



SPENCER ENVIRONMENTAL
M A N A G E M E N T S E R V I C E S L T D.

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Gene Dub, AAA, FRAIC
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Date: 22 January 2024
Our File: EP 995

Dear Mr. Dub,

**Re: Ecological implications analysis for proposed rezoning of the DC1 Site-Specific
Development Control Provision, Rossdale Centre**

Introduction

This letter is prepared further to your request in December 2023 to update our firm's August 2022 report that was prepared in support of rezoning of Rossdale Centre. The purpose of the requested update is to address recent design changes, most related to Building C. In considering a report update, we reviewed the following materials:

- design change information provided to us by Dub in December 2023
- the Ecological Implications Analysis letter report prepared by our firm and submitted to Dub in August 2022

Project Design Changes

We understand that the design changes we have been asked to examine were made to address the fact that the Building C design assessed in August 2022, was partially located in City of Edmonton Floodplain Protection Overlay, and more specifically, intersected with lands mapped by Government of Alberta (AEP 2015) as floodway. Design changes examined in this letter are understood to be as follows:

- Building C footprint has been shifted ~10-20 m to the west (at the north end and centre) – and rotated so more parallel with 100 Street, such that the building, including the underground parkade, will be located fully outside of the mapped floodway. These changes are illustrated in Plates 1, 2, and 3, showing the original and revised location of Building C underground parkade and ground floor in relation to the floodway. For clarity, the footprint of Parcel C remains unchanged and as presented in our August 2022 report, but the footprint of Building C is shifted and the parkade level reduced in area. Note: a few Building C ground level patios remain just inside the margin of the mapped floodway. These patios will have a stone or turf surface.

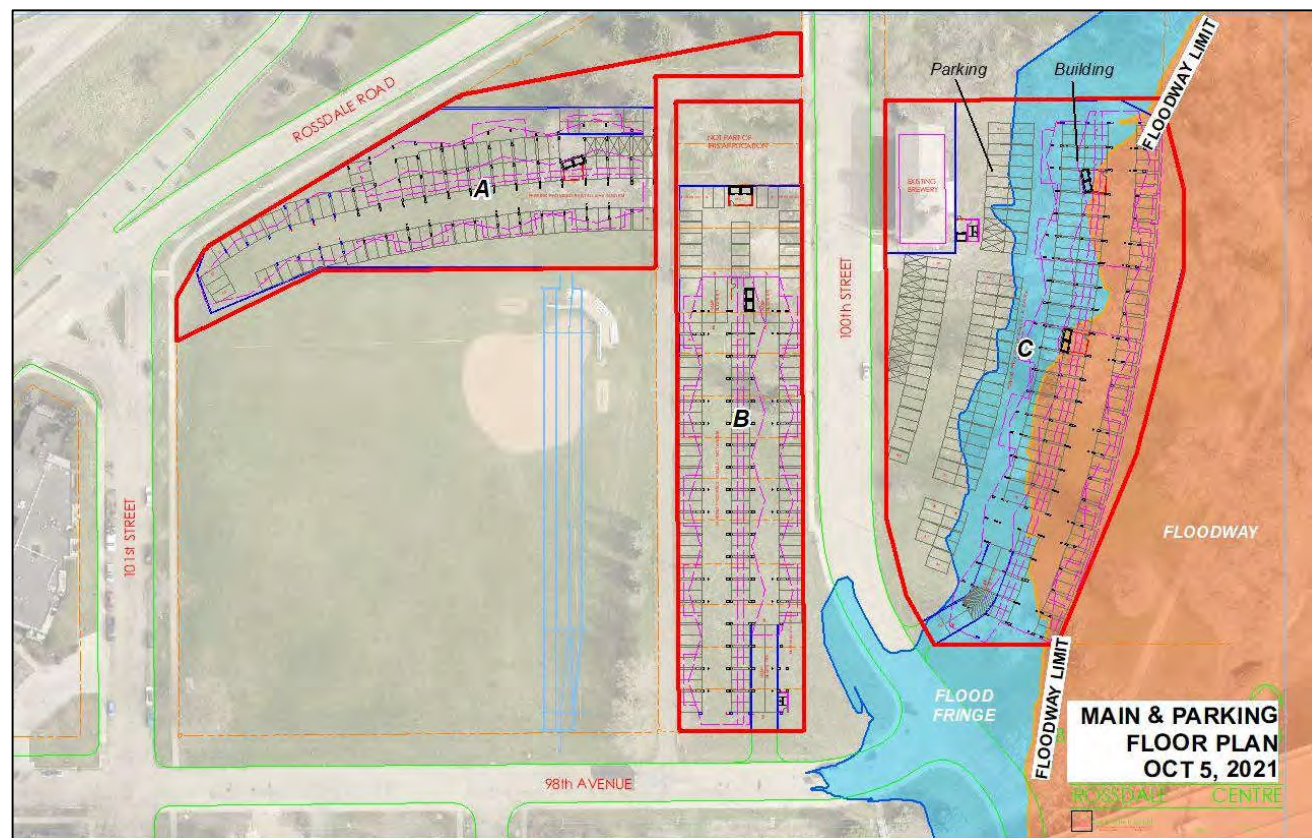


Plate 1. Building footprint assessed in August 2022; pink=above ground infrastructure; gray=below ground parkade

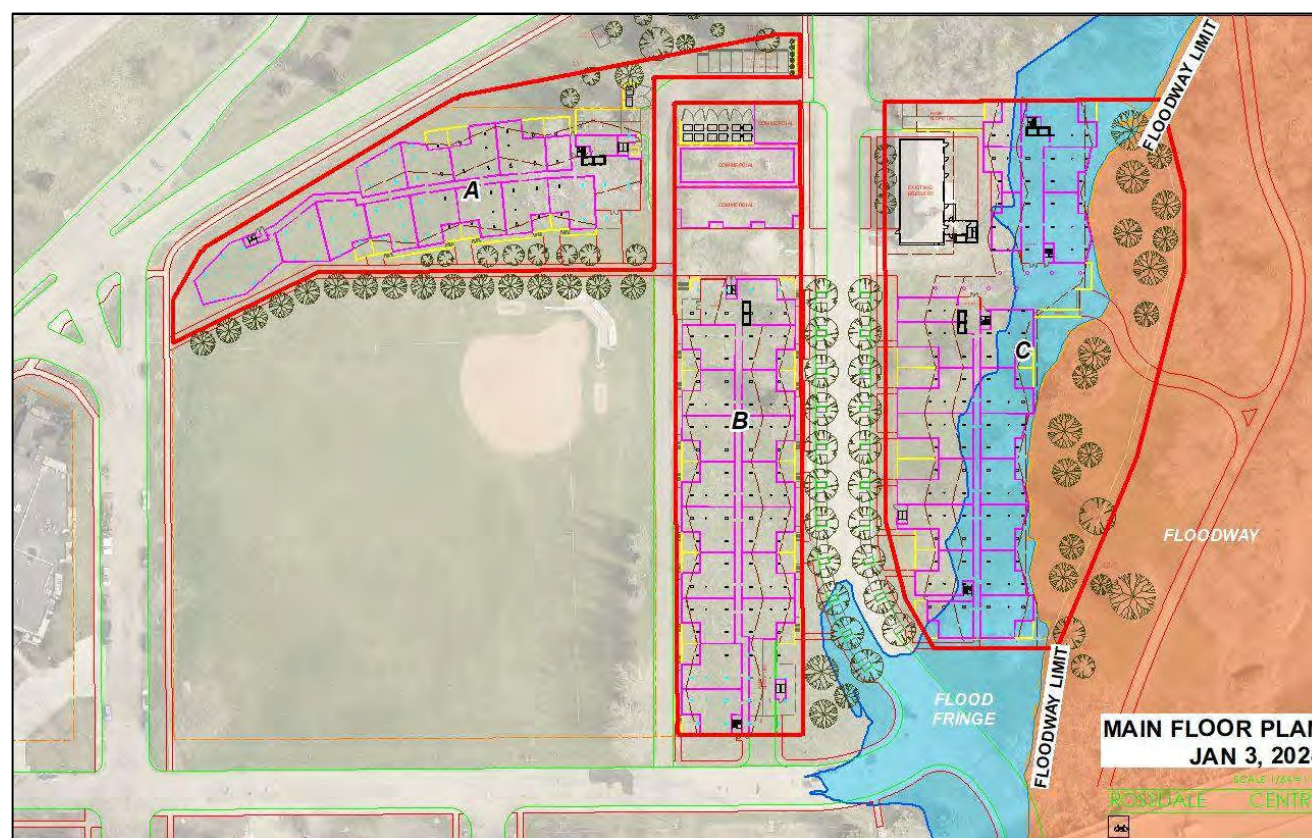


Plate 2. Building footprint as of January 2024; pink=above ground infrastructure

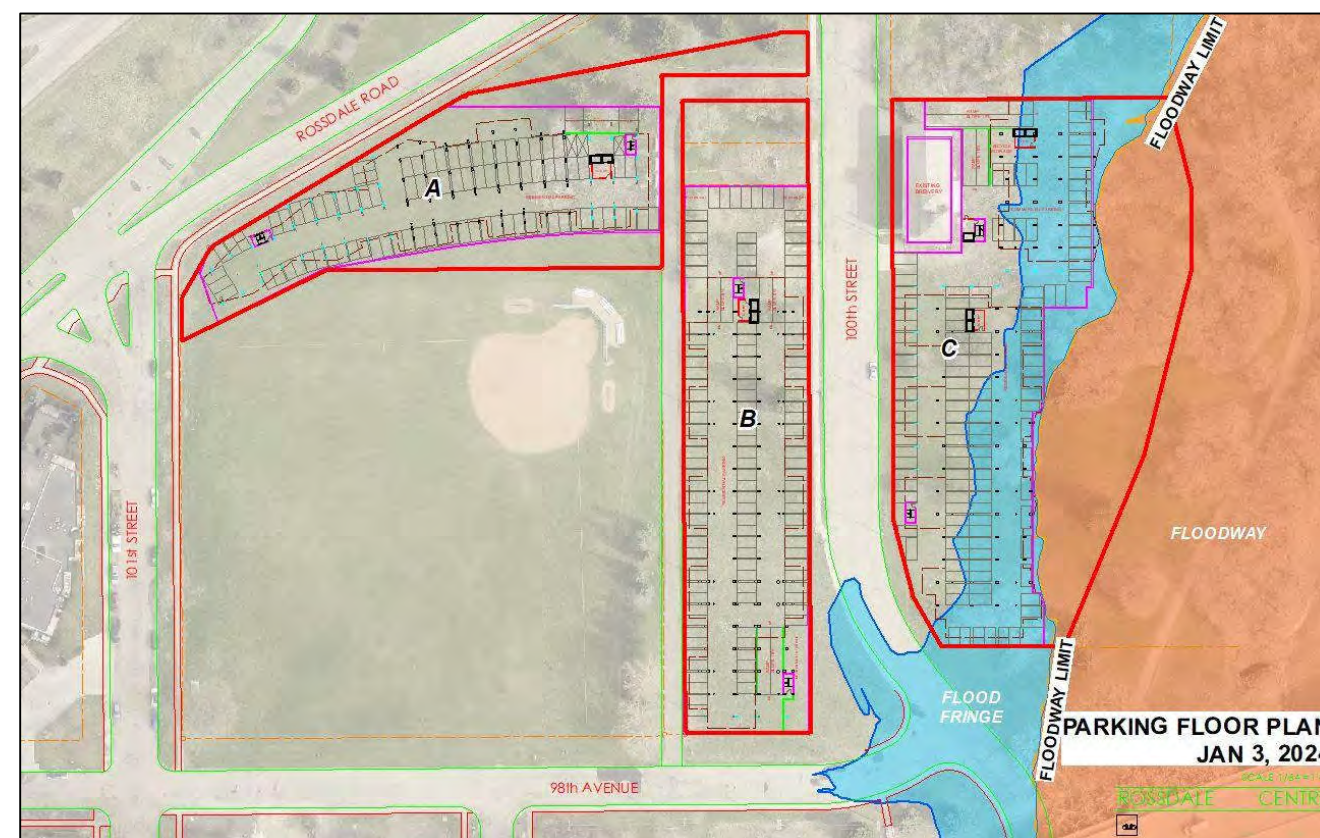


Plate 3. Building footprint as of January 2024; gray=below ground parkade

- Grading that was planned for the east portion of Parcel C, to raise the grade above the floodway (floodproofing) is no longer deemed necessary by Dub. New grading plans for Parcel C have not yet been prepared.
- As before, Building C will have a single level, underground parkade that requires excavation to depths of ~3.5 m. However, Building A will likely now have two levels, and possibly three levels, of underground parking. Our previous report examined a design that specified a single level of underground parking for each of Building A, B and C to maximum excavation depths of 3.5 m.

Important to this January 2024 assessment, we understand that the general design of all three buildings, with respect to number of floors, building exterior treatment etc. remains the same. Figure 1 presents the new design concept overlain on remote imagery, indicating the location of the three buildings in relation to existing infrastructure and natural river valley vegetation. Figure 2 presents the new design as a massing figure.



Figure 1: Building location and layout

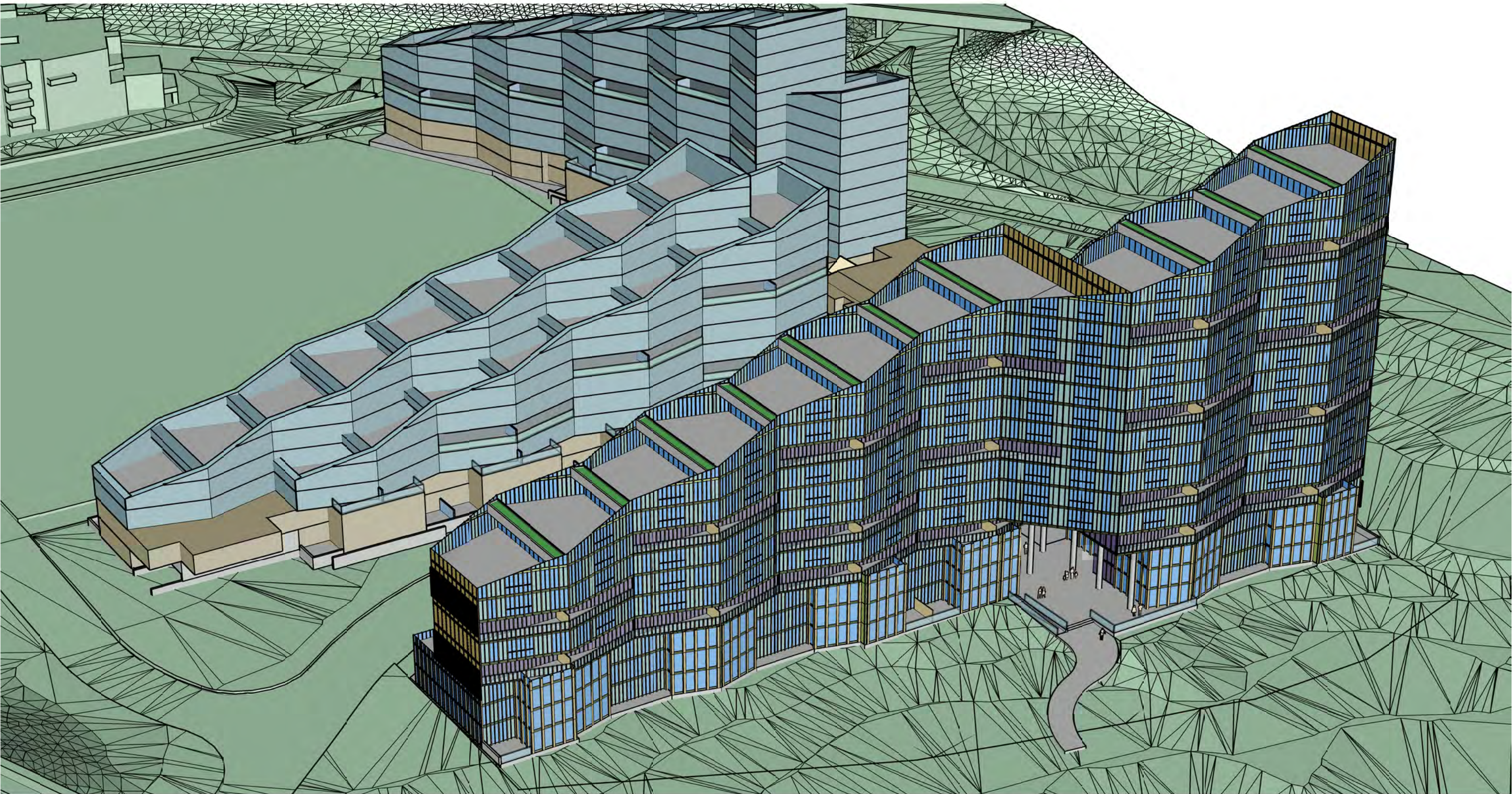


Figure 2: Proposed Development

Updated Implications Analysis

Our 2022 ecological implications analysis considered implications of the proposed development for the following ecological aspects: geology and soils; groundwater; flood hazard boundaries; surface water/stormwater management; wildlife, wildlife habitat, lighting and wildlife; compliance with relevant environmental policies, guidelines, other instruments. Our review indicated that the majority of the 2022 conclusions remain appropriate, unaffected by the recent design changes. We identified the design changes to have implications to our assessment relating to groundwater, flood hazard, surface runoff patterns and some issues relating to wildlife. Further, we determined that the clearest means of updating the 2022 ecological implications analysis was to prepare this letter describing analysis changes stemming from design changes. For context and ease of reference, the 2022 report is appended to this letter.

Groundwater

Design changes to Building A parkade may have implications for groundwater. The addition of one (or two) underground parking levels at Building A will increase the required depth of excavation in Parcel A. Our August 2022 report noted that based on short-term groundwater level monitoring, the groundwater elevations in Parcel A ranged from 6.8 m to 7.2 m below ground surface, with seasonal differences possible (Thurber 2016). For Parcel A designed with one parkade level, Thurber concluded that the groundwater table was below the planned parkade level but noted the possibility of perched water within sand and gravel lenses and an associated possibility of long-term groundwater seepage. Their report recommended mitigating subsurface design measures. Thurber's groundwater depths suggest that excavation required for two parkade levels creates potential for intersection with the water table and interference with groundwater flows to the river. A specialist opinion would be required for a technical determination.

Location in Flood Protection Overlay

The former design had Building C occupying part of the floodway, creating potential to change river hydrology in times of flood and likely requiring a *Water Act* Approval from Alberta Environment and Protected Areas (EPA). The revised location of Building C outside of the floodway limits addresses concerns about disturbance to the floodway zone. Note: the location of several ground level patios just inside the floodway limits (most clearly seen in Figure 1) still warrants consultation with EPA to ensure regulatory compliance.

Surface Water Flows to the River

Vegetated lands in the east portion of Parcel C slope slightly to the east and our 2022 review of contours suggested that under existing conditions, runoff (surface water flows) drains overland toward the river. The expectation was that runoff would be partially retained on site through absorption by soils and vegetation. Floodproof grading had some potential to alter this runoff pattern. With the removal of floodproof grading to raise elevations in east Parcel C and presumed greater retention of natural grades in east Parcel C, the potential for development in Parcel C to affect change in runoff volumes reaching the river is reduced. A more detailed analysis is beyond the scope of this exercise.

Wildlife

Most of the August 2022 analysis conclusions with respect to wildlife remain unchanged as the overall development concept and the Parcel C boundaries have not changed. Exceptions are: potential for building-bird collisions and potential for introduced lighting to trespass into areas of natural habitat. This report assumes that all of Parcel C will be landscaped, as planned in 2022) and as shown in Figure 1, although with fewer grade changes in the extreme east of the parcel. Our previous analysis identified bird-window collisions at Building C, particularly on the east building side and related to daily bird movements (e.g., foraging), and trespass lighting entering the retained riparian forest in Rosedale Park, as concerns for wildlife and suggested mitigation for those two potential impacts be explored. The proximity of the edge of Building C to the retained forest vegetation was a key factor relating to those potential impacts. The shifting and reorientation of Building C ~ 10 - 20 m to the west is thought to meaningfully reduce but not eliminate potential for those two wildlife impacts. Despite this, design solutions to reduce potential for bird-window collisions and the potential for trespass lighting, should continue to be examined.

Closing

This letter report provides an analysis of ecological implications potentially associated with the 2023 design changes for the proposed development in Rosedale Centre and is based on the information available to us at the time of writing.

Please contact the undersigned with questions.

Sincerely,

**Spencer Environmental
Management Services Ltd.**



Lynn Maslen, M.Sc., P. Biol.
President

Reports Cited

Thurber Engineering Ltd. 2016. Rosedale Center Phase 1 Edmonton, Alberta Geotechnical Investigation. Prepared for Dub Architects Ltd. Edmonton, Alberta.

Appendix A

2022 Ecological Implications Analysis Report



SPENCER ENVIRONMENTAL

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Date: 31 August 2022
Our File: EP 995

Dear Mr. Dub,

**Re: Proposed new rezoning of the DC1 Site Specific Development Control Provision,
Rossdale Centre- Ecological Implications Analysis – Final**

Introduction

At your request, Spencer Environmental Management Services Ltd. (Spencer Environmental) has prepared this technical memorandum in support of the 2022 rezoning efforts for the DC1 Site Specific Development Control Provision for Rossdale Centre. Rezoning involves three parcels of privately titled land. For the purposes of the report, parcels are referred to as Parcel A, Parcel B and Parcel C. This report is intended to provide a desktop-based statement regarding potential ecological implications of the proposed rezoning and development, with a particular focus on the increased height of the buildings and the adjacent North Saskatchewan River Valley. Content was prepared in response to an agreed-upon scope of work following a meeting with a City Ecological Planner (Attachment A). The report trigger was a change to the previously approved design, circa 2013, that had been subject to the rezoning process. A 2022 rezoning application for the new design is in progress.

Proposed Development

The proposed development, Rossdale Center, is located in the Rossdale Neighbourhood and comprises three titled parcels: Parcel A (Plan 0021114, Block 2, Lot 2), Parcel B (Plan 0021114, Block 2, Lot 2) and Parcel C (Plan Q, Block 7, Lots 12-15). The project area totals approximately 4 ha. Collectively the parcels are bounded by Rossdale Road NW to the north, Rossdale Park to the east, 98 Ave NW and Diamond Park to the south and 101 Street NW to the west. Parcels A and B are separated from Parcel C by 100 Street NW (Figure 1). The Rossdale Brewery, the only building currently within the project area, is designated as an historical resource.

Current zoning of the lands is Direct Development Control (DC1). The development will include three terraced, high-rise buildings (Building A, B and C, corresponding with Parcels A, B and C) with terracing at each starting at two stories and rising to a maximum of 15 stories

(Dub 2022, see Attachment B). Buildings A and B will be approximately 45 m tall; Building C will be approximately 55 m tall. The Rossdale Brewery will be retained and attached to one of the three proposed high-rises. Combined, the buildings will occupy 1.7 ha of land and will support residential and commercial uses. Each building will include a single-level, below-ground parkade. Excavations approximately 3.5 m deep will be required to construct the underground parking.

Stormwater from the proposed development will be captured and conveyed into the City's existing stormwater system and ultimately discharged into the NSR. There will be no overland runoff leaving the development site (Dub, *pers. comm*). Al-Terra (2022) has recommended measures to ensure that the City's stormwater system is not overloaded by the new development. Timing and quantity of releases into the stormwater system will be controlled to respect the prescribed post-development discharge rates (Al-Terra 2022). The locations of the holding tanks are not yet finalized. In addition, Low Impact Development (LID) designs (e.g., green roofs and site grading), planned though not yet designed, will assist in containing stormwater on the development site. There are no plans to locate project components in the river or on the riverbank. Utilities, including holding tanks, will not be located deeper than the underground parking (G. Dubb, *pers. comm*).

The eastern portion of Parcel C is acknowledged to be within the City of Edmonton's Floodplain Protection Overlay and therefore subject to the Floodplain Management Policies in the *Rossdale Area Redevelopment Plan* (Bylaw 8139) (City of Edmonton 2021). Parcel C is located near to but outside of the 1:25 year flood line and within the 1:100 year flood line (Al-Terra 2022). In response, the proponent currently has plans to flood-proof Building C, in the area shown below in (Plate 1), by constructing the underground parkade at elevations that ensure that the ground floor of Building C is above the 1:25 year flood line and in compliance with the Floodplain Management Policies.

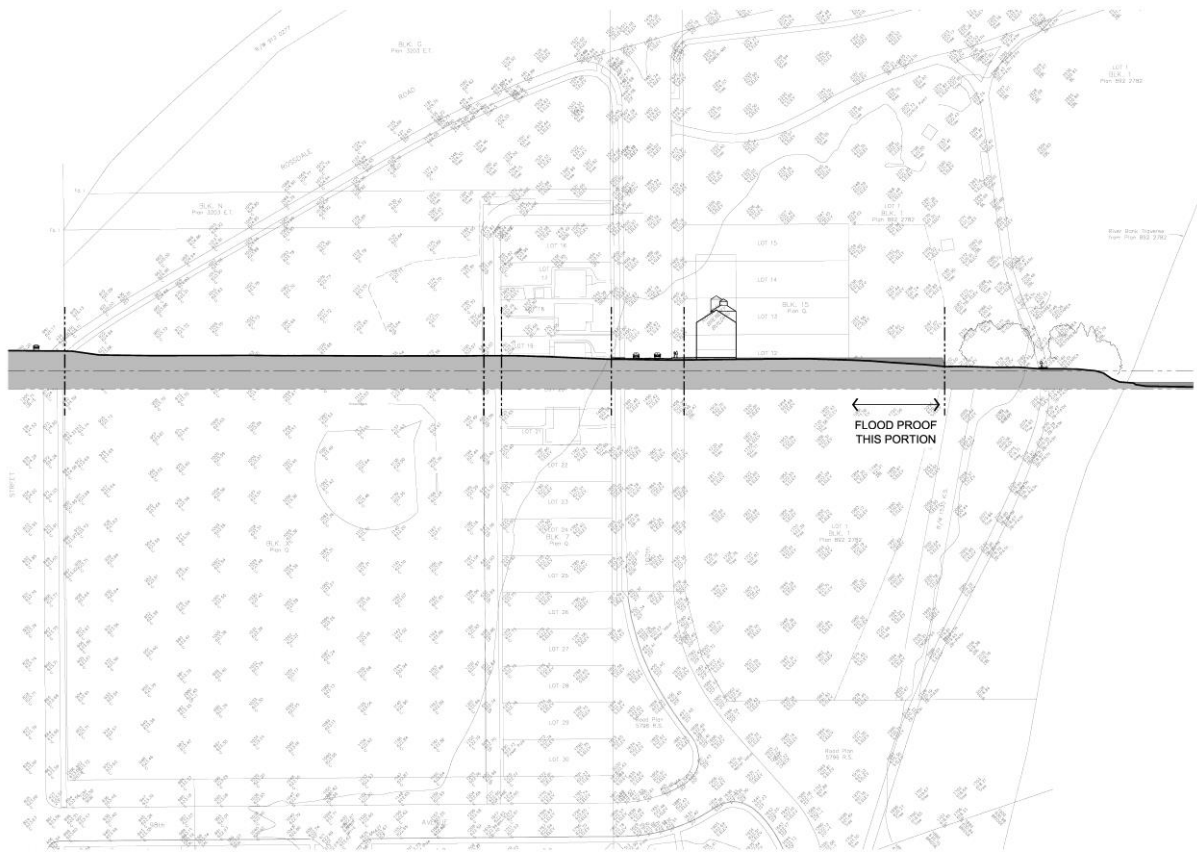


Plate 1. Proponent’s plan to flood-proof a portion of Parcel C.

Each building will be terraced and each terrace will support a landscaped green roof. Rooftop landscaping is as yet undesigned but is expected to comprise turf, grasses and shrub plantings. Geothermal and solar sources of energy are being considered for this project and façade design will ensure a Leadership in Energy and Environmental Design (LEED) silver standard is achieved (Dub 2022). New internal pathways will connect the buildings to each other and surrounding amenities, including the existing river valley path system.

The following lighting strategies are to be implemented as part of the proposed development:

- Site lighting will prioritize the use of fully shielded fixtures and dark sky compliant fixtures to reduce glare and light trespass, while facilitating better vision at night.
- Lighting strategies will be implemented to minimize uplighting and light trespass including fixture selection, low-output lighting and intentional aiming within property lines.
- Pedestrian scale lighting (below 4m tall) will be used to illuminate the building as needed and light pedestrian corridors through the development.
- Curfew lighting will be explored for reduced-use areas outside of typical building hours (i.e., 11pm-5am). Dimming or full-off will be analyzed.
- LED or other high efficiency lighting will be explored to reduce waste heat, save energy, and improve safety.

- The overall design will consider eye adaption zones between areas of high light levels such as the main pedestrian corridor and fringes of the development.
- Crime Prevention through Environmental Design (CPTED) principles will be reviewed in conjunction with the lighting plan design to ensure the elimination of hiding spots and unsafe pedestrian thoroughfares.
- Lighting adjacent to the NSRV wildlife corridor will consider monochromatic light sources to reduce impact to wildlife. This will be balanced against needs for pedestrian safety in these areas.
- Exterior lighting will be approximately 3000K or less to enhance visibility of people and objects and overall site safety.
- Exterior lighting will use low Bug (backlight-up-light-glare) rated luminaires to reduce glare and light trespass.

Previously Approved Design

The previously approved design included DC zoning approval for all three parcels and the proponent had obtained a building permit for Parcel A. The approved building for Parcel A was a 5-story high-rise approximately 16.8 m tall, occupying 0.427 ha. The building was designed to have a single level of below ground parking and a green roof that was not terraced. The approved design included a sidewalk running south of Building A connecting a parking lane situated east of Diamond Park to 101 Street NW. Plantings were to be installed along the south side of the sidewalk. Tree and shrub plantings were also to be installed along the north side of the building. Overall, the design concept and footprint of Building A remains the same in the new proposed development; however, the new Building A is taller. In the previous design, buildings B and C were anticipated to have a maximum height of 20 m (Dub *pers. comm.*).

Study Areas

The ecological analysis primary study area encompasses all three parcels, lands in between and a 10 m outside buffer (Attachment C, Figure 1). A larger, secondary study area, also shown on Figure 1, was used to consider wildlife movement, anthropogenic lighting and mapped floodplain flood zones.

Methods

The preparation of this letter was informed by a series of desktop analyses, a site visit and consideration of the project design as described above. Specific tasks undertaken were:

- Review of publicly available aerial photography of the study area
- Search of the Fish and Wildlife Information System (FWMIS; AEP 2022a) using the FWIMT to identify special status wildlife species observations recorded within or near the study area. The search area consisted of a 250 m radius circle centered on the study area
- Search of the Alberta Conservation Information Management System (ACIMS; AEP 2022b) for special status vascular plant species occurrences recorded within the study area

- Search of ebird records for Rossdale Park and adjacent lands, on 26 July 2022
- A site visit conducted on 08 October 2021 to ground truth and further characterize existing biophysical conditions within the study area. No specific wildlife or plant surveys were undertaken
- Review of relevant literature, including:
 - Rossdale Centre Phase 1 Edmonton, Alberta Geotechnical Investigation (Thurber Engineering 2016)
 - Rossdale Center – Drainage Servicing Report – 2nd Submission (Al-Terra Engineering Ltd. 2022)
 - City of Edmonton 2019 Light Efficiency Community Guidelines
- Qualitative analysis of the key ecological concerns outlined in Attachment A, through cross-referencing existing conditions with design information and application of professional judgement.

Existing Conditions and Potential Ecological Implications

Geology and Soils, Groundwater

Thurber (2016) described general subsurface conditions within the westernmost lands of the project area (i.e., Parcel A), as follows, in descending order: topsoil and organics, clay, sand, gravel and bedrock (Thurber 2016). Topsoil consisted of black, silty clay and organics and extended from the ground surface to 0.15 m to 0.6 m deep. Clay was found below the topsoil to depths ranging between 3.3 m and 6.4 m. Clay was generally brown to grey, silty and contained some sand. Sand was encountered below the clay and extended to a depth of approximately 6.8 m below ground surface. Gravel was encountered below the sand and extended to a depth of approximately 9.5 m below ground surface. Bedrock consisting of clay shale and sandstone was encountered below the gravel layer at a depth of approximately 9.5 m (Thurber 2016).

Thurber installed three standpipe piezometers within Parcel A on 20 April 2016 and monitored water levels upon installation and again on 25 April 2016. Based on short-term groundwater level monitoring, the groundwater levels in Parcel A ranged from 6.8 m to 7.2 m below ground surface (Thurber 2016). Thurber also noted that groundwater levels can vary in response to seasonal factors and precipitation. Groundwater data for Parcels B and C, closer to the river, were not available to us. We assume groundwater flows toward the river.

For Parcel A, Thurber concluded that the groundwater water table is below the planned parkade level. But noted the possibility of perched water within the sand and gravel to provide a source of long-term groundwater seepage. Their report recommends mitigating subsurface design measures. Dub has confirmed to us that the maximum anticipated excavation depth for the entire development is 3.5 m. If the subsoils and groundwater data are also applicable to Parcels B and C, the anticipated maximum depth of excavation suggests that all work will be well above the water table and within clay subsoils, where groundwater typically moves slowly. Considering the above points, Parcel A is assumed to have no potential to effect groundwater flows to the river. This may also be true for the remainder of the project area,

unless in locations closer to the river the groundwater table is closer to 3.5 m below ground surface or sand and gravel lenses are present at shallower depths.

Floodplain

As noted above, a portion of Parcel C falls within the CoE Floodplain Protection Overlay. Parcel C also includes lands mapped by Government of Alberta (AEP 2015) as floodway and flood fringe (Attachment C, Figure 2). The floodway is the portion of the flood hazard area where flows are deepest, fastest and most destructive. New development is typically discouraged in the floodway. Floodwaters in the flood fringe are generally shallower and flow more slowly than in the floodway. New development in the flood fringe may be permitted in some communities and should be flood proofed. The planned location of Building C with underground parkade in the floodway will likely require acquisition of a *Water Act* Approval from AEP. A supporting hydrotechnical report may be required. We recommend early consultation with AEP.

Surface Water/Stormwater Management

There are no wetlands or other surface water bodies in the primary study area. The only surface water body in the secondary study area is the North Saskatchewan River (NSR), which is located approximately 40 m east of the easternmost study area boundary (and ~ 50 m from the closest point of the Parcel C boundary). Most surface runoff from the largely level project area is currently directed to existing catch basins located along roadways (Al-Terra 2022) with some potential for infiltration/interception in vegetated areas. The existing catch basins are connected to the City's stormwater system (combined sewers) and ultimately discharge via outfalls into the NSR (Al-Terra 2022), a fish-bearing water body. Vegetated lands in the east of Parcel C slope slightly to the east and our review of contours suggests that they drain overland toward the river, except when retained on site by soils and vegetation.

Based solely on contours shown in Al-Terra (2022), the grading planned for Parcel C has some potential to slightly reduce the total overland runoff volumes directed east toward Rosedale Park. The post-development difference in runoff volumes leaving the subject parcel has not been quantified. As the area involved is small (in the order of 0.2 ha), it is likely that the reduction would be within natural variation and therefore not significant to the existing plant community to the east of that area. A more detailed analysis is beyond the scope of this exercise.

Wildlife and Wildlife Habitat

Existing Conditions

In October 2021, the primary study area largely supported manicured vegetation in open space areas and gardens/yards associated with previously developed residential and commercial lots (Plate 2). Manicured vegetation comprised turf grass and open space trees such as green ash (*Fraxinus pennsylvanica*), white spruce (*Picea glauca*), Manitoba maple (*Acer negundo*), hybrid poplar (*Populus x*) and Siberian crabapple (*Malus baccata*). On 08 October 2021, we observed evidence of demolished residences on two lots west of 100 Street NW. These lots had not been recently maintained and therefore were weedier and not as groomed as typical manicured areas within the City (Plate 3). Other small locales were similar in character.



Plate 2. Typical maintained manicured area (08 October 2021).



Plate 3. Unmaintained manicured vegetation on a previously developed residential lot (08 October 2021).

A small patch of mixed deciduous – mixed shrub community (shrubby forest habitat), was located along the eastern edge of the study area (Attachment C, Figure 3). Native species found in this community included balsam poplar (*Populus balsamifera*), aspen (*Populus tremuloides*), red-osier dogwood (*Cornus stolonifera*), prickly rose (*Rosa acicularis*) and tall goldenrod (*Solidago altissima*) (Plate 4). The forested area immediately surrounding the brewery property had a less diverse understorey than the forest community outside the primary study area and closer to the river valley SUP and along the NSR. The less diverse patch had an understorey dominated by exotic species such as curly dock (*Rumex crispus*), lamb's-quarters (*Chenopodium album*) and common dandelion (*Taraxacum officinale*) (Plate 5). The noxious weeds common burdock (*Arctium minus*), creeping thistle (*Cirsium arvense*) and perennial sow-thistle (*Sonchus arvensis*) were found scattered throughout the study area. The prohibited

noxious weed common buckthorn (*Rhamnus catharticus*) was found within the river's edge forest outside the study area. No special status plant species were observed during the site visit and a search of ACIMS returned no records of special status plant species within the study area.



Plate 4. Mixed deciduous – mixed shrub habitat with a diverse understorey of native species near the NSR (08 October 2022).



Plate 5. Mixed deciduous – mixed shrub habitat with an understorey of mainly exotic species (08 October 2021).

Portions of the primary study area mapped as manicured vegetation comprise relatively low-quality wildlife habitat. As with other manicured open space throughout the city, this habitat is likely used by a relatively small suite of urban-adapted wildlife species, and species present would likely typically consist of commonly occurring species that are tolerant to human activity. The small forest habitat patches in the primary study area are much higher quality habitat, attractive to a greater number of shrub and tree-dwelling species but still likely most

suitable for species common in urban areas. That said, the relatively low human use, the location in the river valley, and adjacency to a larger patch of forested parkland increases the habitat value of the overall study area. The forest along the river's edge (Attachment C, Figure 3) would support more species and may be important migration stopover habitat. The anticipated suite of resident or frequently present species in the primary study area includes mice and vole species, red squirrel, skunk, white-tailed jack rabbit, fox, coyote, and a wider variety of birds, such as yellow warbler, black-capped chickadee, American robin, downy woodpecker, white-breasted nuthatch, blue jay and common crow. Several small-diameter cavities were observed in the few snags present in the primary study area. Available eBird records support our characterization of the anticipated avian population in the primary study area and adjacent Rosedale Park lands. We could find no site-specific records of special status species and the lands are not shown as a birding hotspot. Other, larger river valley native forest patches outside of the secondary study area are shown as hotspots.

While the NSRV as a whole is recognized as a regional, permeable wildlife movement corridor, in the city centre including in the secondary study area, functionality is reduced, primarily by roadways, pathways, neighbourhoods, outfalls, and intensive human use of many types. In the secondary study area, the bands of riparian forested lands that provide security cover and forage are likely the most important corridor components. The primary study area in its present undeveloped state, and given its valley bottom location, is considered to be a high functioning, albeit small component. In the vicinity of the primary study area, there are currently no significant barriers between the main riparian wildlife corridor and the adjacent project lands, the two separated only by an SUP and mowed verge. It is therefore assessed as currently functioning as an extension of that primary corridor, especially for species preferring to graze and forage in open areas. The project lands may therefore be used as part of larger resident wildlife territories for some species and also seasonally and briefly by dispersing mammals and migrating birds.

Special Status Wildlife Species

FWMIS returned two records of special status wildlife species, Canadian toad and peregrine falcon. Record dates are no longer provided through FWMIS. The Canadian toad is provincially listed as *May Be At Risk*. The record in question is thought to be from 2007, in lower Mill Creek Ravine (Spencer Environmental 2013). Similar to other amphibian species, Canadian toads breed in wetlands, including slow-moving riverine wetlands; however, for much of the year they can be found in adjacent uplands. For breeding, Canadian toads are most often found using water bodies with stable water levels, mudflats and cattail margins (Hamilton *et al.* 1998) and when not breeding are often found along lakes and rivers with sandy soils, which are important for winter hibernation. Habitat within the primary study area is assessed to be unsuitable for Canadian toads. The closest suitable breeding habitat is ~ 800m away and across the river, in lower Mill Creek Ravine. Based on the above, Canadian toads are thought to have some low to moderate potential to be present near the study area, along the river, however, potential to occur *within* the study area is rated as low.

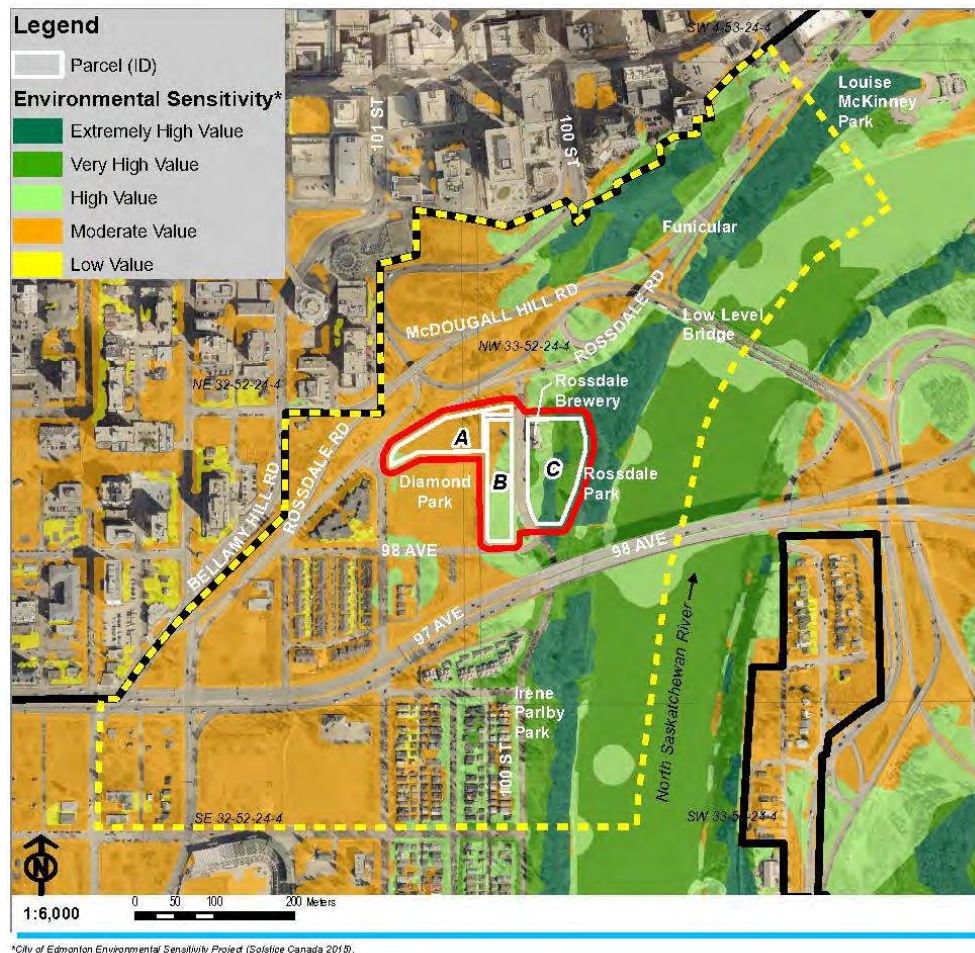
Peregrine falcons are provincially listed as *Threatened* under Alberta's *Wildlife Act* and are federally listed as *Special Concern* under Schedule 1 of the *Species at Risk Act* (SARA). Peregrine falcons are known to nest in two locations nearby the project area: on the High Level Bridge (approximately 1.3 km west of the study area) and at the Biological Sciences Building

at the University of Alberta (approximately 2.3 km west of the project area on the south side of the river) (A. Bismanis, *pers. comm.*). Because of this, it is possible that peregrine falcons may occasionally forage in the project area, therefore, their likelihood of occurrence in the project area is rated as moderate. eBird records suggest that peregrine falcons may have been observed in the secondary study area.

The presence of mature trees, an old building and the proximity of the NSR results in some potential for little brown myotis and northern myotis, two species of bats that are federally listed as *Endangered* and will be provincially listed as *Endangered* in the near future (L. Wilkinson, *pers. comm.*), to use habitat in the project area during the growing season as a roosting site. Legal protection currently only extends to overwintering hibernacula and does not cover individual bats. The protection of individual bats and documented roost sites appears to be an emerging best management practice in line with emerging bat conservation efforts.

Mapped Environmental Sensitivities

Plate 7 shows the result of the City of Edmonton environmental sensitivities analysis and classification mapping (Solstice 2016) in the project vicinity, with the primary and secondary study areas overlaid. This mapping supports the above characterization. In general, the area around Diamond Park is mapped as having ‘moderate’ value. Lands mapped as having ‘moderate’ or ‘low value’ are noted by the City as suitable for restoration. The eastern half of the primary study area and lands extending to and including the river are mapped as ‘high’ to ‘extremely high’ value, with the highest values being located closer to the NSR. The City considers lands mapped as having ‘high’, ‘very high’, and ‘extremely high value’ to be lands suitable for protection or conservation. The mapping of lands on the east half of Parcel C as very high value does not agree with our finer scale vegetation mapping developed during our site reconnaissance, which is taken to be more accurate. Most of Parcel C currently supports manicured vegetation, which would align with moderate value. The central patch of mixed deciduous vegetation does align with high or very high value. The extremely high value areas to the east of the study area, shown on Plate 7, correspond to the primary wildlife movement corridor shown on Figure 3.



*City of Edmonton Environmental Sensitivity Project (Solstice Canada 2018).

Plate 7. City of Edmonton Environmental Sensitivities in the vicinity of the project area.

Wildlife Development Implications

The proposed development is expected to have the following implications for wildlife, wildlife habitat and wildlife movement:

- The proposed development will largely impact low-quality habitat, i.e., grass, turf grass and ornamental/open space trees. All trees within each parcel are assumed to require removal to accommodate the proposed development. Approximately 37 ornamental trees, located on private property will be removed to accommodate the project. Loss of ornamental treed habitat can be mitigated by development landscaping. Landscaping including on rooftops should include a prohibition of use of any invasive non-native species that may escape into the natural area so the river valley.
- Related to this, we note that the City's new Public Tree Bylaw (Bylaw 18825) will apply to this project. A permit and a tree protection or preservation plan will be required for any work done within five meters of a boulevard and open space tree or within 10 meters of a natural stand situated on City property.

- An area of shrubby forest habitat measuring approximately 0.19 ha (1900 m²), will be removed from privately held lands to accommodate Building C. Green rooftops can partly mitigate this but mainly for flying taxa (insects and to a smaller degree birds) insects and possibly.
- The project will not remove any of the highest quality, riparian forest habitat that is the primary wildlife movement corridor situated to the east of Parcel C.
- The potential for the project to result in impacts to special status wildlife is considered low. The only potential impact is associated with removal of some older trees and the historic brewery renovations, both of which could remove or affect roosting habitat for little brown myotis and northern myotis; however, if these activities consider the timing of seasonal bat presence, and avoid habitat removal during that period, direct impacts to these species can be avoided. An abundance of similarly suitable roosting habitat remains in other nearby NSRV lands.
- Building C will be located along the eastern boundary of the primary study area, overlooking the NSR and adjacent riparian forest but will not encroach on the identified primary wildlife movement corridor. The presence of a building and associated human activity near the corridor may reduce corridor habitat use for some resident or breeding species (or individuals of those species) that are intolerant to regular human presence but this effect is anticipated to be minimal given that most species currently frequenting the area are already selecting this urban environment. The building is not expected to reduce corridor functionality for dispersing or migrating species that have already committed to using the relatively narrow, longer corridor that runs through the city centre.
- The proposed location of Building C adjacent to and overlooking riparian forest in combination with the large number of windows shown in the concept, and the potential for the façade to be reflective creates potential for avian-building (primarily windows in this case) collisions. Bird-building collisions have long been identified as a potentially significant source of bird mortality and are now determined to be the largest source of avian collision mortality in North America (Loss *et al* 2019). Calvert (*in* Machtans *et al* 2013) found that mortality from bird-window collisions was one of the largest causes of anthropogenic avian mortality in Canada. Machtans *et al* (2013) report that modeling estimates indicated that about 25 million (range 16 – 42 M) birds are killed annually by colliding with windows in Canada. Further, they found that houses likely cause 90% of building-related mortalities, commercial low-rise buildings (less than 12 storeys tall) slightly less than 10%, and tall buildings approximately 1%. The authors concluded that the disproportionate contribution of mortality caused by houses is a function of their relative number compared to the two other classes of buildings, but they note that regardless, homes and low buildings are certainly a concern. They also found that warblers and sparrows were the most commonly killed birds at low-rise and tall buildings. Collision patterns described in the literature positively correlate mortality to the amount of glass and vegetation present in proximity to the windows (Machtans *et al* 2013). Loss *et al* (2019) note that their results are consistent with past research

suggesting that vegetation near windows elevates collision rates. Lighting escaping from windows also plays a role in bird-window collisions but that relationship is less clear. Loss *et al* (2019) argue there is sufficient circumstantial evidence regarding nighttime lighting effects on bird-building collisions to expand efforts to reduce light pollution in downtown areas and other settings.

- We considered the potential for two types of avian movement to result in window collisions: daily, local movements for foraging, breeding and roosting; and, migratory movements, particularly those that may be funnelled along the river valley. For local movements, the collision risk is associated with confusion resulting from habitat (vegetation) and sky reflections (Loss *et al* 2019) and in this case, is most likely to occur in lower stories of Building C. For the migratory period, the primary risk of collisions is thought to be associated with nocturnal movements and light confusion. Given the maximum height of 55 m (15 stories) migration collisions may be a lesser source of mortality as strikes during migration are positively correlated with building height (Loss *et al* 2019) and high-rises are often identified as problematic. In addition, the alignment of the building wall parallel to the forest band, rather than perpendicular, may be a mitigating design feature.
- We are of the opinion that the potential for avian-window or avian-building collisions to occur at Building C merits mitigation, partly because the solution to this very widespread issue is widely regarded to lie in the collection of a multitude of local efforts (<https://www.birdscanada.org/make-an-impact-by-preventing-collisions-this-fall/>; Machtans *et al* 2013) and partly because effective mitigation means are available and most can be easily incorporated either as part of design or as part of building owner management practices. At the time of writing, potential for window treatments or other features installed on the buildings to mitigate window collisions have not been disclosed to the authors. We recommend that bird collision deterrent measures be pursued during the next project phases. At a minimum, measures should be adopted for the east side of Building C at the lower stories that are adjacent to vegetation and including one story above the forest canopy. The need for additional bird-collision deterrents at higher elevations or on other building walls will depend on landscaping plans and building finishes and should be explored during future design phases.

Lighting and Wildlife

Existing lighting in the primary study area is limited and concentrated on the surrounding streets. Two light poles are located along the north side of 98 Avenue NW, south of Parcel B and two light poles are located on 100 Street NW, one in front of Rossdale Brewery and one at the intersection of 100 Street NW and Rossdale Road. Existing lighting conditions have not yet been quantified or qualified or mapped but we note that the existing fixtures do not appear to be recent or fitted with shields or of the fixture types that prevent trespass lighting in any direction. Except to the north, lands surrounding the primary study area are generally unilluminated. To the north of Parcel A, standard streetlights are present along Rossdale Road. Park lands to the east and north of Parcel C do not currently support lighting. Diamond Park,

bordering Parcel A and B has no lighting, however, five light poles are located along the north side of 98 Avenue NW, south of Diamond Park.

The proposed development will, by necessity, result in a well-lit, safe, residential and commercial area that meets City standards and is compliant with the lighting guidelines in the manner noted above. Efforts have been made to reduce light spill in all directions. The ecological concern to examine is the degree of trespass lighting into the wildlife habitat remaining to the north and east of Parcel C, which are areas of Rosedale Park that are currently not subject to anthropogenic lighting. As is recognized by the City's guidelines, light spill from development into adjacent natural areas can have a negative effect on local wildlife species. Increased lighting can deter wildlife from using habitat and/or disrupt behavior. In the absence of light spill data, our analysis is limited to highlighting this as a potential concern and recommending continued careful consideration of lighting, particularly light standards at/near the juncture of the future internal path and the existing unlit SUP. While it is possible that trespass lighting from commercial and residential windows on the east wall of Building C, may enter the park riparian forest. Urban municipality lighting guidelines that we reviewed did not cover this concern, possibly because interior lighting and window dressing to reduce spill is beyond a municipality's control.

Compliance with Relevant Environmental Policies, Guidelines, Other Instruments

Breathe: Edmonton's Green Network Strategy (City of Edmonton 2017)

The proposed development respects the existing limits of privately held lands, and in providing direct connections to the existing SUP and sidewalk network is consistent with the *Breathe* objective to plan and sustain a healthy city by encouraging connection and integration of open space at the site and neighbourhood levels.

North Saskatchewan River Valley Area Redevelopment Plan (Bylaw 7188) (City of Edmonton 2018).

The proposed development is located in the Central Area mapped in the NSRV ARP. The proposed development is consistent with the following Bylaw 7188 objectives and policy statements for that area:

Section 2.9 Central Area Land Objectives

2.9.1 To designate the Central Area as an area where community plans will be prepared.

3.8 Central Area Land Use Policies

In keeping with the Central Area Land Use Objectives in Section 2.9, the following policies are identified:

3.8.1 It is a policy of this Plan to recognize the existing communities of Rosedale and Cloverdale as illustrated on the Central Area Map (page 17).

3.8.2 It is a policy of this Plan that when the future land use of this area is determined, the detailed development plan and community plan proposals should consider the following guidelines:

1. Primarily residential development will be proposed in the designated areas of South Rosedale and South Cloverdale. (See Central Area Map p. 17).
2. New or expanded major facilities which adversely impact the residential communities shall be discouraged.
3. Proposed new development should be designed to take advantage of the river location and should be integrated with design concepts of the Capital City Recreation Park.
4. Additional commercial uses may be proposed, and if so, should serve local residential development and existing recreational development, be compatible to parkland development, or be part of a city-wide facility.
5. Ensure the provision of pedestrian links to all the abutting neighbourhoods, including the Downtown and ensure that the facilities that provide these links are of sufficient capacity to accommodate the proposed development for this area.
7. Residential and other suitable uses, including parks and recreational uses, may be considered in the Rosedale and Cloverdale community plan areas.

Edmonton City Plan (City of Edmonton 2020); *Ribbon of Green: North Saskatchewan River Valley and Ravine System Master Plan* (City of Edmonton 1992)

The proposed project will create a pedestrian walkway through the project area connecting Diamond Park to the existing SUPs in Rosedale and Irene Parlby parks and to the 100 Street Funicular. This is consistent with the *City Plan* and *Ribbon of Green* intentions to enhance the City's active transportation network (particularly in connection with Edmonton's river valley and open spaces).

Natural Area System Policy (C531) (City of Edmonton 2007)

All three buildings will be located on private land in areas that have previously been developed. They do not encroach on Natural Areas. Further, Building C has been orientated parallel to the river and allows for a continuous ecological corridor along the NSR.

City of Edmonton 2019 Light Efficiency Guidelines

To date, the proposed development lighting plans have been prepared in consideration of the guidelines aim to minimally impact wildlife and plants and natural areas. The measures listed in the proposed development description are all intended to reduce trespass lighting in general and reduce trespass lighting into habitat in Rosedale Park.

Setback from the River

The east margin of Parcel C creates a variable setback distance from the river's edge of ~35 to 90 m. Setback lands are Rosedale Park and are mainly naturally vegetated corridor. This buffer will function to slow runoff, filter pollution create habitat and allow for wildlife movement.

Key Wildlife and Biodiversity Zone

The entire NSRV is mapped by AEP as a Key Wildlife and Biodiversity Zone (KWBZ). In the secondary study area the zone is generously mapped and includes some developed lands (Plate 6). A KWBZ is a combination of key wildlife habitat from both uplands and major watercourse

valleys. KWBZs were created by the Province using major river corridors, valley topography, valley slope breaks and ungulate winter densities. KWBZs are intended to prevent loss and fragmentation of habitat; prevent short and long-term all-weather public vehicle access; prevent sensory disturbance during periods of thermal or nutritional stress on wildlife; and prevent the development of barriers to wildlife corridors (Alberta Sustainable Resource Development 2015). It is our understanding that within Edmonton the City respects this KWBZ by striving to maintain the river valley ecological corridor and avoid/minimize direct and indirect impact on wildlife movement.



Plate 6. Key Wildlife and Biodiversity Zone (pink polygon) in the vicinity of the project area (red star) (FWMIS; AEP 2022a).

This project respects the wildlife movement corridor function of the KWBZ by orienting the building closest to the riparian forest corridor parallel to the river and not encroaching on the primary wildlife movement corridor.

Federal and Provincial Environmental Approvals

As there are no plans to remove wetlands, change surface drainage, construct ditches, construct outfalls or otherwise work within or near the NSR, few environmental approvals will be required. Identified approvals are limited to the potential for the planned development in the east area of Parcel C to require an approval pursuant to Alberta's *Water Act*.

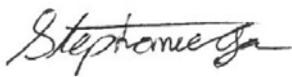
Closing

This letter report provides an analysis of ecological implications potentially associated with the proposed development in Rosedale Centre, based on the information available to us at the time of writing.

Please contact the undersigned if you have any questions.

Sincerely,

**Spencer Environmental
Management Services Ltd.**



Stephanie Jean, M.Sc., P.Biol.
Environmental Scientist



Lynn Maslen, M.Sc., P.Biol.
President, Project Manager

Attachments

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Personal Communication

Bismanis, A., Senior Environmental Scientist, Spencer Environmental Management Services Ltd.

Dub, G., Principal Architect, Dub Architects Ltd.

Wilkinson, L. Provincial Non-Game Specialist, Species at Risk & Stewardship Section, Alberta Environment and Parks.

Attachment A. Scope of Work

Agreed-upon scope of work for ecological analysis of revised proposed design, as considered in October 2021

Summary of information *requested* by Urban Growth and Open Space Strategy (Planning and Environment Services) during a meeting held on 13 October 2021:

- Examination of the ecological implications of the proposed development, with a focus on the new building height and associated underground work (e.g., depth of excavation).
- In brief, primary ecological implications pertaining to:
 - wildlife habitat and wildlife movement, including movement of aerial (flying) animals
 - adverse effects associated with the introduction of more lighting to this area as a result of taller buildings
 - the floodplain location
 - the potential for the project to affect groundwater flows to the river, with ramifying ecological effects
 - stormwater management effects and associated ecological implications

(This above list aligns with the questions raised in earlier correspondence.)

- A description of which, if any, development features compensate for the building's proximity to the river and represent a good feature for the proposed location. Green infrastructure and LID features are encouraged.
- Consideration of the proposed development's compliance with relevant policies and provincial approvals, BMPs, guidelines, setbacks and the river valley designation by the Province as a Key Wildlife and Biodiversity Zone.

Attachment B. Proposed Development

02 PROPOSED DESIGN

DESIGN DESCRIPTION

The proposed project consists of three residential buildings, on three separate parcels of land. The 1915 brewery is to be joined to one of the new buildings. Each residential building will rise from two storeys to a maximum of fifteen storeys. The buildings will contain the following number of units:

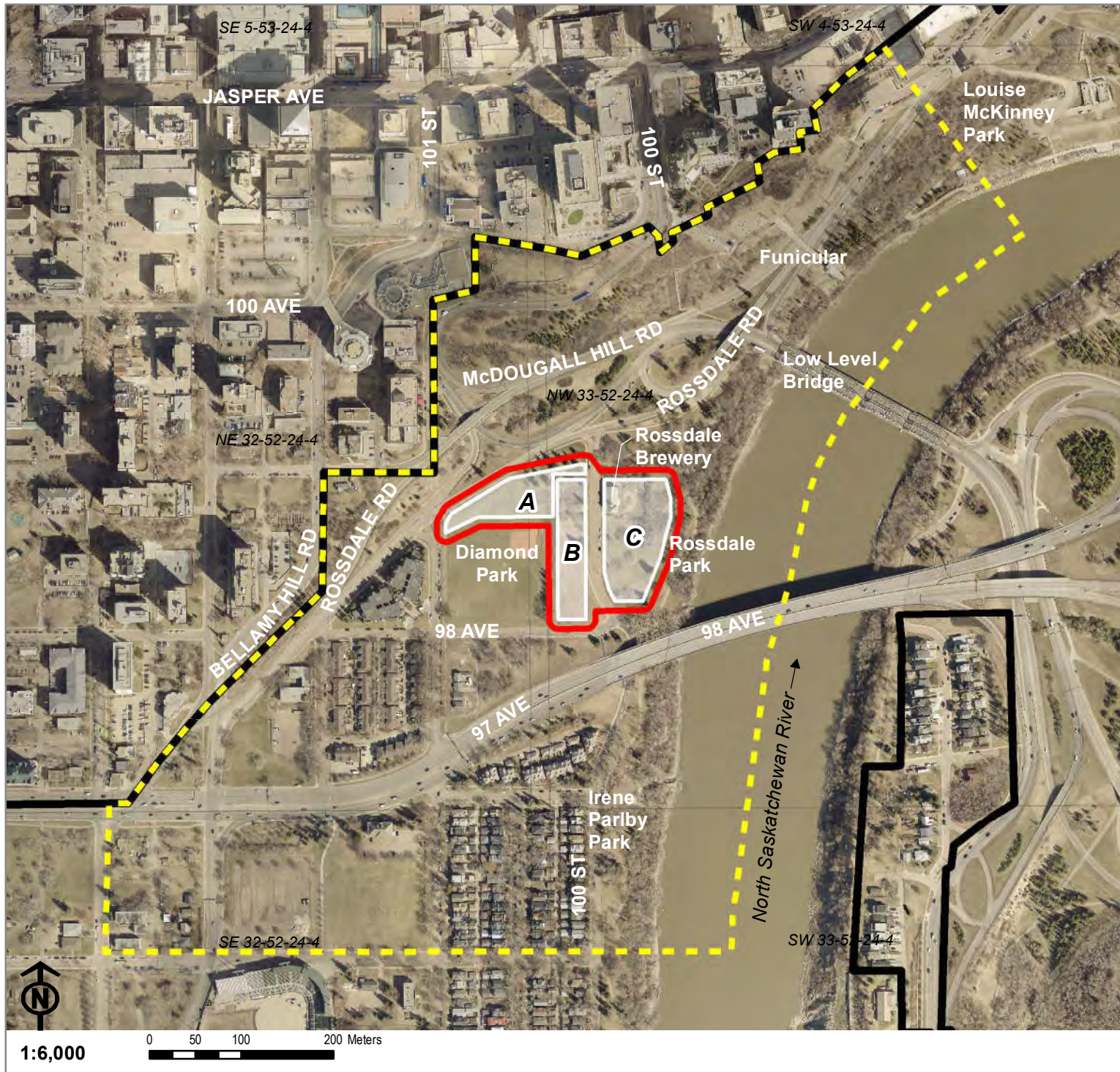
Building 1: 115 Units
Building 2: 166 Units
Building 3: 198 Units

The project will be built in three stages. The project will focus on high quality products and a unique terraced design emphasizing green roofs complimenting the River Valley and contributing to the vibrancy of the Rosedale neighborhood. The apartment buildings may incorporate neighborhood scale uses on the lower level, such as convenience retail stores, work/live units, specialty food services and neighborhood amenities.



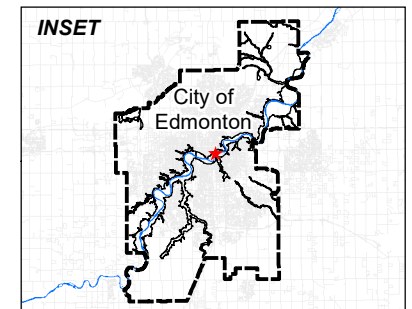
Attachment C. Figures

Figure 1.
Project Location
and Study Areas
Rossdale Rezoning -
Ecological Impact Analysis



Legend

- Parcel (ID)*
- Primary Study Area
- Secondary Study Area
- Bylaw 7188 Boundary** (COE)



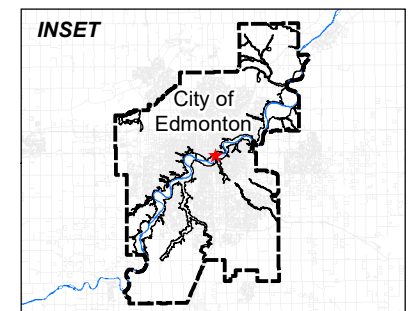
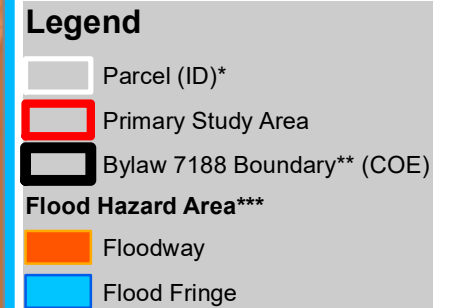
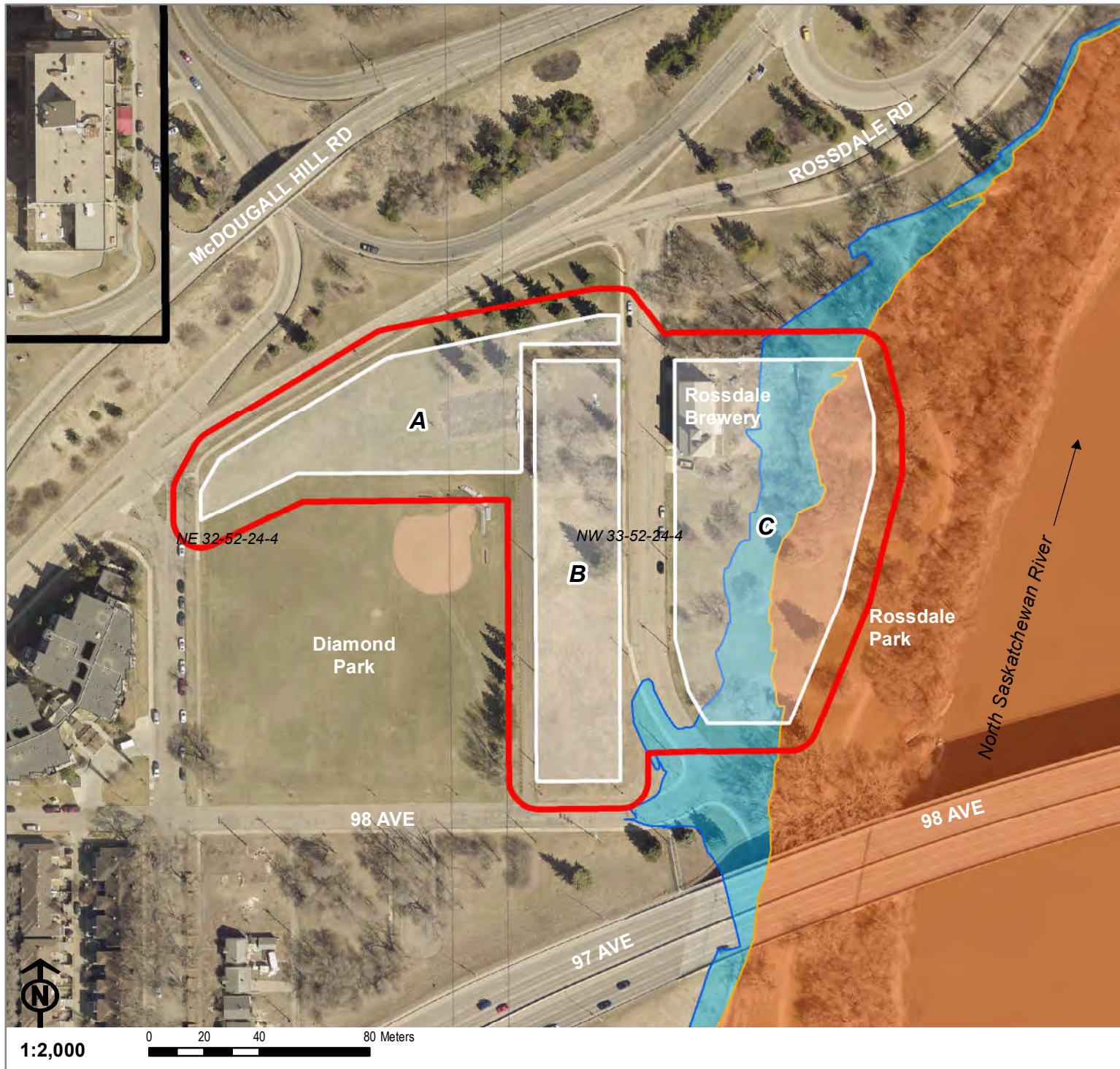
Map Date: 21 July 2022
 Imagery Mosaic: May-July 2021 (COE)



*Design provided by Dub Architects (2021).

**Bylaw 7188 boundary source: North Saskatchewan River Valley and Ravine System Protection Overlay (Bylaw 12800) accessed from <https://data.edmonton.ca>, on 19 July, 2022.

Figure 2.
Flood Hazard
Mapping (1:100)
Rossdale Rezoning -
Ecological Impact Analysis



Map Date: 21 July 2022
 Imagery Mosaic: May-July 2021 (COE)

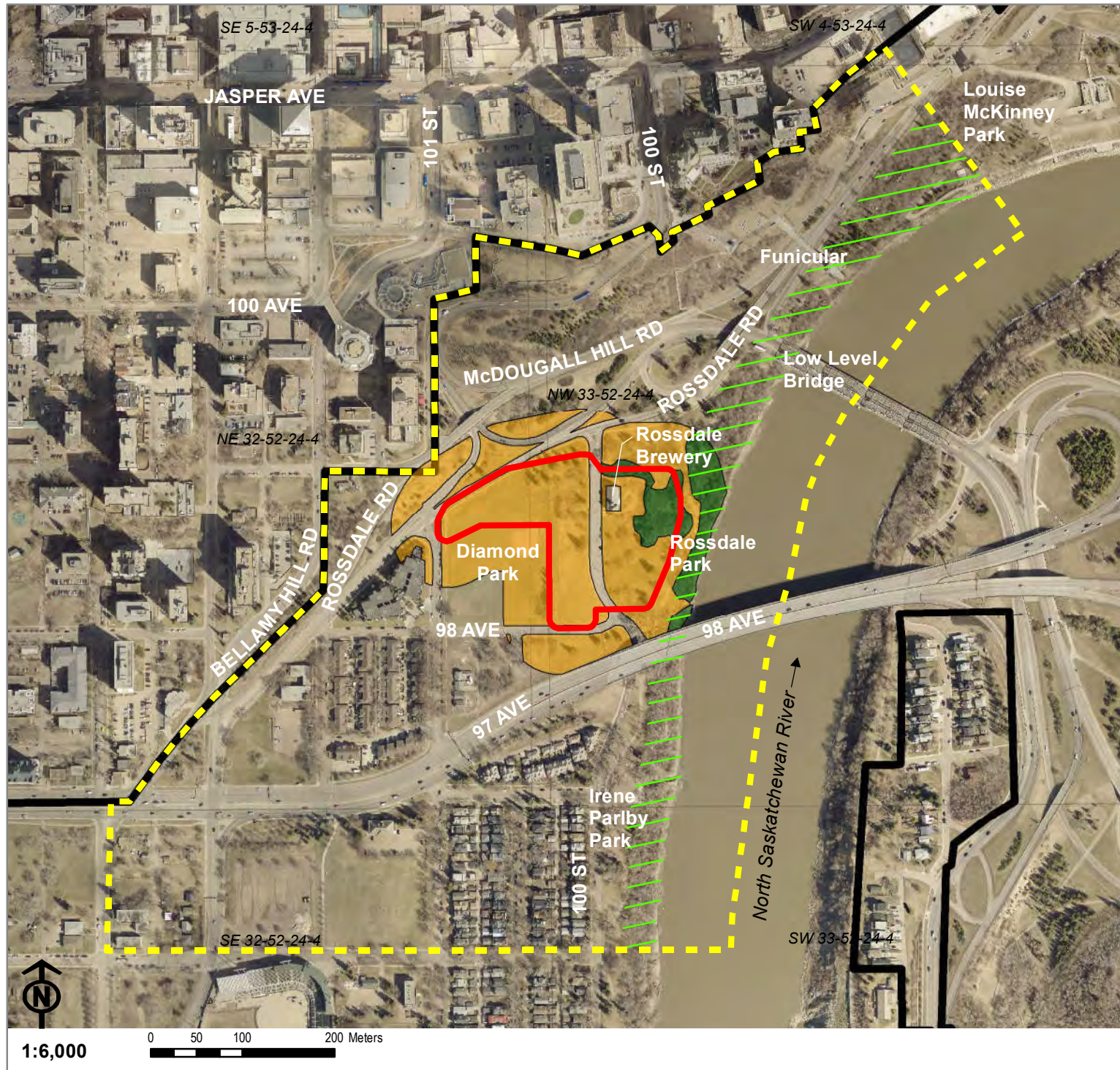


*Design provided by Dub Architects (2021).

**Bylaw 7188 boundary source: North Saskatchewan River Valley and Ravine System Protection Overlay (Bylaw 12800) accessed from <https://data.edmonton.ca>, on 19 July, 2022.

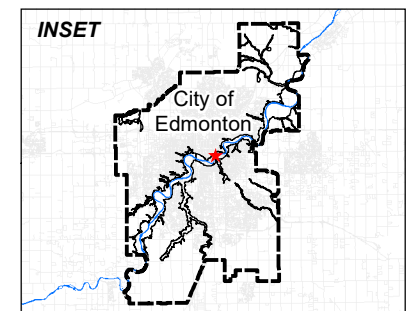
***Flood Hazard Mapping (AEP 2015).

Figure 3.
Plant Communities
and Wildlife Movement
Rossdale Rezoning -
Ecological Impact Analysis



Legend

- Primary Study Area
 - Secondary Study Area
 - Bylaw 7188 Boundary* (COE)
 - Primary Wildlife Movement Corridor
- Plant Communities**
- Mixed Deciduous - Mixed Shrubs
 - Manicured



Map Date: 21 July 2022
 Imagery Mosaic: May-July 2021 (COE)



*Bylaw 7188 boundary source: North Saskatchewan River Valley and Ravine System Protection Overlay (Bylaw 12800) accessed from <https://data.edmonton.ca>, on 19 July, 2022.