July 18 2025

Andrew van Doorn, P.Eng.
Chief Operating Officer
Solar bank Corp.
Unit 803 – 505 Consumers Road
Toronto, ON, M2J 4V8

Emailed to: andrew.vandoorn@solarbankcorp.com

Subject: **Stormwater Management Pre and Post Development Summary Letter**
OZ-1 BESS Project, 157 7th Street SW, Chesley, ON
PRI Project No.: 25-253

Dear Mr. Van Doorn,

As requested, PRI Engineering Corp. (PRI) has prepared a brief report to determine the impact of the proposed development of a battery storage facility to be located at 157 7th Street, SW in Chesley on stormwater generated from the proposed development. The location of the proposed development is shown in Figure 1 along with the catchment areas.

The area of the site that will be disturbed/ developed is approximately 2.60 Ha. The battery storage facility will be located on the southwest side of the property and will be accessed through a private gravel road from 7th Street SW, just to the east of the intersection with 6th Ave. SW. Most of the disturbed areas will consist of re-grading approximately 0.112 Ha of the site for the installation of the battery storage facility itself as well as the new gravel access road (0.21 Ha +/-). The site is divided into two sub-watersheds, separated by a ridge through the middle of the site, adjacent to the two existing buildings between which the road is to be constructed. The area to the south of this ridge (Catchment # 2) is approximately 2.08 Ha in area and generally slopes towards a low point to the north of the proposed facility. Catchment # 1 is located to the northeast of the facility site and has an area of 0.53 Ha. This area will only contain the new gravel access road from 7th St. SW. The land is currently vacant open field grasslands. The only disturbance to this land is the construction of the gravel access road. Catchment area 1 drains towards a low point located generally in the middle of the catchment area and to the west of the new access road. Drainage will be fully contained on site and is expected to dissipate into the ground at that area.

The size of the proposed battery facility itself is only approximately 0.11 Ha and consists of a concrete caisson on which the battery storage components are placed with some of the electrical equipment placed on concrete slab-on-grades. We understand that the facility area is backfilled with clearstone material which will contain less than 8% fines (material passing No. 200 sieve). Upon completion of the facility, it is expected that all remaining disturbed areas will be treated with hydroseed and mulch to reestablish vegetation over the site. It is anticipated that the access road will be constructed with shallow roadside ditches to direct runoff to existing discharge locations.

As requested in the review latter dated June 4th, 2025, from the Municipality of Arran- Ederslie, it was requested that an assessment of the pre and post development flowrates from the site be carried out. We have carried out stormwater drainage calculations for the two sub-watersheds for the 2, 5, 10, 25 and 100 year storm events to determine the impact of the facility on stormwater

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runoff flows and volumes. As noted, the impact was carried out for each of the sub-watersheds as they discharged to different locations.

Due to the relatively small area of the sub-watersheds (< 5Ha), we have carried out these calculations using the Rational method. Rainfall intensities were derived from the Government of Ontario IFD Curve lookup tool and were increased by 15% to account for climate change. The runoff coefficients of 0.28 was used for natural grassed pasture lands on Loam or Silt loam soils, 0.5 for gravel roads and battery storage facility itself. The time of concentration was derived using the Airport Formula and due to the minor change in land use, it was determined that there would be insignificant change in terms of times of concentration between the pre and post development conditions. The results of our calculations for each of the three sub catchment areas are shown below.

Table 1: Catchment 1 – Gravel Access Road – Total Area = 0.53 Ha

Design Storm	Pre-Development	Post Development
	m^3/s	m^3/s
2 Year	0.031	0.035
5 Year	0.041	0.046
10 Year	0.047	0.053
25 Year	0.056	0.063
50 Year	0.062	0.070
100 Year	0.068	0.077

T/C = 13.5 minutes

Table 2: Catchment 2 – Gravel Access Road & Battery Storage Facility Total Area = 2.08 Ha

Design Storm	Pre-Development	Post Development
	m^3/s	m^3/s
2 Year	0.092	0.100
5 Year	0.123	0.134
10 Year	0.143	0.155
25 Year	0.168	0.183
50 Year	0.187	0.203
100 Year	0.205	0.223

T/C = 21.2 minutes

Based on the above calculations, the results indicate that the proposed development of the site including the construction of gravel access roads and the battery storage facility itself will have a slight impact on expected runoff rates. For Catchment Area 1, the increase across all storm events is approximately 13 %. For Catchment Area 2, the increase is approximately 9%. Given the rural nature of the site and the fact that drainage from Catchment Area 1 will be contained entirely on site, we suggest that the impact of this development on stormwater drainage from the site will be negligible and detention /retention storage should not be required.

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Should it be required that 100 year post development flows be maintained at 100 year pre-development levels, the storage requirements for each of the sub catchment areas is as follows:

Catchment Number	Storage required (m^3)
1	8.0
2	25

Note that this is assuming that the time of concentration will remain relatively unchanged between the pre and post development conditions. The storage required also includes a 10% safety factor.

We trust this meets your current requirements, please contact the undersigned if you have any questions.

Sincerely,
PRI Engineering Corp.

Reviewed by:

Michael Young, P.Eng.
Senior Civil Engineer

Arash Yazdani, FEC, CED, P.Eng.
Chief Operating Officer

Appendix:
Appendix A – Storm Drainage Calculations
Appendix B – Proposed Overall Drainage Plan

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Appendix A

Storm Drainage Calculations

STORM DRAINAGE CALCULATIONS **(MODIFIED RATIONAL METHOD)**

DEVELOPMENT LOCATION

Chesley - SWM Calcs
Ontario

Catchment Area # 1

PRE DEVELOPMENT FLOW RATES

Q=0.0028CIACa

WHERE
Q=FLOWRATE
C=WEIGHTED RUNOFF COEFFICIENT
I=RAINFALL INTENSITY
A=AREA
Ca=ANTECEDENT PRECIPITATION COEFFICIENT

Assuming	5284	m2	Silty Loam	C=	0.28
	0	m2	Landscaping	C=	0.3
	0	m2	Asphalt/Concrete	C=	0.95
	0	m2	Building	C=	0.95
			Weighted	C=	0.28
Area=	0.53	Ha			

CALCULATING THE TIME OF CONCENTRATION USING THE AIRPORT FORMULA AS FOLLOWS:

$$T_c = \frac{3.26\,(1.1 - C)\,L^{0.5}}{S_w^{0.33}}$$

WHERE
C=WEIGHTED RUNOFF COEFFICIENT
L=WATERSHED LENGTH
S_W=WATERSHED SLOPE

L=	40	m
S_w=	2	%
T_c=	13.4	min.

Tc		0.0028 *	C *	I *	A			
13.4	2 year	0.0028	0.28	74.5	0.53	Q=	0.031	m^3/s
13.4	5 year	0.0028	0.28	99.1	0.53		0.041	m^3/s
13.4	10 year	0.0028	0.28	113.3	0.53		0.047	m^3/s
13.4	25 year	0.0028	0.28	135.8	0.53		0.056	m^3/s
13.4	50 year	0.0028	0.28	150.8	0.53		0.062	m^3/s
13.4	100 year	0.0028	0.28	165.7	0.53		0.068	m^3/s

Note: Intensities include 15% adjustment to account for climate change

POST DEVELOPMENT FLOW RATES

Q=0.0028CIA

WHERE
Q=FLOWRATE
C=WEIGHTED RUNOFF COEFFICIENT
I=RAINFALL INTENSITY
A=AREA

Assuming	4370	m2	Sandy Loan	C=	0.28
	914	m2	Gravel Road	C=	0.5
	0	m2	Battery Facility	C=	0.5
			Weighted	C=	0.32

Area=	0.44	Ha, Pervious	82.70	%
Area=	0.09	Ha, Impervious	17.30	%
Area=	0.53	Ha, Total		

Tc		0.0028 *	C *	I *	A		
13.4	2 year	0.0028	0.32	74.5	0.53	0.035	m^3/s
13.4	5 year	0.0028	0.32	99.1	0.53	0.046	m^3/s
13.4	10 year	0.0028	0.32	113.3	0.53	0.053	m^3/s
13.4	25 year	0.0028	0.32	135.8	0.53	0.063	m^3/s
13.4	50 year	0.0028	0.32	150.8	0.53	0.070	m^3/s
13.4	100 year	0.0028	0.32	165.7	0.53	0.077	m^3/s

STORAGE VOLUME REQUIRED Q100(POST) - Q100(PRE) X DURATION X 10% SAFETY FACTOR

Tc	(Post Dev Flow - Pre Dev Flow) * Duration * 10% safety Factor				
13.4	0.077	-	0.068	8.2	m^3

REQUIRED VOLUME **8.2 m^3**

STORM DRAINAGE CALCULATIONS (MODIFIED RATIONAL METHOD)

DEVELOPMENT LOCATION

Chesley - SWM Calcs
Ontario

Catchment Area # 2

PRE DEVELOPMENT FLOW RATES

Q=0.0028CIACa

WHERE Q=FLOWRATE
C=WEIGHTED RUNOFF COEFFICIENT
I=RAINFALL INTENSITY
A=AREA
Ca=ANTECEDENT PRECIPITATION COEFFICIENT

Assuming	20780	m2	Silty Loam	C=	0.28
	0	m2	Landscaping	C=	0.3
	0	m2	Asphalt/Concrete	C=	0.95
	0	m2	Building	C=	0.95
				Weighted C=	0.28

Area= 2.08 Ha

CALCULATING THE TIME OF CONCENTRATION USING THE AIRPORT FORMULA AS FOLLOWS:

$$T_c = \frac{3.26\,(1.1 - C)\,L^{0.5}}{S_w^{0.33}}$$

WHERE C=WEIGHTED RUNOFF COEFFICIENT
L=WATERSHED LENGTH
S_W=WATERSHED SLOPE

L= 130 m
S_w= 3 %
T_c= 21.2 min.

Tc		0.0028 *	C *	I *	A		
21.2	2 year	0.0028	0.28	57.2	2.08	Q=	0.092 m^3/s
21.2	5 year	0.0028	0.28	76.0	2.08		0.123 m^3/s
21.2	10 year	0.0028	0.28	88.4	2.08		0.143 m^3/s
21.2	25 year	0.0028	0.28	104.0	2.08		0.168 m^3/s
21.2	50 year	0.0028	0.28	115.5	2.08		0.187 m^3/s
21.2	100 year	0.0028	0.28	127.0	2.08		0.205 m^3/s

Note: Intensities include 15% adjustment to account for climate change

POST DEVELOPMENT FLOW RATES

Q=0.0028CIA

WHERE Q=FLOWRATE
C=WEIGHTED RUNOFF COEFFICIENT
I=RAINFALL INTENSITY
A=AREA

Assuming	18477	m2	Sandy Loan	C=	0.28
	1179	m2	Gravel Road	C=	0.5
	1124	m2	Battery Facility	C=	0.5
				Weighted C=	0.30

Area=	1.85	Ha, Pervious	88.92	%
Area=	0.23	Ha, Impervious	11.08	%
Area=	2.08	Ha, Total		

Tc		0.0028 *	C *	I *	A	
21.2	2 year	0.0028	0.30	57.2	2.078	0.100 m^3/s
21.2	5 year	0.0028	0.30	76.0	2.078	0.134 m^3/s
21.2	10 year	0.0028	0.30	88.4	2.078	0.155 m^3/s
21.2	25 year	0.0028	0.30	104.0	2.078	0.183 m^3/s
21.2	50 year	0.0028	0.30	115.5	2.078	0.203 m^3/s
21.2	100 year	0.0028	0.30	127.0	2.08	0.223 m^3/s

STORAGE VOLUME REQUIRE Q100(POST) - Q NA (PRE) X DURATION X 10% SAFETY FACTOR

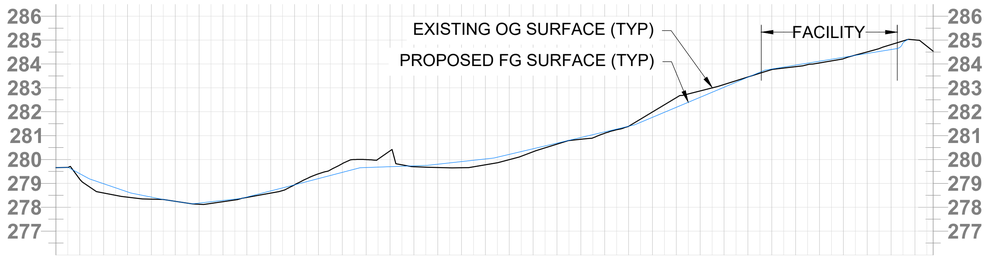
Tc	(Post Dev Flow - Pre Dev Flow) * Duration * 10% safety Factor		
21.2	0.223 -	0.205	25.0 m^3

REQUIRED VOLUME **25.0 m^3**

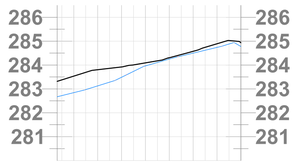
PRI ENGINEERING

Appendix B

Proposed Overall Drainage Plan



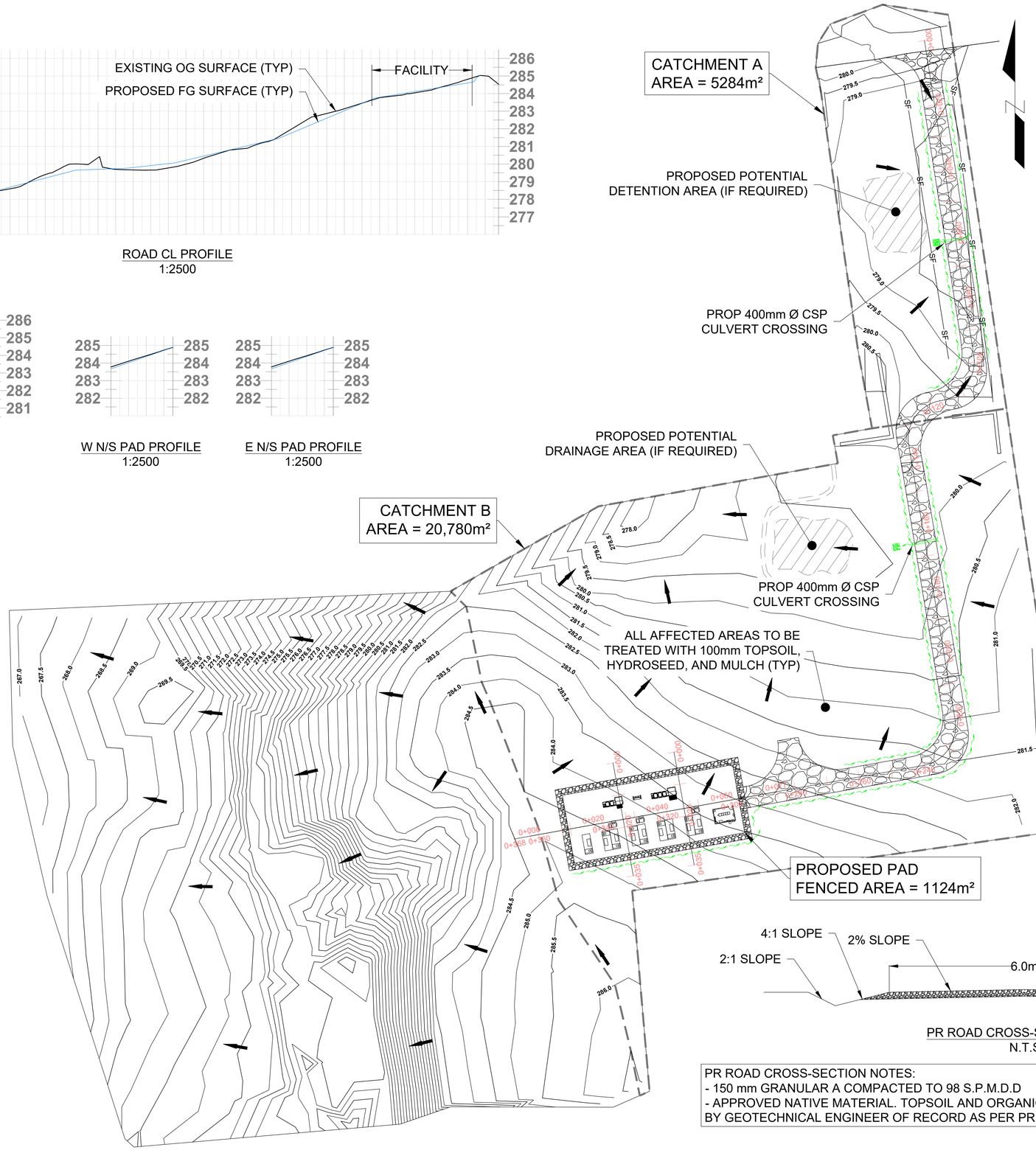
ROAD CL PROFILE
1:2500



W/E PAD PROFILE
1:2500

W N/S PAD PROFILE
1:2500

E N/S PAD PROFILE
1:2500

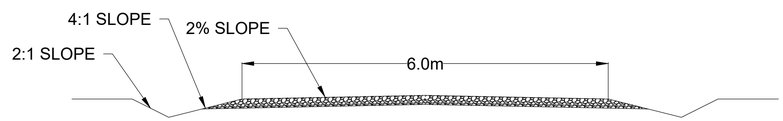


KEY MAP
N.T.S

APPROXIMATE SITE LOCATION

LEGEND

- EXISTING FENCE LINE
- EXISTING EDGE OF PAVEMENT
- EXISTING SURVEY LIMIT
- 100.0 EXISTING CONTOURS
- EXISTING BUILDING
- PROPOSED EDGE OF GRAVEL
- PROPOSED E-HOUSE
- PROPOSED BESS CONTAINER
- PROPOSED LARGE INVERTER
- PROPOSED POWER SUPPLY PANEL
- PROPOSED SMALL INVERTER
- PROPOSED UTILITY AUXILIARY TRANSFORMER (DESIGNED BY OTHERS)
- PROPOSED CRUSHED STONE AREA (BY OTHERS)
- PROPOSED ENTRANCE GATES
- PROPOSED ENTRANCE MUD MAT
- PROPOSED GRANULAR ACCESS ROAD
- PROPOSED SILT FENCE



PR ROAD CROSS-SECTION - TYP
N.T.S

PR ROAD CROSS-SECTION NOTES:
- 150 mm GRANULAR A COMPACTED TO 98 S.P.M.D.D
- APPROVED NATIVE MATERIAL. TOPSOIL AND ORGANICS TO BE REMOVED. SUBGRADE TO BE APPROVED BY GEOTECHNICAL ENGINEER OF RECORD AS PER PRI ENGINEERING GEOTECHINCAL REPORT.

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NOTES:
1. TOPOGRAPHIC SURVEY COMPLETED BY PRI ENGINEERING CORP. ON DECEMBER 2ND 2024 IN A LOCAL COORDINATE SYSTEM USING A ROBOTIC TOTAL STATION.
2. KEY MAP FROM GOOGLE MAPS, USED AS REFERENCE ONLY.
3. PROPOSED BESS LAYOUT PROVIDED BY SOLARBANK, USED FOR REFERENCE ONLY.

REV NO.	ISSUANCE	DATE
02	ISSUED FOR PERMIT	04JUL25
01	ISSUED FOR REVIEW	20DEC24

PROJECT NAME:
SOLARBANK
OZ-1 BESS SITE
157 7TH STREET, CHESLEY ON

DRAWING NAME:
PROPOSED OVERALL
DRAINAGE PLAN

PROJ. NO.:	DWG. BY:	CHKD. BY:	APPR. BY:
23-153-05	AYJr.	-	-

DRAWING NUMBER: C-02