

13.0 CUMULATIVE IMPACT ASSESSMENT

In the TOR, Taggart Miller proposed to undertake a cumulative impact assessment (CIA), or cumulative effects analysis, of the potential effects of the CRRRC project. Such an assessment is not currently a requirement of the provincial EA process. To carry out this assessment, a framework often used in federal EA processes was considered (Canadian Environmental Assessment (CEA) Agency, 1999; CEA Agency, 2013), as well as guidance from other jurisdictions, in particular California. Cumulative effects are defined by the CEA Agency (1999) as “changes to the environment that are caused by an action in combination with other past, present and reasonably foreseeable future human actions”.

An assessment of cumulative effects provides a more complete understanding of what might happen to environmental components of value or concern beyond the influence of the project alone. This is useful for regulatory decision-makers and authorities as they review and plan future developments.

This corresponds to Task 6 of the methodology described in Section 2.3.

13.1 Approach

13.1.1 General

This analysis considers the residual (non-zero) effects of the CRRRC and the potential for these residual effects to interact with other projects or activities, which when combined may result in a greater and in particular adverse effect to an environmental component.

13.1.2 Assessment Methodology

This cumulative effects analysis involved the following steps:

- Scoping:
 - Select appropriate environmental components for analysis;
 - Identify spatial and temporal boundaries; and
 - Identify other projects or activities that may affect the same components in time and space.
- Analysis of Effects:
 - Consider effects of the CRRRC on selected components in time, space and type of effect, accounting for mitigation measures; and
 - Assess the potential for the effects of the other identified projects and actions to overlap with those of CRRRC in time, space and type of effect on selected components.
- Evaluation of significance of residual cumulative effects.

13.2 Scope

13.2.1 Identified Components

In a typical cumulative effects analysis, Valued Ecosystem Components (VEC) are identified, which represent specific features or attributes of the environment that are considered to be important either for regulatory reasons or because of their social, cultural, economic or ecological value. VEC's for this analysis were taken from the list of components used in the assessment of environmental effects of the CRRRC as further described below.

Only those components on which the CRRRC may have a “non-zero” residual effect were carried forward into this cumulative impact analysis. Based on the studies completed for the proposed CRRRC, this includes: atmosphere; hydrogeology; surface water; biology; land use & socio-economic, agriculture and traffic. Excluded is archeology & built heritage, as there were no residual effects identified for this component.

Table 13.2.1-1 summarizes the predicted residual effects of the CRRRC on the selected components where mitigation measures may not be sufficient to completely eliminate the potential effects, even if regulatory standards are being met.

Table 13.2.1-1: Summary of CRRRC Residual Effects

Environmental Component	Potential Effects of CRRRC	Location of Residual Effect from CRRRC
Atmosphere	Odour	Site, Site-vicinity
	Dust emissions	Site, Site-vicinity
	Air quality	Site, Site-vicinity
	Noise emissions	Site, Site-vicinity and Haul route
Hydrogeology	Groundwater quality impacts	Site, Site-vicinity
	Groundwater quantity impacts	Site
Surface Water	Surface water quality impacts	Site, Site-vicinity
	Surface water quantity impacts	Site, Site-vicinity
Biology	Change in habitat as a result of moving/removing ditches and alteration of flows (aquatic biological resources)	Site, Site-vicinity
	Removal of vegetation and disruption to wildlife (terrestrial biological resources)	Site
Land Use & Socio-economic	Atmosphere, groundwater and surface water impacts	Site-vicinity, Haul route
	Spending and employment	Capital Region
	Visual	Site-vicinity
Agriculture	Loss of productive land on-Site	Site
	Atmosphere, groundwater and surface water impacts	Site-vicinity
Traffic	Increased traffic	Haul route from Highway 417

13.2.2 Spatial Boundaries

All predicted residual effects of the CRRRC are located on the Site, in the Site-vicinity or along the haul route from Highway 417 to the Site entrance, except for the positive economic effects of the project.

The existing zoning and land use in the vicinity of the Site was considered in determining the area for this assessment:

- To the north: industrial lands and Highway 417 corridor;
- Immediately to the west: zoned rural heavy industrial, with limited existing residential;
- Further west and to the south, southwest and northeast: zoned rural and largely undeveloped;
- Further southwest and south, and to the southeast and east: zoned agricultural;
- Northwest of the Boundary Road/Highway 417 interchange: natural environment designation; and
- North of Highway 417: golf course.

13.2.3 Temporal Boundaries

The residual effects of the CRRRC considered in this CIA will arise primarily during the construction and operating phase of the facility.

13.2.4 Other Projects and Activities

The TOR indicated that Taggart Miller would consider certain and probable physical activities in the Site-vicinity, where the effects of those activities and of the CRRRC may overlap.

Past actions contribute to baseline conditions. For the purpose of this CIA, effects from historical projects or activities have been included in the baseline conditions. While effects from current (present) actions may also be influencing baseline conditions, they are considered in the cumulative analysis on a component-specific basis, since these effects may continue into the future.

Obtaining sufficient data for meaningful analysis is a challenge in evaluating the interactions of probable future physical activities, since such activities are sometimes only conceptual without formalized development plans. Obtaining sufficient data from existing activities can also be a challenge in cumulative effects assessments. Some degree of uncertainty is therefore typical of cumulative impact assessments.

The existing land uses in the area of the Site south of Highway 417 can be described as follows:

- 1) Boundary Road Industrial Park (land zoned Heavy Rural Industrial west of CRRRC):
 - Mainly properties/facilities/yard areas such as construction companies, vehicle restoration, storage, roofing and line painting companies with usages such as storage of materials and equipment, vehicle parking, sometimes with relatively small single storey buildings used for the offices associated with these businesses, indoor storage, some stockpiling of soils and other surplus materials;
 - A gas bar which consists of one building approximately 10 metres by 12 metres and three gas pumps;

- Two joined lots within which wood splitting is carried out consisting of at least four buildings (approximately 19 metres by 24 metres, 15 metres by 30 metres, 13 metres by 12 metres and 12 metres by 22 metres), with exterior log storage yard and associated moving equipment;
- A licensed used shingle storage and transfer building with one building approximately 13 metres by 19 metres;
- Pomerleau Ltd. – a trucking business; soil screening, blending and stockpiling; asphalt stockpiling for subsequent re-use; multiple aggregate stockpiles; and four buildings approximately 28 metres by 18 metres, 7 metres by 16 metres, 22 metres by 10 metres and 14 metres by 18 metres;
- Vacant undeveloped land/lots within the eastern and northern portions of the industrial park; and
- Some existing residences fronting on Boundary Road to the north/west of the proposed CRRRC, intermixed with commercial and industrial properties.

In general, the businesses within the industrial park are providing local services and are relatively small in scale with the exception of Pomerleau.

2) Rural Land (northeast and south of the Site, and west of the Industrial Park):

- Generally undeveloped and forested or fallow land, with no known uses planned.

3) Agricultural Land (east and southeast):

- Lands with some degree of agricultural improvements currently used for farming (mainly crops or pasture).

The only known new future planned land use in the Site-vicinity is a proposed new terminal to de-couple double tractor trailers to single trailers for travel to sites within the City between (north of) Pomerleau Ltd. and the CRRRC properties and Highway 417 with frontage along Boundary Road. The proponent has submitted an application to the City of Ottawa (Jeff McEwen, personal communication, December 9, 2013).

13.2.5 Potential Impacts Due to Other Projects and Activities

It has been assumed in the absence of information to the contrary that the off-Site activities and projects, existing or proposed, described above operate and perform in compliance with relevant regulatory standards, such as those established by the MOECC. There is no indication to the contrary from the work undertaken for this EA.

A residual effects interaction matrix shown in Table 13.2.5-1 was completed to identify overlaps in terms of types of effect between the residual (non-zero) effects of the CRRRC and the potential residual (non-zero) effects of other projects and activities on each environmental component.

Table 13.2.5-1: Interactions Matrix – Type of Effect

Environmental Component	CRRRC Residual Effect	Wood Splitting Facility	Shingle Storage and Transfer Building	Pomerleau Ltd.	Gas Bar	Additional Small Commercial / Industrial Operations	Farming Operations	Tractor / Trailer Decoupling Proposal
Atmosphere	Odour	no	no	yes	no	no	yes	no
	Dust emissions	yes	no	yes	no	yes	yes	yes
	Air quality	no	no	no	no	no	yes	yes
	Noise emissions	yes	yes	yes	no	yes	yes	yes
Hydrogeology	Groundwater quality impacts	no	no	no	no	no	no	no
	Groundwater quantity impacts	no	no	no	no	no	no	no
Surface Water	Surface water quality impacts	no	no	yes	no	yes	yes	no
	Surface water quantity impacts	no	no	no	no	no	no	no
Biology	Aquatic biological resources	no	no	yes	no	yes	yes	no
	Terrestrial biological resources	no	no	yes	no	yes	yes	yes
Land Use & Socio-economic	Atmosphere, groundwater and surface water impacts	yes	yes	yes	no	yes	yes	yes
	Spending and employment	yes	yes	yes	yes	yes	yes	yes
	Visual	no	no	yes	no	no	no	yes
Agriculture	Loss of productive land on Site	no	no	no	no	no	no	no
	Atmosphere, surface water and groundwater impacts off-Site	yes	no	yes	no	yes	yes	yes
Traffic	Increased traffic	yes	yes	yes	yes	yes	no	yes

13.3 Analysis of Effects

Overlaps in terms of type of effect between the residual effects of the CRRRC and the potential residual effects of the other existing and future activities in the vicinity of the Site were identified in Table 13.2.5-1.

Residual effects of the CRRRC that may also interact in space and time with other activities are summarized in Table 13.3-1. Comments on the overlap are also included.

Table 13.3-1: Interactions Matrix – Effects that May Overlap in Time and Space

CRRRC Residual Effect	Activity that may Interact with CRRRC Residual Effect in Time and Space	Comments
Odour	<ul style="list-style-type: none"> ▪ Farming operations ▪ Pomerleau Ltd. 	CRRRC will have best management practice odour control designed to ensure that off-Site receptors do not experience adverse impacts. The potential for residual odours from the CRRRC to interact with those from farming operations in the Site-vicinity to create cumulative adverse odour impacts at these receptors is judged to be negligible.
Dust emissions	<ul style="list-style-type: none"> ▪ Wood splitting facility ▪ Pomerleau Ltd. ▪ Additional small commercial/industrial operations ▪ Farming operations ▪ Tractor/Trailer de-coupling proposal 	Best management practices including paving of the northern Site roads will be implemented to minimize off-Site dust from the CRRRC. While dust from some of the activities in the Site vicinity is likely to interact cumulatively with dust from the CRRRC, no basis has been identified to conclude that such cumulative impacts are likely to result in exceedances of applicable regulatory standards.
Air quality	<ul style="list-style-type: none"> ▪ Farming operations ▪ Tractor/Trailer de-coupling proposal 	Air quality from the CRRRC will be controlled and mitigated to meet MOECC standards at the property boundary. Any overlapping air quality impacts from farming operations or the tractor/trailer proposal is unlikely to give rise to any exceedances of applicable regulatory standards.
Noise emissions	<ul style="list-style-type: none"> ▪ Wood splitting facility ▪ Pomerleau Ltd. ▪ Shingles storage and transfer building ▪ Additional small commercial/industrial operations ▪ Farming operations ▪ Tractor/Trailer de-coupling proposal 	Noise from the CRRRC is generally below existing background levels due to the presence of Highway 417. The cumulative noise impacts are likely to still be dominated by background noise from the highway.
Groundwater quality impacts	No projects/activities overlap in this type of effect with the CRRRC, therefore no cumulative effect.	

CRRRC Residual Effect	Activity that may Interact with CRRRC Residual Effect in Time and Space	Comments
Groundwater quantity impacts	No projects/activities overlap in this type of effect with the CRRRC, therefore no cumulative effect.	
Surface water quality impacts	<ul style="list-style-type: none"> ▪ Pomerleau Ltd. ▪ Additional small commercial/industrial operations ▪ Farming operations 	Special attention required given elevated concentrations of certain parameters in surface water in the Site-vicinity.
Surface water quantity impacts	No projects/activities to overlap this type of effect with the CRRRC, therefore no cumulative effect	
Aquatic biological resources	<ul style="list-style-type: none"> ▪ Pomerleau Ltd. ▪ Additional small commercial/industrial operations ▪ Farming operations 	See surface water quality residual effect above.
Terrestrial biological resources	<ul style="list-style-type: none"> ▪ Pomerleau Ltd. ▪ Additional small commercial/industrial operations ▪ Farming operations ▪ Tractor/Trailer de-coupling proposal 	Little potential for the effects of the CRRRC on on-Site terrestrial resources to interact cumulatively with the noted off-Site activities and projects in any biologically meaningful way.
Land Use (atmosphere, groundwater and surface water impacts)	<ul style="list-style-type: none"> ▪ Wood splitting facility ▪ Pomerleau Ltd. ▪ Additional small commercial/industrial operations ▪ Shingle storage and transfer facility ▪ Farming operations ▪ Tractor/Trailer de-coupling proposal 	See odour, dust, air quality, noise, groundwater and surface water residual effects above.
Spending and employment	<ul style="list-style-type: none"> ▪ Wood splitting facility ▪ Shingle storage and transfer building ▪ Pomerleau Ltd. ▪ Gas bar ▪ Additional small commercial/industrial operations ▪ Farming operations ▪ Tractor/Trailer de-coupling proposal 	The services provided by the CRRRC are not the same as the off-Site activities. Spending may increase at some of the off-Site businesses due to increased exposure to potential customers.
Visual	<ul style="list-style-type: none"> ▪ Pomerleau Ltd ▪ Tractor/Trailer de-coupling proposal 	CRRRC will be generally well-screened. Whatever is visible of the CRRRC from off-Site vantage points will generally not be in the same field of vision as Pomerleau or the tractor/trailer de-coupling facility other than on an intermittent basis.

CRRRC Residual Effect	Activity that may Interact with CRRRC Residual Effect in Time and Space	Comments
Loss of productive agricultural land on Site	No projects/activities overlap in this type of effect with CRRRC, therefore no cumulative effect.	
Impacts on off-Site agriculture usage (atmosphere, surface water and groundwater impacts)	<ul style="list-style-type: none"> ■ Wood splitting facility ■ Pomerleau Ltd. ■ Additional small commercial/industrial operations ■ Farming operations ■ Tractor/Trailer de-coupling proposal 	See odour, dust, air quality, noise, groundwater and surface water residual effects above.
Increased traffic	<ul style="list-style-type: none"> ■ Wood splitting facility ■ Shingle storage and transfer building ■ Pomerleau Ltd. ■ Additional small commercial/industrial operations ■ Gas bar ■ Tractor/Trailer de-coupling proposal 	Traffic impacts from these existing uses were considered in the traffic analysis for the CRRRC. Traffic from the proposed tractor/trailer de-coupling proposal will exit Highway 417 at Boundary Road and therefore the potential for such traffic to interact cumulatively and adversely with traffic from the CRRRC and the other existing uses at this location will be somewhat minimized. It is possible nonetheless that, should the de-coupling proposal proceed, there will be cumulative adverse traffic impacts that will require additional traffic management measures, such as lights, turn lanes or other road modifications.

13.4 Evaluation of Significance

To assess the significance of cumulative effects requires, among other things, consideration of whether further effects can be sustained by a component without irreversible effects (CEA Agency, 1999). The significance of any residual cumulative effects was determined taking into account the probable magnitude, frequency and reversibility of the residual (non-zero) effects of the CRRRC in combination with the residual (non-zero) effects of the identified existing and future activities in the Site-vicinity.

Using the information presented in the preceding sections regarding the proposed CRRRC Site and the potential interaction with other existing and known planned projects in the area, the significance assessment for the CRRRC cumulative effects analysis is provided below.

In general, there is little indication of baseline environmental quality concerns or existing cumulative environmental impacts on the Site or in the Site-vicinity arising from past/present activities and projects. Air quality appears to be typical of the Ottawa urban environment and there is no evidence of measurable adverse cumulative air quality impacts associated with current activities in the Site-vicinity. Noise levels are typical of a Class 1 area and are dominated by road noise from Highway 417 and Boundary Road. Aquatic and terrestrial biological resources do not exhibit indicators of adverse cumulative impacts in the Site-vicinity, other than benthic organisms associated with surface water quality as discussed below. There are no obvious existing

social, agricultural or traffic issues that could be attributed to the cumulative impact of past and present activities and projects on and in the vicinity of the Site.

However, background surface water quality in municipal drains and watercourses on Site and in the Site-vicinity regularly exceeds PWQO for iron and phosphorus, and dissolved oxygen levels are regularly lower than the PWQO. The exact source or sources of these elevated parameters is unclear, although the elevated phosphorus levels are likely due to agricultural land use in the general area; agricultural land use and other activities may also be the cause of the lower dissolved oxygen levels. Elevated concentrations of such parameters in local surface water features are common in the Ottawa urban/rural environment.

Except as discussed below, the probable residual effects of the CRRRC that have the potential to overlap in time and space with the residual effects of the other identified activities and projects described above are expected to be generally negligible and in any event less than significant. The effects are not expected to result in any substantial alteration of existing baseline conditions, nor are they expected to result in an exceedance of applicable regulatory standards to the extent that they interact cumulatively. Any effects that do interact cumulatively will be of low significance from an environmental perspective as they are likely to be of low magnitude, intermittent in frequency at most and reversible after the activity(ies) ceases.

The only areas of potential cumulative impact significance are surface water quality, given the elevated existing concentrations of some parameters in surface water, and traffic, given the tractor/trailer de-coupling proposal.

To the extent the elevated parameters in existing surface water on-Site and in the Site-vicinity are not the result of naturally occurring conditions, they are the result of past or present activities in the Site-vicinity and possibly beyond. Special care will therefore be taken to monitor surface water quality leaving the CRRRC with respect to these parameters to ensure that surface water quality downgradient of the Site is not further degraded for these parameters. The proposed CRRRC surface water management plan incorporates a number of features to ensure surface water leaving the Site meets regulatory requirements and that iron and phosphorus concentrations and dissolved oxygen impacts are minimized, such as separation of leachate from stormwater, carrying out recycling operations involving metal inside buildings and ensuring that the composting operations have a dedicated collection pond not connected to an outlet to surface water. The SWM plan also includes contingency measures based on ongoing monitoring results, as described in the Volume IV D&O Report. No need for additional surface water mitigation measures has been identified as a result of this CIA.

With respect to traffic, there is some uncertainty about the number of tractor-trailers that may utilize the proposed de-coupling facility and the long-term traffic impacts they may present at the Boundary Road/Highway 417 interchange. This will presumably be considered by the City when assessing this proposal and any required near or longer term road improvements. No need for additional traffic mitigation measures beyond the left turn lane and road improvements already proposed for the CRRRC access off Boundary Road have been identified as a result of this CIA.