



March 5, 2018
Our File: S-1364

Via Email: dgoetz@owensound.ca

City of Owen Sound
808-2nd Avenue East
Owen Sound, ON N4k 2H4

Attention: Mr. Dana Goetz

Re: Addendum to SWM Report (2006)
Revised March, 2018
Andpet Subdivision
16th Avenue East, Owen Sound

Dear Dana,

About 2006, Site Plan Approval was received by AndPet Realty Ltd. for the development of a subdivision on their approximately 7.06 ha property located on 16th Avenue East near 16th Street East, in the City of Owen Sound. At the time of approval, the Draft Plan included:

- 52 single family residential lots (2.70 ha),
- Two (2) blocks for medium density residential townhouses (1.26 ha),
- Two (2) blocks for a walkway and the now constructed 10th Street East (0.21 ha),
- One (1) block for a combination park and stormwater management pond (1.40 ha), and;
- Approximately 1.49 ha of roadway.

Since the time of the previous Site Plan Approval, the proponent has revised the Draft Plan to intensify development within the proposed subdivision. The revised Draft Plan includes:

- 11 semi-detached residential lots (0.69 ha),
- One (1) block for street townhomes (0.09 ha),
- One (1) block for medium density residential housing (1.61 ha),
- One (1) block for high density residential housing (1.12 ha),
- One (1) block for retirement residential housing (0.97 ha),
- One (1) block for open space/parkland (0.48 ha),
- One (1) block for a stormwater management pond (1.03 ha), and;
- Approximately 1.06 ha of roadway, and road widening/ reserve.

The purpose of this letter is to describe the SWM considerations for the updated Draft Plan for the proposed subdivision development as an addendum to the SWM Report previously approved through the Site Plan Approval process.

The criteria used to develop the SWM approach for the previously approved 2006 SWM Report are as follows:

1. Post-development peak flow rates discharging from the subject property are to be attenuated to less than 0.70 m³/s, the capacity of the existing 750 mm Ø storm sewer stub located at the northeasterly corner of the property and draining to the 16th Avenue East storm sewer system, for all design storm events up to and including the 100 year design storm event.
2. The on-site storm sewer system will convey the runoff associated with a 5 year design storm event at the minimum.

- Water quality treatment is to be provided for runoff draining from the site prior to discharging to the 16th Avenue East storm sewer system.

SWM Quantity Control

Under revised post-development conditions, the size of the catchment area draining to the proposed SWM pond, approximately 7.70 ha in area, and the design of the proposed SWM pond (Stage-Storage-Discharge Calculations enclosed as Attachment 1), are consistent as previously proposed in the 2006 SWM Report. However, the higher residential density of the revised post-development conditions is associated with a greater level of imperviousness.

To conservatively consider the increased imperviousness of the updated Draft Plan, the catchment was modelled as being completely (100%) impervious for the 100 year design storm. The MIDUSS modelling for the updated catchment is enclosed as Attachment 2 and the results are summarized in the table below:

Catch.	Area (ha)	Imperviousness	Design Storm Event	Allowable Peak Flow Rate/ Cap. Of Ex. Storm Sewer Stub (m ³ /s)	Post-Development Peak Flow Rate (m ³ /s)
900	7.70	100 %	100 year	0.700	0.534

As shown above, for a conservatively considered 100% imperviousness, the peak flow draining from the subject property under post-development conditions for the updated Draft Plan, is expected to be less than the allowable peak flow rate for the 100 year design storm event.

Therefore, since the currently proposed subdivision development is planned to be less than 100% impervious, the peak flows discharging from the subject property under post-development conditions are expected to be less than the allowable peak flow rate.

The proposed on-site storm sewer system will be designed to convey the site runoff associated with a 5 year design storm event at the minimum.

SWM Quality Control

In addition to the proposed water quality control measures proposed within the previously approved SWM Report, the storage volume provided by the proposed SWM pond, generally designed as a dry pond, is also considered to provide further stormwater quality treatment.

To conservatively consider the stormwater quality storage requirements of the updated Draft Plan, the imperviousness of the lands draining to the proposed SWM pond are assumed to be completely impervious (100%).

The Ministry of Environment and Climate Change (MOECC) guidelines recommend that, for dry ponds to provide 60% TSS removal (there is no recommendation for 70% or 80% TSS removal), the pond should be sized with sufficient storage volume for 200 m³/ha, for a 70% imperviousness, and 240 m³/ha, for a 85% imperviousness. By extrapolation, to provide 60% TSS removal for the considered 100% imperviousness of the contributing catchment, approximately 280 m³/ha of storage should be provided by the SWM pond. Therefore, to provide 60% TSS removal, the dry pond should have a minimum of 2,156 m³ of storage volume for the approximately 7.70 ha area of the contributing catchment (Catchment 900). The SWM pond is proposed to provide approximately 4,572 m³ of storage volume at the elevation of its emergency overland spillway.

Therefore, the additional benefit of the SWM pond's temporary storage volume is expect to provide additional stormwater quality treatment than what was considered in the previously approved SWM Report.



In conclusion, the post-development peak flow rates associated with the updated Draft Plan are expected to be less than the previously approved allowable peak flow rate, and the proposed stormwater quality treatment provided for runoff discharging from the subject property is expected to be better than previously considered and approved. Furthermore, the proposed on-site storm sewer is expected to convey the runoff associated with a 5 year design storm event at the minimum.

Yours truly,

GM BLUEPLAN ENGINEERING LIMITED

Per:

A handwritten signature in blue ink, appearing to read 'John B. Slocombe'.

John B. Slocombe, P.Eng.
OD/mz

Encl.

cc: Andpet Realty: Peter Van Dolder, via Email: peter@andpetrealty.com
File No. S-1364

ATTACHMENT 1

Stage-Storage-Discharge Calculations for the Proposed SWM Pond

ANDPET SUBDIVISION
 16TH AVENUE EAST, CITY OF OWEN SOUND
 OUR FILE: S-1364
 FEBRUARY, 2018

STORMWATER MANAGEMENT POND - STAGE-STORAGE-DISCHARGE CALCULATIONS
 CATCHMENT 900 - LANDS TO SWM POND
 As Per Previously Approved SWM Plan Drawing (Dwg. No. 2)

Pond Dimensions

Side Slopes: 10.00 :1
 Depth: 1.25 m
 Top Area: 9483.00 m²
 Bottom Area: 3010.00 m²

Outlet Data

Orifice Invert: 219.45 mm
 Orifice Dia.: 375.00 mm
 Orifice Area: 0.11 m²
 Coefficient (Tube): 0.80

Elevation (m)	Stage (m)	Surface Area (m ²)	Incremental Volume (m ³)	Cumulative Volume (m ³)	Discharge (m ³ /s)
219.25	0.00	0.00	0.00	0.00	0.000
219.50	0.25	0.00	11.00	11.00	0.087
219.75	0.50	0.00	49.00	60.00	0.214
220.00	0.75	0.00	49.30	109.30	0.290
220.25	1.00	0.00	49.60	158.90	0.350
220.50	1.25	0.00	50.00	208.90	0.401
220.75	1.50	3010.00	0.00	208.90	0.446
220.85	1.60	3507.92	325.90	534.80	0.463
220.95	1.70	4005.85	375.69	910.48	0.479
221.05	1.80	4503.77	425.48	1335.97	0.495
221.15	1.90	5001.69	475.27	1811.24	0.510
221.25	2.00	5499.62	525.07	2336.30	0.525
221.35	2.10	5997.54	574.86	2911.16	0.539
221.45	2.20	6495.46	624.65	3535.81	0.553
221.55	2.30	6993.38	674.44	4210.25	0.567
221.65	2.40	7491.31	724.23	4934.49	0.580
221.75	2.50	7989.23	774.03	5708.52	0.593
221.85	2.60	8487.15	823.82	6532.33	0.606
221.95	2.70	8985.08	873.61	7405.95	0.619
222.00	2.75	9483.00	461.70	7867.65	0.625

ATTACHMENT 2

Post-Development MIDUSS Modelling

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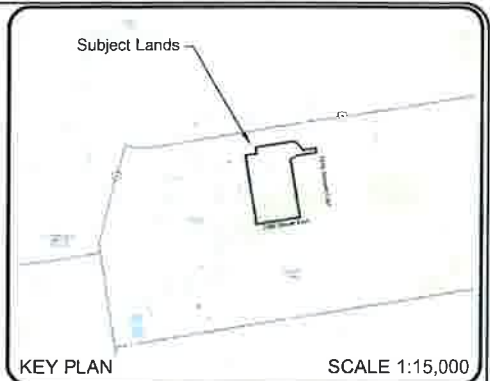
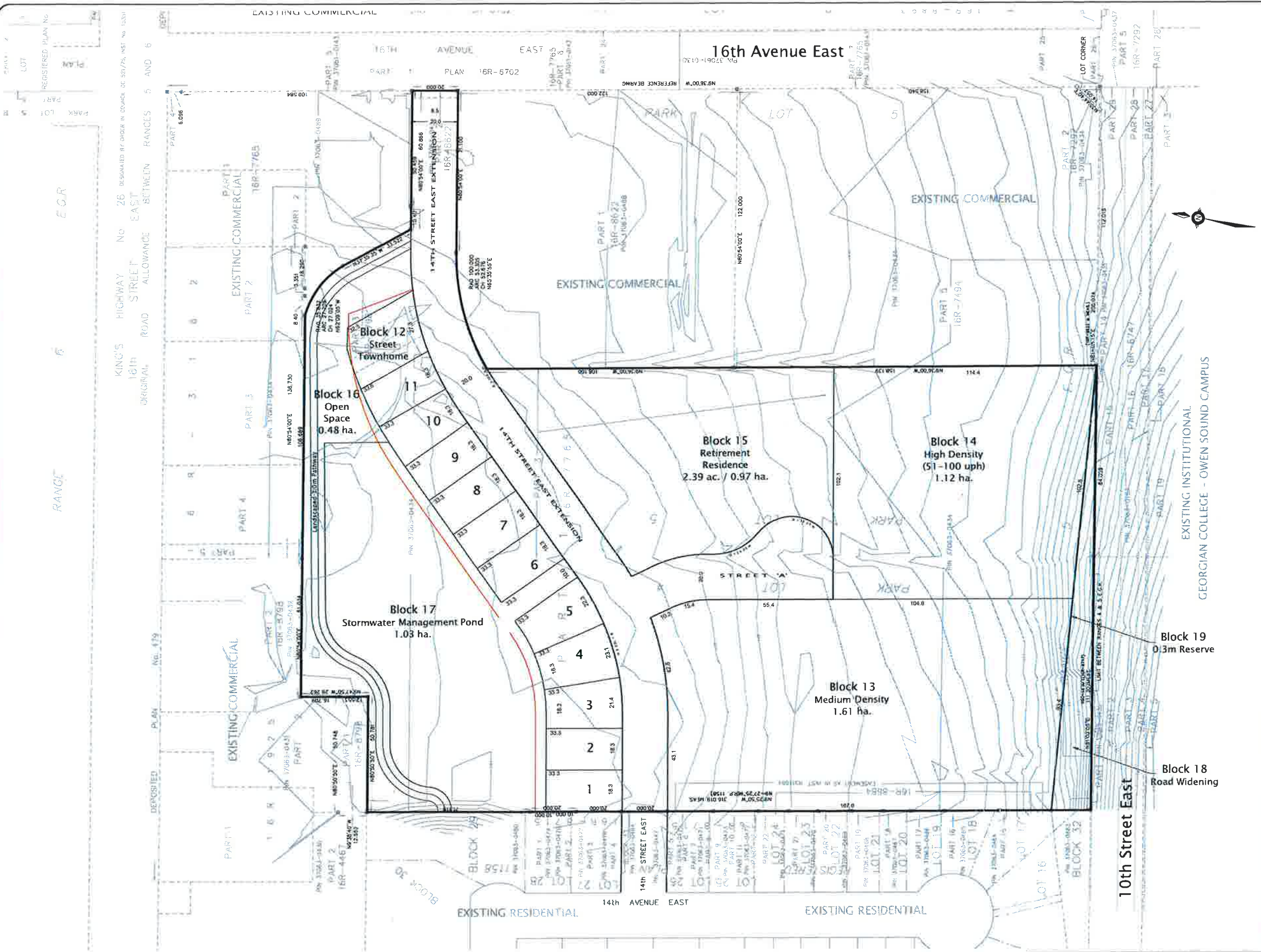
5-1364 - Post 100 YR - rev Mar18.out
----->
MIDUSS Output
MIDUSS version 2.25 rev. 473
MIDUSS created Sunday, February 07, 2010
Units used: C:\MIDUSS\ANDP\ie\METRIC
Job folder: S-1364 - Post 100 YR - rev Feb18.out
Output filename: C:\MIDUSS\ANDP\ie\METRIC
License name: Hewlett-Packard Company
Company: 2/26/2018 at 1:35:41 PM
Date & Time last used:
TIME PARAMETERS
Time step 5.000
Max. storm length 210.000
Max. Hydrograph 360.000
STORM Chicago storm
1 Chicago storm
Coefficient A 2171.750
Constant B 8.303
Exponent C 0.867
Fraction R 0.375
Duration 210.000
Time step multiplier 1.000
Maximum intensity 202.862 mm/hr
Total depth 71.271
100hydr Hydrograph extension used in this file"
6 CATCHMENT 900"
2 Rectangular"
3 SPECTRY values"
1 SCS method"
1 Proposed Subdivision Lands"
100.000 % Impervious"
7.700 Total Area"
100.000 Flow length"
2.000 Overland Slope"
100.000 Pervious Area"
100.000 Pervious length"
2.000 Pervious slope"
7.700 Pervious Area"
100.000 Impervious length"
2.000 Impervious slope"
65.050 Pervious Manning "n""
0.300 Pervious SCS Curve No. ""
0.000 Pervious Runoff coefficient"
0.062 Pervious Ia/S coefficient"
8.461 Pervious Initial abstraction"
0.015 Impervious SCS Curve No. ""
98.630 Impervious Runoff coefficient"
0.147 Impervious Ia/S coefficient"
0.319 Impervious Initial abstraction"
4.415 Impervious Initial abstraction"
0.000 Pervious Total Area "
Catchment 900 0.000
Surface Area 7.700 hectare"
Time of concentration 36.874 minutes"
Time to Centroid 94.704 minutes"
Rainfall depth 71.271 mm"
Rainfall volume 5487.86 C.m"
Rainfall losses 51.474 mm"
Runoff depth 67.392 mm"
Runoff volume 5189.17 C.m"
Runoff coefficient 0.946 C.m"
Maximum flow 4.415 C.m/Sec"
HVDROGRAPH Add Runoff "
4 Add Runoff "

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5-1364 - Post 100 YR - rev Mar18.out
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4.415 POND DESIGN"
0.978 Current peak flow C.m/Sec"
5189.17 Target outflow C.m/Sec"
13. Hydrograph volume C.m"
0.000 Number of stages
0.000 Minimum water level metre"
2.750 Maximum water level metre"
0.000 Starting water level metre"
Keep Design Data: I = True; O = False"
Level Discharge Volume"
219.250 0.000 0.000
219.500 0.08700 11.000"
219.750 0.2140 60.000"
220.000 0.2900 109.300"
220.250 0.3500 158.900"
220.500 0.4010 208.900"
220.750 0.4460 268.900"
220.850 0.4790 334.800"
220.950 0.5250 410.480"
221.250 0.5670 2336.300"
221.500 0.5930 4210.250"
221.750 0.6250 5708.520"
222.000 0.6250 7867.650"
Peak outflow 0.534 C.m/Sec"
Maximum level 221.312 metre"
Maximum storage 2722.992 C.m"
Centroidal lag 2.414 hours"
4.415 0.534 0.000 C.m/Sec"
5 HYDROGRAPH Next Think "
4.415 0.534 0.000"
38 PIPE DESIGN"
0.534 Current peak flow C.m/Sec"
0.013 Manning "n""
0.375 Diameter metre"
0.060 Gradient %"
Surcharged HGL 9.264 %"
Velocity 4.832 m/Sec"
Pipe capacity 0.043 C.m/Sec"
Critical 0.000 metre"
START/RE-START TOTALS 900"
3 Runoff TOTALS on EXIT"
Total Catchment area 7.700 hectare"
Total Impervious area 7.700 hectare"
Total % Impervious 100.000"
EXIT"

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Proposed Draft Plan of Subdivision
 Part of Park Lots 4 and 5, RANGE 5
 East of The Garafaxa Road, PL Owen Sound
 City of Owen Sound
 County of Grey
 2018

OWNER'S CERTIFICATE
 I, THE UNDERSIGNED, BEING THE REGISTERED OWNER OF THE SUBJECT LANDS, HEREBY AUTHORIZE THE JONES CONSULTING GROUP LTD., TO PREPARE THIS DRAFT PLAN OF SUBDIVISION AND TO SUBMIT SAME TO THE CITY OF OWEN SOUND FOR APPROVAL.

DATE _____ OWNER _____

SURVEYOR'S CERTIFICATE
 I CERTIFY THAT THE BOUNDARIES OF THE LANDS TO BE SUBDIVIDED AND THEIR RELATIONSHIP TO ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.

DATE _____ O.L.S. _____
 ONTARIO LAND SURVEYORS

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51(17) OF THE PLANNING ACT
 a) SHOWN ON DRAFT PLAN g) SHOWN ON DRAFT PLAN
 b) SHOWN ON DRAFT PLAN h) MUNICIPAL PIPED WATER TO BE PROVIDED
 c) SHOWN ON KEY PLAN i) CLAY LOAM
 d) RE-RESIDENTIAL, OPEN SPACE, j) SHOWN ON DRAFT PLAN
 STORMWATER MANAGEMENT k) ALL MUNICIPAL SERVICES TO BE PROVIDED
 e) SHOWN ON DRAFT PLAN l) SHOWN ON DRAFT PLAN
 f) SHOWN ON DRAFT PLAN

SUBDIVISION STATISTICS	AREA (ha.)	UNITS
SEMI DETACHED - 18.3m (LOT 1)	0.89 ha	22 units
STREET TOWNHOMES - 6m (LOTS 2 - 13)	0.09 ha	4 units
MEDIUM DENSITY (BLOCK 13)	1.61 ha	96 units
HIGH DENSITY (BLOCK 14)	1.12 ha	112 units
RETIREMENT RESIDENCE (BLOCK 15)	0.97 ha	120 units
PARKLAND/OPEN SPACE (BLOCK 16)	0.48 ha	
STORMWATER MANAGEMENT (BLOCK 17)	1.03 ha	
ROAD WIDENING AND RESERVE (BLOCKS 18 & 19)	0.17 ha	
ROAD (14TH STREET EAST EXTENSION & STREET 'A')	0.89 ha	
TOTAL	7.06 ha	354 units



ANDPET REALTY SITE
 PROPOSED DRAFT PLAN OF SUBDIVISION



Date issued: FEB. 12, 2018
 Checked By: LS
 Project No.: AND-16077
 Drawn By: m.c.f.
 Drawing Name: AND-16077-DP1.dwg



SCHEDULE OF REVISIONS

DATE	DESCRIPTION	DRAWN

ANDPET REALTY SITE
 CITY OF OWEN SOUND