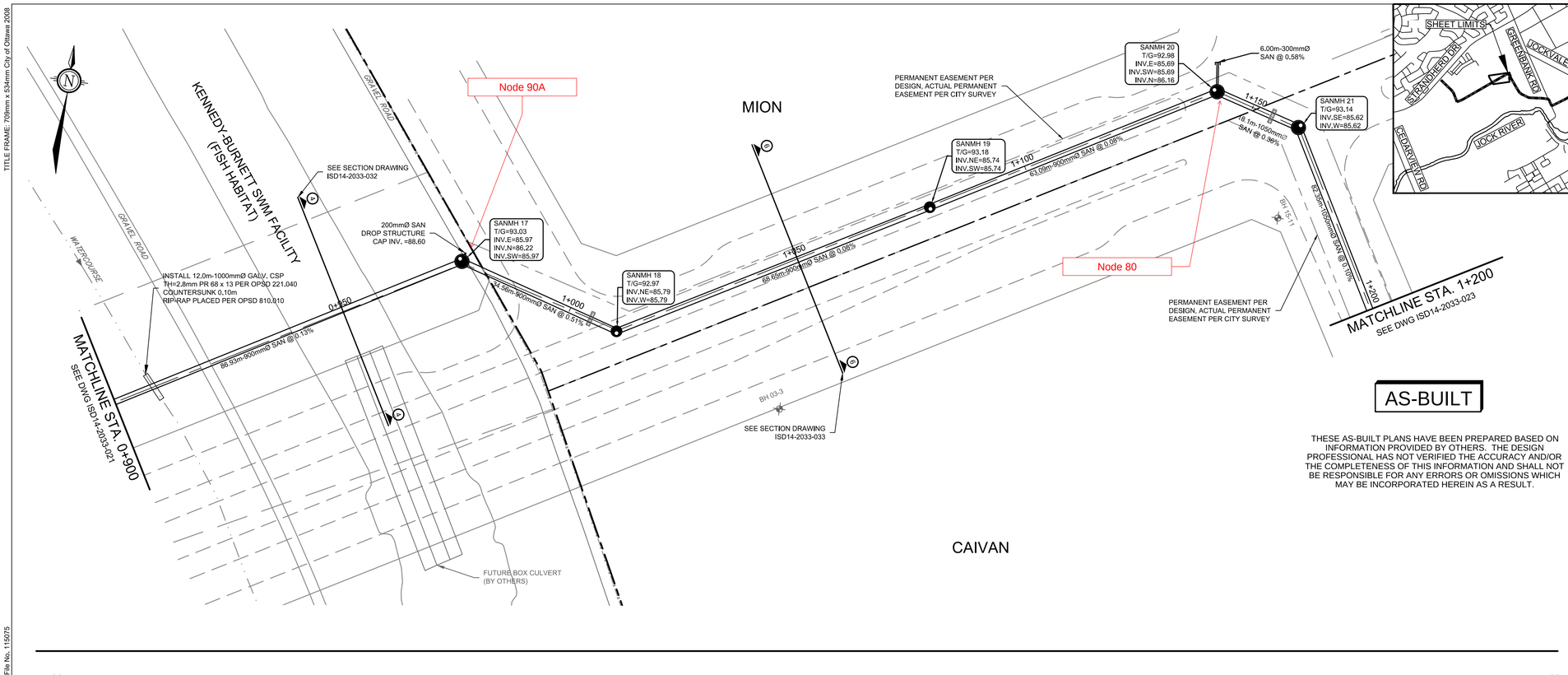
MAINTENANCE HOLE DATA

MH ID	STATION	OFFSET	STRUCTURE	COVER	T/G ELEV	LOW. INV.
12	0+673.79	0.22L	OPSD 701.012	S24/S25	92.81	86.32
13	0+748.17	0.26L	OPSD 701.012	S24/S25	92.80	86.22
14	0+829.51	0.11R	OPSD 701.013	S24/S25	93.28	86.13
15	0+855.40	0.69R	OPSD 701.012	S24/S25	93.20	86.11
16	0+889.44	0.21L	OPSD 701.012	S24/S25	93.33	86.08

SANITARY SEWER PIPE DATA

CONNECTED STRUCTURES & INVERTS	DIA (mm)	LENGTH (m)	MATERIAL
SANMH 11 = 86.40 SANMH 12 = 86.32	900	78.15	AWWA C-301 (L)
SANMH 12 = 86.32 SANMH 13 = 86.22	900	74.38	AWWA C-301 (L)
SANMH 13 = 86.22 SANMH 14 = 86.13	900	81.34	AWWA C-301 (L)
SANMH 14 = 86.13 SANMH 15 = 86.11	900	25.89	AWWA C-301 (L)
SANMH 15 = 86.11 SANMH 16 = 86.08	900	34.53	AWWA C-301 (L)
SANMH 16 = 86.08 SANMH 17 = 85.97	900	86.93	AWWA C-301 (L)



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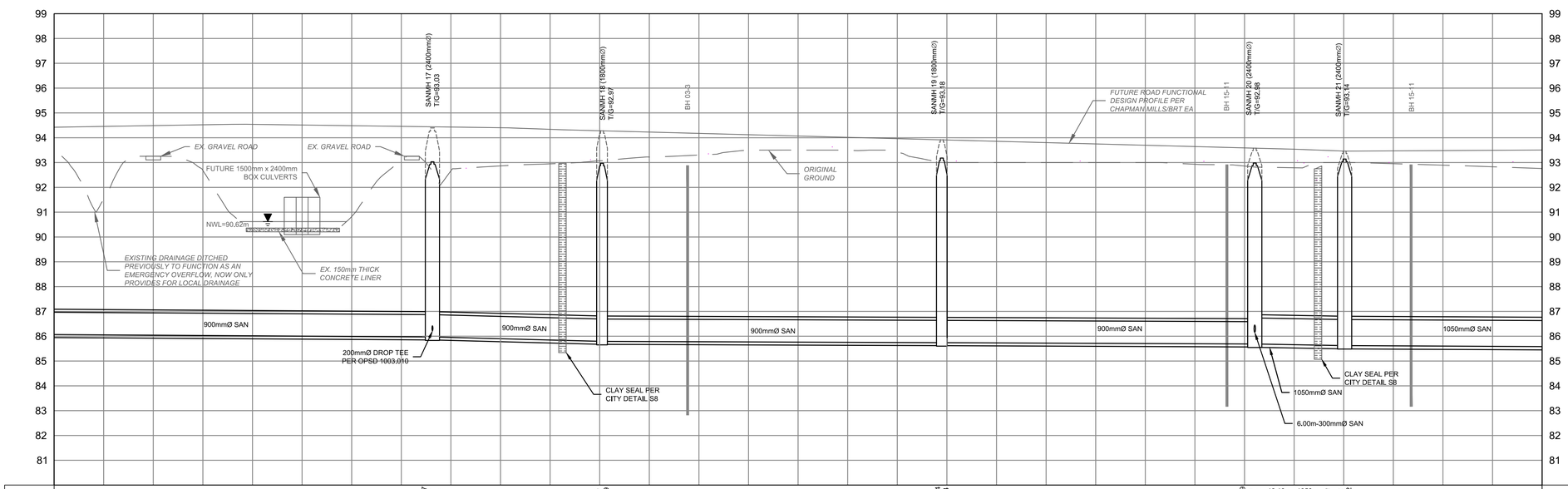

SANITARY SEWER INVERTS	86.93m - 900mmØ SAN AWWA C-301 (L) @ 0.13%								SW=85.97 E=85.97 N=86.22	34.56m - 900mmØ SAN AWWA C-301 (L) @ 0.51%				W=85.79 NE=85.79	68.65m - 900mmØ SAN AWWA C-301 (L) @ 0.08%								SW=85.74 NE=85.74	63.09m - 900mmØ SAN AWWA C-301 (L) @ 0.08%								SW=85.69 E=85.69 N=86.16	18.10m - 1050mmØ SAN AWWA C-301 (L) @ 0.36%		W=85.62 SE=85.62	82.35m - 1050mmØ SAN AWWA C-301 (L) @ 0.10%						SANITARY SEWER INVERTS
EXISTING ELEVATION	93.41	91.52	93.26	92.68	90.36	90.36	90.63	93.09		92.67	92.86	92.95		93.07	93.22	93.30	93.50	93.50	93.49	93.42		93.00	93.00	93.00	93.00	93.00	93.00	92.93						92.86	92.79		93.00	92.95	92.89	92.83		92.76	EXISTING ELEVATION
CHAINAGE	0+900	0+910	0+920	0+930	0+940	0+950	0+960	0+970	0+976.28	0+980	0+990	1+000		1+010 1+010.47	1+020	1+030	1+040	1+050	1+060	1+070		1+078.97 1+080	1+090	1+100	1+110	1+120	1+130							1+140 1+142.06	1+150		1+160 1+160.18	1+170	1+180	1+190		1+200	CHAINAGE

CITY OF OTTAWA
SOUTH NEPEAN COLLECTOR (SNC) SEWER PHASE 2 - STRANDHERD DRIVE TO JOCKVALE ROAD

PLAN AND PROFILE
STA. 0+900 TO 1+200

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Ottawa

Contract No.	Dwg. No.
ISD14-2033	022

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Asset No.

Asset Group: ISD

Des.	Chk'd.
RJD	ERD
Dwn.	Chk'd.
NCS	RJD

Utility Circ. No. | Index No.

Const. Inspector

Scale: HORIZONTAL 1:500 (0, 5, 10, 15, 20); VERTICAL 1:100 (0, 1, 2, 3, 4)

NOTE: The location of utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned. The contractor shall prove the location of utilities and shall be responsible for adequate protection from damage.

REVISIONS

No.	Description	By	Date (dd/mm/yy)
1.	ISSUED FOR PRELIMINARY DESIGN CIRCULATION	ERD	21/12/15
2.	CHANGES TO ORIENTATION ACROSS KB SWM FACILITY	ERD	16/02/16
3.	ISSUED FOR PRELIMINARY DESIGN REPORT	ERD	02/03/16
4.	ISSUED FOR FINAL DESIGN CIRCULATION	ERD	29/04/16
5.	ISSUED FOR MOECC ECA APPLICATION	ERD	26/05/16
6.	ISSUED FOR TENDER	ERD	20/06/16
7.	ISSUED FOR CONSTRUCTION	ERD	30/08/16
8.	SEWER ALIGNMENT SHIFT ON GREENBANK	ERD	16/09/16
9.	REVISED PER MION SERVICING	ERD	08/12/16
10.	ISSUED FOR AS-BUILT	ERD	28/09/17

LEGEND

EXISTING ITEMS

- WATERMAIN
- WATERMAIN VALVE
- STORM SEWER
- STORM MH — STM
- CATCH BASIN & LEAD — CB
- CULVERT
- STORM STRUCTURE
- SANITARY SEWER
- SANITARY MH — SAN

PROPOSED ITEMS

- SANITARY SEWER
- SANITARY MH & LID
- CULVERT
- FUTURE STRUCTURE T/G ADJUSTMENT

NOTES:

1. CONCRETE PRESSURE PIPE SHALL BE AWWA C301 (L) CL-16. FITTING SHALL BE DESIGNED TO THE SAME CRITERIA AS THE ADJACENT PIPE.
2. CONTRACTOR TO PROVIDE PIPE CLASS CALCULATIONS, AS PER AWWA C304 (DESIGN OF PRESTRESSED CONCRETE CYLINDER PIPE), BY THE PIPE MANUFACTURER, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE PROVINCE OF ONTARIO.
3. PIPE EMBEDMENT SHALL BE AS PER CITY OF OTTAWA DETAIL S6. SAND MAY BE USED AS PIPE COVER MATERIAL ABOVE THE SPRINGLINE.
4. A CLOTH DIAPER APPROVED BY THE PIPE MANUFACTURE SHALL BE PLACED AROUND EACH EXTERIOR JOIN RECESS AND FASTENED IN PLACE WITH EITHER WIRE OR STEEL STRAPPING STITCHED INTO ITS EDGES.
5. THE JOINT SHALL BE FILLED WITH MORTAR IN ONCE CONTINUOUS OPERATION AND PATTED OR MANIPULATED TO SETTLE THE MORTAR AND EXPEL AND ENTRAPPED AIR.
6. INTERIOR JOINTS SHALL BE FILLED WITH MORTAR AFTER BACKFILLING AND FINISHED SMOOTH WITH A TROWEL. CEMENT USED SHALL MEET THE REQUIREMENTS OF TYPE HS CEMENT (HIGH-SULPHATE-RESISTANCE), OR APPROVED EQUIVALENT.
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9. SEE MANHOLE DETAIL DRAWINGS ISD14-2033-36 TO ISD14-2033-45 FOR ADDITIONAL DETAILS

MAINTENANCE HOLE DATA

MH ID	STATION	OFFSET	STRUCTURE	COVER	T/G ELEV	LOW. INV.
17	0+976.28	0.53L	OPSD 701.013	S24/S25	93.03	85.97
18	1+010.47	0.27R	OPSD 701.012	S24/S25	92.97	85.79
19	1+078.97	0.20R	OPSD 701.012	S24/S25	93.18	85.74
20	1+142.06	0.01L	OPSD 701.013	S24/S25	92.98	85.69
21	1+160.18	0.08L	OPSD 701.013	S24/S25	93.14	85.62

SANITARY SEWER PIPE DATA

CONNECTED STRUCTURES & INVERTS	DIA (mm)	LENGTH (m)	MATERIAL
SANMH 16 = 86.08 SANMH 17 = 85.97	900	86.93	AWWA C-301 (L)
SANMH 17 = 85.97 SANMH 18 = 85.79	900	34.56	AWWA C-301 (L)
SANMH 19 = 85.74 SANMH 18 = 85.79	900	68.65	AWWA C-301 (L)
SANMH 19 = 85.74 SANMH 20 = 85.69	900	63.09	AWWA C-301 (L)
SANMH 20 = 85.69 SANMH 21 = 85.62	1050	18.10	AWWA C-301 (L)
SANMH 21 = 85.62 SANMH 22 = 85.54	1050	82.35	AWWA C-301 (L)

TITLE FRAME: 708mm x 534mm City of Ottawa 2008
Novatech File No. 115075
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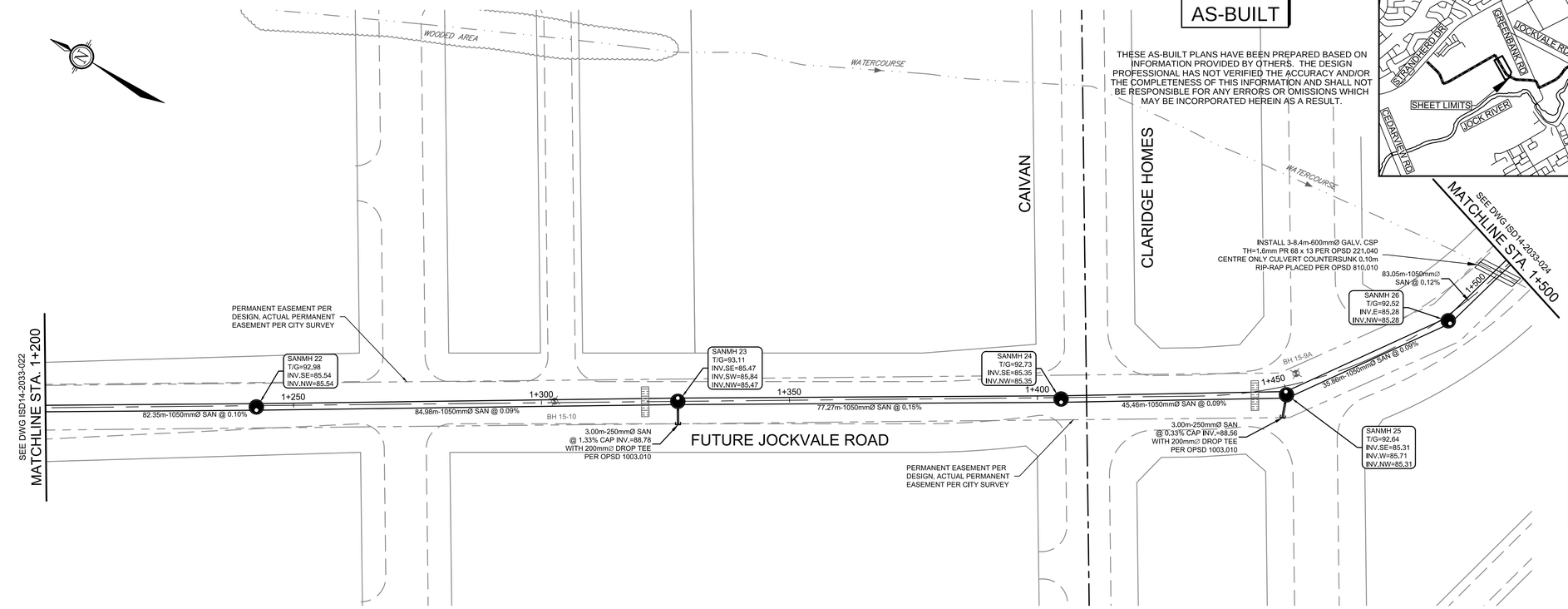
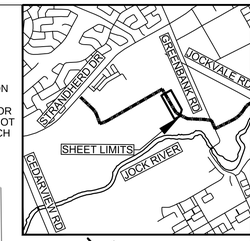
CITY OF OTTAWA
SOUTH NEPEAN COLLECTOR (SNC)
SEWER PHASE 2 - STRANDHERD DRIVE TO JOCKVALE ROAD

PLAN AND PROFILE
STA. 1+200 TO 1+500

AS-BUILT

THESE AS-BUILT PLANS HAVE BEEN PREPARED BASED ON INFORMATION PROVIDED BY OTHERS. THE DESIGN PROFESSIONAL HAS NOT VERIFIED THE ACCURACY AND/OR THE COMPLETENESS OF THIS INFORMATION AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.





WAYNE NEWELL, P.Eng.
General Manager

JONATHAN KNOYLE, P.Eng.
Senior Engineer

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Ottawa

Contract No. ISD14-2033	Dwg. No. 023
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Asset No.	
Asset Group ISD	
Des. RJD	Chk'd. ERD
Dwn. NCS	Chk'd. RJD
Utility Circ. No.	Index No.
Const. Inspector	

Scale: HORIZONTAL 1:500 (0 5 10 15 20 / 0 1 2 3 4)
VERTICAL 1:100

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REVISIONS

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9.	REVISED PER MION SERVICING	ERD	08/12/16
10.	ISSUED FOR AS-BUILT	ERD	28/09/17

LEGEND

EXISTING ITEMS
- WATERMAIN
- WATERMAIN VALVE
- STORM SEWER
- STORM MH (STM)
- CATCH BASIN & LEAD (CB)
- CULVERT
- STORM STRUCTURE
- SANITARY SEWER
- SANITARY MH (SAN)

PROPOSED ITEMS
- SANITARY SEWER
- SANITARY MH & LID
- CULVERT
- FUTURE STRUCTURE T/G ADJUSTMENT

NOTES:

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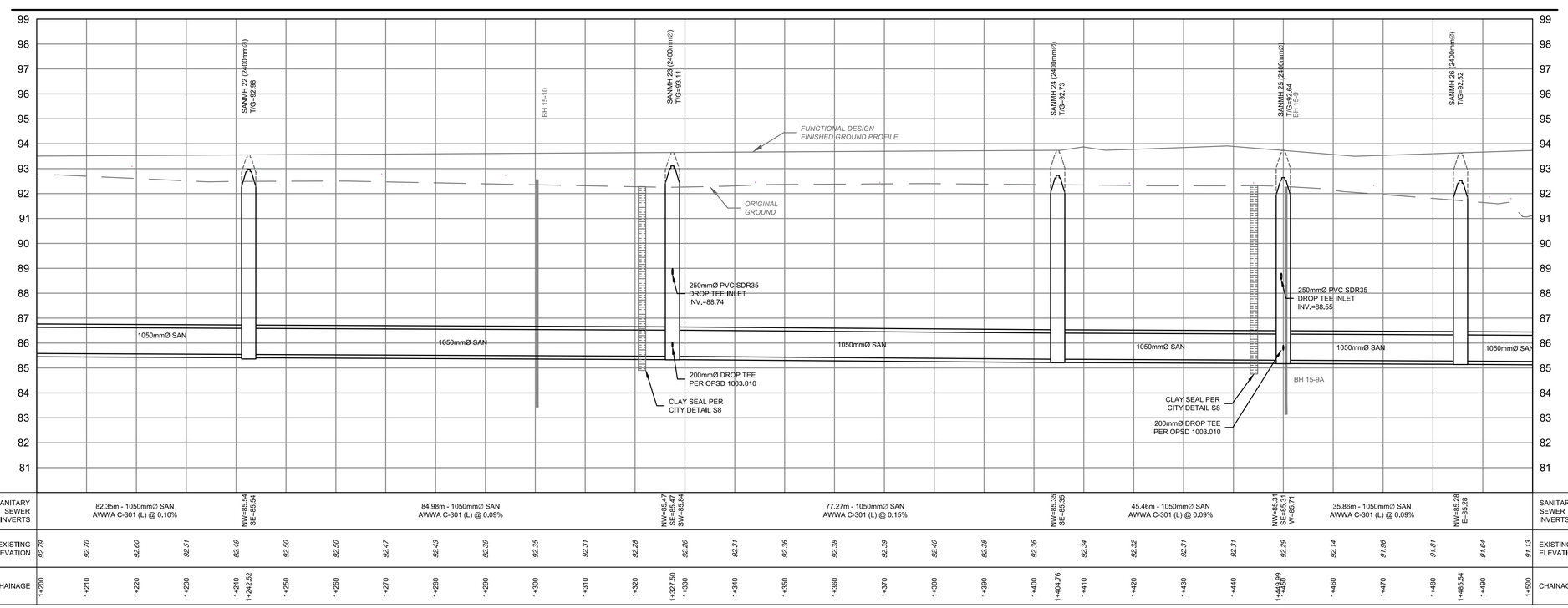

MAINTENANCE HOLE DATA

MH ID	STATION	OFFSET	STRUCTURE	COVER	T/G ELEV	LOW. INV.
22	1+242.52	0.26R	OPSD 701.013	S24/S25	92.98	85.50
23	1+327.50	0.01L	OPSD 701.013	S24/S25	93.11	85.47
24	1+404.76	0.30R	OPSD 701.013	S24/S25	92.73	85.35
25	1+449.99	1.75R	OPSD 701.013	S24/S25	92.64	85.31
26	1+485.54	0.99R	OPSD 701.013	S24/S25	92.52	85.28

SANITARY SEWER PIPE DATA

CONNECTED STRUCTURES & INVERTS	DIA (mm)	LENGTH (m)	MATERIAL
SANMH 21 = 85.62 SANMH 22 = 85.54	1050	82.35	AWWA C-301 (L)
SANMH 22 = 85.54 SANMH 23 = 85.47	1050	84.98	AWWA C-301 (L)
SANMH 23 = 85.47 SANMH 24 = 85.35	1050	77.27	AWWA C-301 (L)
SANMH 24 = 85.35 SANMH 25 = 85.31	1050	45.46	AWWA C-301 (L)
SANMH 25 = 85.31 SANMH 26 = 85.28	1050	35.86	AWWA C-301 (L)
SANMH 26 = 85.28 SANMH 27 = 85.18	1050	83.05	AWWA C-301 (L)

TITLE FRAME: 709mm x 534mm City of Ottawa 2008
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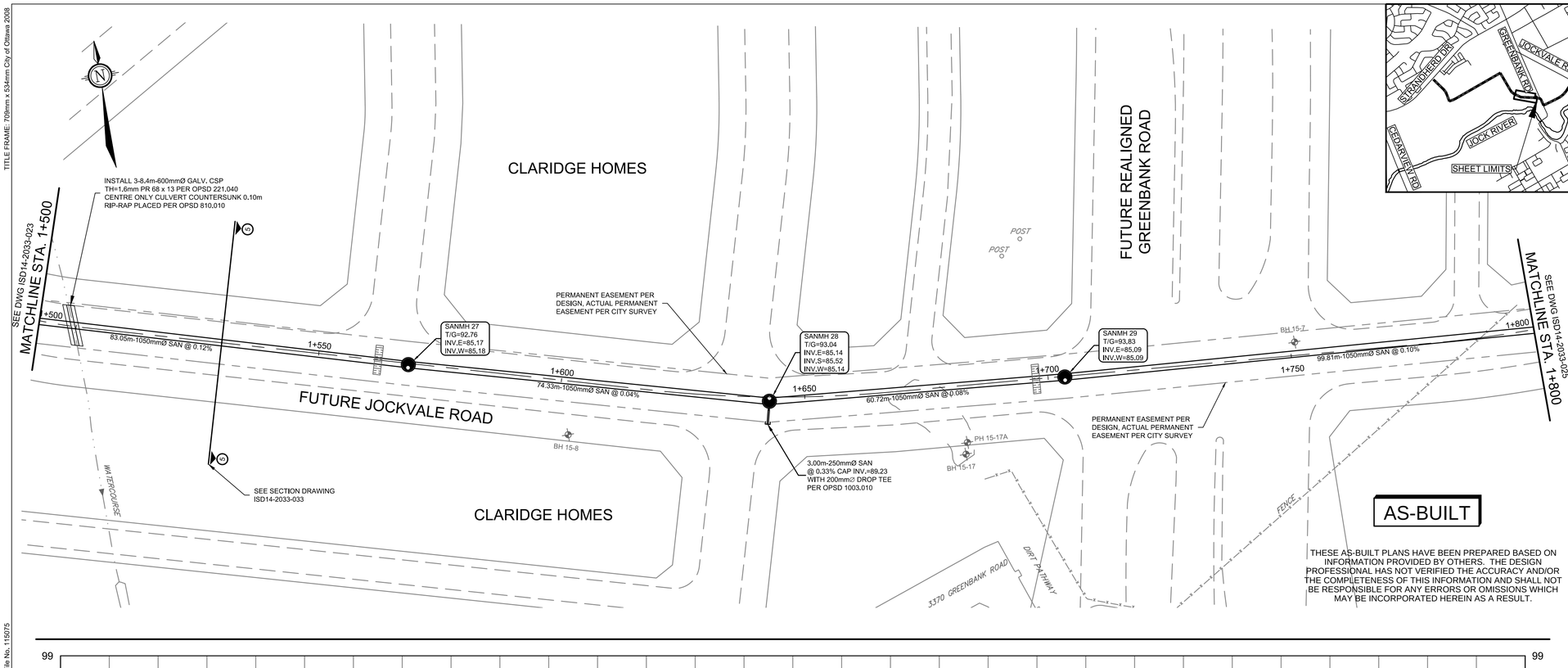

AS-BUILT

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CITY OF OTTAWA
SOUTH NEPEAN COLLECTOR (SNC)
SEWER PHASE 2 - STRANDHERD DRIVE TO JOCKVALE ROAD

PLAN AND PROFILE
STA. 1+500 TO 1+800

WAYNE NEWELL, P.Eng.
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JONATHAN KNOYLE, P.Eng.
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Ottawa

Contract No.	Dwg. No.
ISD14-2033	024

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Asset No.	
Asset Group	ISD
Des. RJD	Chk'd. ERD
Dwn. NCS	Chk'd. RJD
Utility Circ. No.	Index No.
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Scale: HORIZONTAL 1:500 (0 5 10 15 20; 0 1 2 3 4)
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LEGEND

EXISTING ITEMS
- WATERMAIN
- WATERMAIN VALVE
- STORM SEWER
- STORM MH — STM
- CATCH BASIN & LEAD — CB
- CULVERT
- STORM STRUCTURE
- SANITARY SEWER
- SANITARY MH — SAN

PROPOSED ITEMS
- SANITARY SEWER
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- FUTURE STRUCTURE T/G ADJUSTMENT

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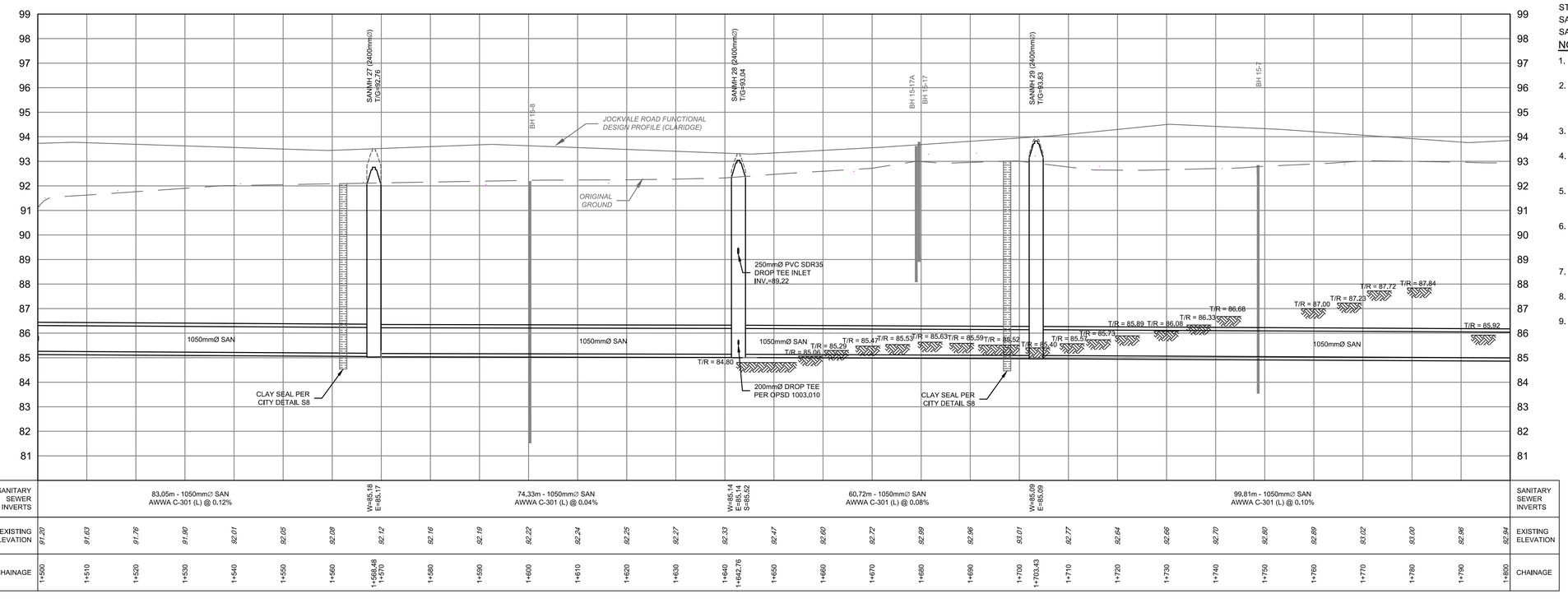

MAINTENANCE HOLE DATA

MH ID	STATION	OFFSET	STRUCTURE	COVER	T/G ELEV	LOW. INV.
27	1+568.48	0.26R	OPSD 701.013	S24/S25	92.76	85.17
28	1+642.76	0.88R	OPSD 701.013	S24/S25	93.04	85.14
29	1+703.43	0.14R	OPSD 701.013	S24/S25	93.83	85.09

SANITARY SEWER PIPE DATA

CONNECTED STRUCTURES & INVERTS	DIA (mm)	LENGTH (m)	MATERIAL
SANMH 26 = 85.28 SANMH 27 = 85.18	1050	83.05	AWWA C-301 (L)
SANMH 27 = 85.17 SANMH 28 = 85.14	1050	74.33	AWWA C-301 (L)
SANMH 28 = 85.14 SANMH 29 = 85.09	1050	60.72	AWWA C-301 (L)
SANMH 29 = 85.09 SANMH 30 = 84.99	1050	99.81	AWWA C-301 (L)

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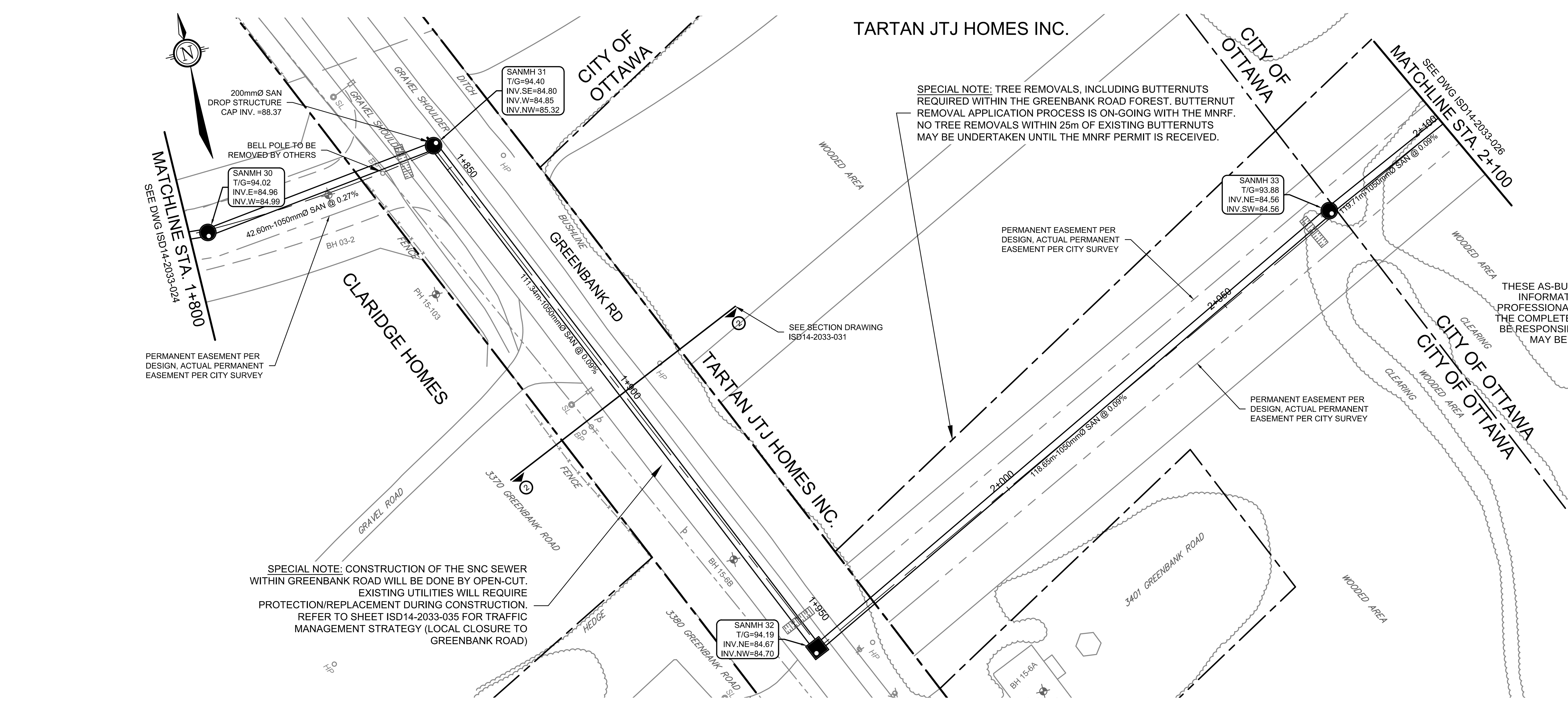

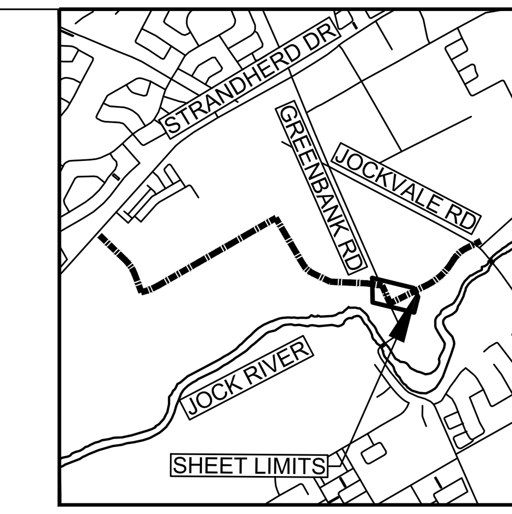

CITY OF OTTAWA

SOUTH NEPEAN COLLECTOR (SNC) SEWER PHASE 2 - STRANDHERD DRIVE TO JOCKVALE ROAD

PLAN AND PROFILE
STA. 1+800 TO 2+100

WAYNE NEWELL, P.Eng. — *General Manager*
JONATHAN KNOYLE, P.Eng. — *Senior Engineer*

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Ottawa

Contract No.	ISD14-2033
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Asset No.	
Asset Group	ISD
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Chk'd.	ERD
Dwn.	NCS
Chk'd.	RJD
Utility Circ. No.	
Index No.	
Const. Inspector	
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REVISIONS

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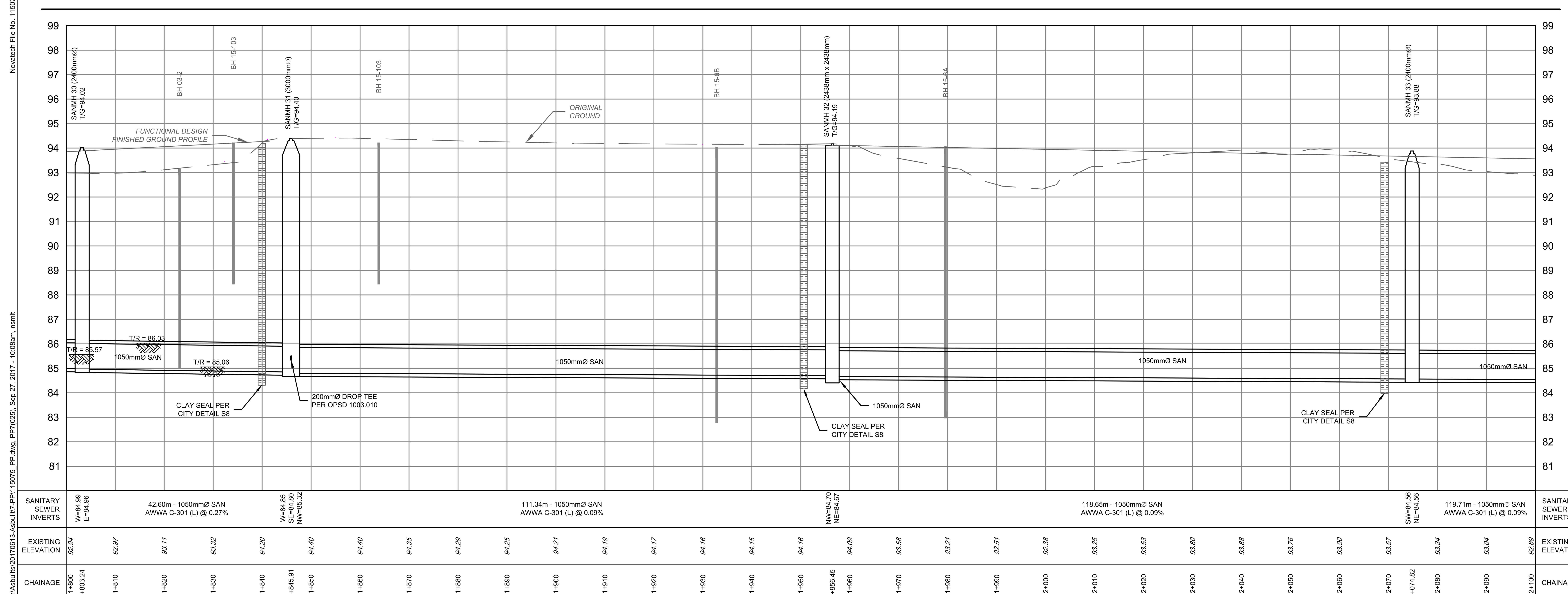
7.	ISSUED FOR CONSTRUCTION	ERD	30/08/16
8.	SEWER ALIGNMENT SHIFT ON GREENBANK	ERD	16/09/16
9.	REVISED PER MION SERVICING	ERD	08/12/16
10.	MH31 UPDATED FOR HIGH SCHOOL SERVICING	ERD	10/01/17
11.	ISSUED FOR AS-BUILT	ERD	28/09/17

LEGEND

EXISTING ITEMS
WATERMAIN
WATERMAIN VALVE
STORM SEWER
STORM MH (STM)
CATCH BASIN & LEAD (CB)
CULVERT
STORM STRUCTURE
SANITARY SEWER
SANITARY MH (SAN)

PROPOSED ITEMS
SANITARY SEWER
SANITARY MH & LID
CULVERT
FUTURE STRUCTURE T/G ADJUSTMENT



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MAINTENANCE HOLE DATA

MH ID	STATION	OFFSET	STRUCTURE	COVER	T/G ELEV	LOW. INV.
30	1+803.24	0.41R	OPSD 701.013	S24/S25	94.02	84.96
31	1+845.91	0.85L	OPSD 701.014	S24/S25	94.40	84.80
32	1+956.45	0.40R	Box MH	S24/S25	94.19	84.67
33	2+074.82	1.11L	OPSD 701.013	S24/S25	93.88	84.56

SANITARY SEWER PIPE DATA

CONNECTED STRUCTURES & INVERTS	DIA (mm)	LENGTH (m)	MATERIAL
SANMH 29 = 85.09 SANMH 30 = 84.99	1050	99.81	AWWA C-301 (L)
SANMH 30 = 84.96 SANMH 31 = 84.85	1050	42.60	AWWA C-301 (L)
SANMH 31 = 84.80 SANMH 32 = 84.70	1050	111.34	AWWA C-301 (L)
SANMH 32 = 84.67 SANMH 33 = 84.56	1050	118.65	AWWA C-301 (L)
SANMH 33 = 84.56 SANMH 34 = 84.46	1050	119.71	AWWA C-301 (L)

TITLE FRAME: 709mm x 534mm City of Ottawa 2008
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CITY OF OTTAWA
SOUTH NEPEAN COLLECTOR (SNC)
SEWER PHASE 2 - STRANDHERD DRIVE TO JOCKVALE ROAD

PLAN AND PROFILE
STA. 2+100 TO 2+400

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JONATHAN KNOYLE, P.Eng.
Senior Engineer

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Ottawa

Contract No.	Dwg. No.
ISD14-2033	026

Sheet 26 of 51

Asset No.

Asset Group: ISD

Des.	Chk'd.
RJD	ERD
Dwn.	**Chk'd.**
NCS	RJD

Utility Circ. No. | Index No.

Const. Inspector

Scale: HORIZONTAL 1:500 (0 5 10 15 20; 0 1 2 3 4) VERTICAL 1:100

TITLE FRAME: 709mm x 534mm City of Ottawa 2008

Novatech File No. 115075

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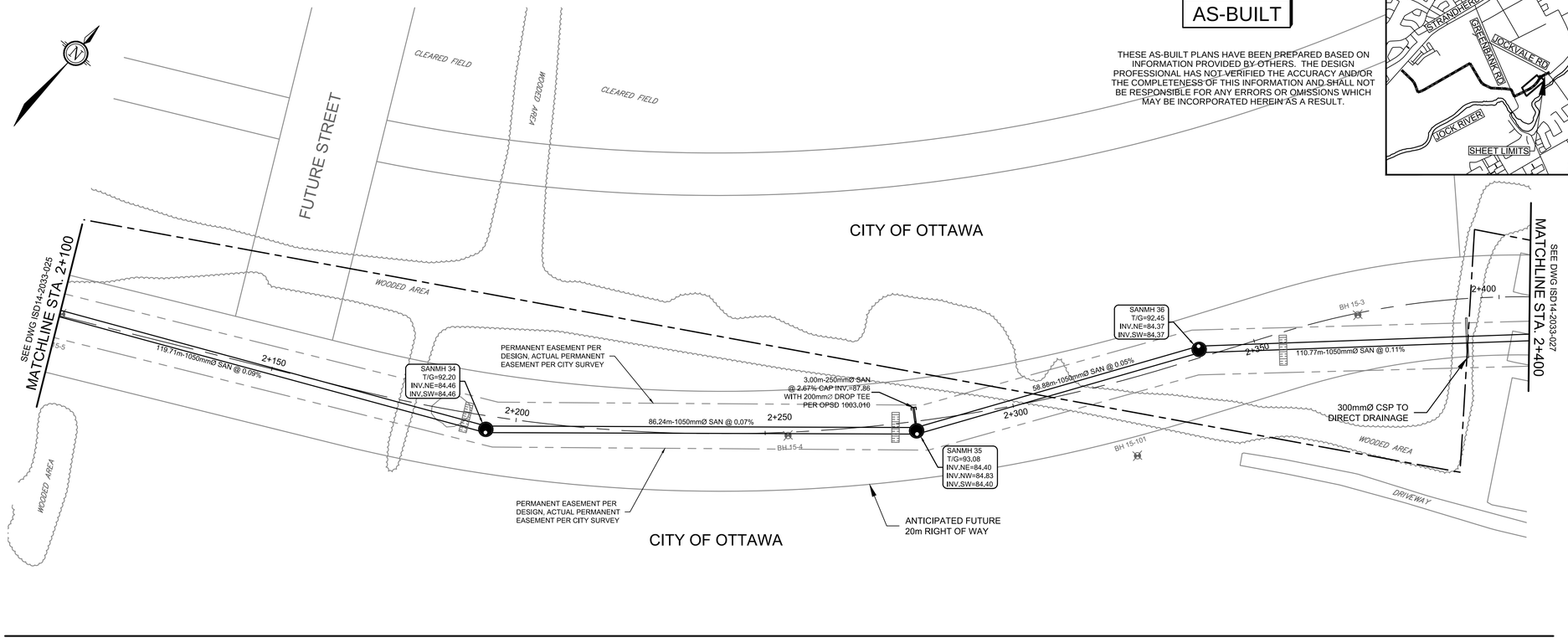
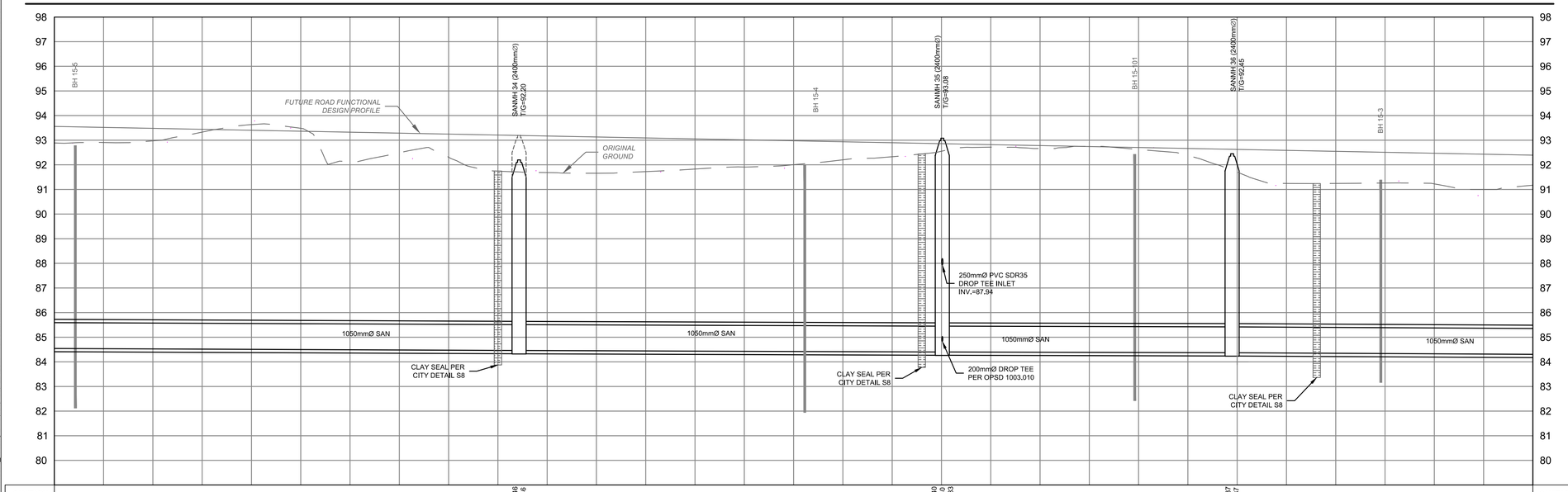
AS-BUILT

THESE AS-BUILT PLANS HAVE BEEN PREPARED BASED ON INFORMATION PROVIDED BY OTHERS. THE DESIGN PROFESSIONAL HAS NOT VERIFIED THE ACCURACY AND/OR THE COMPLETENESS OF THIS INFORMATION AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.





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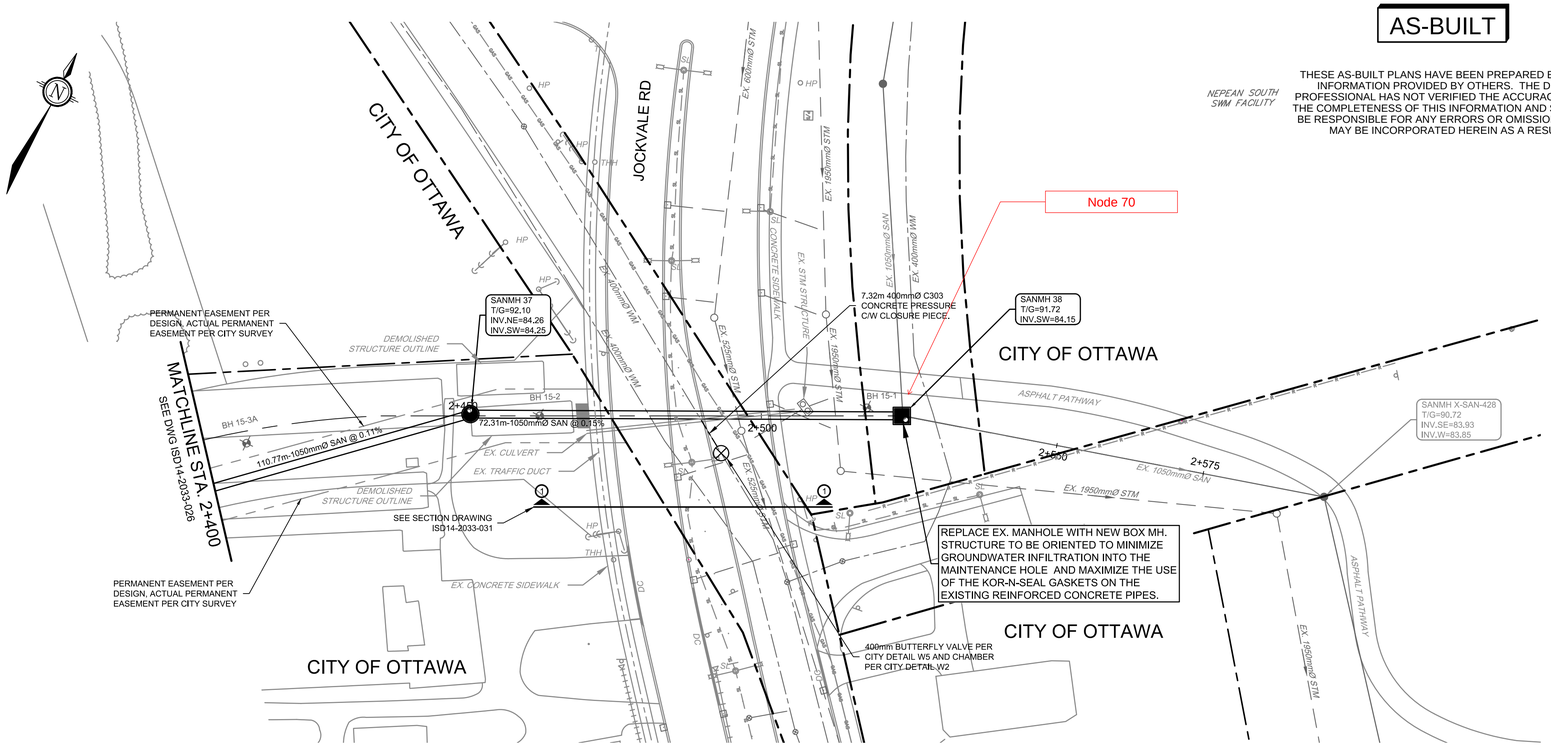

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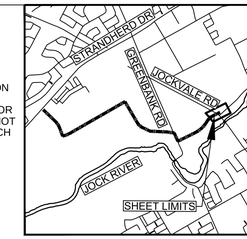

CITY OF OTTAWA
SOUTH NEPEAN COLLECTOR (SNC)
SEWER PHASE 2 - STRANDHERD DRIVE TO JOCKVALE ROAD

PLAN AND PROFILE
STA. 2+400 TO 2+575

WAYNE NEWELL, P.Eng.
General Manager

JONATHAN KNOYLE, P.Eng.
Senior Engineer

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NOTE: The location of utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned. The contractor shall prove the location of utilities and shall be responsible for adequate protection from damage.

REVISIONS

No.	Description	By	Date (dd/mm/yy)
1.	ISSUED FOR PRELIMINARY DESIGN CIRCULATION	ERD	21/12/15
2.	CHANGES TO ORIENTATION ACROSS KB SWM FACILITY	ERD	16/02/16
3.	ISSUED FOR PRELIMINARY DESIGN REPORT	ERD	02/03/16
4.	ISSUED FOR FINAL DESIGN CIRCULATION	ERD	29/04/16
5.	ISSUED FOR MOECC ECA APPLICATION	ERD	26/05/16
6.	ISSUED FOR TENDER	ERD	20/06/16
7.	ISSUED FOR CONSTRUCTION	ERD	30/08/16
8.	SEWER ALIGNMENT SHIFT ON GREENBANK	ERD	16/09/16
9.	SEWER ALIGNMENT UPDATE MH36 - MH37	ERD	18/11/16
10.	REVISED PER MION SERVICING	ERD	08/12/16
11.	ISSUED FOR AS-BUILT	ERD	28/09/17

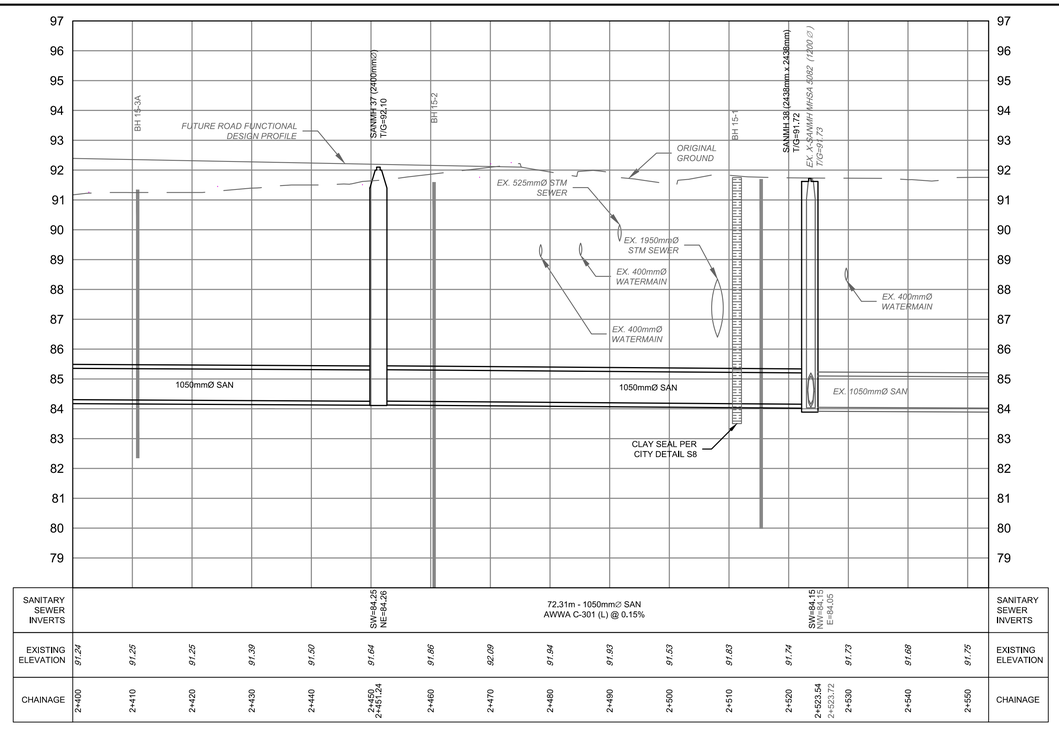
LEGEND

EXISTING ITEMS
- WATERMAIN
- WATERMAIN VALVE
- STORM SEWER
- STORM MH (STM)
- CATCH BASIN & LEAD (CB)
- CULVERT
- STORM STRUCTURE
- SANITARY SEWER
- SANITARY MH (SAN)

PROPOSED ITEMS
- SANITARY SEWER
- SANITARY MH & LID
- CULVERT
- FUTURE STRUCTURE T/G ADJUSTMENT

NOTES:

1. CONCRETE PRESSURE PIPE SHALL BE AWWA C301 (L) CL-16. FITTING SHALL BE DESIGNED TO THE SAME CRITERIA AS THE ADJACENT PIPE.
2. CONTRACTOR TO PROVIDE PIPE CLASS CALCULATIONS, AS PER AWWA C304 (DESIGN OF PRESTRESSED CONCRETE CYLINDER PIPE), BY THE PIPE MANUFACTURER, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE PROVINCE OF ONTARIO.
3. PIPE EMBEDMENT SHALL BE AS PER CITY OF OTTAWA DETAIL S6. SAND MAY BE USED AS PIPE COVER MATERIAL ABOVE THE SPRINGLINE.
4. A CLOTH DIAPER APPROVED BY THE PIPE MANUFACTURE SHALL BE PLACED AROUND EACH EXTERIOR JOIN RECESS AND FASTENED IN PLACE WITH EITHER WIRE OR STEEL STRAPPING STITCHED INTO ITS EDGES.
5. THE JOINT SHALL BE FILLED WITH MORTAR IN ONCE CONTINUOUS OPERATION AND PATTED OR MANIPULATED TO SETTLE THE MORTAR AND EXPEL AND ENTRAPPED AIR.
6. INTERIOR JOINTS SHALL BE FILLED WITH MORTAR AFTER BACKFILLING AND FINISHED SMOOTH WITH A TROWEL. CEMENT USED SHALL MEET THE REQUIREMENTS OF TYPE HS CEMENT (HIGH-SULPHATE-RESISTANCE), OR APPROVED EQUIVALENT.
7. THE INTERIOR OF THE JOINTS SHALL BE PROTECTED FROM CORROSION WITH EPOXY AND ZINC COATING APPLIED DURING FABRICATION.
8. THE INTERIOR STRUCTURAL CONCRETE CORE SHALL BE MANUFACTURED WITH TYPE HS CEMENT (HIGH-SULPHATE-RESITANCE), OR APPROVED EQUIVALENT.
9. SEE MANHOLE DETAIL DRAWINGS ISD14-2033-36 TO ISD14-2033-45 FOR ADDITIONAL DETAILS



MAINTENANCE HOLE DATA

MH ID	STATION	OFFSET	STRUCTURE	COVER	T/G ELEV	LOW. INV.
37	2+451.24	0.29L	OPSD 701.013	S24/S25	92.10	84.25
38	2+523.54	0.00	Box MH	S24/S25	91.72	84.15

SANITARY SEWER PIPE DATA

CONNECTED STRUCTURES & INVERTS	DIA (mm)	LENGTH (m)	MATERIAL
SANMH 36 = 84.37 SANMH 37 = 84.25	1050	110.77	AWWA C-301 (L)
SANMH 37 = 84.26 SANMH 38 = 84.15	1050	72.31	AWWA C-301 (L)

Novatech File No. 115075

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SANITARY SEWER CALCULATION SHEET

DATE: **8-Jan-18**

NEW PROPOSED DESIGN PARAMETERS

Avg. Daily Flow Res.	280	L/p/d	Peak Fact Res. Per Harmons: Min = 2.0, Max =4.0		Infiltration / Inflow	0.33	L/s/ha
Avg. Daily Flow Comr	28,000	L/ha/d	Peak Fact. Comm.	1.5	Min. Pipe Velocity	0.60	m/s full flowing
Avg. Daily Flow Instit.	28,000	L/ha/d	Peak Fact. Instit.	1.5	Max. Pipe Velocity	3.00	m/s full flowing
Avg. Daily Flow Indust	35,000	L/ha/d	Peak Fact. Indust. per MOE graph		Mannings N	0.013	
Harmens Corr Factor	0.8						

Location			Residential Area and Population										Commercial		Institutional		Industrial			Infiltration				Pipe Data							
Area ID	Up	Down	Area	Number of Units by type				Pop.	Cumulative Area	Cumulative Pop.	Peak. Fact.	Q_{res}	Area	Accu. Area	Area	Accu. Area	Area	Accu. Area	Q_{C+I+I}	Total Area	Accu. Area	Infiltration Flow	Total Flow	DIA	Slope	Length	$A_{hydraulic}$	R	Velocity	Q_{cap}	Q / Q full
			(ha)	Singles	Semi's	Town's	Apt's		(ha)		(-)	(L/s)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(L/s)	(ha)	(ha)	(L/s)	(L/s)	(mm)	(%)	(m)	(m^2)	(m)	(m/s)	(L/s)	(-)
Longfields Drive	School	101	0.000					0.0	0.000	0.0	3.20	0.00		0.00	5.61	5.61		0.00	4.87	5.610	5.610	1.571	6.44	200	1.00	14.5	0.031	0.050	1.04	32.8	0.20
	101	102	0.600					0.0	0.600	0.0	3.20	0.00		0.00		5.61		0.00	4.87	0.600	6.210	1.739	6.61	250	0.50	58.0	0.049	0.063	0.86	42.0	0.16
Longfields Drive	Retirehome	102	0.000					0.0	0.000	0.0	3.20	0.00		0.00	1.42	1.42		0.00	1.23	1.420	1.420	0.398	1.63	200	2.43	28.0	0.031	0.050	1.63	51.1	0.03
Longfields Drive	102	103	2.720					174.1	3.320	174.1	3.20	1.81		0.00		7.03		0.00	6.10	2.720	10.350	2.898	10.81	250	0.74	49.0	0.049	0.063	1.04	51.2	0.21
Longfields Drive	122	121	1.130					90.5	1.130	90.5	3.20	0.94		0.00		0.00		0.00	0.00	1.130	1.130	0.316	1.25	250	2.61	100.0	0.049	0.063	1.96	96.1	0.01
Marketplace Ave	McGarry Terrace	121	1.490					89.4	1.490	89.4	3.20	0.93		0.00		0.00		0.00	0.00	1.490	1.490	0.417	1.34	200	0.65	96.0	0.031	0.050	0.84	26.4	0.05
	121	103	0.720					54.1	3.340	234.0	3.20	2.43		0.00		0.00		0.00	0.00	0.720	3.340	0.935	3.36	250	2.61	77.5	0.049	0.063	1.96	96.1	0.03
Marketplace Ave	San Stub	103	0.510					30.6	0.510	30.6	3.20	0.32		0.00		0.00		0.00	0.00	0.510	0.510	0.143	0.46	200	0.65	18.5	0.031	0.050	0.84	26.4	0.02
Longfields Drive	103	5062-A	0.280					0.0	7.450	438.7	3.20	4.55		0.00		7.03		0.00	6.10	0.280	14.480	4.054	14.71	250	0.70	91.0	0.049	0.063	1.01	49.8	0.30
Sue Holloway Drive	1	2	0.280					17.7	0.280	17.7	3.20	0.18		0.00		0.00		0.00	0.00	0.280	0.280	0.078	0.26	200	1.00	18.0	0.031	0.050	1.04	32.8	0.01
Lindenshade Drive	2	3	0.510					69.0	0.790	86.7	3.20	0.90		0.00		0.00		0.00	0.00	0.510	0.790	0.221	1.12	200	2.75	89.0	0.031	0.050	1.73	54.4	0.02
Lindenshade Drive	3	5062-A	0.230					29.6	1.020	116.3	3.20	1.21		0.00		0.00		0.00	0.00	0.230	1.020	0.286	1.49	250	0.50	61.0	0.049	0.063	0.86	42.0	0.04
Longfields Drive	5062-A	5062	0.080					0.0	8.550	555.0	3.16	5.68		0.00		7.03		0.00	6.10	0.080	15.580	4.362	16.15	250	0.70	29.0	0.049	0.063	1.01	49.8	0.32
	5062	5063-A	0.220					0.0	8.770	555.0	3.16	5.68		0.00		7.03		0.00	6.10	0.220	15.800	4.424	16.21	250	0.66	56.5	0.049	0.063	0.98	48.3	0.34
Sue Holloway Drive	2	4	0.440					36.9	0.440	36.9	3.20	0.38		0.00		0.00		0.00	0.00	0.440	0.440	0.123	0.51	200	1.25	86.0	0.031	0.050	1.17	36.7	0.01
	4	5	0.850					56.1	1.290	93.0	3.20	0.96		0.00		0.00		0.00	0.00	0.850	1.290	0.361	1.33	200	2.84	96.0	0.031	0.050	1.76	55.3	0.02
	5	5063-A	0.490					115.1	1.780	208.1	3.20	2.16		0.00		0.00		0.00	0.00	0.490	1.780	0.498	2.66	250	0.50	53.0	0.049	0.063	0.86	42.0	0.06
Sue Holloway Drive	4	8	0.500					74.8	0.500	74.8	3.20	0.78		0.00		0.00		0.00	0.00	0.500	0.500	0.140	0.92	200	1.10	102.0	0.031	0.050	1.09	34.4	0.03
Longfields Drive	5063-A	5063	0.220					0.0	10.770	763.1	3.10	7.66		0.00		7.03		0.00	6.10	0.220	17.800	4.984	18.75	250	0.66	64.0	0.049	0.063	0.98	48.3	0.39
	5063	5063-B	0.130					0.0	10.900	763.1	3.10	7.66		0.00		7.03		0.00	6.10	0.130	17.930	5.020	18.78	250	0.70	37.0	0.049	0.063	1.01	49.8	0.38
Street 5	6	7	0.710					44.2	0.710	44.2	3.20	0.46		0.00		0.00		0.00	0.00	0.710	0.710	0.199	0.66	200	1.00	130.0	0.031	0.050	1.04	32.8	0.02
	7	8	0.540					28.4	1.250	72.6	3.20	0.75		0.00		0.00		0.00	0.00	0.540	1.250	0.350	1.10	200	1.30	120.0	0.031	0.050	1.19	37.4	0.03
Glenroy Gilbert	8	9	0.660					129.5	2.410	276.9	3.20	2.87		0.00		0.00		0.00	0.00	0.660	2.410	0.675	3.55	200	3.02	90.0	0.031	0.050	1.81	57.0	0.06
	9	5063-B	0.370					43.2	2.780	320.1	3.20	3.32		0.00		0.00		0.00	0.00	0.370	2.780	0.778	4.10	250	0.50	59.0	0.049	0.063	0.86	42.0	0.10
Longfields Drive	5063-B	5066	0.180					0.0	13.860	1083.2	3.02	10.61		0.00		7.03		0.00	6.10	0.180	20.520	5.746	22.46	250	0.70	53.0	0.049	0.063	1.01	49.8	0.45
	5066	5067	0.170					0.0	14.030	1083.2	3.02	10.61		0.00		7.03		0.00	6.10	0.170	20.690	5.793	22.50	250	0.70	45.0	0.049	0.063	1.01	49.8	0.45
	5067	5067-A	0.580					97.2	14.610	1180.4	3.00	11.48		0.00		7.03		0.00	6.10	0.580	21.270	5.956	23.54	250	0.70	37.5	0.049	0.063	1.01	49.8	0.47
Chapman Mills Drive Extension	12	13	0.890					124.7	0.890	124.7	3.20	1.29		0.00		0.00		0.00	0.00	0.890	0.890	0.249	1.54	200	1.71	150.0	0.031	0.050	1.37	42.9	0.04
Street 2	10	11	0.370					90.0	0.370	90.0	3.20	0.93		0.00		0.00		0.00	0.00	0.370	0.370	0.104	1.04	200	1.50	41.0	0.031	0.050	1.28	40.2	0.03
	11	13	1.620					429.5	1.990	519.5	3.17	5.34		0.00		0.00		0.00	0.00	1.620	1.990	0.557	5.90	200	1.50	79.0	0.031	0.050	1.28	40.2	0.15
Chapman Mills Drive Extension	13	5067-A	1.890					496.9	4.770	1141.1	3.01	11.13		0.00		0.00		0.00	0.00	1.890	4.770	1.336	12.47	250	0.50	187.0	0.049	0.063	0.86	42.0	0.30
Longfields Drive	5067-A	5070	0.700					0.0	20.080	2321.5	2.83	21.27		0.00		7.03		0.00	6.10	0.700	26.740	7.487	34.86	250	0.62	65.0	0.049	0.063	0.95	46.8	0.74
	5070	5071	0.180					0.0	20.260	2321.5	2.83	21.27		0.00		7.03		0.00	6.10	0.180	26.920	7.538	34.91	250	0.70	49.0	0.049	0.063	1.01	49.8	0.70
	5071	5072	0.220					0.0	20.480	2321.5	2.83	21.27		0.00		7.03		0.00	6.10	0.220	27.140	7.599	34.98	250	0.70	60.0	0.049	0.063	1.01	49.8	0.70
	5072	5073	0.210					0.0	20.690	2321.5	2.83	21.27		0.00		7.03		0.00	6.10	0.210	27.350	7.658	35.03	250	0.70	55.0	0.049	0.063	1.01	49.8	0.70
	5073	5076	0.160					0.0	20.850	2321.5	2.83	21.27		0.00		7.03		0.00	6.10	0.160	27.510	7.703	35.08	250	0.70	43.5	0.049	0.063	1.01	49.8	0.71
	5076	5077	0.220					0.0	21.070	2321.5	2.83	21.27		0.00		7.03		0.00	6.10	0.220	27.730	7.764	35.14	250	1.56	59.5	0.049	0.063	1.51	74.3	0.47
Garrity Crescent	124	5077	7.690					623.7	7.690	623.7	3.14	6.34		0.00		0.00		0.00	0.00	7.690	7.690	2.153	8.50	200	0.50	24.3	0.031	0.050	0.74	23.2	0.37
Longfields Drive	5077	5051	0.280					0.0	29.040	2945.2	2.76	26.34		0.00		7.03		0.00	6.10	0.280	35.700	9.996	42.44	250	1.91	78.5	0.049	0.063	1.67	82.2	0.52
Paul Metivier Drive	101	5051	34.580					4954.3	34.580	4954.3	2.60	41.73		0.00	5.07	5.07		0.00	4.40	39.650	39.650	11.102	57.23	450	0.15	79.5	0.159	0.113	0.69	110.4	0.52
	100A	5051	1.430					89.1	1.430	89.1	3.20	0.92		0.00		5.07		0.00	4.40	1.430	1.430	0.400	5.73	200	0.32	3.4	0.031	0.050	0.59	18.6	0.31
Longfields Drive	5051	5079	0.160					0.0	65.210	7988.6	2.44	63.19		0.00		17.17		0.00	14.90	0.160	76.940	21.543	99.63	1050	0.10	68.0	0.866	0.263	1.00	863.5	0.12
	5079	5080	0.160					0.0	65.370	7988.6	2.44	63.19		0.00		17.17		0.00	14.90	0.160	77.100	21.588	99.68	1050	0.10	60.0	0.866	0.263	1.00	863.5	0.12
	5080	5081	0.210					0.0	65.580	7988.6	2.44	63.19		0.00		17.17		0.00	14.90	0.210	77.310	21.647	99.74	1050	0.52	75.0	0.866	0.263	2.27	1969.2	0.05
	5081	5082	0.150					0.0	65.730	7988.6	2.44	63.19		0.00		17.17		0.00	14.90	0.150	77.460	21.689	99.78	1050	0.02	55.0	0.866	0.263	0.45	386.2	0.26

City of Ottawa
110 Laurier Ave. W
Ottawa, ON
Planning and Growth Management
Develoment Review

Sanitary Sewer Design Sheet
Project: **Longfields Drive**
File No.
Client:

LOCATION			INDIVIDUAL		Institutional		CUMMULATIVE		PEAKING	Institutional		PEAK	PEAK	PEAK	PROPOSED SEWER DATA						EXCESS	AVAILABLE
STREET	FROM MH	TO MH	POP	AREA (ha)	AREA 50000 l/ha/d	Accu. Area (ha)	POP.	AREA (ha)	FACTOR M	PEAK FLOW (l/s)	Accu. FLOW (l/s)	POP. FLOW (l/s)	EXTRAN. FLOW (l/s)	DESIGN FLOW (l/s)	LENGTH (m)	PIPE SIZE (mm)	ACTUAL SIZE (mm)	GRADE (%)	CAPACITY (l/s)	VELOCITY (m/s)	CAPACITY (l/s)	CAPACITY (%)
Longfields Drive	School	101			5.61	5.61		5.61	4.00	4.87	4.87		1.57	6.44	14.50	200.00	201.16	1.00	33.31	1.05	26.87	80.66%
Longfields Drive	101	102		0.60				6.21	4.00		4.87		1.74	6.61	58.00	250.00	251.46	0.50	42.71	0.86	36.10	84.53%
Longfields Drive	Retirehome	102			1.42	1.42		1.42	4.00	1.23	1.23		0.40	1.63	28.00	200.00	201.16	2.43	51.92	1.63	50.29	96.86%
Longfields Drive	102	103		0.17				7.80	4.00		6.10		2.18	8.29	49.00	250.00	251.46	0.74	51.96	1.05	43.67	84.05%
Marketplace Ave.	122	121	90.50	1.13			90.50	1.13	4.00			1.47	0.32	1.78	100.00	250.00	251.46	2.61	97.58	1.96	95.79	98.17%
Marketplace Ave.	McGarry Tres.	121	89.40	1.49			89.40	1.49	4.00			1.45	0.42	1.87	96.00	200.00	201.16	0.65	26.85	0.89	24.99	93.05%
Marketplace Ave.	121	103	54.10	0.72			234.00	3.34	4.00			3.79	0.94	4.73	77.50	250.00	251.46	2.61	97.58	1.96	92.85	95.16%
Marketplace Ave.	San Stub	103	30.60	0.51			30.60	0.51	4.00			0.50	0.14	0.64	18.50	200.00	201.16	0.65	26.85	0.84	26.22	97.62%
Longfields Drive	103	5062-A		0.28			264.60	11.93	4.00		6.10	4.29	3.34	13.73	91.00	250.00	251.46	0.70	50.53	1.02	36.80	72.83%
Sue Holloway Drive	1	2	17.70	0.28			17.70	0.28	4.00			0.29	0.08	0.37	18.00	200.00	201.16	1.00	33.31	1.05	32.94	98.90%
Lindenshade Drive	2	3	69.00	0.51			86.70	0.79	4.00			1.40	0.22	1.63	89.00	200.00	201.16	2.75	55.24	1.74	53.61	97.06%
Lindenshade Drive	3	5062-A	29.60	0.23			116.30	1.02	4.00			1.88	0.29	2.17	61.00	250.00	251.46	0.50	42.71	0.86	40.54	94.92%
Longfields	5062-A	5062		0.08			380.90	13.03	4.00		6.10	6.17	3.65	15.92	29.00	250.00	251.46	0.70	50.53	1.02	34.61	68.49%
Longfields	5062	5063-A		0.22			380.90	13.25	4.00		6.10	6.17	3.71	15.98	56.50	250.00	251.46	0.66	49.07	0.99	33.08	67.42%
Sue Holloway Drive	2	4	36.90	0.44			36.90	0.44	4.00			0.60	0.12	0.72	86.00	200.00	201.16	1.25	37.24	1.17	36.52	98.06%
Bayrose Drive	4	5	56.10	0.85			93.00	1.29	4.00			1.51	0.36	1.87	96.00	200.00	201.16	2.84	56.13	1.77	54.26	96.67%
Bayrose Drive	5	5063-A	115.10	0.49			93.49	1.78	4.00			1.51	0.50	2.01	53.00	250.00	251.46	0.50	42.71	0.86	40.69	95.29%
Sue Holloway Drive	4	8	74.80	0.50			74.80	0.50	4.00			1.21	0.14	1.35	102.00	200.00	201.16	1.10	34.93	1.10	33.58	96.13%
Lonfields Drive	5063-A	5063		0.22			474.39	15.03	3.99		6.10	7.66	4.21	17.97	64.00	250.00	251.46	0.66	49.07	0.99	31.10	63.38%
Lonfields Drive	5063	5063-B		0.13			474.39	15.03	3.99		6.10	7.66	4.21	17.97	37.00	250.00	251.46	0.70	50.53	1.02	32.56	64.44%
Street 5	6	7	44.20	0.71			44.20	0.71	4.00			0.72	0.20	0.92	130.00	200.00	201.16	1.00	33.31	1.05	32.39	97.25%
Street 5	7	8	28.40	0.54			72.60	1.25	4.00			1.18	0.35	1.53	120.00	200.00	201.16	1.30	37.98	1.19	36.45	95.98%
Glenroy Gilbert Drive	8	9	129.50	0.66			276.90	2.41	4.00			4.49	0.67	5.16	90.00	200.00	201.16	3.02	57.88	1.82	52.72	91.08%
Glenroy Gilbert Drive	9	5063-B	43.20	0.37			320.10	2.78	4.00			5.19	0.78	5.97	59.00	250.00	251.46	0.50	42.71	0.86	36.74	86.03%
Longfields Drive	5063-B	5066	0.00	0.18			794.49	17.99	3.86		6.10	12.43	5.04	23.57	53.00	250.00	251.46	0.70	50.53	1.02	26.96	53.36%
Longfields Drive	5066	5067	0.00	0.17			794.49	18.16	3.86		6.10	12.43	5.08	23.62	45.00	250.00	251.46	0.70	50.53	1.02	26.92	53.26%
Longfields Drive	5067	5067-A	97.20	0.58			891.69	18.74	3.83		6.10	13.84	5.25	25.19	37.50	250.00	251.46	0.70	50.53	1.02	25.34	50.15%
Chapman Mills Drive Extension	12	13	124.70	0.89			124.70	0.89	4.00			2.02	0.25	2.27	150.00	200.00	201.16	1.71	43.56	1.37	41.29	94.79%
Street 2	10	11	90.00	0.37			90.00	0.37	4.00			1.46	0.10	1.56	41.00	200.00	201.16	1.50	40.79	1.28	39.23	96.17%
Street 2	11	13	429.50	1.62			519.50	1.99	3.97			8.35	0.56	8.90	79.00	200.00	201.16	1.50	40.79	1.28	31.89	78.18%
Chapman Mills Drive Extension	13	5067-A	496.90	1.23			1141.10	4.11	3.76			17.39	1.15	18.54	187.00	250.00	251.46	0.50	42.71	0.86	24.16	56.58%
Longfields Drive	5067-A	5070		0.70			2032.79	23.55	3.58		6.10	29.48	6.59	42.18	65.00	250.00	251.46	0.62	47.56	0.96	5.38	11.31%
Longfields Drive	5070	5071		0.18			2032.79	23.73	3.58		6.10	29.48	6.65	42.23	49.00	250.00	251.46	0.70	50.53	1.02	8.30	16.43%
Longfields Drive	5071	5072		0.22			2032.79	23.95	3.58		6.10	29.48	6.71	42.29	60.00	250.00	251.46	0.70	50.53	1.02	8.24	16.31%
Longfields Drive	5072	5073		0.21			2032.79	24.16	3.58		6.10	29.48	6.77	42.35	55.00	250.00	251.46	0.70	50.53	1.02	8.18	16.19%
Longfields Drive	5073	5076		0.16			2032.79	24.32	3.58		6.10	29.48	6.81	42.40	43.50	250.00	251.46	0.70	50.53	1.02	8.14	16.10%
Longfields Drive	5076	5077		0.22			2032.79	24.54	3.58			29.48	6.87	36.35	59.50	250.00	251.46	1.56	75.44	1.52	39.08	51.81%
Garrity Cresscent	124	5077	623.70	7.69			623.70	7.69	3.92			9.91	2.15	12.06	24.30	200.00	201.16	0.50	23.55	0.74	11.49	48.78%
Longfields Drive	5077	5051		0.28			2656.49	32.51	3.49		6.10	37.52	9.10	52.73	78.50	250.00	251.46	1.91	83.47	1.68	30.74	36.83%
Paul Metivier Drive	101	5051	4954.30	34.58	5.07	5.07	4954.30	34.58	3.49	4.40	10.50	69.98	9.68	90.16	79.50	450.00	457.20	0.15	115.20	0.70	25.03	21.73%
Paul Metivier Drive	100A	5051	89.10	1.43			89.10	1.43	4.00			1.44	0.40	1.84	3.40	200.00	201.16	0.32	18.84	0.59	17.00	90.21%
Longfields Drive	5051	5079		0.16			7699.89	68.68	3.07		10.50	95.65	19.23	125.38	68.00	1050.00	1066.80	0.10	900.87	1.01	775.49	86.08%
Longfields Drive	5079	5080		0.16			7699.89	68.84	3.07		10.50	95.65	19.28	125.43	60.00	1050.00	1066.80	0.10	900.87	1.01	775.44	86.08%
Longfields Drive	5080	5081		0.21			7699.89	69.05	3.07		10.50	95.65	19.33	125.48	75.00	1050.00	1066.80	0.52	2054.30	2.30	1928.81	93.89%
Longfields Drive	5081	5082		0.15			7699.89	69.20	3.07		10.50	95.65	19.37	125.53	55.00	1050.00	1066.80	0.02	382.21	0.43	256.68	67.16%

NOTES

THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

PRELIMINARY

NOT FOR CONSTRUCTION

NO.	REVISION DESCRIPTION	DATE	BY	APPD
5	ISSUED FOR MOE APPROVAL	23/09/10	KLM	KLM
4	REVISED PER CITY COMMENTS	24/08/10	KLM	KLM
3	REVISED PER CITY COMMENTS, REVISED SITE PLAN	16/07/10	KLM	KLM
2	ISSUED FOR APPROVAL	26/05/10	KLM	KLM
1	ISSUED FOR SITE PLAN APPLICATION	26/03/10	KLM	KLM

SCALE

HORZ 1:500

0 5 10 15 20

minto — CANADA'S MOST HONOURED BUILDER

REVIEWED BY — LICENSED PROFESSIONAL ENGINEER K.L. MURPHY PROVINCE OF ONTARIO

CLIENT: MINTO COMMUNITIES INC.

David McManus Engineering
A Trow Global Company
100-2650 Queensview Drive Ottawa, Ontario, K2B 8H6
E-mail: mcmanus@dme.on.ca Ph.613-596-1090 Fax 613-225-7330

BASEPLAN DME
DESIGN JHB
CHECKED KLM
CAD JHB
PROJ. MAN KLM
APPROVED KLM

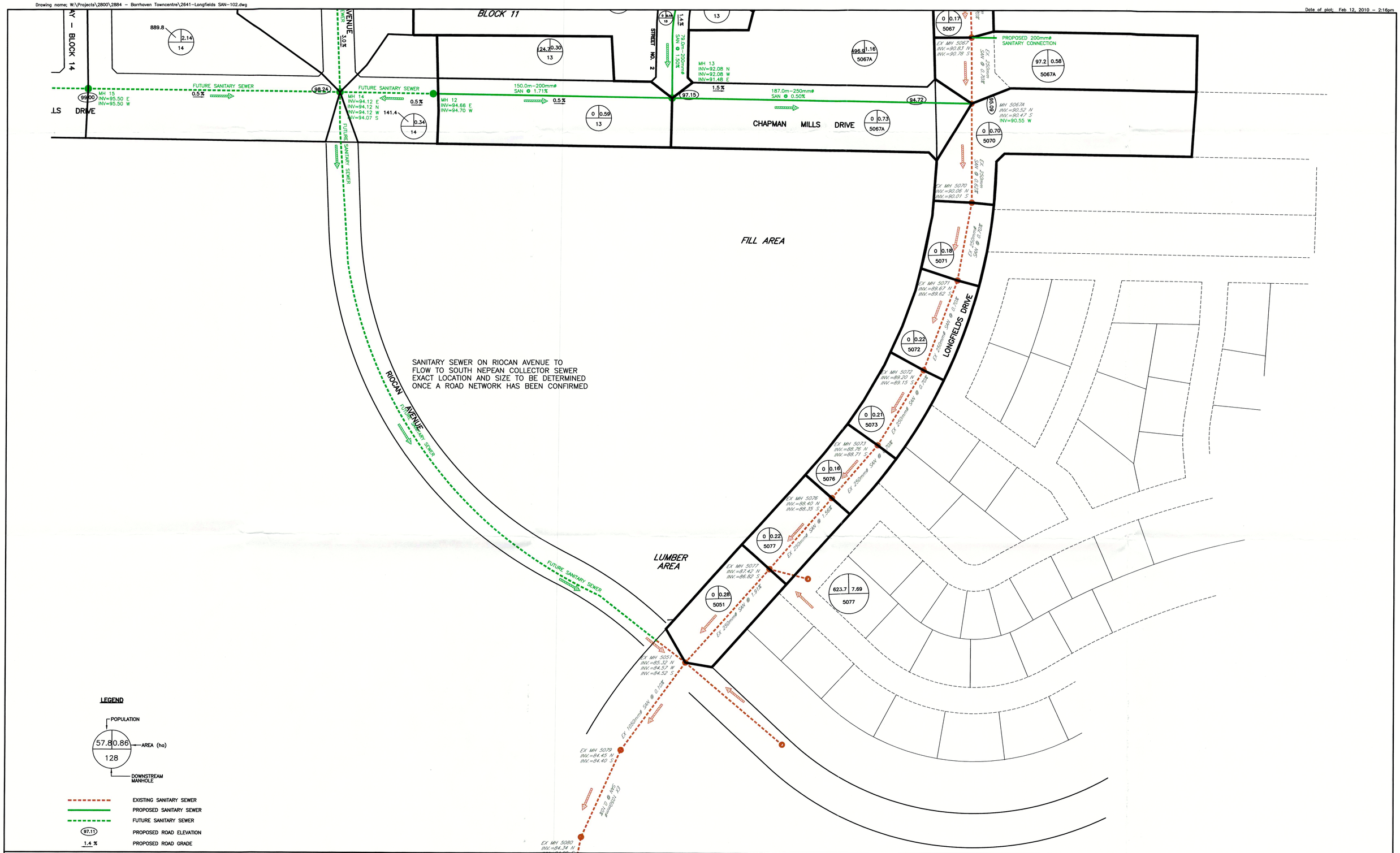
PROJECT: AMPERSAND IN CHAPMAN MILLS TOWN CENTRE

TITLE: SANITARY DRAINAGE AREA PLAN

PROJ. NO. 2884
SURVEY DME
DATE MARCH 2010
DRAWING NO. SAN1

Drawing name: W:\Projects\2800\2884 – Barrhaven Towncentre\2641-Longfields SAN-102.dwg

Date of plot: Feb 12, 2010 – 2:16pm



NOTE
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Ottawa

No.	REVISION	DATE	BY
3.	REVISED PER CITY COMMENTS	FEB 9/10	KLM
2.	REVISED PER CITY COMMENTS	DEC 14/09	KLM
1.	ISSUED FOR SERVICING BRIEF	JUNE 2/09	SMC

LICENSED PROFESSIONAL ENGINEER
K.L. MURPHY
PROVINCE OF ONTARIO

minto
CANADA'S MOST HONOURED BUILDER

DME Ltd.
David McManus Engineering Ltd.
400 – 30 Camelot Drive
Nepean Ontario, K2G 5X8
E-mail: mcmanus@dmel.on.ca
Ph. 225-1929 Fax 225-7330

BASEPLAN	DME
DESIGN	JHB
CHECKED	SWB/JHB
CAD	SWB/JHB
PROJ. MGR.	SMC
APPROVED	SMC

SCALE 1:1000

0 10 20 30 40

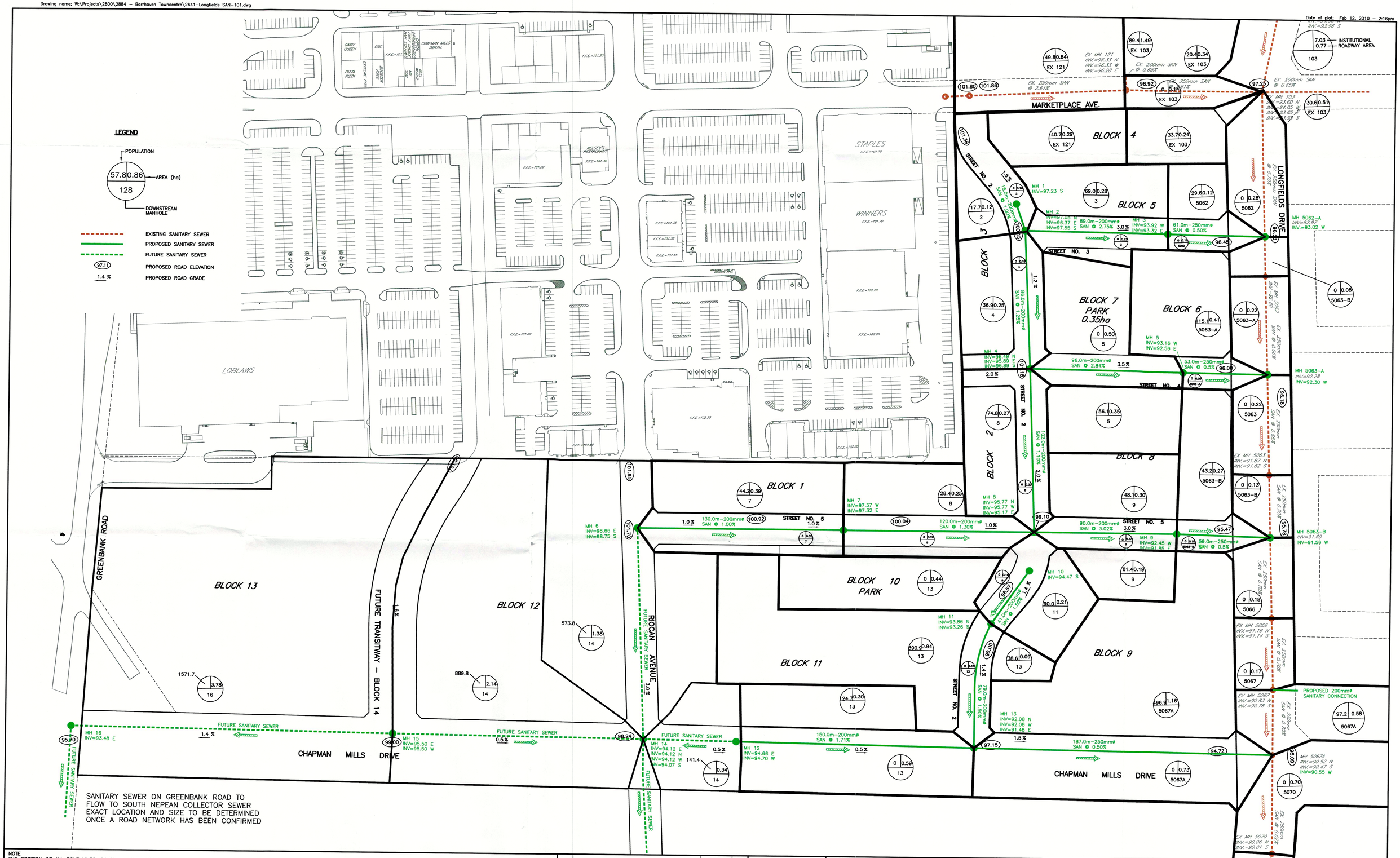
MINTO COMMUNITIES INC.
BARRHAVEN TOWN CENTRE
CITY OF OTTAWA

CONCEPTUAL SANITARY DRAINAGE AREA PLAN

PROJECT No.	2884
SURVEY BY	DME
DATE	MAY 2009
DRAWING No.	2884-SAN-102

Drawing name: W:\Projects\2800\2884 – Barrhaven Towncentre\2641-Longfields SAN-101.dwg

Date of plot: Feb 12, 2010 – 2:16pm



NOTE
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Ottawa

No.	REVISION	DATE	BY
3.	REVISED PER CITY COMMENTS	FEB 9/10	KLM
2.	REVISED PER CITY COMMENTS	DEC 14/09	KLM
1.	ISSUED FOR SERVICING BRIEF	JUNE 2/09	SMC

LICENSED PROFESSIONAL ENGINEER K.L. MURPHY PROVINCE OF ONTARIO

minto CANADA'S MOST HONOURED BUILDER

DME Ltd. David McManus Engineering Ltd.
400 – 30 Camelot Drive
Nepean Ontario, K2G 5X8
E-mail: mcmanus@dme1.on.ca
Ph. 225-1929 Fax 225-7330

BASEPLAN	DME
DESIGN	JHB
CHECKED	SWB/JHB
CAD	SWB/JHB
PROJ. MGR.	SMC
APPROVED	SMC

SCALE 1:1000 (0 10 20 30 40)

MINTO COMMUNITIES INC.
BARRHAVEN TOWN CENTRE
CITY OF OTTAWA

CONCEPTUAL SANITARY DRAINAGE AREA PLAN

PROJECT No.	2884
SURVEY BY	DME
DATE	MAY 2009
DRAWING No.	2884-SAN-101

Braden Kaminski

Subject: RE: South Nepean Town Centre - Sanitary Sewer Longfields Drive

From: Shillington, Jeffrey [mailto:jeff.shillington@ottawa.ca]
Sent: Tuesday, March 27, 2018 2:51 PM
To: Laura Maxwell <LMaxwell@dsel.ca>
Cc: Braden Kaminski <BKaminski@dsel.ca>; Robert Freel <RFreel@dsel.ca>
Subject: RE: South Nepean Town Centre - Sanitary Sewer Longfields Drive

Hi Laura,

My apologies for taking so long on getting back to you on this. I've spoken with some of my colleagues and yes this is the latest information we have in this area.

Let me know if you require any additional information.

Regards,

Jeff Shillington, P.Eng.
Project Manager, Development Review, South Branch
Planning, Infrastructure and Economic Development
City of Ottawa
tel: 580-2424 x 16960
email: jeff.shillington@ottawa.ca

From: Laura Maxwell [mailto:LMaxwell@dsel.ca]
Sent: Thursday, March 15, 2018 2:48 PM
To: Shillington, Jeffrey <jeff.shillington@ottawa.ca>
Cc: Braden Kaminski <BKaminski@dsel.ca>; Robert Freel <RFreel@dsel.ca>
Subject: RE: South Nepean Town Centre - Sanitary Sewer Longfields Drive

Hi Jeff,

Wanted to follow up to see if you are the right contact for this?

We are looking to confirm latest sanitary flow information in the Longfields Drive sewer.

Thanks,

Laura Maxwell, B.Sc.(Civil Eng), M.Pl.
Client Project Manager

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext. 527
cell: (613) 293-8750
email: lmaxwell@DSEL.ca

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From: Laura Maxwell
Sent: Wednesday, February 14, 2018 11:25 AM
To: 'Shillington, Jeffrey' <jeff.shillington@ottawa.ca>
Cc: Braden Kaminski <BKaminski@dsel.ca>; Robert Freel <RFreel@dsel.ca>
Subject: FW: South Nepean Town Centre - Sanitary Sewer Longfields Drive

Hi Jeff,

James Hall had previously provided our office with the attached draft capacity information for the sanitary sewer on Longfields Drive south of Strandherd.

We've used the draft information to inform our work on the McGarry Terrace submission and other work in the South Nepean Town Centre that has not yet been submitted to the City.

Has the City finalized this work?

Please feel free to pass this question along to one of your colleagues if there is a more appropriate contact for this area.

Thanks,

Laura Maxwell, B.Sc.(Civil Eng), M.Pl.
Client Project Manager

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext. 527
cell: (613) 293-8750
email: lmaxwell@DSEL.ca

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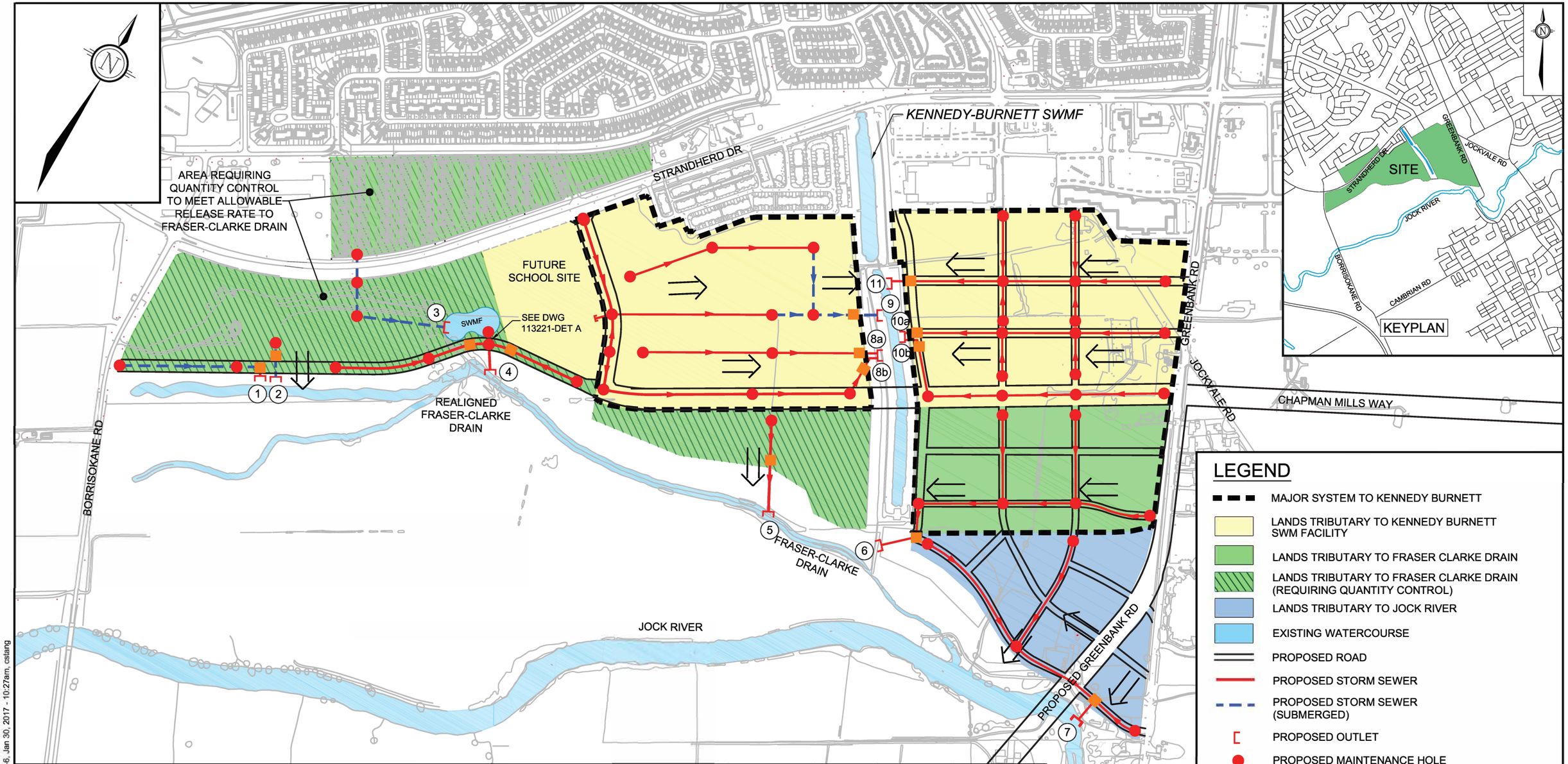
Appendix D

Stormwater Management Servicing



				OUTLET							
ID	WATER COURSE	DRAINAGE AREA	NWL	PIPE INVERT	PIPE SIZE	PEAK FLOW *CONTROLLED	SUBMERGED SEWERS	DEPTH TO OBVERT	MAX GRADE RAISE	STM HGL (D/S - U/S)
1	FRASER-CLARKE DRAIN	0.97 ha	90.25	90.15	600mm	28 L/s*	75m	1.5m	1.1m	91.75m - 92.30m
2	FRASER-CLARKE DRAIN	5.34 ha	90.25	89.85	965 x 1525mm ELLIPTICAL	187 L/s*	400m	1.5m	0.9m	91.75m - 92.20m
3	MINTO SWM POND	14.64 ha	90.00	89.81	1220mm x 1930mm ELLIPTICAL	1,785 L/S	195m	1.5m	0.8m	91.65m - 92.23m
4	FRASER-CLARKE DRAIN	1.29 ha + 14.64 ha	89.90	89.90	1050mm	692 L/S*	0m	1.5m	1.0m	91.65m - 92.25m
5	FRASER-CLARKE DRAIN	6.49 ha	89.87	89.87	965 x 1525mm ELLIPTICAL	363 L/S*	0m	1.8m	0.9m	91.65m - 92.00m
6	FRASER-CLARKE DRAIN	11.83 ha	89.90	89.90	1220mm x 1930mm ELLIPTICAL	1,649 L/S	0m	1.8m	0.8m	91.75m - 92.65m
7	JOCK RIVER	9.24 ha	89.20	89.20	965 x 1525mm ELLIPTICAL	1,252 L/S	0m	1.8m	0.1m	91.60m - 92.45m
8A	KENNEDY-BURNETT SWMF	6.58 ha	90.20	90.20	1050mm	915 L/S	0m	1.5m	0.9m	91.80m - 92.80m
8B	KENNEDY-BURNETT SWMF	2.44 ha	90.20	90.20	825mm	444 L/S	0m	1.8m	0.9m	91.80m - 92.76m
9	KENNEDY-BURNETT SWMF	15.49 ha	90.20	90.00	1220mm x 1930mm ELLIPTICAL	2,034 L/S	200m	1.5m	1.2m	91.90m - 93.18m
10A	KENNEDY-BURNETT SWMF	6.68 ha	90.20	90.20	1050mm	928 L/S	0m	2.0m	0m	91.80m - 92.80m
10B	KENNEDY-BURNETT SWMF	2.07 ha	90.20	90.20	825 mm	365 L/S	0m	2.0m	0m	91.80m - 92.78m
11	KENNEDY-BURNETT SWMF	10.90 ha	90.20	90.20	1220mm x 1930mm ELLIPTICAL	1,892 L/S	0m	1.8m	0.3m	91.90m - 92.78m

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

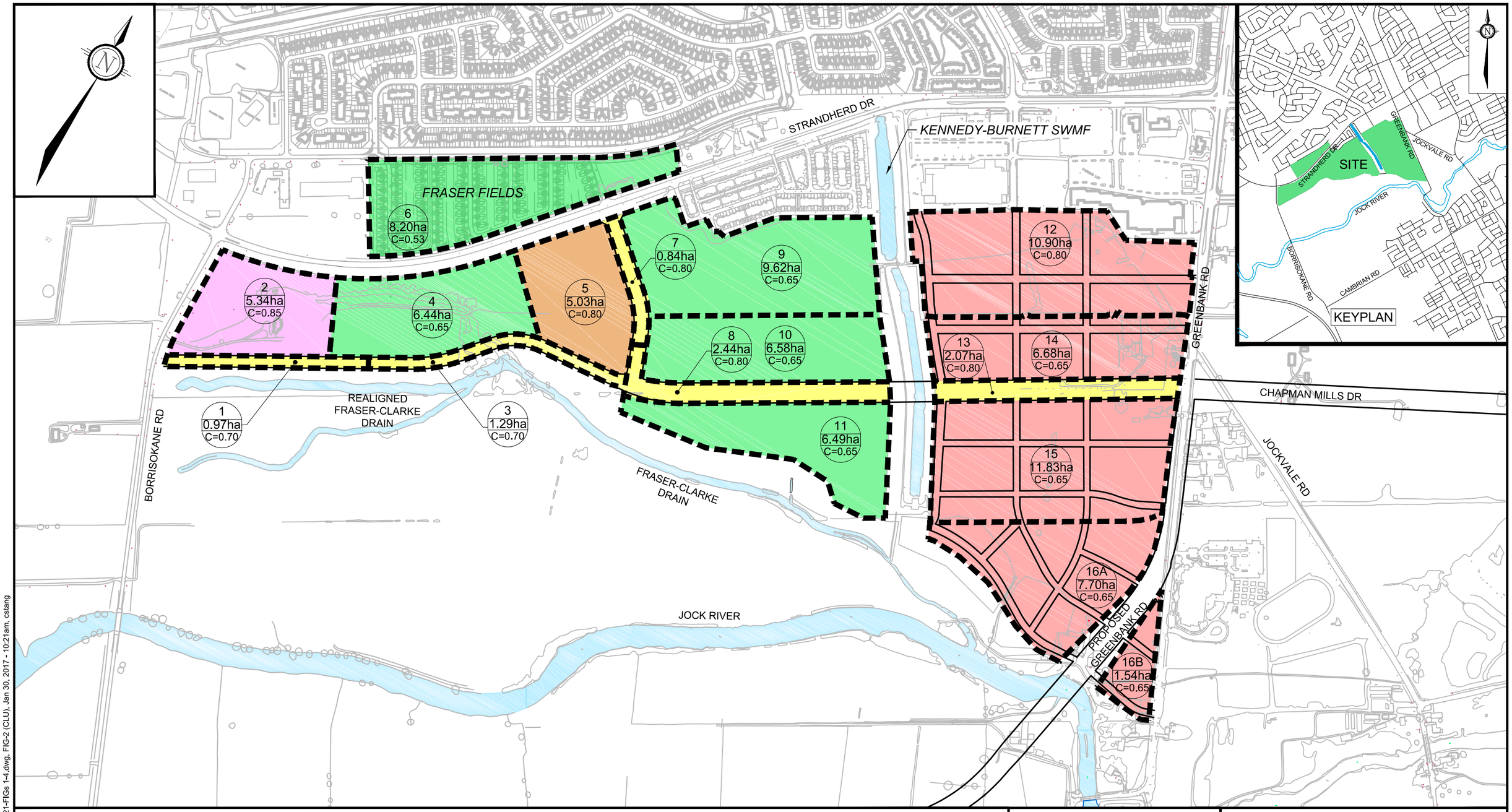
KENNEDY-BURNETT SWMF SERVICING OPTIONS

OPTION 4: HYBRID EXPANDED K-B SWIMF / HDS UNITS

SCALE 1 : 7500 (0, 100, 200, 300)

DATE	JOB	FIGURE
JAN 2017	113221	FIG 5-1

M:\2013\113221\CAD\Design\Figures\SWM\113221-FIGs 5-6.dwg, FIG-6, Jan 30, 2017 - 10:27am, cstang



LEGEND

- MIXED RESIDENTIAL (AS PER SOUTH NEPEAN CDP)
- LOW / MEDIUM DENSITY RESIDENTIAL
- INSTITUTIONAL
- COMMERCIAL
- CHAPMAN MILLS DRIVE / BUS RAPID TRANSIT (BRT)
- EXISTING WATERCOURSE
- PROPOSED ROAD
- 6 / 8.20ha / C=0.53 — CATCHMENT ID / DRAINAGE AREA / RUNOFF COEFFICIENT

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

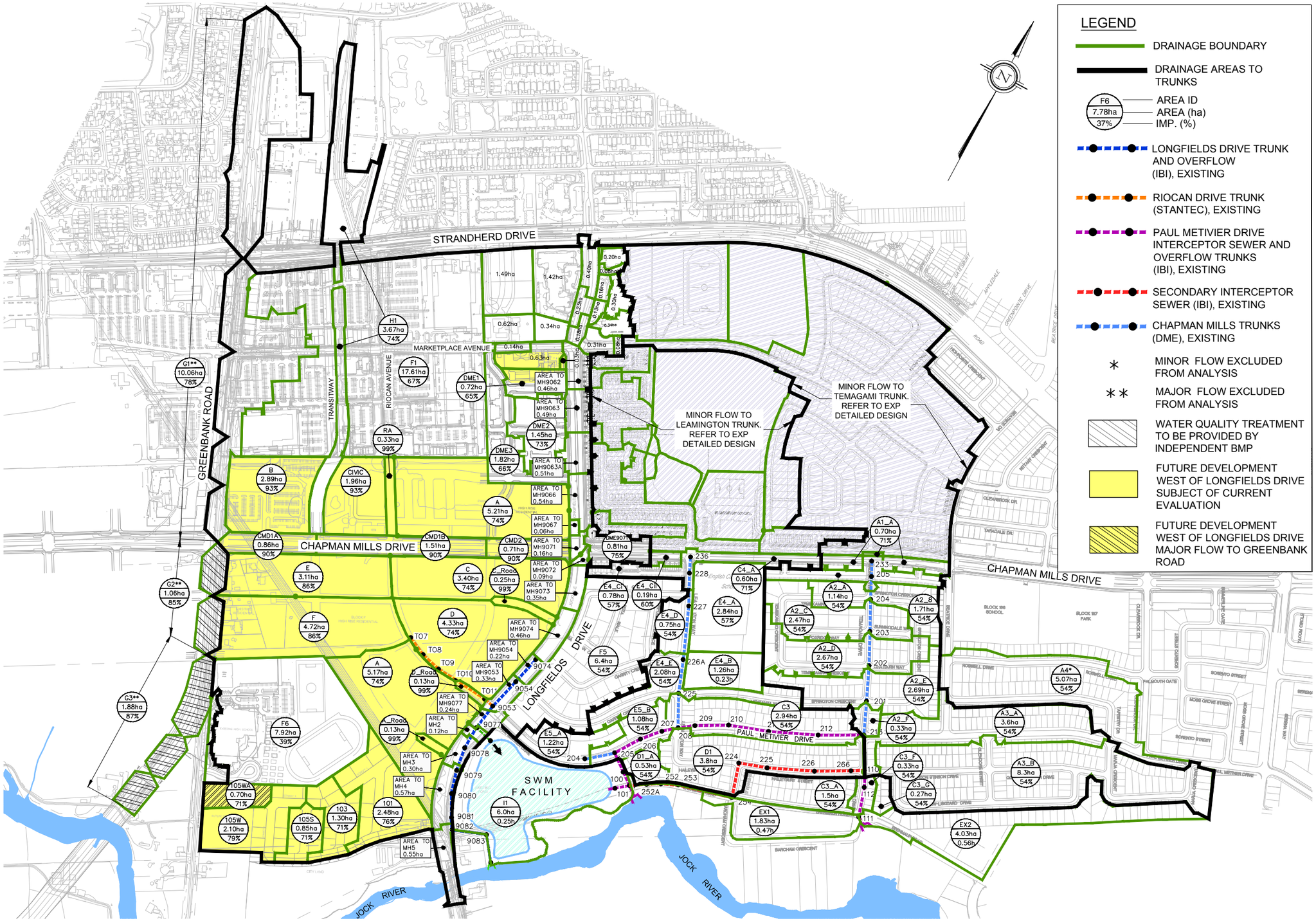
KENNEDY-BURNETT SWMF SERVICING OPTIONS

CONCEPTUAL LAND USE

SCALE	DATE	JOB	FIGURE
1 : 7500	JAN 2017	113221	FIG. 2

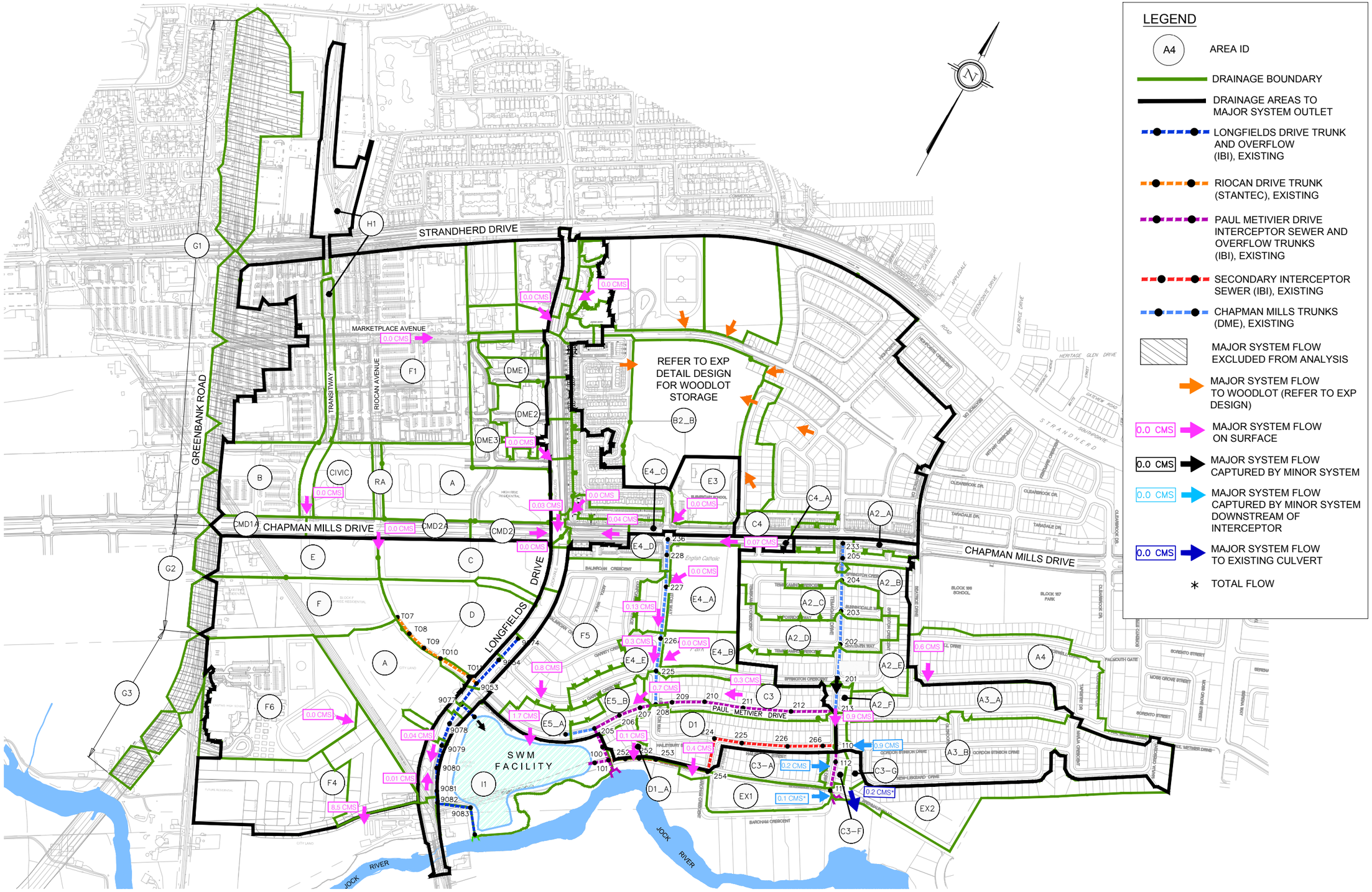
SHT11X17.DWG - 279mmX432mm

M:\2013\113221\CAD\Design\Figures\SWM\113221-FIGs 1-4.dwg, FIG-2 (CLU), Jan 30, 2017 - 10:21am, cstang



J:\IBI Engineering\CCL\0-CAD\cad\Water\3771 Nepean South\5.0\5.9\5.9.1\Design files\CH-MILLS SWM Addendum-2017\Figure 1A.dwg Layout Name: Figure 1A Plot Style: ---- Plot Scale: 1:2.5849 Plotted At: 2/15/2018 11:56 AM Last Saved By: svukic Last Saved At: Dec. 20, 17

Scale	Project Title	Drawing Title	Sheet No.
N.T.S.	NEPEAN SOUTH-CHAPMAN MILLS SWM SERVICING ADDENDUM	DRAINAGE AREA PLAN	FIGURE 1A



Scale	Project Title	Drawing Title	Sheet No.
N.T.S.	NEPEAN SOUTH-CHAPMAN MILLS SWM SERVICING ADDENDUM	MAXIMUM CUMULATIVE MAJOR SYSTEM FLOW	FIGURE 2A

J:\IBI Engineering\CCL\0-CAD\cad\Water\3771 Nepean South\5.0\5.9\5.9.1\Design files\CH-MILLS SWM Addendum-2017\Figure 2A.dwg Layout Name: Figure 2A Plot Style: ---- Plot Scale: 1:2.5849 Plotted At: 2/15/2018 11:55 AM Last Saved By: svukic Last Saved At: Feb. 15, 18

Storm Drainage Area Comparisons
DSEL
May 8, 2018

Areas considered in the Kennedy-Burnett Stormwater Management Facility and Functional Design Report (CH2M 2017)

Areas considered in the Nepean South Chapman Mills Stormwater Management Servicing, Fourth Addendum (IBI Group 2018)

LAND USE	AREA
HIGH RISE MIXED USE	18.49 Ha
MID-RISE MIXED USE	33.24 Ha
MID-RISE RESIDENTIAL	39.86 Ha
NEIGHBOURHOOD PARK	4.19 Ha
DISTRICT PARK	17.46 Ha
SCHOOL	7.98 Ha
CIVIC COMPLEX	1.98 Ha

SOUTH NEPEAN TOWN CENTRE
LAND USE PLAN

- HIGH RISE MIXED-USE
- MID-RISE MIXED-USE
- MID-RISE RESIDENTIAL
- NEIGHBOURHOOD PARK
- DISTRICT PARK
- SCHOOL
- CIVIC COMPLEX
- STRANDHERD RETAIL DISTRICT
- STORMWATER MANAGEMENT POND (SMP)
- SUBJECT AREA

0 100m 200m 400m

No.	REVISION	DATE	BY
6	LAND USE	2018.04.26	CB
5	LAND USE	2018.04.16	CB
4	LAND USE	2018.04.13	CB
3	FOR REVIEW	2018.03.22	BL
2	FOR REVIEW	2018.03.09	BL

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DESIGNED CB
REVIEWED MS
DATE 2018.03.09

DRAWING No. P1

Runoff Coefficient Comparison for the Western SNTC Lands

DSEL

8-May-18

	CH2M FEB 2017			OPA MAY 2018		
Catchment I.D.	Area (ha)	C	A*C	Area	Avg. C	A*C
12	10.90	0.80	8.72	10.22	0.78	7.99
13	2.07	0.80	1.66	2.08	0.90	1.87
14	6.68	0.65	4.34	7.02	0.82	5.74
15	11.83	0.65	7.69	11.73	0.75	8.79
16A/B	9.24	0.65	6.01	9.55	0.80	7.65

OPA Equivalent of Catchment 15

Land Use	Area (ha)	C	A*C
Mid Rise Res	5.30265898	0.73	3.870941
Mid Rise MU	1.11538204	0.83	0.925767
Park	0.96882684	0.4	0.387531
School	1.47964337	0.7	1.03575
Roads	2.85978686	0.9	2.573808
Total	11.72629809		8.793797

OPA Equivalent of Catchment 16A/B

Land Use	Area (ha)	C	A*C
Mid Rise Res	4.96481372	0.73	3.624314
Mid Rise MU	1.48042043	0.83	1.228749
Roads	3.10661767	0.9	2.795956
Total	9.55185182		7.649019

OPA Equivalent of Catchment 14

Land Use	Area (ha)	C	A*C
Mid Rise Res	3.98233295	0.83	3.305336
High Rise MU	1.76364713	0.85	1.4991
Park	0.42409597	0.4	0.169638
Roads	0.8532406	0.9	0.767917
Total	7.02331665		5.741991

OPA Equivalent of Catchment 13

Land Use	Area (ha)	C	A*C
Roads	2.08006813	0.9	1.872061

OPA Equivalent of Catchment 12

Land Use	Area (ha)	C	A*C
Mid Rise Res	3.1834743	0.73	2.323936
Mid Rise MU	5.64194812	0.83	4.682817
Park	0.5453113	0.4	0.218125
Roads	0.84654002	0.9	0.761886
Total	10.21727374		7.986764

Runoff Coefficient Comparison for the Eastern SNTC Lands

DSEL

8-May-18

	IBI FEB 2018			OPA MAY 2018		
Catchment Area	**Area (ha)**	**C**	**A*C**	**Area**	**Avg. C**	**A*C**
Tributary to Longfields Drive Trunk Sewer	34.25	0.69	23.52	34.96	0.83	29.04
Tributary to Riocan Ave Interceptor Sewer	44.87	0.72	32.41	46.05	0.77	35.60

Data from in Nepean South Chapman Mills Stormwater Management Servicing, Fourth Addendum (IBI Group 2018)

Area ID	Area (ha)	Imp (%)	C	A*C
Tributary to Riocan Ave Interceptor Sewer				
105w	2.1	79	0.75	1.5813
105s	0.85	71	0.70	0.59245
103	1.3	71	0.70	0.9061
101	2.48	76	0.73	1.81536
105WA	0.7	71	0.70	0.4879
f6	7.92	39	0.47	3.74616
a	5.17	74	0.72	3.71206
F	4.72	86	0.80	3.78544
e	3.11	86	0.80	2.49422
cmd1a	0.86	90	0.83	0.7138
cmd1b	1.51	90	0.83	1.2533
c	3.4	74	0.72	2.4412
d	4.33	74	0.72	3.10894
b	2.89	93	0.85	2.45939
h1*	1.240516	74	0.72	0.890691
civic	1.96	93	0.85	1.66796
ra	0.33	99	0.89	0.29469
c-Road	0.25	99	0.89	0.22325
d_road	0.13	99	0.89	0.11609
A_road	0.13	99	0.89	0.11609
TOTAL	44.87052			32.40639
Tributary to Longfields Drive Trunk Sewer				
f1	17.61	67	0.67	11.78109
a	5.21	74	0.72	3.74078
G1**	2.36	78	0.75	1.76056
cmd2	0.71	90	0.83	0.5893
dme1	0.72	65	0.66	0.4716
dme2	1.45	73	0.71	1.03095
dme3	1.82	66	0.66	1.20484
***	0.63	65	0.66	0.41265
***	0.03	65	0.66	0.01965
***	0.14	90	0.83	0.1162
***	0.34	67	0.67	0.22746
***	0.32	67	0.67	0.21408
***	1.49	67	0.67	0.99681
***	1.42	67	0.67	0.94998
TOTAL	34.25			23.51595

*Only 1.24 ha area of H1 within SNTC used for comparison

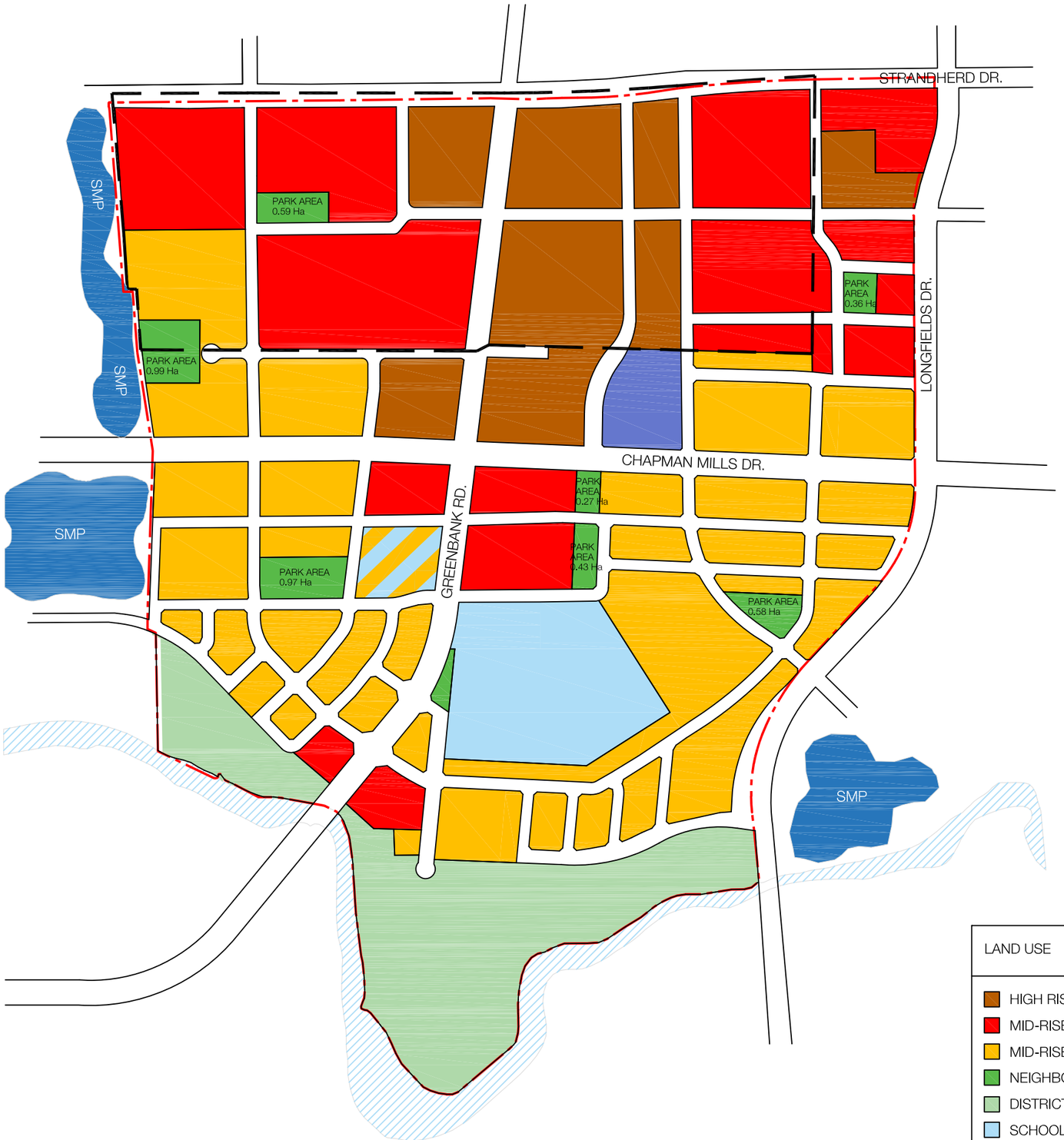
**Only 2.36 ha area of G1 within SNTC used for comparison

***No imperviousness or ID given to areas. Imperviousness was assigned based on neighbouring areas

OPA equivalent of Chapman Mills Drainage Area

Land Use	Area (ha)	C	A*C
Tributary to Riocan Ave Interceptor Sewer			
High-Rise Mixed Use	2.64	0.85	2.241687
Mid-Rise Mixed Use	3.19	0.83	2.647882
Mid-Rise Residential	17.60	0.73	12.85159
Neighbourhood Park	1.48	0.4	0.590229
School	7.98	0.7	5.587524
Civic Complex	1.98	0.82	1.619864
Other	11.18	0.9	10.06247
TOTAL	46.05		35.60124
Tributary to Longfields Drive Trunk Sewer			
High-Rise Mixed Use	11.87	0.85	10.08626
Mid-Rise Mixed Use	12.44	0.83	10.32218
Mid-Rise Residential	4.58	0.73	3.3468
Neighbourhood Park	0.36	0.4	0.143816
Other	5.72	0.9	5.144464
TOTAL	34.96		29.04

FIGURES



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