

File 121371

February 8, 2022

Shekhar Dalal
The Blue Meadows Inc.
24 Marydale Avenue
Markham, Ontario L3S 3N4

Re: 125 Arthur Street, Town of The Blue Mountains
Town Model update for Proposed Development

Dear Shekhar:

As per your request we have updated the Thornbury West Drainage Master Plan (TWDMP) PCSWMM hydrologic/hydraulic model to determine peak flows established for the 125 Arthur Street development property to assist in the site's stormwater management design. Tatham originally developed the PCSWMM model for the Town of The Blue Mountains as part of the Thornbury West Drainage Master Plan (TWDMP) study. We have updated the PCSWMM model and revised the subcatchment boundaries delineated across the development site to match the delineation provided by Crozier Consulting Engineers. This letter has been prepared to summarize the model updates and findings.

EXISTING CONDITIONS

The development site is located at 125 Arthur Street and covers approximately 4.22 ha of land. The site is bounded by Alice Street West to the South, the little Beaver River to the West, Arthur Street West to the North and Lansdowne Street South to the East. The development site consists of six parcels, two of which contain existing residential dwellings. A third existing residential dwelling exists in a parcel surrounded by the proposed development which is not included in the development site. The existing landcover of the development site consists predominantly of open grass field and the lands generally drain overland as sheet flow to the north-west.

In the original PCSWMM model, the development site is covered by subcatchment S12035, which drains north-east to the intersection of Lansdowne Street South and Arthur Street West.

Drainage from the study area enters the storm sewer at Junction DCBMH_12035, which flows from Lansdowne Street South to Arthur Street West and discharges to a tributary of the Little Beaver River. This tributary flows through culverts across the Georgian Trail, King Street West, and Lansdowne Street North and ultimately discharges to the Little Beaver River via a culvert along Huron Street West.

The study area drainage conditions are illustrated on Figure 1 enclosed for reference.

PCSWMM MODEL UPDATES

To determine existing condition peak flow targets for the proposed development, the existing PCSWMM hydrologic/hydraulic model was updated to revise the catchment boundaries and percent impervious to match those delineated by Crozier Consulting Engineers as shown in Figure 2 enclosed for reference. The existing hydrologic properties of the subcatchment are provided in Table 1.

Table 1: Existing Conditions Subcatchment Parameter Summary

PARAMETER	125 ARTHUR STREET SUBCATCHMENT
Catchment ID	S12035
Catchment Area (ha)	4.22
Percent Impervious (%)	5
Percent Routed (%)	20
Slope (%)	2
Impervious Area Depression Storage (mm)	2
Pervious Area Depression Storage (mm)	5

The Blue Mountains Engineering Standards (2009) were used to generate the 1:2-year, 1:5-year, 1:25-year and 1:100-year 3.0- and 3.5-hours Chicago Storms and 1:2-year, 1:5-year, 1:10-year, 1:25-year, 1:50-year and 1:100-year 24-hour SCS Storms. These storms were analysed to quantify the runoff from the site under the existing conditions. The existing condition peak flows are summarized in the following table.



Table 2: Existing Conditions Peak Flow Summary

SCENARIO	CHICAGO STORM PEAK FLOW (m ³ /s)	SCS STORM PEAK FLOW (m ³ /s)
1:2-year	0.05	0.08
1:5-year	0.12	0.24
1:10-year	-	0.39
1:25-year	0.32	0.65
1:50-year	-	0.77
1:100-year	0.55	0.89

The existing storm sewer system downstream of the development was also modeled in PCSWMM to confirm capacity limitations. The results indicate the first two lengths of conduit from the site to Arthur Steet have a limiting capacity of 0.44 m³/s which is equivalent to approximately the existing 1:10-year storm flow from the site. Figure 3 enclosed illustrates the performance of the storm sewer under the 1:5-year peak flow.

Given the Little Beaver River tributary downstream of the storm sewer outlet has several known capacity deficiencies identified through the TWDMP analysis to avoid exacerbating these deficiencies we recommend post-development peak flows be controlled to the lesser of pre-development peak flows or the constraining capacity of the storm system of 0.44 m³/s unless additional available capacity can be identified through further downstream analysis.

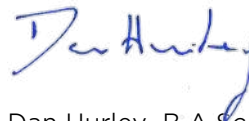
CLOSING

We trust this letter meets your needs. If you have any questions or comments regarding the assessment, please do not hesitate to contact the undersigned.

Yours truly,
Tatham Engineering Limited

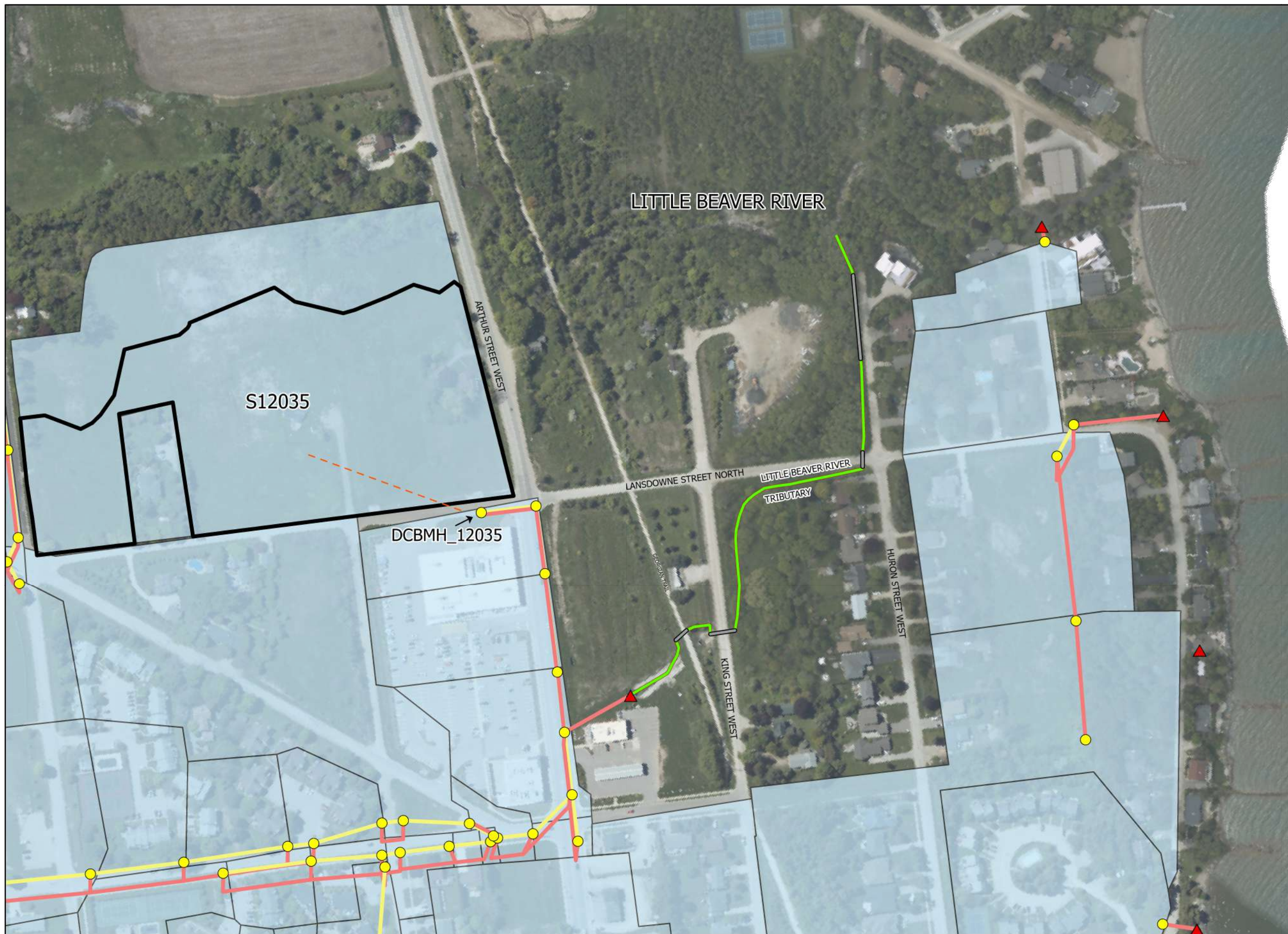


Jacob Macdonald, B.A.Sc.
 Engineering Intern
 KKS/JM:rlh



Dan Hurley, B.A.Sc., P.Eng., LEED AP
 President

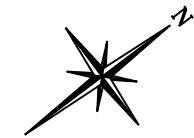
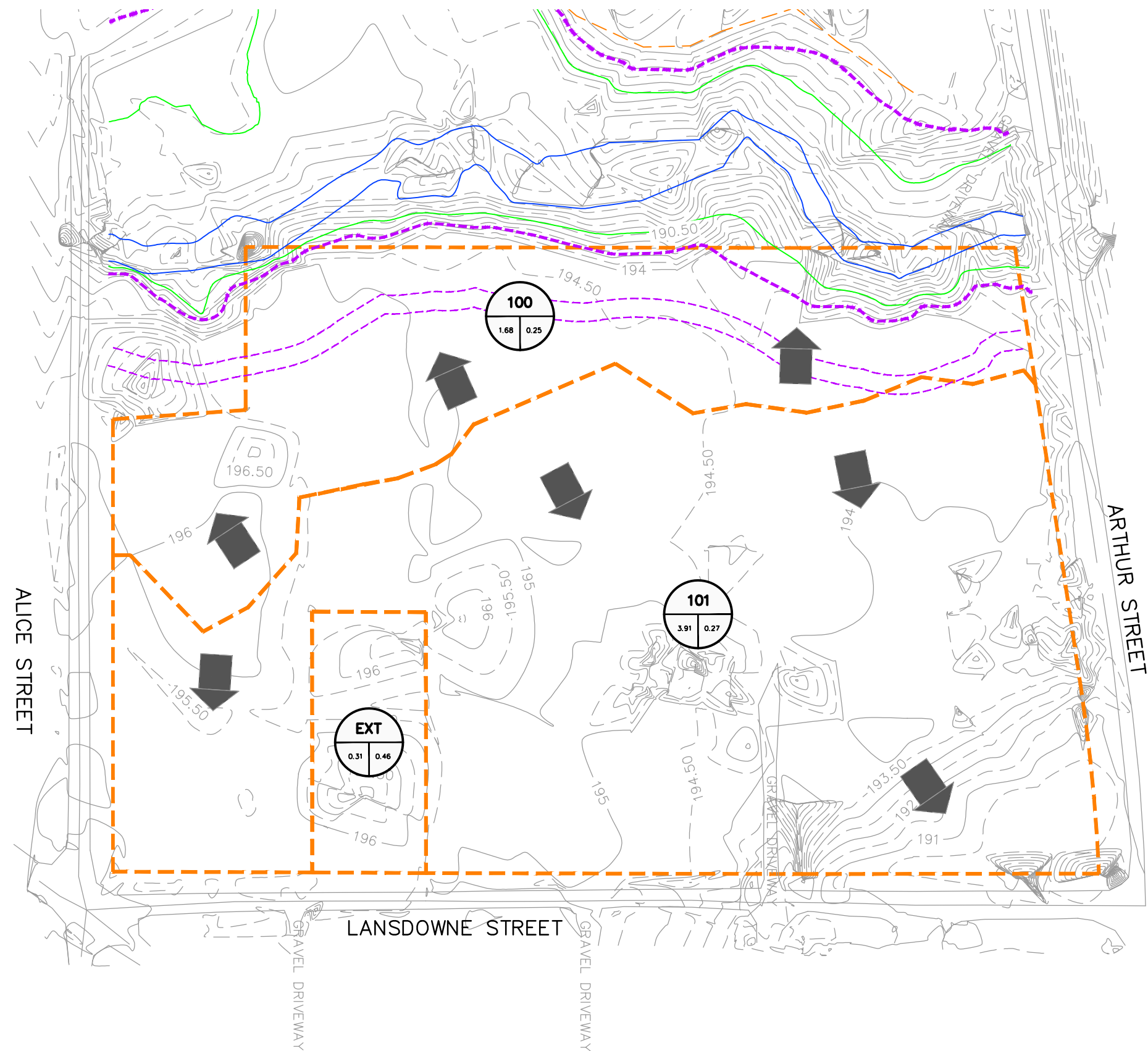




- LEGEND**
- DEVELOPMENT SITE
 - OUTFALL
 - CULVERT
 - DITCH
 - JUNCTION
 - MAJOR SYSTEM
 - SEWER
 - SUBCATCHMENT

FIGURE 1 - STUDY AREA DRAINAGE MAP





LEGEND

- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- EXISTING ELEVATION
- PROPERTY BOUNDARY
- DRAINAGE AREA
- OVERLAND FLOW ARROW
- CATCHMENT ID
RUNOFF COEFFICIENT
- CATCHMENT AREA (ha)
- REGIONAL FLOODLINE
- 6.0m EROSION ACCESS SETBACK
- 100 YR FLOODLINE
- WATER COURSE

Project		125 ARTHUR STREET TOWN OF BLUE MOUNTAINS		Admiral Building 1 First Street, Suite 200 Collingwood, ON, L9Y 1A1 705-446-3510 T 705-446-3520 F www.cfcrozier.ca info@cfcrozier.ca	
Drawing		PRE-DEVELOPMENT DRAINAGE		CROZIER CONSULTING ENGINEERS	
Drawn By	S.O.	Design By	S.O.	Project	2142-6059
Scale	1:1500	Date	09/07/2021	Check By	G.C.
					FIG. 2

FIGURE 2 - DEVELOPMENT SITE BY CROZIER CONSULTING ENGINEERS

TOBM SCS 24hr 5 year

