

- GHD Technical Review, October 2019
- Clarification Responses

Motion 1-191107

Moved by:

Brian Dowdall

Seconded by:

Melissa Sullivan

That the RVCA Executive Committee sit as a Hearing Board.

Motion Carried

Pieter Leenhouts, Chair, asked for a round of introductions. Mr. Leenhouts then outlined the purpose of a hearing under Section 28 (12) of the *Conservation Authorities Act*, R.S.O. 1990 as amended to the applicant, Frank Cairo.

Frank Cairo, the Applicant, and Steve Pichette of DSEL, J.F. Sabourin of J.F. Sabourin and Associates Inc., and Bruce Kilgour of Kilgour & Associates Ltd, representing the Applicant, were sworn in. Terry Davidson and Glen McDonald representing the Rideau Valley Conservation Authority, were also sworn in.

The following exhibits, slides, and information were presented by Terry Davidson.

Exhibit 1 - Application # RV5-44/19 received July 30, 2019 indicating that it is for a cut and fill located between Highway 416 and the Fraser Clarke Drain. The west and east sides of Borrisokane Road (formerly Cedarview Drive). North of the Jock River and south of Strandherd in the Barrhaven area.

The application is for the placement of fill in the 1:100 year floodplain of the Jock River without a balanced cut as required by the locally approved development policies.

The application submission includes:

- “Barrhaven Conservancy Cut/Fill Hydraulic Impact Assessment” prepared by J.F. Sabourin and Associates (JFSA), July 2019, revised October 2019
- Grading plans prepared by DSEL – Numbered 1-5, dated October 23, 2019
- Natural Heritage Impacts and Opportunities associated with a Proposed Cut and Fill at Barrhaven Conservancy, by Kilgour & Associates Ltd., July 23, 2019
- “Fluvial Geomorphological Memo” July 24, 2019

Exhibit 1 Application Summary

Placement of 407,000 cubic metres of fill in the flood plain to bring the majority of the property above the corresponding 1:100 year floodplain

- Cut or Removal of 116,000 cubic metres of fill in the floodplain to alleviate any hydraulic issues
- Exhibit 2 - Location Plan – Property is on the southwest corner of the Barrhaven Community with Borrisokane (Cedarview) cutting the property
- Exhibit 3 - Location Plan – Property is bounded by the 416 on the west and the Fraser Clarke drain on the east. Strandherd is on the north and the Jock River is on the south.
- Exhibit 4 - Site Plan
- Exhibit 5 - Regulation Limit & Subject Property - map provided in JFSA report indicating the 1:100 year flood plain and the subject lands almost entirely within the floodplain
- Exhibit 6 - Floodplain Cross-Sections
- Exhibit 7 - Proposed Cut/Fill Offsets – Site plan showing property, regulation lines, and 1:100 year floodplain
- Exhibit 8 - Definition of Balanced Cut and Fill
All fill placed at or below the flood elevation balanced with an equal amount of soil material removal within a defined reach of a watercourse
- Exhibit 9 - Hydraulic Impact Assessment prepared by JFSA and received October 2019
- Exhibit 10 - Floodway Delineation
The floodway has been delineated where the flood depth is greater than 1.0 metres and/or the flood velocity greater than 1.0 m/s
- Exhibit 11 - One Zone Administration
The Jock River is an area of one zone administration. The entire 1:100 year floodplain is considered the flood way. Local policy indicates new development including site alteration is not permitted
- Exhibit 12 - Proposed Cut/Fill Volume
Table 2 provides a summary of the floodplain storage gained and lost through the respective proposed cut/fill. Note as this analysis relies on the two-zone concept (floodway/flood fringe, a balanced cut/fill has not been proposed for this analysis. As indicated by the 2D hydraulic modelling, a 100 m³ of fill in the flood fringe does not have the same effect on the hydrodynamic of the watercourse as a 100 m³ in the floodway. Accordingly, the analysis was completed using the 2D model, as this modelling approach can account for the impacts of the proposed adjustments based on their location relative to the floodway. This analysis showed that the proposed cut/fill has no impacts upstream and downstream of the subject location, with only minor localized differences near the locations of the proposed adjustments. Irrespective of this, the proposed cut/fill volumes have been provided below as requested by RVCA
- Exhibit 13 - Two Zone Administration
Two Zone Floodway – Floodfringe concept
- Exhibit 14 - Peak Water Levels Table
- Exhibit 15 - Map of Jock River
- Exhibit 16 - Map dated March 29, 1976
(prior to construction of Highway 416) dark areas indicate flooding
- Exhibit 17 - 1999 Air Photography
- Exhibit 18 - Map of Jock River – Barrhaven. 1999 Historic Flood

- Exhibit 19 - Map of Jock River – Barrhaven. April 11, 1999 Historical Flooding with proposed areas of fill and cut and Jock River outlined and limit of flooding
- Exhibit 20 - Photo of flooding – March 29, 1976
- Exhibit 21 - Photo of flooding – west side of Cedarview – April 11, 1999
- Exhibit 22 - Photo of flooding – west side of Cedarview – April 11, 1999
- Exhibit 23 - Photo of flooding – west side of Cedarview – April 11, 1999
- Exhibit 24 - Municipal Zoning Map – property is zoned floodplain. Property is within the Urban Boundary. Property historically agriculture
- Exhibit 25 - Letter from Lee-Ann Snedden of the City of Ottawa dated November 7, 2019
- Exhibit 26 - *Conservation Authorities Act* Right to Hearing
- Exhibit 27 - O. Reg 174/06 s3. (1)
- Exhibit 28 - RVCA Policy Considerations Section 1.1 General Principles, Section 1.2 Development within a One-Zone Regulatory Floodplain of a River or Stream Valley, Section 2.1 Policies Regarding the Placing of Fill and Section 2.7 General Provisions
- Exhibit 29 - Summary
- Exhibit 30 - Next Steps
- Exhibit 31 - Conditions

Existing Conditions:

Terry Davidson highlighted the following existing conditions:

- Property is approximately 100 hectares located on the north side of the Jock River bounded by the 416 on the west and the Fraser Clarke Drain on the east
- Municipal Zoning. Development Reserve with Floodplain Overlay
- Existing Land Use – Agriculture
- Jock River is a “One-Zone” Administration of the 1:100 year floodplain
- Quantity of Fill Material – not considered minor
- Cut area does not meet definition of “balanced”
- Letter of Support from the City of Ottawa
- JFSA Hydraulic Impact Assessment, July and October 2019 and all responses
- GDH Technical Peer Review of the JFSA Report
- RVCA Technical Memos
- Historic Flooding

Legislation and Policy Considerations

Conservation Authorities Act – Section 28

28 (1) Subject to the approval of the Minister, an authority may make regulations applicable in the area under its jurisdiction,

- b) prohibiting, regulating or requiring the permission of the authority for development if, in the opinion of the authority, the control of flooding,

erosion, dynamic beaches or pollution or the conservation of land may be affected by the development;

Ontario Regulation 174/06, Development Prohibited – Section 2, 3. 5:

2. (1) Subject to section 3, no person shall undertake development or permit another person to undertake development in or on the areas within the jurisdiction of the Authority that are,
3. (1) The Authority may grant permission for development in or on the areas described in Section 2 (1) if, in its opinion, the control of flooding, erosion, dynamic beaches, pollution or the conservation of land will not be affected by the development. O. Reg. 174/06, s. 3 (1)

Policy Considerations:

RVCA Local Development Policies Last Amended February 22, 2018

Section 1.1 General Principles

- a) New development must result in no significant impact on expected flood levels or velocities, taking into consideration the direct and cumulative effects of the development on floodplain conveyance capacity and storage capacity.
- b) New development involving capital investment in flood susceptible areas by the public and private sectors must be designed so that structures and their contents are protected against flood damage.
- c) New development must not increase risks to public safety which are expected to be present during the regulatory flood (or more frequent floods); in this regard the availability of access to and egress from the structure and the potential depths of water over access routes will be the primary consideration.
- d) New development must not, in the opinion of the Authority, have the result of polluting or contributing to the pollution of the abutting watercourse nor will new development be permitted which will adversely affect the Authority's interests in terms of the conservation of land.
- e) Development is to be set back a minimum distance of 30 metres from the normal high-water mark of a watercourse. Additionally, where there is a defined bank, development shall be no closer than 15 metres from the top of the bank.

Exceptions will be considered only if specific measures are provided for in an approved watershed or sub-watershed plan.

Exceptions may also be considered in redevelopment situations where the use of the land remains the same and where lot sizes are restricted. Setbacks may, however, be no less than existing. Adverse effects on the Authority's interests in terms of the control of flooding, erosion, pollution or the conservation of land, including negative impacts on adjacent fish habitat, must be mitigated.

- f) It is the intent of the Authority that these policies shall be in conformity with and complement the Ontario government's "*Provincial Policy Statement*" made under the authority of Section 3 of the *Planning Act* (as approved by the Lieutenant Governor in Council) as well as their attendant Implementation Guidelines.

Section 1.2 Development within a One-Zone Regulatory Floodplain of a River or Stream Valley

1. Development within the 1:100 year regulatory floodplain shall not be permitted except as allowed by specific policies elsewhere in this document. This includes:
 - i) new buildings and structures
 - iii) site grading and filling
 - iv) development associated with flood hazard protection and bank stabilization works to allow for future/proposed development or an increase in development envelope or area within the 1:100 year floodplain....

In "areas of reduced Flood Risk" described in Section 1.5 and in the flood fringe (determined in accordance with the PPS provisions and MNR guidelines with respect to the two-zone concept) development involving site grading or fill placement or removal may be permitted provided it will not have an adverse effect on the control of flooding, erosion, pollution or the conservation of land.

Development involving site grading or fill placement or removal within the floodway is generally not permitted; exceptions may be considered, however, subject to the provisions of Section 2.1 (minor removal or placement of fill/minor site grading in the floodplain) below.

Section 2.1 Policies Regarding the Placing of Fill

Minor removal or placement of fill/minor site grading in the floodplain

- 2.1 Exceptions may be considered for the minor removal or placement of fill/minor site grading/minor site alteration in the floodway where flood depths in the floodway are shallow, flow velocities are minimal and the proposed development or site alteration is considered to be minor in nature with no impact in terms of its effect on the control of flooding, pollution, erosion and the conservation of land such that:
 - (i) The site alteration (cut and fill operation) is confined to lands toward the edge of the floodplain with ground elevations that are at present no more than 0.3 metres lower than the estimated 1:100 year water surface elevation...
 - (ii) The loss of floodplain storage volume within the 1:100 year floodplain which will result from the placement of fill shall not be fully compensated for by a balanced cut to be carried out in close proximity

to and concurrent with the placement of fill in accordance with the following tolerances:

- The volume of available floodplain storage capacity within the affected river or stream reach shall not be reduced; and
- The minimum proposed ground elevation in the cut shall not be lower than the minimum existing ground elevation in the proposed fill area...
- The proposed site grading must result in no increase in flow velocities in the affected river cross sections under full range of potential flood discharge conditions (1:2 year to 1:100 year return periods).

Section 2.7 General Provisions

- a) Associated with pollution concerns only clean fill may be utilized
- b) Consistent with *established standards and procedures* relating to erosion and sediment control
- c) Matters related to the conservation of land shall be addressed such that a *net environmental gain* shall be achieved associated with on-site natural heritage features (wooded areas, riparian zones, wildlife habitat, etc.)

Provincial Policy Statement, 2014

3.1 Natural Hazards

3.1.2 Development and site alteration shall not be permitted within:

- a. The dynamic beach hazard;
- b. Defined portions of the flooding hazard along connecting channels (the St. Mary's, St. Clair, Detroit, Niagara and St. Lawrence Rivers);
- c. Areas that would be rendered inaccessible to people and vehicles during times of flooding hazards, erosion hazards and/or dynamic beach hazards, unless it has been demonstrated that the site has safe access appropriate for the nature of the development and the natural hazard; and
- d. A floodway regardless of whether the area of inundation contains high points of land not subject to flooding.

3.1.3 Planning authorities shall consider the potential impacts of climate change that may increase the risk associated with natural hazards.

3.1.4 Despite policy 3.1.2, development and site alteration may be permitted in certain areas associated with the flooding hazard along river, stream and small inland lake systems:

- b. in those exceptional situations where a Special Policy Area has been approved. The designation of a Special Policy Area, and any change or modification to the official plan policies, land use designations or boundaries applying to Special Policy Areal lands, must be approved by the Ministers of Municipal Affairs and Housing and Natural Resources prior to the approval authority approving such changes or modifications; or
- c. where the development is limited to uses which by their nature must locate within the floodway, including flood and/or erosion

control works or minor additions or passive non-structural uses which do not affect flood flows.

- 3.1.5 Development shall not be permitted to locate in hazardous lands and hazardous sites where the use is:
- a. an institutional use including hospitals, long-term care homes, retirement homes, pre-schools, school nurseries, day cares and schools;
 - b. an essential emergency service such as that provided by fire, police and ambulance stations and electrical substations; or
 - c. uses associated with the disposal, manufacture, treatment or storage of hazardous substances.
- 3.1.6 Where the two-zone concept for floodplains is applied, development and site alteration may be permitted in the flood fringe, subject to appropriate floodproofing to the flooding hazard elevation or another flooding hazard standard approved by the Minister of Natural Resources.
- 3.1.7 Further to policy 3.1.6 and except as prohibited in policies 3.1.2 and 3.1.5, development and site alteration may be permitted in those portions of hazardous lands and hazardous sites where the effects and risk to public safety are minor, could be mitigated in accordance with provincial standards, and where all of the following are demonstrated and achieved:
- a. development and site alteration is carried out in accordance with floodproofing standards, protection works standards, and access standards;
 - b. vehicles and people have a way of safely entering and exiting the area during times of flooding, erosion and other emergencies;
 - c. new hazards are not created, and existing hazards are not aggravated; and
 - d. no adverse environmental impacts will result.

Staff Recommendation

The application for the placement of 407,000 cubic metres of fill in the floodplain cannot be approved at a staff level for the following reasons:

1. The Jock River floodplain is administered as a one-zone floodplain, wherein the floodway is the entire floodplain (RVCA Policy 1.2).
2. Development involving site grading or fill placement or removal within the floodway is generally not permitted; exceptions may be considered, however, subject to the provisions of Section 2.1 (Minor removal or placement of fill/minor site grading in the floodplain) (RVCA Policy 2.0)
3. The proposal is for a major cut and fill, whereas the policy allows for consideration of minor removal or placement of fill at the edge of the floodplain where the ground surface elevation is no more than 0.3 metres below flood level and that the fill is compensated by a balanced cut (RVCA Policy 2.1).

4. The property has been flooded in the past (aerial photography 1999 and 1976).
5. The granting of permission will set a precedent.
6. The granting of permission may have cumulative impacts.

Next Steps

- Approve the application
- Approve the application with conditions
- Deny the application

Having reviewed the application in detail with the applicant, staff are comfortable with approval of the application subject to the following conditions:

Recommended Conditions

Any decision to approve the proposal should consider including the following conditions:

Submission for review and acceptance by RVCA staff of:

- A Monitoring Plan that demonstrates water levels and velocities are verified and within acceptable range. Must include provisions for the cost of the equipment by the proponent for 2-4 monitoring stations and a 3rd party consultant to devise and implement the Monitoring Plan. Provide an annual "Review of the Findings Report" for a term acceptable for evaluating impact from filling. A Memorandum of Agreement with the proponent to fully fund the Monitoring Plan.
- In the event of adverse effects from the filling of the flood fringe are identified by the Monitoring Program, the proponent agrees to undertake additional earth works to mitigate the adverse effects to the satisfaction of RVCA.
- Both areas to be cut must be completed prior to any filling to the satisfaction of RVCA.

Discussion

In response to a question from Judy Brown, Terry Davidson confirmed that the applicant was not proposing a balanced cut and fill.

Judy Brown noted that the Jock River is quite prone to flooding.

Brian Dowdall questioned whether the local policies were RVCA policies or City of Ottawa policies. Terry Davidson confirmed that the local policies were RVCA policies. Mr. Davidson added that the RVCA does not currently administer any two-zone floodplains.

In response to a question from Judy Brown as to whether the land is currently being farmed, Frank Cairo confirmed that cash crops are being farmed right down to the river.

Judy Brown asked whether new landowners would be notified that their property was located in the floodplain. Frank Cairo responded that after application of the proposed fill, the subdivision would no longer be in the floodplain.

Frank Cairo addressed the Executive Committee and presented Exhibits 32 through 39.

- Exhibit 32 - Barrhaven Conservancy
- Exhibit 33 - Map of Barrhaven South showing location of study area
- Exhibit 34 - Map of Barrhaven South showing location of adjacent parks
- Exhibit 35 - Concept Diagram
- Exhibit 36- Purpose
- Exhibit 37 - Policy Context
- Exhibit 38 - Background
- Exhibit 39 - Summary of Proposal

J.F. Sabourin addressed the Executive Committee and presented Exhibits 40 through 39.

- Exhibit 40 - Study Area (Jock River, from Rideau River to Monahan Drain)
- Exhibit 41 - Study Area (Jock River, from Rideau River to Monahan Drain)
(rectangle shows study area)
- Exhibit 42 - Existing Floodplain (2005)
- Exhibit 43 - Proposed Cut/Fill Area
- Exhibit 44 - Validation that Proposed Fill/Cut will have no Impacts on Water Levels and Flows
- Exhibit 45 - Who is JFSA
- Exhibit 46 - 2005 RVCA 1D HEC-RAS Model (X-Sections)
- Exhibit 47 - Typical Cross Sections
- Exhibit 48 - Typical Cross Sections (with Bridge)
- Exhibit 49 - 2005 HEC-RAS Model (Ineffective flow areas)
- Exhibit 50 - Typical Cross Sections (Including Ineffective Flow Areas)
- Exhibit 51 - Typical Cross Sections (Including Ineffective Flow Areas)
- Exhibit 52 - 2005 HEC-RAS Model (100 yr water levels)
- Exhibit 53 - 2005 HEC-RAS Model (with proposed cut/fill)
- Exhibit 54 - 1D Model Results, Proposed vs Existing conditions
- Exhibit 55 - 1D HEC-RAS Model Results were a Foregone Conclusion
- Exhibit 56 - Development of a 2D HEC-RAS Model (Lidar)
- Exhibit 57 - Development of a 2D Model (Lidar)
- Exhibit 58 - Existing Terrain Elevation
- Exhibit 59 - 2005 Floodplain Elevations Applied to Lidar
- Exhibit 60 - 58,000 cells .VS. 2,000 data points in 1D model
- Exhibit 61 - 2D Model with 100 yr hydrograph (existing conditions)
- Exhibit 62 - 2D HEC-RAS Validated Against 1999 Flood Observations
- Exhibit 63 - 2D HEC-RAS Validated Against 1999 Flood Observations
- Exhibit 64 - 2D HEC-RAS Validated Against 1999 Flood Observations
- Exhibit 65 - 2D HEC-RAS Validated Against 1999 Flood Observations
- Exhibit 66 - Confirmation of Flood Fringe Area (flow velocity)
- Exhibit 67 - Confirmation of Flood Fringe Area (flow depth)
- Exhibit 68 - Confirmation of Flood Fringe Area (flow depth & velocity)

- Exhibit 69 - Fill Extent and Existing 100 Year Flow Areas
- Exhibit 70 - Figure 6
- Exhibit 71 - Figure 7
- Exhibit 72 - Figure 8
- Exhibit 73 - Built in Safety Factors

J.F. Sabourin of J.F. Sabourin and Associates Inc., advised that most of his organization's work is with water. Mr. Sabourin added that the proposed cut and fill would have no impact on water levels or flows. Mr. Sabourin noted that while the Jock River has lots of water it is not moving water. Placement of fill in ineffective areas would have no impact on the river's conveyance.

Bruce Kilgour addressed the Executive Committee and presented Exhibits 74 through 81.

- Exhibit 74 - RVCA Jock River Subwatershed Report 2016 – Barrhaven Catchment
- Exhibit 75 - RVCA Jock River Subwatershed Report 2016 – Barrhaven Catchment
- Exhibit 76 - Barrhaven Conservancy
- Exhibit 77 - Existing Ecological Values
- Exhibit 78 - Barrhaven Conservancy – Development Concept
- Exhibit 79 - Concept Drawing
- Exhibit 80 - Barrhaven Conservancy – Concept drawing
- Exhibit 81 - Future Ecological Values

Bruce Kilgour, of Kilgour & Associates Ltd., a fish biologist spoke to the Committee on the various species of fish and species at risk found in the Jock River. Muskie, pike and walleye, along with certain species at risk including Brindle Shiner, Blandings turtles, Barnswallows and Butternuts are present on the subject property. Mr. Kilgour noted that the river is hot and full of algae and plants.

Melissa Sullivan questioned why the Jock River was classified as a one-zone floodway and not a two-zone floodway. Terry Davidson responded that the RVCA typically only administers one-zone floodways. Municipalities can ask for a two-zone approach.

Melissa Sullivan expressed concern with the continuous references to a lack of impact on the waters of the Jock. J.F. Sabourin confirmed that there would be no impact on flows or water levels. Mr. Sabourin noted that a 1:2 year spring event would be equal to a 1:100 summer storm event.

Melissa Sullivan questioned the proposed elevation. Steve Pichette, of DSEL, advised that a 0.5 metre elevation was being proposed.

Frank Cairo confirmed that the 30 metre setback would be maintained to the river and drains. Brian Dowdall questioned who would be responsible for long-term maintenance costs. Mr. Cairo explained that capital expenses and facility costs would be borne by the developer.

Pieter Leenhouts questioned whether the 2D modelling had been proofed. J.F. Sabourin explained that the proof could be found in multiple successful projects.

Pieter Leenhouts asked about the extent of the peer review process. Frank Cairo explained that the peer review process was an extensive one in and noted that the City of Ottawa and RVCA chose GHD to complete the review.

In response to a question from Pieter Leenhouts, J.F. Sabourin confirmed that there would be no impact upstream. Steve Pichette confirmed that the depth of the cuts would be 0.4 metres.

Pieter Leenhouts noted that the removal of farming would actually be good for the river. The reduction of nutrient sources entering the river should improve water quality

Melissa Sullivan asked about precedence and whether there were any other similar areas in the watershed. Terry Davidson responded that he could not think of any. Glen McDonald suggested that landowners on the south side might also want to benefit from the same type of opportunity.

Pieter Leenhouts, Chair, thanked Messrs. Cairo, Pichette, Sabourin and Kilgour for their information.

Motion 2-191107 **Moved by:** Judy Brown
Seconded by: Melissa Sullivan

That the RVCA Executive move in camera.

Motion Carried

Decision

Motion 3-191107 **Moved by:** Brian Dowdall
Seconded by: Judy Brown

That Application RV3-41/19 be approved with conditions.

Motion Carried

Motion 4-191107 **Moved by:** Judy Brown
Seconded by: Brian Dowdall

That the RVCA Executive Committee members move out of camera.

Motion Carried

Pieter Leenhouts, Chair of the RVCA Executive Committee, addressed the applicant, Frank Cairo. Mr. Leenhouts stated that, while the decision had not been unanimous, the Executive Committee had passed a motion approving the application with the following conditions:

Submission for review and acceptance by RVCA staff of

- 1 A Monitoring Plan that demonstrates water levels and velocities are verified and within acceptable range. Must include provisions for the cost of the equipment by the proponent for 2-4 monitoring stations and a 3rd party consultant to devise and implement the Monitoring Plan. Provide an annual "Review of the Findings Report" for a term acceptable for evaluating impact from filling. A Memorandum of Agreement with the proponent to fully fund the Monitoring Plan.
- 2 In the event of adverse effects from the filling of the flood fringe are identified by the Monitoring Program, the proponent agrees to undertake additional earth works to mitigate the adverse effects to the satisfaction of RVCA.
- 3 Both areas to be cut must be completed prior to any filling to the satisfaction of RVCA.

Formal written notice will be provided once the hearing minutes have been prepared. The decision may be appealed directly to the Minister of Natural Resources for Ontario within 30 days of receipt of the written reasons.

Frank Cairo, Steve Pichette, J.F. Sabourin and Bruce Kilgour were excused.

Motion 5-191010 **Moved by:** Brian Dowdall
Seconded by: Melissa Sullivan

That the RVCA Executive Committee move out of Hearing Board and sit as an Executive Committee.

Motion Carried

2.0 Approval of Minutes, October 10, 2019

Motion 6-191107 **Moved by:** Judy Brown
Seconded by: Brian Dowdall

That the Executive Committee Meeting minutes of October 10, 2019 - File Number RV3-41/19 be approved as circulated.

Motion Carried

3.0 Adjournment

The meeting adjourned at 9:55 p.m. on a motion by Judy Brown.

Pieter Leenhouts
Chair

Michelle Paton
Recording Secretary