

DATE 24 November 2016**PROJECT No.** 1114220046-659-TM-Rev0-1150**TO** Rob Hajdú
Canadian Environmental Assessment Agency**CC** Derek Holmes, BURSCO**FROM** Bridget Dunne, Brock Simons**EMAIL** bridget_dunne@golder.com,
brock_simons@golder.com**BURSCO AGGREGATE PROJECT: RESPONSE TO INFORMATION REQUESTS CEAA-211, EC-064,
AND EC-065**

1.0 INTRODUCTION

BURSCO Rock Products Ltd (BURSCO) and 0819042 B.C. Ltd. propose to develop the BURSCO Aggregate Project (the Project), which will include a sand and gravel pit, processing facility and marine barge load-out facility. Wildlife and wildlife habitat baseline surveys and effects assessment were conducted as a component of the Environmental Assessment Certificate Application / Environmental Impact Statement (EAC Application/EIS). This memorandum provides a response to information requests (IRs) CEAA-211, EC-064 and EC-065 (Table 1).

2.0 WILDLIFE VALUED COMPONENT SELECTION

Although all species have specific habitat requirements, there are often similarities in habitat requirements among species that allows for their effective grouping using a focal species approach. Focal species can be effective indicators in an EA for those species that share similar habitat requirements, life history characteristics, and most importantly, species that are expected to be affected by a project in similar ways. It is often appropriate to select representative focal species that are likely to be more sensitive to disturbance than other potential focal species (Roberge and Angelstam 2004). This results in a more precautionary assessment for the broader wildlife community.

An accurate EA does not require an individual assessment of all species, and is made more effective and efficient through a focal species approach (Beanlands and Duinker 1983). Any disturbance is likely to affect numerous species in similar ways. Therefore, the absence of a focal species approach would result in a highly repetitive, excessively long EA, which would impede the effectiveness of the document as a communication tool without improving the accuracy or quality of the assessment. Species-specific considerations may be necessary when designing appropriate mitigation measures, but this can be done without requiring the significance of Proposed Project effects to be assessed for every species individually. Assessment conclusions for each representative focal species may then be extrapolated to the broader wildlife community (Sergio et al. 2008).

The factors considered when selecting focal species for the EA were conservation status, socio-economic importance, importance to First Nations, sensitivity to Project effects, ecological representativeness and likelihood of occurrence in the Terrestrial LSA. Focal species were selected to be broadly representative of the wildlife communities likely to be affected by the Project in terms of habitat associations, life history characteristics and potential Project effects.



The selection of appropriate wildlife Valued Components (VCs) was completed in accordance with the BC EAO Guideline for the Selection of Valued Components and Assessment of Potential Effects (BC EAO 2013). The selection of VCs was determined following provincial and federal feedback of the Application Information Requirements document and Valued Component and Study Area Rationale, which occurred in 2013 and 2014. Please refer to Vol 2, Sec 4.0 for detailed methods on the VC selection process.

Waterbirds, waterfowl, and shorebirds were not selected as VCs because the predicted Project effects on these species groups are expected to be similar to the marine birds VC (Section 5.1, Vol 2). Suitable nesting habitat for the majority of waterfowl and waterbird species (i.e., pond or lake habitat) does not exist within the LSA (Appendix 5.3-A, Section 3.5.3). Therefore, potential Project effects on waterfowl and waterbirds would be largely limited to birds foraging along the marine foreshore and coastal habitat, which overlap the habitat associations of marine birds (Badzinski et al. 2005). The majority of shorebirds species occur in the region only during migration or winter, when they utilize intertidal areas along the marine foreshore and other coastal habitats (BSC 2012). In their coastal foraging habitat, waterbirds, waterfowl and shorebirds are anticipated to be susceptible to the same Potential Project effects and have similar sensitivities as marine birds. Therefore, marine birds are assessed as a surrogate VC for waterfowl, waterbirds and shorebirds.

Land birds were not selected as a separate wildlife VC because Proposed Project effects on land birds can be inferred from assessed effects on northern goshawk, western screech-owl, band-tailed pigeon and common nighthawk. These four VCs represent the range of terrestrial habitats and ecosystems identified in the Terrestrial RSA and LSA (Section 5.3.2.4, Vol 2). For example, northern goshawks nest in mature to old-growth coniferous forest (App 5.3-1, Sec 3.5.6.3), band-tailed pigeons forage in areas with open or sparse canopies and an abundance of fruiting shrubs (App 5.3-1, Sec 3.5.6.5), western-screech owls are associated with low elevation riparian areas (App 5.3-1, Sec 3.5.6.6), and common nighthawks inhabit a variety of open or semi-open habitats including anthropogenic disturbances (App 5.3-A, Sec 3.5.7).

3.0 FEDERALLY LISTED AVIAN SPECIES

BURNCO is confident that the effects of the Proposed Project on federally listed (i.e., SARA and COSEWIC) wildlife species at risk with the potential to occur in the Project Area, are accurately represented by focal species. Of the SAR confirmed in the Terrestrial LSA (Table 5.3-7, Vol 2, Sec 5.3) all of them were selected as VCs with the exception of barn swallow, olive-sided flycatcher, black swift and great-blue heron (*fannini* subspecies). The effects of the Proposed Project on these species may be inferred from the assessed effects on selected VCs, as described below.

Black swift: nests on ledges or shallow caves in damp, steep rock faces and canyons, usually near or behind waterfalls (Lowther and Collins 2002). Suitable nesting habitat is not known or expected to be present within the Terrestrial LSA. Foraging black swifts tend to congregate at concentrations of aerial insects, whose localities tend to be influenced by local weather conditions such as barometric pressure, wind and temperature (Lowther and Collins 2002). Given the ephemeral nature of these insect concentrations, black swifts range widely when foraging and have been documented over 40 km from known nesting sites (Lowther and Collins 2002). Common nighthawk also forage for aerial insects while in flight, up to heights greater than 80 m above forest canopy (Brigham et al. 2011). Therefore, the effects of the Proposed Project on black swift and common nighthawk are predicted to be similar because of their similar foraging ecology. However, common nighthawk is likely to be more sensitive to the effects of the Proposed Project because it may nest in the area, which will result in a more precautionary

assessment for black swift. Common nighthawk is assessed as a surrogate species for black swift because it is representative of aerial feeding insectivorous avian species.

Olive-sided flycatcher: is associated with forest openings in montane coniferous forests including natural openings (i.e., meadows, burns, rivers) or anthropogenic opens (i.e., cut blocks, Altman and Sallabanks 2012). Nesting occurs in natural and anthropogenic forest openings with survival rates in natural openings approximately double that of nests adjacent to clearings created by forest harvest (Robertson and Hutto 2007). The Project Area mostly consists of pole sapling forests in the early stages of post-logging regeneration, and is not considered high suitability olive-sided flycatcher habitat. Band-tailed pigeon and olive-sided flycatcher has similar habitat requirements, specifically mature coniferous forest for nesting and forest openings or areas of sparse canopy (i.e., clearcuts or young stands) for foraging (COSEWIC 2008a). Therefore, the effects of the Proposed Project on olive-sided flycatcher and band-tailed pigeon are predicted to be similar because of their similar habitat requirements. Band-tailed pigeon has been selected as a surrogate species for olive-sided flycatcher to represent avian species that occur in open habitat and forest edges (Keppie and Braun 2000).

Species at risk confirmed in the Terrestrial LSA are listed in Table 5.3-7 (Vol 2, Sec 5.3), including olive-sided flycatcher. Updates to Table 5.3-7 (Vol 2, Sec 5.3) are not necessary because the olive-sided flycatcher is not listed as “Identified Wildlife” under the BC Forest and Range Practices Act (Pearson and Healey 2012).

Great blue heron (fannini subspecies): nesting has not been recorded within the Proposed Project Area. Nesting is colonial and typically occurs at sites with low levels of human disturbance, located on average between 2.3 to 6.5 km from their primary foraging site (Vennesland and Butler 2011). Colonies are situated in woodlands in large deciduous or coniferous tress such as Sitka spruce (*Picea sitchensis*), western redcedar (*Thuja plicata*), western hemlock (*Tsuga heterophylla*), red alder (*Alnus rubra*), and black cottonwood (*Populus trichocarpa*) (COSEWIC 2008b). Potential nesting habitat for great blue heron is represented by western screech-owl, which is associated with low elevation riparian areas, with a preference for mature or old-growth coniferous and mixed forests (COSEWIC 2012, Cannings and Angell 2001). Tree species and structure in such forest provide suitable nesting sites for great blue heron. Potential interactions with great blue heron food sources (i.e., fish) was assessed as part of the fisheries and freshwater habitat VCs (Section 5.1, Vol 2) and the marine resources VCs (Section 5.2 Vol 2). Great blue heron was excluded as a VC because potential nesting habitat in the Project area is represented by western screech-owl (although heron nesting does not occur in the Project Area), and impacts to food sources are represented by assessed impacts to fisheries and freshwater habitat and marine fish.

Clearing of the Proposed Project Area during the construction phase will result in the loss of 4 ha of moderate suitability western screech-owl habitat, which represents a reduction of approximately 0.1% of available moderate and high (combined) suitability habitat within the Terrestrial RSA. No high suitability habitat will be removed. Sensory disturbance is predicted to affect less than 0.1% of moderate and high suitability habitat within the Terrestrial RSA. Mortality may occur due to interactions with infrastructure and are predicted to be negligible at the population (i.e., RSA) scale and localized in the Proposed Project Area. Mortality due to clearing is not likely because no great blue heron nests are present in the Terrestrial LSA.

Anadromous and resident freshwater fish VCs (assessed under Fisheries and Freshwater Habitat, Vol 2, Sec 5.1) were considered sensitive (existing system is considered to be susceptible to potential changes caused by the Proposed Project) because the affected watercourses in the Project area maintain rearing, overwintering and spawning habitats and could support juvenile and larval fish that are particularly susceptible to increases in suspended sediments. The loss of instream freshwater habitat and wetted area caused by removal of the upper segment of WC 2 and the predicted reduction of flow will be offset by extending the lower segment of WC 2 to

create new instream fish habitat (Vol 2 Sec 5.1.5.4). The magnitude of the loss of habitat is considered to be low for all anadromous and resident freshwater fish VCs (context is sensitive) with only small changes in the relative abundance of fish populations or habitat due to the construction of similar function habitat (i.e., salmonid rearing and overwintering habitat) in the extension. In addition, the proposed extension is expected to provide higher value habitat as a result of the presence of a functional and improved riparian area and the incorporation of instream cover structures into the watercourse. Given the application of known and effective mitigation, the magnitude of any changes to surface water quality are predicted to be low (i.e., potential measurable change but within the scope of natural variability with no population level effects anticipated). Given the application of known and effective mitigation and the limited use of nighttime lighting to security lighting only (all construction, operational and reclamation work will occur during daylight hours) the magnitude of the effect is predicted to be low (potential measurable change but within the scope of natural variability with no population level effects anticipated). The magnitude of a potential hydrocarbon spill (toxic and hazardous material spills and loss of containment of the pit lake) on fish is assessed as high because a spill could impact sensitive life history fish stages depending on the timing of the spill. However, after the implementation of mitigation measures (Vol 2, Sec 5.1.5.3), the net residual effects of the Proposed Project on fish and fish habitat are determined to be negligible to not significant (Vol 2, Sec 5.1, Table 5.1-13).

Marine fish VCs (assessed under Marine Resources, Vol 2, Sec 5.2) were considered resilient to potential habitat changes caused by the Proposed Project because of the unfavorable habitat conditions presently available in the marine Proposed Project footprint and the fact that no sensitive fish habitat areas (e.g., spawning grounds, RCAs) or suitable fish spawning areas (e.g., eelgrass) occur in this area. The majority of the piles are intended to be installed in the subtidal environment in the existing log dump area where the substrate is presently covered with extensive woody/bark debris and associated with relatively low value fish habitat. Sediment in this area is characterized by high silt-clay content and elevated concentrations of trace metals and polycyclic aromatic hydrocarbons. The magnitude of the direct habitat loss and changes in habitat quality are predicted to be low (potential measurable change but within the scope of natural variability with no population level effects anticipated) (Vol 2, Sec 5.2.5.4.1.3). With the implementation of noise-reduction measures (e.g., bubble curtains around the wetted pile) in combination with active mitigation measures as described in Section 5.2.5.3 (e.g., implementation of ramp up procedures, and sound verification monitoring), the potential for Project-generated underwater noise to result in serious harm (e.g., injury) to marine fish is considered unlikely. The magnitude of mortality from in-water works is predicted to be medium (i.e., potential measurable change but within the scope of natural variability with no population level effects anticipated; Vol 2, Sec 5.2.5.4.1.3). In the unlikely event of a collision of a Proposed Project vessel with another vessel, shore feature or man-made structure, effects may include rupturing of the vessel's fuel tank. In the worst case scenario, the maximum amount of fuel that can be released into the marine environment is 81 m³ of diesel fuel (Vol 2, Sec 5.2.5.4.2). Most of the released fuel would undergo rapid weathering and evaporation processes and would be contained and cleaned by emergency response crews. The magnitude of a potential hydrocarbon spill on marine fish is assessed as high. However, after the implementation of mitigation measures (Vol 2, Sec 5.2, Table 5.2-18), the net residual effects of the Proposed Project are not expected to exceed ecological thresholds or compromise the maintenance of self-sustaining commercial, recreational, and Aboriginal-associated fish populations in the marine environment on both the local or regional scale, and are therefore determined to be negligible to not significant (Vol 2, Sec 5.2, Table 5.2-25).

Western screech-owl, fisheries and freshwater habitat, and marine fish were assessed as surrogates for great blue heron nesting and foraging habitat and the risk of great blue heron mortality. The net residual effects of the Proposed Project on western screech-owl, fisheries and freshwater habitat and marine fish were each determined

to be negligible to not significant. Considering those factors cumulatively, Proposed Project effects on great blue heron are also considered negligible to not significant.

Barn swallow: nesting sites include a variety of artificial structures that provide either a horizontal nesting surface (e.g., ledge) or a vertical face with an overhang for shelter, in close proximity to suitable foraging habitat (COSEWIC 2011). Barn swallows are aerial insectivores and prefer open habitats for foraging, such as grassy fields, pastures, farmyards, agricultural crops, lake and river shorelines, wetlands and large forest clearings (COSEWIC 2011). Barn swallow was not included as a VC because Project infrastructure is expected to increase preferred nesting habitat in the Terrestrial LSA and therefore contributes to a likely positive effect for barn swallows. However, potential Project effects to foraging habitat or mortality due to interactions with infrastructure could still occur. Common nighthawk are associated with a variety of open or semi-open habitats, including forest clearings, burned areas, grassy meadows, pastures, rocky outcrops, sandy areas, and anthropogenic disturbances (Brigham et al. 2011, COSEWIC 2007). Both species are likely to be similarly sensitive to the risk of mortality due to interactions with infrastructure. Therefore the effects of the Proposed Project on barn swallow and common nighthawk are predicted to be similar because of their similar foraging ecology. Mitigation measures related to barn swallows will include avoiding physical disturbance of active nests built on infrastructure, and marking power lines to enhance visibility for avian species. Common nighthawk is assessed as a surrogate species for barn swallow because it is representative of aerial feeding insectivorous avian species and is also generally associated with open habitats (COSEWIC 2007).

4.0 CLOSURE

We trust that this response meets the current information requirements. Please contact the undersigned with questions or comments.

GOLDER ASSOCIATES LTD.

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Attachment: Table 1 - Information Requests CEAA-211, EC-064, and EC-065

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5.0 REFERENCES

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TABLE 1
Information Requests CEAA-211, EC-064, and EC-065

Information Request	Application Section	Agency Context	Comment
CEAA-211	Section 5.3.1.3.1 and Section 5.3.4.1.	<p>The EIS uses certain SARA-listed or COSEWIC-assessed species as indicators for ecosystems and other species (e.g., amphibian species at risk as aquatic indicator species). Groups of species, which include species at risk, are also listed as a single VC (e.g., amphibian species at risk). It is not appropriate to use species identified under SARA or COSEWIC as indicators (e.g., Northern Goshawk and Western Screech-owl were selected as surrogates for Bald Eagle and Osprey; Common Nighthawk was selected for Purple Martin). SARA-listed species have specific habitat needs that may not reflect those of the larger species group. Chosen migratory breeding bird indicator species should consider all bird guilds present (waterbirds, waterfowl, shorebirds, and land birds) and all habitat types that the Project will likely impact (e.g., old growth forest, riparian areas, wetlands, freshwater/stream, alpine) as VCs when undertaking baseline work. Use the list of Priority Species provided by Bird Conservation Region.</p> <p>Strategies as a guide for selecting indicator species: http://nabci.net/Canada/English/bird_conservation_regions.html The following can also aid in selection of indicator species:</p> <ul style="list-style-type: none"> • Caro, T. (2010). Conservation by proxy: indicator, umbrella, keystone, flagship, and other surrogate species. Island Press, Washington, DC, USA • Kershner, J., Samhouri, J.F., James, C.A., and Levin, P.S. (2011). Selecting indicator portfolios for marine species and food webs: a Puget Sound case study. PLoS ONE 6:e25248 <p>See page 5.3-2, table 5.3-3, page 5.3-4 and page 5.3-184 for reference.</p>	<p>CEAA-IR-17 (Ref ECCC-Wildlife-IR-2): Assess the potential effects to each wildlife species listed under SARA and COSEWIC as a separate Valued Component, rather than grouping them. Since each SARA species has specific habitat requirements that may not reflect those under which they have been grouped provide mitigation measures to reduce or eliminate the potential effects for each of the species.</p> <p>The use of indicator species is not recommended for assessing effects to species listed under SARA and COSEWIC.</p>



TABLE 1
Information Requests CEAA-211, EC-064, and EC-065

Information Request	Application Section	Agency Context	Comment
EC-064	Volume 2; 5.3 Terrestrial Wildlife and Vegetation; Section 5.3.1.3.1 (page 5.3-2), Table 5.3-3 (page 5.3-4), Section 5.3.4.1 (page 5.3-184)	<p>All VCs (except roosevelt elk) are SARA-listed or COSEWIC-assessed and are used as indicators/surrogates for certain ecosystems and species (e.g., amphibian species at risk as aquatic indicator species).</p> <p>In addition, groups of species, which include species at risk, are listed as a single VC (e.g., amphibian species at risk).</p> <p>When selecting surrogate/indicator species, ECCC does not recommend using SARA-listed or COSEWIC-assessed species as surrogate/indicator species (e.g., Northern Goshawk and Western Screech-owl were selected as surrogate species for excluded Bald Eagle and Osprey, while Common Nighthawk was selected for Purple Martin). Listed species often have very specific habitat needs that do not reflect those of the larger species group. Despite this, ECCC advises that each SARA-listed species that is likely to occur within the Local and Regional Study Areas be included as separate VCs (not representing a larger grouping).</p> <p>In general, ECCC recommends choosing migratory breeding bird indicator species that consider all bird guilds present (waterbirds, waterfowl, shorebirds, and landbirds) and all habitat types that the Project will likely impact (e.g., old growth forest, riparian areas, wetlands, freshwater/stream, alpine) as VCs when undertaking baseline work.</p> <p>ECCC recommends using the list of Priority Species provided by Bird Conservation Region Strategies as a selection guideline for potential Indicator Species: http://nabci.net/Canada/English/bird_conservation_regions.html</p> <p>The following can also aid in selection of indicator species: - Caro T (2010) Conservation by proxy: indicator, umbrella, keystone, flagship, and other surrogate species. Island Press, Washington, DC, USA - Kershner J, Samhouri JF, James CA, and Levin PS (2011) Selecting indicator portfolios for marine species and food webs: a Puget Sound case study. PloSONE 6:e25248</p>	<p>ECCC-Wildlife-IR-2 (Ref CEAA-IR-17): ECCC recommends revising the selection of VCs such that each species listed under SARA or assessed by COSEWIC is included as its own VC. ECCC recommends that an effects assessment be conducted and mitigation measures be provided to address effects for each VC.</p> <p>ECCC recommends that species listed under SARA or assessed by COSEWIC are not included as surrogate/indicators of larger species groups.</p>



TABLE 1
Information Requests CEAA-211, EC-064, and EC-065

Information Request	Application Section	Agency Context	Comment
EC-065	Volume 2; 5.3 Terrestrial Wildlife and Vegetation; Section 5.3.1.3.1, Table 5.3-3 (page 5.3-4); Section 5.3.4.1, Table 5.3-7 (page 5.3-15) Appendix 5.3-A; Table 12 (page 38), Figure 10 (page 42)	<p>The rationale for exclusion of olive-sided flycatcher as a VC states that “the proposed project area...is not considered highly suitable olive-sided flycatcher habitat...”, and that band-tailed pigeon was chosen as a surrogate.</p> <p>However, olive-sided flycatcher was observed in the proposed Project area and at other observation stations, as stated in the baseline report. ECCC notes that “no high suitability habitat” does not justify exclusion of olive-sided flycatcher, as it has been documented near the proposed Project Area within the LSA.</p>	<p>ECCC-Wildlife-IR-3 (Ref CEAA-IR-19): ECCC recommends including the olive-sided flycatcher species as its own VC as it was observed in the LSA following the recommendation above.</p> <p>ECCC also recommends updating Table 5.3-7 and the effects assessment to include olive-sided flycatcher as identified wildlife in the LSA.</p> <p>Following this recommendation, ECCC also recommends updating Table 5.3-7 to include other species at risk confirmed in the LSA during surveys.</p>

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