

West 240 Phase II Ecological Network Report

SECOND SUBMISSION



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FIERA
Biological Consulting



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1.0 Introduction

1.1. Objectives

The West 240 Neighbourhood encompasses an area of approximately 93.6 ha in south-central Edmonton. As part of the City of Edmonton requirements for a Neighbourhood Area Structure Plan (NASP), Fiera Biological Consulting Ltd. (Fiera Biological) was retained to conduct an ecological assessment and complete a Phase II Ecological Network Report for the neighbourhood.

This assessment is guided by the City of Edmonton's *Phase II Ecological Network Report Terms of Reference* (City of Edmonton 2014) and includes a wetland inventory and a site assessment of the existing natural areas within the West 240 neighbourhood boundary.

The main objective of this Phase II ENR is to identify ecologically important areas and features at the neighbourhood scale, as well as within the larger ecological network, and to provide recommendations that inform the environmental planning and design of West 240. Specifically, this Phase II ENR includes the following:

- 5.1.1 An inventory of wetlands that includes a classification and description of the value and function of each wetland as per the provincial standardized wetland assessment tool.
- 5.1.2 A description of natural areas within the neighbourhood boundary, including documentation of the vegetation community, important habitat features, and the potential for wildlife use and occurrence within each area.
- 5.1.3 An analysis of the pre- and post-development ecological network in the neighbourhood, and a description of the importance of the habitat within the larger regional ecological network.
- 5.1.4 Recommendations for the retention of important ecological features, and a description of the environmental design elements that have been integrated into the proposed neighbourhood concept plan to reduce the environmental impact of the development and maintain ecological network connectivity.

1.2. Study Area

The West 240 neighbourhood, located in south-central Edmonton, includes portions of NW/NE 13-52-25-4 (Figure 1). The neighbourhood is bounded by 122 Street to the east, 62 Avenue to the north, and Whitemud Creek Ravine to the west (Figure 2). All lands within the neighbourhood are owned by the Governors of the University of Alberta.

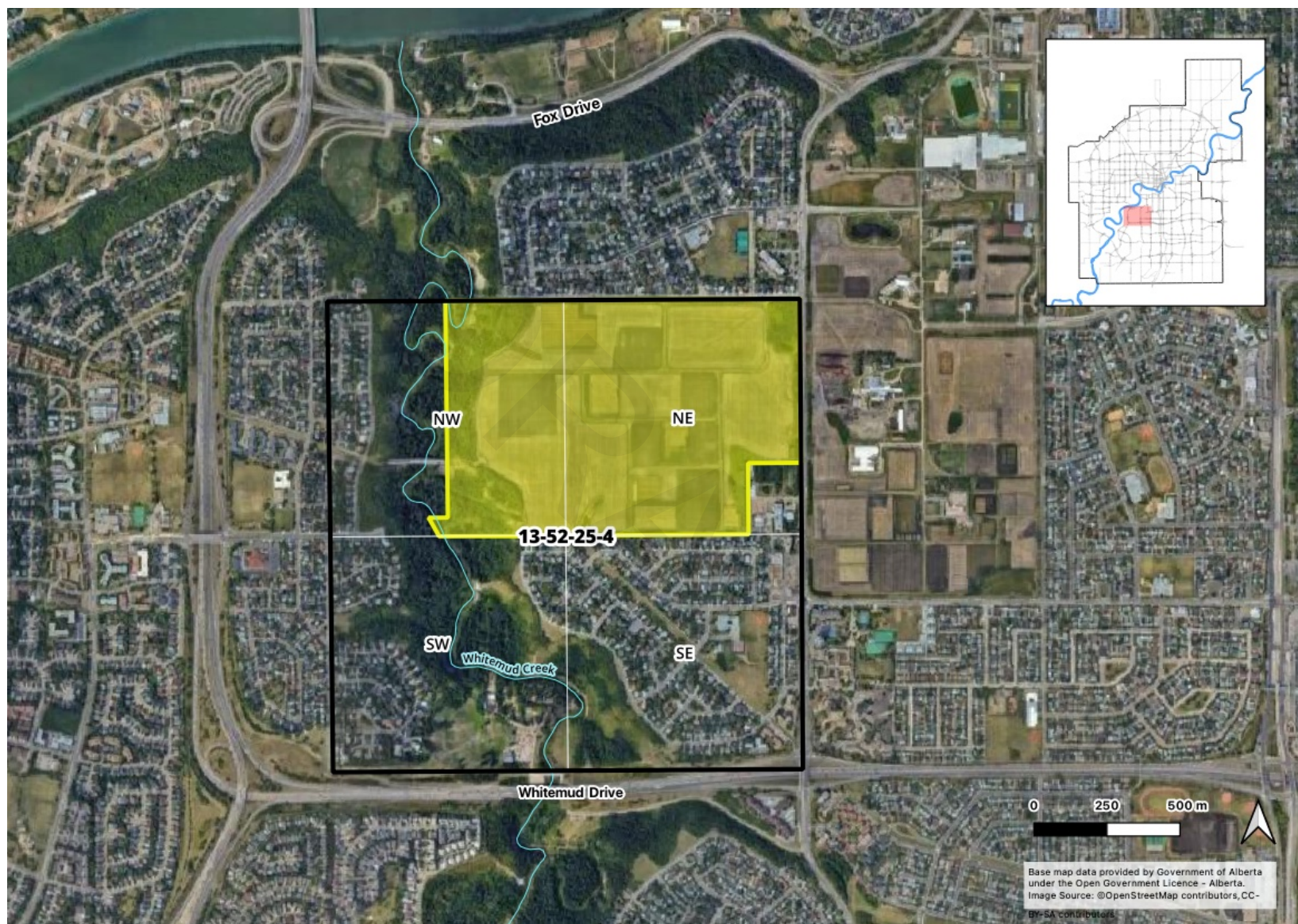


Figure 1. The West 240 neighbourhood in south-central Edmonton.

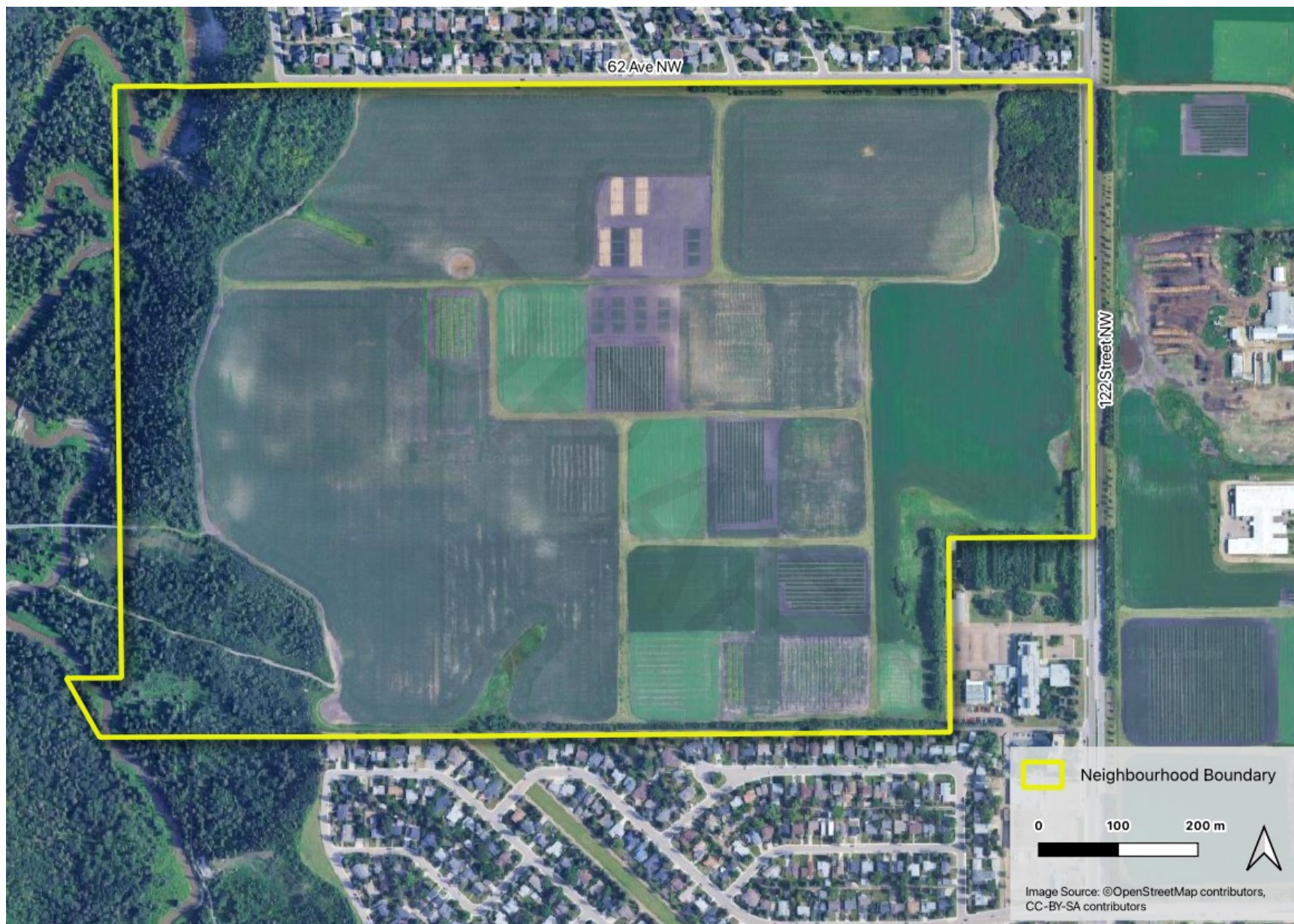


Figure 2. The West 240 neighbourhood boundary.

2.0 Regulatory Review

2.1. Municipal

2.1.1. Natural Area Systems Policy (C-531)

Policy C-531 was passed by City Council on July 17, 2007 as a means for conserving, protecting, and restoring Edmonton's biodiversity using the best available conservation science. The new policy directs Administration to plan for functional ecological systems at the neighbourhood, city, and regional scale and to conserve natural areas. The policy requires ecological information to support planning and development applications.

The City of Edmonton's Natural Area Systems Policy requires that developers submit specific ecological information in conjunction with development proposals to ensure early consideration of natural areas in the planning process. Information requirements for neighbourhood structure plans (NSP) or natural area structure plans (NASP) require Stage 1 and Stage 2 Ecological Network Reports, Environmental Reserve (ER) considerations, and a Provincial Bed & Shore Claim. NSPs or NASPs may also require an Ecological Design Report (at the discretion of the Planning & Development Department). The Natural Area Systems City Policy C-531 also includes guidelines for determining Environmental Reserve dedication for wetlands and other water bodies. These guidelines are based on considerations for flood protection, unstable lands, public access, pollution prevention, and emergency access. The guidelines suggest a minimum buffer width of 30 m for pollution prevention; however, this extent may be increased to address other concerns, such as slope stability.

2.1.2. Natural Connections Strategic Conservation Plan

This strategic plan is focused on conserving a functional ecological network in the City of Edmonton. This approach involves identifying key natural elements at an early stage of planning to protect core areas of biodiversity, in addition to stepping stone habitats, and ecological linkages. This plan supports the implementation of the City's Natural Area Systems Policy (C-531).

2.1.3. North Saskatchewan River Valley Area Redevelopment Plan (Bylaw 7188)

The North Saskatchewan River Valley Area Redevelopment Plan (ARP) ensures the protection of the North Saskatchewan River Valley and Ravine System as part of the City's open space heritage and establishes the principles for future implementation plans and programs for parks development. The major portion of the River Valley and Ravine System are managed as an environmental protection area and for major urban and natural parks. Any development should respect the overall natural environment of the River Valley and its tributary ravine lands.

2.1.4. Ribbon of Green Concept Plan and Master Plan

The Ribbon of Green Concept Plan (1990) and Master plan (1992) provide strategic direction for the North Saskatchewan River Valley and Ravine System. The plans identify preservation, conservation, and extensive use management zones within the river valley based on biophysical resources and outlines suitable recreational activities, construction practices, and management plans for each zone.

2.1.5. Top of Bank Policy (C-542)

This policy was enacted to setback development from River Valley/Ravine Crests to ensure private and public property is reasonably safe from environment hazards, such as slope instability/failure, or flooding.

2.1.6. Municipal Development Plan: The City Plan (Bylaw 20,000)

In 2020, the City of Edmonton adopted The City Plan, which is the City's Municipal Development Plan (MDP) that provides the strategic policy framework for directing the physical, economic, and social development of Edmonton. Section 5 of The City Plan outlines an approach for protecting, expanding, and improving access to natural systems and open spaces in support of biodiversity and the health and enjoyment of residents. The following is a list of policy statements set out in The City Plan that are relevant to the management of natural areas and open space in the West 240 neighbourhood:

- 5.1.1 Ensure protection, enhancement and opportunities for access to open space and the river valley and ravine system
 - 5.1.1.3 Expand and enhance Urban Greenways as part of the Green and Blue Network to improve the built and natural environments
 - 5.1.1.5 Maintain the North Saskatchewan River Valley and Ravine System's key role as an environmental protection area and for open space, cultural and recreational uses
 - 5.1.1.6 Acquire lands within the North Saskatchewan River Valley and Ravine System for natural areas protection, open space connectivity and use
- 5.1.2 Promote the conservation and restoration of natural systems to improve ecological connectivity and reduce habitat fragmentation
 - 5.1.2.1 Improve the quality and function of habitat greenways and ecological connections within the Green and Blue Network
 - 5.1.2.2 Expand and diversify Edmonton's urban tree canopy and native vegetation
 - 5.1.2.3 Pursue the protection, management and integration of wetlands into new and existing developments.
 - 5.1.2.4 Use environmental reserve to protect land and water bodies that meet the definition of environmental reserve but are not claimed by the Province in a manner that balances interests and enables contiguous and efficient urban development

2.1.7. District Policy (Bylaw 24110) and Scona District Policy (Charter Bylaw 24010)

Adopted in October 2024, the District Policy identifies 15 Districts across Edmonton, with each District having its own unique plan. The West 240 neighbourhood is located within the Scona District, which is one of the most densely populated districts in the City. The vision for this area is to promote population and employment growth through redevelopment and infill. The District Policy also emphasizes environmental health, climate resilience, and neighbourhood design that preserves wetlands and expands the urban tree canopy, integrates natural areas, preserves habitat connectivity, and introduces Low Impact Development and nature-based solutions.

2.1.8. Breathe: Green Network Strategy

The main goal of Breathe is to plan and sustain a healthy city by encouraging connection and integration of open space at the site, neighbourhood, city, and regional levels (City of Edmonton 2017). Breathe aligns several strategic goals for the City of Edmonton, including improving liveability, preserving and sustaining the environment, transforming urban form, and encouraging the use of public transit, walking, and cycling. The following is a list of policies set out in Breathe that are relevant to this project:

- 4.1.1a Incorporate Crime Prevention Through Environmental Design (CPTED) principles in the (re)design and programming of open spaces and the facilities within them, including efforts to encourage passive surveillance and a sense of ownership over open spaces through animation, active uses and community building initiatives.
- 4.1.3a Wherever feasible, trails and pathways should be (re)designed and maintained to ensure universal access. While not every open space will provide accessible trails and pathways (e.g. some natural trails, mountain bike trails), the network as a whole will provide a diverse range of safe, challenging and accessible pathways for recreation and active transportation.

- 4.2.1a Adopt best practices in landscape and urban design during open space (re)development to encourage social interaction and compatible relationships with surrounding uses.
- 4.2.1e Explore opportunities through landscape and urban design to recognize and emphasize Edmonton's scenic landscapes, ecological heritage and cultural connections to the land (e.g. native species and vegetation patterns).
- 4.2.1g Encourage year-round usage of open spaces by employing siting and design that promotes sheltering from winter climate impacts, and incorporating well-designed artificial lighting to extend winter hours of operation.
- 4.2.1l Protect vistas, views and visual connections between the North Saskatchewan River Valley and Ravine System and the top of bank through implementation of top-of-bank development standards, development of public roadways and view points, and responsible maintenance of vegetation.
- 4.2.1m Where appropriate, incorporate elements into open space design that encourage people to gather and linger, such as seating, public art, lighting and shade structures.
- 4.5.1d Require development proponents to articulate, through sound market and/or consultation research, key demographic characteristics of the population to be served by the development, and use such demographic information to create an appropriate program for the proposed open space.
- 4.6.3h Provide well integrated transitions among sidewalks, cycling infrastructure, the shared-use pathway network, other pedestrian networks, transit facilities and open spaces (particularly those in the River Valley and Ravine System). Open spaces should be connected to surrounding areas by sidewalks and pathways to increase pedestrian and cyclist mobility and access.
- 4.7.1b Maintain and enhance wildlife connectivity by preserving existing areas of natural land cover; minimizing disturbance and removing barriers in the River Valley and Ravine system and other connectivity corridors; and encouraging development on public and private land that maintains the connections between open spaces.

2.1.9. City of Edmonton Wetland Strategy 2012

The City of Edmonton released a municipal wetland strategy in 2012 in response to the decline of natural wetlands within City limits. The three main goals of the Wetland Strategy include: 1) securing Edmonton's wetlands as part of the city's ecological network, 2) managing Edmonton's wetlands to maximize their ecological function, and 3) engaging Edmontonians to support wetland conservation. This strategy prioritizes the conservation and integration of wetlands and wetland complexes into the ecological network.

Specifically, the City of Edmonton has a strategic commitment to "dedicate permanent, semi-permanent, and seasonal wetlands (i.e., Class III, IV, and V in the Stewart and Kantrud system) and all peatlands as Environmental Reserve upon subdivision of land".

2.1.10. Wildlife Passage Engineering Design Guidelines 2011

These guidelines outline recommendations for incorporating the needs of wildlife into transportation projects with the intent of achieving two main goals: 1) maintaining habitat connectivity and 2) reducing human-wildlife conflicts and improving road safety. Known significant natural areas may benefit from larger scale mitigations (such as a large wildlife underpass) while wildlife in areas with lower environmental value can benefit by minor improvements, including traffic calmed areas, signage, and altered lighting or curb structures.

2.2. Provincial

2.2.1. Public Lands Act

The bed and shores of all permanent watercourses and water bodies are considered public lands and are owned by the Crown, unless ownership is otherwise stated. As such, approvals under the *Public Lands Act* [R.S.A. 2000, c. P-40] are required for any activity on the bed or shore of Crown owned rivers, streams, or lakes. Any activity that alters or occupies the bed and shore of a waterbody may be done only after written approval.

2.2.2. Water Act

The Water Act [R.S.A. 2000, c. W-3] stipulates that all water in the province is vested in the Crown. As such, an approval and/or attainment of a license are required before undertaking any works that might impact a surface waterbody or the aquatic environment (Province of Alberta 2013). Specific activities that require an approval include:

- 1) Partial or complete filling of a waterbody for recreational, agricultural, and industrial uses, road construction, residential development, or any other purpose;
- 2) Activities impacting or having the potential to impact (cumulative effects) the aquatic environment and involving the disturbance, alteration, or modification of a waterbody;
- 3) Removal or destruction of vegetation, aquatic plants and trees within the confines of the bed and shores of a waterbody;
- 4) Draining of a waterbody; or,
- 5) Re-alignment of a waterbody.

2.2.3. Alberta Wetland Policy

The Alberta Wetland Policy came into effect in 2013, replacing the previous policy, Wetland Management in the Settled Area of Alberta: An Interim Policy (1993). The policy's goal is to "conserve, restore, protect, and manage Alberta's wetlands to sustain the benefits they provide to the environment, society, and economy". It provides the strategic direction and tools required for the implementation of a provincial wetland management system and focuses on four outcomes:

- 1) Wetlands of the highest value are protected for the long-term benefit of all Albertans;
- 2) Wetlands and their benefits are conserved and restored in areas where losses have been high;
- 3) Wetlands are being managed by avoiding, minimizing, and if necessary, replacing lost wetland value; and
- 4) Wetland management considers regional context.

Based on five criteria (biodiversity, water quality improvement, flood reduction, human value, and relative abundance), the province determines the relative value of wetlands using four categories ranging from High (A-value) to Low (D-value). These values are used to inform wetland management decisions and to calculate wetland replacement fees.

2.2.4. Species at Risk Program & Wildlife Act

Alberta has a Species at Risk Program, which was initiated as a response to the Province's commitment to the Accord for the Protection of Species at Risk in Canada. The intent of the Accord is to prevent species in Canada from becoming extinct because of human activity. Any species that is designated as Endangered or Threatened becomes legally protected under Alberta's *Wildlife Act* [R.S.A 2000, c.W-10]. This legal designation prohibits the disturbance, killing or trafficking of these species, and provides immediate protection of birds of prey nests and den sites. Any species that is designated as "Sensitive" after a general assessment, or as "Special Concern" after a detailed assessment becomes eligible for

special management actions designed to prevent the species from becoming “At Risk”. Additionally, Section 36 of the *Wildlife Act* declares it unlawful to willfully molest, disturb, or destroy a house, nest, or den of prescribed wildlife at certain times of the year. The Wildlife Regulation further specifies that Section 36(1) applies to nests and dens of endangered animals, upland game birds and migratory birds, snake and bat hibernacula, and houses and dens of beavers not located on private lands.

2.2.5. The Weed Control Act

The *Weed Control Act* provides legal authority to manage native and introduced species that present significant economic, social or ecological risks. The duties of individuals, local authorities, municipalities, and the Crown related to the prevention, control, and destruction of weeds are described in the Act. Specifically, Part 1 of the Act specifies that noxious weeds must be controlled and prohibited noxious weeds must be destroyed.

2.2.6. Municipal Government Act (MGA)

The Municipal Government Act forms the legal basis for the way local municipal governments operate in Alberta. The MGA gives municipalities responsibility for land use planning within their boundaries and requires that each municipality create a Municipal Development Plan (MDP), which outlines policies for land use. The MGA also grants municipalities the power to designate lands as Municipal and Environmental Reserve. Upon subdivision, 10% of the total developable land area must be designated as Municipal Reserve to be used for public parks or public recreation areas. Environmental Reserve can also be dedicated for conservation of swamps, ravines, other natural drainage courses, and/or buffers on these areas.

2.3. Federal

2.3.1. Species at Risk Act (SARA)

The Federal *Species at Risk Act* protects listed wildlife species and their critical habitats on federal lands, but does not apply to lands held by the Province of Alberta or its private citizens unless “the laws of Alberta do not effectively protect the species or the residences of its individuals”. In this case, the Minister may issue an order in council to protect federally listed species that occur on provincial or private lands.

2.3.2. Migratory Birds Convention Act & Migratory Birds Regulations

The federal *Migratory Birds Convention Act* [S.C. 1994, c. 22] (MBCA) and the Migratory Birds Regulation [SOR/2022-105] (MBR) prohibits disturbance or damage to birds or their nests. Specifically, the MBCA protects migratory birds at all times and the nests of all migratory birds when the nest contains a live bird or viable egg. Additionally, Schedule 1 of the MBR provides year-round protection for the nests of 18 species that regularly reuse their nests, including pileated woodpecker, a species commonly found in Edmonton. As per Schedule 1, nests of pileated woodpeckers are protected unless it can be demonstrated that the nest has been unoccupied for a period of 36 months. All unoccupied nests must be reported through the Abandoned Nest Registry¹ before a permit can be issued for tree removal.

¹ <https://www.permis-permits.ec.gc.ca/en/AbandonedNests>

3.0 Methods

The following section outlines the methods used to complete this report and were designed to meet the Phase II Ecological Network Terms of Reference (City of Edmonton 2014).

3.1. Topography & Surface Drainage

A 1 m Digital Terrain Model (DTM) was acquired to provide information regarding the topography of the study area. Additionally, a probability of depression layer was created from the DTM using a depression-finding algorithm to aid in identifying surface drainage patterns. Flow direction and flow accumulation were determined from the filled DTM raster and a threshold cut-off flow accumulation value was applied to the flow accumulation raster to derive the surface drainage network within the study area. A Cost Distance to Water (CDtW) was derived from the drainage network and a slope layer to predict the flow and inundation patterns for the study area. Additionally, a Deviation from Mean Elevation (DME) layer was derived from the DTM to show patterns of local highs and lows within the study area.

3.2. Species Occurrence

A desktop evaluation was completed to compile a list of plant and wildlife species that have the potential to occur in the study area based on previous observations. This list was created from a variety of sources, including the Alberta Fish and Wildlife Information System (FWMIS), the Alberta Conservation Information Management System (ACIMS), eBird, iNaturalist, and provincial range maps. This list was used to help field crews understand the variety of species that could be expected to occur on-site, including previous reports of rare or threatened species detected within or near the study area. During the field assessment, incidental observations of plant and wildlife species encountered were noted. Wildlife habitat features (e.g. snags with cavities, stick nests, dens) were recorded and the locations of these features were documented using GPS, if detected. A list of wildlife species observed in each natural area was created and the provincial status rank of each species was determined as per the 2020 Alberta wildlife species general status listing (Government of Alberta 2022).

3.3. Natural Area Inventory & Assessment

Upland areas with natural vegetation were initially identified and mapped by referencing the City of Edmonton Urban PLVI layer against a 2023 air photo. Boundaries of upland features were edited to match the air photo and habitat classes were assigned based on the Urban PLVI layer and photo interpretation. Each mapped area was assessed in the field. Upland areas were evaluated using an Ecological Evaluation Tool that included 39 metrics organized within four major indicator groups (Table 1). Scores for each area were calculated by summing the total of all metrics assessed and dividing by the highest possible score (total number of metrics assessed multiplied by 15) to derive a percent value that represented the field condition rating of each natural area. Wetlands were assessed using the provincial ABWRET-A tool.

Table 1. Metrics and scoring used to assign a field condition rating to natural areas in the neighbourhood.

Indicator Group	Indicator	Metric	Metric Response	Score
Nativity	Cover of native species by growth form	% cover of native tree species	0%	0
			>0 to 5%	4
		% cover of native shrub species	6 to 25%	8
		% cover of native forb species	26 to 50%	12
			51 to 75%	14
	Cover of non-native species	% cover of native grass species	>75%	15
		% cover <i>Agropyron cristatum</i>		
		% cover <i>Bromus inermis</i>	0%	15
		% cover <i>Poa pratensis</i>	>0 to 5%	14
		% cover <i>Cotoneaster</i> sp.	6 to 25%	12
		% cover <i>Caragana arborescens</i>	26 to 50%	8
		% cover <i>Syringa vulgaris</i>	51 to 75%	4
		% cover <i>Lonicera tartarica</i>	>75%	0
	Presence of forest community intactness indicator species		None detected	0
		<i>Actaea rubra</i> , <i>Anemone</i> spp., <i>Disporum trachycarpum</i> , <i>Lathyrus venosus</i> , <i>Lathyrus ochroleucus</i> , <i>Lonicera dioica</i> , <i>Pyrola</i> spp	>1 species detected	15
Vegetation Structure	Presence of and impacts to vertical structure	Overstory		
		Understory		
		Tall shrub	Absent	0
		Short shrub	Impacted	5
		Forb	Partially Intact	12
		Grass	Intact	15
		Lichen & moss		
	Abundance of forest succession features	Seedlings/young trees (<2m)	Absent	0
			Rare	5
		Coarse woody debris	Occasional	12
		Snags	Common	15
	Age	Age of stand	Pole/sapling	0
			Young	5
			Mature	10
			Old Forest	15
		Age of oldest trees	<20 years	0
			20 to 40 years	5
			40 to 60 years	12
			60 to 80 years	14
Anthropogenic Impacts	Overall human use	Combined proportion of natural area negatively affected by anthropogenic use	<5%	15
			5 to 10%	14
			10 to 25%	12
			25 to 50%	8
			50 to 75%	4
			>75%	0
	Human intrusions	Grazing by domestic livestock		
		Dumping		
		Vegetation clearing		
		Draining/ditching		
		Access roads	Absent	15
		Paved foot & bike paths	Rare	12
		Gravel foot & bike paths	Occasional	5
		Dirt foot & bike paths	Common	0
		Small structures		
		Large structures		
		Utility structures		
	Restoration potential	What level of effort is required to improve the overall condition of the natural area?	No disturbance	15
			Easy	12
			Difficult	5
			Irreversible impacts	0
Weediness	Weed occurrence	Occurrence of invasive or noxious/prohibited noxious species	Absent	15
			Rare	12
			Occasional	5
			Common	0
	Weed distribution	Distribution of invasive or noxious/prohibited noxious species	Rare or occasional	15
			Distinct clumps	12
			Sparse and uniform	5
			Dense and continuous	0

3.4. Wetland Inventory & Assessment

A preliminary wetland inventory was created using a combination of terrain analysis and aerial photograph review. All potential wetlands were identified using a depression-finding algorithm (Lindsay et al. 2004) using a 1 m LiDAR digital terrain model. This information was used together with current and historical air photos to digitize an estimated wetland boundary. Areas with a high probability of depression and evidence of wetland vegetation in the air photos were identified as potential wetlands. Cultivated areas with a high probability of depression and visible evidence of soil saturation were also identified as potential wetlands. All potential wetlands were given a unique identifier, and this inventory was used to direct the field assessment.

All potential wetlands within the developable area of the neighbourhood that were identified by the desktop inventory were assessed in the field to confirm whether the area met the definition of a wetland under the Alberta Wetland Policy. If the area was confirmed as a wetland, wetland class was confirmed using the Classification Key from the Alberta Wetland Classification System (AESRD 2015) and the boundary was confirmed following guidelines in the Alberta Wetland Identification and Delineation Directive (Government of Alberta 2015a). Each wetland was then assessed using the Alberta Wetland Rapid Evaluation Tool – Actual (ABWRET-A) field form (Government of Alberta 2015b). If a location identified as a wetland in the desktop inventory was found not to be a wetland in the field, a brief site description was noted but no field delineation, ABWRET-A form, or wildlife surveys were completed, and the water body was removed from the wetland inventory (AESRD 2015). An ABWRET-A value score (A-B-C-D) was obtained from Alberta Environment and Protected Areas for each wetland that was assessed in the field.

4.0 Results

4.1. Historical Conditions

4.1.1. Ecological Landscape of Study Area

The West 240 neighbourhood is located within the Central Parkland Natural Subregion of Alberta, which is a transition zone between grasslands to the south and closed aspen forests to the north. This entire subregion has been intensely cultivated due to the fertile nature of the soils, and it is estimated that only 5% of the Central Parkland Natural Subregion remains in native vegetation (Downing 2006). The patches of remaining native parkland vegetation are generally restricted to areas unsuitable for agriculture due to topography or soil constraints. Wetlands make up approximately 10% of the Central Parkland Natural Subregion (Downing 2006). Native grassland communities in this subregion are dominated by plains rough fescue or co-dominated by western porcupine grass (*Hesperostipa spartea*), northern wheat grass (*Elymus lanceolatus*), and a variety of perennial herbs. Shrub communities of western snowberry (*Symphoricarpos occidentalis*), silverberry (*Elaeagnus communtata*), prickly rose (*Rosa acicularis*), chokecherry (*Prunus virginiana*), and saskatoon (*Amelanchier alnifolia*) dominate moderate- to well-drained sites. Treed areas in the subregion are dominated by trembling aspen (*Populus tremuloides*) with diverse understories that vary with soil type and moisture, but typically include saskatoon, prickly rose, beaked hazelnut (*Corylus cornuta*), and a variety of forbs and grasses. Balsam poplar (*Populus balsamifera*) and white spruce (*Picea glauca*) are common on moist, rich sites. Low wet areas are typically dominated by common cattail (*Typha latifolia*), sedges (*Carex* spp.), and willow (*Salix* spp.) shrub lands.

The study area is in the North Saskatchewan River Basin, which is composed of 12 smaller HUC6 watersheds. The West 240 neighbourhood is in the northern portion of the Whitemud/Blackmud Creeks HUC6 watershed.

4.1.2. Environmental History of Study Area

Air photos spanning the years 1950 to 2015 were reviewed to understand the environmental history and land use within the West 240 neighbourhood (Appendix A). The earliest air photo from 1950 shows that much of the area within the proposed neighbourhood boundary has been cleared and is being utilized for agriculture. Natural vegetation along the slope and top of the bank of Whitemud Creek is still intact, as is the tree stand in the northeast corner. Wetlands in and around the neighbourhood are apparent, and several have visible drainage ditches associated with them. Between 1950 and 1962, there was little change within West 240, aside from some tree clearing in the southwest corner along the top of the bank, which appears to be associated with the construction of a pipeline. There is also notable change to the north associated with the development of the Grandview Heights neighbourhood. By 1970, there is substantial residential development to the south, within the Lansdowne neighbourhood, as well as along the west bank of Whitemud Creek, within the Brookside neighbourhood. This expanded residential development resulted in the loss of many of the wetlands that were evident in earlier images. The Northern Forestry Centre is also present directly southeast of the neighbourhood, and additional development is evident on the University lands to the east of West 240. Between 1970 and 2015, little changed within the West 240 lands. Beyond the neighbourhood, the most notable changes occurred to the east, and included construction of additional buildings associated with the University of Alberta.

4.1.3. Historical Wildlife Occurrences

Previously recorded wildlife observations included 30 different species of birds, mammals, amphibians, and reptiles (Table 2). Two-thirds of these species have been designated as either Sensitive, May Be At Risk, or At Risk provincially, with five of these species also being listed as Special Concern, Threatened, or Endangered under the federal *Species At Risk Act*. While a number of these species have been recorded in the vicinity of West 240 historically, for several of them, occurrence within the neighbourhood

today is unlikely given their current distribution and/or the type of habitat that is available within the neighbourhood boundary. For example, northern leopard frog is extirpated from much of central Alberta, with most of the known populations currently located in southeastern Alberta.

Table 2. Wildlife species reported to have occurred within or near the West 240 neighbourhood.

Scientific Name	Common Name	Provincial Status	SARA Status	Likelihood of Occurrence
Birds				
American Robin	<i>Turdus migratorius</i>	Secure	Not listed	Likely
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Sensitive	No Status	Likely
Baltimore Oriole	<i>Icterus galbula</i>	Secure	No Status	Likely
Bank Swallow	<i>Riparia riparia</i>	Sensitive	Threatened	Unlikely
Barred Owl	<i>Strix varia</i>	Sensitive	No Status	Likely
Bay-breasted Warbler	<i>Dendroica castanea</i>	Sensitive	No Status	Unlikely
Black-billed Magpie	<i>Pica hudsonia</i>	Secure	Not listed	Likely
Canada Goose	<i>Branta canadensis</i>	Secure	Not listed	Likely
Cape May Warbler	<i>Dendroica tigrina</i>	Sensitive	No Status	Unlikely
Common Raven	<i>Corvus corax</i>	Secure	Not listed	Likely
Eastern Phoebe	<i>Sayornis phoebe</i>	Sensitive	No Status	Likely
Great Blue Heron	<i>Ardea herodias</i>	Sensitive	No Status	Unlikely
Hairy Woodpecker	<i>Dryobates villosus</i>	Secure	No Status	Likely
Least Flycatcher	<i>Empidonax minimus</i>	Secure	No Status	Likely
Olive-sided Flycatcher	<i>Contopus cooperi</i>	May Be at Risk	Special Concern	Likely
Peregrine Falcon	<i>Falco peregrinus</i>	At Risk	No Status	Unlikely
Pileated Woodpecker	<i>Dryocopus pileatus</i>	Sensitive	No Status	Likely
Prairie Falcon	<i>Falco mexicanus</i>	Sensitive	No Status	Unlikely
Sandhill Crane	<i>Grus canadensis</i>	Sensitive	Not listed	Unlikely
Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>	Sensitive	No Status	Unlikely
Short-eared Owl	<i>Asio flammeus</i>	May Be at Risk	Special Concern	Unlikely
Sora	<i>Porzana carolina</i>	Sensitive	No Status	Unlikely
Mammals				
Cougar	<i>Puma concolor</i>	Secure	No Status	Unlikely
Little Brown Bat	<i>Myotis lucifugus</i>	May Be at Risk	Endangered	Likely
Long-tailed Weasel	<i>Mustela frenata</i>	May be at Risk	No Status	Likely
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	May be at Risk	No Status	Unlikely
Amphibians				
Canadian Toad	<i>Anaxyrus hemiophrys</i>	May Be at Risk	No Status	Unlikely
Northern Leopard Frog	<i>Lithobates pipiens</i>	At Risk	Special Concern	Unlikely
Reptiles				
Plains Garter Snake	<i>Thamnophis radix</i>	Sensitive	No Status	Likely
Red-Sided Garter Snake	<i>Thamnophis sirtalis</i>	Sensitive	No Status	Likely

4.1.4. Historical Plant Occurrences

Ten different vascular and non-vascular plants have been historically recorded within the West 240 neighborhood or vicinity (Table 3). Several of the non-vascular plants have a status rank of S2, meaning that they have very few known occurrences and may be vulnerable to extirpation. Notably, the observations for dot lichen and common antler lichen are from the 1960s, while the observation for Schleicher's silk moss and flat fruited pelt lichen are from 2002 and 2011, respectively.

Table 3. Vascular and non-vascular plant species reported to have occurred within or near the West 240 neighbourhood.

Scientific Name	Common Name	Status Rank*
Vascular Plants		
Common Blue Lettuce	<i>Lactuca pulchella</i>	S5
Common Juniper	<i>Juniperus communis</i>	SU
Lodgepole Pine Dwarf-Mistletoe	<i>Arceuthobium americanum</i>	S4
Sea-buckthorn	<i>Hippophae rhamnoides</i>	SNA
Tufted Vetch	<i>Vicia cracca</i>	SNA
Yellow Salsify	<i>Tragopogon dubius</i>	SNA
Non-vascular Plants		
Common Antler Lichen	<i>Pseudevernia consocians</i>	S2
Dot Lichen	<i>Micarea melaena</i>	S2S4
Flat Fruited Pelt Lichen	<i>Peltigera horizontalis</i>	S2S4
Schleicher's Silk Moss	<i>Entodon schleicheri</i>	S2S3

*Status Rank definitions:

S1: Critically imperiled

S2: Imperiled

S3: Vulnerable

S4: Apparently Secure

S5: Secure

SNA: Not applicable

SU: Unrankable

S#S#: a numeric range rank is used to indicate any range of uncertainty about the status of the species

4.2. Existing Conditions

4.2.1. Topography

The highest point (~678 m) in the West 240 neighbourhood is along the northern boundary (Figure 3). From this local high point, the elevation drops to ~670 m in the northeast corner, ~668 m along the southern boundary, and ~661 m along the top of the bank of Whitemud Creek. The surveyed Top of Bank (TOB) line along Whitemud Creek generally corresponds with an elevation of ~663 m. From the top of the bank, the elevation drops steeply to the creek at ~621 m. Generally, surface water flows towards major depressional areas (corresponding to wetland locations) in the northeast, southeast, and south, as well as towards Whitemud Creek in the west (Figure 4).

4.2.2. Geology, Hydrogeology & Soil Conditions

Regional surficial geology of the study area consists of 18-20 m of glaciolacustrine deposits of sand, silts, and clay over ~5m of glacial till clay, with a bedrock deposit of interbedded shale and sandstone (CT & Associates 2024). As part of a geotechnical study conducted by CT & Associates (2024), 26 piezometers were installed to measure groundwater elevations. Groundwater levels along the top of Whitemud Creek ravine ranged between 12.1 m and 18.3 m below ground surface (bgs). To the east, groundwater levels were generally measured beyond the depth of the boreholes, which was >8 m bgs.

Soil stratigraphy in the West 240 neighbourhood was also described by CT & Associates (2024) from boreholes. The topsoil layer ranges between 10-45 cm, and consists of organic, silt, and sand, with some clay. A clay layer is present below the topsoil, ranging in thickness from 3.0 to 8.6 m. A sand and silt/sand layer of between 1.8 and 8.9 m is located below the clay, with a clay till layer of between 0.7 and 5.2 m overlaying bedrock.

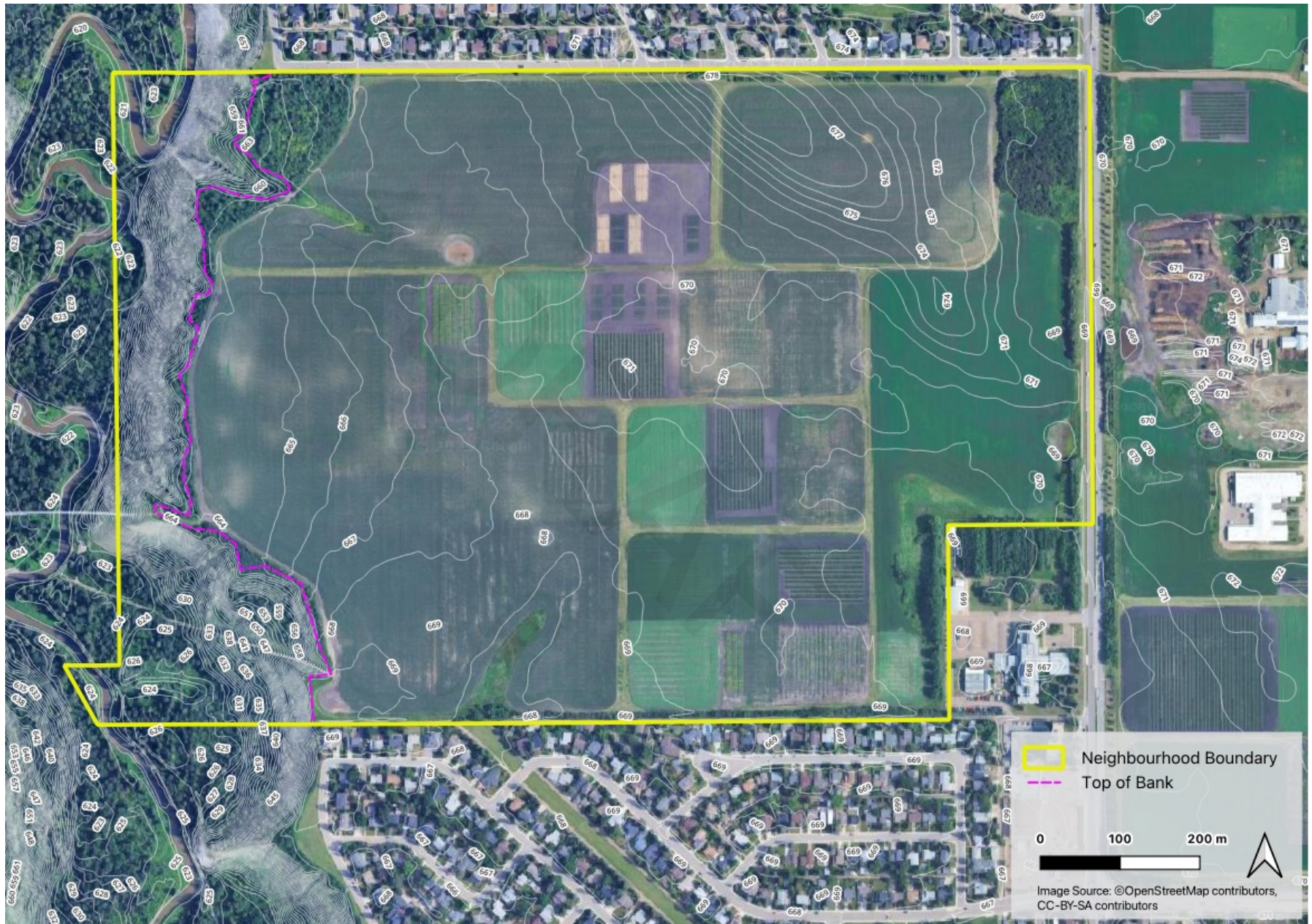


Figure 3. Topography within the West 240 neighbourhood.

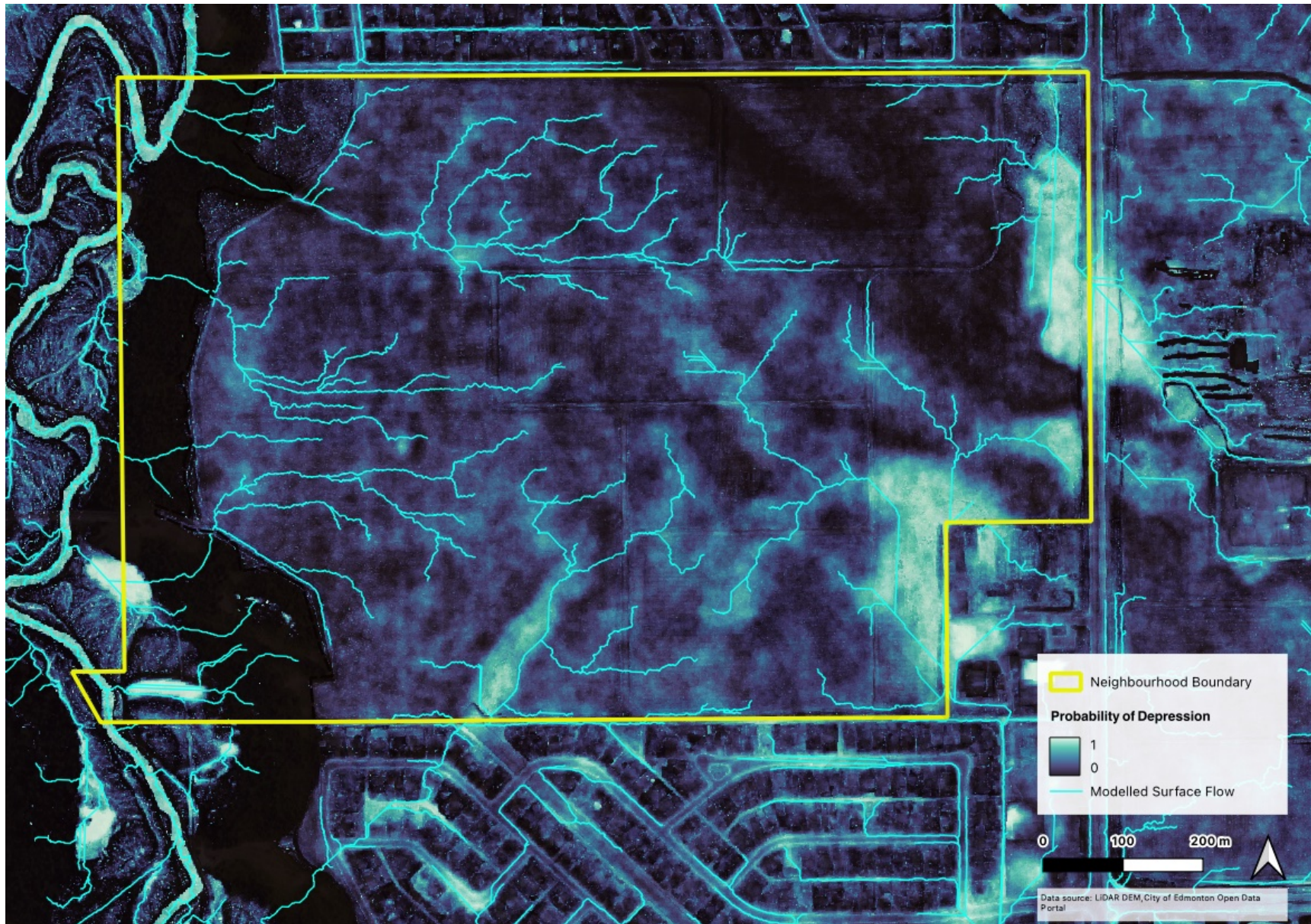


Figure 4. Probability of depression mapping and modelled surface water flow paths in the West 240 neighbourhood. Lighter areas on the map indicate depressional areas and modelled surface flows show the general extent and direction of existing drainage.

4.2.3. Existing Land Use

Existing land use within the study area is dominated by agriculture, including annual cultivation of a variety of crops that are grown in various plots as part of the research conducted by the University of Alberta. The plots are divided by pathways that are used by vehicles and machinery, as well as by pedestrians.

Several natural and semi-natural upland and wetland features are also present within the neighbourhood boundary (Figure 5). This includes treed hedgerows that are located along the northern, eastern and southern boundary and wetlands that are primarily located along the margins of the property. Two natural areas are also located within the neighbourhood boundary. This includes a forest stand and wetland in the northeast corner, as well as a large natural area along the western boundary. Portions of the natural area along the western boundary are part of the larger Whitemud Creek Natural Area Park, and there are several existing trails located within the natural area. Residential neighbourhoods are located to the north (Grandview Heights) and south (Lansdowne), and additional lands owned by the University of Alberta are located to the east.

4.2.4. Wetlands

This section provides an overview of the wetlands that were identified and assessed in the West 240 neighbourhood. A more detailed description of each wetland, including photos and ABWRET-A scores, is provided in Appendix B.

Seven wetlands that have the potential to be impacted by land development in the West 240 neighbourhood were delineated and evaluated using the provincial wetland assessment tool (ABWRET-A). One additional wetland was identified in the southwest corner of the neighbourhood, within Natural Area 2b (Figure 5). This wetland is located within an existing City Park and will not be impacted by the development of the West 240 lands; consequently, it was not assessed using ABWRET-A.

Wetlands located on the developable lands within the neighbourhood include five graminoid marshes and two deciduous swamps that cover a total area of approximately 3.01 ha (Table 4; Figure 5). As per the provincial wetland assessment tool, two of the wetlands (002 and 003) were assigned a C-value, while the remaining five wetlands received a D-value (Table 4 and Table B-1).

All the wetlands that were assessed have been impacted by human activities to varying degrees. Wetland 001 is a temporary marsh located along the southern boundary that has been impacted by cultivation. This wetland appears to be a remnant of a larger wetland that was partially filled between 1962 and 1970 when the Lansdowne neighbourhood was developed (Figures A-1 to A-3). This wetland currently drains toward the south through a culvert that appears to be tied into the City's drainage system.

The largest wetland (002) was partially filled when the Northern Forestry Centre was constructed in the early 1970s. Prior to the construction of the facility the wetland appears to have been a temporary marsh that was cultivated (Figures A-1 and A-2), but after construction of the Forestry Centre the wetland increased in both size and permeance (Figure A-3 to A-7). This change is likely related to the presence of berms located along the west and north boundary of the Forestry Centre that have changed the surface drainage patterns and resulted in seasonal water impoundment within the wetland basin. Vegetation cover in this wetland was dominated by emergent vegetation (primarily *Carex untriculata*), with some scattered shrubs along the margin of the wetland.

The hydrology of wetland 005, located in Natural Area 1, has also been impacted by human activity. A large drainage ditch is evident in this wetland and this ditch drains surface water north toward 62 Avenue (Figure 4). Wetland 007 also appears to have been historically impacted by drainage activity. Surface water from this wetland drains west into a vegetated swale, through a culvert, and into Natural Area 2a. Additionally, vegetation within the basins of wetland 006 and wetland 007 has been impacted by cultivation. While some wetland vegetation remains in wetland 007, wetland 006 appears to be cultivated in most years, and as a result, little wetland vegetation remains in this basin; however, hydric soil indicators were present. The margins of wetland 003 and 004 have also been impacted by cultivation and the hydrology of these wetlands has been impacted by the construction of 122 Street.

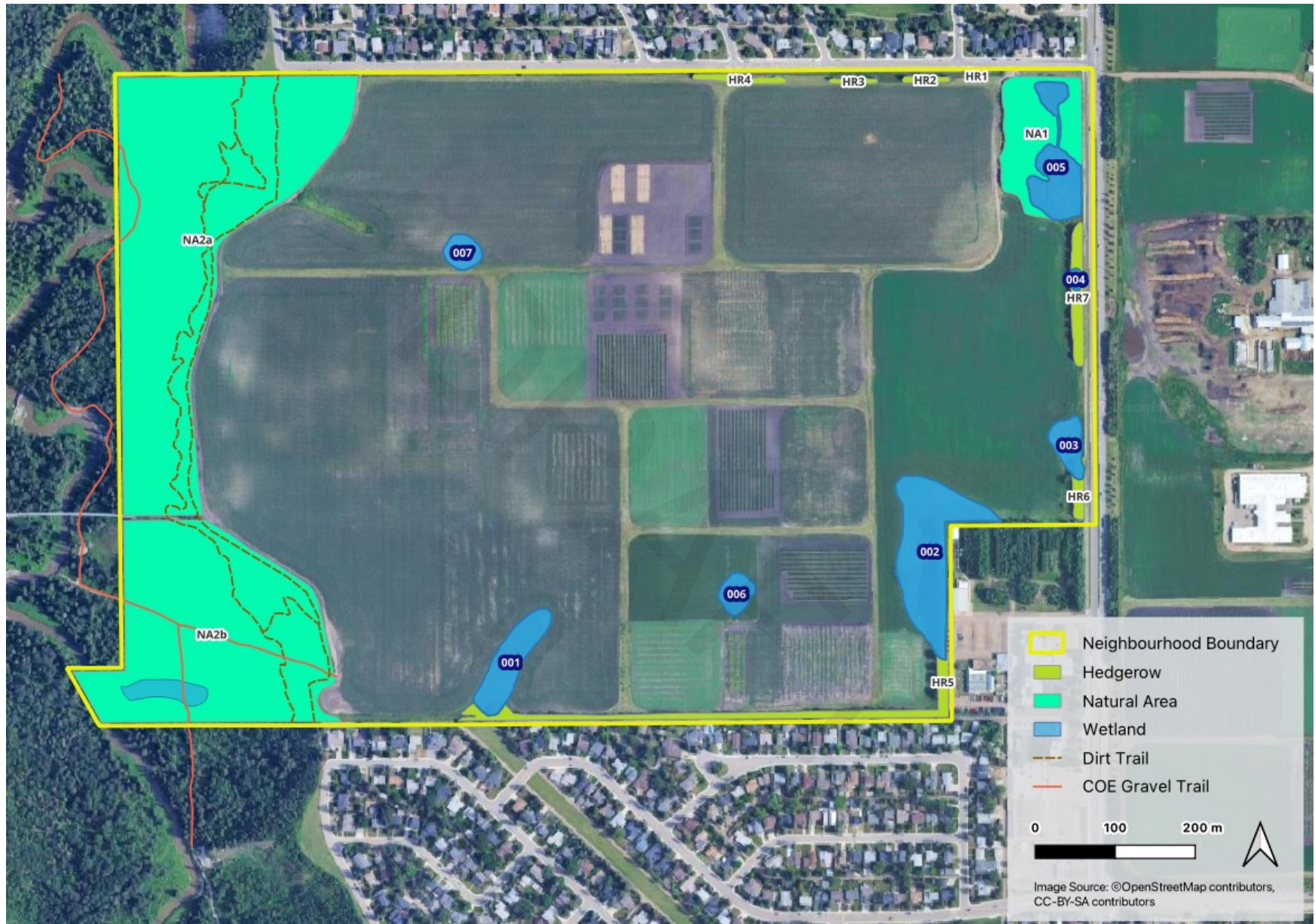


Figure 5. Existing natural features and trails within the West 240 neighbourhood.

Table 4. Description of wetlands identified in the West 240 neighbourhood.

Wetland ID	Alberta Wetland Classification System (AWCS) Class	ABWRET-A Relative Wetland Value Score	Wetland Size (ha)	Proportion of NASP (%)
001	Marsh-Graminoid-Temporary (II)	D	0.514	0.5
002	Marsh-Graminoid-Temporary (II)	C	1.304	1.4
003	Marsh-Graminoid-Temporary (II)	C	0.229	0.2
004	Swamp-Wooded Deciduous-Temporary (II)	D	0.031	0.03
005	Swamp-Wooded Deciduous-Seasonal (III)	D	0.599	0.6
006	Marsh-Graminoid-Temporary (II)	D	0.172	0.2
007	Marsh-Graminoid-Temporary (II)	D	0.163	0.2
			3.012	3.2

4.2.5. Natural Areas

Most of the West 240 neighbourhood has been cleared of natural vegetation and is cultivated annually as part of agricultural research trials conducted by the University of Alberta. There are, however, several areas that contain natural upland vegetation, and these areas cover approximately 16.3 ha, or 17.5% of the neighbourhood (Table 5; Figure 5).

Table 5. Summary of upland habitat present within the West 240 neighbourhood.

Upland Area	Area of Upland Habitat (ha)	Proportion of NASP (%)	Habitat Condition Score (/100)
Hedgerow 1	0.02	<1%	37.5
Hedgerow 2	0.04	<1%	39.8
Hedgerow 3	0.03	<1%	37.1
Hedgerow 4	0.09	<1%	29.2
Hedgerow 5	0.57	<1%	64.4
Hedgerow 6	0.07	<1%	56.2
Hedgerow 7	0.21	<1%	55.7
Natural Area 1	1.07	1	72.1
Natural Area 2a	8.42	9.0	85.0
Natural Area 2b	5.90	6.3	77.6
16.3		17.5	---

The upland areas include numerous hedgerows located along the northern, eastern, and southern boundaries (Figure 5). Most of these areas are relatively small and narrow and include a mixture of coniferous and deciduous trees, most of which have been planted in rows. For example, hedgerows 1-3 consist of a single row of white spruce, several of which are standing dead, while hedgerow 4 is primarily composed of a single row of green ash. Hedgerows 6 and 7, which are located along the eastern boundary of the neighbourhood (adjacent to 122 Street), are wider (~10 m) are composed of a mix of green ash, willow, and white spruce planted in two rows. Hedgerow 5, located along the southern boundary, is the largest (~10 m wide and ~600 m long) and was composed of a mix of mature trembling aspen and balsam poplar that offer good habitat for songbirds and woodpeckers, which was evidenced by extensive foraging sign noted on many of the trees. This hedgerow also included a diverse understory of shrubs, forbs, and grasses.

Most of the upland habitat within the neighbourhood is located a ~14.3 ha mixedwood forest stand (NA2) located along the neighbourhood's western boundary. For this assessment, an existing utility ROW was used to divide Natural Area 2 into a northern (NA2a) and southern (NA2b) portion. These natural areas are part of the larger Whitemud Park, a large City park that generally runs north/south and includes lands

associated with Whitemud Creek. In this location, Whitemud Creek runs through a deep ravine, and the slopes associated with Natural Area 2 within the West 240 neighbourhood are very steep (>15%). Whitemud Park and its ravine system have been identified by the City as a Biodiversity Core Area.

Vegetation in NA2a is characterized by a mix of mature/old trembling aspen, balsam poplar, and white spruce. The shrub layer was dominated by saskatoon and pincherry, and the dominant forb species included purple vetch and northern bedstraw. Red baneberry, meadow anemone, and pink wintergreen were also found throughout. Coarse woody debris and snags were abundant, and notable wildlife observations included pileated woodpecker and an active porcupine den. Human impacts in this portion of the natural area appear to be limited to several dirt trails that are located along the top of the bank and the upper portion of the ravine slope (Figure 5). These trails are well-used and are popular with both runners and mountain bikers. A small portion of the Whitemud Ravine gravel trail also meanders through the northwest corner of NA2a. This is a popular City of Edmonton trail that runs along Whitemud Creek between Whitemud Creek/Fox Farm (near Fox Drive) in the north, and Snow Valley/Rainbow Valley Park (near Whitemud Drive) to the south. Overall, this natural area was in excellent condition and offers a wide range of habitat types that support a diversity of urban wildlife.

Vegetation in Natural Area 2b is substantially influenced by its more southwest aspect, resulting in more open areas along the upper and mid slopes that were dominated by snowberry, rose, and smooth brome. Forested areas along the top of the bank and mid-slope were dominated by trembling aspen, while the lower slopes near Whitemud Creek were dominated by balsam poplar. All forested areas have substantial shrub components, including pincherry and wild rose. Trails were more numerous in NA2b than in other natural areas in the neighbourhood. This includes a COE gravel trail that extends from the top of the bank to the northwest and connects at the base of the slope with the Whitemud Ravine gravel trail. At this junction, the Whitemud Ravine trail extends northwest toward the creek, as well as south toward Snow Valley/Rainbow Valley Park. The southern portion of the trail crosses the wetland in the southwest corner of the neighbourhood via a boardwalk. In addition to the gravel trails, NA2b also includes the same dirt trails present in NA2a. These dirt trails traverse the top of the bank, as well as the upper slope of the ravine. Despite the more numerous trails, this area was in excellent condition and offers diverse habitats for a wide range of species.

West 240 also includes a ~1.1 ha deciduous forest stand in the northeast corner (NA1) of the neighbourhood that is associated with wetland 005, a 0.6 ha wooded deciduous swamp. The upland forested portion of NA1 was dominated by a mature overstory of trembling aspen and balsam poplar with an average diameter at breast height of ~20 cm. The shrub layer was dense and was dominated by red-osier dogwood and wild rose, and the dominant forbs included goldenrod and sarsaparilla. Smooth brome and Kentucky bluegrass were the dominant grasses. Multiple stick nests were observed, and coarse woody debris and snags were present throughout. Wildlife observations included blue jay, American crow, black-billed magpie, vole, and a white-tailed deer fawn that was bedded down in dense shrubs. Human impacts in this natural area were evident, including encampments, which were concentrated in the central portion of the natural area, and dumping of vegetation debris, which was generally limited to the margin of the natural area.

A total of 71 different plant species were observed during the field assessment of the West 240 neighbourhood, including high bush cranberry, a S3S4 species. Four plants listed as Noxious under the provincial Weed Control Act were also observed, including Canada thistle, creeping bellflower, perennial sow thistle, and scentless chamomile. Additionally, seven bird and six mammal species were observed, including pileated woodpecker, a species listed provincially as Sensitive.

A more detailed description of the natural areas in West 240, including photos, is provided in Appendix C. The complete list of plant and animal species detected during the field assessment is provided in Appendix D.

4.3. Ecological Network Analysis

4.3.1. Existing Ecological Network

As previously described, approximately 21% of the West 240 neighbourhood is composed of wetland or upland habitat. Most of the existing habitat within West 240 are small (<1 ha) and serve as stepping stone habitats that are embedded within an agricultural matrix that provides a semi-natural linkage to other surrounding habitats (City of Edmonton 2007; Figure 6). Additionally, the two natural areas (NA1 and NA2) have been identified as key components to the City's ecological network. NA1 is considered a Natural Linkage (City of Edmonton 2007) that offers High Support of ecological functions (City of Edmonton 2017), while NA2 is part of a Biodiversity Core Area (City of Edmonton 2007) that offers High Support of ecological functions and is a major ecological connection at the City and regional scale (City of Edmonton 2017).

Given the previously recognized importance of NA1 and NA2 in supporting local and regional biodiversity, ecological function, and habitat connectivity, we recommend maintaining as much of these existing natural areas as possible. In addition, we recommend maintaining a semi-natural greenway that would promote movement from Lansdowne Park, through the West 240 neighbourhood, to Whitemud Creek ravine. Given the lack of strong east-west connections through the West 240 lands, we also recommend maintaining the hedgerow along the southern boundary of the neighbourhood (HR5). Ideally, wetland 001 would be retained as part of this greenway (Figure 7). The retention of mature trees in other hedgerows throughout the neighbourhood is also strongly encouraged, where possible.

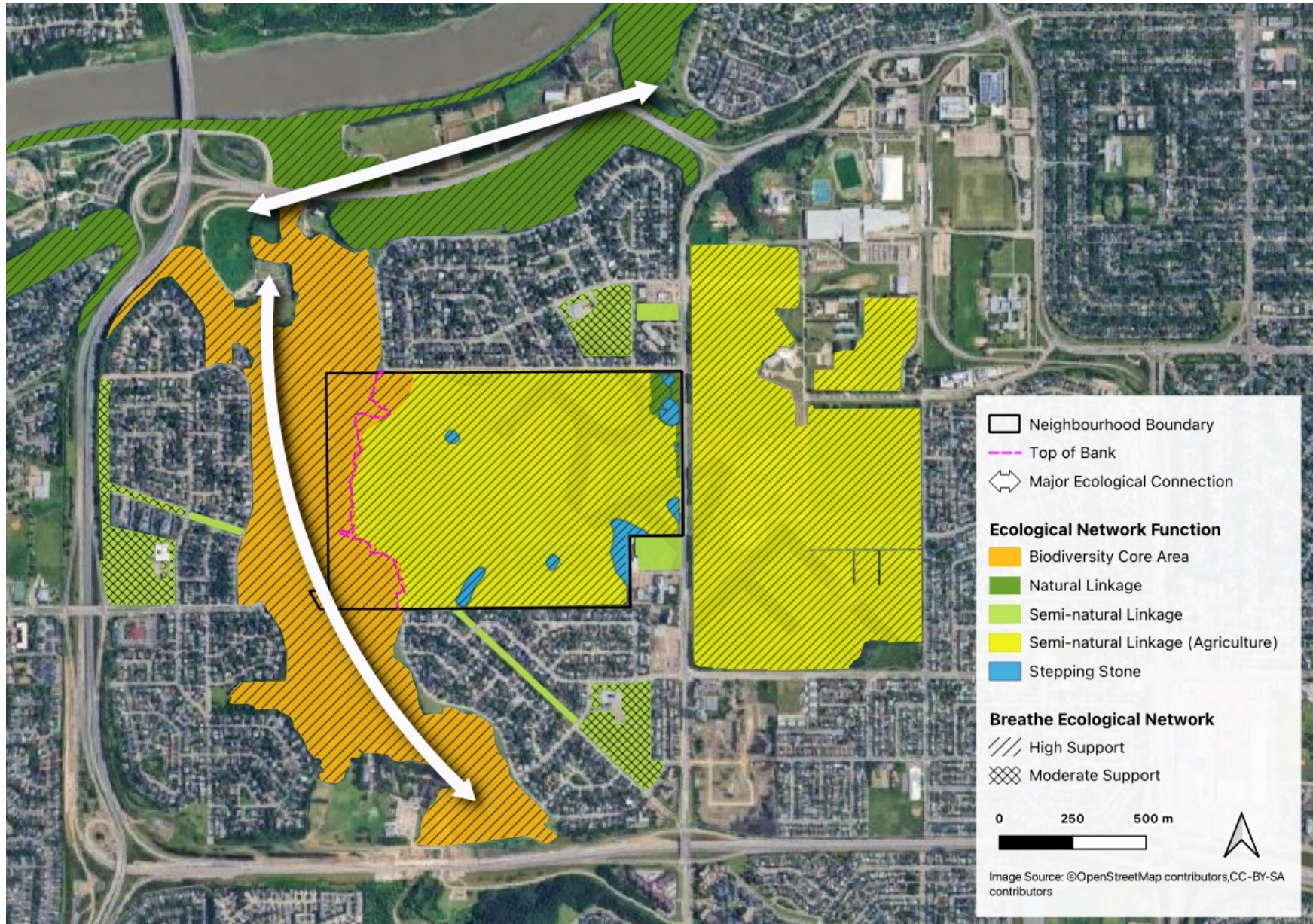


Figure 6. Existing ecological network within and surrounding the West 240 neighbourhood.

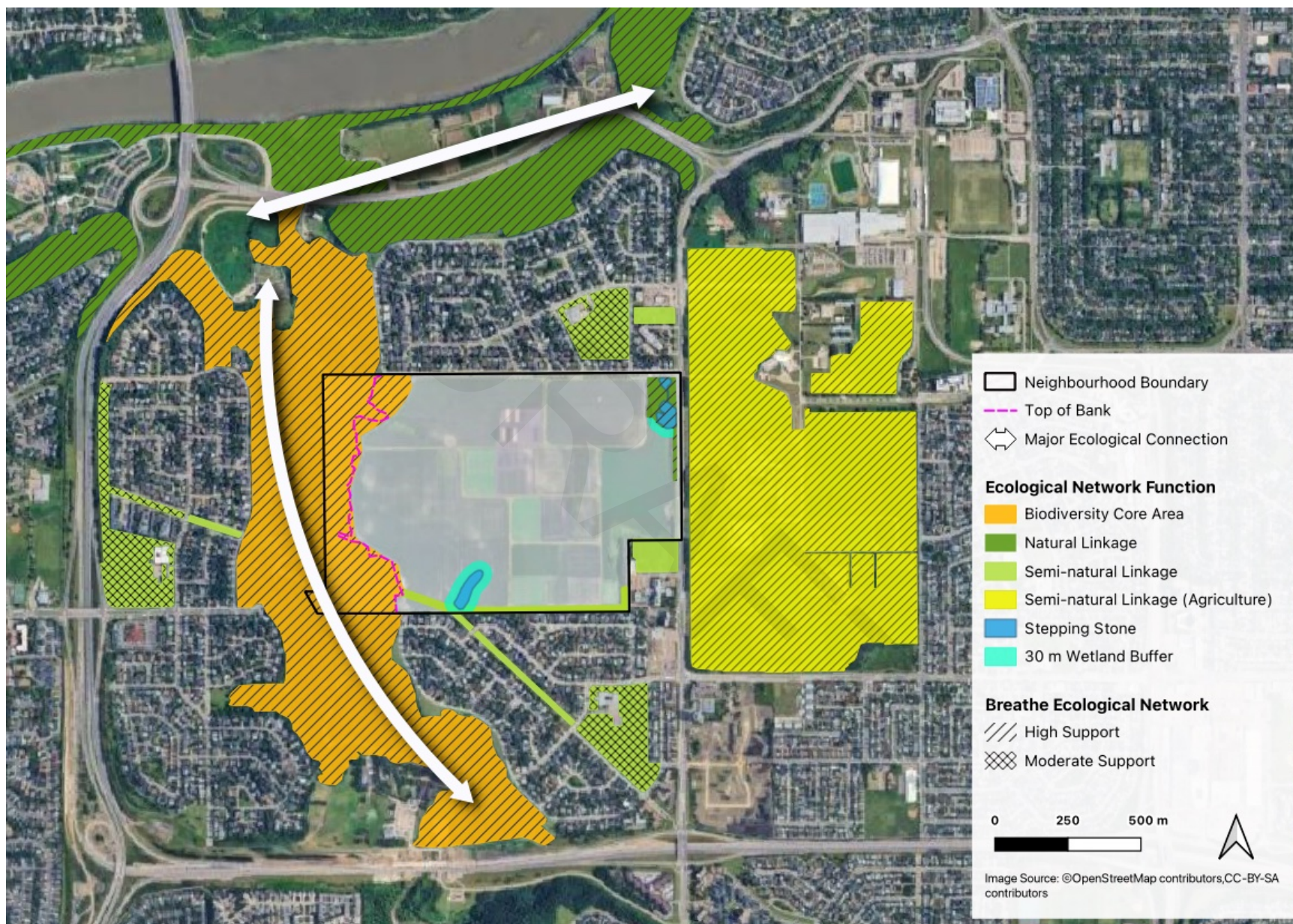


Figure 7. Recommended ecological network for West 240 post-development.

5.0 Development Concept

5.1. Retained Natural Areas

Within the 93.6 ha neighbourhood, the proposed land use is primarily residential with a mix of low (22% of GDA), medium (12%), high (17%) density. An additional 5% is zoned for mixed use and Urban Village Flex, which is a mix of commercial, multi-family, and high density residential.

Approximately 75% of the existing natural area within the neighbourhood is being preserved post-development (Table 6; Figure 8). Most of the retained area is associated with Natural Area 2 (NA2), a core biodiversity area that is part of the existing Whitemud Park Natural Area. The majority of NA2 will be retained through Environmental Reserve dedication, with a smaller portion (~1.3 ha) in the northeast being retained as Municipal Reserve. Approximately 0.35 ha of NA2 will be lost due to the construction of a TOB walkway that will be located along the eastern edge of the natural area (Figure 8). Other natural habitat that will be retained post-development includes all of hedgerow 5 (0.57 ha) and most of hedgerow 4 (0.09 ha). Both areas will be retained as MR.

Note that individual trees associated with hedgerows 1-3 will be evaluated by a qualified professional at subdivision and those considered high value and in good condition will be identified for retention in the front yards of residential lots fronting 62 Avenue.

Table 6. Summary of natural features that will be retained post-development, along with the retention tool that will be utilized.

Feature	Total Area (ha)	Area Retained (ha)	Area Lost (ha)	Proportion Retained	Retention Tool
Wetlands	3.01	0	3.01	0	--
Hedgerow 1-3	0.18	TBD*	TBD*	TBD*	--
Hedgerow 4	0.09	0.088	0.002	98%	MR
Hedgerow 5	0.57	0.57	--	100%	MR
Hedgerows 6-7	0.28	0	0.28	0	--
NA1	1.07 (upland)	0	1.07	0	--
NA2	14.38	14.03	0.35	98%	ER/MR
TOTAL	19.41	14.69	4.71	75%	

***NOTE:** Existing trees will be evaluated by a qualified professional at subdivision and those considered high value and in good condition will be identified for retention in the front yards of residential lots fronting 62 Avenue.

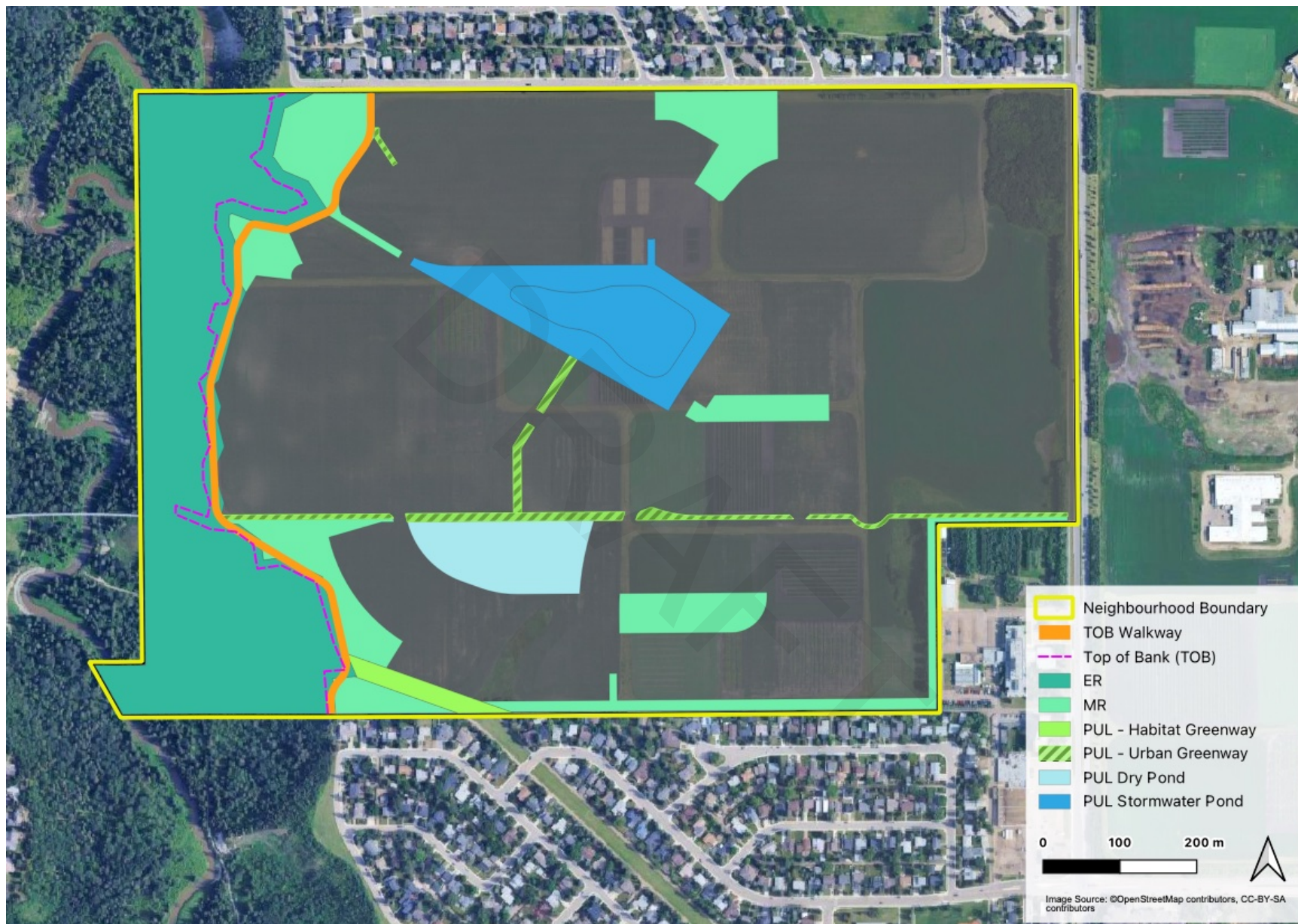


Figure 8. Proposed post-development ecological network in the West 240 neighbourhood.

5.1.1. Pre- and Post-development Flows

An important consideration in neighbourhood planning as it relates to natural areas is the change in the amount and quality of surface water runoff. To assist with decisions related to natural area retention, pre-development and post-development basin size and run-off rates were calculated for natural areas in West 240 to determine whether sufficient flows could be maintained post-development. The specific details of this analysis, including the methods, results, and drainage patterns for natural features in West 240 can be found in Arcadis (2025).

For this analysis, NA2 was divided into two separate areas: the “NW Tree Stand” includes the portion of NA2 located above the top of bank in the northwest corner of the neighbourhood and the “Creek” portion of NA2 includes the natural area within Whitemud Creek Park located below the top of bank (Figure 9). A summary of results, including a comparison of the pre- and post-development basin size, runoff volumes (Q5yr and Q10yr), and the predicted percentage change in each of these variables for the major natural areas in the neighbourhood is provided in Table 7.

Table 7. Summary of the pre-development and post-development basin hydrology analysis (Arcadis 2025) for natural areas in West 240. For clarity, we provide the name of the natural area as referenced in the ENR, as well as the corresponding name (in brackets) that is referenced in Arcadis (2025).

Natural Area	Drainage Area			Q5yr (L/s)			Q10yr (L/s)			Retention Status
	Pre	Post	% change	Pre	Post	% change	Pre	Post	% change	
NA 1 (NE Tree Stand)	7.81	0.52	-93.3	193	87	-54.9	239	106	-55.6	Remove
Hedgerow 5 (S. Tree Hedgerow)	5.91	1.65	-72.1	115	190	65.2	142	230	62.0	Retain
NA2 (NW Tree Stand)	4.84	0.48	-90.1	100	40	-60.0	124	48	-61.3	Retain
NA 2 (Creek)	26.28	4.45	-83.1	451	258	-42.8	560	317	-43.4	Retain

Post-development runoff is expected to decline for most of the natural areas, with the NW Tree Stand associated with NA2 expected to have the greatest reduction in flow. Flows to NA1 (the tree stand and wetland in the NE corner) are also expected to decline by more than half, with flows to the Creek portion of NA2 predicted to decrease by approximately 40% post-development. Hedgerow 5, located along the southern boundary of the neighbourhood, is expected to receive an increase in post-development flow of approximately 60%.

While NA1 was recommended for retention within the ecological network (Figure 7), the expected decrease in surface flows to this natural area was considered when making the decision about whether to retain the area within the neighbourhood. The hydrologic changes that are expected post-development make the retention of this natural area challenging, especially when considering the wetland habitat that is associated with this natural area. A reduction of more than half of the pre-development flow is likely to have large and negative impacts on the ecology and hydrologic function of the wetland and tree stand, and maintaining water quantity and quality to this natural area post-development was considered unviable from an engineering and land development perspective. Given these considerations, this natural area was excluded from the development concept.

Reduced surface flows are also expected for NA2 and given the magnitude of the reduction in flow to the NW tree stand, options for redirecting additional water to this area are being explored. Given that slope stability is also a consideration along the top of bank, point sources of additional water will not be permitted. Consequently, other options, such as an infiltration trench that would capture and treat additional runoff may be a viable solution, as water from the trench would permeate the soil and feed the trees along the top of the bank. Additional detail about this option is provided in Arcadis (2025).

While the projected increase in surface flows to Hedgerow 5 is quite high, impacts can be partially mitigated by increasing the topsoil depth on the residential lots that back onto these trees. This should increase infiltration and reduce some of the excess surface water expected to flow into the natural area after a significant rain event. Additionally, given the existing grades in the hedgerow, excess water is not expected to collect and sit in the trees; rather, water is expected to flow south to the alley where it will drain to existing stormwater infrastructure. Finally, the dominant tree species in this hedgerow is trembling aspen, which is a species that is tolerant of a wide range of soil moisture conditions, and is moderately tolerant of flood conditions. As such, it is expected that the trees in this hedgerow will not be adversely affected by the periodic increase in soil moisture that is likely to occur post-development given that there is no water ponding expected within the hedgerow.

In terms of water quality, all the surface water that will be flowing into retained natural areas post-development will come from the back of residential lots. To reduce the risks associated with increased nutrient loading and other chemical contaminant to the natural areas, a restricted covenant will be placed on lots backing onto natural areas that will restrict the use of fertilizers and herbicides.

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5.2. Post-Development Ecological Network

In addition to the 14.7 ha of natural areas that will be retained, the post-development ecological network will include 14.0 ha of semi-natural components such as a naturalised stormwater pond, a dry pond, urban and habitat greenways, and parks (Figure 10). When the area of semi-natural and natural habitat is combined, the proposed post-development ecological network covers 28.7 ha or ~31% of the West 240 neighbourhood (Table 8).

Table 8. Summary of the type and area of post-development ecological network components.

Ecological Network Component	Area (ha)	Proportion of Gross NASP Area (%)
Environmental Reserve (ER)	13.6	14.5
Municipal Reserve (MR)	7.9	8.5
Storm Pond (PUL)	4.0	4.2
Dry Pond (PUL)	1.9	2.0
Urban Greenway (PUL)	1.0	1.0
Habitat Greenway (PUL)	0.4	0.5
TOTAL	28.7	30.7

Post-development, the neighbourhood is expected to support a wildlife assemblage like the one that currently exists (Table D-2). This primarily includes small and medium-sized mammals and passerine birds. While not detected during the field assessment, the neighbourhood is also likely to support birds of prey (e.g., owls) and coyote. Notably, the wildlife species that were detected in the West 240 neighbourhood during field assessments were primarily detected in NA2, which is part of the Whitemud Creek ravine and is being retained as ER. This natural area will serve as the core habitat within the neighbourhood, and the proposed ecological network will maintain connectivity from this core area to other natural and semi-natural habitats within the neighbourhood via urban greenways, as well as to the Lansdowne neighbourhood via a habitat greenway. A naturalized stormwater management facility will be constructed within the neighbourhood, which may provide additional habitat for riparian and wetland-dependent bird species, and potentially amphibians. More details about the various elements of the proposed ecological network are discussed in more detail below.

5.2.1. Greenways

The neighbourhood will include urban and habitat greenways. The habitat greenway will be approximately 24 m wide and will run in a northwest/southeast direction, providing a major habitat connection between Whitemud Creek ravine and the existing habitat greenway in the Lansdowne neighbourhood. Because of its designation as a habitat greenway that is intended to facilitate wildlife movement, this greenway will be naturalised with native, climate-resilient vegetation and will not include a shared-use pathway.

Within the neighbourhood, urban greenways will enhance connectivity for both people and wildlife. These greenways will range in width from ~5m to ~10 m and most will include a pathway. The urban greenways will also be enhanced landscaping that will consist of native, climate-resilient vegetation. As a partial offset for the loss of treed habitat in NA1, tree plantings along the habitat and urban greenways will exceed the City planting requirements in locations where this additional plantings are both feasible and appropriate.

5.2.2. Storm Pond Design & Wetland Habitat Replacement

The development of the West 240 neighbourhood will result in the loss of 3.01 ha of wetland habitat (Table 6 and Table 9). As per the provincial wetland policy, the area of compensatory wetland habitat required is 4.55 ha, and this habitat must be replaced through permittee responsible wetland restoration or construction, or through a payment in-lieu of habitat replacement.

Table 9. Wetland area of that will be lost in West 240 and the associated wetland replacement ratios that will be required under the Provincial wetland policy.

Wetland Type	Area Lost (ha)	Replacement Ratio	Compensatory Area Required (ha)
Relative Wetland Value: C	1.53	2:1	3.07
Relative Wetland Value: D	1.48	1:1	1.48
	3.01		4.55

West 240 includes a single (wet) stormwater facility that will make up ~4% of the neighbourhood. Additionally, there will be a dry pond that will collect and retain runoff, which may be complemented by other Low Impact Development features that will absorb and collect stormwater onsite to reduce flooding and enhance water quality (Arcadis 2025). All these features create a matrix that is more hospitable to wildlife. In particular, the (wet) stormwater management facility may provide additional habitat for aquatic and semi-aquatic species if it is designed with specific habitat targets and goals in mind.

It is the stated intent of UAPT to use the stormwater management facility as a partial offset for the loss of wetlands in the neighbourhood. This includes seeking approval from the provincial government to use the facility as an offset for lost wetland habitat under the Provincial Wetland Policy. As such, the design of the facility will be guided by the standards outlined in the Alberta Guide to Wetland Construction in Stormwater Management Facilities (Government of Alberta 2018), which sets minimum requirements for facility design in cases of permittee-responsible habitat replacement. Additional detail about the stormwater facility design can be found in Arcadis (2025).

5.2.3. Habitat Connectivity & Wildlife Passage

Development within the West 240 neighbourhood will result in habitat fragmentation and will decrease connectivity between remaining habitat patches. Consequently, special efforts will need to be directed towards improving connectivity within the post-development ecological network to facilitate wildlife passage through the neighbourhood. Given the wildlife species that are predicted to be present within the neighbourhood post-development, the location of the neighbourhood relative to Whitemud Creek ravine, and as per the City of Edmonton Wildlife Passage Engineering Design Guidelines (Stantec 2010), the ecological design groups that should be considered include small terrestrial (e.g., red squirrel), medium terrestrial (e.g., porcupine, coyote), and large terrestrial (e.g., deer).

Given the proposed road layout and configuration of natural and semi-natural habitats within the neighbourhood, active traffic management is the most feasible type of mitigation for facilitating wildlife movement through the neighbourhood. This type of mitigation should be located along roadways where the movement of terrestrial mammals is most likely, such as where roadways intersect semi-natural and natural upland habitat corridors. Predicted wildlife movement pathways and locations where wildlife passage should be considered to enhance habitat connectivity within the West 240 neighbourhood are identified in Figure 10.

An example of the type of active traffic management strategies that could be utilized in the West 240 neighbourhood include, but are not limited to:

- traffic calming measures, such as speed humps, boulevard extensions, raised medians, lane reductions, rumble strips, and traffic circles,
- reduced speed limits,
- signage.

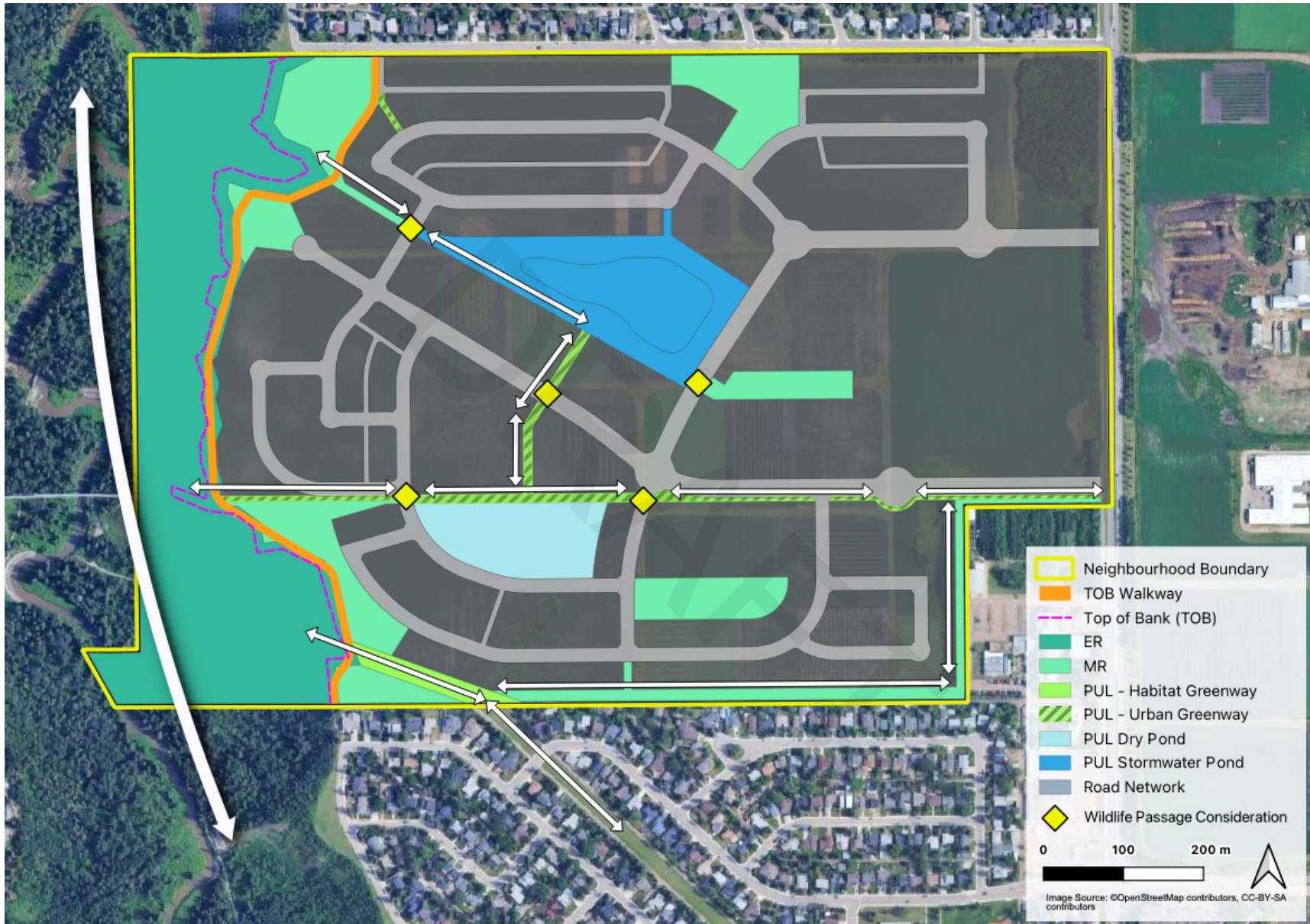


Figure 10. Post-development ecological network with predicted wildlife movement pathways shown with white arrows and locations where wildlife passage measures should be considered to improve habitat connectivity (yellow diamonds).

6.0 Ecological Impacts of Development

The following is a description of the ecological impacts that may occur due to the development of the West 240 neighbourhood.

6.1. Geology & Soils

The West 240 neighbourhood is located adjacent to Whitemud Creek ravine, which includes areas with very steep slopes. Bank stability is a major concern, as construction can create short-term impacts, and increased development along the top of bank increases the potential for long-term sedimentation and erosion issues that can impact vegetation, water quality, and aquatic species downstream of the site.

6.2. Habitat Loss & Reduced Connectivity

The West 240 neighbourhood currently contains suitable habitat for a range of wildlife species, including a large diversity of birds and other urban-adapted mammal species such as coyote and deer. As per the design concept, approximately 4.7 ha of upland and wetland habitat will be lost. This is expected to impact wildlife and wildlife habitat through the following primary mechanisms:

- Direct habitat loss as a result of vegetation removal/disturbance, as well as the loss of forest structure such as snags and woody debris.
- Indirect habitat loss and changes to daily/seasonal movement and activity patterns as a result of increased sensory disturbance (e.g., noise, light, human use).
- Increase in direct and indirect mortality risk due to vegetation loss, habituation and/or more frequent human-wildlife encounters/conflicts.

The loss of natural features within West 240 will contribute to the cumulative loss of wetlands and natural areas at both the local and city-scale, which will have immediate and long-term impacts on biodiversity. Additionally, the development of a road network and the transition from a matrix dominated by agriculture to one dominated by residential development will have long-term impacts on the movement of highly mobile wildlife, such as coyote and deer. While these species are generally well-adapted to an urban environment, the cumulative effects of increased human presence may result in an increased avoidance of this area, particularly during the daytime, over baseline conditions. While no dens were detected during the field assessment, natural areas associated with Whitemud Creek do provide suitable denning habitat for coyote. This increases the potential for human/wildlife conflict.

6.3. Introductions & Increases in Invasive Species

After habitat loss, invasive species represent one of the largest threats to biodiversity. Invasive species, and in particular non-native plants, impact native ecosystems by altering wildlife habitat and out-competing native species, including sensitive or at-risk species. Other impacts of invasive species include lower aesthetic and property values, increased rates of diseases and insects, reductions in available forage for wildlife, and declines in soil stability and water quality (Cranston et al. 2002).

Invasive species, including noxious weeds, are present within the West 240 neighbourhood, and construction activities associated with the development of the neighbourhood will increase the potential for the spread and establishment of invasive species to previously unaffected areas. Increased human activity within natural areas will also increase the potential for invasive species establishment and spread.

As a result, the development of West 240 is likely to have immediate and long-term impacts on natural areas through the spread of invasive species; however, these impacts can be minimized through targeted and active management of invasive species.

6.4. Increased Human Presence & Use of Natural Areas

As development of the West 240 neighbourhood proceeds, there will be an increase in the number of people who have access to natural areas within the neighbourhood. An increase in human presence and direct use of natural features is likely to have negative impacts on species that are sensitive to the presence of people, vehicles, or other disturbances that are typically associated with residential development. This is likely to result in a decline in the number of species that are sensitive to human disturbance, with an increase in species that are more tolerant of human disturbance and urban environments.

Construction activities, as well as increased human traffic through and around natural areas, will also increase the potential for the spread of invasive species. While some of these impacts can be minimized by providing infrastructure that encourages passive human use of sensitive areas, many of the impacts, such as changes in wildlife species assemblages, will be unavoidable and long-term. Development setbacks around natural areas can help to mitigate the impacts of increased human use.

7.0 Mitigation Measures

While the potential impacts of urban development on natural areas are numerous, there are opportunities to minimize impacts through careful design and management. The following sections provide general suggestions for the management of natural features in the post-development landscape, such that potential impacts can be minimized, and ecological function of the network can be maintained or improved over time. These mitigation measures include general considerations for maintaining the functional capacity of existing natural features, as well as enhancing natural and semi-natural habitat. More specific natural area management plans may be required by the City at sub-division.

7.1. Sedimentation & Erosion

A geotechnical investigation has been completed by CT & Associates (2024), which outlines recommendations associated with development setback and restrictions along the top of bank, as well as grading and water management for lots situated along the top of bank. In addition to adhering to these geotechnical recommendations, sedimentation and erosion risks during the construction phase can be minimized through the development and implementation of a sedimentation and erosion control plan, including detailed specifications for minimizing grading along the TOB and re-establishing vegetation in erosion prone areas post-construction.

7.2. Vegetation Removal

The nests of certain bird species are protected year-round under the provincial *Wildlife Act* (e.g., hawks, eagles, owls, falcons, and herons) and all pileated woodpecker nest cavities are protected under the federal Migratory Birds Regulation, unless they are unoccupied for 36 months (Government of Canada 2023). Migratory birds and their nests are also protected under the federal *Migratory Bird Convention Act* during the primary nesting period, which for the Edmonton region, extends from April 8 to August 24. Additionally, under the *Wildlife Act*, it is an offence to disturb or destroy the den or lodge of wildlife (e.g., coyote, beaver) without a permit.

To mitigate impacts to wildlife that may result from vegetation removal during construction, the following timing restrictions should be followed:

- At all times of the year, a pre-disturbance wildlife sweep should be conducted within 7-days of the commencement of any vegetation removal to check for denning wildlife and/or nesting birds. If nesting/denning activity is detected, species-appropriate restricted activity buffers should be established.
- If trees with visible cavities are to be removed, the tree must be inspected by a qualified professional to ensure that pileated woodpecker nests are not being destroyed. All coarse woody debris should be retained on-site if snags are removed due to safety concerns.

7.3. Development Setbacks (Buffers)

Placing development setbacks on natural areas is important for maintaining the condition and health of these features. Buffers can help to improve the quality of surface waters, offer additional wildlife habitat, and in the case of forested areas, protect tree roots from damage. From the perspective of human use, buffers can also improve the aesthetic appeal of a natural area and create both passive and active recreational opportunities for residents.

The City of Edmonton provides policy direction for applying development setbacks on natural features, including a suggested 10 m setback on treed natural areas. For the natural areas that will be retained in the West 240 neighbourhood (i.e., NA2), a minimum buffer of 10 m has been applied to treed areas. There will, however, be impacts to some trees within NA2 because of the construction of the TOB walkway, which will follow the delineated top of bank and include a 3 m multi-use trail. The clearing of vegetation associated with the construction of this TOB walkway should be limited to the extent possible, and any vegetation clearing activity should adhere to the timing restrictions and conditions outlined in Section 7.2.

8.0 Conclusion

The West 240 lands cover an area of approximately 93.6 ha in south central Edmonton. These lands currently contain 16.4 ha of upland habitat and 3.0 ha of wetland habitat. As per the neighbourhood concept design, approximately 75% (or 14.7 ha) of the existing habitat within the neighbourhood will be retained post-development. Most of this habitat is associated with a single natural area that is part of the Whitemud Creek Natural Area Park. This Park is a biodiversity core area and major ecological linkage within the City of Edmonton. In addition, the neighbourhood will include semi-natural habitat, such as dry and wet ponds, greenway linkages, and other neighbourhood park space. Together, the natural and semi-natural habitats will create an approximately 29 ha ecological network within the West 240 neighbourhood.

8.1. Closure

This report was written and reviewed by:



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Appendix A: Historical Air Photos

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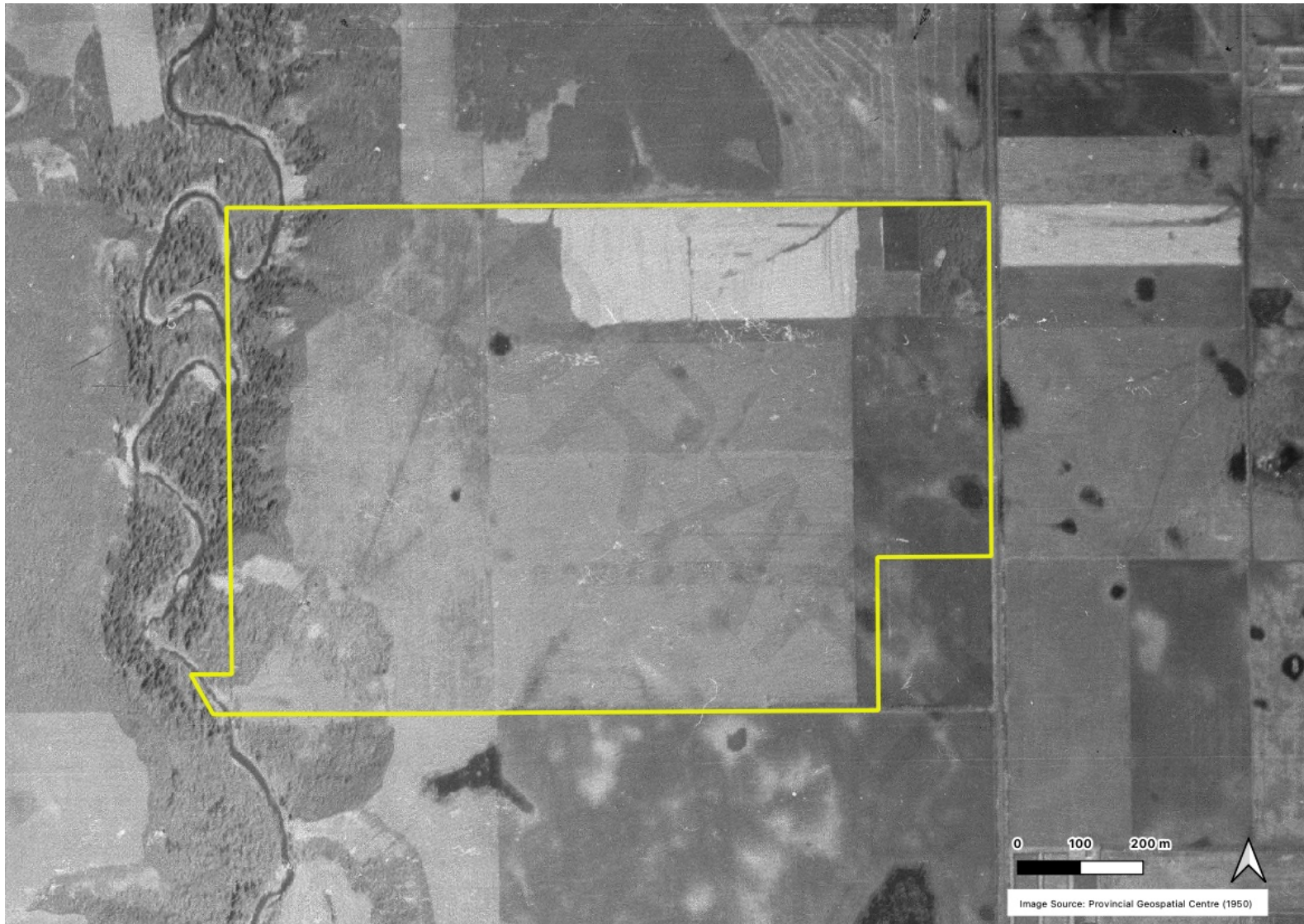


Figure A-1. 1950 air photo.

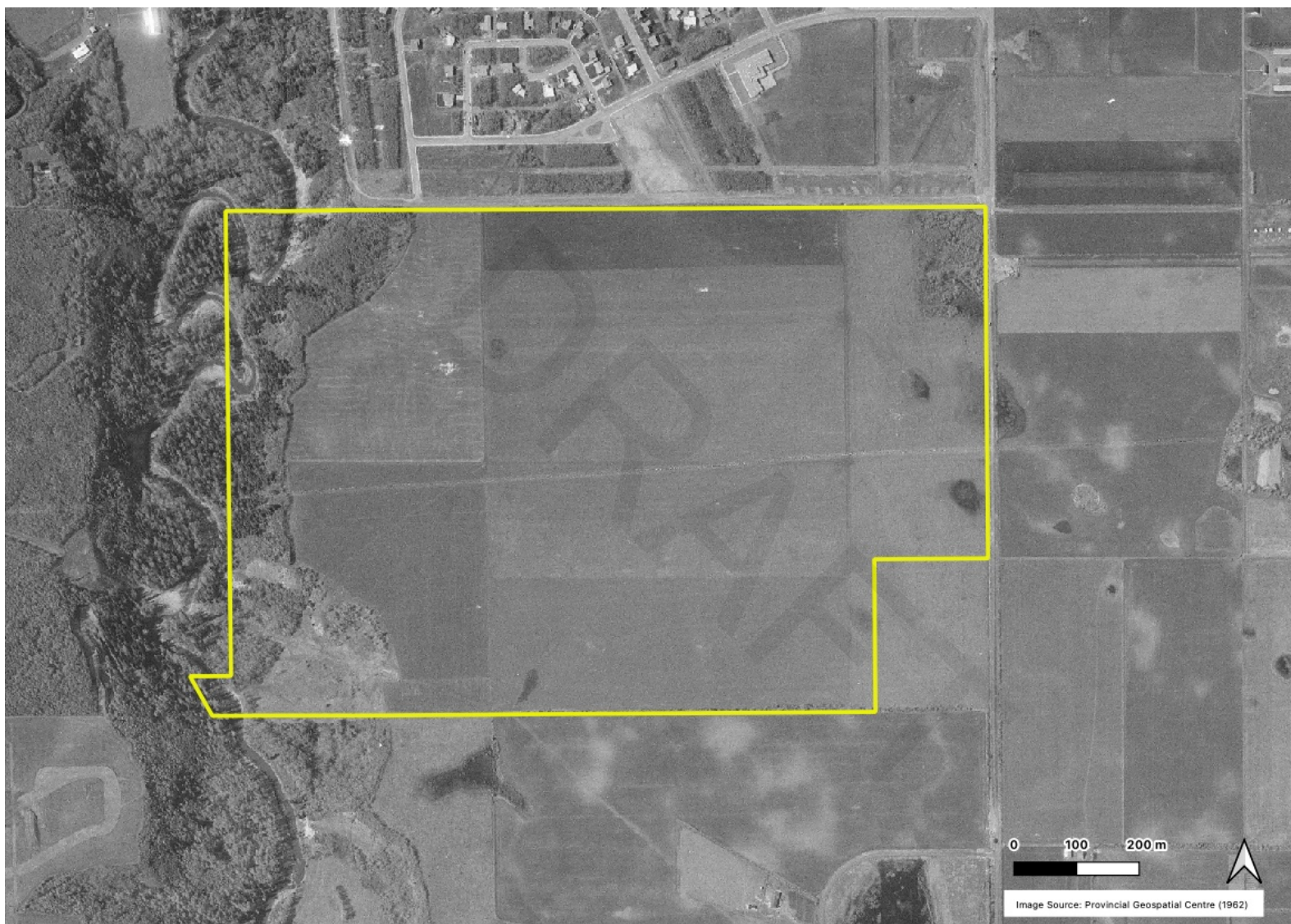


Figure A-2. 1962 air photo.



Figure A-3. 1970 historical air photo.



Figure A-4. 1980 air photo.



Figure A-5. 1992 air photo.

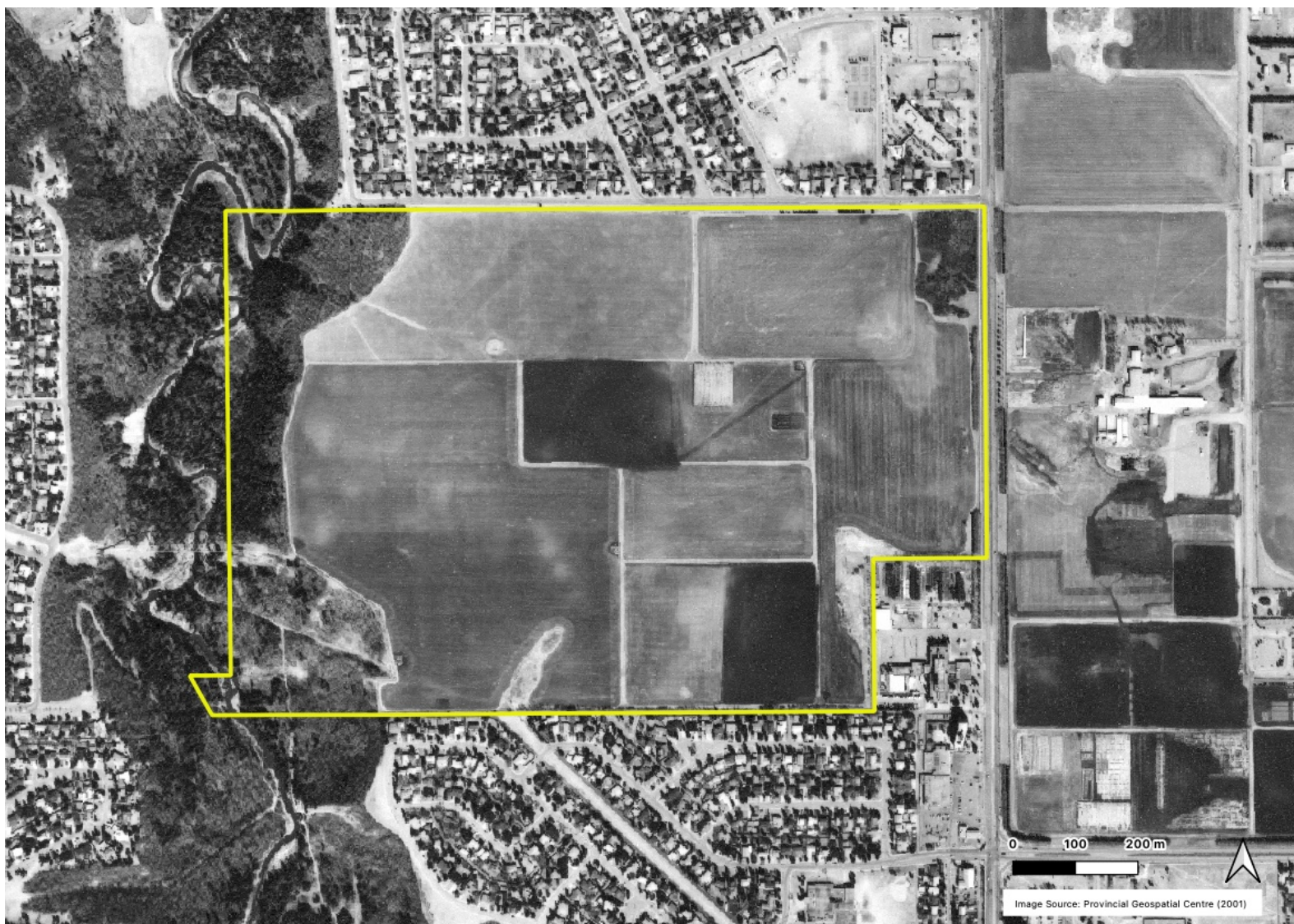


Figure A-6. 2001 air photo.

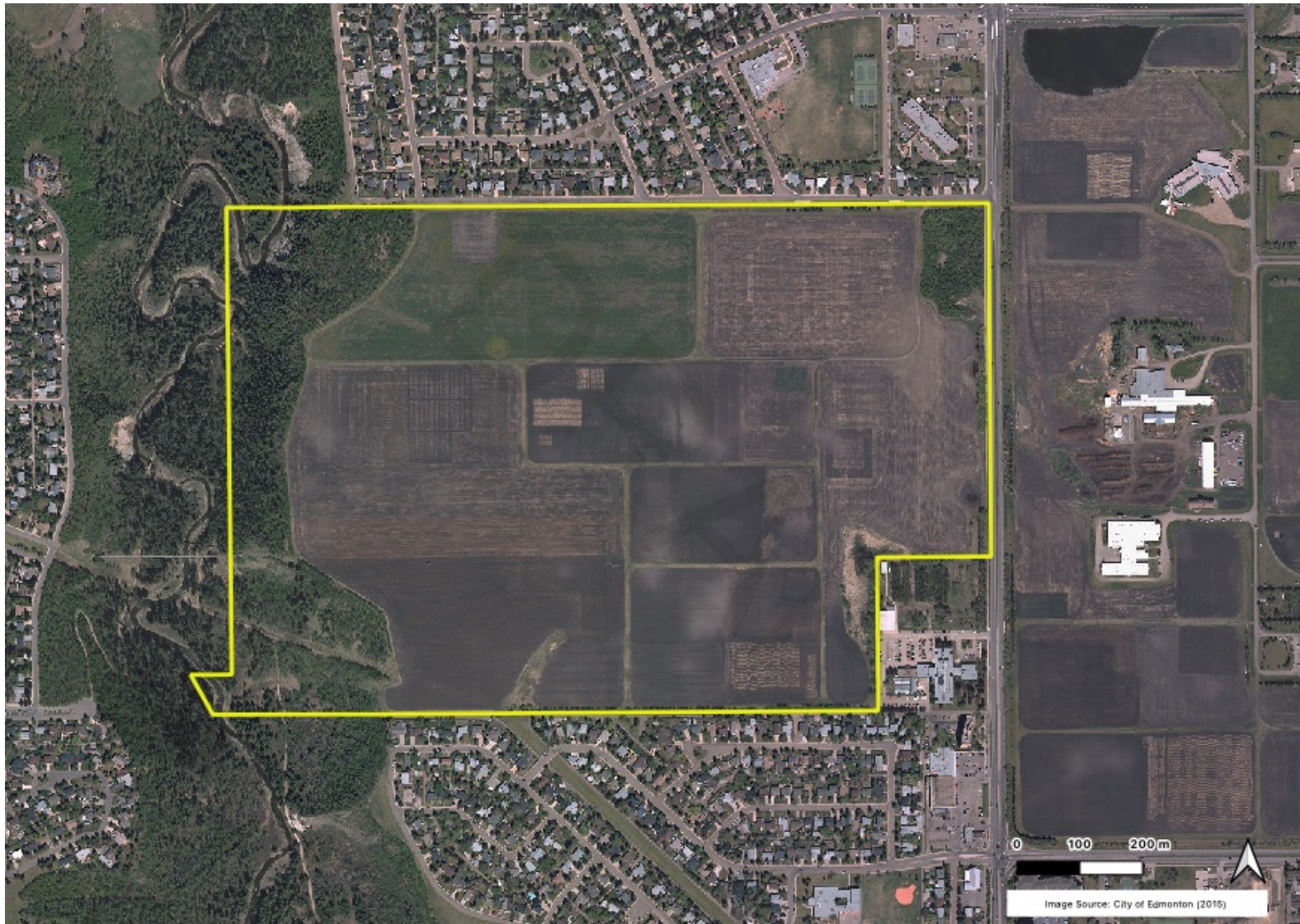


Figure A-7. 2015 air photo.

Appendix B: Wetlands

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Wetland 001
Size (ha): 0.514

AWCS Class: Marsh-Graminoid-Temporary (II)
ABWRET-A Score: D

Wetland 001 is a temporary marsh located along the southern boundary of the neighbourhood. This wetland appears to be a remnant of a larger wetland that was partially filled between 1962 and 1970 when the Lansdowne neighbourhood was developed. This wetland currently drains toward the south through a culvert that appears to be tied into the City's drainage system and the hydrology is further impacted by a footpath that runs along the southern margin of the wetland. Sedge (*Carex untriculata*) was the dominate vegetation within the basin and there was no standing water at the time of assessment. The margins of this wetland have been impacted by cultivation and most of the riparian vegetation has been removed, except for trees and shrubs associated with hedgerow 5, which runs along the wetland's southern boudnary.

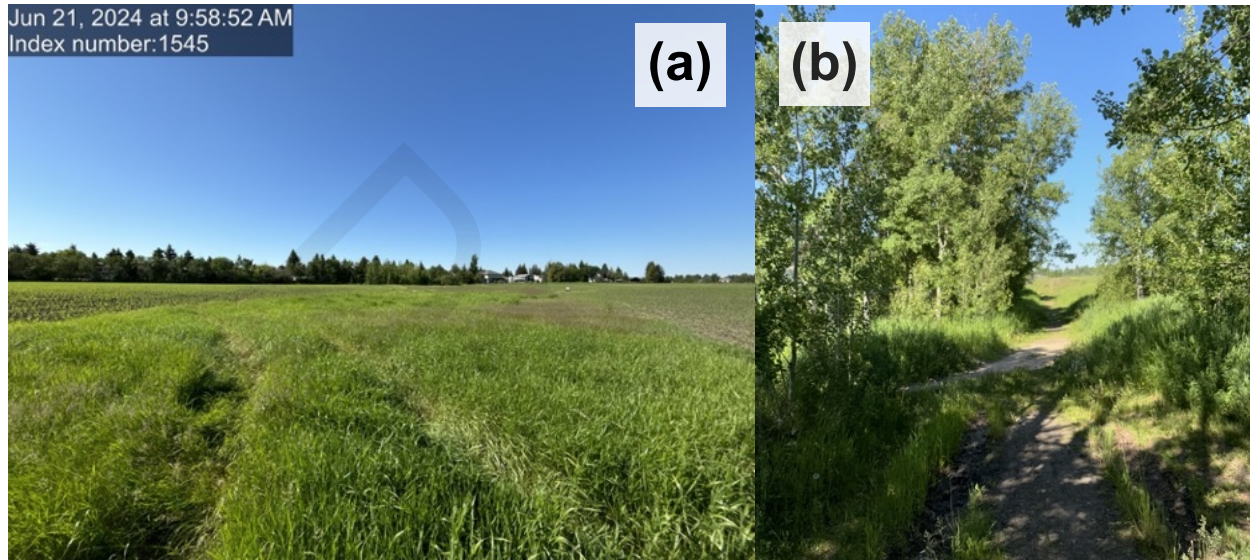


Photo B- 1. Wetland 001 looking north (a) and west along Hedgerow 5 (b). Sedge (*Carex untriculata*) was the dominant cover in this wetland.

Wetland 002
Size (ha): 1.304

AWCS Class: Marsh-Graminoid-Temporary (II)
ABWRET-A Score: C

This wetland was partially filled when the Northern Forestry Centre was constructed in the early 1970s. Prior to the construction of the facility the wetland appears to have been a temporary marsh that was cultivated, but after construction the wetland increased in both size and permeance. This change is likely related to the presence of berms (and a fence) located along the west and north boundary of the Forestry Centre that have changed surface drainage patterns and resulted in seasonal water impoundment within the wetland basin. Vegetation cover in this wetland was dominated by emergent vegetation (primarily *Carex untriculata*) and soils were saturated in the deepest portion of the basin but there was no standing water at the time of assessment. Some willow shrubs were scattered along the margins of the wetland. Rows of mature white spruce and balsam poplar were present along the eastern boundary of the wetland, immediately adjacent to the fence and mature trees (planted) were present along the top of the berm.

Jun 21, 2024 at 11:22:34 AM
Index number:1550

(a)



Jun 21, 2024 at 11:29:27 AM
Index number:1556

(b)



Jun 21, 2024 at 11:30:19 AM
Index number:1558

(c)



Sep 30, 2025 at 9:31:05 AM
Index number:1710

(d)



Photo B- 2. Wetland 002 looking south (a) and east (b). Sedge (*Carex untriculata*) was the dominant cover in this wetland (c). Two rows of planted trees (white spruce and balsam poplar) were also located along the eastern boundary of the wetland (d).

Wetland 003
Size (ha): 0.229

AWCS Class: Marsh-Graminoid-Temporary (II)
ABWRET-A Score: C

Wetland 003 was located along the eastern boundary of the neighbourhood, adjacent to 122 Street. This was a temporary wetland dominated by wetland grasses (*Glyceria* spp.) and there was no standing water in the wetland at the time of assessment. Non-native weedy species were prevalent throughout and a substantial portion of the basin had been mowed. There was no riparian vegetation present.

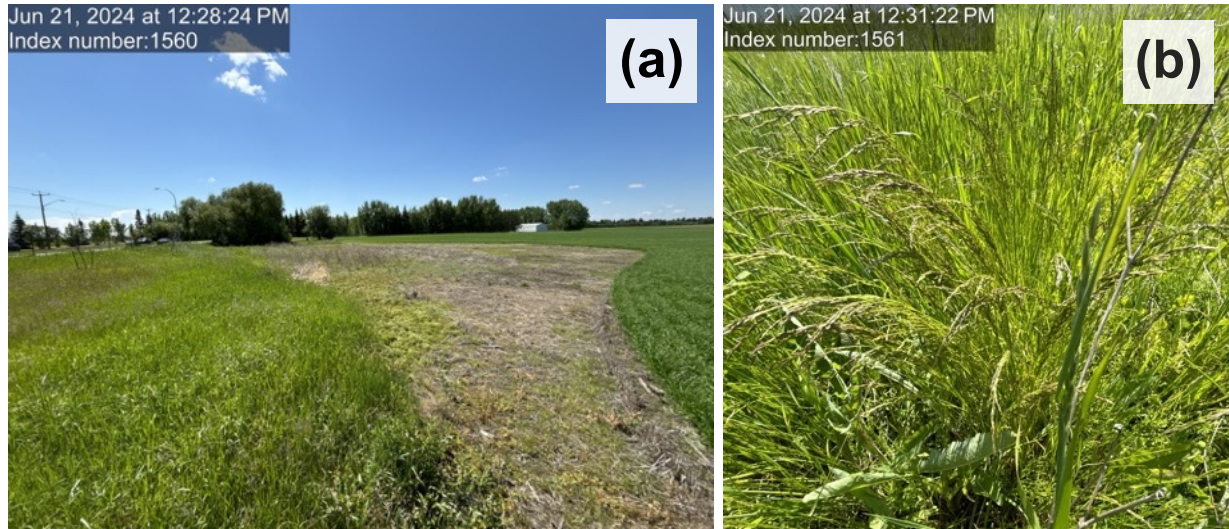


Photo B-3. Wetland 003 looking south (a). Vegetation in a portion of the basin had been cut, with the remaining portion dominated by wetland grasses (*Glyceria* spp.) (b).

Wetland 004
Size (ha): 0.031

AWCS Class: Swamp-Wooded Deciduous-Temporary (II)
ABWRET-A Score: D

Wetland 004 was a small temporary wetland located within hedgerow 7. This wetland is seasonally wet but did not have any water at the time of assessment. Hydrology in the area appears to be altered by the multi-use pathway and 122 Street. The western portion of the wetland has been cultivated and was dominated by grasses, while the eastern portion was dominated by woody vegetation (willow).



Photo B-4. Wetland 004 looking north (a). Vegetation in the western portion of the basin had been cut, with the vegetation in the western portion dominated by woody vegetation (willow) (b).

Wetland 005
Size (ha): 0.599

AWCS Class: Swamp-Wooded Deciduous-Temporary (II)
ABWRET-A Score: D

Wetland 005 was located within Natural Area 1, in the northeastern corner of the study area. This wetland was dominated by woody vegetation (willow, dogwood) and included a small open area in the southern portion that was dominated by wetland obligate forbs (marsh hedge-nettle). No standing water was present at the time of assessment and a large drainage ditch was evident, which drains surface water north toward 62 Avenue.

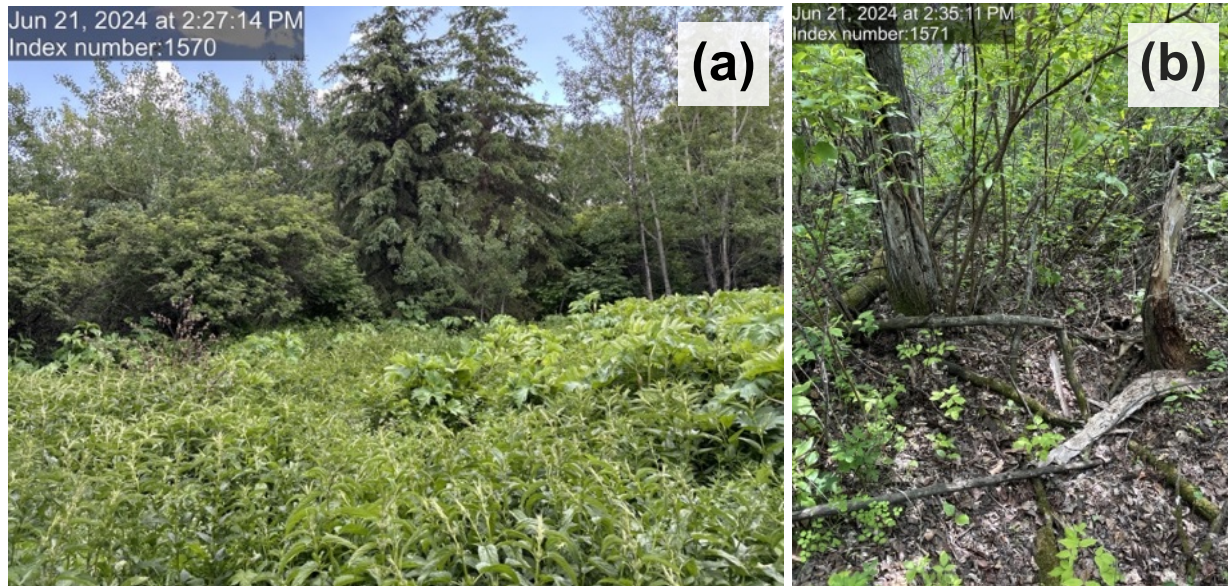


Photo B-5. Wetland 005, looking north from the open area dominated by wetland forbs (a). Most of the wetland was dominated by woody vegetation (dogwood and willow) (b).

Wetland 006
Size (ha): 0.172

AWCS Class: Marsh-Graminoid-Temporary (II)
ABWRET-A Score: D

Wetland 006 was heavily impacted by cultivation. The basin was dominated by cultivated plants but included a large proportion of horsetail (*E. arvense*). There was no standing water present at the time of assessment by hydric soil indicators (depleted matrix) were present.

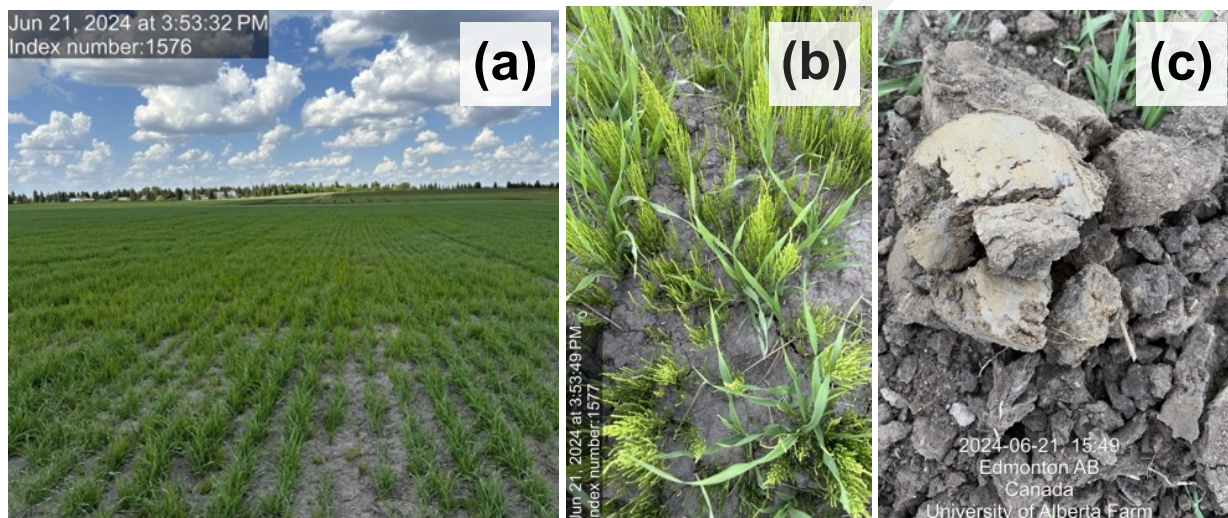


Photo B-6. Wetland 006 looking north (a). The basin was cultivated but vegetation cover included a high proportion of horsetail (*E. arvense*) (b), which is an indicator of moist to wet soils. Hydric soil indicators (depleted matrix) were also present (c).

Wetland 007
Size (ha): 0.163

AWCS Class: Marsh-Graminoid-Temporary (II)
ABWRET-A Score: D

Wetland 007 was located in the western portion of the study area. This wetland was heavily impacted by cultivation, but portions of the basin were covered by reed canary grass. No water was present at the time of assessment.



Photo B-7. Wetland 007 looking northwest. The basin was cultivated but vegetation cover included a high proportion of reed canary grass.

Table B-1. ABWRET-A scores for wetlands identified in the West 240 neighbourhood.

	Wetland ID						
	001	002	003	004	005	006	007
Sub-Function Model Scores							
Surface Water Storage (WS)	0.79	0.82	0.83	0.79	0.80	0.83	0.79
Stream Flow Support (SFS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Streamwater Cooling (WC)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sediment & Toxicant Retention & Stabilization (SR)	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Phosphorus Retention (PR)	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Nitrate Removal & Retention (NR)	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Organic Nutrient Export (OE)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fish Habitat (FH)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aquatic Invertebrate Habitat (INV)	0.44	0.49	0.42	0.00	0.10	0.43	0.43
Amphibian Habitat (AM)	0.27	0.30	0.27	0.00	0.06	0.28	0.28
Waterbird Habitat (WB)	0.19	0.21	0.19	0.00	0.00	0.18	0.19
Songbird, Raptor, & Mammal Habitat (SBM)	0.10	0.17	0.06	0.09	0.20	0.09	0.05
Pollinator & Native Plant Habitat (PH)	0.17	0.15	0.01	0.13	0.17	0.12	0.08
Human Use & Recognition (HU)	0.22	0.42	0.42	0.42	0.38	0.12	0.15
Aggregated Function Scores							
Normalized Hydrological Health (HH)	0.79	0.82	0.83	0.79	0.80	0.83	0.79
Normalized Water Quality (WQ)	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Normalized Ecological Health (EH)	0.44	0.49	0.42	0.13	0.20	0.43	0.43
Normalized Human Use (HU)	0.22	0.42	0.42	0.42	0.38	0.12	0.15
Normalized Value Score (ABWRET_a)	0.69	0.74	0.72	0.62	0.64	0.69	0.68
Final Score (A, B, C, D)	D	C	C	D	D	D	D

Appendix C: Natural Areas

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Natural Area 1 (NA1)

Size: 1.67 ha (deciduous forest: 1.072 ha; wetland: 0.599 ha)

Habitat Condition Score: 70.2 / 100

Natural Area 1 contained a deciduous tree stand approximately 1 ha in size, along with wetland 005, a wooded deciduous swamp that was approximately 0.6 ha. The upland forested portion of NA1 was dominated by a mature overstory of trembling aspen and balsam poplar with an average diameter at breast height of ~20 cm. The shrub layer was dense and was dominated by red-osier dogwood and wild rose, and the dominant forbs included goldenrod and sarsaparilla. Smooth brome and Kentucky bluegrass were the dominant grasses. Multiple stick nests were observed, and coarse woody debris and snags were present throughout. Wildlife observations included blue jay, American crow, black-billed magpie, vole, and a white-tailed deer fawn that was bedded down in dense shrubs. Human impacts in this natural area were evident, including homeless encampments, which were concentrated in the central portion of the natural area, and dumping of vegetation debris, which was generally limited to the margin of the natural area.



Photo C- 1. NA1 was dominated by deciduous trees with a dense shrub layer. Debris and garbage was common through the area.

Natural Area 2a (NA2a)

Size: 8.4 ha

Habitat Condition Score: 83.5 / 100

The northern portion of Natural Area 2 was composed of a mature/old mixedwood forest dominated by trembling aspen, balsam poplar, and white spruce with an average DBH of ~25 cm. The shrub layer was dominated by saskatoon and pincherry, and the dominant forb species included purple vetch and northern bedstraw. Red baneberry, meadow anemone, and pink wintergreen were also found throughout NA2a. Several non-native species were common, including Kentucky bluegrass, smooth brome, shiny cotoneaster, and tatarian honeysuckle. Coarse woody debris and snags were abundant, and notable wildlife observations included pileated woodpecker and an active porcupine den.

Human impacts in this portion of the natural area appear to be limited to several dirt trails that are located along the top of the bank and the upper portion of the ravine slope (Figure 5). These trails are well-used and are popular with both runners and mountain bikers. A small portion of the Whitemud Ravine gravel trail also meanders through the northwest corner of NA2a. This is a popular City of Edmonton trail that runs along Whitemud Creek between Whitemud Creek/Fox Farm (near Fox Drive) in the north, and Snow Valley/Rainbow Valley Park (near Whitemud Drive) to the south. Overall, this natural area was in excellent condition and offers a wide range of habitat types that support a diversity of urban wildlife.



Photo C-2. NA2a was composed of a mature/old mixedwood forest dominated by trembling aspen, balsam poplar, and white spruce.

Natural Area 2b (NA2b)

Size: 5.90 ha
Habitat Condition Score: 75.7 / 100

Vegetation in Natural Area 2b is substantially influenced by its southwest aspect, resulting in open grassy and shrubby areas along the upper and mid slopes that were dominated by snowberry, rose, and smooth brome. Forested areas along the top of the bank and mid-slope were dominated by trembling aspen, while the lower slopes near Whitemud Creek were dominated by balsam poplar. All forested areas have substantial shrub components, including pincherry and wild rose. A low wet area was also noted in the southwest corner of the natural area, which drains west toward Whitemud Creek.

Trails were more numerous in NA2b than in other natural areas in the neighbourhood. This includes a COE gravel trail that extends from the top of the bank to the northwest and connects at the base of the slope with the Whitemud Ravine gravel trail. At this junction, the Whitemud Ravine trail extends northwest toward the creek, as well as south toward Snow Valley/Rainbow Valley Park. The southern portion of the trail crosses the wetland in the southwest corner of the neighbourhood via a boardwalk. In addition to the gravel trails, NA2b also includes the same dirt trails present in NA2a. These dirt trails traverse the top of the bank, as well as the upper slope of the ravine. Despite the more numerous trails, this area was in excellent condition and offers diverse habitats for a wide range of species.



Photo C-3. The southwest aspect of NA2b results in areas that are more open and contain vigorous grass and shrub layers.

Hedgerow 1 (HR1)

Size: 0.02 ha

Habitat Condition Score: 37.5 / 100

Hedgerow 1 was composed of seven planted white spruce trees and several volunteer trembling aspen. Low branches and mowing have limited the establishment of native shrubs and forbs. The grass layer was dominated by smooth brome.



Photo C-4. Hedgerow 1, located along the northern boundary of the neighbourhood, looking southwest.

Hedgerow 2 (HR2)

Size: 0.04 ha

Habitat Condition Score: 39.8 / 100

Hedgerow 2 was composed of approximately 14 white spruce trees, including some standing dead trees, and several volunteer trembling aspen. Low branches and mowing have limited the establishment of native shrubs and forbs. The grass layer was dominated by smooth brome.



Photo C-5. Hedgerow 2, located along the northern boundary of the neighbourhood, looking southwest.

Hedgerow 3 (HR3)

Size: 0.03 ha

Habitat Condition Score: 37.1 / 100

Hedgerow 3 is composed of approximately 16 white spruce trees, including one standing dead spruce, and several volunteer trembling aspen. Low branches and mowing have limited the establishment of native shrubs and forbs. The grass layer was dominated by smooth brome. A paved trail and fence was located along the north side of the hedgerow, with a dirt footpath/truck trail located to the south.



Photo C-6. Hedgerow 3, located along the northern boundary of the neighbourhood, looking northeast.

Hedgerow 4 (HR4)

Size: 0.09

Habitat Condition Score: 29.2 / 100

Hedgerow 4 was a widely spaced linear row of non-native, young green ash. There was no shrub layer and the grass layer was dominated by smooth brome. A paved trail and fence bounded the north side, while a dirt footpath/truck trail bounded the south.



Photo C-7. Hedgerow 4, located along the northern boundary of the neighbourhood, looking northeast.

Hedgerow 5 (HR5)

Size: 0.48

Habitat Condition Score: 64.4 / 100

Hedgerow 5 was comprised of mature trembling aspen and balsam poplar. Snags were common, as were trees containing cavities that provide good habitat for secondary cavity nesting species. The understory was composed of a mix of willow, saskatoon, rose, cherry, and spruce and aspen saplings. Grass was dominated by smooth brome.



Photo C-8. Hedgerow 5, located along the southern boundary of the neighbourhood, looking east (a). Snags and cavities were abundant in this hedgerow b).

Hedgerow 6 (HR6)

Size: 0.07 ha

Habitat Condition Score: 56.2 /100

Hedgerow 6 was located along in the southeast corner of the neighbourhood, adjacent to 122 Street. It was composed of two rows: mature willows were located next to the street and mature white spruce were located next to the field. The understory here was mostly absent due to the density of vegetation. Several of the white spruce were dead. Grass was dominated by smooth brome.



Photo C-9. Hedgerow 6, located adjacent to 122 Street, looking southeast.

Hedgerow 7 (HR7)

Size: 0.21 ha

Habitat Condition Score: 55.7 / 100

Hedgerow 7 was a mix of mature green ash and willow, with occasional white spruce scattered throughout. This area is in a topographic low, receiving runoff from the west and a portion of the hedgerow is associated with wetland 004.



Photo C-10. Hedgerow 7, located adjacent to 122 Street, looking northeast.

Table C- 1. Ecological Evaluation Tool metrics and raw scores for each natural area assessed in the field.

Indicator Group	Indicator	Metric	NA1	NA2a	NA2b	HR1	HR2	HR3	HR4	HR5	HR6	HR7
Nativity	Cover of native species by growth form	% cover of native tree species	15	14	14	15	15	15	0	15	15	12
		% cover of native shrub species	15	15	15	N/A	N/A	N/A	N/A	15	5	5
		% cover of native forb species	15	15	15	0	0	0	0	5	5	5
		% cover of native grass species	4	14	15	0	0	0	0	0	0	0
	Cover of non-native species	% cover <i>Agropyron cristatum</i>	15	15	15	12	12	12	12	12	12	12
		% cover <i>Bromus inermis</i>	4	15	12	0	0	0	0	0	0	0
		% cover <i>Poa pratensis</i>	8	12	12	12	12	12	12	12	12	12
		% cover <i>Cotoneaster</i> sp.	15	12	12	N/A	N/A	N/A	N/A	15	15	15
		% cover <i>Caragana arborescens</i>	15	12	12	N/A	N/A	N/A	N/A	15	15	15
		% cover <i>Syringa vulgaris</i>	14	12	12	N/A	N/A	N/A	N/A	15	15	15
		% cover <i>Lonicera tartarica</i>	15	5	5	N/A	N/A	N/A	N/A	15	15	15
Vegetation Structure	Presence of forest community intactness indicator species	<i>Actaea rubra</i> , <i>Anemone</i> spp., <i>Disporum trachycarpum</i> , <i>Lathyrus venosus</i> , <i>Lathyrus ochroleucus</i> , <i>Lonicera dioica</i> , <i>Pyrola</i> spp	15	12	12	0	0	0	0	0	0	0
	Presence of and impacts to vertical structure	Overstory	12	12	15	5	5	5	5	12	12	12
		Understory	12	15	12	5	5	5	5	12	5	5
		Tall shrub	12	15	15	0	0	0	0	12	0	0
		Short shrub	12	15	10	0	0	0	0	12	0	0
		Forb	12	14	5	0	0	0	0	5	5	5
		Grass	5	14	12	5	5	5	5	5	5	5
		Lichen & moss	12	15	15	5	5	5	0	5	5	5
	Abundance of forest succession features	Seedlings/young trees (<2m)	5	12	12	0	5	5	0	15	5	5
		Coarse woody debris	12	12	12	0	0	0	0	12	5	5
		Snags	12	12	15	5	12	5	0	15	12	12
	Age	Age of stand	10	15	5	5	5	5	0	5	5	5
		Age of oldest trees	12	15	15	12	12	5	0	12	12	12
Anthropogenic Impacts	Overall human use	Proportion of area negatively affected by anthropogenic use	12	15	15	0	0	0	0	4	12	12
	Human intrusions	Grazing by domestic livestock	15	5	5	15	15	15	15	15	15	15
		Dumping	0	15	15	15	15	15	15	15	15	15
		Vegetation clearing	5	15	15	0	0	0	0	5	12	12
		Draining/ditching	5	12	5	15	15	15	15	15	15	15
		Access roads	15	12	12	0	0	0	0	0	0	0
		Paved foot & bike paths	15	5	0	0	0	0	0	15	0	0
		Gravel foot & bike paths	15	12	12	15	15	15	15	15	15	15
		Dirt foot & bike paths	0	14	14	0	0	0	0	5	15	15
		Small structures	15	15	15	15	15	15	15	15	15	15
		Large structures	15	15	15	5	5	5	5	5	5	5
		Utility structures	15	14	15	15	15	15	15	5	15	15
	Restoration potential	Level of effort is required to improve overall condition	12	15	15	5	5	5	5	12	5	5
Weediness	Weed occurrence	Occurrence of invasive or noxious/prohibited noxious species	0	15	12	5	5	5	5	5	5	5
	Weed distribution	Distribution of invasive or noxious/prohibited noxious species	5	12	12	5	5	5	5	5	5	5
Score:			422	497	454	191	203	189	149	377	329	326
Number of Metrics:			39	39	39	34	34	34	34	39	39	39
Highest Possible Score:			585	585	585	510	510	510	510	585	585	585
% of Highest Possible Score:			72.1	85.0	77.6	37.5	39.8	37.1	29.2	64.4	56.2	55.7

Appendix D: Species Observations

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Table D-1. List of plant species observed in the West 240 neighbourhood.

Common Name	Scientific Name	S Rank	Origin	Weed Control Act Designation
Absinthe Wormwood	<i>Artemisia absinthium</i>	SNA	Exotic	---
Alfalfa	<i>Medicago sativa</i>	SNA	Exotic	---
Alsike Clover	<i>Trifolium hybridum</i>	SNA	Exotic	---
Aster Spp.	<i>Asteraceae</i>	Varied	Native	---
Balsam poplar	<i>Populus balsamifera</i>	S5	Native	---
Beaked Hazelnut	<i>Corylus cornuta</i>	S5	Native	---
Black Currant	<i>Ribes americanum</i>	S4	Native	---
Bracked Honeysuckle	<i>Lonicera involucrata</i> var. <i>involucrata</i>	S5	Native	---
Buckbrush	<i>Symphoricarpos accidentalis</i>	S5	Native	---
Canada Thistle	<i>Cirsium arvense</i>	SNA	Exotic	Noxious
Canada Violet	<i>Viola canadensis</i>	S5	Native	---
Chickpea Milkvetch	<i>Astragalus cicer</i>	SNA	Exotic	---
Choke Cherry	<i>Prunus virginiana</i>	S5	Native	---
Common Cow-parsnip	<i>Heracleum maximum</i>	S5	Native	---
Common Tansy	<i>Tanacetum vulgare</i>	SNA	Exotic	---
Creeping Bellflower	<i>Campanula rapunculoides</i>	SNA	Exotic	Noxious
Crested Wheatgrass	<i>Agropyron cristatum</i>	SNA	Exotic	---
Dandelion	<i>Taraxacum officinale</i> ssp. <i>officinale</i>	SNA	Exotic	---
Dwarf Red Raspberry	<i>Rubus arcticus</i>	S5	Native	---
Field Penny Cress	<i>Thlaspi arvense</i>	SNA	Exotic	---
Fire weed	<i>Chamerion angustifolium</i>	S5	Native	---
Fragrant Bedstraw	<i>Galium triflorum</i>	S5	Native	---
Glaucous Honeysuckle	<i>Lonicera dioica</i>	S5	Native	---
Goldenrod	<i>Solidago canadensis</i> var. <i>gilvocanescens</i>	SU	Native	---
Goose Berry	<i>Ribes oxycanthoides</i>	S5	Native	---
Green Foxtail	<i>Setaria viridis</i>	SNA	Exotic	---
Hairy Wild Rye	<i>Leymus innovatus</i>	S5	Native	---
High Bush Cranberry	<i>Viburnum opulus</i>	S3S4	Native	---
Kentucky Bluegrass	<i>Poa Pratensis</i>	S5	Native	---
Lilac	<i>Syringa vulgaris</i>	SNA	Exotic	---
Low Bush Cranberry	<i>Viburnum edule</i>	S5	Native	---
Manitoba Maple	<i>Acer negundo</i>	SU	Native	---
Meadow Anemone	<i>Anemone canadensis</i>	S5	Native	---
Meadow Foxtail	<i>Alopecurus pratensis</i>	SNA	Exotic	---
Meadow Horsetail	<i>Equisetum pratense</i>	S5	Native	---
Mountain Ash	<i>Sorbus scopulina</i>	S5	Native	---
Northern Bedstraw	<i>Galium boreale</i>	S5	Native	---
Northern Stickseed	<i>Hackelia deflexa</i>	S3	Native	---
Paper Birch	<i>Betula neoalaskana</i>	S5	Native	---
Pincherry	<i>Prunus pensylvanica</i>	S5	Native	---
Pink Wintergreen	<i>Pyrola asarifolia</i> ssp. <i>asarifolia</i>	S5	Native	---
Perennial Sowthistle	<i>Sonchus arvensis</i>	SNA	Exotic	Noxious
Plantain	<i>Plantago major</i>	SNA	Exotic	---
Purple Vetch	<i>Vicia americana</i>	S5	Native	---
Red Baneberry	<i>Actaea rubra</i>	S5	Native	---
Red Clover	<i>Trifolium pratense</i>	SNA	Exotic	---
Red Elderberry	<i>Sambucus racemosa</i>	S4	Native	---
Red-Osier Dogwood	<i>Cornus sericea</i>	S5	Native	---
Sarsaparilla	<i>Aralia nudicaulis</i>	S5	Native	---
Saskatoon	<i>Amelanchier alnifolia</i>	S5	Native	---
Scentless Chamomile	<i>Tripleurospermum inodorum</i>	SNA	Exotic	Noxious
Shiny Cotoneaster	<i>Cotoneaster lucidus</i>	SNA	Exotic	---
Silver Berry	<i>Elaeagnus commutata</i>	S5	Native	---

Continued...

Table D-1. Continued ...

Common Name	Scientific Name	S Rank	Origin	Weed Control Act Designation
Smooth Brome	<i>Bromus inermis ssp. inermis</i>	SNA	Exotic	---
Snowberry	<i>Symphoricarpos albus</i>	S5	Native	---
Spreading Dogbane	<i>Apocynum androsaemifolium</i>	S5	Native	---
Starflowered Lily of the Valley	<i>Maianthemum Stellatum</i>	S5	Native	---
Stinging Nettle	<i>Urtica dioica</i>	S5	Native	---
Tall Bluebell	<i>Mertensia paniculata</i>	S5	Native	---
Tatarian honeysuckle	<i>Lonicera tatarica</i>	SNA	Exotic	---
Trembling Aspen	<i>Populus tremuloides</i>	S5	Native	---
Veiny Meadow Rue	<i>Thalictrum venulosum</i>	S5	Native	---
White Clover	<i>Trifolium repens</i>	SNA	Exotic	---
White Spruce	<i>Picea glauca</i>	S5	Native	---
White Willow Dock	<i>Rumex triangulivalvis</i>	S5	Native	---
Wild Raspberry	<i>Rubus idaeus</i>	S5	Native	---
Wild Rose	<i>Rosa woodsii</i>	S5	Native	---
Willow	<i>Salicaceae spp.</i>	---	---	---
Woodland Agrimony	<i>Agrimonia striata</i>	S4	Native	---
Woolly Yarrow	<i>Achillea borealis</i>	S5	Native	---
Yellow Sweet Clover	<i>Melilotus officinalis</i>	SNA	Exotic	---

Table D-2. List of wildlife species observed in the West 240 neighbourhood.

Common Name	Scientific Name	Provincial Rank	Federal Rank
Bird			
American Crow	<i>Corvus brachyrhynchos</i>	Secure	Secure
American Robin	<i>Turdus migratorius</i>	Secure	Secure
Black-billed Magpie	<i>Pica hudsonia</i>	Secure	Secure
Black-capped Chickadee	<i>Poecile atricapilla</i>	Secure	Secure
Blue Jay	<i>Cyanocitta cristata</i>	Secure	Secure
Pileated Woodpecker	<i>Dryocopus pileatus</i>	Sensitive	Secure
Purple Finch	<i>Carpodacus purpureus</i>	Secure	Secure
Mammal			
Common Porcupine	<i>Erethizo dorsatum</i>	Secure	Secure
Deer	<i>Odocoileus spp.</i>	Secure	Secure
Red-breasted Nuthatch	<i>Sitta canadensis</i>	Secure	Secure
Red Squirrel	<i>Tamiasciurus hudsonicus</i>	Secure	Secure
Vole	<i>Arvicolinae spp.</i>	Secure	Secure
White-breasted Nuthatch	<i>Sitta carolinensis</i>	Secure	Secure
White-tailed deer	<i>Odocoileus virginianus</i>	Secure	Secure