

# REPORT

## City of Swift Current

### Munro Industrial Study



**September 2014**

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## 1 Introduction

### 1.1 MUNRO INDUSTRIAL PARK CONCEPT PLAN

Associated Engineering (AE) has been commissioned by the City of Swift Current (the City) to develop a concept plan to guide the expansion of the Munro Heavy Industrial Park (the concept plan). The proposed industrial park expansion is located south of the present Munro Industrial Park within the SW 20-15-13-W3M along the City's southeastern boundary as illustrated in Figure 1-1.

### 1.2 THE PURPOSE OF THE CONCEPT PLAN

A concept plan as defined within *The Planning and Development Act, 2007 (The Act)*, provides a framework for the subsequent subdivision and development of a specific area of land. A concept plan focuses on a specific geographical area, providing a further level of policy detail than is provided in the broader Official Community Plan confirming the type, form and conditions for the development of the area.

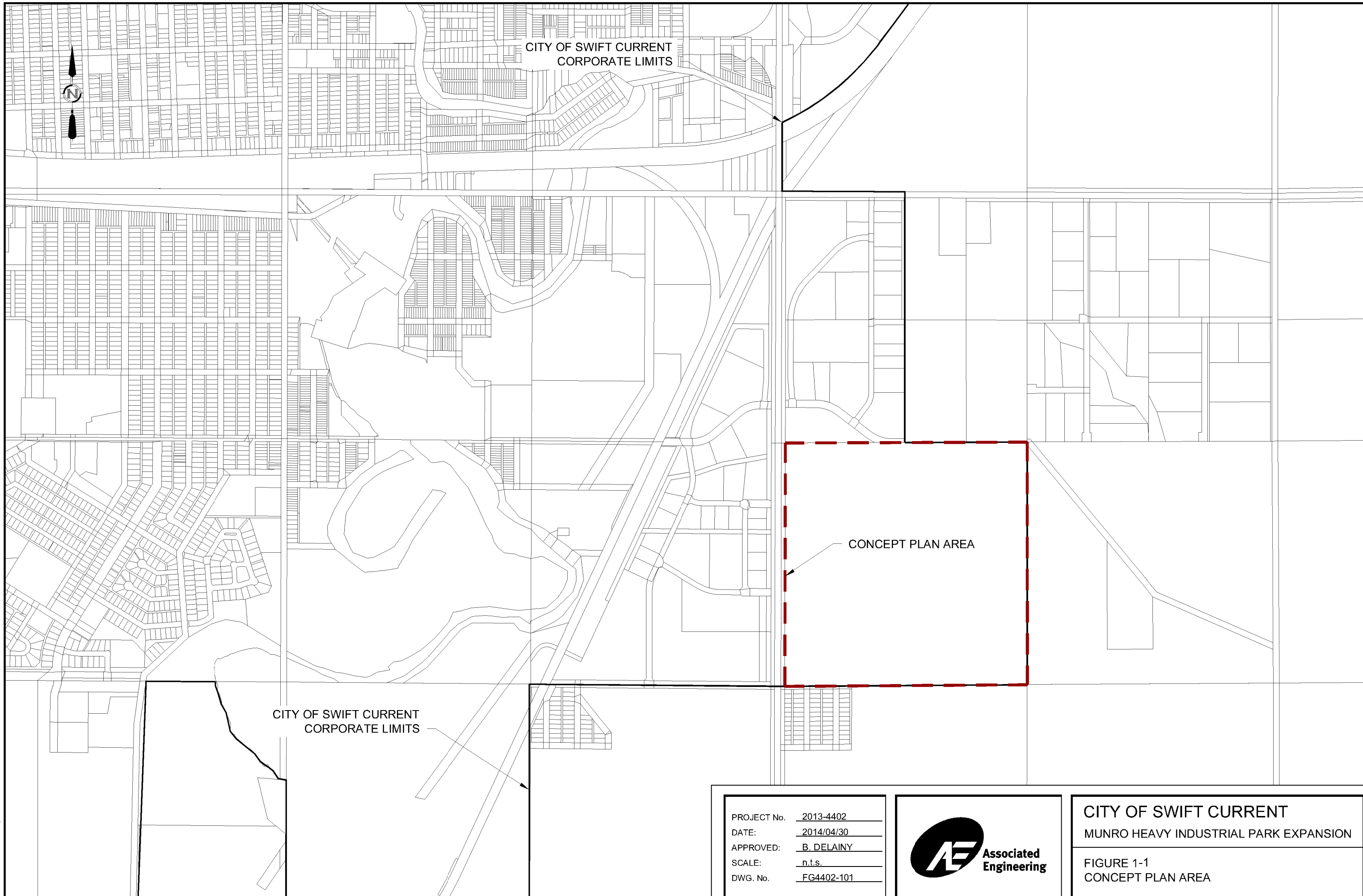
A concept plan promotes orderly development by forecasting the future distribution of land uses within the plan area recognizing existing surrounding land uses and existing and future infrastructure capacities. By preparing a concept plan, the municipality is better prepared to make decisions concerning subdivision, development and future investments in public infrastructure within the plan area. This concept plan is intended to be a non-statutory plan endorsed by Council and used to inform the subsequent subdivision and development of the Munro site.

## 2 Regulatory Framework

### 2.1 DEVELOPMENT PLAN

The concept plan area is appropriately designated as Planned Industrial on the City's Development Pattern Map appended to Bylaw No. 3/2003. The preparation of a concept plan for this area is consistent with the City's Development Pattern objectives of providing for the orderly growth of industrial development in the City, while ensuring that this development makes efficient and cost effective use of land and infrastructure. The preparation of a concept plan for this area also supports the Development Plan's Industrial Policies by ensuring that an adequate supply of industrial lots of varying sizes and locations are available to meet the City's need to support business and industry. The concept plan is consistent with the overall direction outlined within the Development Plan and no amendments will be required to facilitate its adoption.

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CITY OF SWIFT CURRENT  
MUNRO HEAVY INDUSTRIAL PARK EXPANSION  
FIGURE 1-1  
CONCEPT PLAN AREA

### 2.2 ZONING BYLAW

The City's Zoning Bylaw No. 4/2003 designates the concept plan area as a M2-Heavy Industrial District, providing the City with the flexibility to permit a variety of industrial uses within this expanded industrial area.

In addition to all of the uses provided in the City's M1- Light Industrial District, the M2- Heavy Industrial District permits the following additional uses:

- gravel stockpiling
- manufacturing and/or processing of agricultural products
- manufacturing industries
- industrial warehousing and/or storage facilities
- parking lots
- sewage treatment and/or disposal plants

The following minimum site regulations apply to subdivisions within the M2 District:

- The minimum site area shall not be less than 700 square metres
- The minimum site frontage shall not be less than 22.5 metres

The proposed concept plan including the lot plan options fully complies with these regulations will not require any amendments to the City's Zoning Bylaw No. 4/2003.

## 3 Background

### 3.1 LOCATION

The plan area is located in SW 20-15-13-W3M in the southeast area of the City and comprises 64.75 hectares. It is bounded by Highway No. 4 on the west, the existing Munro Heavy Industrial Park and country residential development located in the Rural Municipality of Swift Current (RM) to the north, and undeveloped farmland to the east and south.

### 3.2 LAND OWNERSHIP

All of the land contained within the concept plan area is owned by the City of Swift Current.

### 3.3 HERITAGE RESOURCE IMPACT ASSESSMENT

Following a preliminary online heritage screening and initial consultation with the Heritage Conservation Branch (HCB) of the Ministry of Parks, Culture, and Sport, a Heritage Resource Impact Assessment (HRIA) was completed for the site by Canada North Environmental Services (CanNorth) pursuant to Archaeological Resource Investigation Permit No. 14-100 (HCB File No. 14-241). The HRIA comprised a combination of desktop and field investigations to confirm the presence or absence of significant heritage sensitive artifacts. The requirement for the preparation of an HRIA was based on the presence of areas of native prairie located along the two coulees and the surface depression at the southwest corner of the Munro



concept plan area. The study area was assessed using a combination of pedestrian reconnaissance and the excavation of 37 shovel probes and 5 shovel tests. One new archaeological site, EbNw-24 was discovered.

EbNw-24 is an artifact find site located in LSD 4-20-15-13 W3M. The site is located along the south side of the Swift Current Creek tributary valley crest. The artifact consists of a brown chert secondary flake which cautioned CanNorth to expand the investigation of this area from a shovel probe to a shovel test (T01). This expanded investigation included an additional four shovel tests which were excavated 5 m from shovel test T01 in the cardinal directions. All excavated sediment and soil was screened through a quarter-inch wire mesh.

No additional artifacts were recovered. Given the low density of artifacts and site size (1 m by 1 m), this site is considered to have low scientific and interpretive value. EbNw-24 is considered adequately mitigated and no further archaeological work is recommended at EbNw-24.

CanNorth has recommended that Associated Engineering be provided with regulatory approval as per Section 63 of The Heritage Property Act for the Munro Heavy Industrial Park to proceed as planned. If survey plans are altered, or if heritage resources are discovered during construction, the HCB must be notified immediately. In the event that human remains are discovered during construction activities the local RCMP detachment and the HCB must be contacted.

The HRIA report and subsequent approval letter is attached as Appendix B.

### **3.4 EXISTING LAND USES WITHIN INDUSTRIAL AREA BOUNDARY**

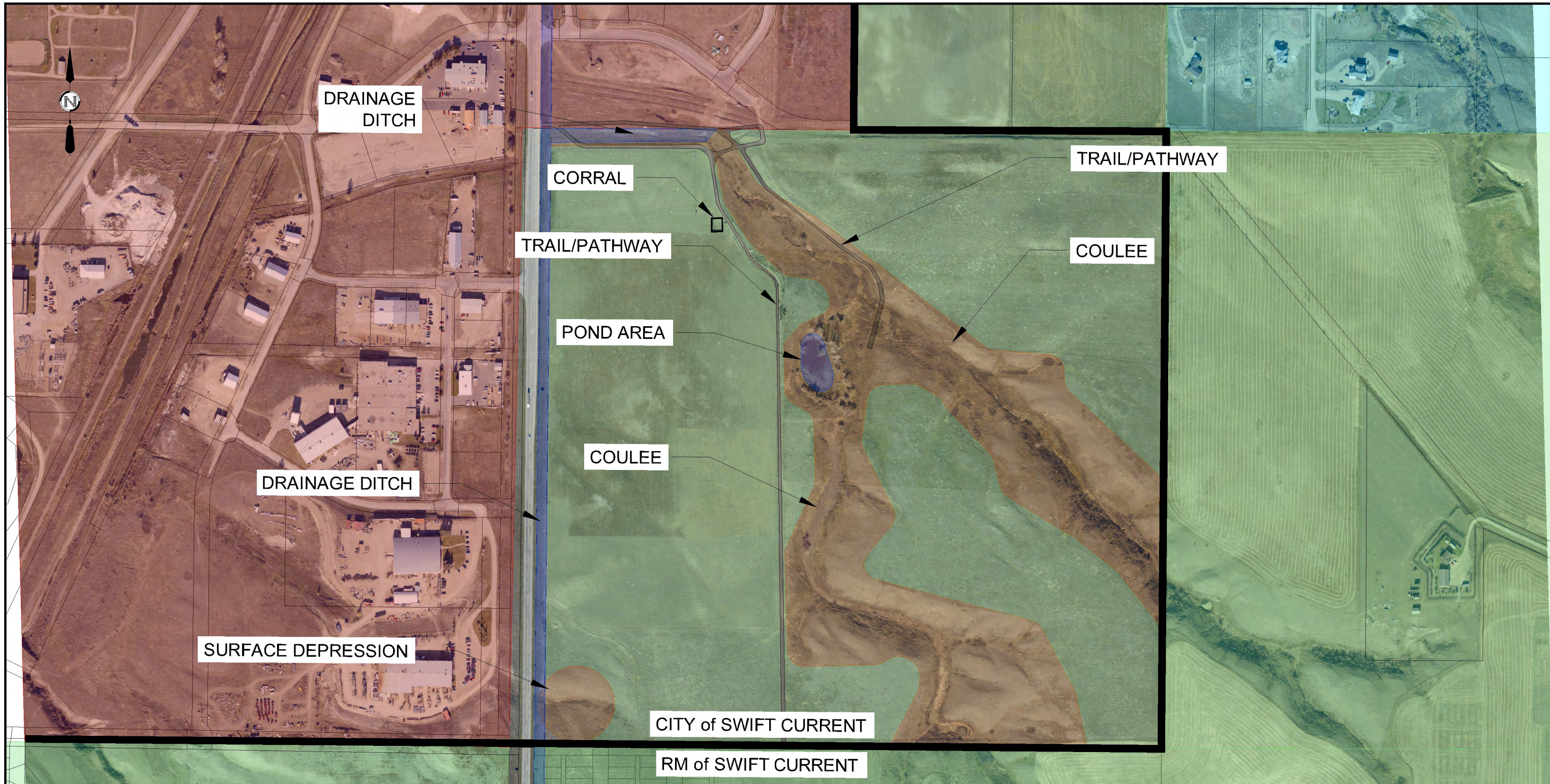
The concept plan area is currently zoned as M2-Heavy Industrial; however, the site is presently used for agricultural purposes by the Agricultural Society. The Society uses the land for grazing cattle and testing crops for agricultural production. The agricultural use is considered a non-conforming use and is anticipated to be phased out as site development progresses. Figure 3-1 provides an illustration of the surrounding land uses and prominent features within the plan area.

### **3.5 ADJACENT LAND USES**



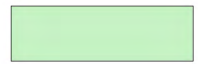
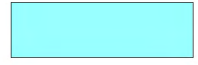

#### **3.5.1 Industrial**

A large portion of the adjacent land use consists of existing industrial development. Directly west of Highway No. 4, the McIntyre Industrial Park is operating at near capacity supporting the City's decision to pursue development of additional industrial lands in this area. The existing Munro Industrial Park is located north of the concept plan area and is also operating at or near capacity.

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### LEGEND

- INDUSTRIAL DEVELOPMENT 
- LAND FEATURE 
- AGRICULTURAL 
- COUNTRY RESIDENTIAL 
- MUNICIPAL BOUNDARY 

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**CITY OF SWIFT CURRENT**  
MUNRO HEAVY INDUSTRIAL PARK EXPANSION

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FIGURE 3-1  
EXISTING LAND USES AND FEATURES

The City's Development Pattern map identifies the future extension of urban industrial development within the RM directly south and southeast of the plan area within the NW 17-15-13-W3M and NE17-15-13-W3M. The existing and proposed industrial developments located within the direct vicinity of the plan area makes this site suitable for considering additional industrial development.

### 3.5.2 Multi-Lot Country Residential

Existing and proposed multi-lot country residential development is located in close proximity to the concept plan area. The NE 20-15-13-W3M section within the RM's boundary contains a large portion of multi-lot country residential development adjacent to the plan area. There is also proposed multi-lot country residential southwest of the plan area diagonally across Highway No. 4 within the NE 18-15-13-W3M.

### 3.5.3 Agricultural

The plan area is surrounded by undeveloped agricultural lands to the south and east. As previously indicated, the agricultural lands located directly south of the plan area are intended to be developed for urban industrial use; while at the present time there is no approved plan for the future development of the agricultural lands to the east of the site.

## 3.6 PHYSICAL SITE CHARACTERISTICS

The plan area encompasses a variety of physical features which creates both opportunities and challenges for development. The local topography and existence of areas of native vegetation were influential within the concept plan design process. Two significant coulees traverse the study area, creating three distinctive and separate areas within the broader plan area as illustrated in Figure 3-2.

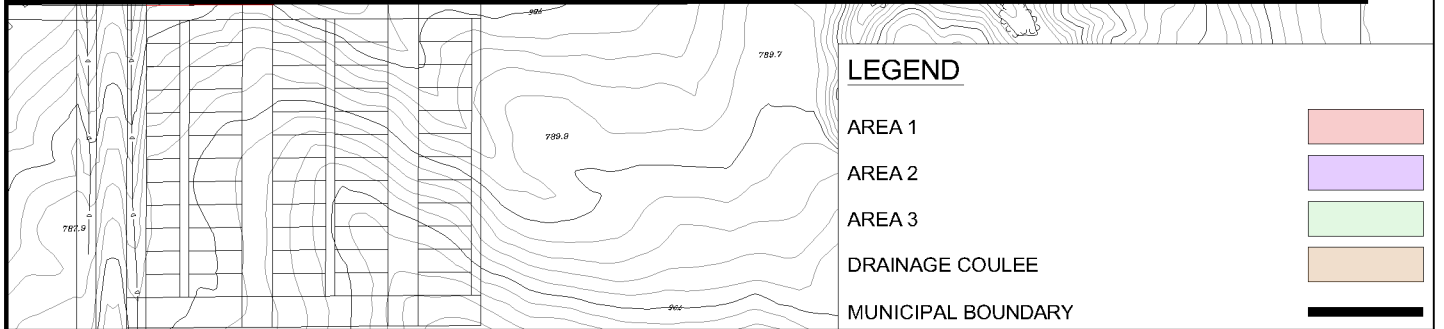
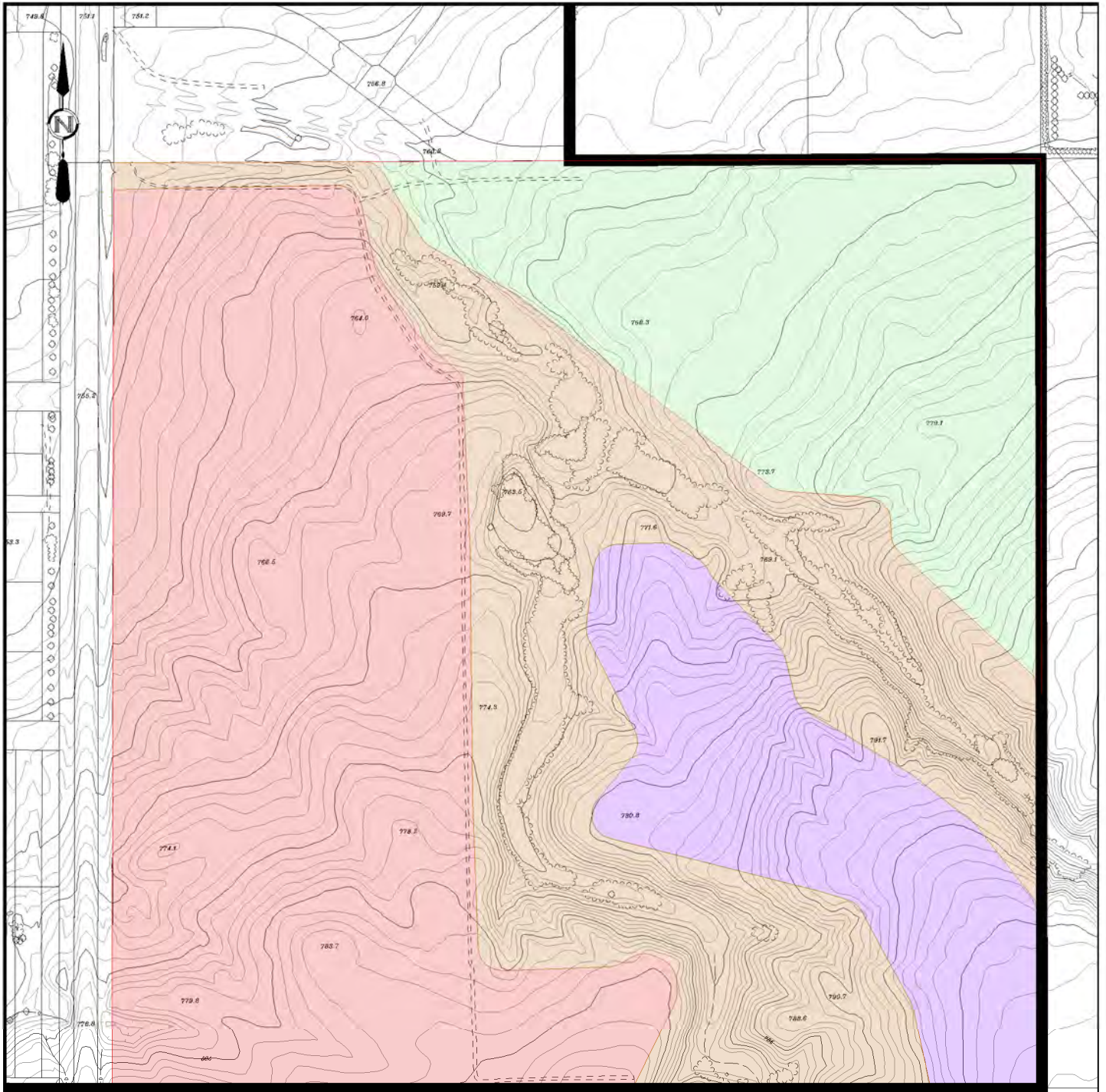
### 3.6.1 Area 1

Area 1 is located directly east of Highway No.4 and bounded on the west by the first of two coulees on the site. Area 1 is rectangular shaped and contains approximately 25 hectares which is intended to be subdivided and developed.

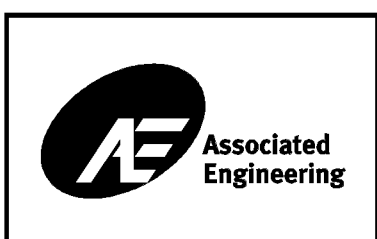
The topography within this area consists of a constant slope with the highest point located at the southeastern corner of the area (785.0 m) and sloping northwest to the lowest point of elevation (755 m). This represents a 4% grade from the highest point to the lowest point. A natural depression is located adjacent to Highway No. 4 in the southwest corner of the area which has a change in elevation of approximately 21% and has been deemed unsuitable for development.

There are no significant tracts of vegetation within Area 1 as this area has been actively farmed in the past. This enables development to be accommodated without concerns regarding protection or incorporation of existing vegetation. It also presents an opportunity for future landowners to tailor their property landscaping and overall site development to meet the City's requirements and their individual needs without any significant physical constraints.

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**CITY OF SWIFT CURRENT**  
MUNRO HEAVY INDUSTRIAL PARK

FIGURE 3-2  
TOPOGRAPHY

### 3.6.2 Area 2

Area 2 represents a peninsula of land located in the southeastern section of the concept plan area between the two coulees. This area contains approximately 10 hectares and is considered to have low development potential due to the topography of the area, the high potential for heritage sensitivity and most importantly the costs of servicing the lands. If this area is considered for future development an additional heritage resource impact assessment will be required to identify its heritage sensitivity.

The local topography consists of a radial symmetry slope that forms a hill in the middle of the area and slopes outwards towards the coulees on either side of the area. The highest elevation is at the southeastern corner of the area (804.0 m) and slopes northwest to the lowest point (775.0 m), a change in elevation of approximately 5%.

The area contains tracts of natural vegetation and has had limited capacity for agricultural production. It has been used as grazing land for cattle and presents difficulties for access by motor vehicles or heavy equipment. Based upon the local conditions in this area, it is recommended that consideration for development of this area be preceded by a detailed geotechnical investigation to confirm that the local geology is suitable for development.

### 3.6.3 Area 3

Area 3 is located in the northeast corner of the quarter section, directly northeast of the second coulee and south of the existing Munro Heavy Industrial Park. This triangular shaped area contains approximately 14 hectares.

The land within this area generally slopes from the southeast to the northwest with the highest elevation (795.0 m) represented at the south end of the area and the lowest elevations (765.0 m) located in the northwest corner. The local gradient is estimated to be approximately 4%.

There are no significant tracts of vegetation within Area 3 as the majority of this area has been used for active agricultural purposes such as grazing cattle or cultivation which enables development to be accommodated relatively unencumbered. Similar to Area 1 the local conditions present an opportunity for future landowners to tailor their property landscaping and overall site development to meet the City's requirements and their individual needs without any significant physical constraints.

### 3.6.4 Coulees

Two coulees traverse the concept plan area from the south boundary sloping north and west towards the northern boundary of the plan area. The two coulees eventually intersect one another near the centre of the concept plan area and extend to the northwest connecting to a drainage ditch located at the northern boundary of the study area.

The two drainage coulees create challenges to development within the quarter section. The coulees represent a significant physical boundary from a servicing standpoint impacting decisions concerning internal access and the extension of shallow utilities. Extending internal roadways to connect the three areas introduced above would require the construction of several crossings designed to accommodate the heavy truck traffic envisioned for the area.

The coulees provide an ideal opportunity to accommodate and manage storm water run-off within the plan area. The only vegetation in the area lies within the bed and banks of the coulees which will be preserved as development is not expected to encroach into the bed or banks of the coulees. The coulees also provide an indirect benefit to future property owners as a visual amenity.

### 3.7 PRELIMINARY GEOTECHNICAL INVESTIGATION

SNC-Lavalin was contracted by Associated Engineering to complete a preliminary geotechnical investigation which provides information to establish physical baseline conditions on the site, confirm general suitability for development, and appropriately inform the development concept. The geotechnical investigation included borehole drilling, standpipe piezometer installation, field and laboratory soil testing, and preparation of a report providing preliminary geotechnical recommendations for the proposed subdivision and development of the site. The preliminary geotechnical report is attached as Appendix C.

It is noted that SNC-Lavalin was unable to access the peninsula of land between the drainage courses due to site access restrictions.

The following scope of work was completed:

- Field investigation consisting of:
  - Eight boreholes drilled to depths of 12.2 to 15.7 metres below ground level (mbgl) within the proposed development site;
  - Installation of standpipe piezometers within each borehole and record water levels; and
  - Geotechnical field tests, logging of soils and collection of soil samples for laboratory testing.
- Laboratory testing of select soil samples obtained from boreholes, including water contents, grain size distribution analysis, unit weights and Atterberg limits
- Preparation of a report summarizing the field investigation and providing preliminary geotechnical recommendation for development of the site.

The general soil profile within the study area consists of organic topsoil overlying predominantly glacial till, extending to depths of at least 12.2 to 15.7 mbgl in the boreholes which were terminated within glacial till. Glacial till is comprised of a heterogeneous mixture of clay, silt, sand and gravel-sized particles. Inter/intra till sand and gravel deposits (some of which were saturated) were encountered at various depths and locations across the site. Interbedded clay and silt deposits were encountered underlying the glacial till. Groundwater seepage and sloughing conditions, cobbles and boulders were encountered during test drilling. The subgrade soils are frost susceptible and the approximate depth of frost penetration for the subgrade soils within the study site is in the order of 2.5 m.

Cobbles/boulders were encountered within the glacial till deposits in most boreholes at depths ranging from 1.5 to 13.7 mbgl. Cobbles and boulders are often located randomly within glacial till deposits but can also form sorted layers, such as boulder pavements. Considering this, cobbles and boulders should be anticipated during the construction of foundations at this site.

The report generally confirmed that the development site is suitable for the proposed industrial development. It is recommended that a buffer zone is established adjacent to the drainage courses that transect the site. The site development should proceed in a manner that will not disrupt the natural drainage patterns and not induce erosion of the drainage course valley slopes. Based on the soil conditions encountered, slope stability is not anticipated to be an issue at this site. It is recommended that following a site survey, SNC-Lavalin would be consulted prior to finalizing the subdivision plan and preliminary drainage design to confirm that the proposed buffer zone width and drainage details are appropriate.

It is anticipated that future development will likely consist of industrial buildings having pile/grade beam foundation systems and grade-supported concrete floor slabs. Drilled, cast-in-place concrete piles and/or belled piles; continuous flight auger (CFA), cast-in-place concrete piles; driven piles or helical screw piles are all considered feasible pile alternatives for this site. However, temporary casing will be required to complete the installation of drilled piles extending through saturated granular deposits, and the practical length of drilled piles may be limited in some areas due to the presence of groundwater seepage and sloughing conditions.

The geotechnical report confirmed that grade-supported concrete floor slabs should perform satisfactorily, provided that some differential movements and slab cracking can be tolerated. The potential for future floor slab distress can be reduced by over-excavating and replacing a portion of the “desiccated crust” and replacing with more stable soils. If differential movements and slab cracking cannot be tolerated, then structural floor slabs should be utilized.

Additionally, preliminary design recommendations have been identified for site preparation; fill materials, placement and compaction; foundations; foundation concrete; grade beams and pile caps; grade supported concrete slabs; and, traffic structures.

The recommendations presented in the preliminary geotechnical report are intended to provide a general high level characterization of the larger development site. Due to the general nature of this preliminary geotechnical investigation completed, it is recommended that the City encourages future property owners to conduct a follow-up site specific geotechnical investigation to confirm localized conditions and further define specific foundation requirements prior to issuance of a building permit.

### 3.8 DESK-TOP ENVIRONMENTAL ANALYSIS

The objective of the desk-top environmental analysis is to identify all environmentally sensitive areas and natural features within the study area and provide recommendations for their protection and preservation as part of future development.

### 3.8.1 Methods

The methods used to complete this desk-top overview natural area screening study included the following:

- Gather available background information using readily available information about the project and area (plans, maps, figures, aerial photographs, interviews) and existing databases (i.e. Saskatchewan Conservation Data Center (SKCDC) Biodiversity Website, GeoSask, Committee on the Status of Endangered Wildlife in Canada (COSEWIC) status reports, Schedule 1 of Species at Risk, Government of Saskatchewan's Saskatchewan Bird's Atlas, Water Security Agency's Water Well Information Database, Saskatchewan Soil Information Database);
- Conduct a desk-top screening of the delineated concept plan area to confirm the ecological condition and habitat value of natural areas, identify areas of concern (e.g., species at risk, environmentally sensitive areas), and assess potential impacts to existing aquatic and terrestrial habitats (includes eco-region and vegetation, wildlife and wildlife habitat, fisheries and aquatic resources, and wetlands) based on available preliminary development plans;
- Prepare a summary of the results and provide recommendations to minimize project impacts.

### 3.8.2 Regulatory Overview

The following sections outline the provincial and federal regulatory requirements considered for this desk-top review. These regulatory requirements along with general construction best management practices form the basis of the future mitigation recommendations presented in Section 3.8.5.

#### 3.8.2.1 Provincial Regulations

##### Wildlife Act

Under Section 50 (1) (a) of *The Wildlife Act* it is an offense to “kill, injure, disturb, take, capture, harvest, genetically manipulate or interfere with or attempt to do any of those things to any designated species.” There are fifteen “wild species at risk” identified in the *The Wildlife Act*. A Scientific Permit is required to conduct activities that may significantly affect these listed-species.

##### Environmental Management and Protection Act

*The Environmental Management and Protection Act* (EMPA) ensure protection of land, air and water resources. Any alteration of a shoreline, bed, bank or boundary or removal of riparian vegetation of any watercourse requires an Aquatic Habitat Protection Permit under Section 36 of this Act.

##### Wildlife Habitat and Protection Act

*The Wildlife Habitat and Protection Act* provides for the management, conservation and protection of wildlife lands and wildlife by preventing the sale and alteration of certain Crown lands. The Act prevents the government from selling designated Crown land, and lessees require permission before any clearing, breaking or drainage occurs. The philosophy of the Act is to conserve wildlife habitat while enabling compatible traditional uses to co-exist.



### 3.8.2.2 Federal Regulations

#### Fisheries Act

*The Fisheries Act* is the main federal legislation affecting all fish, fish habitat and water quality. Section 36 (3) of the Act prohibits deposition of deleterious substances in water frequented by fish. The harmful alteration, disruption or destruction of fish habitat was prohibited under Section 35 (1); however, following recent amendments (2012) to *The Fisheries Act*, Section 35 (1) now states “No person shall carry on any work, undertaking or activity that results in serious harm to fish that are part of a commercial, recreational or Aboriginal fishery, or to fish that support such a fishery.”

#### Committee of the Status of Wildlife in Canada and *Species at Risk Act (SARA)*

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) is the independent agency that determines the status of species in Canada. *The Species at Risk Act (SARA)* is federal legislation that provides legal protection of wildlife and its habitats designated under Schedule 1 of the Act. This protection applies to aquatic species, migratory birds covered by *The Migratory Birds Convention Act*, and species that occur on federal lands in Canada. Federal lands are lands owned by the federal government, such as national parks, lands used by the Department of National Defence, reserve lands and most of the land in the three territories. The purpose of the Act is to prevent Canadian indigenous species, subspecies, and distinct populations from becoming extirpated or extinct, to provide for the recovery of endangered or threatened species, and encourage the management of other species to prevent them from becoming at risk.

It is an offence under sections 32 and 33 of the SARA to:

- kill, harm, harass, capture or take an individual of a listed species that is extirpated, endangered or threatened;
- possess, collect, buy, sell or trade an individual of a listed species that is extirpated, endangered or threatened, or its part or derivative;
- damage or destroy the residence of one or more individuals of a listed endangered or threatened species or of a listed extirpated species if a recovery strategy has recommended its reintroduction.

#### *Migratory Bird Convention Act (Migratory Birds Regulation)*

*The Migratory Bird Convention Act* is a federal act that protects migratory birds and their nests from indiscriminate harvesting and destruction. Specifically, the Regulations stipulate that “no person shall disturb, destroy or take a nest, egg, nest shelter, or duck box of a migratory bird” (Section 6[a]), and “no person shall deposit, or permit to be deposited oil, oil wastes or any other substance harmful to migratory birds in any waters or any area frequented by migratory birds (Section 35 [1]).

### 3.8.3 Environment Overview

#### 3.8.3.1 Land Use and Designated Areas

There are no designated areas (e.g., National and Provincial park lands, historic parks, park reserves, recreation sites, wildlife habitat protection lands, game preserves, conservation easements, etc.) within 5 kilometers (km) of the plan area (SMOE, 2013). Ducks Unlimited has not identified conservation or protected areas within the project's location (Ducks Unlimited, 2013).

#### 3.8.3.2 Ecoregion and Terrestrial Vegetation

The concept plan area is located within the Mixed Grassland Ecoregion within the Prairie Ecozone. This ecoregion represents the driest area of the province as evidenced by the absence of native trees and scarcity of wetlands and the permanent water bodies. Its diverse landscapes include level, glacial lake plains; dune-covered, sand hill areas; the hilly, pothole country along the Missouri Coteau; and the rolling expanses of native grassland and intermittent "badlands" near the United States border. The native grasslands are characterized mainly by wheatgrasses and spear grasses and, to a lesser extent, by blue grama grass which gains prominence on extremely droughty soils or under high grazing pressure. Shrub communities composed of snowberry and wolf willow are found in areas of favourable soil moisture (SKCDC, 2012).

The concept plan area's land appears to be predominantly cultivated (Google Maps, 2013). Based on current land use and aquatic resources, vegetation most likely to occur on the area would consist of Trembling aspen (*Populus tremuloides*), Caragana (*Caragana arborescens*), willow (*Salix spp.*), sow thistle (*Sonchus arvensis*), and quack grass (*Agropyron repens*). Cattails (*Typha latifolia*), dock (*Rumex L.*), forbs, wild buckwheat (*Fagopyrum esculentum*), and Kochia (*Kochia scoparia*), and would be associated with the low and seasonally wet areas throughout the concept plan area.

#### 3.8.3.3 Aquatic Resources

During the desk-top screening, one wetland location was identified in the central portion of the concept plan area. Based on satellite imagery, this wetland is likely a Class IV wetland (Stewart and Kantrud, 1971). Class IV wetlands are semi-permanent water bodies that seasonally maintain surface water through the growing season (i.e., May to September). A small number of trees are also visible around the Class IV wetland in the central portion of the concept plan area. Based on satellite imagery, this wetland and associated coulees have a low to moderate potential as fish habitat, but may provide significant habitat for other small wildlife (e.g., amphibians, birds, small mammals). The wetland's natural capacity for storm water attenuation and hydrological control should be assessed, and depending on the results, could serve to manage storm water and site drainage.

#### 3.8.3.4 Wildlife and Wildlife Habitat

Pronghorn antelope, white-tailed and mule deer, coyote, jack rabbit, Richardson's ground squirrel, horned lizard, prairie rattlesnake and western painted turtle are typical of the Mixed Grassland ecoregion. The only Canadian population of black-tailed prairie dog is found here. Characteristic birds include ferruginous hawk, long-billed curlew, yellow-breasted chat, chestnut-collared longspur, burrowing owl and sage grouse (SKCDC, 2012)

The wetland located in the central portion of the concept plan area may provide habitat features that can support a variety of waterfowl and shorebirds, including various geese, ducks, and widgeons, as well as frogs (i.e., northern leopard frog) and toads.

#### 3.8.3.5 Rare and Endangered Species

A field assessment will be required to confirm the presence of any rare and endangered species, however, the potential for listed vegetation species to be present on site during the growing season (e.g., spring and summer) are low to moderate as a result of heavy disturbance from agricultural activities. Listed species that have been observed within the Rural Municipality (RM) of Swift Current, therefore having high potential to be present within the project footprint include:

- Burrowing Owl (*Athene cunicularia*; S2<sup>1</sup>). Burrowing owls are known to prefer sparsely vegetated agricultural land and may nest in the lands that are adjacent to the wetland.
- Ferruginous Hawk (*Buteo regalis*; S4).
- Smooth Wild-rye (*Elymus glaucus*; S2). Often found on the edge of an opening, in a transitional habitat between full sun and partial shade.
- Moss Gentian (*Gentiana fremontii*; S2). Moss gentian is found in calcareous and saline soil in springy meadow depressions.
- Alkaline Wing-nerved Moss (*Pterygoneurum kozlovii*; S1). Most commonly found in narrow striparound wetlands in flat or very slightly sloped areas. It grows only in open areas along the edges of ponds, lakes, mud flats and seepage slopes where the vegetation is short and patchy. It is generally found amongst grasses and sedges.

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<sup>1</sup>Provincial Ranking: S1 - Extremely Rare; S2 - Rare; S3 - Rare; Uncommon; S4 - Common; S5 - Very Common.

There have been 24 other species identified within a 50 km radius of the proposed development area (SKCDC, 2012).

### 3.8.4 Potential Environmental Effects

Overall, environmental impacts resulting from the development of this area are expected to be low. Depending on the nature and extent of the development, it is likely that removal of vegetation and excavation of native and non-native soils would occur. However, potential environmental impacts can be mitigated through proper planning and management.

Potential impacts as a result of development would be related to: 1) Fisheries and Aquatic Resources; and 2) Wildlife and Wildlife Habitat.

#### 3.8.4.1 Fisheries and Aquatic Resources

Based on the desk-top screening, the semi-permanent wetland and associated coulees within the proposed development area are unlikely to support fish as a result of isolation from other fish-bearing water courses and shallow depths.

Industrial developments tend to increase impervious surfaces within a watershed, exposing surface waters to potential contamination such as increased salinity, sedimentation, hydrocarbons, metals, and nutrients (Kaushal et al., 2005; Paul and Mayer, 2001). Although contamination within surface water bodies can occur at any time, contaminants can accumulate within snow and ice over the winter and become concentrated within surface waters as a result of impervious surfaces increasing melt water run-off, especially during periods of “first melt” and “end-melt”. “First-melt” is typically associated with a higher concentration of dissolved contaminants (i.e., most soluble in water), whereas “end-melt” tends to facilitate the transfer of a higher proportion of particulates and hydrophobic contaminants to surface waters (Oberts et al., 2000). The same concepts can also be applied during storm events.

Despite low fish habitat potential and a lack of connectivity to other bodies of water, increased loading of both dissolved and solid phase contaminants to surface waters within the proposed development area has the potential to cause both acute and chronic effects (e.g., mortality and impairment of biological function) to various levels of the aquatic food chain including plankton, microorganisms, benthic invertebrates and aquatic megafauna. Increased impervious surfaces will likely increase transportation of sediments and nutrients to the Class IV wetland and coulees, which can act as a continuous and long-term source of pollution. Accumulated contaminants contained in these sediments can become re-dissolved or re-suspended into the water column under certain conditions (i.e., changing redox potentials, pH, and biodegradation). Excess nutrient accumulation can result in eutrophic conditions. This can lead to decreased dissolved oxygen concentrations and result in asphyxiation of aquatic organisms.

Depending on the run-off acidity, ground permeability, and soil characteristics (e.g., pH, ion exchange capacity, conductivity, organic matter content), the accumulation of contaminants within groundwater can occur due to run-off infiltration of soils and associated leaching processes. It is unknown if the wetland interacts with groundwater by a discharge and/or recharge processes. Although the general area tends to have sandier till soils, very few groundwater resources have been found in the vicinity. It is unlikely that an extensive surface/groundwater link exists in the area. The likelihood that any significant impact to possible near-surface groundwater aquifers is limited and negligible. However, this cannot be verified without further geotechnical investigations.

There is also the potential for construction and development activities to both directly and indirectly impact the wetland and associated coulees. Direct effects would result in the loss of habitat, diversity, and storm water management function if the aquatic resources were altered, removed or replaced by permanent infrastructure such as buildings or roadways. Indirect effects include the potential for increased sedimentation within the wetland and associated coulees as a result of adjacent construction activities (e.g., grading and clearing). Excessive sedimentation can cause a degradation of water quality leading to the degradation of natural habitat (e.g., negative effects on community composition and species diversity of vegetation and wildlife).

#### **3.8.4.2 Wildlife and Wildlife Habitat**

Moderate to minimal loss to wildlife and wildlife habitat is expected because the majority of the land contained within the proposed development area has been previously disturbed due to agriculture. Some riparian vegetation may be disturbed or removed as a result of land clearing, and utility, transportation, and building construction activities. The removal of trees and shrubs found around the wetland and along the coulees would also decrease the potential foraging habitat of small mammals, and resident and migratory bird species. Impacts to ground nesting birds (e.g., burrowing owl) may be significant during the clearing and construction of roadways, buildings, and other infrastructure on areas that are currently cultivated, however, any nests are likely temporary and seasonal due to frequent cultivation and customary farming practices.

The wetland and coulee areas are likely inhabited by aquatic, terrestrial, and avian life. Development impacting these areas would prevent their use by song birds, waterfowl, and other small animals.

### 3.8.5 Recommendations and Mitigation Measures

The desktop environmental analysis performed was intended to provide a general assessment of the development site and flag any existing natural conditions that would prohibit or alternatively be problematic with the implementation the concept plan. The following general recommendations and best management practices are provided as a checklist of considerations which should be made as the concept plan moves into the preliminary and detailed design phases of the project:

1. A follow-up biological field assessment (typically done in spring) would be beneficial within the preliminary design phase of the project, allowing the City to confirm the following and to define an appropriate mitigation strategy:
  - The presence or absence of rare and endangered species identified in this overview assessment; and
  - The permanency, level of disturbance, overall ecological function and value of the existing wetland located within the development site.
2. Complete a detailed hydrological study (e.g., flows, over flows, volume, climate, etc.) and engineering design (inlet culverts, potential outlet culverts, drain tile) of the Class IV wetland and associated coulees during the preliminary design phase of the project to confirm the suitability of the lowland areas for storm water management based on the proposed development plan.

The following best management practices should be considered by the City and individual property developers as the concept plan moves through the design and implementation phases:

- The preservation and incorporation of the existing vegetation within the lowland areas should be considered.
- Site development should avoid any land clearing, grading, or construction activities during sensitive breeding periods for breeding birds (April to July) and northern leopard frog (April to October) if expected to be found on-Site. If land clearing activities are proposed within this time period, wildlife and nesting survey should be completed by a qualified biologist. If listed species are encountered prior to or during land clearing, grading, or construction, workers should follow the Saskatchewan Activity Restriction Guidelines for Sensitive Species in Natural Habitats – Table 1 (SMOE, 2013).
- If bird nests are identified on-Site, and appropriate mitigation cannot be applied, the management buffer areas for bird nesting would apply. The recommended buffer area for high intensity activities (i.e. road and building construction) for most bird nesting areas is 500 m, all year-round (SKCDC, 2012). If burrowing owl nests are observed near the project area, a 500 m management buffer area is required and the Operation Burrowing Owl (OBO) Coordinator (obo@naturesask.ca) must be notified.

- If the wetland is determined to have significant ecological function and value, the following general mitigation measures are recommended to reduce impacts:
  - avoid filling wetlands or removing trees or other vegetation from within the wetlands;
  - preserve natural areas around wetlands as much as possible;
  - design construction with the grade of the land, limit road and utility crossing and if unavoidable, locate at the narrowest section of the wetland;
  - avoid water withdrawal from wetlands; and
  - plant trees and shrubs to help buffer the wetland from noise lighting, and other disturbances.
- Ensure all construction equipment is cleaned prior to entering the project area to prevent the spread of noxious weeds.
- Use signage or fencing to protect any natural features to be preserved in development.
- To prevent erosion and sedimentation of water bodies (on and off-Site) during construction, use erosion and sediment control structures (e.g., silt fence) as required.
- Plan to re-vegetate disturbed areas using native ground cover seed mix.

### 3.9 MARKET ANALYSIS

A Market Analysis study was prepared by Fast Consulting (see Appendix D – Munro Heavy Industrial Park Expansion Market Analysis February 2014). The analysis assessed potential high growth industries attracted to Swift Current's Munro Heavy Industrial Park, as well as perceived gaps in the City's land supply. The Market Analysis study involved three main areas of research consisting of stakeholder interviews, interview summary, and desk research. The following is an overview of the findings of the Market Analysis study.

#### 3.9.1 Stakeholder Interviews

Fast Consulting conducted interviews with nine stakeholders in the manufacturing, oil & gas, real estate and industrial sales & service sectors. Interview subjects included current/incoming tenants of Munro Park and potential tenants. These interviews identify the following common themes:

- Access – Location is a Drawing Card – Easy access to Highway No. 4 and TransCanada Highway No. 1 are important benefits.
- Drainage – Perception vs. Reality – Drainage is seen as an issue among stakeholders, a more important issue might be lack of awareness among stakeholders of the City's move to resolve it.
- Lot Size – Availability Key – The key appears to be variety and availability.
- Serviced Lots – Clarify Terms – Munro Park marketing materials need to more clearly communicate what "serviced lots" entail.
- Relationships – City Responsiveness Appreciated – Current/incoming tenants said that while they had some concerns about the area, they were able to work through them with the City's development group which has generated a greater confidence and satisfaction within the stakeholders.
- Communication – Room for Improvement – Information about the park is not always clearly communicated.

### 3.9.2 Interview Summary

After the nine stakeholder interviews were completed, Fast Consulting compiled the interviews summary and provided a table illustrating the key factors in the stakeholders purchase decision displayed on Table 3-1:

**Table 3-1  
Key Factors in Purchase Decision**

<b>Access</b>	<ul style="list-style-type: none"> <li>• Easy Access to/from Highway</li> <li>• Within City limits, convenient for Swift Current Employees</li> </ul>
<b>Appearance/Quality</b>	<ul style="list-style-type: none"> <li>• Cleanliness/appearance of fellow tenants</li> <li>• Park maintained to quality standard</li> </ul>
<b>Availability</b>	<ul style="list-style-type: none"> <li>• Availability of large lots</li> <li>• Availability of suitable lots (i.e., size, access, servicing, price)</li> </ul>
<b>Development Guidelines</b>	<ul style="list-style-type: none"> <li>• Awareness, communication and understanding of park development guidelines</li> </ul>
<b>Grading</b>	<ul style="list-style-type: none"> <li>• Improved grading for drainage issues</li> <li>• Want graded lots as part of the scale</li> <li>• Grading finished in time for construction season</li> </ul>
<b>Internet</b>	<ul style="list-style-type: none"> <li>• High speed internet (at least 10 Mbps)</li> </ul>
<b>Lot Size</b>	<ul style="list-style-type: none"> <li>• Corner lot to accommodate turning for large trucks</li> <li>• Large lots (5-7 acres)</li> <li>• Rectangular lots</li> </ul>
<b>Roads</b>	<ul style="list-style-type: none"> <li>• Need roads infrastructure finished by spring</li> <li>• Timing of road infrastructure &amp; impact on construction</li> </ul>
<b>Security</b>	<ul style="list-style-type: none"> <li>• Thefts from yard a problem</li> </ul>
<b>Serviced Lots</b>	<ul style="list-style-type: none"> <li>• Municipally serviced lots a plus</li> <li>• Define what services lots include</li> <li>• Identify what tenant needs to do</li> <li>• Identify when City services are available</li> </ul>
<b>Zones for Different Uses</b>	<ul style="list-style-type: none"> <li>• Potential clash between commercial and manufacturing uses</li> </ul>

These key factors provide the opportunity to ensure future tenants have the opportunity to purchase a site which meets their needs within the concept plan. The concept plan lot layout drawing will provide a variety of lot shapes and sizes with the opportunity to consolidate lots where larger sites are required. The concept plan provides the opportunity to move toward the subdivision process which would address matters such as grading, roads, and servicing.



### 3.9.3 Desktop Research

Based on the projected growth in the province's agriculture and oil & gas sectors which are key drivers of the Swift Current economy and forecasting employment requirements and constraints; the potential market for the Munro Heavy Industrial Park will focus on industries directly and indirectly related to these sectors:

- Agriculture (equipment sales & service, food processing, value-added)
- Oil & gas (oilfield services, equipment manufacturing, rental, sales & service, engineering & technical)
- Construction (residential and commercial, trades, sales & service)
- Utilities (sales & service, i.e., wind turbines)
- Transportation & warehousing

### 3.9.4 Public Open House

A come and go open house was held to introduce the proposed concept plan on Thursday April 3<sup>rd</sup>, 2014 from 5 p.m. to 7 p.m. at the Council Chambers, Swift Current City Hall. The purpose of the open house was to provide the public and stakeholders the opportunity to review and comment on the direction provided within the concept plan. Comment sheets were provided to attendees including a description of the next steps in the concept plan process.

The open house material was displayed on 34" X 22" boards and guided the public and stakeholders through the concept plan process. In summary, the display boards provided the following information:

- What is a Concept Plan?
  - A brief explanation of what concept plans are and how they are used by a municipality;
- The Study Area Illustration
  - Described the concept plan area size and legal land description;
- Existing Land Uses and Features Illustration
  - Described the current zoning, what the study area is currently used for, surrounding land uses, and what land features exist on the site;
- Proposed Land Use Illustration
  - Described the proposed land uses within the concept plan area;
- The Market Analysis
  - Described the industries which are expected to locate in the industrial park and the key factors in purchase decision for these developments; and
- The Preferred Concept Plan Illustration
  - Described the concept plan design statistics and the land use distribution. The preferred concept plan represented the proposed roadway pattern and the block layout.

No written comments were received regarding the materials presented and only one attendee was recorded on the sign-up sheet for the open house.

## 4 Innovation

Innovation which promotes greater sustainability within industrial developments is becoming a common consideration and topic of discussion across North America. Through research of industrial developments within Saskatchewan and Alberta the following potential innovations were identified for grey water reuse, eco-industrial development, landscaping and xeriscaping.

### 4.1 GREY WATER REUSE

Developments such as the Marquis Industrial Area in Saskatoon have begun to reuse grey water. The grey water reuse process is developed by utilizing a dual plumbing system where water is separated into grey water and black water. Grey water consists of water from uses such as showers, sinks, bath tubs, and washing machines. Black water is wastewater from restroom toilets and kitchen facilities which gets disposed to the wastewater management system, for example to holding tanks.

The grey water is cycled into a grey water reuse system where it is treated and prepared for reuse. After the grey water has been treated, it is used for irrigation, restroom toilets, and washing machines. This creates an innovative approach to dealing with wastewater through the reuse and results in the minimization of wastewater.

### 4.2 ECO-INDUSTRIAL DEVELOPMENTS

An eco-industrial development is a development where industries cooperate with one another and the local community to actively reduce waste and pollution and share resources (water, energy, infrastructure, development materials, etc.), in order to achieve a greater level of sustainability. This can be accomplished through a variety of performance criteria such as:

- Maintenance of ecological functions;
- Lowering of overall level of material use;
- Reduction of toxic and hazardous materials;
- Use of renewable and re-useable resources rather than non-renewable and disposable resources;
- Waste prevention as an underlying design criterion;
- Diversification of industries, businesses, materials, products, and services within the capacity of natural systems;
- Creation of physical, administrative, and financial infrastructure for cycling of waste materials; and
- Encouragement of products and services which have no undue environmental impact.

By meeting these performance criteria, eco-industrial developments become more sustainable and environmentally friendly.

## 5 Landscaping

Highway No. 4 is a gateway into the City and provides an opportunity to introduce visitors to the City with a clean and welcoming appearance. This can be achieved through landscaping and other policies within the regulatory framework available to the City. Due to the changing climate the City of Swift Current faces on an annual basis, soft landscaping such as trees (deciduous or coniferous), shrubs, plants, grass, and flowers should be hardy, drought-resistant, disease-resistant, and low-maintenance. These soft landscaping features should be encouraged throughout the landscaping within the municipal buffer strips. A mixture of soft and hard landscaping is recommended to be included into the municipal buffer strips to assist with maintenance and longevity of the vegetation.

By utilizing the municipal buffer strips as the area to be landscaped, the City retains the responsibility for construction and maintenance of the landscaping. The up-front costs associated with the initial site landscaping would be recouped from subsequent landowners via a sales agreement between the City and those property developers/owners that have sites where the rear yard abuts the dedicated land. All site preparation and landscaping installation costs would be calculated on a proportionate basis depending upon the width of the site that abuts the dedicated land. As the landscaping is intended to be focused in public land, all ongoing maintenance costs would remain the responsibility of the City.

## 6 Infrastructure

### 6.1 TRANSPORTATION

The proposed internal roadway layout integrates well with the City's existing road network and the provincial highway network. The concept plan is bound by Highway No. 4 on the West and by Gladstone Street East to the north. Additional transportation infrastructure may be required at Fentons Drive to accommodate the additional traffic turning off Highway No. 4. The additional infrastructure is expected to include the construction of a turning lane on the west side of Highway No. 4 at Fentons Drive extending south and changes to roadway demarcations (paint) informing proper traffic flows.

#### 6.1.1 Roadway Classification

The Transportation Map appended to the City's Development Plan establishes the classification of key roadways within the City. Highway No. 4 is classified as a primary weight highway accommodating all weight classes and provides direct access to Highway No. 1 which is a national transportation trade route. Highway No. 4 connects the City with major trade partners such as the Cities of, Medicine Hat, Calgary, Moose Jaw, Regina, and Winnipeg. It also provides access to the City of North Battleford, the City of Saskatoon via Highway No. 7, and the United States.

Figure 6-1 provides an illustration of the proposed internal road network within the study area. Gladstone Street East is expected to remain as an arterial roadway based upon the anticipated volume of traffic and size. The remaining streets throughout the proposed concept plan area are considered local streets as they provide street access to abutting sites.

Arterial roadways are intended to carry large volumes of traffic of all types moving at medium speeds. They expedite movement of traffic to and from major traffic generators and link neighborhoods. Generally direct access to arterial roadways is limited to respect their intended function. It is recommended that a minimum 30 metre right of way be established for all arterial roadways within the plan area.

The main function of local streets is to provide local property access. Local streets are not intended to carry large volumes of traffic, but primarily traffic with an origin or destination along its length. Generally, local streets within industrial subdivisions should be designed within a minimum 22 metre right of way.

### **6.1.2 Access & Roadway Pattern**

The layout of internal roadways acknowledge and support the phased development of the site while also accommodating the future extension of these roadways to connect with the existing RM road network and providing a potential access point to the lands located between the two coulees.

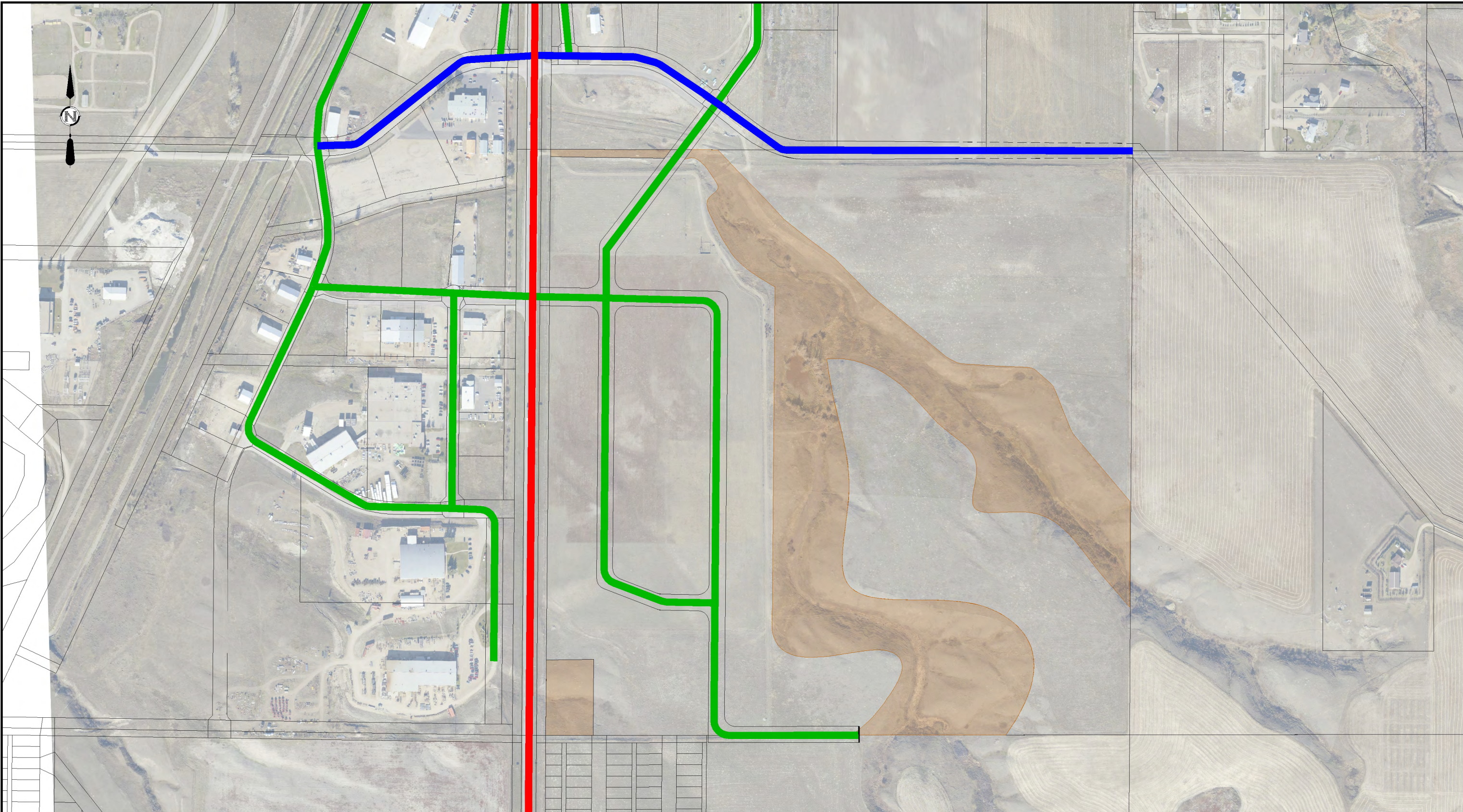
The use of a radial block roadway pattern containing looped roadways supports the efficient movement of large trucks and provides alternate routes in case an accident or other emergency arises within the area.

A southern access point along Highway No. 4 has been considered but deemed to be unsafe and not functional for the plan area without costly upgrades required to create a safe and functional access point. Opportunity is provided for future entry points from the existing country residential development to the east and future industrial development to the south. A future connection to the existing country residential development may be considered via an extension of Gladstone Street East. The roadway on the southern boundary also provides for future connection to the lands south of the study area. These southern lands have been identified as future industrial development as per the City of Swift Current's Development Plan Development Pattern Map.




### **6.1.3 Traffic Impact Study Summary**

A Traffic Impact Study (TIS), attached as Appendix E, was completed for the study area. The TIA was intended to determine potential impacts of the site development on the existing transportation network and to define appropriate mitigation measures.

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**LEGEND**

HIGHWAY	
ARTERIAL ROADWAY	
LOCAL ROADWAY	

PROJECT No.	2013-4402
DATE:	2014/04/30
APPROVED:	B. DELAINEY
SCALE:	1:5000
DWG. No.	FG4402-104



**CITY OF SWIFT CURRENT**  
MUNRO HEAVY INDUSTRIAL PARK EXPANSION

FIGURE 6-1  
ROADWAY CLASSIFICATION

The TIA provided the following description for the transportation system within the study area.

- Highway No. 4, also known as Memorial Drive is designated by the Ministry of Highways and Infrastructure (MHI) as an Urban Highway Connector under the jurisdiction of the City within city limits. Highway No. 4/Memorial Drive functions as a major north-south arterial running along the east side of Swift Current.
- Gladstone Street is an east-west street that connects residential and industrial areas west of Highway No. 4 with the growing industrial areas to the east.
- Fentons Drive is an east-west street that currently intersections Highway No. 4 at a T-intersection. It connects to the industrial development west of Highway No. 4. This street is planned to be extended east through the development and forms one of the two accesses.

Existing traffic volumes were defined through a traffic count completed on July 9, 2014 at the intersections of Fentons Drive and Gladstone Street with Highway No. 4. The traffic counts confirmed that the periods between 7:15 AM to 8:15 AM and from 4:30 PM to 5:30 PM represent the peak morning and afternoon traffic volumes.

The planning horizon for the TIS was determined to be 11 years (2025). The study looked at two background growth scenarios; the first anticipates population growth at 1.5% per year, based on recent Census population growth, Saskatchewan Ministry of Health population estimates, and the City of Swift Current's Development Plan. The second growth scenario considers the City's stated goal of 25,000 people by 2025. These population growth scenarios were used to approximate the background traffic growth for the 2025 planning horizon.

The TIS identified site generated traffic and trip distribution and assignment for the AM and PM peak hours. These forecasts were then utilized to determine the total future traffic for the study.

Further traffic analysis was completed to determine the current level of service for the intersections in the study area. Level of service analysis is an indicator of traffic delays at intersections. The existing and proposed intersections for the concept plan, in both scenarios, are expected to continue to operate at a high level of service with minimal delays for traffic.

Based on the findings of the traffic study, the following measures are recommended upon construction of the Fentons Drive extension east of Highway No. 4:

- Reduce the speed limit to 80 km/h from approximately 300 m south of Fentons Drive to the existing 60 km/h zone north of Gladstone Street;
- Widen Highway No. 4 southbound between Gladstone Street and Fentons Drive to include two southbound lanes;
- Construct a southbound receiving lane in the southwest quadrant of the intersection according to Ministry of Highways and Infrastructure Standard Plan 20620;
- Repaint the pavement marking arrows in both northbound and southbound directions to indicate permitted movements: through and left in the left hand lane and through and right in the right hand lane;
- Install stop control for the Fentons Drive extension at Highway No. 4; and
- Install yield control for Alexander Drive at each of its intersections.

## 6.2 WATER SUPPLY

The proposed water distribution system for the concept plan area is illustrated in Figure 6-2.

There are two existing water main connections which will provide access to potable water service. These two existing main water connections consist of:

- A 300 mm diameter PVC water main located at the East end of Gladstone Street
- A 400 mm diameter Asbestos Cement (AC) water main at the end of Oman Drive which extends across highway # 4 through a casing

These two connections will provide a closed loop system when connected to the distribution network. Three key benefits for utilising a closed loop system are:

- Redundancy/fail safe should sections of water main require servicing
- More reliable pressure with having at least two source points of pressure distribution; and
- Improved water quality through water re-circulation

The serviceability of the area is largely dependent on the water pressure provided to the area at the two connection points and the general topography of the proposed area. The topography for the proposed development increases in elevation from the north to the southeast by as much as 30 m in elevation; this equates to a 42.6 psi static pressure. The Swift Current Servicing Master Plan report identifies that the two potential connection points shown in their water model are in the range of 38-60 psi. It is recommended a minimum residual pressure of 20 psi be placed within the system at all times and given a static pressure loss of 42.6 psi, it is anticipated that a booster station is required for the area. A preferred location for the booster station and a resulting pressure reducing station has been identified.

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**CITY OF SWIFT CURRENT**  
 MUNRO HEAVY INDUSTRIAL PARK  
 FIGURE 6-2  
 WATER DISTRIBUTION CONCEPT PLAN



The water mains should be sufficiently sized based on three limiting factors identified in the Swift Current Servicing Master Plan for industrial developments:

- Adequately supply fire flow at 127 l/s
- Maintain a minimum of 20 psi residual pressure
- Maintain flow velocities not more than 1.5 m/s

With these limiting factors, it is estimated the minimum water main size should be 200 mm diameter using PVC C900 material for pipe.

It is important to note that based on the topography and maintaining a residual pressure of 20 psi, the limiting elevation for not over pressurizing the system at the north end is in the range of 810 m above mean sea level. Future development above this elevation range may require additional booster stations and possibly an upgrade in water main size from 200 mm diameter to potentially a 300 mm diameter.

Hydrant spacing on Figure 6-2 is based on the City of Saskatoon's recommended maximum spacing of 90 m for commercial/industrial areas which is reference to the Water Supply for Public Fire Protection (Fire Underwriters Survey).

The concept plan is intended to be implemented in several phases. In phase one, the water distribution system in the concept plan area will connect to the City's existing water distribution system at both existing main water connection points (the 300 mm water main along Gladstone Street East and the 400 mm water main at the end of Oman Drive). This will provide for the water distribution system to be a closed loop system. Phase two will be an extension of the Gladstone Street East 300 mm water main to provide water distribution services to the northeast area of the plan area. Phases three and four will be internal connections within the plan area west of the coulee. Figure 6-2 illustrates the conceptual design for the water distribution network which may change at the predesign stage of development.

### 6.3 SANITARY SEWER

The proposed sanitary sewer system for the concept plan area is illustrated in Figure 6-3. Swift Current has 14 existing lift stations and one main lift station with a 400 mm diameter force main. Lift station 12 services the south east area of Swift Current including sewage from lift station 13 and discharges through it through a 300 mm force main to the lagoon. This lift station and force main are the main focus for capacity assessment.

The existing sanitary sewer collection system near the concept plan area consists of a 250 mm diameter PVC sewer along Gladstone Street East. This existing sewer line crosses Highway No. 4 and extends its services into the McIntyre Industrial Park. The Swift Current Servicing Master Plan estimates peak sewage flows at 20.1 l/s.

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SCALE:	1:5000
DWG. No.	FG4402-106



CITY OF SWIFT CURRENT  
MUNRO HEAVY INDUSTRIAL PARK  
FIGURE 6-3  
SANITARY SEWER NETWORK CONCEPT PLAN

To extend this service to the concept plan area a future connection to the existing 250 mm diameter sewer will be required consisting of:

- An estimated 250 mm diameter PVC sewer from the extension of Fentons Drive to Gladstone Street East
- An estimated 250 mm diameter PVC sewer along Gladstone Street East to service lands along the northeastern area of the plan area
- An estimated 200 mm diameter PVC sewer will service the loop and southwest area of the plan area

The future connection sewer diameters have been determined based on the Swift Current Servicing Master Plan.

The Swift Current Servicing Master Plan suggests there is limited capacity in the mains and no consideration was given for inflow and infiltration. Therefore, a conservative allowance for inflow and infiltration has been estimated at 0.28 l/s/ha to account for wet weather flow.

To ensure there is adequate sewage disposal capacity for future development in this area, it is recommended that capacities should be evaluated during the preliminary design stage:

- Swift Current lift station 12 and force main
- Existing contributing gravity sewer mains
- It is assumed that the sewage lagoon has sufficient capacity to support future development
- Swift Current lift station 13 and lift station 12 pump run time hours to correctly identify capacities and existing usage more accurately. A flow monitoring system would also achieve more accurate/realistic results.

Pipe capacities in the southeast area are of concern as three catchments appear to have 0-50% pipe capacity which permits 50-75% available capacity.

Sanitary sewer mains will be sized in detailed design to maintain a minimum of 0.60 m/s for adequate flushing velocity and a maximum of 3.0 m/s to avoid liquid to solid separations and erosion.

Minimum sewer grades are easily achieved for this area and the entire development plan west of the Coulee appears to be serviceable by gravity. Maximum grades will likely be the only constraint which is manageable through drop manhole structures.

For the conceptual sanitary sewer network capacity maybe an issue in the existing pipes downstream. This will need to be evaluated during the predesign stage. Servicing the plan area by gravity is an available option for the City.

The concept plan is intended to be developed in multiple phases. In phase one, the sanitary sewer system in the Plan Area will connect to the City's existing sewer system at only one location (the 250 mm sewer along Gladstone Street East). Phase two will be an extension of the Gladstone Street East 250 mm sewer to provide sanitary sewer services to the northeast area of the concept plan. Phases three and four will be internal connections within the plan area west of the coulee. Figure 6-3 illustrates the conceptual design for the sanitary sewer network which may change at the predesign stage of development.

#### **6.4 STORM DRAINAGE**

Storm run-off is currently conveyed through a culvert under Highway No. 4 at the northwest boundary of the site. The size of the existing culvert is unknown at this point and until it can be confirmed through the preliminary design phase of the concept plan, it may be a limiting factor in the design of the concept plan. An upgrade to the drainage crossing or alternatively the retention of post development flows in their entirety which can be accomplished through retention ponds which collect the stormwater drainage and release the stormwater at the predevelopment rate of flow may be required to effectively facilitate site drainage. These ponds would also provide the opportunity for primary stormwater treatment to occur.

Due to the natural topography of the area, erosion control measures should be considered for slopes in excess of 2% during detailed design. There is a natural drainage course flowing through the center of the property which acts as a boundary for development.

Storm sewer mains will be sized in a detailed design to maintain a minimum of 0.90 m/s for adequate flushing velocity and a maximum of 3.0 m/s to avoid liquid to solid separations and erosion.

Figure 6-4 provides an estimate in storm sewer mains ranging in size from 300 - 600 mm diameter PVC. These sizes are preliminary based on approximate areas, a 1:5 year return period, and must be evaluated further in the details of predesign.

#### **6.5 SHALLOW UTILITIES**

The concept plan area is serviced by the City's Department of Light and Power who purchase electrical power from SaskPower in bulk and provide it to the community for a fee. Because the concept plan area lies within the Department of Light and Power's boundary, it is expected they will be able to supply the appropriate amount of power required to accommodate the development.

Based on the location of other existing industrial uses within the plan area, it is expected SaskEnergy will be able to service the additional development within the area.

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PROJECT No. 2013-4402  
 DATE: APRIL 2014  
 APPROVED: B. DELAINEY  
 SCALE: 1:5000  
 DWG. No. FG4402-107



CITY OF SWIFT CURRENT  
 MUNRO HEAVY INDUSTRIAL PARK

FIGURE 6-4  
 STORM SEWER NETWORK CONCEPT PLAN

### 6.6 SOLID WASTE

It will be the responsibility of the individual business owners to contract a local waste service provider to handle their solid waste disposals.

### 6.7 RECYCLING DEPOT

The City provides the opportunity for future lot owners to reduce their solid waste disposal through the City's multi-material recycling centre. Items which the multi-material recycle centre accepts consist of paper, plastic, tin cans and glass. Through the use of recycling facilities, the amount of solid waste produced and the cost to have the solid waste hauled off site can be reduced.

### 6.8 FIRE AND PROTECTIVE SERVICES

The City has access to fire and protective services for the area. This is accommodated with a local RCMP detachment and local Ambulance Service that both service the City as well as the surrounding rural area. The City operates its own Fire Department. It is expected these services will be sufficient to accommodate the concept plan.

### 6.9 SNOW REMOVAL AND STORAGE

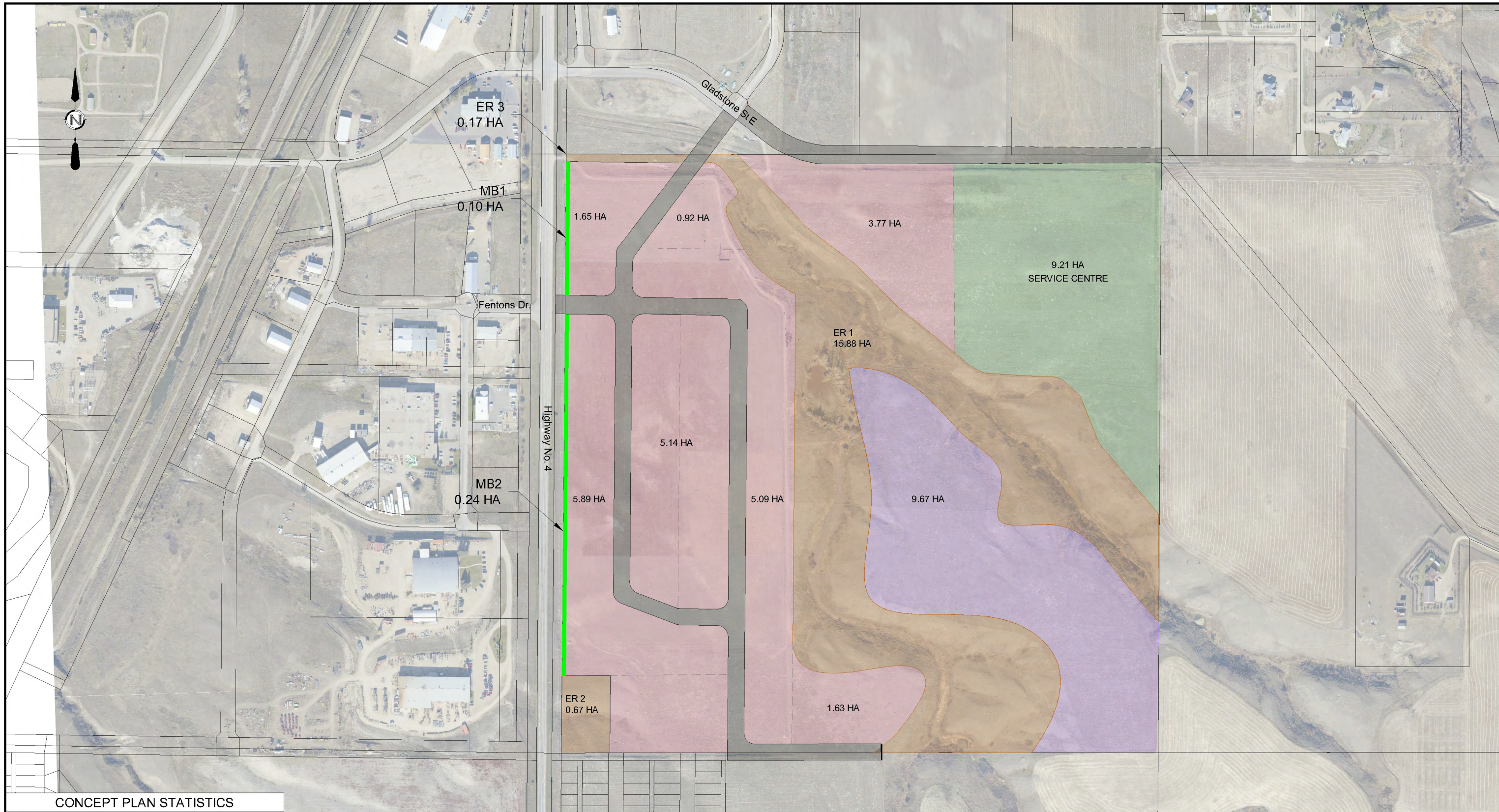
Removal and storage of snow along arterial, collector or local roadways will be the responsibility of the City. However, it will be the responsibility of individual business owners for the removal and storage of snow from their individual properties.

## 7 The Industrial Concept Plan

### 7.1 BLOCK LAYOUT

The concept plan allocates land amongst five different uses including buffer strips, environmental reserve, future urban development, municipal service centre, and industrial land. The distribution of these five land use classifications are illustrated on Figure 7-1 and reflected throughout the context below.

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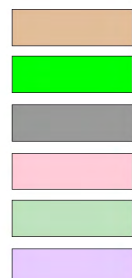


**CONCEPT PLAN STATISTICS**

	HECTARES	% OF CPA
CONCEPT PLAN AREA	64.75	
ENVIRONMENTAL RESERVE	16.72	
MUNICIPAL BUFFER STRIP	0.34	
RIGHT-OF-WAY	4.72	
FUTURE URBAN DEVELOPMENT	9.67	
NET DEVELOPABLE AREA	33.30	51.4
NET DEVELOPABLE AREA	33.30	% OF NDA
INDUSTRIAL LAND	24.09	72.3
SERVICE CENTRE	9.21	27.7

**LEGEND**

- ENVIRONMENTAL RESERVE
- BUFFER STRIP
- RIGHT-OF-WAY
- INDUSTRIAL LAND
- SERVICE CENTRE
- FUTURE URBAN DEVELOPMENT



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 SCALE: 1:5000  
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**CITY OF SWIFT CURRENT**  
 MUNRO HEAVY INDUSTRIAL PARK EXPANSION  
 FIGURE 7-1  
 CONCEPT PLAN BLOCK LAYOUT

### 7.1.1 Municipal Reserve Dedication

*The Planning and Development Act, 2007*) requires a minimum of 5% of the net developable area to be dedicated as municipal reserve (MR) or provided as a cash equivalent. As an approving authority under the Act, the City has several options for managing the dedication of MR which includes dedication of land, providing cash in lieu of dedication, providing a combination of land and cash or deferral.

Section 186 (1) (b) of the Act allows for a cash payment to be made in lieu of land dedication for municipal reserve. The cash in lieu payment is calculated based on the market value of the net developable area contained within the concept plan area in a subdivided but unserviced state. The net developable area is defined by deducting land dedications for public highways (internal roads), environmental reserves, and buffer strips from the gross land area.

Based upon the current concept plan drawing the following calculation would be made to define the value of the remaining cash in lieu payment:

- Net Developable Area = Gross Land Area less ER, Public Highways and Municipal Buffer = 32.96 ha<sup>1</sup>
- 5 % MR Requirement =  $32.96 * 5\% = 1.65$  ha valued in a subdivided but unserviced state<sup>2</sup>

<sup>1)</sup> *The Future Urban Development area is not intended to be subdivided and will remain a remnant of the current ¼ section; consequently it is not included in this calculation.*

<sup>2)</sup> *Typically, property servicing represents 80% of the market value of a property.*

Section 190 (1) of the Act allows an approving authority to defer MR dedication in whole or in part. The deferral creates a debt of land to be discharged when that parcel is subdivided in the future. Such deferral must be protected by an interest registered on the title to the parcel. The Act allows the deferral to be assigned to the remaining part of the host area being subdivided or to another parcel owned by the City. Section 190 (4) provides the direction for deferment to subsection (1);

- (a) *State the name of the person applying for subdivision approval;*
- (b) *Describe the land that is the subject of the application for subdivision approval;*
- (c) *Describe the land to which the deferment relates; and*
- (d) *State the area of land mentioned in clause (b).*



The City's Subdivision Bylaw No. 57/1986 section 11 (4) (b) also allows for municipal reserve dedications to be deferred in whole or in part until a further subdivision occurs. Based upon the direction represented in the concept plan concerning the designation of a portion of the ¼ section as a Future Urban Development area combined with recent discussions regarding the potential use of this land by the City's Recreation and Parks Department, the opportunity exists for the City to defer any MR dedication until a decision concerning the form and timing for development of this area has been made. At that point, if this remnant of the existing quarter section is developed for public recreational purposes, the land dedication for the Munro expansion would be considered satisfied. Alternatively, if this area is subdivided or developed in the future for a non-recreational purpose, the cash in lieu payment can be made as defined in Option 1.

### 7.1.2 Buffer Strips

A 5 metre municipal buffer strip has been provided along the property frontage abutting Highway No. 4 to provide an opportunity for the City to landscape the area facing the highway and to eliminate physical and legal access from adjacent properties to the highway right-of-way. The landscaping will be constructed and maintained by the City with the costs associated with the development of the landscaping to be recouped from future landowners via sale agreements. This additional sale condition would only apply to property owners directly abutting the municipal buffer. The capital costs associated with landscaping the municipal buffer would be allocated proportionately amongst abutting land owners based upon frontage. The municipal buffer strips encompass 0.34 hectares (0.84 acres) of land accounting for approximately 0.8 % of the gross developable area.

### 7.1.3 Environmental Reserve

A large portion within the concept plan is designated as environmental reserve respecting the local topography and physical site features. The environmental reserve (ER) illustrated in Figure 7-1 includes the two large coulees, a drainage channel running adjacent the property boundary in the northwest of the concept plan area, and the natural depression located in the southwest corner of the plan area. ER1 contains the two coulees and represents the largest environmental reserve dedication consisting of 15.88 hectares (39.2 acres). ER 2 consumes 0.67 hectares (1.7 acres) and ER 3 is a drainage channel that contains 0.17 hectares (0.4 acres) of land and conveys existing storm drainage under Highway No. 4 to the drainage system at the McIntyre Industrial Park. In all cases, the environmental reserve areas maintain fairly steep slopes and a higher natural value, making them less appropriate to develop. The environmental reserve areas consumes a total of 16.72 hectares (41.3 acres) representing 25.8% of the total concept plan area.

#### 7.1.4 Future Urban Development

The lands located along the south end of the site between the coulees has been designated as a Future Urban Development (FUD) area as it is not considered a feasible development option at this point in time due to the access and servicing challenges combined with its relatively unforgiving topography. It is recommended that further investigation commence regarding the peninsula of land due to:

- The sites topography and geographical features.
- The potential historical resources which may be located within the peninsula.
- The financial implications to develop the area may not make it feasible.

Although at this point in time, development is not recommended within this area, following a more intensive geotechnical investigation to confirm its suitability for development, this site may be considered as part of a future phase of development, perhaps in conjunction with future industrial developments to the south of the concept plan area. The concept plan represents this possibility by providing a southern connection to these lands. The possibility exists for the City to design the service centre property to accommodate a looped road network connecting the FUD from the north as well.

The future urban development area contains 9.67 hectares (23.9 acres) which is 22.3 % of the net developable area.

#### 7.1.5 Service Centre

The City has indicated its intent to retain approximately 10 hectares (20-25 acres) within the northeast corner of the concept plan area to construct a public works facility to replace the current facility which has reached its capacity. The location of the service centre was selected based on the City's interest to reserve the higher visibility prime marketable land adjacent to Highway No. 4 for private developments. The proposed land area provided for the service centre is 9.21 hectares (22.8 acres) accounting for approximately 21.3 % of the net developable area. It should be noted that these lands would need to be zoned Industrial Reserve District (R-M) to recognize public works as a permitted use.

#### 7.1.6 Industrial

The concept plan area is zoned Heavy Industrial District (M2); therefore, any development in the concept plan area shall conform to the regulations prescribed within the City of Swift Current Zoning Bylaw No. 4-2003. The concept plan achieves the minimum site area requirement of 700 m<sup>2</sup> and provides the opportunity to accommodate a variety of front yard widths. It provides the flexibility of access to lands for a variety of uses as described within the City's Zoning Bylaw such as business and/or professional offices, construction plants, yards and/or offices, farm machinery sales and/or service, manufacturing industries, and wholesale stores and/or warehouses.

The concept plan is designed to maximize the lot yield by following a radial block roadway pattern with one access point adjacent Highway No. 4 and a second access point to the north via Gladstone Street East. The internal road network accounts for 4.72 hectares (11.7 acres) of land which is approximately 7.3 % of the total concept plan area. The internal road network promotes connectivity to existing developments in the City but also provides for future connections to the east and south of the concept plan area.

The future industrial land consists of 24.09 hectares (59.5 acres) which is approximately 55.6 % of the net developable area. Table 7-1 – Overall Land Use Summary lists the overall concept plan statistics and Table 7-2 – Net Developable Area Summary lists the land use and corresponding size for the developed area for the concept plan.

**Table 7-1  
Overall Land Use Summary**

<b>Concept Plan Statistics</b>		
	<b>Hectares</b>	<b>% of CPA</b>
<b>Concept Plan Area (CPA)</b>	64.75	
<i>Less</i> <b>Environmental Reserve, Right of Way, Future Urban Development, and Municipal Buffer Strip</b>	31.45	48.6
<b>Net Developable Area (NDA)</b>	33.30	51.4
<b>Municipal Reserve Dedication*</b>	1.66	

\* The NDA includes the 5% of the Municipal Reserve Land requirement which the City will determine the option to meet this requirement.

**Table 7-2  
Net Developable Area Summary**

<b>Land Use Summary</b>		
	<b>Hectares</b>	<b>% of NPA</b>
<b>Net Developable Area</b>	33.30	
<b>Industrial Land</b>	24.09	72.3
<b>Service Centre</b>	9.21	27.7

## 7.2 LOT LAYOUT

The City has expressed an interest in accommodating lot sizes ranging between 0.4 – 0.8 hectares (1 – 2 acres) to meet anticipated demand. The concept design provides the opportunity to satisfy the desired 0.4 – 0.8 hectare lot sizing with the option of consolidating individual lots if larger sites are required in the future. The lots are generally rectangular supporting the effective consolidation in the future as needed. There are 45 lots within the concept plan area with the lots ranging in size from 0.33 hectares (0.82 acres) to 1.58 hectares (3.90 acres). The average lot size is approximately 0.52 hectares (1.28 acres). Figure 7-2 illustrates a potential distribution of lots within the study area. Ultimately, the preparation of a formal Plan of Proposed Subdivision will be required to implement this concept plan, at which point, final lot sizing will be confirmed.

# 8 Plan Implementation

## 8.1 INDUSTRIAL PHASING

A phasing plan provides a development staging process for the concept plan area which assists in managing time, cost, quality, change, risk and issues. A phasing plan also helps manage contractors and external suppliers to ensure the development delivery is on time and within budget.

Figure 8-1 illustrates the four preliminary phases for subdivision and site servicing. The phasing plan illustrated and described below is intended as a starting point only and will be refined and potentially altered as more detailed preliminary engineering of the site is completed following municipal approval of the concept plan.

### 8.1.1 Phase 1

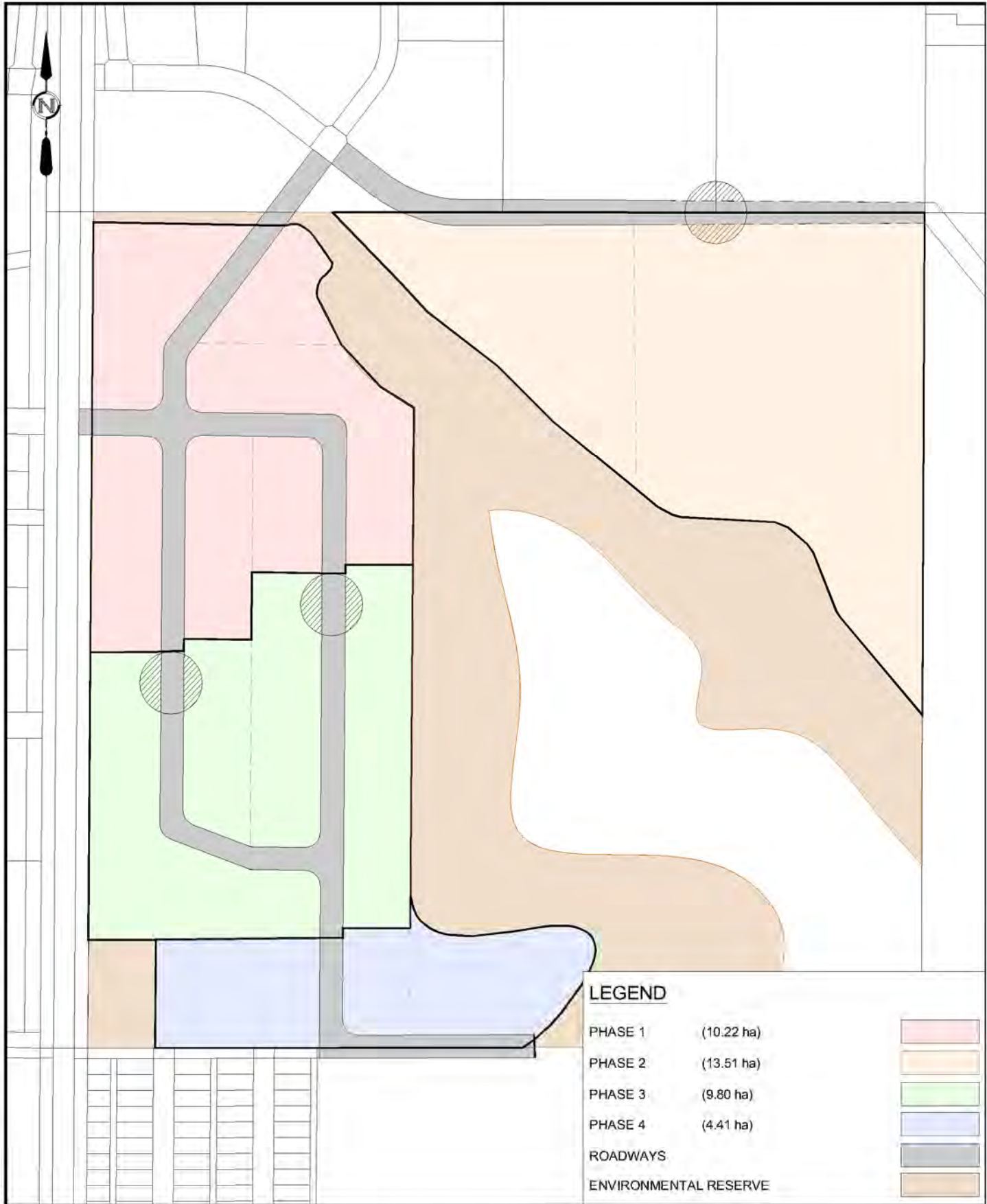
The first phase of the concept plan contains approximately 10 hectares (25 acres) and provides connection to the existing Munro and McIntyre Industrial Parks via Gladstone Street East and Fentons Drive. Phase 1 provides the City with approximately 18 industrial lots in an attractive location adjacent to Highway No. 4. This phase would require approximately 965 m (0.965 km) of roadway to be constructed and also requires two temporary cul-de-sacs be constructed. The temporary cul-de-sacs are approximately 250 m and 320 m in length and will be temporary until such time as Phase 3 commences development.

### 8.1.2 Phase 2

Phase 2 contains approximately 14 hectares (34 acres) of land and provides access to the northeastern area of the concept plan and to the future service centre. It provides approximately 3 large industrial lots and access to the City's future service centre. This phase requires an additional 380 m (0.38 km) of roadway to be developed with a temporary turn around which will be removed as development continues east of the concept plan area.



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DWG. No.	FG4402-110



**CITY OF SWIFT CURRENT**  
 MUNRO HEAVY INDUSTRIAL PARK

FIGURE 8-1  
 PRELIMINARY PHASING PLAN

### 8.1.3 Phase 3

The third phase of the plan area is located directly south of Phase 1 and contains approximately 10 hectares (25 acres) of land. With the development of Phase 3, the two temporary turn around cul-de-sacs for Phase 1 will be removed and the roadway will create a closed loop pattern. Phase 3 provides the City with approximately 18 industrial lots along Highway No. 4 and bordering the western boundary of the coulees. It will require 615 m (0.615 km) of roadway to be developed to provide access to individual sites.

### 8.1.4 Phase 4

Phase 4 contains approximately 4 hectares (9 acres) of land which is located along the southern boundary of the concept plan area. This phase provides approximately 6 industrial lots and connection points to future industrial lands to the east and south of the plan area. It requires approximately 290 m (0.29 km) of roadway to be developed for access to individual sites.

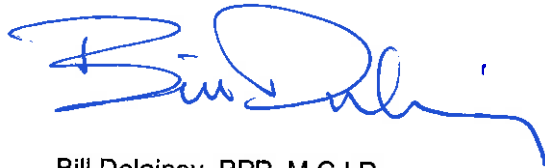
# REPORT

## Closure

This report was prepared for the City of Swift Current to develop a concept plan to guide the expansion of the Munro Heavy Industrial Park.

The services provided by Associated Engineering (Sask.) Ltd. in the preparation of this report were conducted in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions. No other warranty expressed or implied is made.

Respectfully submitted,  
Associated Engineering (Sask.) Ltd.



Bill Delainey, RPP, M.C.I.P.  
Project Manager



**Associated  
Engineering**

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LOCAL FOCUS.*