

STORMWATER MANAGEMENT DESIGN BRIEF

Drake Hotel Properties

Drake Devonshire and Motor Inn Site Plan

July 16, 2021



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1 Background Information

Jewell Engineering Inc. (Jewell) was retained by Drake Hotel Properties (Drake) to assist with the planning applications for the Devonshire and Motor Inn sites on Wharf Street in Wellington, Ontario (Figure 1). The area around the Drake is mostly commercial, with residential properties further away from Wellington Main Street. The surrounding area is mostly hard surfaced with some clustered vegetation, and runoff drains south over the gently sloped lands to Lake Ontario.

The Drake Devonshire is located at 24 Wharf Street and includes hotel accommodations and a restaurant. The Drake Motor Inn is located north of Main Street and provides additional motel accommodations using multiple buildings. One single-family dwelling is located at 20 Wharf Street, next to the Drake Hotel, and another is located at 47 Wharf Street north of the Inn.



Figure 1-1: Project Location (Google, 2018).

It is proposed to demolish the structures at 20 and 47 Wharf Street. Additional units and restaurant capacity will be added by constructing an addition to the Drake Devonshire at 20

Wharf St. (in place of the existing dwelling), and by constructing a new addition to the Motel in place of the existing single-family dwelling at 47 Wharf St.

Lane Creek abuts and receives drainage from both sites. The creek collects runoff from northeast of Wellington and discharges to Lake Ontario just west of the Drake Hotel.

A parking lot is situated northeast of the intersection of Wharf and Main. This lot serves the Drake Hotel and restaurant, Motor Inn, and Midtown Brewery. It will have sufficient capacity for the expansions and is closed to public use.

It is intended to convert the surplus parking area into green space in the future, to be used as an amenity area for the Motor Inn. This would reduce the total impervious area, slightly reducing peak runoff flows and providing additional quality treatment to runoff.

2 Quantity and Quality Control

This section discusses the overall stormwater management approach with regard to the implementation of quantity and quality controls.

2.1 Quantity Control

Quantity controls can be used to limit peak flows to pre-development levels to ensure rainfall events have no negative effect on downstream areas. These controls can include on-site storage to attenuate the increased runoff volume. Runoff rates increase as a result of an increase in impervious area, so limiting impervious areas decreases peak flows.

The main Drake site abuts Lake Ontario to the south and Lane Creek to the west. The site naturally drains via sheet flow to the south and west, with the adjacent waters as the immediate receivers. The addition at 47 Wharf St. is an existing structure, so rebuilding the structure will not have a significant impact on impervious cover. In addition, it is proposed to convert the surplus parking area to green space for the Motor Inn, which will slightly decrease site runoff. As the impervious cover is substantially unchanged, the peak flows through Lane Creek will not be affected.

There are no downstream recipients of the site runoff. The area of hardened surfaces on site will not increase, therefore an increase in runoff is not expected. Since site runoff flows directly into Lane Creek and Lake Ontario and no substantial increase in impervious cover is expected, quantity controls are not triggered.

2.2 Quality Control

The Drake Hotel and adjacent building currently drain via sheet flow towards Lane Creek and Lake Ontario. Prior to discharge, the runoff receives quality treatment from grassed surfaces. Grassy areas filter out entrained particles by spreading flow into sheet flow and slowing flow, allowing entrained particles to settle out before they reach the receiving waters. Impervious cover is not expected to increase, and runoff will continue to receive treatment from the existing grassy contact under proposed conditions.

Similarly, runoff from the Drake Motor Inn and new addition at 47 Wharf St. flows overland to Lane Creek through established vegetated areas, which reduces the amount of sediment that will be carried downstream.

The new building at 47 Wharf St. will be further back from the flood line than the existing accessory structure. This increased setback provides more grassy contact for runoff, resulting in improved water quality treatment.

Quality controls are required when percent imperviousness is increased, contributing to contamination in receiving watercourses. The amount of sediment and contamination is proportional to the increase in impervious areas. The proposed site plan does not include a significant increase in impervious area, therefore quality controls are not triggered.

Due to the extent of impervious area remaining unchanged, there will be no negative impacts to water quality as a result of the hotel additions.

2.3 Summary

Jewell spoke with Mr. Dave Eastcott of Quinte Conservation on June 2, 2021 to discuss the proposed development south of Wellington Main Street and the overall approach to stormwater management. Upon completion of the discussion, Mr. Eastcott stated he has no concerns with the stormwater management approach and agreed that quality and quantity controls would not be required for this project assuming no increase in site imperviousness.

The expansion to the Drake Motor Inn (47 Wharf St.) will not have a significant impact on impervious cover. Runoff from the structure will flow overland, and the increased setback will provide improved quality treatment of runoff.

Quantity and quality controls are not required to support the proposed hotel addition.

3 Flooding

In 2016, Jewell completed a study to analyse and determine flooding risk along Lane Creek in the Wellington area. The floodplain mapping indicated there would be broad, shallow flooding across the Midtown site, flowing north to south before crossing Wellington Main Street. The RFA drawing in Appendix A indicates the extent of existing flooding during the 100-yr event covers most of the site. The depth of flooding is in the vicinity of 0.15 m.

The 2016 design also included a channelization scheme to reduce the amount of flooding on the Midtown site. The design included a two-stage channel and retaining wall, which would permit filling and redevelopment of the site.

The current plan does not include intensification on the east side of the creek. The proposed parking uses an existing impervious footprint, and it is proposed to convert the overflow parking into an amenity area in the future. Given the low level of flooding, parking within the shallow floodplain would be an acceptable use. Therefore, the channel improvements may not be needed for the proposed plan. Typical flooding depths of 0.15m experienced in existing conditions would be unchanged in the proposed conditions.

The conversion of the surplus parking area to an amenity area may provide opportunity to construct flood control measures in the future if it is determined that they are required. Otherwise, these measures can be implemented if intensification is carried out in the future.

The RFA sketch showing the existing and proposed floodplain conveys the original Jewell proposal to show the effect of floodplain reduction and channelization on the flooding limits east of Lane Creek. If the Drake plans to intensify the east side of the creek at a future point, the channelization scheme should be implemented to prevent additional flood risk to the structures along the creek.

4 Erosion and Sediment Controls

There is a high risk of sediment release during construction activities. Typical sediment and erosion control measures include:

- Siltation fencing,
- Strawbale check dams,
- Rip-rap check dams, and
- Filter sock inserts in catch basins.

Controls are to be placed downstream of all active work areas and upstream of protected receivers. Controls should also be placed around stockpiles of topsoil and fill materials.

Typical OPSDs provide good instruction on the correct placement and construction of the controls. The controls provide some protection if they are properly maintained, but they should be considered last-resort measures. The most effective means of control are those which prevent or reduce erosion at the source. This would include diligent stabilization of exposed areas immediately after grading is completed. Stabilization measures include sod, erosion blankets, or rip-rap and filter cloth on steep slopes, as well as topsoil and hydroseed on gently sloped areas (with slope 10% or less).

Existing stormwater management facilities should not be used for control of sediment. The site developer and contractor should actively maintain the new drainage works to remove accumulations of sediment within catch basin sumps.

A silt fence should be located along the upland perimeter of all sensitive features during the construction process, which should be maintained until the lands have stabilized or as directed by the municipality. There would be benefit in maintaining this silt fence for up to 2 growing seasons.

5 Conclusions

As a result of the unchanged impervious area and proximity to Lane Creek and Lake Ontario, quality and quantity controls are not required for the Drake development. Quinte Conservation also agreed stormwater management would not be required for this project. Jewell is proposing the implementation of sediment and erosion controls to limit any sediment deposition. Best management practices are to be used during construction to limit potential negative environmental impacts.

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6 References

Bay of Quinte Restoration Council. (2006). *Bay of Quinte Remedial Action Plan Implementation Area, Stormwater Management Design Guidelines*.

Ontario Ministry of the Environment. (2003). *Stormwater Management Planning and Design Manual*. Queen's Printer for Ontario.

APPENDIX A
DEVELOPMENT SITE PLAN

DEVELOPMENT SITE PLAN

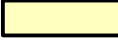



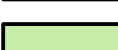

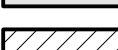













266 MAIN STREET
 41 WHARF STREET
 43 WHARF STREET
 45 WHARF STREET
 47 WHARF STREET

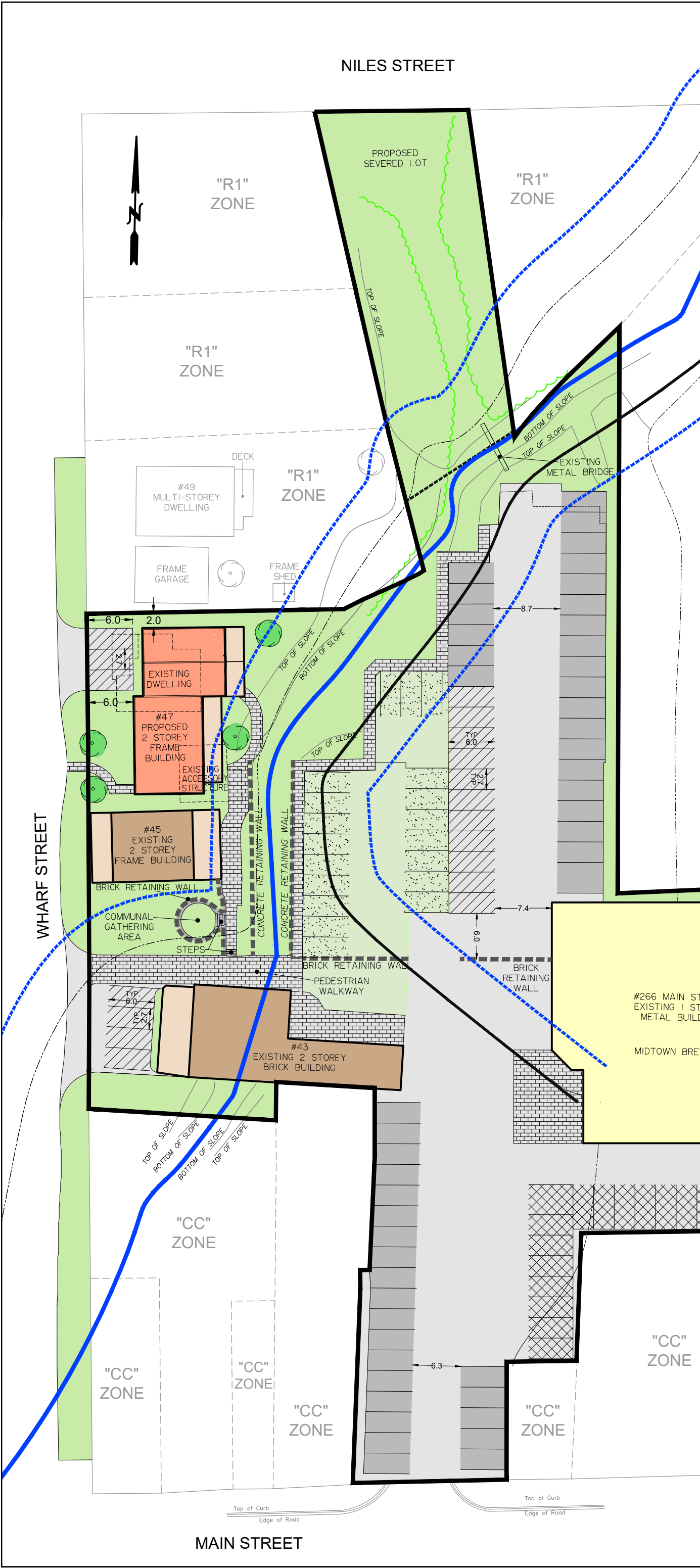
VILLAGE OF WELLINGTON
 COUNTY OF PRINCE EDWARD

SCALE 1:500



LEGEND

-  EXISTING COMMERCIAL BUILDING
-  EXISTING TOURIST ACCOMMODATION (12 UNITS)
-  PROPOSED TOURIST ACCOMMODATION (6 UNITS)
-  DECK AREA
-  LANDSCAPED AREA / EXISTING VEGETATION
-  ASPHALT AREA
-  TOURIST ACCOMMODATION PARKING-DRAKE MOTOR INN (18 SPACES)
-  BREWERY PARKING (EXISTING) (16 SPACES)
-  DRAKE DEVONSHIRE HOTEL PARKING (48 SPACES)
-  SURPLUS PARKING / FUTURE LANDSCAPED AREA (19 SPACES)
-  WALKWAY/PATIO AREA
-  LANE CREEK
-  TREE LINE
-  RETAINING WALL
-  EXISTING FLOODPLAIN
-  PROPOSED FLOODPLAIN
-  6m SETBACK FROM FLOODPLAIN
-  EXISTING BUILDING
-  PROPOSED SEVERANCE/LOT LINE
-  EXISTING TREES TO BE RETAINED



No.	REVISION	DATE	APPR'D
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JULY 13, 2021



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