

# TECHNICAL MEMO

<b>To</b> Engineering Department. District of Saanich	<b>From</b> Jon Irving, P.Eng. LEED Green Associate Engineering Division Manager, Duncan, B.C.
<b>Re</b> 4079 Quadra St. DP Application Stormwater Management Statement	<b>Date</b> March 23, 2021

The following are the details to address the requirements of Schedule "H" of the Subdivision Bylaw 7452 and to provide information in accordance with Saanich Planning Form APPL8 - Development Permit Application Storm Water Management Statement. The project site is within the Type 1 Watershed requirements under Schedule "H". The questions noted in bold and italics are as shown on the application form.

## 1. Stormwater Management Statement

### 1.1. INTENT OF THE RELEVANT DEVELOPMENT PERMIT GUIDELINES

#### 1.1.1. Questions from the Stormwater Management Standards application form

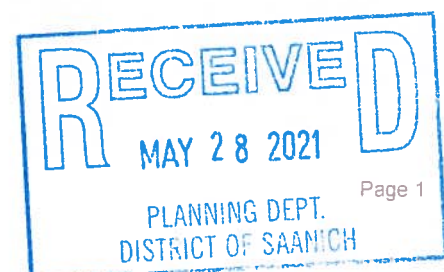
***a) Will there be an increase or decrease in impervious area compared to existing conditions?***

The proposal results in an increase in impervious surface of **52 m<sup>2</sup>** compared to existing conditions. The imperviousness of the existing condition is an estimation of the pavement remnants of a gas station previously occupying the lot, based on survey data and visual inspection. Also, the lot size has been reduced by a 4.3-4.6m dedication required by the District for future frontage infrastructure. Figure 1 below shows the post-development site plan indicating pervious and impervious areas.

***b) What percentage of the site will be impervious cover compared to existing conditions?***

The site will be **71%** impervious cover compared to **60%** estimated for existing condition as explained on above paragraph.

***c) How will impervious surface area be minimized (e.g., minimized paved area and building footprints, pervious paving, green roofing, absorbent landscaping)?***



For this mix-use re-development the number of parking stalls (area of parking) is based on planning requirements according to the building uses and its GFA. The areas that are not building, parking or sidewalks will be green pervious area.

**d) How will the proposed system detain and regulate flows and improve storm water quality (e.g. infiltration systems, engineered wetlands, bioswales)?**

The proposed grading for the site will match the existing condition draining to the southeast corner. A portion of the building's roof and sidewalks runoff will be directed to the green pervious areas around them. Grass areas will be built as absorbent landscape with a 300mm thick topsoil layer to absorb and treat the runoff water directed to it. Excess runoff from the green area will be collected by a catch basin. As per the geotechnical investigation on the site, LEA Engineering Associates, Ltd. December 2020, the immediate subsoils are not conducive of an infiltration system. Runoff from the parking lot and parts of the roof and sidewalks will be collected by a catch basin at the south end of the parking lot. An oil/grit separator will provide quality treatment for the stormwater captured by the catch basin. To detain and regulate the flows, a storage tank/chamber will be installed under the parking lot. The allowable release rate to the City's system and volume of the storage tank required is calculated according to the District of Saanich guidelines as follow:

STORMWATER STORAGE CALCULATIONS	
TOTAL SITE (After dedication) - (ha)	0.14
IMPERVIOUS AREA (I.A) - (ha)	0.10
STORAGE REQUIRED (200 m <sup>3</sup> /(I.A) - (m <sup>3</sup> )	20.06
STORAGE PROVIDED - (m <sup>3</sup> )	21.00
ALLOWABLE RELEASE RATE (5 l/s/(I.A.) - (l/s)	0.50
MAX. HIDRAULIC HEAD OVER ORIFICE - (m)	1.00
ORIFICE SIZE - (cm)	1.4

An alternative to the small size orifice that could plug with debris, a Hydrovex device (model 25SVHV-1) could be installed at the control manhole. The calculated footprint area for the storage tank to achieve the 21 m<sup>3</sup> of storage is an area of approximately 40m<sup>2</sup>. Details of storage tank system and discharge control device to be provided with detailed engineering package for approval.

The very south end of the lot, a 44 m<sup>2</sup> (3% of the lot size), will be green space designed as absorbent landscaping imitating pre-development pervious conditions. Discharges from the entire site will be through a Manhole/CB located within the south landscaped area.

**e) If the intent of the guideline cannot be met, explain why.**

N/A



Figure 1. Post-Development Pervious and Impervious Areas.

