INDUSTRIAL AREA GROWTH STRATEGY CONSULTING REPORT – UPDATE 2024

THE CITY OF CALGARY

SEPTEMBER 2024

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September 24, 2024

To: Selina Chen, RPP, MCIP
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Re: Industrial Area Growth Strategy Consulting Report – Update 2024

Cushman & Wakefield partnered with metroeconomics and Hemson Consulting to undertake this companion work to the Industrial Area Growth Strategy Consulting Report that was prepared back in February 2021 and updated in 2023. This Update 2024 builds upon the prior work in order to differentiate between serviced and shovel-ready lands versus serviced and not shovel-ready lands, which is an important nuance in evaluating the supply of readily developable lands city-wide.

Once again, the Consultant Team is appreciative of the considerable support received from City staff and the Industrial Strategy Working Group throughout this engagement. If you have any questions, please contact the undersigned.

Respectfully submitted,

Cushman & Wakefield

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EXECUTIVE SUMMARY

Report Summary

Calgary has a supply of approximately 2,400 net hectares of vacant land in its industrial areas. The attributes of land across the city's industrial areas (both vacant and occupied) have been examined, including by geographic sector, parcel size, land use district, servicing status, ownership (private versus City of Calgary-owned), and site coverage (for occupied sites). The city offers a diversity of available lands for industrial development.

An analysis of industry clusters and trends identifies those industry groups that are projected to account for the greatest share of future industrial-type employment and identifies the site selection preferences of these users, in order to align planning policy with anticipated demand. Jobs in the warehousing and storage sector are anticipated to account for two-thirds of future industrial-type employment growth in Calgary through 2076 (the forecast horizon).

Projections of industrial land demand indicate a requirement to plan for 1,400-1,900 net hectares of lands across Calgary's industrial areas. This is comprised of a need for lands to accommodate industrial-type employment growth, non-industrial lands to compliment industrial uses, and a long-term vacancy factor. It does not account for any adjustment for future intensification that may occur on existing developed sites.

From a longer term perspective, there is an adequate provision of vacant lands across a range of geographic areas and parcel sizes to accommodate a spectrum of prospective occupiers – including those industry groups that are projected to account for the most employment growth in coming decades. However, the present inventory of 150 net hectares of serviced and shovel-ready lands represents only a roughly four year supply, based on anticipated demand through 2031 (assuming all of these sites are developed in the near-term). In an active period of demand that exceeds projections presented in this report, this limited serviced and shovel-ready land supply would be an impediment to achieving the potential growth, which would pivot to other markets instead. Accordingly, it should be a land use planning priority to increase the supply of shovel-ready lands to provide more options within the marketplace for prospective occupiers, including large sites (10+ hectares) that accommodate larger industrial buildings which continue to be in demand by users (30% of the new industrial buildings added since 2010 were over 100,000 sf in size and 15% exceeded 250,000 sf in size, based on Cushman & Wakefield data for the Calgary market [which includes Balzac/Rocky View County]). The City of Calgary could consider a strategic policy approach of supporting a 10-year supply of serviced and shovel-ready lands in order to provide a suitable range of options in the market in terms of location, site size, zoning, and development-readiness in order to be able to capitalize on economic opportunities as they arise (the land demand modeling indicates a varying need over time based on employment growth trends but a 10-year supply is generally a figure of 300-400 hectares). The city's land supply itself – including City-owned assets – is a competitive advantage that can be leveraged to foster economic development.

The Northeast sector is home to 45% of the city's vacant land in industrial areas, followed by the Southeast, at 41%. Both have an established base of industrial activity, have attracted substantial new supply over the past decade, and will play a key role in accommodating future industrial land demand. The Central sector accounts for close to 15% of the city's occupied industrial land (little remaining vacancy) and remains in demand, based on market metrics such as vacancy rates and rental rates. However, the older building stock on often smaller sites is not suited to some modern occupiers. The Northwest and Southwest sectors have a more limited extent of vacant lands as a share of the overall market and only a limited presence of established industrial users. The timing of creating a critical mass of industrial development in these areas is uncertain.

Part of the scope of work for this assignment was an assessment of the potential of the Nose Creek area to accommodate future industrial uses. Nose Creek has many site selection attributes that make it well suited for future industrial land development, including proximity to major highways (Deerfoot Trail and Stoney Trail) and the airport; proximity to established and emerging industrial uses in Northeast Calgary and neighbouring Balzac; good access to labour; and large, contiguous sites that can accommodate future industrial buildings. The topography of the area has been cited as a potential obstacle to industrial-style development (particularly large buildings that require large, level sites).

Although Nose Creek offers the site selection criteria that would appeal to many industrial users, there are other considerations that must inform land use decision-making, such as whether parcels of land with irregular shapes may be best suited for non-industrial use, or whether parcels that are not contiguous to the broader industrial area could be better used for non-industrial purposes. Similarly, other planning priorities – such as encouraging dense land uses in proximity to transit stations – could mean that an industrial land use is not appropriate for certain locations. While overall the Nose Creek area has many attributes that position it for future industrial/employment uses – it remains some of the city's prime remaining undeveloped lands within industrial areas – the land supply and demand analysis does enable some extent of conversion of industrial lands to non-industrial uses when justified by other planning considerations.

In December 2021, Calgary City Council directed Administration to initiate annexation of lands southeast of the city, primarily for the purposes of industrial development. However, a subsequent City Council directive in December 2022 widened the scope to consider other options in collaboration with Rocky View County. The intent is now to explore a collaborative, regionally-significant industrial corridor project area that leverages the rail line and a potential future CPKC intermodal facility.

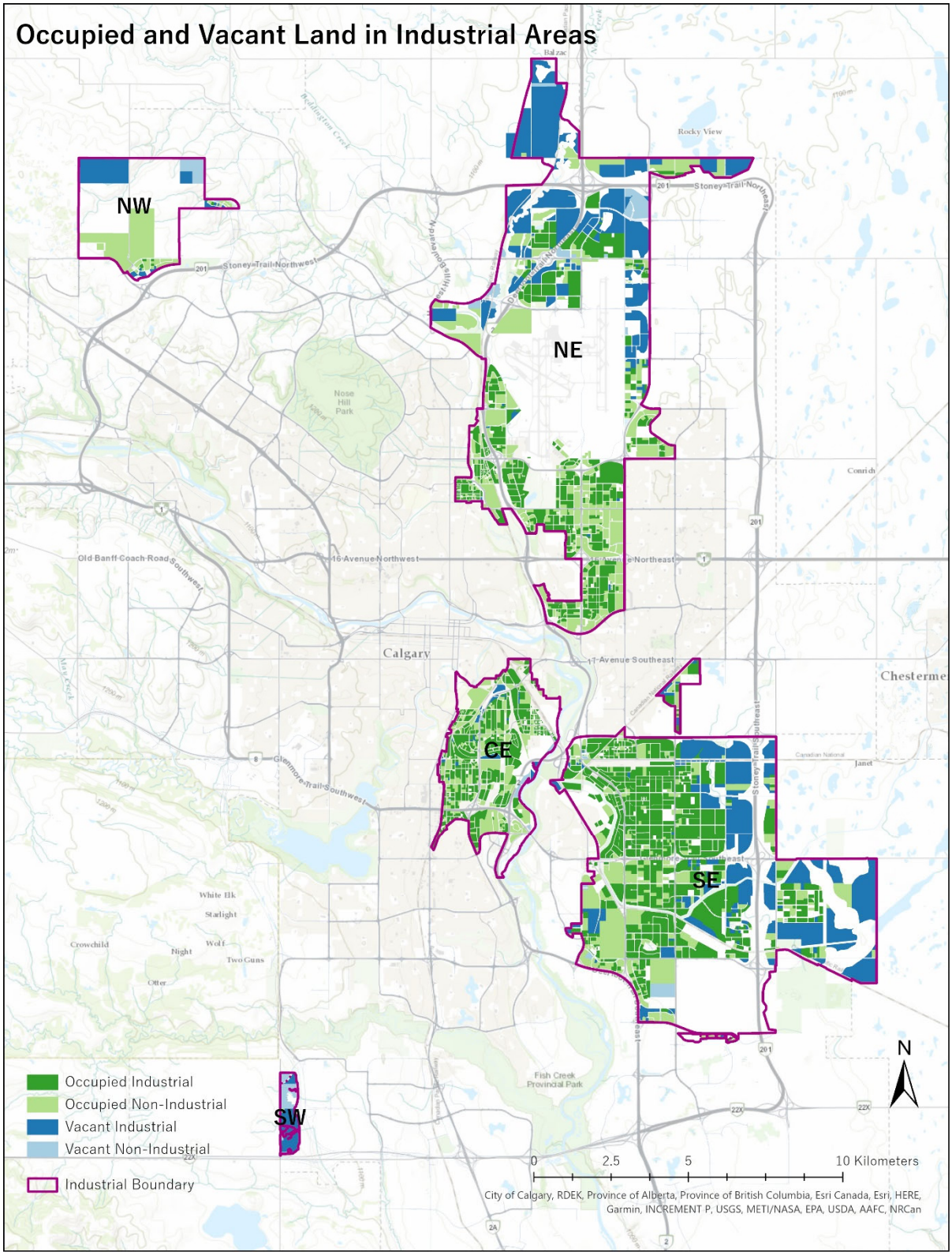
Given that the land supply and demand analysis indicates that the city has a suitable supply of land through 2076 (based on the model assumptions regarding employment growth, employment density, site coverage, and intensification potential, among other factors), there is no near or medium-term requirement to annex lands, from a supply perspective. There are other reasons such an initiative may be warranted, such as preserving lands for longer-term growth and ensuring connectivity of industrial areas to transportation infrastructure (i.e., highway interchanges, intermodal facilities, etc.). The expansion of industrial uses to the southeast is a natural extension of the thriving employment base in this area, and the extent of large development sites that could be created is well aligned with the type of demand anticipated in coming decades.

June 2024 Shovel-Ready Lands Update

The land inventory data illustrated in this report was initially provided to the Consultant Team by City staff in November 2022, and refined during the course of the 2023 engagement. Thus, the analysis and conclusions represent a snapshot in time circa late-2022/early 2023. In June 2024, City staff undertook a review of the inventory of serviced and shovel-ready lands city-wide in order to generate a more current assessment of supply. The variance in figures from late-2022/early-2023 and June 2024 may be explained by sites that have been developed and are no longer vacant; sites that have been converted from industrial to non-industrial during this time period (or vice versa); sites that were previously not serviced or partially serviced and which have been fully serviced in the meantime; the sale of lands by The City to a private owner; or other factors.

Overall, the total supply of vacant, industrial-designated serviced and shovel-ready lands was approximately 188 hectares in June 2024 (versus 186 hectares in late-2022/early-2023) – virtually unchanged on an absolute basis. The majority of these lands are located in the Northeast (120 hectares) and the Southeast (65 hectares). Some 103 hectares of serviced and shovel-ready lands are sites less than 10 hectares in size, 85 hectares are within the 10-20 range, and there are no shovel-ready lands greater than 20 hectares. Whereas The City owned approximately 54 hectares of serviced and shovel-ready lands circa late-2022/early-2023 (almost entirely in the Southeast submarket), as at June 2024, this figure had declined to less than 8 hectares (divided between the Southeast and Northeast).

This updated shovel-ready lands analysis reinforces the recommendations of this report that The City continue to monitor its industrial land supply and also that it should encourage owners of serviced land to pursue Development Agreements in order to bring to market additional shovel-ready lands to provide more site selection options for prospective occupiers/users.


Occupied and Vacant Land in Industrial Areas
NW
NE
CE
SE
SW
Occupied Industrial
Occupied Non-Industrial
Vacant Industrial
Vacant Non-Industrial
Industrial Boundary
N
0
2.5
5
10 Kilometers
City of Calgary, RDEK, Province of Alberta, Province of British Columbia, Esri Canada, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, EPA, USDA, AAFC, NRCan
Balzac
Rocky View
Stoney Trail Northwest
Stoney Trail Northeast
Nose Hill Park
Old Banff Coach Road Southwest
16 Avenue Northwest
Calgary
17 Avenue Southeast
Glenmore Trail Southwest
Stoney Trail Southeast
Chestermere
Janet
Fish Creek Provincial Park
White Elk
Starlight
Crowchild
Night
Wolf
Two Guns
Otter

1.0 INTRODUCTION

1.1 Project Overview

Building on the previous work titled *Industrial Area Growth Strategy Consulting Report* completed in February 2021, The City of Calgary retained Cushman & Wakefield (and sub-consultants metroeconomics [employment forecasts] and Hemson Consulting [GIS/mapping services]) to conduct subsequent analysis of industrial lands and activities in the city. The initial work was primarily focused at a citywide level. An updated additional area-specific in-depth analysis was required to support The City's effort in multiple active projects and respond to new challenges.

The land inventory data illustrated in this report was initially provided to the Consultant Team by City staff in November 2022, and refined during the course of the engagement. Thus, the analysis and conclusions represent a snapshot in time circa late-2022/early 2023, with Development Agreements data enabling a subsequent analysis of shovel-ready lands at that time – which is the focus of this 2024 Update report.

This report begins with an assessment of historic industrial land absorption, then profiles the current land supply. Next, we revisit the industry clusters and trends analysis that was explored in the 2021 report, with updates based on recent Census of Canada data. An assessment of industrial land demand guided by a detailed employment by industry forecast is provided. These preceding analyses inform the two emerging areas of investigation that are the impetus for this Phase 2 work: (1) addressing pressures for industrial land conversion in the Nose Creek area as part of a deeper understanding of the dynamics of the city's industrial submarkets; and (2) exploring the development of regionally-significant industrial lands focused on rail in Calgary's southeast.

In exploring the preceding areas of analysis, City staff identified a series of key questions to inform the work, including:

- How much industrial land (gross and net developable land) is there across the city by geography, by land use policy, by ownership, by servicing status, and by parcel size?
- What is the correlation between industrial job growth, floor space, and industrial land absorption?
- What are the opportunities and threats related to potentially non-compatible uses (e.g., institutional uses, places of worship, etc.) within industrial areas?
- What are the recent and future trends in urban manufacturing and industrial uses? How do Calgary's industrial lands and buildings need to adapt to address these trends?
- How have recent economic challenges (e.g., the COVID-19 pandemic) influenced industrial development in Calgary and how will this affect current and future demand for industrial land?
- What are the long-term land requirements to meet the needs of the city by 2076 for industrial and supporting commercial uses?
- How many years of vacant industrial supply remain given the rate of absorption and rate of conversions (from industrial to non-industrial)?
- What are the market characteristics specific to individual industrial areas and/or different locations within Calgary?
- Which industrial areas in Calgary should be preserved and which areas should be allowed to be converted, such as part of new transit-oriented development, lands near rail yards and corridors, major interchanges, and other logistics networks?

1.2 Consultant Team Overview

Cushman & Wakefield (real estate market and employment trends, and land supply/demand analysis) was the Lead Consultant and Project Manager, partnered with Sub-Consultant firm **metroeconomics** (economic and employment forecasting). These firms reprised their roles from the initial work on the *Industrial Area Growth Strategy Consulting Report* that was completed in February 2021. **Hemson Consulting** provided GIS/mapping to support the Consultant Team.

2.0 INDUSTRIAL LAND SUPPLY ANALYSIS

2.1 Introduction

The Consultant Team and City staff collaborated to develop an updated inventory of lands across the city's industrial areas. To address various recent land use conversions that have taken place and to recognize the transitional nature of some areas, select revisions were made to previous industrial area boundaries in certain locations (generally on the edges of established employment areas, as well as some lands in undeveloped parts of the city that are moving through the development process).

It is important for a municipality to ensure a range of employment land are available to capture development opportunities as they arise. This includes options in terms of a range of locations, site sizes, zoning, and serviced or readily-serviceable sites for development. The following section profiles lands across Calgary's five industrial sectors (Central, Northeast, Northwest, Southeast, and Southwest) by a range of attributes including: location, parcel size, land use district (zone), servicing status, ownership, and site coverage.

2.2 Attributes of Vacant Land Supply in Industrial Areas

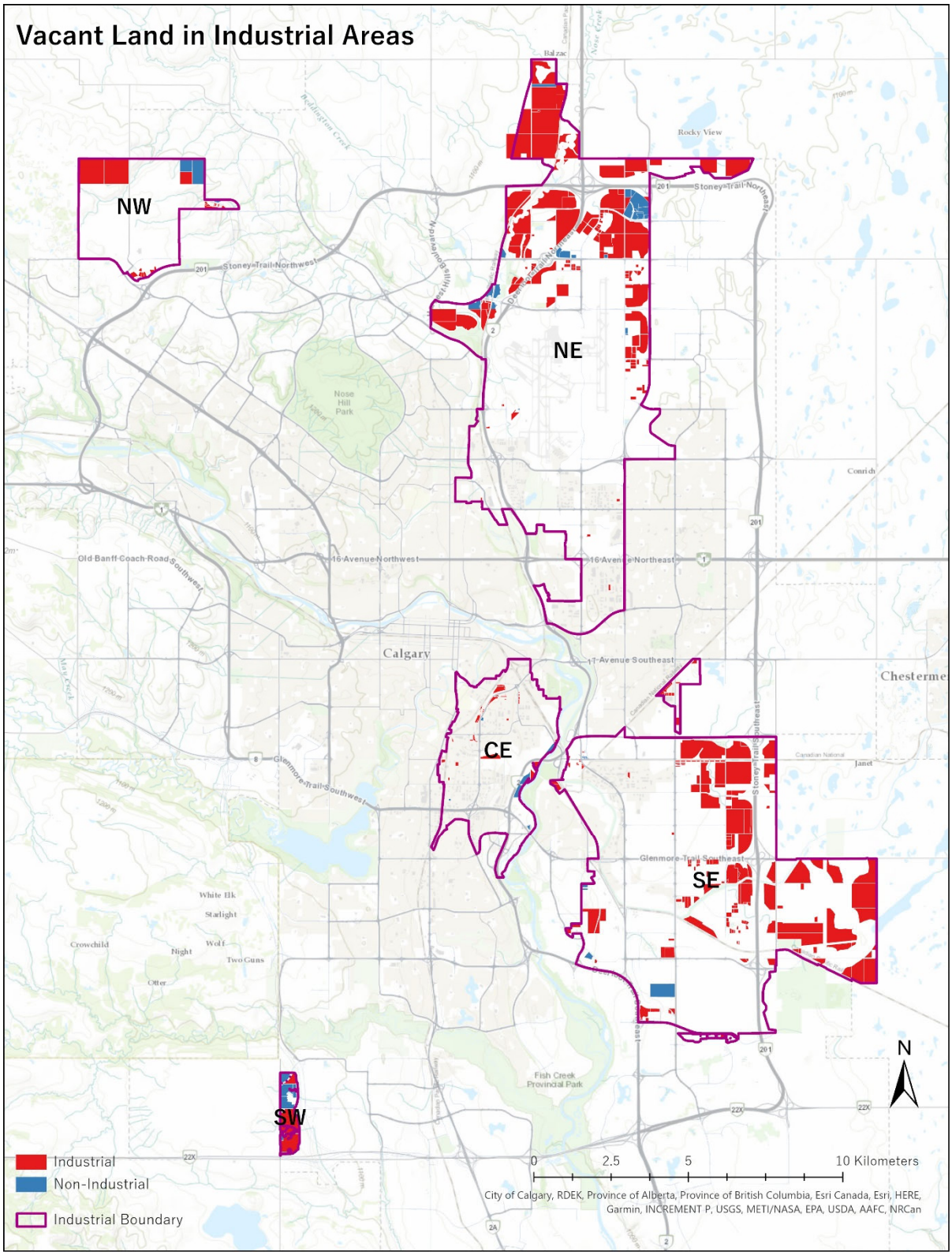
2.2.1 Overview

The following section profiles the vacant land supply across the city's industrial areas. This includes currently undeveloped lands – which constitute the majority of the parcels – but also some extent of presently occupied sites that City staff have identified as suited for future industrial development which may have an alternative use presently (such as farm buildings).

2.2.2 Overall Vacant Land Supply

Calgary has nearly 3,000 hectares of vacant land within its industrial areas across some 440 sites. Of this overall supply, just over 2,700 hectares are industrial lands (roughly 90% share across 375 sites) and just less than 300 hectares are non-industrial lands (roughly 10% share across nearly 70 sites), as characterized by City staff for the purposes of this analysis (note: non-industrial lands were determined by an analysis of land use designations – land use districts and MDP designations). Importantly, a portion of this nearly 3,000 hectare vacant land supply should be considered "gross" hectares, meaning that there has not yet been any adjustment made for the future on-site land requirements for roads, utilities, or stormwater management ponds to service any eventual subdivided lands/lots, nor any adjustment made to account for the presence of natural features such as waterways, wetlands, or other physical features (slopes, valley lands, etc.) which could limit the actual "developable" land area.

In a land needs assessment, it is common to attribute a factor of 75% or 80% to represent the "net developable" portion of lands compared to the "gross" total land area. For the purposes of this analysis, the Consultant Team will utilize a factor of 80% to adjust the overall land inventory from "gross" to "net" (recognizing that some lands are already considered net – generally the smaller parcels which abut occupied lands). This adjustment brings the overall estimated vacant industrial land inventory total to approximately 2,400 net hectares citywide. This figure is of importance in comparing land supply to anticipated land demand (discussed in a later section of this report). The balance of this examination of land inventory is on a gross basis, for illustrative purposes, since it is outside of the scope of this project to make a site-by-site assessment of net versus gross land area.

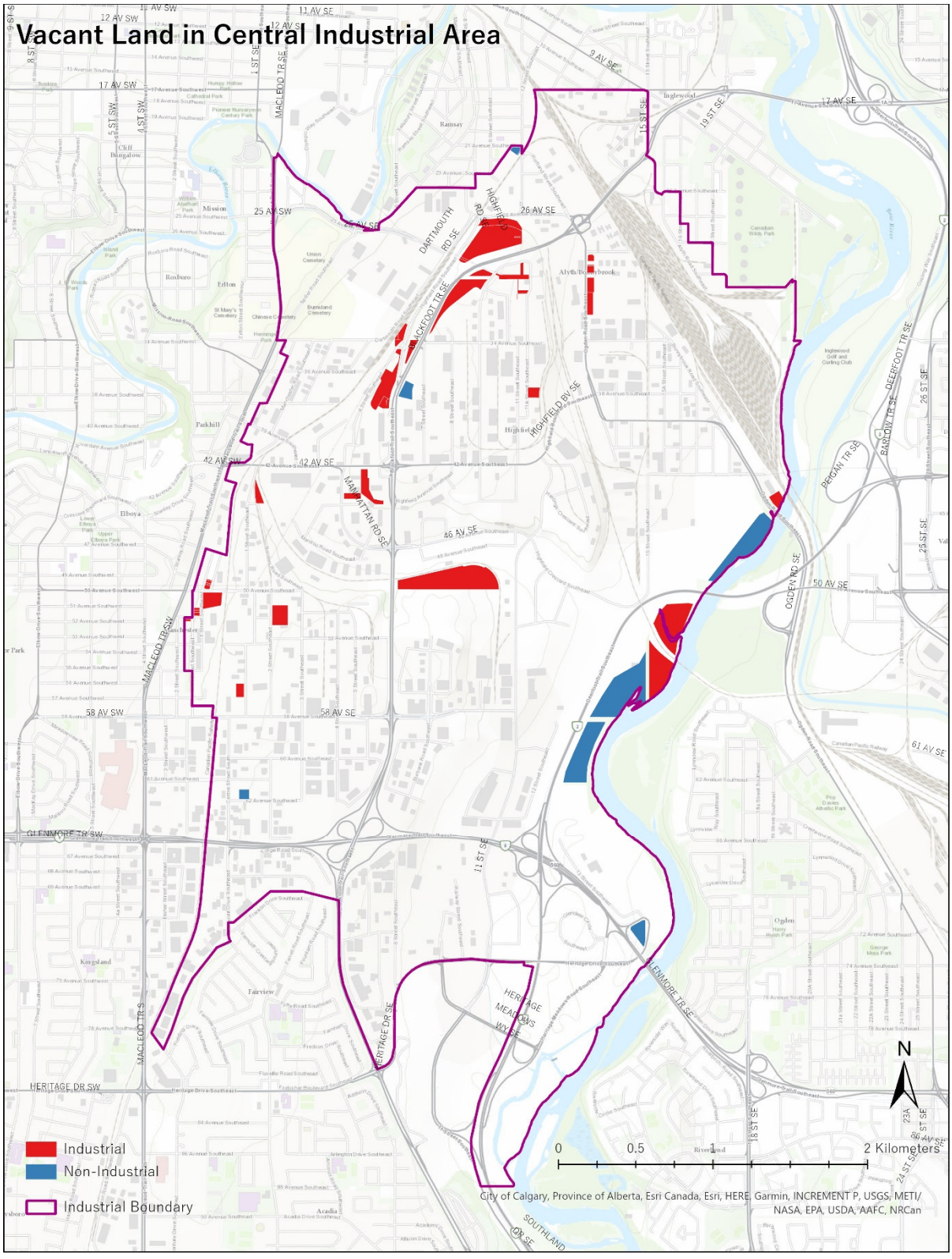

Vacant Land in Industrial Areas
NW
NE
CE
SE
SW
Industrial
Non-Industrial
Industrial Boundary
0
2.5
5
10 Kilometers
N
City of Calgary, RDEK, Province of Alberta, Province of British Columbia, Esri Canada, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, EPA, USDA, AAFC, NRCan

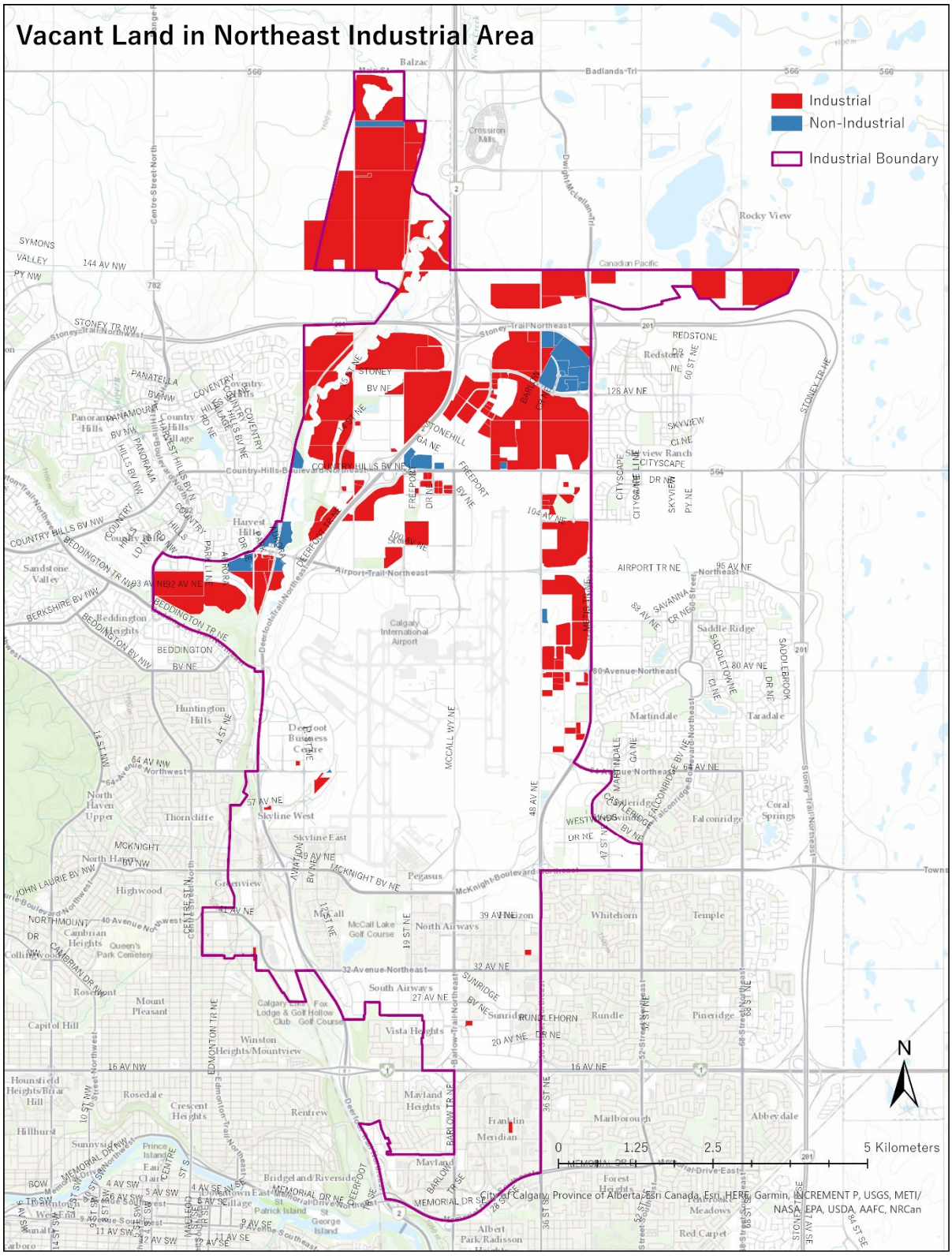
2.2.3 Vacant Land Supply by Sector

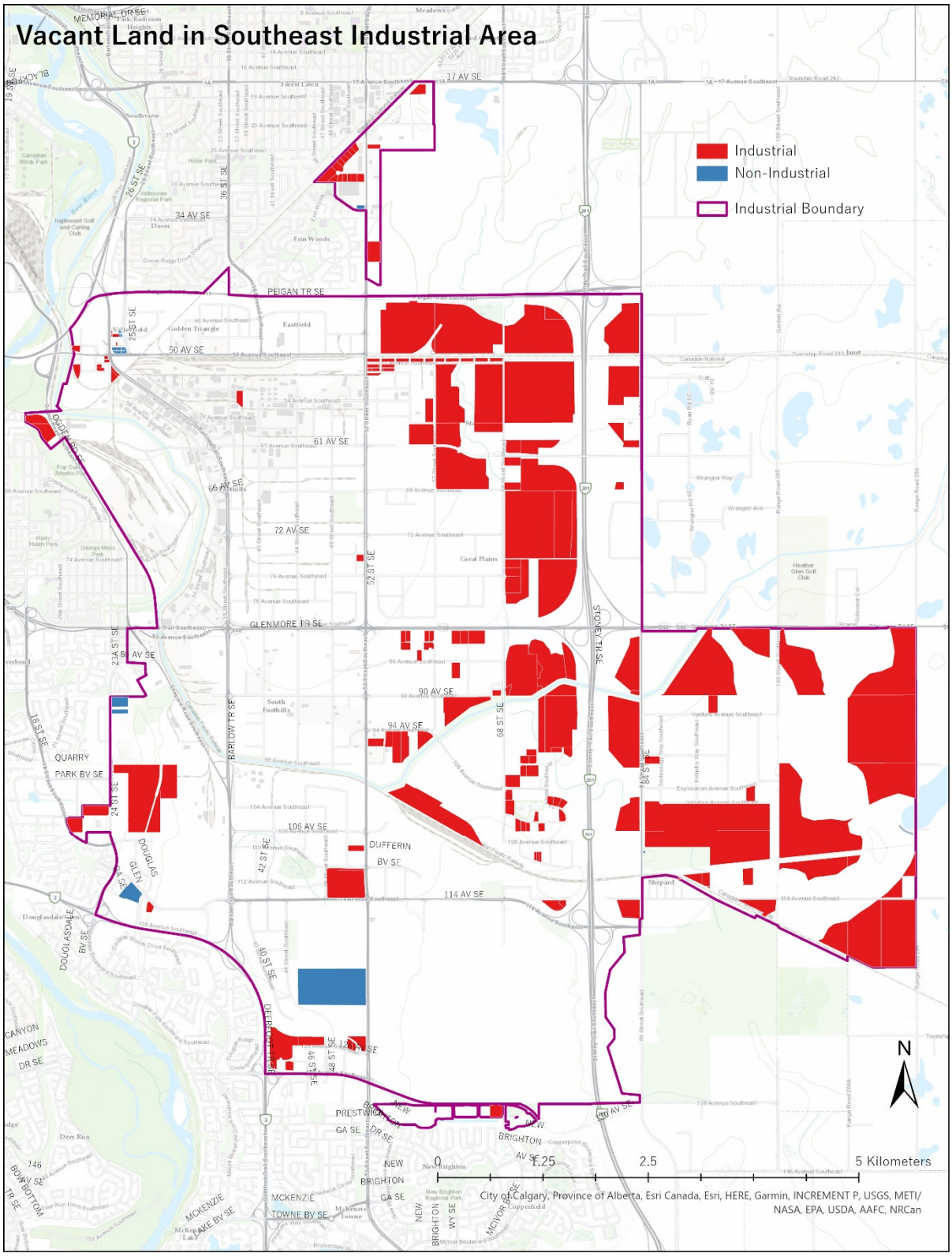
By sector, the Northeast is home to the city's largest inventory of vacant industrial lands (over 1,200 hectares, accounting for a 41% share of Calgary's total vacant lands in industrial areas), followed closely by the Southeast (just less than 1,200 hectares, representing 40% of the total). The remaining nearly 300 hectares of vacant industrial lands are located within the Northwest, Southwest, and Central sectors (in declining order by size of inventory) which together account for about 10% of the overall land supply in industrial areas. Non-industrial vacant lands within the city's industrial areas are distributed across the city with the largest concentration found in the Northeast sector (roughly 110 hectares).

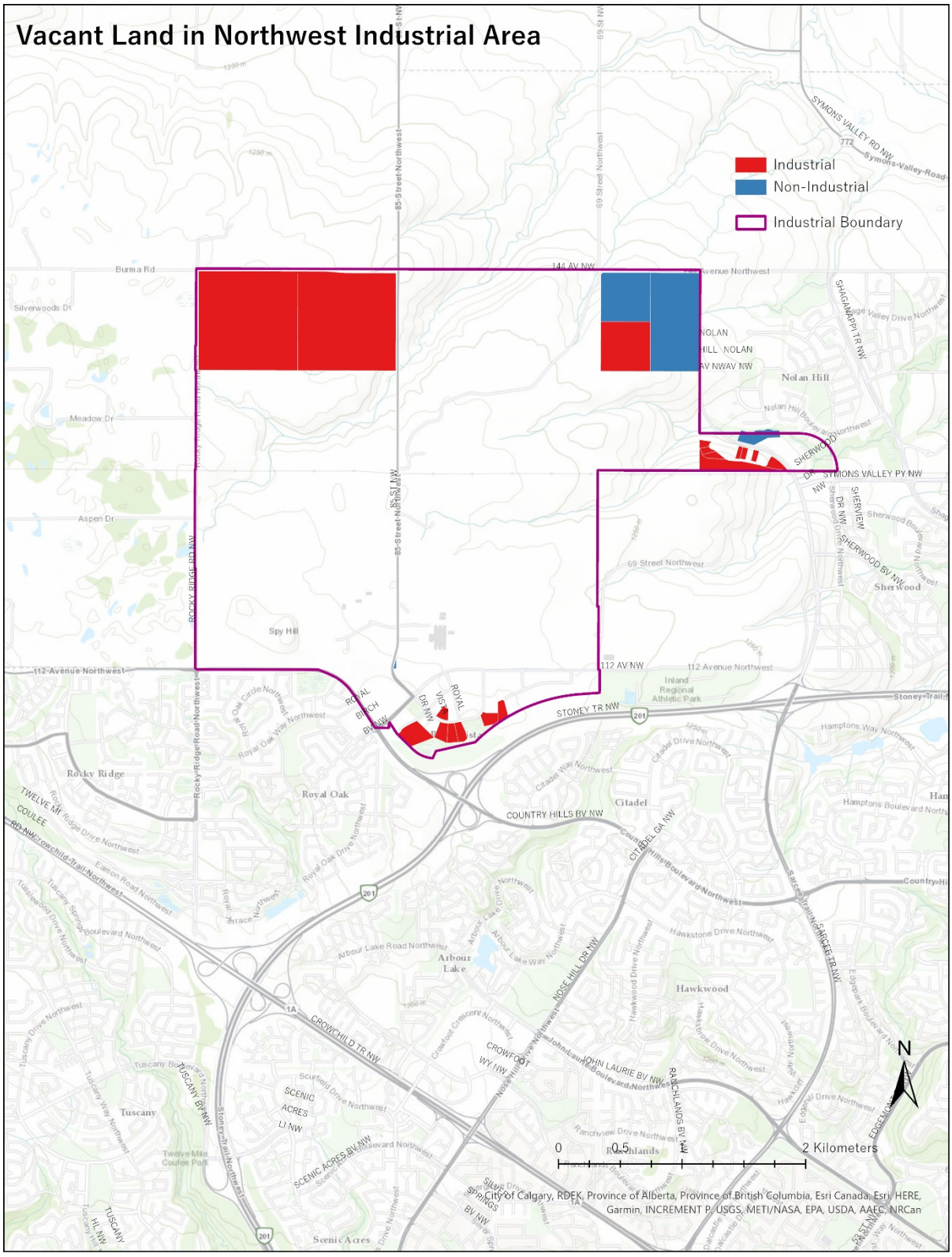
VACANT LAND SUPPLY BY TYPE AND BY SECTOR

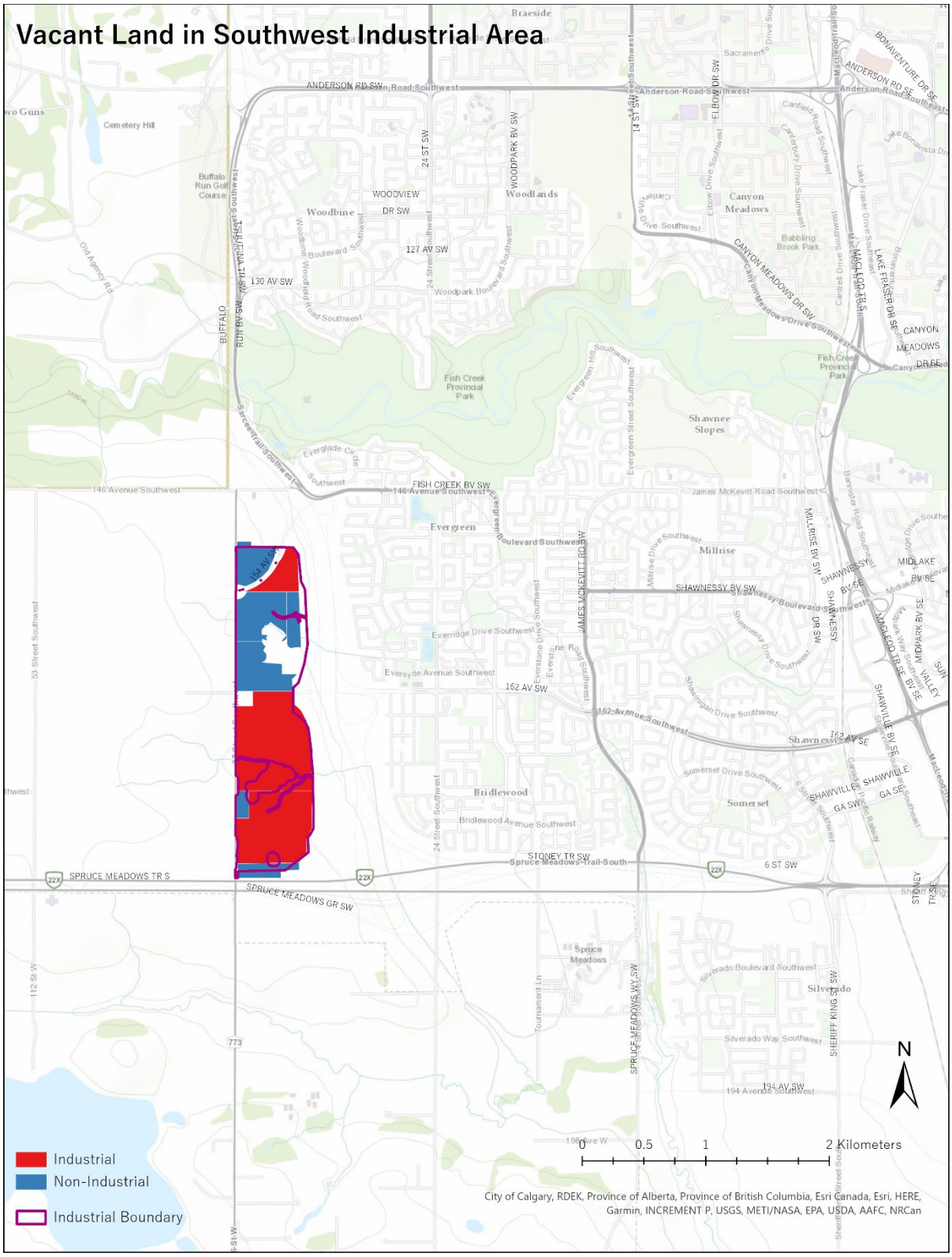
Sector	Industrial (ha)	Industrial (% Share)	Non-Industrial (ha)	Non-Industrial (% Share)	Total (ha)	Total (% Share)
Central	38.7	1%	19.5	1%	**58.2**	**2%**
Northeast	1,237.9	41%	111.3	4%	**1,349.3**	**45%**
Northwest	161.9	5%	50.7	2%	**212.6**	**7%**
Southeast	1,194.8	40%	44.1	1%	**1,239.0**	**41%**
Southwest	84.1	3%	47.8	2%	**131.9**	**4%**
TOTAL	**2,717.5**	**91%**	**273.5**	**9%**	**2,991.0**	**100%**


Vacant Land in Central Industrial Area
Industrial
Non-Industrial
Industrial Boundary
N
0
0.5
1
2 Kilometers
City of Calgary, Province of Alberta, Esri Canada, Esri, HERE, Garmin, INCREMENT P, USGS, METI/ NASA, EPA, USDA, AAFC, NRCan


Vacant Land in Northeast Industrial Area
Industrial
Non-Industrial
Industrial Boundary
N
0
1.25
2.5
5 Kilometers
City of Calgary, Province of Alberta, Esri Canada, Esri, HERE, Garmin, INCREMENT P, USGS, METI/ NASA, EPA, USDA, AAFC, NRCan


Vacant Land in Southeast Industrial Area
Industrial
Non-Industrial
Industrial Boundary
17 AV SE
34 AV SE
50 AV SE
61 AV SE
66 AV SE
72 AV SE
84 AV SE
90 AV SE
94 AV SE
106 AV SE
114 AV SE
PEIGAN TR SE
GLENMORE TR SE
STONEY TR SE
BARLOW TR SE
DUFFERIN BV SE
QUARRY PARK BV SE
DOUGLASDALE BV SE
MCKENZIE TOWNE BV SE
MCKENZIE LAKE BV SE
PRESTWICK GA SE
NEW BRIGHTON GA SE
N
0
1.25
2.5
5 Kilometers
City of Calgary, Province of Alberta, Esri Canada, Esri, HERE, Garmin, INCREMENT P, USGS, METI/ NASA, EPA, USDA, AAFC, NRCan


Vacant Land in Northwest Industrial Area
Industrial
Non-Industrial
Industrial Boundary
Burma Rd
Silverwoods Dr
Meadow Dr
Aspen Dr
Spy Hill
Rocky Ridge
Royal Oak
Citadel
Hawkwood
Arbour Lake
Nolan Hill
Sherwood
Tuscany
Scenic Acres
Inland Regional Athletic Park
144 AV NW
112 AV NW
112 Avenue Northwest
69 Street Northwest
85 Street Northwest
STONEY TR NW
COUNTRY HILLS BV NW
CROWCHILD TR NW
NOSE HILL DR NW
JOHN LAURIE BV NW
RANCHLANDS BV NW
TUSCANY BV NW
SCENIC ACRES BV NW
SHERWOOD BV NW
SYMONS VALLEY PY NW
0
0.5
2 Kilometers
N
City of Calgary, RDEK, Province of Alberta, Province of British Columbia, Esri Canada, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, EPA, USDA, AAFC, NRCan


Vacant Land in Southwest Industrial Area
Industrial
Non-Industrial
Industrial Boundary
0
0.5
1
2 Kilometers
N
City of Calgary, RDEK, Province of Alberta, Province of British Columbia, Esri Canada, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, EPA, USDA, AAFC, NRCan

2.2.4 Vacant Land Supply by Parcel Size

While the aggregate supply of vacant lands across the city's industrial areas is described above, a refined assessment based on parcel size provides a more in-depth view of the nature of available industrial land. One industrial market trend over the past decade or more has been the development of increasingly large warehouse and distribution properties with taller ceiling clear heights. These major developments require large sites not only to accommodate the building itself, but also the required truck parking/turning, along with on-site outdoor storage that may be needed.

The exhibits below illustrate the supply of vacant industrial land by sector across a range of parcel size cohorts, both by land area and by count of parcels by cohort. There are 68 sites citywide that are 10 hectares in size or greater which together account for 80% of the total vacant land inventory. These sites offer considerable future capacity for multi-phased developments of large format warehouse/distribution facilities or other land-extensive industrial uses. There is also a considerable supply of lands in the 5-10 hectare range (over 220 hectares across 32 sites). The 1-5 hectare cohort accounts for the largest share of vacant lands by count of parcels (over 110 sites). Smaller sites (less than 1 hectare) are plentiful across the city, but due to their size offer limited development potential in many instances, influenced by factors including their location, orientation, and frontage.

By location, the Northeast and Southeast sectors are home to a similar supply of very large, vacant industrial sites (approximately 840 and 830 hectares, respectively, on 43 total sites). The options for users seeking a large parcel of land elsewhere in the city are limited, as there are fewer than 10 sites larger than 5 hectares across the Central, Northwest, and Southwest markets combined.

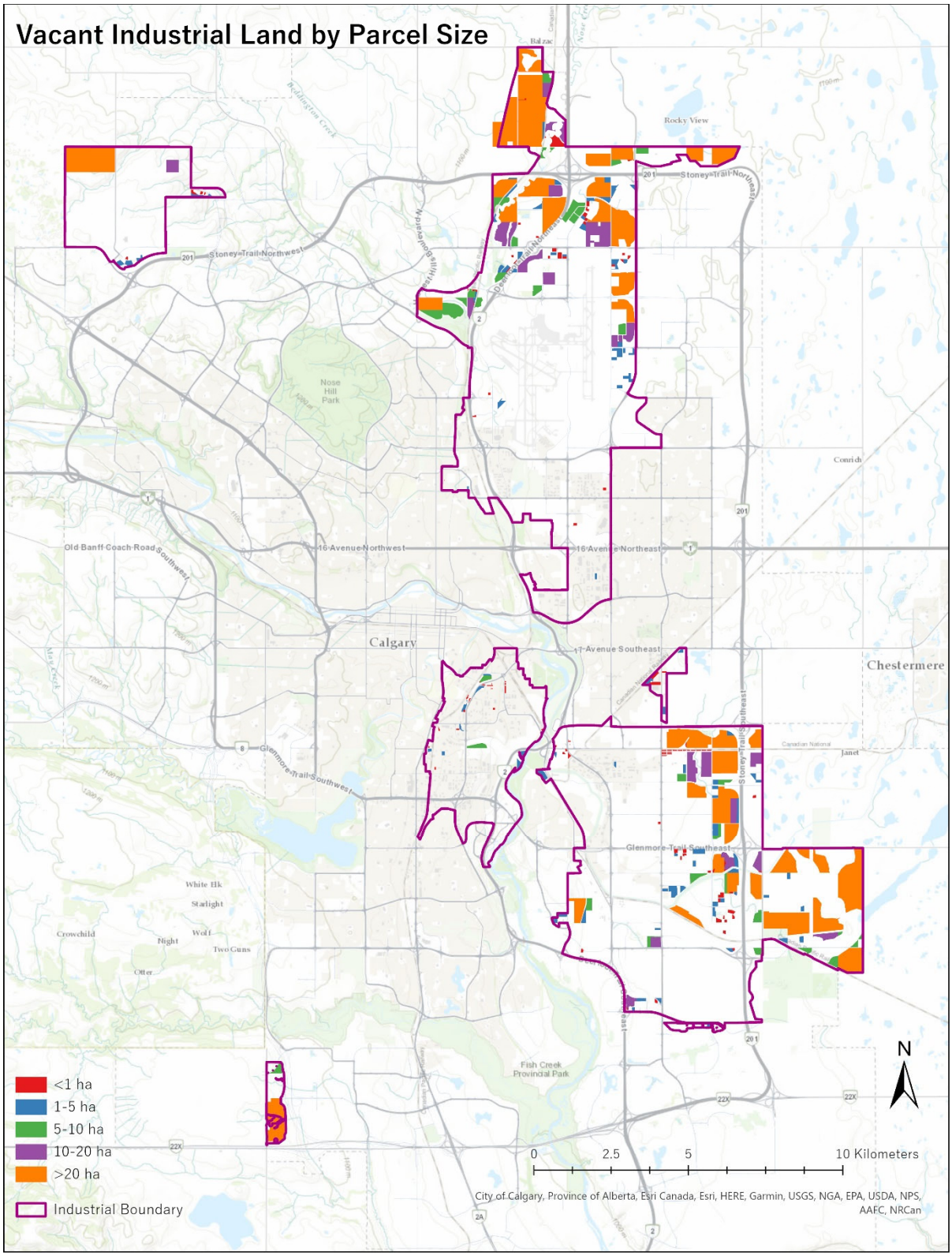
VACANT INDUSTRIAL LAND BY PARCEL SIZE AND SECTOR

Parcel Size	Central	Northeast	Northwest	Southeast	Southwest	Total
<0.5 ha	4.9	1.9	2.1	7.1	0.0	**16.1**
0.5-1 ha	2.5	22.7	1.4	36.8	0.0	**63.4**
1-5 ha	18.4	88.4	14.7	117.5	0.0	**238.9**
5-10 ha	12.9	119.1	0.0	80.7	7.6	**220.3**
10-20 ha	0.0	162.7	16.1	122.0	0.0	**300.9**
>20 ha	0.0	843.2	127.5	830.8	76.5	**1,878.0**
TOTAL	**38.7**	**1,237.9**	**161.9**	**1,194.8**	**84.1**	**2,717.5**

VACANT INDUSTRIAL LAND BY PARCEL SIZE AND SECTOR – SHARE OF TOTAL LAND AREA

Parcel Size	Central	Northeast	Northwest	Southeast	Southwest	Total
<0.5 ha	0%	0%	0%	0%	0%	**1%**
0.5-1 ha	0%	1%	0%	1%	0%	**2%**
1-5 ha	1%	3%	1%	4%	0%	**9%**
5-10 ha	0%	4%	0%	3%	0%	**8%**
10-20 ha	0%	6%	1%	4%	0%	**11%**
>20 ha	0%	31%	5%	31%	3%	**69%**
TOTAL	**1%**	**46%**	**6%**	**44%**	**3%**	**100%**

VACANT INDUSTRIAL LAND BY PARCEL SIZE AND SECTOR – COUNT OF PARCELS						
Parcel Size	**Central**	**Northeast**	**Northwest**	**Southeast**	**Southwest**	**Total**
<0.5 ha	31	9	5	30	0	**75**
0.5-1 ha	4	30	2	53	0	**89**
1-5 ha	8	45	8	50	0	**111**
5-10 ha	2	17	0	12	1	**32**
10-20 ha	0	11	1	9	0	**21**
>20 ha	0	21	2	22	2	**47**
TOTAL	**45**	**133**	**18**	**176**	**3**	**375**


Vacant Industrial Land by Parcel Size
Balzac
Rocky View
Stoney Trail Northeast
Stoney Trail Northwest
Nose Hill Park
Conrich
Old Banff Coach Road Southwest
16 Avenue Northwest
16 Avenue Northeast
Calgary
17 Avenue Southeast
Chestermere
Glenmore Trail Southwest
Glenmore Trail Southeast
Janet
White Elk
Starlight
Crowchild
Night
Wolf
Two Guns
Otter
Fish Creek Provincial Park
<1 ha
1-5 ha
5-10 ha
10-20 ha
>20 ha
Industrial Boundary
N
0
2.5
5
10 Kilometers
City of Calgary, Province of Alberta, Esri Canada, Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS, AAFC, NRCan

2.2.5 Vacant Land Supply by Land Use District (Zone)

The City of Calgary has seven industrial land use districts (summarized below). In addition, certain parcels of land with a Direct Control (DC) or Special Purpose – Future Urban Development (S-FUD) designation have been included in the supply of vacant industrial lands for the purposes of this analysis. There is also a parcel identified as RF which is a historic zone associated with lands that were formerly part of Rocky View County included in the present supply of vacant industrial land.

Calgary's seven existing industrial land use districts are as follows:

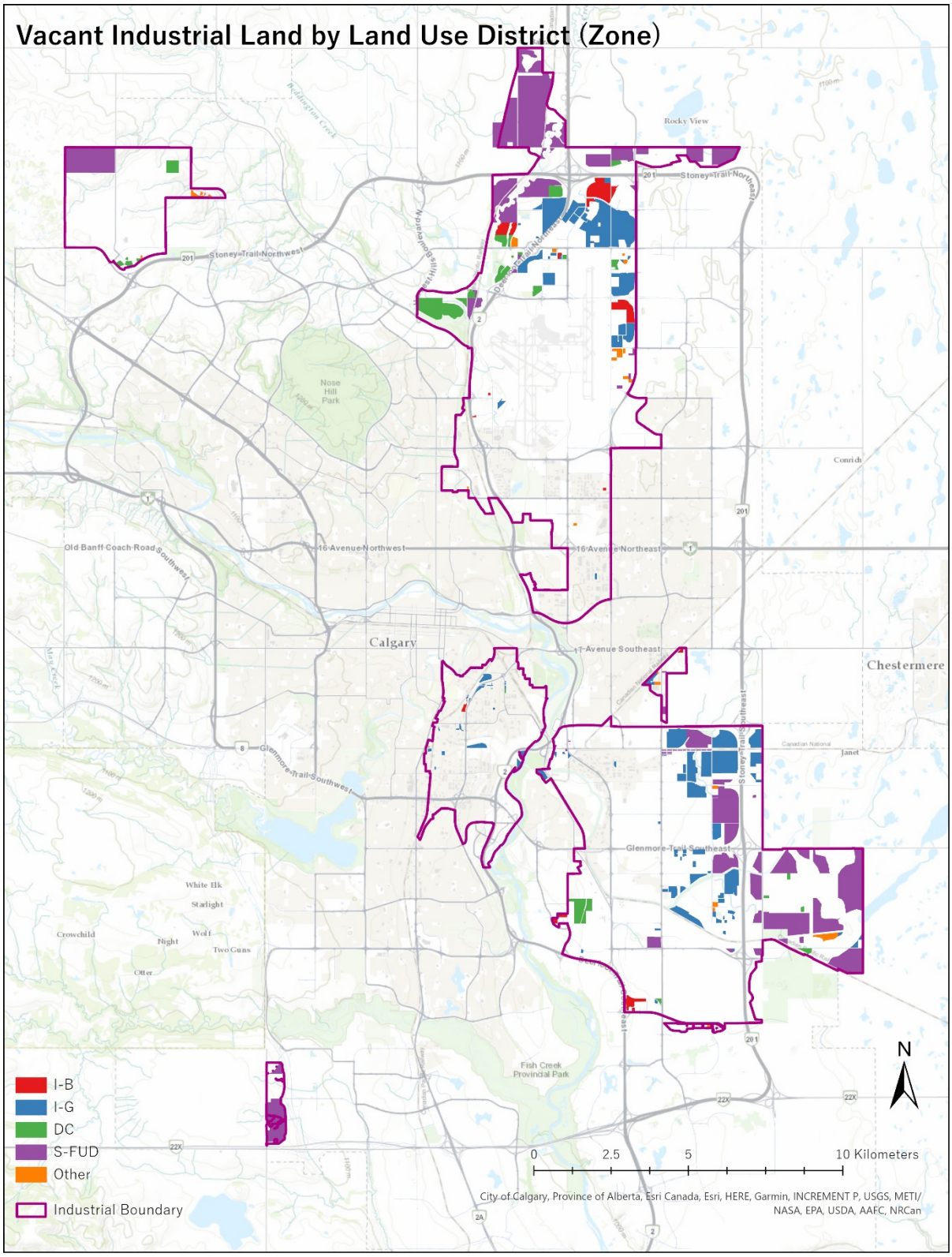
- **(I-B) Industrial – Business District:** I-B is an industrial designation that is primarily for business park uses with high quality buildings in a campus-like setting, typically in highly visible locations next to major roadways.
- **(I-C) Industrial – Commercial District:** I-C is an industrial designation that allows light industrial and limited small-scale commercial uses that are compatible with adjacent industrial areas.
- **(I-E) Industrial – Edge District:** I-E is an industrial designation that allows a limited range of low impact light industrial uses that are suitable in close proximity to residential areas.
- **(I-G) Industrial – General District:** I-G is an industrial designation that is primarily for a wide range of general industrial uses.
- **(I-H) Industrial – Heavy District:** I-H is a heavy industrial designation that is primarily for large, purpose-built heavy industrial developments that typically locate close to hazardous goods routes and rail lines.
- **(I-O) Industrial – Outdoor District:** I-O is an industrial designation that is primarily for outdoor storage, salvage, and equipment yard uses on land that has limited or no municipal services.
- **(I-R) Industrial – Redevelopment District:** I-R is an industrial designation applied to seven older industrial areas that were developed before current land use standards were introduced. Properties in these areas often have significant development constraints that affect matters such as parking, access, and landscaping.[1]

Lands with Special Purpose – Future Urban Development (S-FUD) designation total approximately 1,550 hectares (approximately 115 parcels of land) and account for close to 60% of the overall vacant industrial land supply citywide (the majority of which are located in the Southeast and Northeast sectors). Lands within the Industrial – General zone (I-G) account for the next largest share (just less than 30%), with a total of close to 800 hectares across over 150 parcels of land (again, largely in the Southeast and Northeast). The balance of the land use districts account for the remaining approximately 400 hectares of vacant industrial land citywide (roughly a 15% share).

[1] https://www.calgary.ca/planning/land-use/districts.html

VACANT INDUSTRIAL LAND BY LAND USE DISTRICT AND SECTOR							
Land Use District	**Central (ha)**	**Northeast (ha)**	**Northwest (ha)**	**Southeast (ha)**	**Southwest (ha)**	**Total (ha)**	**Share**
I-B	2.8	100.0	0.0	22.8	0.0	**125.5**	**5%**
I-C	0.0	11.2	9.5	8.2	0.0	**29.0**	**1%**
I-E	0.0	1.3	0.0	0.0	0.0	**1.3**	**<1%**
I-G	34.9	364.0	0.0	389.3	0.0	**788.1**	**29%**
I-H	0.0	0.0	0.0	0.0	0.0	**0.0**	**0%**
I-O	0.0	12.9	0.0	1.9	0.0	**14.9**	**1%**
I-R	0.5	0.0	0.0	0.0	0.0	**0.5**	**<1%**
DC	0.6	110.7	24.8	51.6	0.0	**187.6**	**7%**
S-FUD	0.0	637.8	127.5	708.3	84.1	**1,557.7**	**57%**
RF	0.0	0.0	0.0	12.8	0.0	**12.8**	**<1%**
TOTAL	**38.7**	**1,237.9**	**161.9**	**1,194.8**	**84.1**	**2,717.5**	**100%**
Share	**1%**	**46%**	**6%**	**44%**	**3%**	**100%**	

As identified by City staff, vacant non-industrial sites located within the industrial areas have a range of land use designation including Future Urban Development, Regional Commercial, Direct Control, City Regional Infrastructure, and others. Together these vacant non-industrial lands within industrial areas amount to just less than 300 hectares.


Vacant Industrial Land by Land Use District (Zone)
I-B
I-G
DC
S-FUD
Other
Industrial Boundary
N
0
2.5
5
10 Kilometers
City of Calgary, Province of Alberta, Esri Canada, Esri, HERE, Garmin, INCREMENT P, USGS, METI/ NASA, EPA, USDA, AAFC, NRCan
Calgary
Chestermere
Rocky View
Conrich
Nose Hill Park
Fish Creek Provincial Park
Stoney Trail Northwest
Stoney Trail Northeast
Stoney Trail Southeast
16 Avenue Northwest
16 Avenue Northeast
17 Avenue Southeast
Glenmore Trail Southwest
Glenmore Trail Southeast
Old Banff Coach Road Southwest
Janet
White Elk
Starlight
Crowchild
Night
Wolf
Two Guns
Otter

2.2.6 Vacant Land Supply by Servicing Status

City staff from various departments collaborated to assemble a portrait of the servicing status of Calgary's vacant industrial lands. The land supply has been categorized as follows:

- **Not Serviced –** There are no existing municipal services in place at the site (none of the five leading infrastructure types: municipal water, sanitary sewer, stormwater, emergency services, and transportation infrastructure).
- **Partially Serviced –** Some of the five leading types of infrastructure are in place, but some elements remain to be provided in order to achieve full servicing requirements.
- **Serviced –** These lands have municipal water, sanitary sewer, stormwater, emergency services, and transportation infrastructure in place (the five leading infrastructure types). There are two sub-categories of Serviced land:
  - **Serviced and Shovel-Ready** – These lands have the five leading infrastructure types in place, as well as a Development Agreement. Thus, the property is considered "shovel-ready" for the purposes of this report. Notably, a large site that an owner may intend to subdivide into multiple smaller lots would have a longer time to proceed to vertical development, as the necessary on-site servicing is required in advance. In contrast, sites that are intended to accommodate a single building may proceed to the vertical construction phase much sooner.
  - **Serviced and Not Shovel-Ready** – These lands have the five leading infrastructure types in place, but do not have a Development Agreement.

Large development areas normally undertaken by private developers require a Development Agreement between The City and the developer. A Development Agreement is a legal contract that sets out the terms and conditions under which development of the lands are to take place within the city, including the responsibility to construct public facilities and associated financial obligations.[2]

A detailed assessment of land servicing is a complex endeavour requiring considerable resources to identify the prospective timing, costing, and municipal finance impacts of extending services to new areas. In this report, the Consultant Team has profiled the status of the city's vacant industrial land supply circa late-2022/early 2023. Comments on the potential provision and/or prioritization of future servicing are not within the scope of this assignment. However, decisions regarding the future extension of services to Partially Serviced or Not Serviced lands may be made by City staff to achieve the recommendations that emanate from the supply and demand analysis within this report.

As per the exhibit below, the Not Serviced lands (four parcels totaling roughly 140 hectares, accounting for a 5% share of the overall supply) are sites located in the Southwest (about 80 hectares) and Northeast (about 60 hectares) sectors, and almost all have the Special Purpose – Future Urban Development (S-FUD) designation.

At a 60% share, Partially Serviced lands characterize the majority of the vacant land supply citywide, totaling just over 1,600 hectares across some 80 sites. A substantial share is found both in the Southeast (nearly 900 hectares) and Northeast (nearly 600 hectares) sectors. Partially Serviced lands represent the majority of lands in the Northwest sector.

Serviced vacant industrial development lands represent a 35% share of the city's supply, totaling almost 960 hectares across nearly 290 sites. The Northeast sector is home to the most significant quantum of Serviced lands, at over 580 hectares (just over 100 parcels of land), accounting for about a 21% of the overall vacant land supply citywide, and a 60% share of the city's vacant Serviced industrial land. The Southeast sector also has a vast supply of Serviced vacant industrial lands, with over 310 hectares (almost 125 land parcels), accounting for one-third of the supply in the city.

[2] https://www.calgary.ca/development/agreements.html

In terms of Serviced and Shovel-Ready vacant lands, there is a citywide supply of 186 hectares spread across the Northeast (almost 120 hectares across 27 sites) and Southeast (62.5 hectares across 25 sites), with only a limited supply in the Northwest submarket (less than 4 hectares across 7 sites). There are no Serviced and Shovel-Ready lands in either the Central or Southwest submarkets. Altogether, the Serviced and Shovel-Ready sites account for just a 7% share of overall vacant lands within the city's industrial areas.

VACANT INDUSTRIAL LAND BY SERVICING STATUS AND SECTOR

Parcel Size	Central	Northeast	Northwest	Southeast	Southwest	Total
Not Serviced (ha)	0.0	61.6	0.0	0.0	76.5	**138.1**
Partially Serviced (ha)	0.0	594.4	143.7	881.8	0.0	**1,619.8**
Serviced (ha)	38.7	581.9	18.2	313.1	7.6	**959.5**
TOTAL	**38.7**	**1,237.9**	**161.9**	**1,194.8**	**84.1**	**2,717.5**
Serviced and Shovel-Ready (ha)	0.0	119.9	3.8	62.5	0.0	**186.3**
Serviced and Not Shovel-Ready (ha)	38.7	462.0	14.4	250.5	7.6	**773.3**
TOTAL SERVICED	**38.7**	**581.9**	**18.2**	**313.1**	**7.6**	**959.5**

The exhibit below illustrates the servicing status and share of total vacant industrial land supply.

VACANT INDUSTRIAL LAND BY SERVICING STATUS AND SECTOR

Parcel Size	Central	Northeast	Northwest	Southeast	Southwest	Total
Not Serviced	0%	2%	0%	0%	3%	**5%**
Partially Serviced	0%	22%	5%	32%	0%	**60%**
Serviced	1%	21%	1%	12%	0%	**35%**
TOTAL	**1%**	**46%**	**6%**	**44%**	**3%**	**100%**
Serviced and Shovel-Ready (ha)	0%	21%	21%	20%	0%	**19%**
Serviced and Not Shovel-Ready (ha)	100%	79%	79%	80%	100%	**81%**
TOTAL SERVICED	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

The exhibit below illustrates the supply of vacant industrial land by servicing status and parcel size. Although 75% of the city's vacant industrial land less than 10 hectares in size is Serviced, only about 30% of this land (58 hectares) is Serviced and Shovel-Ready. Lands within a range of 10-20 hectares are a mix of Partially Serviced and Serviced (roughly evenly divided). Parcels greater than 20 hectares in size are predominantly Partially Serviced (1,340 hectares, or an approximately 70% share), while Serviced lands account for the next largest share (nearly 400 hectares, or a 20% share). Over 80% of the supply of vacant Partially Serviced lands are parcels larger than 20 hectares, meaning that future subdivision of these lands is likely necessary to facilitate development. All of the Not Serviced lands are parcels greater than 20 hectares in size, which are longer-term industrial development lands situated on the city's periphery.

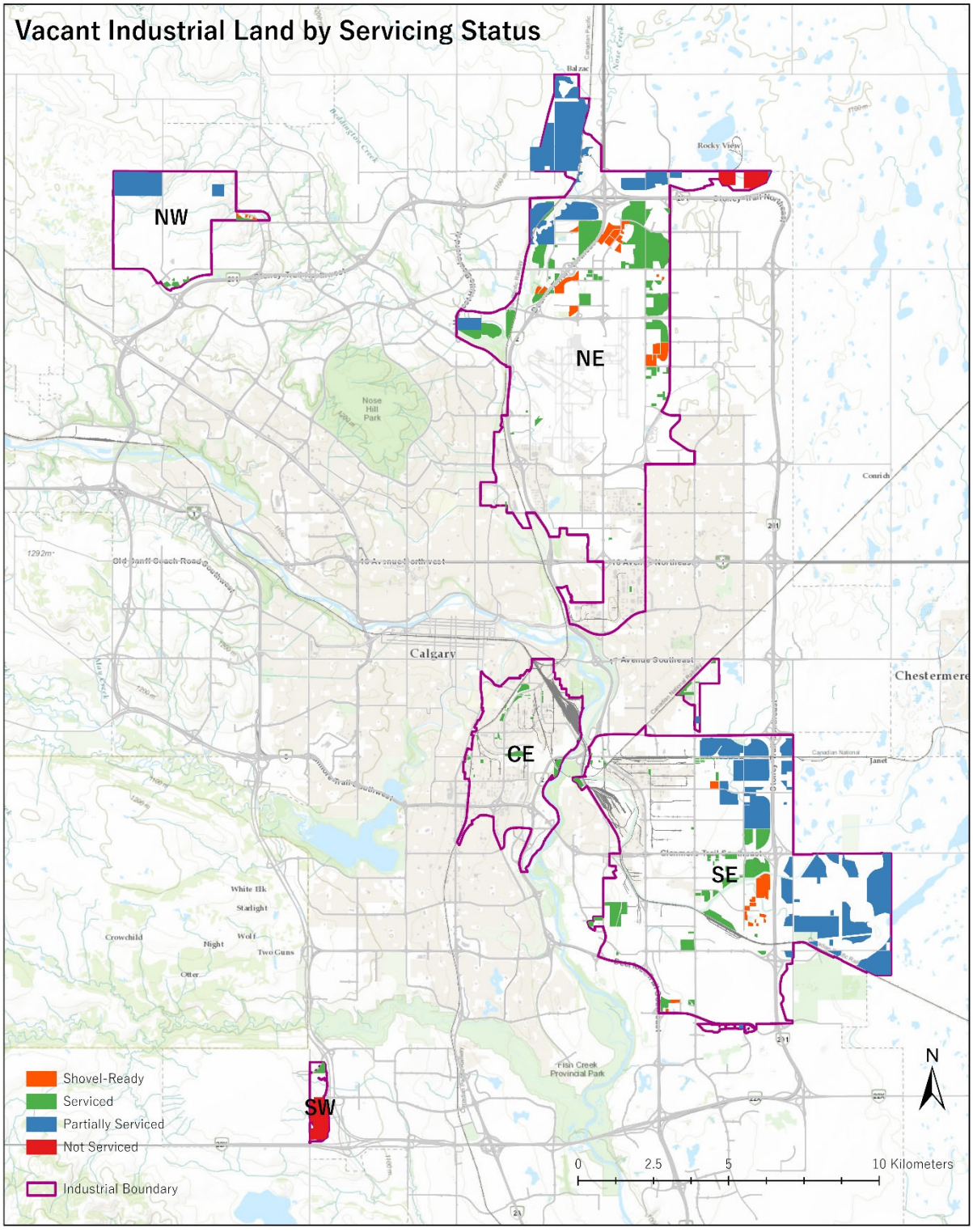
Serviced and Shovel-Ready parcels greater than 10 hectares in size total just 70 hectares (4 sites), accounting for a modest 3% of all parcels greater than 10 hectares citywide. This indicates that there is a very limited supply of large, vacant, Shovel-Ready properties available in Calgary. For reference, a 10-hectare parcel can accommodate approximately 430,000 sf of industrial space (assuming a 40% site coverage). Therefore, a 1 million sf building (e.g., a large, modern warehouse/distribution centre) requires approximately 23.2 hectares of land (again, assuming a 40% site coverage).

VACANT INDUSTRIAL LAND BY SERVICING STATUS AND PARCEL SIZE

Parcel Size	<0.5 ha	0.5-1 ha	1-5 ha	5-10 ha	10-20 ha	>20 ha	Total
Not Serviced	0.0	0.0	0.0	0.0	0.0	138.1	**138.1**
Partially Serviced	1.3	5.3	43.9	82.5	146.0	1,340.8	**1,619.8**
Serviced	14.8	58.1	195.0	137.7	154.9	399.1	**959.5**
TOTAL	**16.1**	**63.4**	**238.9**	**220.3**	**300.9**	**1,878.0**	**2,717.5**
Serviced and Shovel-Ready (ha)	2.4	19.3	36.6	58.3	46.8	22.9	**186.3**
Serviced and Not Shovel-Ready (ha)	12.4	38.8	158.4	79.4	108.1	376.2	**773.3**
TOTAL SERVICED	**14.8**	**58.1**	**195.0**	**137.7**	**154.9**	**399.1**	**959.5**

VACANT INDUSTRIAL LAND BY SERVICING STATUS AND PARCEL SIZE – SHARE OF TOTAL LAND AREA

Parcel Size	<0.5 ha	0.5-1 ha	1-5 ha	5-10 ha	10-20 ha	>20 ha	Total
Not Serviced	0%	0%	0%	0%	0%	5%	**5%**
Partially Serviced	0%	0%	2%	3%	5%	49%	**60%**
Serviced	1%	2%	7%	5%	6%	15%	**35%**
TOTAL	**1%**	**2%**	**9%**	**8%**	**11%**	**69%**	**100%**
Serviced and Shovel-Ready (ha)	16%	33%	19%	42%	30%	6%	**19%**
Serviced and Not Shovel-Ready (ha)	84%	67%	81%	58%	70%	94%	**81%**
TOTAL SERVICED	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**


Vacant Industrial Land by Servicing Status
NW
NE
CE
SE
SW
Calgary
Chestermere
Balzac
Rocky View
Conrich
Janet
Nose Hill Park
Fish Creek Provincial Park
White Elk
Starlight
Crowchild
Night
Wolf
Two Guns
Otter
Shovel-Ready
Serviced
Partially Serviced
Not Serviced
Industrial Boundary
N
0
2.5
5
10 Kilometers

2.2.7 Vacant Land Supply by Ownership

Of the approximately 3,000 hectares of vacant land within the city's industrial areas, The City of Calgary owns approximately 25% of it (715 hectares across 100 parcels), while private landowners control the majority share, at roughly 75% (approximately 2,275 hectares and nearly 340 parcels). Of The City of Calgary's vacant land holdings within industrial areas, almost 95% is industrial land (675 hectares), while the balance is identified as non-industrial (nearly 40 hectares).

OWNERSHIP OF VACANT LAND						
Landowner	**Industrial (ha)**	**Industrial (% Share)**	**Non-Industrial (ha)**	**Non-Industrial (% Share)**	**Total (ha)**	**Total (% Share)**
City of Calgary	675.1	23%	39.9	1%	**715.0**	**24%**
Private	2,042.3	68%	233.6	8%	**2,276.0**	**76%**
TOTAL	**2,717.5**	**91%**	**273.5**	**9%**	**2,991.0**	**100%**

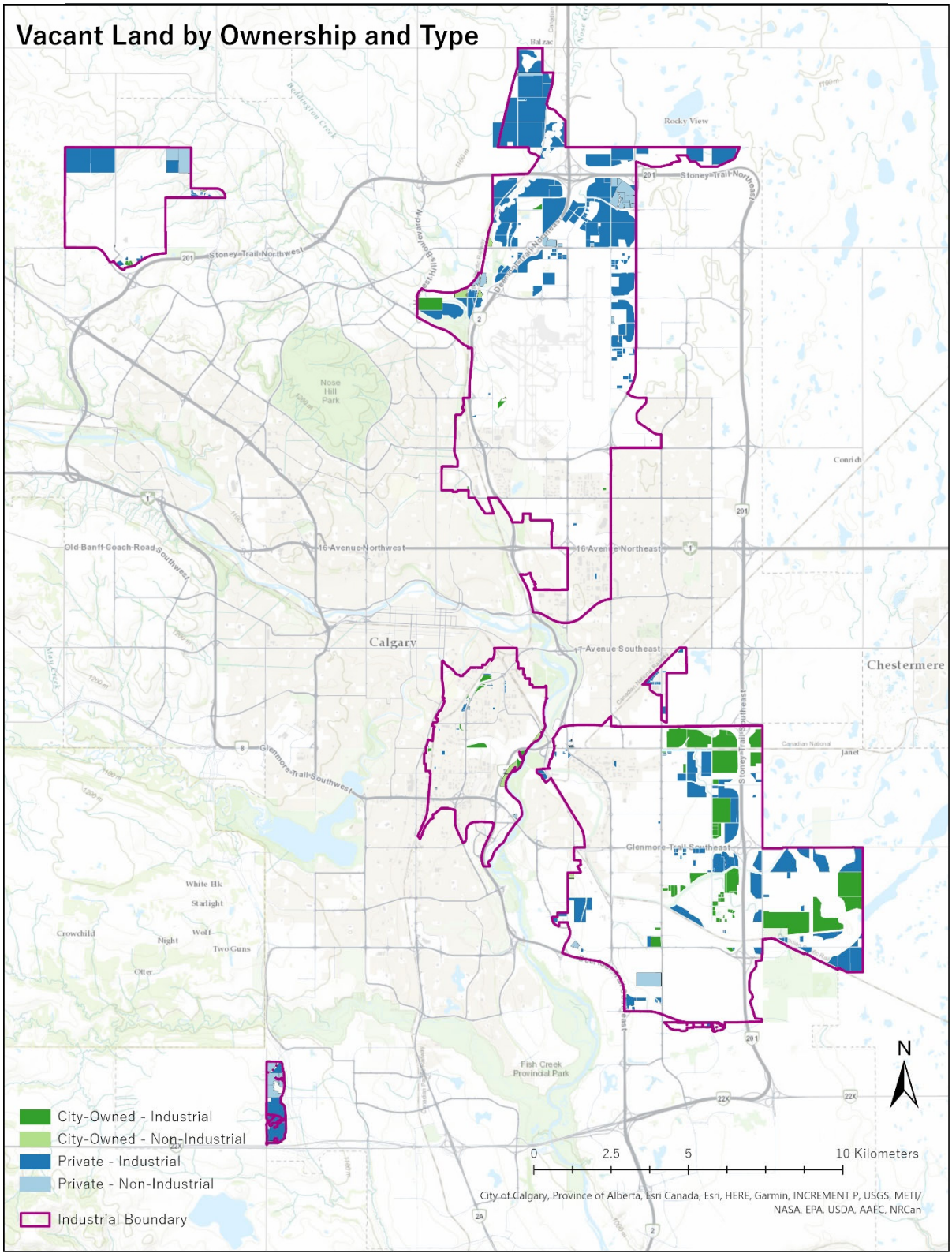
By sector, The City of Calgary's largest vacant industrial land holdings are in the Southeast (over 600 hectares across 56 sites), accounting for almost 90% of its total. The City owns some 40 hectares of land in the Northeast (5 sites), close to 30 hectares in the Central sector (20 sites), and less than 4 hectares in the Northwest (3 sites). There are no City-owned lands in the Southwest industrial area.

The City of Calgary owns almost 40 hectares of vacant non-industrial lands comprising 16 sites across the city's industrial areas – primarily in the Central and Northeast sectors.

CITY-OWNED VACANT LANDS BY TYPE AND SECTOR						
	Central	**Northeast**	**Northwest**	**Southeast**	**Southwest**	**Total**
Industrial (ha)	28.6	41.0	3.5	602.0	0.0	**675.1**
% Share of Total	4%	6%	1%	89%	0%	**100%**
Non-Industrial (ha)	17.3	16.5	2.8	3.3	0.0	**39.9**
% Share of Total	43%	41%	7%	8%	0%	**100%**

The majority of City-owned industrial lands are located in the Southeast sector (close to 90% share). Most of the City-owned lands are Partially Serviced (roughly 80%). Almost all of the City-owned Serviced and Shovel-Ready lands are situated in the Southeast.

VACANT CITY-OWNED INDUSTRIAL LAND BY SERVICING STATUS AND SECTOR						
	Central	**Northeast**	**Northwest**	**Southeast**	**Southwest**	**Total**
Not Serviced	0.0	0.0	0.0	0.0	0.0	**0.0**
Partially Serviced	0.0	32.0	0.0	496.3	0.0	**528.3**
Serviced	28.6	9.0	3.5	105.7	0.0	**146.8**
TOTAL	**28.6**	**41.0**	**3.5**	**602.0**	**0.0**	**675.1**
Serviced and Shovel-Ready (ha)	0.0	3.2	0.0	51.2	0.0	**54.3**
Serviced and Not Shovel-Ready (ha)	28.6	5.8	3.5	54.5	0.0	**92.5**
TOTAL SERVICED	**28.6**	**9.0**	**3.5**	**105.7**	**0.0**	**146.8**


Vacant Land by Ownership and Type
Balzac
Rocky View
Stoney Trail Northeast
Stoney Trail Northwest
Nose Hill Park
Conrich
Old Banff Coach Road Southwest
16 Avenue Northwest
16 Avenue Northeast
Calgary
17 Avenue Southeast
Chestermere
Glenmore Trail Southwest
Glenmore Trail Southeast
Janet
White Elk
Starlight
Crowchild
Night
Wolf
Two Guns
Otter
Fish Creek Provincial Park
City-Owned - Industrial
City-Owned - Non-Industrial
Private - Industrial
Private - Non-Industrial
Industrial Boundary
N
0
2.5
5
10 Kilometers
City of Calgary, Province of Alberta, Esri Canada, Esri, HERE, Garmin, INCREMENT P, USGS, METI/ NASA, EPA, USDA, AAFC, NRCan

2.3 Attributes of Occupied Land Supply in Industrial Areas

2.3.1 Overview

The following section profiles the occupied land supply across the city's industrial areas. These are sites that are home to one or more buildings – both industrial and non-industrial. A range of non-industrial land uses are present in Calgary's industrial areas, including retail-commercial properties, offices, hotel/motel properties, some extent of residential uses, and a range of other types (public utilities, public assembly/religious buildings, schools, fire stations, and more).

2.3.2 Overall Occupied Land Supply

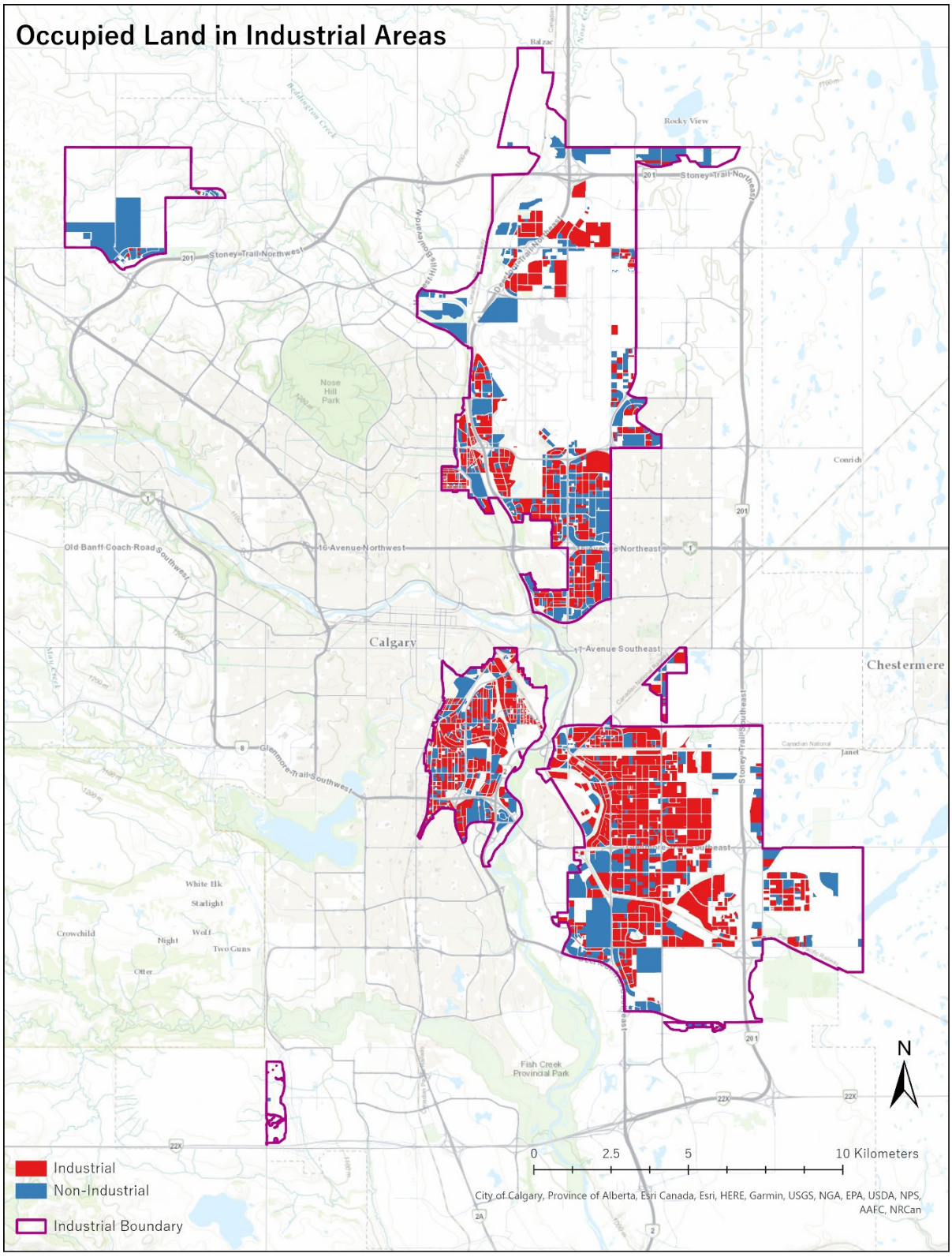
Calgary has nearly 6,200 hectares of occupied land within its industrial areas across over 4,200 sites. Of this overall supply, close to 3,600 hectares are industrial lands (over 3,000 sites comprising a roughly 60% share of the lands) and approximately 2,600 hectares are non-industrial lands (roughly 40% share across nearly 1,200 sites) as characterized by the Consultant Team for the purposes of this analysis. Given that these are developed lands, this land supply can be considered as net hectares, as opposed the gross hectares assumption made regarding the city's vacant (undeveloped) lands discussed previously.

2.3.3 Occupied Land Supply by Sector

By sector, the Southeast is home to the city's largest inventory of occupied lands in industrial areas (over 2,800 hectares, accounting for a 45% share of Calgary's total), followed by the Northeast (over 2,200 hectares, representing roughly 35% of the total). The Central industrial area has an occupied land inventory of close to 900 hectares (about 15% share of total), with nearly 300 hectares in the Northwest (5% share), and a negligible amount in the Southwest.

OCCUPIED LAND SUPPLY BY TYPE AND BY SECTOR

Sector	Industrial (ha)	Industrial (% Share)	Non-Industrial (ha)	Non-Industrial (% Share)	Total (ha)	Total (% Share)
Central	531.2	9%	337.9	5%	**869.1**	**14%**
Northeast	1,097.2	18%	1,118.8	18%	**2,216.0**	**36%**
Northwest	6.0	0%	282.4	5%	**288.4**	**5%**
Southeast	1,953.3	32%	861.0	14%	**2,814.3**	**45%**
Southwest	0.0	0%	1.6	0%	**1.6**	**0%**
TOTAL	**3,587.8**	**58%**	**2,601.7**	**42%**	**6,189.4**	**100%**


Occupied Land in Industrial Areas
Balzac
Rocky View
Stoney Trail Northeast
Stoney Trail Northwest
Nose Hill Park
Conrich
Old Banff Coach Road Southwest
16 Avenue Northwest
Calgary
17 Avenue Southeast
Chestermere
Glenmore Trail Southwest
Janet
White Elk
Starlight
Crowchild
Night
Wolf
Two Guns
Otter
Fish Creek Provincial Park
N
Industrial
Non-Industrial
Industrial Boundary
0
2.5
5
10 Kilometers
City of Calgary, Province of Alberta, Esri Canada, Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS, AAFC, NRCan

2.3.4 Occupied Land Supply by Land Use District (Zone)

Calgary's occupied industrial lands include sites designated among the seven industrial land use districts (as summarized previously). In addition, certain parcels of land with a Direct Control (DC) or Special Purpose – Future Urban Development (S-FUD) designation have been included in the supply of occupied industrial lands for the purposes of this analysis. There are also a small number of sites with other designations.

The exhibit below identifies the distribution of occupied industrial lands by land use district and by sector. Lands within the Industrial – General zone (I-G) account for by far the largest share of the total, at 80% (nearly 2,200 properties citywide).

OCCUPIED INDUSTRIAL LAND BY LAND USE DISTRICT AND SECTOR

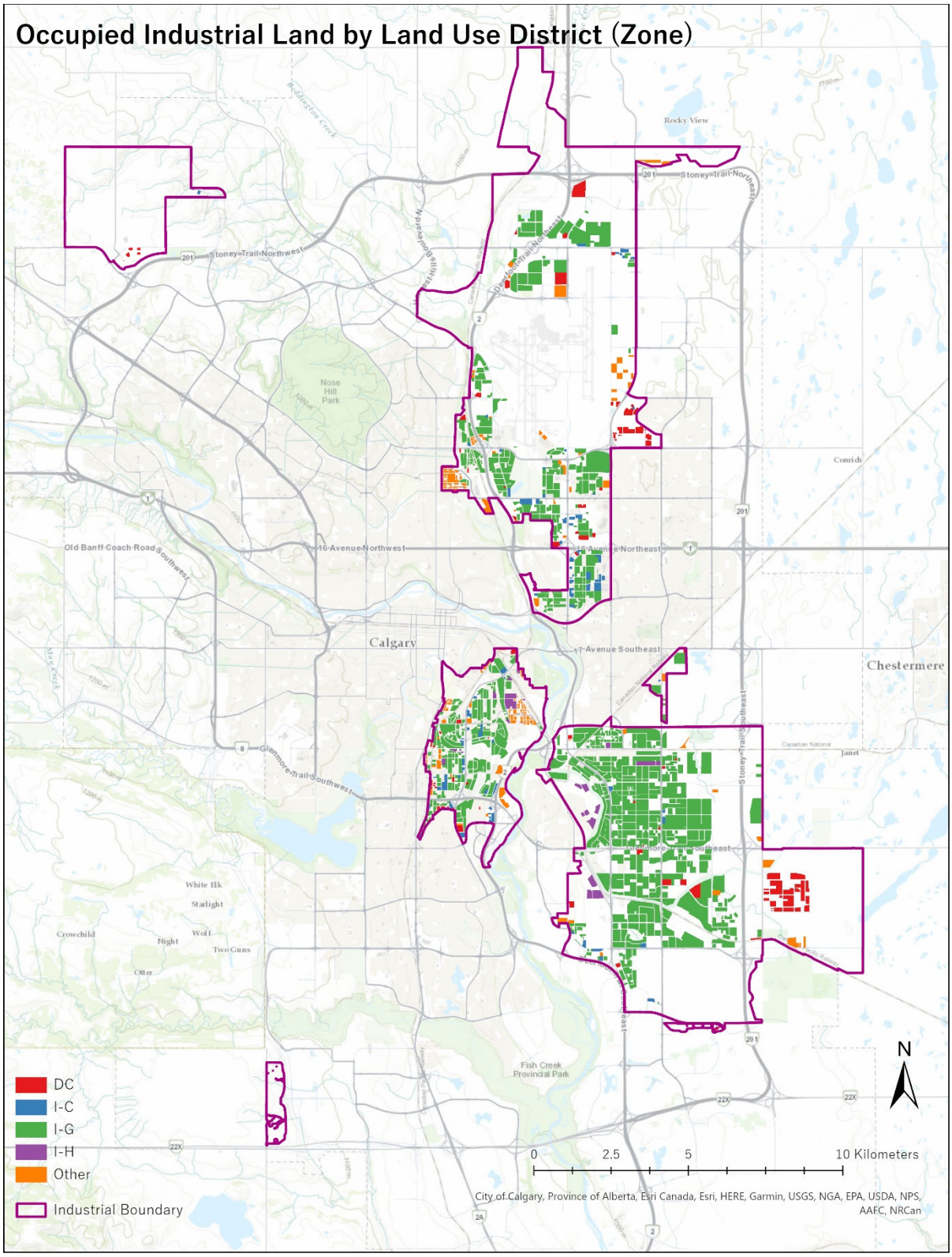
Land Use District	Central (ha)	Northeast (ha)	Northwest (ha)	Southeast (ha)	Southwest (ha)	Total (ha)	Share
I-B	5.3	30.5	0.0	8.5	0.0	**44.2**	**1%**
I-C	44.8	70.6	1.9	18.5	0.0	**135.7**	**4%**
I-E	6.8	5.9	0.0	0.0	0.0	**12.7**	**<1%**
I-G	370.6	804.9	0.0	1,704.2	0.0	**2,879.6**	**80%**
I-H	28.1	0.0	0.0	52.1	0.0	**80.2**	**2%**
I-O	0.0	28.8	0.0	10.5	0.0	**39.3**	**1%**
I-R	30.3	15.8	0.0	0.0	0.0	**46.0**	**1%**
DC	20.6	102.9	4.2	133.5	0.0	**261.2**	**7%**
S-FUD	14.6	7.4	0.0	26.0	0.0	**48.1**	**1%**
Other	10.3	30.4	0.0	0.0	0.0	**40.7**	**1%**
TOTAL	**531.2**	**1,097.2**	**6.0**	**1,953.3**	**0.0**	**3,587.8**	**100%**
Share	**15%**	**31%**	**<1%**	**54%**	**0%**	**100%**	

Occupied non-industrial sites located within the city's industrial areas have a range of land use designation including Commercial zones (Community, Corridor, Neighbourhood, Office, and Regional); Special Purpose zones (Community Institution District, City and Regional Infrastructure District, and Future Urban Development); as well as Direct Control. There are also non-industrial uses situated on lands that have an industrial land use designation/zone, as determined by analysis of data provided by City staff, including property assessment records. Together these occupied non-industrial lands within industrial areas amount to 2,600 hectares across 1,200 sites.

OCCUPIED NON-INDUSTRIAL LAND BY LAND USE DISTRICT AND SECTOR							
Land Use District	**Central (ha)**	**Northeast (ha)**	**Northwest (ha)**	**Southeast (ha)**	**Southwest (ha)**	**Total (ha)**	**Share**
C-C1	2.5	0.5	0.0	1.8	0.0	**4.8**	**<1%**
C-C2	0.0	34.2	14.9	0.0	0.0	**49.1**	**2%**
C-COR2	0.8	6.5	0.0	1.8	0.0	**9.1**	**<1%**
C-COR3	23.9	88.7	0.0	11.5	0.0	**124.1**	**5%**
C-N2	0.0	2.2	0.0	1.4	0.0	**3.6**	**<1%**
C-O	1.6	5.2	0.0	0.0	0.0	**6.8**	**<1%**
C-R1	8.2	29.6	0.0	0.0	0.0	**37.8**	**1%**
C-R2	0.0	6.2	0.0	0.0	0.0	**6.2**	**<1%**
C-R3	15.8	101.8	0.0	27.1	0.0	**144.7**	**6%**
DC	42.0	155.7	38.3	301.8	0.0	**537.8**	**21%**
I-B	18.5	118.9	1.9	10.2	0.0	**149.4**	**6%**
I-C	33.8	54.5	5.8	39.8	0.0	**133.9**	**5%**
I-E	4.2	0.8	0.0	1.5	0.0	**6.5**	**<1%**
I-G	118.8	109.3	0.0	242.9	0.0	**470.9**	**18%**
I-H	22.4	0.0	0.0	64.6	0.0	**87.0**	**3%**
I-O	0.0	33.3	0.0	10.7	0.0	**44.1**	**2%**
I-R	7.5	2.8	0.0	0.0	0.0	**10.2**	**<1%**
R-1	0.0	0.0	0.6	0.0	0.0	**0.6**	**<1%**
R-MH	0.0	0.0	0.0	46.1	0.0	**46.1**	**2%**
S-CI	2.1	28.7	0.0	2.1	0.0	**33.0**	**1%**
S-CRI	31.7	167.5	6.4	0.0	0.0	**205.6**	**8%**
S-FUD	4.1	172.3	214.6	97.8	1.6	**490.3**	**19%**
TOTAL	**337.9**	**1,118.8**	**282.4**	**861.0**	**1.6**	**2,601.7**	**100%**
Share	**13%**	**43%**	**11%**	**33%**	**<1%**	**100%**	

The Consultant Team has refined the land uses into a set of categories illustrated in the exbibit below. As noted above, industrial is the predominant use, accounting for nearly 60% of the occupied lands within the city's industrial areas, and over 70% of total properties. However, there is a considerable presence of non-industrial uses throughout Calgary's industrial areas due to factors including: (a) the delineation of the industrial area boundaries themselves; (b) land use conversion that has occurred over time; and (c) the need for some extent of nearby services and amenities for workers in these areas (restaurants, financial services, entertainment establishments, etc.).

LAND USES IN INDUSTRIAL AREAS				
Use	**Land (ha)**	**Share**	**Count of Properties**	**Share**
Industrial	3,587.8	58%	3,045	72%
Commercial-Retail	987.5	16%	534	13%
Office	267.2	4%	242	6%
Residential	112.4	2%	42	1%
Hotel/Motel	36.3	1%	31	1%
Other	1,198.2	19%	346	8%
TOTAL	**6,189.4**	**100%**	**4,240**	**100%**


Occupied Industrial Land by Land Use District (Zone)
Rocky View
Stoney Trail Northwest
Stoney Trail Northeast
Nose Hill Park
Conrich
Old Banff Coach Road Southwest
16 Avenue Northwest
16 Avenue Northeast
Calgary
17 Avenue Southeast
Chestermere
Glenmore Trail Southwest
Stoney Trail Southeast
Janet
White Elk
Starlight
Crowchild
Wolf
Night
Two Guns
Otter
Fish Creek Provincial Park
DC
I-C
I-G
I-H
Other
Industrial Boundary
N
0
2.5
5
10 Kilometers
City of Calgary, Province of Alberta, Esri Canada, Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS, AAFC, NRCan

2.3.5 Occupied Industrial Land Supply by Site Coverage

From a land supply perspective, the Consultant Team is particularly interested in identifying the extent of "underutilized" lands within the existing occupied industrial inventory. This is a reference to properties that are currently in use but have a very low site coverage – hence the potential to accommodate additional uses over time (either through an addition to an existing building, the construction of another building on site, or perhaps a property severance to facilitate additional development). However, there are a number of limitations that must be considered, including:

- Does the property exhibit a low site coverage because the remaining lands are being used for outside storage of raw or finished goods, equipment storage, or vehicle parking?
- Does the orientation of the existing building(s) on the site encumber future development?
- Does the land parcel orientation limit future development (such as a triangular or pie-shaped property, which is not as well suited as a rectangular property for development, due to required setbacks and creating a functional building layout)?
- Is there an issue related to accessibility of the undeveloped portion of the property which makes it unlikely to intensify over time?
- Is there a physical reason that the undeveloped lands have not been utilized to date (such as the presence of a waterway, wetlands, or other features [slopes, valley lands, etc.] which could limit the "developable" land area)?
- Is the property owner motivated to intensify uses on the site?

While addressing these questions across all of the identified occupied industrial properties with a low site coverage is not within the scope of this assignment, providing an indication of the prospective extent of future intensification does offer some insights to assist in land use planning for City staff going forward.

The exhibit below identifies the distribution of occupied industrial lands by sector and by site coverage category. Nearly 60% of occupied industrial lands have a site coverage ranging from 20%-50%. 20% of industrial buildings occupy greater than 50% of the site area (a number of which are industrial condominiums which skew the data somewhat, as they may occupy 100% of a site – although this excludes the common area/roadway/other lands which are actually associated with a separate, adjoining land parcel). Properties with less than 20% site coverage are of the most interest to this analysis, since these represent sites that may currently be underutilized, and therefore capable of absorbing additional density through intensification over time.

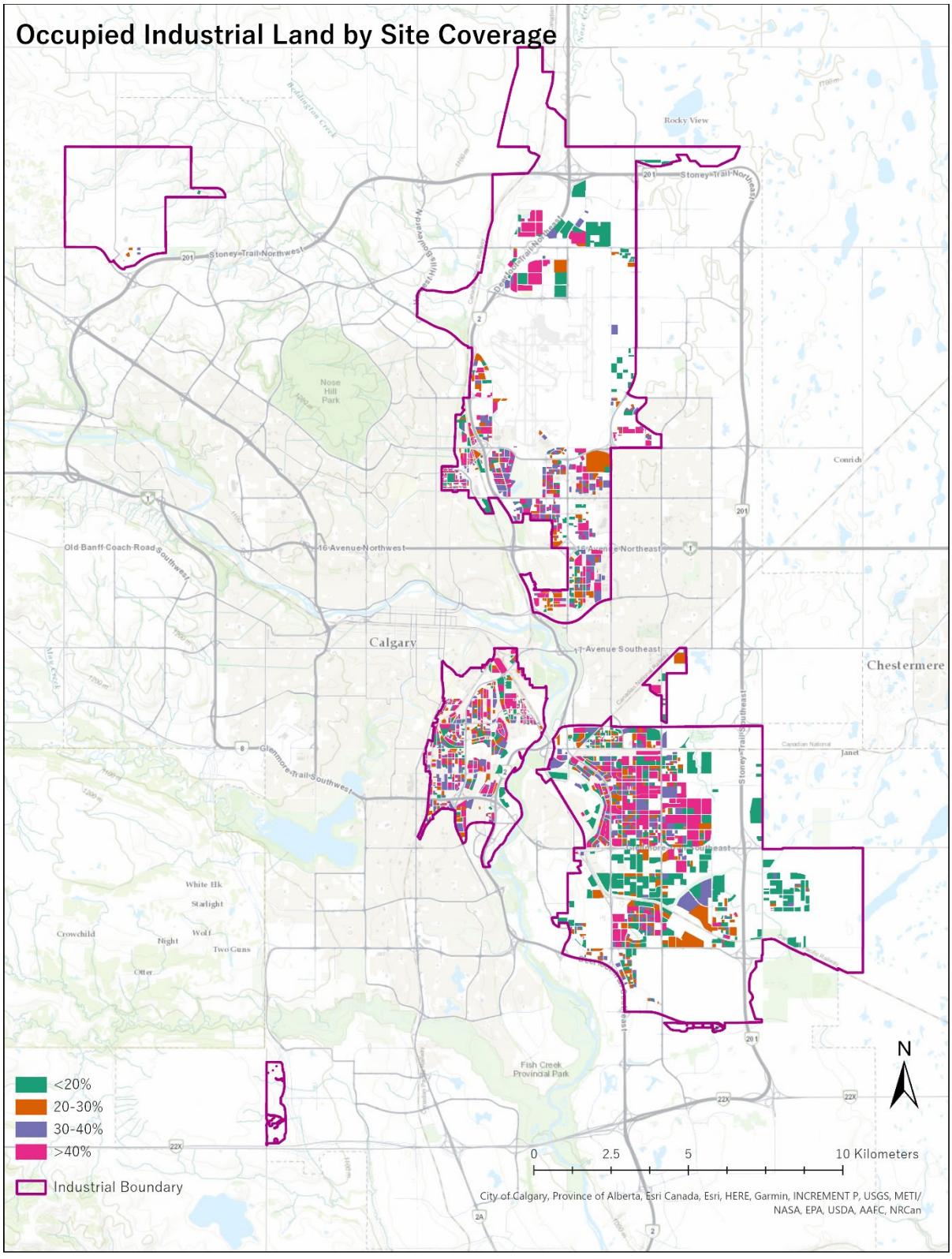
OCCUPIED INDUSTRIAL LAND BY LAND USE DISTRICT AND SECTOR – BY COUNT OF PARCELS

Site Coverage	Central	Northeast	Northwest	Southeast	Southwest	Total	Share
<10%	40	72	3	158	0	**273**	**9%**
10%-20%	71	68	0	212	0	**351**	**12%**
20%-30%	150	146	2	274	0	**572**	**19%**
30%-40%	212	271	2	242	0	**727**	**24%**
40%-50%	155	208	0	135	0	**498**	**16%**
>50%	150	304	1	169	0	**624**	**20%**
TOTAL	**778**	**1,069**	**8**	**1,190**	**0**	**3,045**	**9%**
Share	**26%**	**35%**	**0%**	**39%**	**0%**	**100%**	

OCCUPIED INDUSTRIAL LAND BY LAND USE DISTRICT AND SECTOR – BY SHARE OF PARCELS						
Site Coverage	**Central**	**Northeast**	**Northwest**	**Southeast**	**Southwest**	**Total**
<10%	5%	7%	38%	13%	0%	**9%**
10%-20%	9%	6%	0%	18%	0%	**12%**
20%-30%	19%	14%	25%	23%	0%	**19%**
30%-40%	27%	25%	25%	20%	0%	**24%**
40%-50%	20%	19%	0%	11%	0%	**16%**
>50%	19%	28%	13%	14%	0%	**20%**
TOTAL	**100%**	**100%**	**100%**	**100%**	**0%**	**100%**

A 1-hectare site that is home to a 2,000 m^2 building has a site coverage of 20%. If this site was intensified up to a 40% site coverage, an additional 2,000 m^2 of building floor area would be created. This is obviously a nominal figure in the scope of the city's overall industrial marketplace. In order to have a more meaningful impact on land needs going forward, we will limit the analysis of intensification potential to sites that are at least 2 hectares in size. A 2-hectare site at 20% site coverage accommodates 4,000 m^2 of floorspace; if intensified to a coverage of 40%, an additional 4,000 m^2 of floorspace is created (representing a doubling of the building floor area to 8,000 m^2). For sites that are below 20% site coverage, even more additional floorspace can be accommodated to bring them up to the 40% site coverage average across the city's industrial areas (note that 40% is used to reflect the site coverage seen in many modern industrial developments – slightly above the 37% site coverage for the city as a whole).

The Consultant Team has identified almost 140 existing industrial properties that meet the criteria of having less than 20% site coverage and which are also at least 2 hectares in size. If all of these sites were to intensify up to a 40% site coverage factor, then an additional approximately 2.3 million m^2 of floorspace would be created. This would reduce the requirement for up to 565 hectares of greenfield lands in the future (assuming 40% site coverage for new development). Of course, it is not reasonable to assume that all "underutilized" sites will intensify. For example, some of these sites are presently used as outdoor storage of equipment/laydown yards or truck/trailer parking and maintenance with a small building on site, and there is an ongoing need for such facilities within industrial areas. However, even a modest share of intensification has the effect of lessening the extent of new greenfield industrial development required over time (and the associated cost of extending municipal services).


Occupied Industrial Land by Site Coverage
Rocky View
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17 Avenue Southeast
Chestermere
Glenmore Trail Southwest
Stoney Trail Southeast
Janet
White Elk
Starlight
Crowchild
Wolf
Night
Two Guns
Otter
Fish Creek Provincial Park
<20%
20-30%
30-40%
>40%
Industrial Boundary
N
0
2.5
5
10 Kilometers
City of Calgary, Province of Alberta, Esri Canada, Esri, HERE, Garmin, INCREMENT P, USGS, METI/ NASA, EPA, USDA, AAFC, NRCan

2.4 Key Questions from City Staff

2.4.1 What are the opportunities and threats related to potentially non-compatible uses (e.g., places of worship, institutional uses, etc.) within industrial areas?

With their land costs typically being lower than commercial and mixed-use neighbourhoods in many urban markets, industrial areas are sometimes viewed as an alternative “dumping ground”/”catch-all” repository for a variety of land uses that are not included in planned greenfield developments, or for which identifying sites in other parts of the city may be challenging.

Institutional facilities and social services functions that situate within industrial areas are detached from the residential communities which they are intended to serve. From the point of view of residents (i.e., clients of these services), industrial areas often feature inferior accessibility, visibility, and transit services – all of which are important attributes for a range of institutional uses and social services providers. Of course, siting such uses within industrial areas means that they are distant from the broader network of established institutional/social services uses across the city.

Places of worship can be a source of significant traffic/parking conflict with established industrial uses. Such occupiers are optimally suited to standalone sites, as opposed to multi-tenant flex industrial/commercial buildings. Sometimes vehicles cannot access sufficient parking on site and spill out onto adjacent roadways, impairing traffic flows. High traffic volumes at particular parts of the day can generate traffic bottlenecks that the local roads were not designed to accommodate.

From the viewpoint of providing opportunities, non-industrial uses can play a role within industrial areas in a few ways. They provide important amenities to nearby workers (restaurants, financial services, entertainment establishments, etc.). As well, small-scale non-industrial occupiers may also take advantage of sites/units that are not well suited to modern industrial users, such as parcels of land with irregular shapes, or those with relatively inferior accessibility/visibility.

Conversion and encroachment – when applied to industrial areas – are terms that describe land use activity that changes a land parcel from an industrial use to a non-industrial use (conversion) and where that activity is located within a defined geographic area (encroachment). Overall, the activities of both conversion and encroachment are known to have significant detrimental effects on the functional characteristics of an industrial area, leading to a removal, over time, of those lands and areas from the overall industrial land inventory. Generally, conversion and encroachment:

- decrease the diversity of land and sites available to accommodate the full array of industrial activities – diversity in terms of context, availability, location, and price;
- have a destabilizing effect on adjacent lands, usually increasing land prices to be reflective of the potential for the introduced land use, making it difficult or impossible for the historic industrial users to remain (the effects may be more pronounced for tenants than owner-users, who control their property);
- are disruptive to the operation of existing industrial businesses – particularly if they are heavy industrial uses that produce obnoxious emissions, including noise, vibration, and smell; and,
- tend to exacerbate existing interface conflicts and promote additional land use incompatibilities.

Overall, it is critical to balance the needs of non-industrial occupiers with the land use restrictions that are inherent within industrial areas and ensuring that established industrial operations and future users have to opportunity to find locations for their facilities – and to be noisy, smelly, ugly, cause vibrations, generate truck traffic, and all the other externalities that are the reason that industrial uses are planned as segregated away from most other land uses within an urban area.

3.0 INDUSTRY CLUSTERS AND TRENDS

3.1 Introduction

This section of the report provides an update to work completed in the original *Industrial Area Growth Strategy Consulting Report (February 2021)*, informed by recently released employment by industry data from Statistics Canada. The following explores employment by industry for the City of Calgary and Calgary Census Metropolitan Area (CMA) in order to identify the prominent industries that are drivers of the local economy. The site selection criteria associated with these industry groups are linked to land requirements.

metroeconomics is an economic consulting firm that projects the economic and demographic future of the United States and Canada at the national, state, provincial, and metropolitan area level. metroeconomics provided the population and employment forecasts that were utilized in the original *Industrial Area Growth Strategy Consulting Report* and has updated these projections and extended them to the 2076 forecast horizon.

3.2 Components of the Calgary CMA

metroeconomics prepared its forecasts of employment by industry on a place of work basis for the Calgary CMA and the City of Calgary. Place of work data refers to the location of the employer (where the employee works), as opposed to the location of the residence of the employee (where the employee lives).

Data from the 2021 Census indicates that the City of Calgary accounted for just over 88% of the total population of the Calgary CMA and home to nearly 90% of all jobs.

POPULATION AND EMPLOYMENT BY GEOGRAPHY

Geography	Population 2021 (persons)	% Share	Employment 2021 (jobs)	% Share
City of Calgary	1,346,822	88.2%	552,970	89.9%
Other CMA	180,384	11.8%	61,846	10.1%
TOTAL CALGARY CMA	**1,527,207**	**100.0%**	**614,815**	**100.0%**

3.3 Employment by Industry

3.3.1 Analysis of 2-Digit NAICS Categories (Industry Sectors)

Three North American Industry Classification System (NAICS) categories generate the majority of the demand for industrial-type space: manufacturing; wholesale trade; and transportation and warehousing. Definitions are provided below to assist the reader.

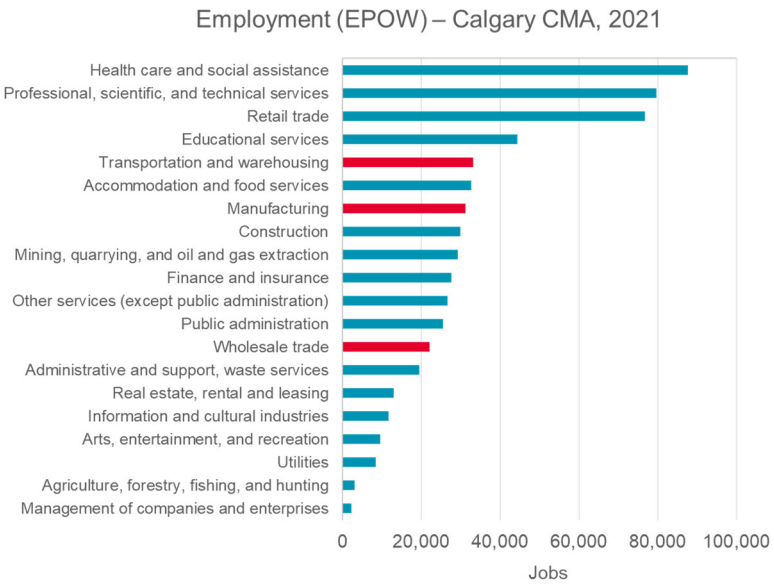
- **Manufacturing** – Establishments in the manufacturing sector are often described as plants, factories, or mills, and characteristically use power-driven machines and materials-handling equipment. The materials, substances, or components transformed by manufacturing establishments are raw materials that are products of agriculture, forestry, fishing, mining, or quarrying, as well as products of other manufacturing establishments.
  - Cushman & Wakefield considers all subsectors/industry groups within the manufacturing sector to be drivers of industrial building and land demand.

- **Wholesale trade** – The wholesale trade sector comprises establishments engaged in wholesaling merchandise, generally without transformation, and rendering services incidental to the sale of merchandise. The merchandise described in this sector includes the outputs of agriculture, mining, manufacturing, and certain information industries, such as publishing. Wholesalers sell merchandise to other businesses, and normally operate from a warehouse or office. These warehouses and offices are characterized by having little or no display of merchandise. In addition, neither the design nor the location of the premises is intended to solicit walk-in traffic. Wholesalers do not normally use advertising directed to the general public.
  - Cushman & Wakefield considers all subsectors/industry groups within the wholesale trade sector to be drivers of industrial building and land demand.
- **Transportation, warehousing** – The transportation and warehousing sector includes industries providing transportation of passengers and cargo, warehousing and storage for goods, scenic and sightseeing transportation, and support activities related to modes of transportation. Establishments in these industries use transportation equipment or transportation-related facilities as a productive asset. The type of equipment depends on the mode of transportation. The modes of transportation are air, rail, water, road, and pipeline. While jobs in the transportation industry are often associated with having “no fixed place of work”, the warehousing and storage-related jobs are linked with industrial-type buildings, along with the storage and maintenance of transportation equipment.
  - The following industry groups are drivers of industrial building and land demand: general freight trucking; specialized freight trucking; freight transportation arrangement; and warehousing and storage. Employment in these industry groups accounted for a 20% share of total transportation and warehousing sector employment in the City of Calgary in 2021.

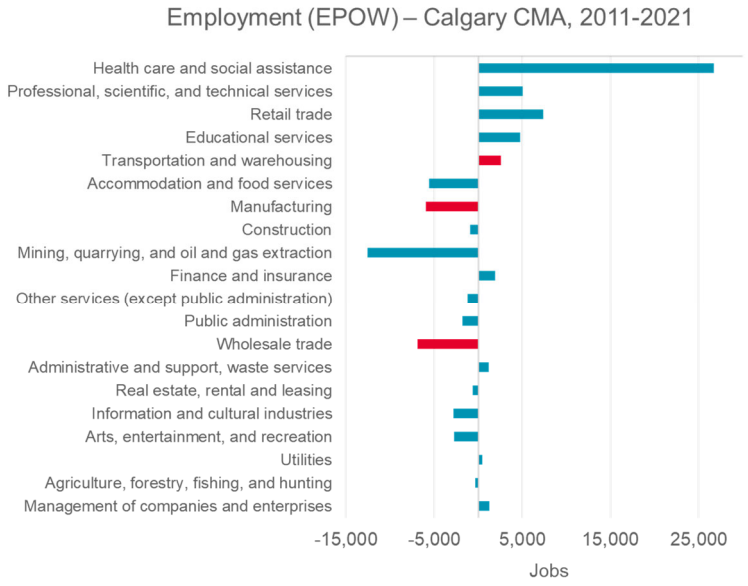
For the Calgary CMA, the industry sectors discussed above cumulatively have declined in employment from approximately 72,900 jobs in 2011 to around 61,200 jobs in 2021. In terms of overall share of total employment, this represents a decline from 12% in 2011 to 10% in 2021. For the City of Calgary, these industry sectors together have declined in employment from approximately 67,700 jobs in 2011 to around 53,500 jobs in 2021, reflecting a similar decline in share of overall employment as the CMA.

The first exhibit below presents the composition of employment by place of work (EPOW) across the 20 NAICS industry sectors for the Calgary CMA in 2021. Those industries associated with industrial-type land and building needs rank 5th (transportation and warehousing), 7th (manufacturing), and 13th (wholesale trade) largest. Together, industrial-type employment totaled approximately 61,200 jobs across the CMA in 2021, representing a 10% share of total employment by place of work. For the City of Calgary, industrial-type jobs totaled 53,500, accounting for just less than 10% of total employment by place of work.

The second exhibit below illustrates the same set of industries ranked largest to smallest based on 2021 total jobs from top to bottom, but this time depicting the change in employment from 2011-2021. Most notably, the health care and social assistance industry has seen significant job growth during this period. Two of the three industry sectors that generate demand for industrial lands saw a decline in employment over the past decade – wholesale trade and manufacturing – while transportation and warehousing has seen job gains and has been the principal driver of industrial land demand in recent years.



Note: Employment that is associated with industrial-type demand is indicated in red.

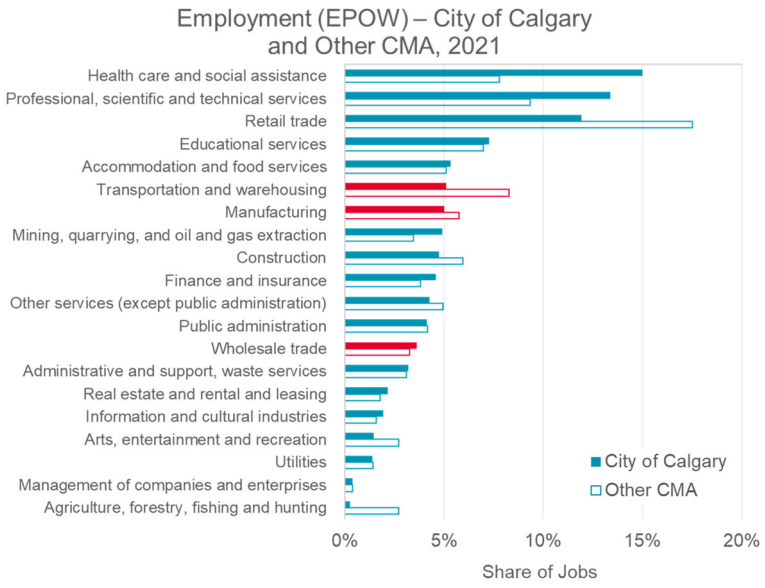


Note: Employment that is associated with industrial-type demand is indicated in red.

The exhibit below illustrates the share of total employment by place of work (EPOW) for the 2-digit NAICS categories for both the City of Calgary and the other Census Subdivisions (CSDs) that collectively comprise the balance of the Calgary CMA (referred to here as “Other CMA”). The following observations are notable:

- Health care and social assistance is the largest category of employment across the Calgary CMA, with almost 87,700 jobs in 2021 (14.3% of total employment). It accounts for a larger proportion of overall employment in the City of Calgary (15%) compared to the Other CMA geography (about 8%).
- Professional, scientific, and technical services is the second largest category, representing a 13% share of total CMA employment, with over 79,700 jobs in 2021 (a 13.4% share of jobs in the City of Calgary versus a roughly 9% share in Other CMA).

- Retail trade accounts for the third largest share of total employment across the CMA, with some 76,800 jobs in 2021 (it had been the largest industry sector in 2016, at the time of the prior Census). This industry sector accounted for nearly 12% of jobs in the City of Calgary and 17.5% of jobs in Other CMA.
- The three categories of employment that are associated with industrial-type land demand account for a fairly similar share of employment in both the City of Calgary and Other CMA – generally in the range of 1-5% of total employment.
- Most of the other industries have a fairly similar share of total employment within the City of Calgary and the Other CMA geography, with the exceptions of mining, oil, and gas (higher in City of Calgary); finance and insurance (higher in City of Calgary); construction (higher in Other CMA); arts, entertainment, and recreation (higher in Other CMA); and agriculture, forestry, fishing, and hunting (notably higher in Other CMA).



Note: Employment that is associated with industrial-type demand is indicated in red.

3.3.2 Analysis of 4-Digit NAICS Categories (Industry Groups)

Overview of Analysis

NAICS has a hierarchical structure with increasing levels of specificity. The preceding analysis examined the 2-digit level, which is referred to as “sectors”. At the 3-digit level, the classification is known as “subsectors”, while at the 4-digit level, the classification is known as “industry groups”. Definitions for key industries are provided throughout this section of the report to assist the reader.

For the purposes of our clusters analysis, we further explore the composition of Calgary’s employment by industry at the 4-digit level.

- Example: While the 2-digit code “31” refers to Manufacturing as a “sector”, the 4-digit code “3111” refers to “Animal food manufacturing”, while the code “3112” refers to Grain and oilseed milling”, and so on.

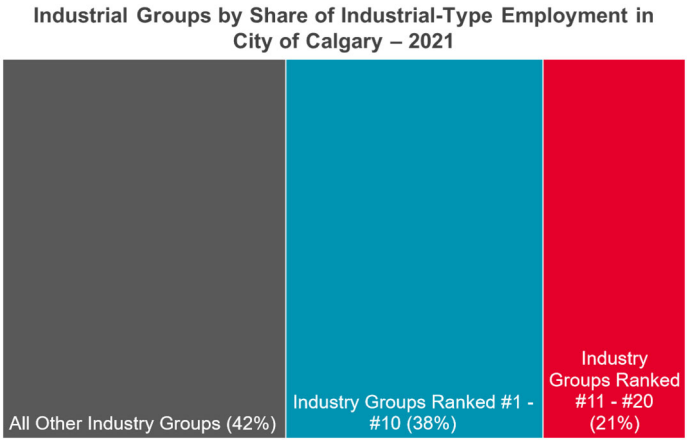
In the preceding section, we discussed the three NAICS sectors that generate the majority of demand for industrial-type premises: manufacturing; wholesale trade; and transportation and warehousing. However, there are other industry groups that may be found in industrial areas – although the line is blurred in many cases between industrial uses and commercial uses. A list of these industry group is as follows:

- Support activities for mining and oil and gas extraction.
  - This industry group may have a component of industrial space needs (including some office space) but is primarily associated with activities at resource sites.
- In general, the following are considered commercial uses, although some may seek sites in industrial/employment areas:
  - Automotive dealers; other motor vehicle dealers; and automotive parts, accessories, and tire stores.
  - Building material and supplies dealers.
  - Lawn and garden equipment and supplies stores.
  - Motion picture and video industries; sound recording industries; and radio and television broadcasting.
  - Data processing, hosting, and related services.
  - Automotive equipment rental and leasing; and commercial and industrial machinery and equipment rental and leasing.
  - Consumer goods rental; and general rental centres.
- Waste treatment and disposal; and remediation and other waste management services.
  - The inclusion of the collection of waste as a component of this category means that a portion of the employment is considered “no fixed place of work”. Also, employment growth in this category is likely linked to existing land uses/sites and does not necessarily translate to additional future land requirements.

The Consultant Team has not made a separate allocation for these industry groups; our land demand analysis focuses on the three principal industry sectors that drive industrial land and building demand.

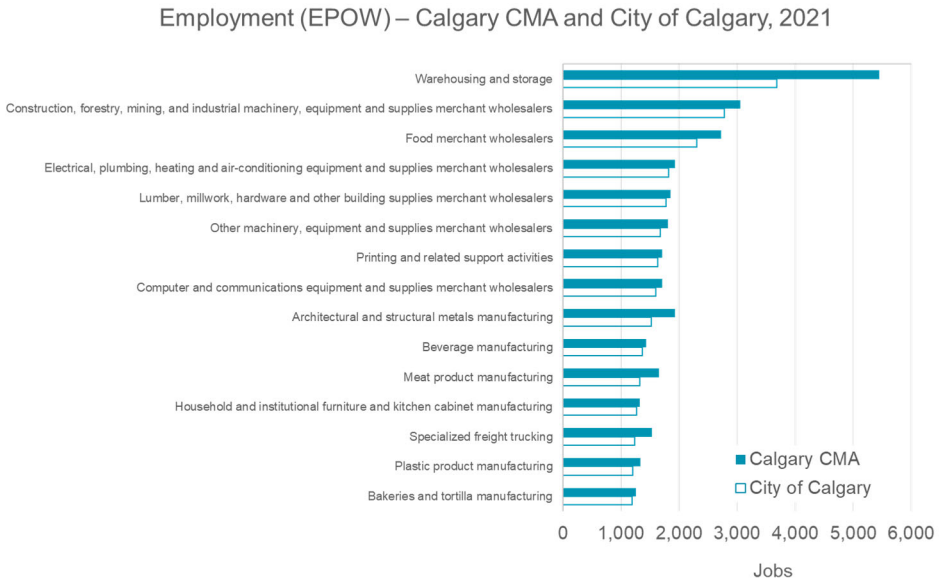
The following summary of the Calgary CMA’s largest industry groups is drawn from the metroeconomics forecasts from an industrial-type land and buildings point of view for 2021, as illustrated in the exhibit below.

- According to 2021 Census data, the top 10 industry groups associated with industrial type demand across the Calgary CMA account for 39% of all industrial-type jobs. This compares to a 38% share in the City of Calgary, and a 56% share across the balance of the CMA.
- The 20 largest industry groups associated with industrial type demand across the Calgary CMA account for 60% of all industrial-type jobs. This compares to a 58% share for the City of Calgary, while the Other CMA share is much higher, at 83%.
  - Of the 20 largest industry groups in the Calgary CMA, 18 are among the top 20 in the City of Calgary. This is as expected, since the City of Calgary accounted for nearly 90% of total employment by place of work in the CMA in 2021.



There are several notable conclusions from this data:

- In the City of Calgary, the largest clusters span the range of industries from transportation and warehousing (warehousing and storage; specialized freight trucking; and freight transportation arrangement) to wholesale trade (seven different industry groups, including six within the top 10) to manufacturing (accounting for 10 of the 20 largest industry groups).
- The largest industrial-type employers in the CMA that are located outside of the City of Calgary have a disproportionately large impact on total industrial-type employment in these outlying areas compared to the City of Calgary itself, which is more diversified across its industrial base.



The following exhibit presents the 20 industry groups that are anticipated to account for the largest gains in employment over the 2021-2076 forecast horizon across the Calgary CMA, along with their 2021 and 2076 ranking. The forecast envisions a transition in the types of industry groups that are drivers of employment growth. Of the top 20 industry groups/clusters in 2021, only seven remain among the top 20 largest in terms of industrial-type employment growth for the period from 2021-2076.

TOP 20 INDUSTRY GROUPS BY EMPLOYMENT INCREASE (2021-2076) – CALGARY CMA						
Industry Group	Jobs 2021	Rank 2021	Jobs 2076	Rank 2076	Jobs Change 2021-2076	Rank 2021-2076
Warehousing and storage	5,445	1	48,431	1	42,986	**1**
Food merchant wholesalers	2,720	3	6,646	2	3,926	**2**
Recyclable material merchant wholesalers	745	27	3,260	4	2,515	**3**
Beverage merchant wholesalers	555	35	2,738	7	2,183	**4**
Specialized freight trucking	1,535	11	3,623	3	2,088	**5**
Other miscellaneous manufacturing	1,315	16	3,222	5	1,907	**6**
Architectural and structural metals manufacturing	1,925	5	3,076	6	1,151	**7**
Bakeries and tortilla manufacturing	1,255	17	2,218	8	963	**8**
Farm product merchant wholesalers	185	70	1,049	14	864	**9**
Glass and glass product manufacturing	350	48	858	16	508	**10**
Beverage manufacturing	1,430	12	1,797	9	367	**11**
Other food manufacturing	890	22	1,186	11	296	**12**
Farm, lawn and garden machinery and equipment merchant wholesalers	325	51	610	21	285	**13**
Aerospace product and parts manufacturing	370	46	646	19	276	**14**
Industrial machinery manufacturing	190	69	452	25	262	**15**
Pharmaceutical and medicine manufacturing	200	65	456	24	256	**16**
Motor vehicle manufacturing	125	80	306	37	181	**17**
Sawmills and wood preservation	230	59	353	32	123	**18**
Cannabis product manufacturing	100	83	133	49	33	**19**
Railroad rolling stock manufacturing	25	97	48	71	23	**20**
Sources: Statistics Canada and metroeconomics						

The following exhibit presents the 20 industry groups that are anticipated to account for the largest gains in employment over the 2021-2076 forecast horizon across the City of Calgary, along with their 2021 and 2076 ranking.

TOP 20 INDUSTRY GROUPS BY EMPLOYMENT INCREASE (2021-2076) – CITY OF CALGARY						
Industry Group	**Jobs 2021**	**Rank 2021**	**Jobs 2076**	**Rank 2076**	**Jobs Change 2021-2076**	**Rank 2021-2076**
Warehousing and storage	3,685	1	28,605	1	24,920	**1**
Food merchant wholesalers	2,305	3	4,915	2	2,610	**2**
Recyclable material merchant wholesalers	675	26	2,577	4	1,902	**3**
Beverage merchant wholesalers	515	36	2,217	7	1,702	**4**
Other miscellaneous manufacturing	1,170	16	2,867	3	1,697	**5**
Specialized freight trucking	1,230	13	2,534	5	1,304	**6**
Bakeries and tortilla manufacturing	1,190	15	2,103	8	913	**7**
Architectural and structural metals manufacturing	1,525	9	2,436	6	911	**8**
Farm product merchant wholesalers	160	71	792	14	632	**9**
Glass and glass product manufacturing	275	52	674	16	399	**10**
Beverage manufacturing	1,365	10	1,715	9	350	**11**
Aerospace product and parts manufacturing	345	46	602	18	257	**12**
Pharmaceutical and medicine manufacturing	200	61	456	22	256	**13**
Industrial machinery manufacturing	180	67	428	24	248	**14**
Other food manufacturing	665	27	886	13	221	**15**
Motor vehicle manufacturing	100	80	245	37	145	**16**
Farm, lawn and garden machinery and equipment merchant wholesalers	210	58	344	28	134	**17**
Sawmills and wood preservation	65	89	100	53	35	**18**
Cannabis product manufacturing	100	80	133	48	33	**19**
Railroad rolling stock manufacturing	25	97	48	70	23	**20**
Sources: Statistics Canada and metroeconomics						

Definitions of 4-Digit NAICS Codes – Top 20 Industry Groups in City of Calgary, 2021

The following section provides definitions and NAICS 4-digit codes for the top 20 industrial-type industry groups in the City of Calgary for 2021. The definitions are sourced from the Government of Canada's Canadian Industry Statistics webpage.[3]

- **Warehousing and storage (4931)** – This industry group comprises establishments primarily engaged in: operating general merchandise, refrigerated, and other warehousing and storage facilities. These establishments provide facilities to store goods for customers.
- **Food merchant wholesalers (4131)** – This industry group comprises establishments primarily engaged in: wholesaling processed milk and other dairy products, poultry and eggs, fish and seafood products, fresh fruit and vegetables, red meat and meat products, bread and other bakery products, processed rice, flour, flour mixes, prepared cereal foods, and spices.

[3] https://www.ic.gc.ca/app/scr/app/cis/search-recherche

- **Recyclable material merchant wholesalers (4181)** – This industry group comprises establishments primarily engaged in: wholesaling recyclable metals, paper and paperboard, and other recyclable materials. This industry does not include establishments primarily engaged in operating facilities in which recyclable materials are removed from waste, or mixed recyclable materials are sorted into distinct categories and prepared for shipment.
- **Beverage merchant wholesalers (4132)** – This industry group comprises establishments primarily engaged in wholesaling alcoholic and non-alcoholic beverages.
- **Other miscellaneous manufacturing (3399)** – This industry group comprises establishments primarily engaged in manufacturing activities that are not classified to any other industry group.
- **Specialized freight trucking (4842)** – This industry group comprises establishments primarily engaged in specialized freight trucking. These establishments transport articles that, because of size, weight, shape, or other inherent characteristics, require specialized equipment for transportation. Some important types of specialized equipment are built tankers, dump trucks and trailers, refrigerated vans, and motor vehicle haulers. Establishments that transport used household and offices goods are included.
- **Bakeries and tortilla manufacturing (3118)** – This industry group comprises establishments primarily engaged in manufacturing baked goods. Establishments primarily engaged in manufacturing bakery products, for retail sale, but not for immediate consumption, are included.
- **Architectural and structural metals manufacturing (3323)** – This industry group comprises establishments primarily engaged in fabricating metal products for structural or architectural purposes.
- **Farm product merchant wholesalers (4111)** – This industry group comprises establishments primarily engaged in wholesaling livestock, grain, and other farm products.
- **Glass and glass product manufacturing (3272)** – This industry group comprises establishments primarily engaged in manufacturing glass and glass products.
- **Beverage manufacturing (3121)** – This industry group comprises establishments primarily engaged in manufacturing beverages. Excluded from this category are (a) establishments primarily engaged in canning fruit and vegetable juices; freezing juices, and drinks (see fruit and vegetable preserving and specialty food manufacturing – 3114); (b) manufacturing milk-based drinks (see fluid milk manufacturing – 311511); and (c) manufacturing soft drink bases or fruit syrups for flavouring; coffee and tea, except ready-to-drink; powdered drink mixes; and non-alcoholic cider (see other food manufacturing – 3119).
- **Aerospace product and parts manufacturing (3364)** – This industry group comprises establishments primarily engaged in: manufacturing aircraft, missiles, space vehicles and their engines, propulsion units, auxiliary equipment, and parts thereof. The development and production of prototypes is classified in this industry, as is the factory overhaul and conversion of aircraft and propulsion systems.
- **Pharmaceutical and medicine manufacturing (3254)** – This industry group comprises establishments primarily engaged in manufacturing drugs, medicines, and related products for human or animal use. Establishments in this industry may undertake one or more of several processes, including basic processes, such as chemical synthesis, fermentation, distillation, and solvent extraction; grading, grinding, and milling; and packaging in forms suitable for internal and external use, such as tablets, vials, ampoules, and ointments.
- **Industrial machinery manufacturing (3332)** – This industry group comprises establishments primarily engaged in manufacturing machinery designed for use in specific manufacturing industries.
- **Other food manufacturing (3119)** – This industry group comprises establishments primarily engaged in manufacturing food that are not classified to any other industry group.

- **Motor vehicle manufacturing (3361)** – This industry group comprises establishments primarily engaged in manufacturing motor vehicles. Establishments that manufacture chassis and then assemble complete motor vehicles (including truck cab and chassis assemblies) and those that only manufacture motor vehicle chassis are both classified in this industry group.
- **Farm, lawn and garden machinery and equipment merchant wholesalers (4171)** – This industry group comprises establishments primarily engaged in wholesaling new or used farm, lawn and garden machinery, equipment, and parts.
- **Sawmills and wood preservation (3211)** – This industry group comprises establishments primarily engaged in manufacturing boards, dimension lumber, timber, poles, and ties from logs and bolts. These establishments produce lumber that may be rough, or dressed by a planing machine to achieve smoothness and uniformity of size, but is generally not further worked or shaped. Establishments that preserve wood are also included.
- **Cannabis product manufacturing (3123)** – This industry group comprises establishments primarily engaged in manufacturing products made from cannabis plants with a level of tetrahydrocannabinol (THC) greater than 0.3%. This is a relatively new NAICS code that did not exist during the 2016 Census.
- **Railroad rolling stock manufacturing (3365)** – This industry group comprises establishments primarily engaged in manufacturing and rebuilding locomotives and railroad cars, of any type or gauge, including frames and parts. The manufacture of rapid transit cars and special-purpose self-propelled railroad equipment, such as rail layers, ballast distributors, rail-tamping equipment, and other railway track maintenance equipment is included in this industry.

3.4 Site Selection Criteria and Land Requirements

3.4.1 Overview

Across the spectrum of industrial lands uses there tends to be a consistent set of site selection criteria that are considered in location decision-making. The include the following:

- **Real estate factors –** geographic location; availability and cost of business premises, or cost of land and new building construction; and location of customers and suppliers;
- **Economic factors –** availability of raw materials and intermediate goods (production inputs); labour force availability; labour cost; and government incentives; and,
- **Infrastructure factors –** transportation; telecommunications; and utilities.

Certain industry groups exhibit particular site selection requirements for their operations. The following are such examples:

- Some businesses may be labour-intensive, while others may require far less labour input. Those with greater need for labour – particularly skilled labour – may be inclined to locate within or in close proximity to large population centres. However, even within an industry group, there may be significant variation (for example, comparing the employee density within an Amazon warehouse [relatively high] versus a warehouse for automotive parts [relatively low]). Non-labour-intensive industrial businesses may seek to locate further from urban areas/population centres to take advantage of lower land costs, for example. A related consideration for labour-intensive businesses may be access to public transit to provide commuting options for their workforce (particularly for lower-wage occupations).
- Highway access is vital for certain businesses that have a high volume of shipping and receiving. On the other hand, businesses with fewer inputs to their production process – or those not reliant upon just-in-time delivery – will not require highway access/proximity (or may not prioritize it to the same extent as other site selection factors).

- Adjacency to a rail line may be an important site selection factor for some businesses – particularly those reliant upon raw materials/commodities in their production process, or those that distribute finished goods across a large market area. However, it is challenging to associate specific industry groups with needed access to a rail spur. For many businesses, proximity to intermodal (container shipping via truck-to-rail facilities) satisfies their supply chain needs.

In reviewing the employment forecast for the top 20 industry groups across the City of Calgary, some do not have distinguishing site selection characteristics of importance. However, the following list of attributes/potential needs are identified for select businesses within the forecasted higher growth industry groups identified below. Although many of these businesses may be able to operate within enclosed buildings (particularly as technology/automation is increasingly incorporated into manufacturing operations), these characteristics should be considered as City staff undertake long-term land use planning to ensure a range of suitable lands are available for occupiers that are relocating or expanding within the city or are new market entrants. Some manufacturers may seek an (I-H) Industrial – Heavy District zone in order to have flexibility in their business processes over time – particularly those with large-scale operations – although it is acknowledged that the move towards high tech means that the requirement to shelter expensive manufacturing equipment would likely trend away from outdoor manufacturing.

INDUSTRIAL SITE SELECTION PREFERENCES

Industry Group	Proximity to Highway	Very Large Sites	Outside Storage	Truck/ Vehicle Parking	Minimum Separation Distance	Heavy Industrial Zoning
Warehousing and storage	Yes	Yes	Yes	Yes		
Specialized freight trucking	Yes			Yes		
Architectural and structural metals manufacturing			Yes		Yes	Yes
Farm product merchant wholesalers			Yes			
Glass and glass product manufacturing			Yes		Yes	Yes
Aerospace product and parts manufacturing			Yes		Yes	Yes
Pharmaceutical and medicine manufacturing					Yes	
Industrial machinery manufacturing			Yes		Yes	Yes
Motor vehicle manufacturing		Yes	Yes	Yes	Yes	Yes
Farm, lawn and garden machinery and equipment merchant wholesalers		Yes	Yes	Yes		
Sawmills and wood preservation		Yes	Yes	Yes	Yes	Yes
Cannabis product manufacturing					Yes	
Railroad rolling stock manufacturing		Yes	Yes	Yes	Yes	Yes

3.5 Key Questions from City Staff

3.5.1 How have recent economic challenges (e.g., the COVID-19 pandemic) influenced industrial development in Calgary and how will this affect current and future demand for industrial land?

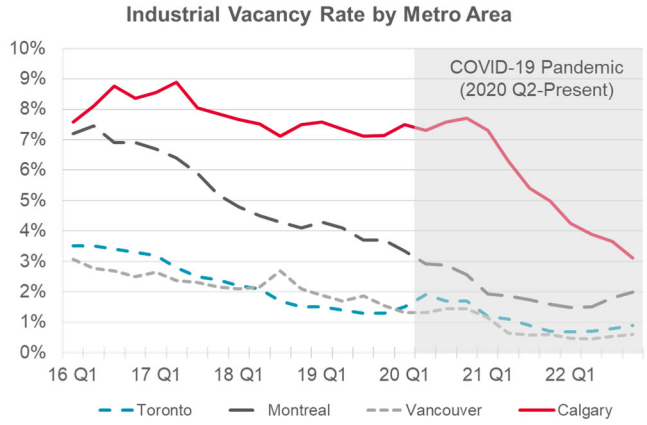
Introduction

Among the major commercial real estate asset classes (office, industrial, retail, and residential rental apartments), the industrial sector has been a leading performer since the onset of the COVID-19 pandemic. The impacts of the pandemic were first captured in market data in 2020 Q2. The performance of the industrial market over these 11 quarters is profiled below (data as at 2022 Q4), along with some historical perspectives.

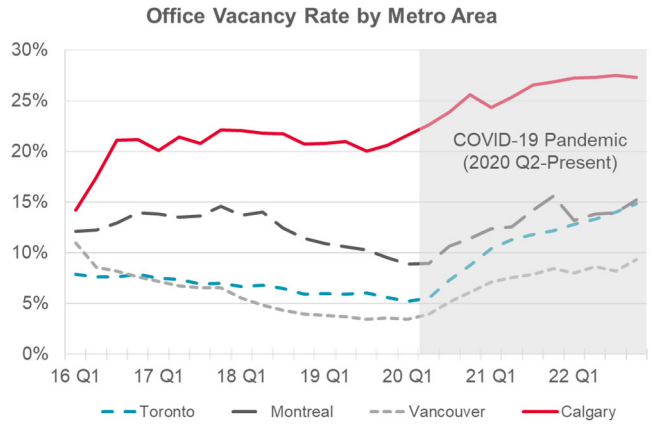
Industrial and Office Vacancy Rates by Major Market

The exhibit below identifies the vacancy rate for Canada's four largest industrial markets. Remarkably, each has seen a decline in vacancy since the onset of the pandemic. Toronto, Montreal, and Vancouver each recorded an all-time market low vacancy during 2022 (for reference, Calgary's all-time low of 1.7% was recorded back in 2006).

Recent strong demand for industrial space has been driven by three forces in particular: (a) significant new demand for space emanating from the retail sector seeking additional warehousing and distribution facilities to fulfill e-commerce, which spiked during stay-at-home public health measures; (b) the necessity of maintaining manufacturing across a range of industries to supply essential goods to support the economy; and, (c) a desire to diversify supply chain locations in order to mitigate disruptions to the network.

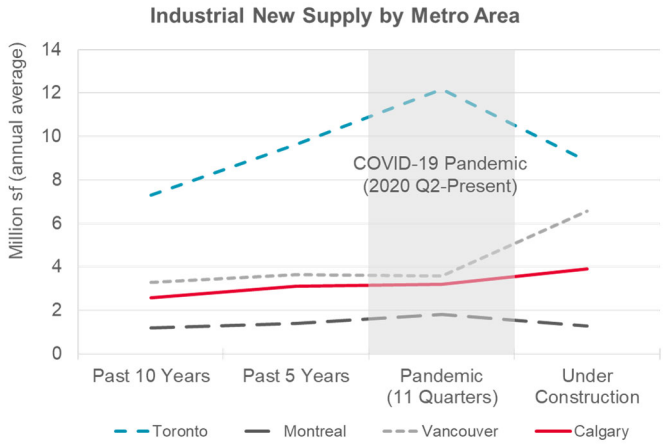


The strong performance of the industrial market stands in contrast to the office markets in those same metropolitan markets, illustrated in the exhibit below. Calgary's office market was impacted pre-COVID by the combination of significant new supply additions at a time of falling energy prices and waning office space demand. The shift to work-from-home due to pandemic public health restrictions has exacerbated the challenges in the local office market. Vacancy in Toronto, Montreal, and Vancouver had been trending downward in the years preceding the pandemic, but all of the positive momentum has reversed over the course of the past few years, with the outlook for office space demand still highly uncertain. The purpose of this comparison of industrial and office markets is to highlight the vastly different performance in the two asset classes in the same time period, from a vacancy (demand) perspective, underscoring the strength observed in the industrial asset class.



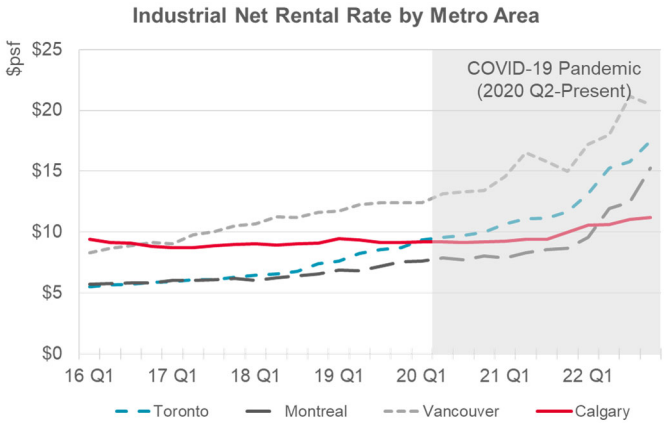
Industrial New Supply by Major Market

The exhibit below illustrates annual average new supply (projects completed) for four different time periods: (a) the 10 years pre-pandemic, (b) the five years that preceded the pandemic; (c) the 11 quarters from 2020 Q2 through 2022 Q4; and, (d) the new industrial supply that is presently under construction, which has been estimated to be spread over the next two years (i.e., the current total known new construction underway divided by two). This data makes it clear that the pace of new industrial construction has accelerated during the pandemic compared to the recent past (five and 10-year increments) in three of Canada's four largest industrial markets – Toronto, Montreal, and Calgary – with Vancouver seeing relatively little change (impacted by a constrained land supply). For the Calgary market, the amount of new supply presently under construction is 50% higher than the average for the 10-year period pre-pandemic, indicative of a strong belief among local developers that demand conditions will remain favourable for at least the near future.



Industrial Net Rent by Major Market

The strong performance of Canada's major industrial markets through the pandemic thus far is exemplified in the change in average asking net rent from 2020 Q1 to present. Over these past 11 quarters, net rents have increased by 100% in Montreal, almost 90% in Toronto, and 65% in Vancouver, while average rents are up a more modest 20% in Calgary. Of note, Toronto's average asking net rents had been lower than Calgary's dating back to 2005 before the dramatic drop in vacancy fueled by demand far exceeding new supply drove up rents in Canada's largest industrial market in recent years – and particularly since early 2020.



Conclusions

Early in the pandemic, Cushman & Wakefield and other market observers had identified the industrial sector as one that presented a range of opportunities, despite the economic uncertainties. A need for new warehousing and distribution space to satisfy rising online shopping activity, sustained goods movement, and manufacturing across a spectrum of essential businesses positioned this asset class for success. The result has been a decline in vacancy despite an uptick in new supply additions across Canada's major markets. Calgary's average asking net rental rate is at an all-time high (now over $11.00 psf), and its vacancy rate of 3.1% (year-end 2022) has not been this low since early 2008 (roughly 15 years).

Overall, these conditions mean that the Calgary industrial market is poised to see additional new building construction and demand for land in the coming years. The warehousing and logistics sectors will continue to drive space demand, including large facilities, to support the Western Canadian distribution network. As well, manufacturers and retailers will increasingly seek onshore locations for goods production and storage to resolve supply chain challenges. Calgary continues to feature a geographic location that offers access to markets across Western Canada, a diverse supply of industrial lands, a large and growing labour pool, and in-place infrastructure to facilitate industrial growth – all of which are key site selection criteria for occupiers, developers, and investors.

3.5.2 What are the recent and future trends in urban manufacturing and industrial uses? How do Calgary's industrial lands and buildings need to adapt to address these trends?

An emerging area of industrial demand is urban sites for "last mile" distribution of consumer goods to households to fulfill e-commerce orders. Such sites accommodate smaller-sized warehousing and distribution facilities compared to the land-extensive facilities that tend to gravitate to lower cost lands on the urban periphery. In some cases, struggling shopping mall sites may be repurposed to industrial use (with the vacant former anchor department store space being a prime opportunity, given the size and orientation of the premises). A key consideration is successfully integrating new centrally-situated distribution facilities with the surrounding neighbourhood – particularly in the case of retail-commercial-to-industrial land use conversions. The considerable truck traffic associated with inner-urban warehousing and distribution facilities may exceed capacities planned for the local road network and impact adjacent land uses, including residential neighbourhoods. To date, there is no meaningful presence of last mile distribution within Calgary's inner areas, as logistics uses prefer to be on sites on the urban periphery. However, as the city's population density increases over time, there may be a need for some extent of such facilities. This is a topic that should be monitored over time with applications for such uses evaluated on a site-by-site basis.

The stock of centrally situated industrial properties tends to be older than the building stock on the urban edge. These older buildings are typically smaller and have lower ceiling clear heights, which may not appeal to a range of modern industrial uses. Consequently, they may over time become occupied with alternative uses such as office space (for occupiers not requiring traditional office tower premises), commercial operations (small start-up businesses), or a range of other uses seeking lower cost premises compared to commercial strips and mixed-use downtowns. Accommodating the higher employment densities with these alternate uses – which typically have more employees per floor area versus many industrial-type uses – places added pressure on accommodating parking, waste management, and other municipal services. Adaptive re-use of older urban industrial facilities indicates a healthy dynamic in the market, rather than vacant or under-utilized buildings remaining in place.

Urban farming is an industrial use that is increasing in popularity. Driven by a desire for locally grown and sustainable food, urban agriculture can significantly reduce the distance between producers and consumers. Vertical farming is one approach whereby stacked trays and racking systems replace vast acreages of farmland. These systems require substantially less water than conventional agriculture and are protected from the elements and invasive pests. These windowless facilities can be an adaptive re-use of existing industrial buildings or new construction within the urban environment and as a relatively low intensity use do not create some of the negative externalities (noise, odour, emissions, etc.) associated with other types of industrial uses.

Public transit access can be a key criterion in attracting labour for industrial businesses and is particularly critical for firms that have significant labour needs and which draw across a large urban area. The City of Calgary could enhance its public transit service to meet the commuting requirements of its industrial labour pool and further differentiate itself from other outlying locations across the Calgary region. Aligning bus/transit schedules to match shift changes at major employers can assist these firms to attract/retain the talent needed to succeed in the competitive labour market and enable the city to secure a greater share of overall industrial occupier demand.

4.0 INDUSTRIAL LAND DEMAND ANALYSIS

4.1 Industrial Land Demand Projection Analysis

4.1.1 Overview

There are three principal industries that generate demand for industrial space: manufacturing, wholesale trade, and transportation and warehousing. As discussed earlier, Cushman & Wakefield considers all subsectors/industry groups within the manufacturing and wholesale trade sectors to be drivers of industrial building and land demand (100% of future employment growth in these industry sectors is included in our land demand modeling). Within the transportation and warehousing sector, the following industry groups are associated with industrial-type demand: general freight trucking; specialized freight trucking; freight transportation arrangement; and warehousing and storage (employment in these industry groups accounted for a 20% share of total transportation and warehousing sector employment in the City of Calgary in 2021, and all forecast growth in these groups is accounted for in our land demand modeling below).

metroeconomics' forecast of employment by industry (refer to Appendix A) enables Cushman & Wakefield to translate this job growth into land demand by utilizing an employment density figure (number of employees per hectare of land). This is influenced by the site coverage (ratio of building floor area to land area). An analysis of the city's existing industrial building supply indicates that the average site coverage is 37%, with a median of around 35%. This is in line with the Consultant Team's observations in other major metropolitan markets in Canada. Roughly 60% of Calgary's industrial buildings occupy between 20%-50% of the site, while around 12% occupy between 10%-20% of the site, and roughly 10% of industrial buildings occupy less than 10% of the site area. Approximately 20% of industrial buildings occupy greater than 50% of the site area. Notably, there has been an identified trend toward higher site coverage in many urban markets as developers maximize site utilization and seek to minimize land costs – although there are practical limits, in order to ensure suitable space for on-site storage, truck movements, employee parking, and required setbacks.

INDUSTRIAL BUILDING SITE COVERAGE RATIO

Metric	<10%	10%-20%	20%-30%	30%-40%	40%-50%	>50%	Total
Site Coverage (share of total)	9%	12%	19%	24%	16%	20%	**100%**

While The City of Calgary does not conduct an employer survey (which would enable The Consultant Team to link employment at businesses with a building's municipal address, and thus use property data to calculate employee density), a benchmark range of 30-35 jobs per net hectare would be in line with observations in other major metro areas in Canada (a range of 25-40 is generally seen, with the upper end of the range including business parks with a considerable share of flex industrial properties with a higher component of office-type uses, and the lower end of the range reflecting a greater extent of outside storage of machinery, equipment, and raw and finished goods). We have also used 25 jobs per hectare as a lower end value in our modeling to recognize the considerable growth anticipated in the warehousing and storage industry group, which accounts for some two-thirds of Calgary's anticipated industrial-type employment growth through 2076. Higher employment densities are generally associated with higher cost land markets (major cities), while lower densities are observed in lower cost land markets (secondary and tertiary markets) – subject to the mix of industries that are seeking land in these communities.

The exhibit below presents the amount of floorspace per worker based on a 40% site coverage at different employment densities per hectare. These range from a low of 114 m^2 per worker (35 jobs per hectare – the highest density considered in our land demand modeling presented below) to a high of 160 m^2 per worker (which reflects a lower industrial density).

FLOORSPACE PER WORKER			
Metric	**@ 25 Jobs per Net Hectare**	**@ 30 Jobs per Net Hectare**	**@ 35 Jobs per Net Hectare**
Jobs per Net Hectare	25	30	35
m^2 per Hectare	10,000	10,000	10,000
Site Coverage	40%	40%	40%
m^2 of Building Floor Area per Hectare	4,000	4,000	4,000
m^2 per Job	160	133	114

4.1.2 Forecast Approaches

Cushman & Wakefield has developed two forecast approaches to estimate future land demand based on industrial-type employment growth.

Approach 1 – Forecast Based on Net New Industrial-Type Employment

In this approach we have utilized the net new industrial-type employment in each industry sector over the 2021-2076 forecast horizon. Forecast job growth in some industry groups is partially offset by a decline in other industry groups, resulting in net new employment by industry. This net amount (job gains minus job declines) is the figure that is used in our modeling.

Approach 2 – Forecast Based on Industrial-Type Employment Growth (Excludes Declining Industry Groups)

In this approach we have only included industry groups that are anticipated to see increased employment during the forecast horizon. Consequently, industry groups that are projected to see a decline in employment over time are excluded from our modeling. This recognizes that while total employment in an industry group may decline over time, these jobs may be replaced by increased productivity through process improvements and enhanced automation. Thus, industry output and demand for industrial premises may stay the same or even grow, despite declining employment. In other words, although overall employment in an industry group may diminish over time, demand for industrial real estate may remain stable or even increase among some firms, offsetting declining demand in others. This has been observed over the past decade in Calgary which saw an increase in new industrial building construction compared to historic levels despite a period of overall declining industrial-type employment.

Summary of Approaches

The exhibits below illustrate the outcomes of our two approaches using varied employment densities (jobs per net hectare) for comparative purposes.

LAND DEMAND PROJECTION APPROACH 1 – NET NEW INDUSTRIAL-TYPE EMPLOYMENT

Industry Sector	Jobs (2021)	Jobs (2076)	Jobs Change (2021-2076)[1]	Land Need @ 25 Jobs per Net Hectare (ha)	Land Need @ 30 Jobs per Net Hectare (ha)	Land Need @ 35 Jobs per Net Hectare (ha)
Industrial-Type Employment	53,500	68,375	14,875	**595.0**	**495.8**	**425.0**

Note 1: In this approach we have utilized the net new industrial-type employment in each industry sector over the 2021-2076 forecast horizon. Forecast job growth in some industry groups is partially offset by a decline in other industry groups, resulting in net new employment by industry.

LAND DEMAND PROJECTION APPROACH 2 – INDUSTRIAL-TYPE EMPLOYMENT GROWTH (EXCLUDES DECLINING INDUSTRY GROUPS)

Industry Sector	Jobs (2021)	Jobs (2076)	Jobs Change (2021-2076)[2]	Land Need @ 25 Jobs per Net Hectare (ha)	Land Need @ 30 Jobs per Net Hectare (ha)	Land Need @ 35 Jobs per Net Hectare (ha)
Industrial-Type Employment	53,500	68,375	38,700	**1,548.1**	**1,290.1**	**1,105.8**

Note 2: In this approach we have only included industry groups that are anticipated to see increased employment during the forecast horizon. Consequently, industry groups that are projected to see a decline in employment over time are excluded from the job change 2021-2076 figure.

4.2 Land Demand Conclusions

The preceding land demand assessment explores two approaches to utilizing forecasted industrial-type employment to derive an estimate of land demand – and includes three employment densities (25, 30, and 35 jobs per net hectare) to provide a range of outcomes. The result is an anticipated need for roughly 425-1,550 net hectares of land to accommodate new occupied buildings to house the industrial employment growth from 2021 through 2076 within the City of Calgary.

An additional allocation of lands for non-industrial uses that support the industrial areas (restaurants/food services; back-office functions such as accounting, legal, temporary staffing services, etc.; banks/financial services; hotels/motels; automotive/trucking-related services; and other retail-commercial functions) – as well as other uses such as public utilities and laydown yards for construction equipment – could contribute demand for an additional up to 10%-15% of lands, with those truly population-related retail-commercial services and suburban offices being appropriately situated instead in mixed-use and commercial areas beyond the industrial business parks themselves. These non-industrial lands amount to a required additional approximately 110-230 net hectares of land.

LAND DEMAND BY TYPE			
Type	Land Need @ 25 Jobs per Net Hectare (ha)	Land Need @ 30 Jobs per Net Hectare (ha)	Land Need @ 30 Jobs per Net Hectare (ha)
Industrial Land	1,548.1	1,290.1	1,105.8
Non-Industrial Land – Low (10%)	154.8	129.0	110.6
TOTAL – LOW	**1,702.9**	**1,419.1**	**1,216.4**
Non-Industrial Land – High (15%)	232.2	193.5	165.9
TOTAL – HIGH	**1,780.3**	**1,483.6**	**1,271.7**

This recommended target range translates to annual absorption of approximately 22-32 net hectares. As a "market reality check", the overall Calgary market (as tracked by Cushman & Wakefield – which includes rapidly growing East Balzac) has seen an annual average of approximately 60 hectares of industrial land absorbed during the past decade (this is based upon annual average new supply of approximately 2.6 million sf/240,000 m^2 and an estimated site coverage of 40%).

Given that a substantial component of industrial-type employment growth is emanating from the warehousing and storage industry group (nearly two-third of total forecast job growth), The City will need to ensure a suitable supply of large sites (5-10 hectares, and larger) are available to attract large warehouse and distribution facilities. For reference, at a 40% site coverage, a 200,000 sf/18,600 m^2 building requires an 11.5-acre/4.6-hectare site, whereas a 500,000 sf/46,500 m^2 building requires a 28.7-acre/11.6-hectare site. Of note, while the average industrial building in Calgary measures approximately 52,800 sf/4,900 m^2, the new supply completed over the past decade has averaged just over 106,000 sf/9,850 m^2 (approximately twice as large). Notably, 30% of the new industrial buildings added since 2010 were over 100,000 sf in size and 15% exceeded 250,000 sf in size, based on Cushman & Wakefield data for the Calgary market (which includes Balzac/Rocky View County).

4.3 Summary of Industrial Land Supply Versus Demand

Previous sections of this report have profiled the city's supply of industrial and non-industrial lands within its industrial areas. As well, several land demand scenarios have been presented which forecast the amount of land needed to accommodate anticipated industrial-type employment through 2076. There are additional considerations that inform future land use planning in Calgary's industrial areas:

- **Availability of Large, Vacant Sites –** The city has a significant supply of large, vacant industrial lands (including over 550 hectares of serviced land parcels greater than 10 hectares in size) needed to attract major warehouse and distribution facilities that are likely to drive the majority of industrial land demand in coming decades, based on the forecast of employment by industry. These facilities rely upon large sites not only to accommodate the building itself, but also the required truck parking/turning, along with on-site outdoor storage that may be needed.

  There are close to 70 sites citywide that are 10 hectares in size or greater which together account for 80% of the total vacant land inventory. These sites offer considerable future capacity for multi-phased developments of large format warehouse/distribution facilities or other land-extensive industrial uses. There is also a considerable supply of lands in the 5-10-hectare range (over 220 hectares across 32 sites).

- **Availability of Serviced Vacant Industrial Lands –** The city has a supply of approximately 960 gross hectares/770 net hectares of serviced industrial land, accounting for a 35% share of the overall vacant industrial land inventory. There is presently a suitable supply of serviced lands available in a range of locations throughout the city. Assuming a constant rate of employment growth, this inventory represents approximately one-half of the required lands to accommodate projected industrial-type employment growth through 2076. Accordingly, there is no near-term requirement to provide additional infrastructure/services to areas that are partially serviced or presently not serviced.
- **Availability of Serviced and Shovel-Ready Vacant Industrial Lands –** There is a supply of approximately 185 gross hectares/150 net hectares of shovel-ready industrial land – sites which are serviced and have a Development Agreement in place – which account for a 7% share of the city's overall vacant industrial land inventory. Approximately two-thirds of these lands are located in the Northeast and one-third in the Southeast, with a modest supply in the Northwest.
  Many of these shovel-ready sites are small (less than 10 hectares), and this limited availability of larger sites (only 4 shovel-ready sites are greater than 10 hectares in size) impacts the ability to quickly proceed with development at a significant scale and respond to market demand as it arises. As noted earlier in this report, a large site that an owner may intend to subdivide into multiple smaller lots would have a longer time to proceed to vertical development, as the necessary on-site servicing is required in advance. The implication of this impact on timing is that the effective supply of serviced and shovel-ready sites is somewhat less than indicated in the analysis presented herein – although this impact is difficult to quantify.
  Of the 59 shovel-ready sites citywide, The City of Calgary owns 23 (located mostly in the Southeast submarket).
- **Availability of Land with Various Land Use Districts –** Lands designated Special Purpose – Future Urban Development (S-FUD) account for the largest share of vacant industrial lands, at close to 60%, while sites under the Industrial – General zone (I-G) account for nearly 30%. Other zones represent a small component of the overall vacant land supply.
- **Intensification Potential on Existing Sites –** Occupied industrial properties with a low building site coverage ratio may offer some potential for future intensification and will accommodate a component of projected industrial-type employment growth. However, there are many reasons that such sites may not intensify, such as: their function for outside storage purposes; long-term excess land being held in case of future business needs; limited capital for expansion on the part of a landowner/landlord; issues related to topography/natural areas; municipal servicing constraints; an irregular site orientation that limits development potential; or other considerations. Cushman & Wakefield cautions that intensification of existing sites should not be relied upon to fulfill a meaningful extent of future land requirements. Accordingly, no adjustment to the recommended long-term industrial land supply target has been made to account for intensification potential.
- **Impact of Land Use Conversions –** The conclusions regarding land supply and demand presented in this report do not account for any future conversion of lands from industrial to non-industrial. To the extent that future conversions occur, there would be a need for additional industrial lands elsewhere to offset the lost supply.

  Industrial lands are typically a lower cost land use compared to other employment-type land uses and compared to residential lands – particularly in urban areas. Notwithstanding other strategic municipal objectives that may conflict with this goal, The City must continue to protect the designated, budgeted industrial lands that are necessary to meet employment targets from conversion to other uses that are seeking to capitalize on their relatively lower cost of acquisition. In permitting the conversion of employment lands to a non-employment use, these lands are highly unlikely to revert in the future back to an employment use; they are "lost" forever.

- **Incorporating a Vacancy Factor –** At just 3.1% at year-end 2022, Calgary's industrial building vacancy rate is considered low in historic terms. Vacancy has averaged 5.3% dating back to 2000. With this relatively low level of industrial vacancy at present, there is no "slack" in the marketplace to absorb future employment growth absent new industrial building supply. An additional 250,000 m^2 of vacant floorspace would bring the vacancy rate up to 5% (roughly a market equilibrium level), which is the equivalent of approximately 60 hectares of land needed at a 40% site coverage to reach this state. This would bring the current market back into competitive balance from a landlord and tenant perspective.

  A similar long-term vacant factor should be considered in planning for future land demand. To ensure a healthy level of building vacancy to facilitate choice for prospective occupiers, there is a need to plan for additional lands beyond the land demand model output, which strictly accounts for anticipated future employment growth and the land and buildings needed to accommodate these jobs. The forecast approximately 1,550 net hectares of industrial land (@ 25 jobs per net hectare) would accommodate approximately 6.2 million m^2 of occupied building floor area. If a 5% vacancy factor is to be applied, there is a need for an additional 80 hectares of future lands to accommodate vacant buildings to ensure a competitive balance is sustained over time.

When accounting for lands that will be required to accommodate forecast industrial-type employment growth, non-industrial lands in industrial areas needed to support these uses, and a vacancy factor to reflect a long-term leasing market equilibrium (5% industrial building vacancy), **the Consultant Team recommends that The City of Calgary ensure provision of 1,400-1,900 net hectares of lands across its industrial areas**. This includes up to 1,550 net hectares of land required for industrial uses (at a density of 25 jobs per net hectare – the lowest of the three densities used in our model) as well as up to 230 net hectares of non-industrial lands to accommodate complimentary uses that support industrial occupiers (lands across industrial areas for non-industrial uses are suggested at an additional 15% of the industrial land area), as well as 140 hectares of lands to account for long-term building vacancy (60 hectares of which are needed to adjust for the present shortfall and 80 hectares that capture the long-term equilibrium amount, based on projected new industrial building supply from the land demand model).

SUMMARY OF LAND NEEDS AT VARIOUS EMPLOYMENT DENSITIES

Description	Land Need @ 25 Jobs per Net Hectare (ha)	Land Need @ 30 Jobs per Net Hectare (ha)	Land Need @ 35 Jobs per Net Hectare (ha)
Industrial Lands to Accommodate Industrial-Type Employment Growth	1,548	1,290	1,106
Non-Industrial Lands to Complement Industrial Uses in Industrial Areas (@15%)	232	194	166
Long-Term Vacancy Adjustment (High Scenario)	140	140	140
Intensification Potential	No adjustment made		
TOTAL	**1,920**	**1,624**	**1,412**

The city has a supply of close to 2,400 net hectares of vacant land within its industrial areas across some 440 sites, of which roughly 90% is industrial land (2,175 net hectares) and roughly 10% is non-industrial (220 net hectares). Based on the Consultant Team's review, there is an adequate provision of vacant lands across a range of geographic areas and parcel sizes to accommodate a spectrum of prospective occupiers – including those industry groups that are projected to account for the most employment growth in coming decades. The city's land supply itself is a competitive advantage that can be leveraged to foster economic development.

Presently, the extent of vacant serviced lands is considered adequate. However, The City should encourage more landowners with serviced sites to secure Development Agreements in order to increase the supply of shovel-ready lands. Shovel-ready vacant sites within the city's industrial areas total 186 hectares spread across the Northeast (almost 120 hectares across 27 sites) and Southeast (62.5 hectares across 25 sites), with only a limited supply in the Northwest submarket (less than 4 hectares across 7 sites). There are no serviced and shovel-ready lands in either the Central or Southwest submarkets. Altogether, shovel-ready sites account for just a 7% share of overall vacant lands within the city's industrial areas.

Since 2010, Cushman & Wakefield has tracked 37 new buildings completed that are greater than 250,000 sf. Of these, 23 are located within the City of Calgary and 14 are located in Balzac/Rocky View County. An inadequate supply of large, Serviced and Shovel-Ready sites could cause prospective occupiers to seek other markets for their facilities rather than wait for suitable sites to move through the development process.

The Consultant Team recommends that City staff monitor the land supply in industrial areas on a periodic basis (at least every five years) to understand the rate of land absorption, to track employment growth by industry group to ensure supply is aligned with emerging demand, to incorporate and assess the impacts of any land use conversions, and to enable City Council to make strategic decisions regarding its land holdings.

4.4 Key Questions from City Staff

4.3.1 How many years of vacant industrial supply remain? Considering the city's current industrial land supply in years, what is the lead time at which point additional lands will be needed to accommodate growth?

The preceding analysis of land supply and demand indicates that Calgary has an adequate amount of land within its industrial areas to accommodate projected demand (absorption) through the 2076 forecast horizon. The Consultant Team anticipates demand for approximately 1,400-1,900 net hectares of land (which excludes any adjustment for intensification on existing sites – which is challenging to predict), whereas the city presently has a supply of close to 2,400 net hectares of vacant land throughout its industrial areas.

The exhibit below illustrates the potential land demand through 2076 in 10-year segments (and 5 years for the final time period of 2071-2076). This projection is guided by the industrial-type employment growth projection and builds in an accommodation for non-industrial uses in industrial areas, as well as the long-term vacancy factor, as discussed above. The anticipated rate of industrial-type employment growth (excluding declining industry groups) slows from 2021-2036, before rebounding through the next several decades.

- The aggregate industrial land demand through 2076 has been distributed based on the percentage share of growth over the indicated time cohort below.
- The non-industrial lands to complement industrial uses are projected to be required as an additional 15% in each indicated time cohort below, guided by the industrial land demand in each cohort.

For simplicity, the long-term vacant adjustment has been accounted for on a straight-line basis throughout the forecast horizon.

The present supply of 186 gross hectares/150 net hectares of serviced and shovel-ready lands identified across 59 sites represents a roughly four year supply, based on anticipated demand through 2031 (assuming all of these sites are developed in the near-term). In an active period of demand that exceeds projections presented in this report, this limited serviced and shovel-ready land supply would be an impediment to achieving the potential growth, which would pivot to other markets instead. Accordingly, it should be a land use planning priority to increase the supply of shovel-ready lands to provide more options within the marketplace for prospective occupiers.

Some municipalities have policies/strategies in place to guide the maintenance of a supply of vacant, serviced, development-ready employment lands.[4][5][6] The City of Calgary could consider a similar strategic policy-driven approach of supporting a 10-year supply of serviced and shovel-ready lands in order to provide a suitable range of options in the market in terms of location, site size, zoning, and development-readiness in order to be able to capitalize on economic opportunities as they arise. This recommended 10-year serviced and shovel-ready supply target equals approximately 300-400 net hectares (with demand fluctuating over time based on forecast industrial-type employment growth trends).

SUMMARY OF LAND NEEDS BY TIME COHORT

Description	2021-2031 (ha)	2031-2041 (ha)	2041-2051 (ha)	2051-2061 (ha)	2061-2071 (ha)	2071-2076 (ha)	2021-2076 (ha)
Industrial Lands to Accommodate Industrial-Type Employment Growth (@25 Jobs per Net Hectare)	314.4	236.7	251.8	275.1	300.2	169.8	**1,548.1**
Non-Industrial Lands to Complement Industrial Uses in Industrial Areas (@15%)	47.2	35.5	37.8	41.3	45.0	25.5	**232.2**
Long-Term Vacancy Adjustment (High Scenario)	25.5	25.5	25.5	25.5	25.5	12.7	**140.0**
TOTAL	**387.1**	**297.7**	**315.0**	**341.9**	**370.7**	**208.0**	**1,920.4**
Annual Total	**38.7**	**29.8**	**31.5**	**34.2**	**37.1**	**41.6**	**34.9**

[4] The City of London, Ontario's Industrial Land Development Strategy (ILDS) recommends the maintenance of a minimum 10-year supply of vacant, serviced, market-ready industrial land at strategic locations. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://london.ca/sites/default/files/2024-05/Industrial_Lands_CIP_2024_AODA.pdf

[5] The City of Thunder Bay's Official Plan states that up to a 20-year supply of land shall be designated for a wide range of economic activities and ancillary uses.chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://gotothunderbay.ca/wp-content/uploads/2020/11/Thunder-Bay-Employment-Land-Strategy-2020-FINAL.pdf

[6] The City of Greater Sudbury's Employment Land Strategy recommends that the City maintain a 20-year supply of industrial lands, and that it should continue to promote a range of locations, site sizes, zoning, and serviced or readily-serviceable sites for employment land development. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://pub-greatersudbury.escribemeetings.com/filestream.ashx?DocumentId=47320

4.3.2 What are the needs of the city's land supply for new business and industrial growth that cannot be accommodated within the current land base?

There is a limited availability (only about 15 hectares, mostly located in the Northeast sector) of vacant lands designated Industrial – Outdoor (I-O), which is an industrial designation primarily for outdoor storage, salvage, and equipment yard uses on land that has limited or no municipal services. In many areas it is challenging to find suitable sites for outside storage of shipping containers, trucks, and trailers associated with the logistics industry. These uses are often visually unsightly, and the noise and high volume of truck traffic associated with these properties means that they are sometimes not easy to situate within established/built-up areas of a city.

There is an absence of vacant Industrial – Heavy (I-H) lands in the city. This industrial designation is primarily for large, purpose-built heavy industrial developments that typically locate close to hazardous goods routes and rail lines. The preceding analysis of employment growth by industry indicated that many of the industry groups that are anticipated to be among the drivers of future industrial-type job growth are those that may require heavy industrial facilities, including a range of manufacturing industry groups (Bakeries and tortilla manufacturing, Architectural and structural metals manufacturing, Glass and glass product manufacturing, Beverage manufacturing, Aerospace product and parts manufacturing, Pharmaceutical and medicine manufacturing, Industrial machinery manufacturing, Other food manufacturing, Motor vehicle manufacturing, Cannabis product manufacturing, and Railroad rolling stock manufacturing).

While it may be the case that a considerable share of future jobs associated with heavy industrial-type uses can be accommodated at existing businesses, City staff should proactively consider designating some lands for such uses. This is a challenge since a private landowner may be reluctant to support a redesignation of their lands to heavy industrial since it may incumber alternate opportunities for land development in the near term. Accordingly, The City should evaluate whether any of its own vacant industrial land holdings would be suited to an I-H zoning, taking into account their location, proximity to sensitive uses, access to rail, access to goods movement, and other factors. Finally, City staff must be responsive to inquiries for the redesignation of industrial lands to accommodate heavy industry as economic development opportunities emerge.

4.3.3 How can The City create policy to support land development in achieving its forecast industrial growth?

In addition to addressing the issues related to the land use designations identified above (I-O and I-H), The City can ensure that the timing of future extensions of infrastructure/servicing to partially serviced or unserviced lands is coordinated in order to always maintain a suitable supply of shovel-ready lands (at least 10-years of forecast absorption).

The City should monitor the regional industrial market to remain abreast of land development economics (supply of land, new/upgraded infrastructure, economic development incentives, etc.) across the surrounding municipalities and amend its land use planning policies accordingly over time in response to these changes.

4.3.4 What is the correlation between industrial job growth, industrial floor space, and industrial land absorption?

In undertaking an analysis of employment density (the amount of floor space per worker, or land area per worker), it is optimal to source municipal employer survey data (the number of workers by business address) and link this to real estate data (building area and land area) in order to develop well-informed conclusions. The City of Calgary does not undertake a periodic survey of employers, so such data is not available.

In 2021, Cushman & Wakefield was engaged by the City of Mississauga to complete an industrial floor space planning per worker study. This work combined data from the City's employer survey (a building-by-building survey of the number of employees) with recent building permit data (address, building size, land area, etc.) in order to calculate industrial employment density in terms of floor space per worker (FSW). The following are some key conclusions from this work:

- Floor space per worker (FSW) increases as building size increases. Buildings less than 25,000 m^2 have an average FSW of approximately 130 m^2 while buildings over 25,000 m^2 have an average FSW nearly three times greater. This trendline aligns with expectations, since the larger buildings likely are home to a significant portion of warehousing and distribution space (with fewer workers), while the smaller buildings are more likely to be manufacturing/production-oriented, with a relatively more dense level of occupancy.
- The employment density was expressed on a floor space per worker basis because the analysis was relied upon as an input to calculate future industrial building permit rates. When translated to an employment density on a land area basis, a site coverage factor is required. Given the relatively high cost of land in Mississauga, a high site coverage would be anticipated. At a site coverage of 40%, this translates to a density of approximately 31 employees per net hectare (for buildings less than 25,000 m^2), which would be lower for larger buildings which are typically less densely occupied.

In recent years, Cushman & Wakefield has completed door-to-door employer surveys in the City of Thunder Bay and across Simcoe County (located north of the Greater Toronto Area) to gather data for industrial land demand studies in these markets (since municipal employer survey data was not available). The following are some key conclusions from this work:

- In Thunder Bay, the average industrial building site coverage was just less than 20%. This is attributable to lower land costs and the nature of the local industrial uses (a higher proportion of the site was used for outside storage of materials and equipment compared to more urban industrial markets across Canada). Overall, industrial employment density was measured at 26 employees per net hectare.
- Across Simcoe County, the observed site coverage was lower, at around 15%, and employment density was estimated to be roughly 16 employees per net hectare. Again, this is attributable to lower land costs and a high degree of outside storage of raw materials, finished goods, equipment, and vehicle parking.

In the *Industrial Area Growth Strategy Consulting Report* that was prepared back in February 2021, Cushman & Wakefield wrote the following:

> *While The City of Calgary does not conduct an employer survey (which would enable the Consultant Team to link employment at businesses with a building's municipal address, and thus use property data to calculate employee density), a benchmark range of 30-35 jobs per net hectare would be in line with observations in other major metro areas in Canada (a range of 25-40 is generally seen, with the upper end of the range including business parks with a considerable share of flex industrial properties with a higher component of office-type uses, and the lower end of the range reflecting a greater extent of outside storage of machinery, equipment, and raw and finished goods). Higher densities are generally associated with higher cost land markets (major cities), while lower densities are observed in lower cost land markets (secondary and tertiary markets).*

Notably, these remarks are aligned with recent observations made in Mississauga, Thunder Bay, and Simcoe County. The following is also extracted/paraphrased from the *Industrial Area Growth Strategy Consulting Report*:

An analysis of Calgary's existing industrial building supply indicates that the average site coverage is 40% across all properties within the Industrial land use designation. This is in line with the Consultant Team's observations in other major metropolitan markets in Canada. Notably, there has been an identified trend toward higher site coverage, as developers maximize site utilization, and seek to minimize land costs – although there are practical limits, in order to ensure suitable space for on-site storage, truck movements, employee parking, and required setbacks.

The future industrial-type job growth identified in the employment forecast to 2076 demands additional industrial floor space, generating a need for industrial land across the city.

5.0 INDUSTRIAL SUBMARKETS ANALYSIS

5.1 Introduction

The *Industrial Area Growth Strategy Consulting Report* completed in February 2021 profiled the industrial market at a citywide level within the regional context. In this follow up report, City staff sought more in-depth information by local industrial submarket. The following section provides an overview and outlook for each geographic sector and addresses several questions raised by City staff pertaining to the industrial submarkets.

5.2 Submarket Profiles

5.2.1 Introduction

The purpose of this section is to provide a summary profile of each of Calgary's industrial submarkets that examines key property and performance metrics such as share of inventory, age of the building stock, along with historic vacancy rates and rental rates (through year-end 2022). An outlook for each submarket is also provided that considers prospective demand and pressure for conversion, among other issues. Of note, Cushman & Wakefield currently only tracks the Central, Northeast, and Southeast submarkets in our quarterly market survey datasets. Therefore, only a brief overview is provided for the Northwest and Southwest submarkets, along with an outlook.

5.2.2 Central Submarket Profile

Overview

The following are some key property metrics for the Central submarket:

- As tracked by Cushman & Wakefield, the Central submarket accounts for a 16% share of the total industrial floorspace in the Calgary market, with some 22.4 million sf as at year-end 2022.
- The average building size in the Central submarket is approximately 35,000 sf, based upon buildings tracked by Cushman & Wakefield. This is well below the market-wide average of 52,800 sf. The Central submarket is home to a greater extent of smaller single-tenant and small-bay multi-tenanted properties compared to other areas across the city.
- The industrial building stock is older, on average, than other areas of the city. Buildings completed in the 1960s and 1970s together account for two-thirds of the Central submarket's inventory of floorspace, as tracked by Cushman & Wakefield.
- Reflecting the older age of the building stock, ceiling clear heights in the Central submarket are typically lower than those seen in the city's other submarkets. Buildings with a ceiling clear height of 24 feet or less account for almost 85% of the overall floorspace in the Central submarket, versus around 50% in the Northeast and Southeast submarkets.

The following are some key performance metrics for the Central submarket:

- The Central submarket has exhibited the lowest vacancy rate among the city's industrial submarkets over the past decade. From 2011 onward, vacancy in the Central submarket has ranged from roughly 2%-7%, with an average of just less than 4%; this compares to an average of 6% citywide.

- For the decade prior to the pandemic, Calgary's Central submarket consistently exhibited the highest average asking net rental rate among the three submarkets. More recently, the Northeast and Southeast submarkets have achieved all-time highs due to modern new supply that has been in strong demand, whereas rates in the Central submarket have not yet rebounded to their peak level seen back in 2014-2015. The average asking net rent at year-end 2022 in the Central submarket was $10.80 psf, which is up almost 50% from year-end 2019.

Outlook

The stock of industrial buildings in the Central submarket is generally older and has lower ceiling clear heights compared to the Northeast and Southeast submarkets. Accordingly, a portion of this local inventory will have limited appeal to a range of more modern industrial users that require higher ceilings and better building finishes, up-to-date HVAC and lighting systems, etc. Despite this, rental rates have remained very competitive in the overall market context due to demand for smaller users seeking single tenant buildings or smaller bay units within multi-tenanted properties. This indicates that sufficient occupier interest exists for properties in the Central area that have exhibited ongoing demand despite the modernization of the city's industrial stock in recent decades, as extensive new supply has been added on the edges of the city.

Over time, there is the potential to see increased pressure for conversion of some of these functionally obsolete buildings into alternative employment uses such as flex office spaces, showrooms with some extent on on-site industrial functions (production, assembly, etc.), retail-commercial uses, or residential uses on select sites where land use conflicts can be mitigated/avoided. High-value sites in proximity to transit stations are at particular risk of conversion pressure. The City will have to make choices regarding capitalizing upon opportunities to increase density near transit infrastructure versus retaining ongoing employment uses. A potential policy solution is to ensure that jobs are incorporated into any redevelopment scheme. Such jobs may be in the form of office, retail-commercial, institutional, or even compatible light industrial uses.

If dynamics in other industrial markets are repeated in Calgary, demand for last-mile goods delivery could generate renewed interest in centrally-situated properties in the form of demolishing an older building(s) on a large site and erecting a large, modern facility for such uses. An issue with such uses is the conflict between higher volumes of truck traffic/deliveries and proximity to residential communities and surface routes that are not designed to accommodate such uses, and which could exacerbate traffic congestion.

The presence of small bay units within multi-tenanted buildings – which is an expensive building format to replicate in today's market – provides options for a range of smaller industrial users and start-up firms to satisfy their space requirements across the Central submarket. Such premises may be more difficult to find in outlying industrial areas of the city where developers of new buildings are typically seeking larger users to pre-lease these projects. It is critical to preserve these smaller premises to provide options for new small businesses which may grow to be some of tomorrow's major industrial employers.

5.2.3 Northeast Submarket Profile

Overview

The following are some key property metrics for the Northeast submarket. It is important to note that Cushman & Wakefield's definition of Northeast includes lands within the City of Calgary as well as neighbouring Balzac/Rocky View County. This is because the market survey data gathered is for the overall Calgary metro area (note: the same research methodology is employed in other Canadian cities – e.g., Greater Toronto Area). Where possible, distinctions are made to differentiate the City of Calgary's Northeast industrial area lands from the lands within Balzac.

- The Northeast submarket accounts for a 37% share of the total industrial floorspace in the overall Calgary market (this includes Balzac in adjacent Rocky View County). Cushman & Wakefield tracks an inventory of some 52.7 million sf as at year-end 2022 in this submarket.
  - Of this overall Northeast inventory, approximately 80% of the industrial floorspace is located within the City of Calgary (42.3 million sf in over 800 buildings), while the remaining 20% share is located in Balzac (10.4 million sf in nearly 60 buildings).
- The average building size in the Northeast submarket is just over 65,000 sf, based upon buildings tracked by Cushman & Wakefield. This compares to an average of 52,800 sf market-wide. This is indicative of the presence of many very large warehousing and distribution facilities in this area which raise the overall average (which again includes properties in Balzac).
  - Notably, the average building size in Balzac (approximately 180,000 sf) more than three times larger than the average building size for properties located within the City of Calgary's lands (roughly 55,000 sf) in the Northeast submarket. This is due to the presence of some very large warehouses/distribution centres in Balzac (home to Sobey's, Lowe's, Walmart, and Amazon, among others).
- The Northeast submarket is home to the Calgary market's most modern building stock by decade built. New supply added from the 2000s-onwards accounts for 50% of the overall floorspace in this submarket, compared to around 40% on average market-wide.
  - Note: This data is for the City of Calgary only (it excludes properties in Rocky View County).
- Ceiling clear heights in the Northeast submarket are fairly evenly distributed across the cohorts from 16 feet up to 32 feet clear, by share of total floorspace. Close to 15% of the floorspace has a ceiling clear height of over 32 feet, which is by far the largest share in the Calgary market.
  - Note: This data is for the City of Calgary only (it excludes properties in Rocky View County).

The following are some key performance metrics for the Northeast submarket:

- The Northeast submarket has consistently recorded the highest vacancy rate among the city's submarkets, averaging 7.5% since 2011. This compares to a Calgary overall market average of 6%. The year-end 2022 rate of 3.5% is the lowest rate recorded during this period.
- Average asking net rents in the Northeast submarket have closely tracked the overall market average (the submarket accounts for nearly 50% of the overall inventory). The average asking net rent at year-end 2022 was $10.30 psf, which is up 25% from year-end 2019.

Outlook

The Northeast submarket has seen substantial industrial development take place in recent decades. Land use restrictions in close proximity to Calgary International Airport played a role in facilitating this vital land supply for employment uses. Those users that benefit from proximity to the airport will continue to drive demand in the local submarket. In time, this growth will be exhausted as development reaches the urban boundary with neighbouring Rocky View County. The opportunity to leverage proximity to CN's intermodal terminal in nearby Conrich is another site selection attribute for this area of the city.

Vacant industrial-designated lands situated south of Stoney Trail generally abut established residential areas. Therefore, the future development of low impact, light industrial-type uses is best suited for these areas (such as the current I-B, I-C, I-E, and I-G designations). Undeveloped lands in Calgary's Northeast situated north of Stoney Trail offer greater potential to incorporate a broader range of industrial uses (including the preceding list, along with I-H and I-O designations) – of course, subject to compatibility with other planned land uses nearby.

A cluster of automotive dealerships has emerged along Country Hills Boulevard NE (including Toyota, Hyundai, Nissan, Volkswagen, and Mercedes-Benz), taking advantage of high visibility sites along the arterial road. These uses occupy what would otherwise be prime industrial sites given the proximity to Deerfoot Trail NE and Calgary International Airport, as well as other industrial uses nearby. Automotive uses are an example of a land use that can buffer industrial areas from other uses. Given their need for vehicle display, they may seek sites in business parks/industrial areas in order to benefit from lower land costs compared to commercial or mixed-use arterial corridors. To the extent that such non-industrial uses occur on planned industrial lands, sites will need to be identified elsewhere in the city to replace the lost vacant industrial land inventory.

Economic factors such as lower development costs (up front costs) and lower property taxes (an ongoing occupancy cost) have led to an influx of new industrial and retail-commercial construction in nearby Balzac. Highway 2 and Calgary's 100+ km Ring Road facilitates labour and goods movement to occupiers beyond Calgary's northern urban boundary.

Calgary International Airport plays an important role in the local industrial market as a key logistics hub and has been an active land developer since 1992. The lands are home to considerable air cargo-related operations, as well as mail/courier facilities (including Canada Post, DHL, FedEx, Purolator, and UPS), functioning as an inland port. Direct access to cargo apron space is a key differentiator for some users in the warehousing, transportation, and logistics industries. Airport lands are available on a long-term land lease basis to prospective occupiers and substantial land remains available on both the west and east side of the Airport – some of which is runway-adjacent. These lands will continue to appeal to a subset of occupiers seeking the on-site advantages that a location at Calgary International Airport offers.

5.2.4 Southeast Market Profile

Overview

The following are some key property metrics for the Southeast submarket:

- The Southeast submarket is home to the greatest share of Calgary's industrial floorspace at nearly 66.5 million sf, accounting for 47% of the overall market.
- The average industrial building size in the Southeast submarket is 53,000 sf, which is on par with the average market-wide.
- The Southeast submarket has seen considerable new supply over the past decade or more but is somewhat older on average compared to the Northeast. Just over 50% of the floorspace in the Southeast submarket was constructed during the 1990s and 2000s.
- Ceiling clear heights in the Southeast submarket are concentrated in the 20-28 foot range, accounting for nearly two-thirds of the total floorspace in this area.

The following are some key performance metrics for the Southeast submarket:

- Calgary's Southeast submarket has historically performed close to the overall market average level of vacancy rate. Vacancy has ranged from a low of around 3% (year-end 2022) to a high of nearly 9% (in 2013) since 2011, for an average of roughly 6% during this period.
- Although historically rents in the Southeast market have been the lowest among the city's three submarkets, strong occupier demand has driven up rents by 60% over the past three years to a new submarket record high of over $12.00 psf net.

Outlook

Southeast Calgary offers substantial remaining vacant industrial-designated land to accommodate the continued expansion of the city's industrial base. In addition, a prospective partnership with adjacent Rocky View County to promote land development in the southeast would enhance the site selection opportunities for potential users – both new market entrants and existing businesses seeking to expand or relocate to this area.

A key advantage of the vacant industrial-designated land supply in the Southeast (compared to the Northeast) is that these lands are generally well buffered from residential and other potentially sensitive land uses due to the presence of established industrial development to the west. Accordingly, these undeveloped lands have the potential to accommodate the full range of industrial uses, including light and heavy manufacturing/production, warehousing and distribution, outside storage, and more (uses encompassing an array of Calgary's existing industrial zones: I-B, I-C, I-G, I-H, I-O, and perhaps I-E, where this transition is applicable).

Limited remaining development land in the Central submarket and the inevitable build-out of employment lands in Northeast Calgary (constrained by the existing urban boundary) will position the Southeast to play an increasingly important role in the city's overall industrial land supply in coming decades.

5.2.5 Northwest Market Profile

Overview

Cushman & Wakefield does not track the Northwest industrial area as a submarket in our quarterly market survey due to the limited industrial building inventory. Based on City of Calgary data, a significant number of occupied properties across the Northwest industrial area are commercial uses situated along 112 Ave NW. The area offers over 160 hectares of vacant industrial lands (and a further 50 hectares of vacant lands with a non-industrial land designation – predominantly Special Purpose – Future Urban Development [S-FUD]).

Outlook

This area is planned as a mixed industrial/commercial employment area, along with some extent of institutional uses already in place. The presence of ongoing aggregate extraction operations nearby may impact timing of land absorption in this area, as well as the nature of demand.

Given that the Northwest industrial area is somewhat removed from the city's more established employment areas, this area may not appeal to businesses that are particularly dependent upon proximate supplier and customer markets (i.e., a lot of production inputs requiring locational synergies within an industrial ecosystem). The Northwest industrial area could appeal to users seeking sites in industrial areas that serve the local population, such as automotive and related uses, maintenance and repair facilities, on-site showrooming with rear production facilities (e.g., home decor, landscaping supplies, etc.), and other uses that take advantage of the nearby established and emerging residential population in this part of the city.

5.2.6 Southwest Market Profile

Overview

Cushman & Wakefield does not track the Southwest industrial area as a submarket in our quarterly market survey due to the very limited presence of industrial uses. The Southwest industrial area is situated between Stoney Trail SW (to the east) and 37 Street SW (to the west), on the north side of Spruce Meadows Trail SW. The area is home to over 130 hectares of vacant land, of which nearly 85 hectares is designated as industrial. Among the city's five industrial submarkets, this represents the smallest amount of vacant industrial land (just a 3% share of the city's overall supply). Based on City of Calgary data, there is only one existing industrial business presently.

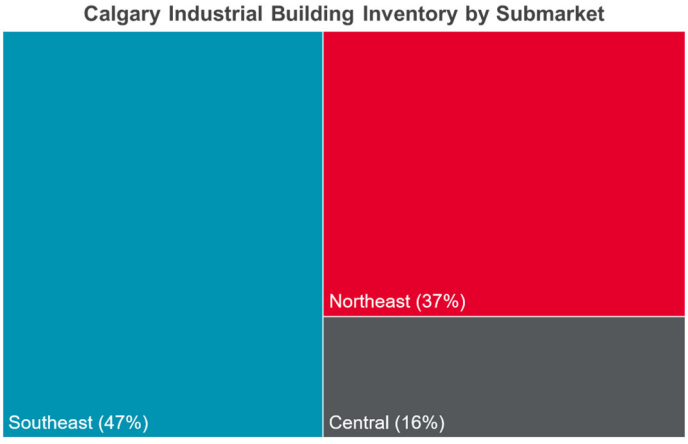
Outlook

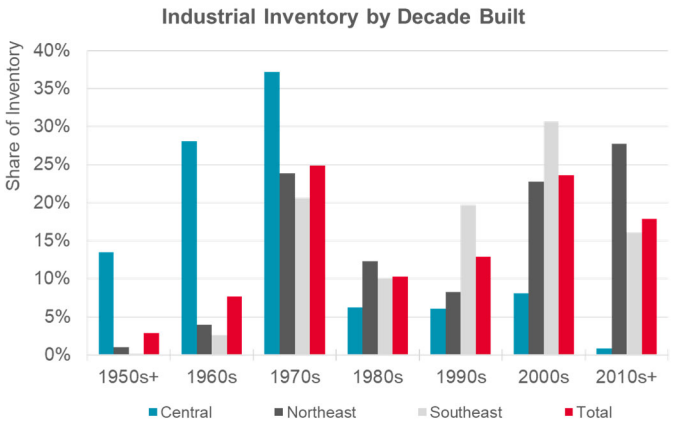
All of the vacant industrial lands situated in the Southwest industrial area have an S-FUD designation. They are identified as Employment Area or Business Industrial Area in the Providence Area Structure Plan. These lands provide for employment opportunities as an element of a complete community for this area as well as other neighbourhoods in the southwest part of the city.

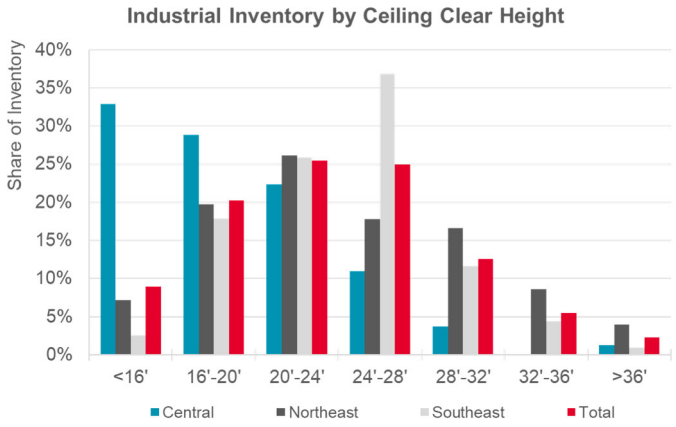
Similar to the Northwest industrial area, given that the Southwest industrial area is physically distant from the city's established industrial/employment areas, this area may not appeal to prospective occupiers that are reliant upon easy access to supplier and customer markets. The Southwest industrial area could appeal to users seeking sites that serve the local population, such as automotive and related uses, maintenance and repair facilities, on-site showrooming with rear production facilities (e.g., home decor, landscaping supplies, etc.), and other uses that take advantage of the nearby residential population in this part of the city.

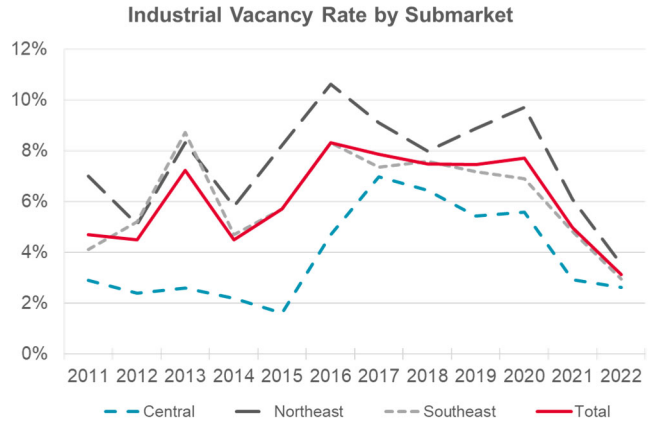
These industrial/employment lands in the Southwest will face competition from the planned mixed-use Taza development situated immediately west of Calgary, which is a partnership between Tsuut'ina and Canderel. The project will be comprised of three development villages – Taza Park, Taza Crossing, and Taza Exchange – with different mixes of land uses including retail, office, residential, high-tech industries, tourism, and recreation, across 445 total hectares of land.

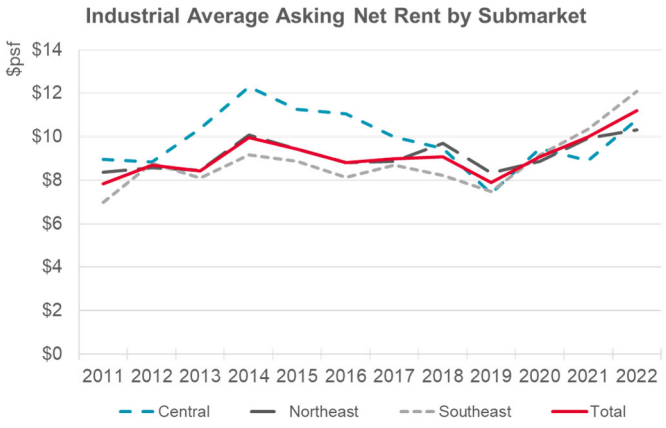
5.2.7 Summary Exhibits











5.3 Key Question from City Staff

5.3.1 Which industrial areas in Calgary should be preserved and which should be allowed to be converted?

This Industrial Area Growth Strategy incorporates analysis undertaken at the city scale (macro-level) and generally is not focused on specific employment areas/business parks. The aggregate land supply and demand conclusions indicate a need to preserve much of the designated industrial land stock to accommodate anticipated demand through the forecast horizon. However, some limited extent of conversion of industrial lands to non-industrial use can be considered, provided that the identified long-term land requirements are maintained. Notwithstanding a desire to achieve other planning objectives, there is no rationale for The City to proactively redesignate any of its industrial land supply. Any land use conversion requests should be evaluated on a case-by-case basis.

The land demand analysis identifies the amount of land required to accommodate future industrial-type employment growth, along with complimentary uses that support these jobs, non-industrial uses that seek sites in employment areas, and a long-term vacancy factor. Any currently vacant industrial-designated lands that are converted in the future would necessitate the addition of that quantum of lands elsewhere in the city to maintain the required inventory to meet the forecast growth. Likewise, any presently occupied industrial sites that are converted would necessitate the identification of alternate lands elsewhere in order to accommodate the total industrial jobs that are projected through the forecast horizon.

Direct or frictionless access to highways is vital as a site selection driver for many industrial occupiers. Warehousing and logistics uses are increasing as a component of the industrial stock as e-commerce growth is necessitating new distribution models for retailers (a trend accelerated by the pandemic). This includes “last mile” sites in central locations offering rapid access to consumers. Businesses that are seeking to enhance supply chain resilience may increase and diversify their locations of warehousing of critical goods, which will spur demand for industrial buildings to accommodate this need. Due to their large building footprint (and accordingly, land cost), warehousing and logistics uses are often attracted to large sites on the urban periphery. Sites that align with these attributes should be preserved in order to accommodate future demand.

Many of Calgary’s established industrial areas feature remaining undeveloped land that offers ready access to the Ring Road and wider highway network and will remain a sought-after location to accommodate industrial-type growth. From a market demand and site selection perspective, proximity to established major highway infrastructure is of heightened importance to facilitate the required labour access and goods movement to enable successful employment areas. Protecting these well-located employment lands in from conversion – whether they form part of established employment areas, or those planned for future growth – must be a prime goal of The City’s industrial land strategy.

Undeveloped and underutilized lands that offer access to rail provide a unique opportunity for occupiers seeking this feature as an element of their business operations. Such a requirement is more commonly associated with manufacturing businesses (and often heavy industrial-type uses) that receive raw material inputs via rail or ship finished goods by rail – particularly across a large geographic area. Rail spurs would generally be associated with larger land parcels which permit outside storage, given their space requirements. For most businesses, proximity to truck-to-rail intermodal facilities (for container shipping) satisfies their supply chain needs, rather than a dedicated rail spur.

It is critical that accessibility from industrial areas to intermodal facilities is not compromised by the introduction of non-compatible uses such as nearby residential subdivisions which could introduce traffic conflicts. As well, it is important to buffer intermodal facilities from incompatible uses in proximity in order to limit potential complaints due to noise and aesthetics, given the types of operations that gravitate around such facilities (truck parking, trailer and container storage, etc.). Maintaining goods movement corridors must remain a core element of The City’s strategic land use planning – including collaborating with the adjacent municipality where transportation facilities are located beyond Calgary’s urban boundary.

5.3.2 What criteria is used to determine land use conversion?

Demand for the conversion of lands within designated employment areas to other uses is an issue faced by many municipalities. The nature of employment continues to evolve away from a historic manufacturing base to a more service-based economy; reconciling these lands needs is an ongoing planning concern. A municipality must carefully weigh the benefits and drawbacks of any proposed industrial land use conversion in order to maintain/preserve sufficient lands to accommodate anticipated long-term industrial employment demand. Municipalities should encourage a range of parcel sizes, locations, and timing/levels of servicing of employment lands in order to be responsive to evolving occupier and developer requirements.

There are a series of criteria that City staff may consider in evaluating proposals for land use conversion. These include the following factors:

- **Demonstrating the need for conversion –** Are there alternative sites elsewhere in the city that could accommodate the proposed land use? If so, what is the rationale for converting the industrial lands to a non-industrial use?
- **Ensuring that The City can maintain a suitable supply of industrial lands –** A suitable supply means not only an aggregate supply in terms of total hectares, but also a range of site selection options for prospective users including a variety of parcel sizes, locations, land use designations, and types of infrastructure/services.
- **Preserving the viability of the industrial/employment area –** It is necessary to evaluate whether the conversion may impact the viability and ongoing use of the adjacent/nearby employment lands and the rate/extent of change that may occur. Would the proposed conversion impact the role and function of the industrial/employment area, impair development of contiguous lands that are well suited to future industrial growth, or impede accessibility to important infrastructure that supports industrial businesses (highway access, intermodal access, etc.)?
- **Identifying the availability of services to accommodate the proposed use –** Is there appropriate infrastructure/servicing in place or available to facilitate the proposed land use? What is the municipal financial impact of the conversion from an infrastructure cost perspective?

Demonstrating that the proposed conversion would not introduce a non-compatible use to the surrounding industrial/employment area is an essential element of any conversion application. The following additional perspectives relate to the suitability of lands for conversion:

- Vacant or occupied properties on the edge of an established industrial area are better suited to conversion than interior sites. Impacts on adjacent properties may be more manageable, along with issues such as accessibility.
- Vacant or occupied sites that create opportunities to effectively transition from one land use to another can be considered for conversion. More specifically, sites that may be in proximity to sensitive land uses (e.g., residential, schools, hospitals, and other institutional or community facilities) that would enable buffering of negative externalities from nearby industrial businesses (noise, odour, vibration, etc.) could be considered for conversion to a use that provides an effective transition.
- Vacant or occupied land that is not contiguous to other industrial/employment uses – such as historic remnants from decades ago when land use planning was less prescriptive than it is today, and the present industrial business operations are no longer optimally situated – may be suitable candidates for conversion. Industrial sites that are isolated from other employment uses may be incompatible with adjacent/nearby land uses that have emerged over time.
  - A prime example are sites on the urban periphery which were once remote but have seen development encroach over the past few decades.
  - Another example would be centrally-situated sites that have seen other nearby land converted, yet they remain a holdout to a prior pattern of land use.
- Vacant lands that are constrained due to their size, orientation, topography, or proximity to natural heritage features/environmental constraints may not be easily or economically be developed as industrial, and therefore could be suited to conversion.
- Older industrial areas with buildings that no longer meet the requirements of contemporary business (i.e., properties with lower ceiling clear height, a less functional site layout for truck movements/distribution, etc.) may convert over time to alternate uses – although there is uncertainty and complexity in anticipating the adaptive re-use of employment lands.
  - Notably, some of the city's oldest industrial stock is situated within the Central sector, which has exhibited the lowest vacancy rate among the city's industrial submarkets over the past decade and had consistently exhibited the highest average asking net rental rate among the three major submarkets until very recently.

The following perspectives relate to retention of industrial lands:

- Properties that form part of a critical mass and clustering of industrial uses should generally be preserved for ongoing use (if occupied) or future development (if vacant).
- Areas that exhibit recent investment (building permits for new construction) or reinvestment (building permits for additions/renovations) demonstrate a healthy industrial market dynamic. These locations should be preserved for ongoing employment use, given that there is proven appeal among existing and/or new occupiers.

In order to protect for employment opportunities in transitioning areas, one approach is to require through policy the provision of a set amount of gross floor area for employment use (such as retail-commercial or office space – or where achievable, light industrial uses that can be designed to be compatible with adjacent uses). In seeking to appropriately balance employment and non-employment uses in transitioning areas, a suitable ratio of gross floor area among the land uses can be identified and linked to future planning approvals in order to achieve these ratios. The determination of such a ratio would be guided by the scale of the redevelopment, the scale of nearby established employment lands and residential uses (densities), proximity to transit, accessibility, and other factors. The prospective market demand by land use type will need to be identified in developing a planning vision for such an area, since every local context is unique.

A related approach could be a strategy for phasing the conversion/redevelopment of an area such as a transit station or intensification corridor that facilitates an orderly transition which ensures that employment is accommodated in new buildings over time, in a staged manner, while non-employment uses are also introduced. This can also be used to ensure the protection/preservation of key properties/employers that are planned to remain over the longer term.

5.3.3 If Calgary International Airport's Noise Exposure Forecast (NEF) contours were not a factor, would the Nose Creek lands still be considered important industrial lands? Should the Nose Creek lands remain industrial in light of competition from the lands east of Deerfoot Trail or the Balzac industrial lands? If yes, what type of industrial is most appropriate for the Nose Creek area?

The Nose Creek Area Structure Plan (ASP) was approved by City Council in December 2015. The ASP provides for considerable lands for Industrial use as well as Industrial-Commercial and Industrial-Employee Intensive mixed uses (along with Residential and Commercial uses).[7] Of note, the ASP falls within the Calgary International Airport Vicinity Protection Area Regulation (AVPA) Noise Exposure Forecast (NEF) which dictate a range of prohibited land uses/development types depending on the NEF contour area. More specifically, when the ASP was approved in 2015 it reflected the AVPA NEF contours at that time. In 2021, the Province amended the NEF contours so that most of the land is within the 25dB NEF contour, which is the least restrictive and would allow other uses including residential development.

[7] Nose Creek Area Structure Plan. Map 3: Land Use Concept. Page 9.

The identified industrial area stretches from just north of Stoney Trail NE in the south to Highway 566 in the north, on the west side of Deerfoot Trail NE. Major highway interchanges are located at the north and south ends of the employment area providing excellent accessibility, and the adjacent highway offers good visibility and exposure for businesses. A Canadian Pacific Kansas City (CPKC – formerly CP Rail) corridor runs through the area on a north-south orientation. Calgary International Airport lies a short distance to the south.

The Nose Creek area offers many site selection attributes that make it well suited for future industrial land development, including proximity to major highways (Deerfoot Trail and Stoney Trail) and the airport; proximity to established and emerging industrial uses in Northeast Calgary and neighbouring Balzac; good access to labour; and large, contiguous sites that can accommodate future industrial buildings. However, the topography and presence of natural features of some of the area has been cited as a potential obstacle to industrial-style development (particularly large buildings that require large, level sites). Cushman & Wakefield does not have the expertise to evaluate the suitability of lands based on topography/presence of physical features (slopes, valley lands, environmental areas, etc.). Additional analysis by City staff is required.

Although the Nose Creek area satisfies many of the key site selection criteria that appeal to many industrial users, there are other considerations that must inform land use decision-making, such as whether parcels of land with irregular shapes may be best suited for non-industrial use, or whether parcels that are not contiguous to the broader industrial area could be better used for non-industrial purposes. Similarly, other planning priorities – such as encouraging dense land uses in proximity to transit stations – could mean that an industrial land use is not appropriate for certain locations. While overall the Nose Creek area has many attributes that position it for future industrial/employment uses and it remains some of the city's prime remaining undeveloped lands within industrial areas, the land supply and demand analysis does support some extent of conversion of industrial lands to non-industrial uses when justified by other planning considerations.

Cushman & Wakefield believes that the Nose Creek are is well positioned to attract demand from a range of industrial occupiers over time including transportation and storage, manufacturing, and wholesale trade. The area is not considered ideally suited for heavy industrial due to several factors including the presence of Employee-Intensive, Residential, and Commercial designations through the central part of the ASP (along 15 St NE). It may be a challenge to address land use compatibility concerns if (I-H) Industrial – Heavy District lands were designated in this area.

5.3.4 Are lands situated within the Nose Creek Area Structure Plan between the Canadian Pacific Kansas City (CPKC – formerly CP Rail) corridor and Hwy. 2 feasible for industrial development?

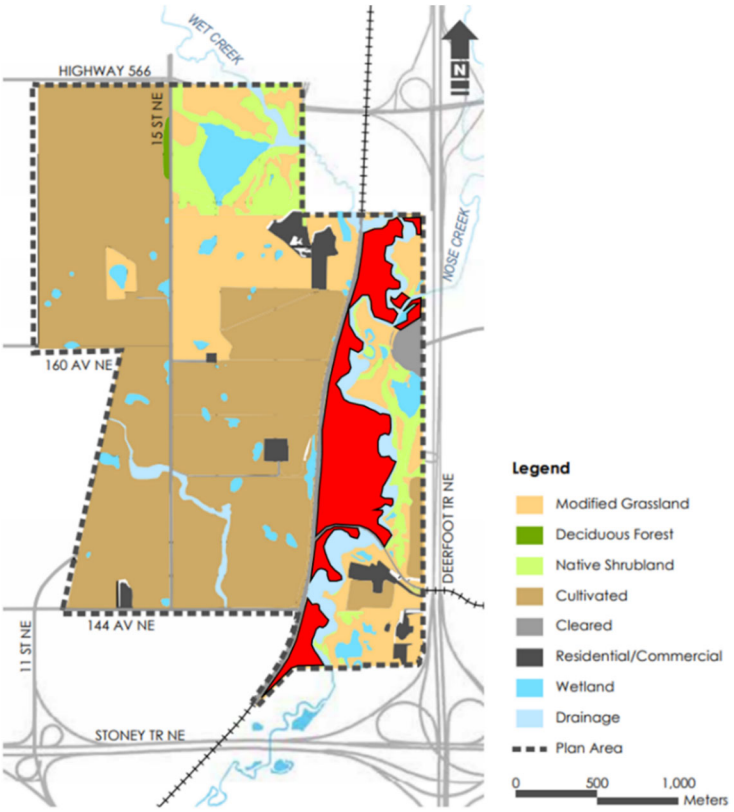
In this area, Nose Creek lies between the CPKC rail corridor and Deerfoot Trail NE/Highway 2. The winding nature of the creek and the setbacks that are required in order to build upon adjacent lands impact the extent of developable land area. An Environmental Open Space (EOS) Study Area is described in the Nose Creek ASP.[8] The EOS Study Area identifies land that is environmentally significant and will require further study at the Outline Plan/Land Use Amendment stage to determine if it qualifies as Environmental Reserve or if it can be incorporated into development.[9]

[8] Nose Creek Area Structure Plan. Map 3: Land Use Concept. Page 9.

[9] Nose Creek Area Structure Plan. Environmental Open Space Study Area. Page 34.

One of the policies related to the Environmental Open Space Study Area in the Nose Creek ASP states that crossings of wetlands and drainages should be avoided where possible.[10] With the constraint of the rail line to the west, there may be issues creating sites for industrial development of a suitable scale that would attract demand on certain lands on the west side of Nose Creek. The existing 24 St NE/Range Road 10 provides road access to sites on the east side of the creek abutting Deerfoot Trail. Because of the winding path of the creek and presence of considerable wetlands,[11] irregular parcel boundaries are created that may not be conducive to optimized industrial building footprints (large rectangles). This is particularly true north of 160 Ave NE, but these conditions may also occur south of 160 Ave NE. However, such sites may be able to accommodate outside storage uses with small on-site buildings which are generally more adaptable to irregular parcel orientations.

The map at right is an excerpt from the Nose Creek ASP that denotes Biophysical Features (Map D1). The areas identified in red have been added by Cushman & Wakefield to identify those lands which may not be well suited to future industrial development given issues related to accessibility (need for a future road to cross a creek/wetland) and/or parcel configuration. All of these lands are identified as either Industrial or Environmental Open Space Study Area in the Land Use Concept (Map 3).



5.3.5 If cost was not a factor (e.g., tax, off-site levy, land value), are there citywide and regional factors that make certain locations for industrial land better than others within the city?

As described earlier, a number of site selection principles are of importance in industrial location decision-making. These broadly include:

- Real estate factors – geographic location; availability and cost of business premises, or cost of land and new building construction; and location of customers and suppliers;
- Economic factors – availability of raw materials and intermediate goods (production inputs); labour force availability; labour cost; and government incentives; and,
- Infrastructure factors – transportation; telecommunications; and utilities.

[10] Nose Creek Area Structure Plan. Environmental Open Space Study Area. Page 35.

[11] Nose Creek Area Structure Plan. Map D1:Biophysical Features. Page D1.

The majority of these factors are considered to be relatively uniform across the City of Calgary. Assessing differences in these factors is more applicable when considering site selection across a broader region (e.g., Western Canada). A notable difference is that the cost of industrial development is higher within the City of Calgary itself versus the surrounding metropolitan region due to higher lands costs (a market-driven issue, to a large extent), higher development costs (off-site levies and other development-related charges/fees), and higher municipal taxes.

The following is a list of factors can be considered in the site selection decision-making process, along with some discussion of Calgary's various industrial areas:

- Does the site provide good access to labour – both within Calgary and across the metropolitan region – today, and in the future?
  - Neighbourhoods around the Central, Northeast, and Southeast industrial areas provide superior access to labour compared to the somewhat more peripheral Northwest and Southwest industrial areas.
- Is the site in proximity to other established employment areas, in order to promote supplier-customer dynamics, and provide an opportunity for future business expansion?
  - Again, the more peripheral locations of the Northwest, and particularly the Southwest, mean that these employment areas are relatively more distant from established employment areas. These would be considered inferior from a location perspective versus the Northeast, Southeast, and Central submarkets.
- Does the location complement existing or planned employment uses nearby?
  - With the exception of the small Southwest industrial area (approximately 130 hectares in size – as identified in the Providence Area Structure Plan approved by City Council in July 2020) that is presently mostly undeveloped, all areas offer vacant lands to accommodate future industrial and other employment uses to complement nearby existing or planned employment uses.
- Does the site offer proximity to transportation infrastructure such as major highways/Ring Road, intermodal facilities, and Calgary International Airport?
  - The Northeast features superior access to transportation infrastructure given the location of Calgary International Airport. The Northeast and Southeast industrial areas offer excellent access to intermodal facilities – the CN Calgary Logistics Park located in nearby Conrich and the CPKC Calgary Intermodal Terminal situated north of 114 Ave SE and east of 52 St SE. All areas have good access to major highways/Calgary's Ring Road.
- Does the site offer access and visibility on arterial roads?
  - Accessibility and visibility from arterial roads are not an issue for any of the industrial areas.
- Does the site connect existing and/or future employment uses with opportunities to access public transit?
  - Transit service levels vary by employment area. Over time, service frequency can be adjusted to address the timing and scale of future industrial development in these locations. The ability of The City to provide economical transit service is likely greater for centrally situated industrial sites versus more outlying properties on the urban periphery; therefore, preservation of these more central lands for industrial uses rather than conversion takes on heightened importance. The significance of transit access as a site selection attribute will vary among industrial employers. Those with larger workforces and a greater extent of less-skilled/lower wage workers (whose capacity to afford a private vehicle to use to commute with would be lower) may value nearby transit service as a site selection factor more highly than smaller firms and those with higher-skilled/higher wage workers (as an example to illustrate this contrast – warehouse workers versus those engaged in advanced manufacturing).

- Is the area large enough to provide opportunities for significant contiguous blocks of land for employment to accommodate land-extensive users such as manufacturing, warehousing, and logistics properties?
  - The Central industrial area is largely built out, offering no potential for major blocks of space (except through demolition of existing properties, which may occur as buildings become functionally obsolete). Both the Northeast and Southeast offer substantial opportunities for large-scale industrial development. Land availability for large sites in the Northwest is considered limited. The much smaller scale of industrial-designated lands in the Southeast is not conducive to prospective land-extensive occupiers.
- Are there any physical features that could preclude/inhibit development, such as valley lands, bodies of water, or other natural heritage features?
  - City staff made efforts to remove significant natural features from the preparation of the land supply data that was provided to the Consultant Team. Further, the gross to net land area adjustment accounts for some extent of physical features that would limit the development potential for industrial purposes. The Consultant Team has not undertaken a detailed assessment of physical features that could preclude/inhibit development on a site-by-site basis.
- Can employment uses be added in a way that land use conflicts can be managed/avoided – such as proximity to residential and any sensitive land uses?
  - Managing land use conflicts will have to be addressed as development applications are made over time. Industrial uses are well established in the Central, Northeast, and Southeast areas, and to a lesser extent, the Northwest. The relative absence of such uses in the Southwest means that land use conflicts (related to industrial/employment uses) have likely not been an issue, historically.

6.0 DEVELOPMENT OF SOUTHEAST REGIONALLY-SIGNIFICANT INDUSTRIAL LANDS FOCUSED ON RAIL

6.1 Introduction

The purpose of this section of the report is to explore the prospects for the development of regionally-significant industrial lands focused on rail to Calgary's southeast, in neighbouring Rocky View County. In December 2021, Calgary City Council directed Administration to initiate annexation of lands southeast of the city, primarily for the purposes of industrial development. These lands are bounded by Highway 560 (to the north), Range Road 282 (east), the Canadian Pacific Railway line (south), and Range Road 284 (west), and total approximately 1,700 hectares. However, a subsequent City Council directive in December 2022 widened the scope to consider other options in collaboration with Rocky View County. The intent is now to explore a collaborative, regionally-significant industrial corridor project area that leverages the rail line and a potential future CPKC intermodal facility.

6.2 Perspectives on Identifying and Protecting Growth Corridors

A growth corridor may be defined as an area designated for investments to further economic growth and development. Planning and strategies related to community infrastructure, transportation (including transit), and employment are among the factors to be considered in order to enhance the attractiveness of lands for future development and creating the environment for change. Calgary's Central, Northeast, and Southeast industrial areas have historically attracted investment due to their proximity to labour, highway accessibility, and access to key transportation infrastructure (airport and intermodal facilities). In contrast, industrial-designated lands in the Northwest have been slower to develop, and industrial lands in the Southwest remain largely undeveloped. The Southwest industrial lands in particular lack the connectivity that an industrial growth corridor would enable, and existing built-up lands nearby inhibit the creation of such a corridor. Thus, it is cut off from other industrial/employment areas of the city, which negatively impacts its attractiveness and marketability.

Establishing and protecting an industrial growth corridor that would link existing occupied and vacant lands in Calgary's Southeast industrial area to future development that would emerge at the regionally-significant industrial lands focused on rail to Calgary's southeast should be a key land use planning consideration in the years ahead, in a collaborative effort with Rocky View County. This will ensure that non-compatible uses do not occur that could compromise the ability of this area to reach its full development potential as a location for industrial and related employment land development.

6.3 Perspectives on Goods Movement and Intermodal Facilities

Port Metro Vancouver is Canada's largest port and the most diversified port in North America. Offering 27 major marine cargo terminals and three Class 1 railways, the Port provides a full range of facilities and services to the international shipping community.[12] The Port of Prince Rupert is North America's closest port to Asia by up to three days sailing; it is 36 hours closer to Shanghai than Vancouver and over 68 hours closer than Los Angeles.

[12] https://www.portvancouver.com/wp-content/uploads/2015/03/Port-Metro-Vancouver-Map.pdf

Port Metro Vancouver has North America's deepest harbour, is ice-free year round, and is able to accommodate the largest vessels in the shipping trade.[13] With constraints in the Vancouver industrial market including limited warehouse space available (industrial vacancy has been at or below 5% for almost two decades, and land constraints limit prospects for new supply) and bottlenecks that can arise at the Port of Vancouver's operations, Prince Rupert has taken on increased importance as a key point in the supply chain from Asia to Western Canada. As an alternative to the Port of Vancouver, goods can be transferred from ship to rail in Prince Rupert and then transported by rail to a Calgary distribution centre for final delivery to market by truck. In this way, Calgary can serve as an inland port that facilitates goods movement. As another advantage, industrial rental rates in Vancouver (averaging nearly $20.50 psf net at year-end 2022) are presently 80% higher than Calgary ($11.20 psf net at year-end 2022) – although rents were on par as recently as 2016.

CN Rail's Calgary Logistics Park located in Conrich is the newest facility in the company's network of logistics parks across North America (including Toronto, Montreal, Chicago, Memphis, and Mobile). CN's Logistics Parks offer businesses co-location within an intermodal yard which eliminates one truck move. There is access to all key logistics elements in one place – rail, intermodal, warehousing, and distribution. The 275-hectare park offers fully serviced, build-to-suit sites for warehousing and distribution, with direct rail connection, and is home to Whirlpool Canada, Princess Auto, and TDL Group.[14] A similar type of facility could be established on lands to the southeast of Calgary in Rocky View County, along the CPKC rail corridor.

Intermodal transportation can combine the global reach of ocean shipping vessels, the speed and efficiency of trains, and the versatility and reach of trucking. Shipping by rail is four times more fuel-efficient than trucking alone. Leading intermodal facilities can offer partnerships with port facilities, temperature controlled cargo movement, customs brokerage services, along with transloading and distribution.[15]

In proximity to an intermodal facility there are unique opportunities to plan for an agglomeration of transportation and logistics activities to promote economic growth and development. These can include customs, insurance, banking, postal, and other services, along with basic services in support of transportation and logistics such as fuel and maintenance facilities, restaurants, and other employment-supportive uses, as well as secured outdoor storage sites for trucks, trailers, and shipping containers.

In general, goods movement industries tend to concentrate when a series of key factors come into alignment, including the following:

- a large supply of available, zoned, and serviced (or readily-serviceable) lands;
- access via highway networks;
- proximity and access to industrial/employment areas via arterial roads;
- links to major trading destinations;
- competitive land costs;
- proximity to a major urban centre;
- proximity to multi-modal hubs (airports, rail, and ports); and,
- separation from conflicting land uses. [16]

[13] https://www.rupertport.com

[14] https://tribalpartners.com/cn-logisitics-calgary

[15] https://www.cn.ca/en/our-services/intermodal

[16] Peel Enterprise Zone Business Case. Watson & Associates Economists et al. February 2018.

With the creation of a “freight village”, the locations of transport and logistics activities can be master planned such that excess movements are reduced, the impact of negative externalities to communities are minimized, and synergies among land uses are maximized. This occurs by providing a “park” or “campus”-style layout in which transport and logistics activities can occur and the intensity of movements that arise in this sector can be accommodated. This reduces the potential chokepoints that can arise within freight hubs when movements are funneled onto municipal road networks and the many entry and egress points that result from separate land uses. This is similar to the way mixed-use and compact communities create walkable neighbourhoods, by reducing travel distances for local trips. To fully realize the benefits of this layout, the users of a freight village are co-located to best ensure synergies between uses. If a rail intermodal terminal is within the freight village, firms that regularly make use of it are encouraged to co-locate within the same area. Combined with an open layout, this enables these firms to access their containers in a timely fashion. By avoiding travel on municipal roads, terminal tractors or shunt trucks can be used instead of full-size trucks to transfer containers to and from the terminal and warehouse.[17]

6.4 Perspectives on CP Rail Acquisition of Kansas City Southern

In December 2021, CP Rail acquired Kansas City Southern, creating the only railway stretching from Canada through to the U.S. and Mexico. The merger combines the two smallest of North America's seven Class 1 railroads. Spanning from Vancouver and Saint John, to Houston and Mexico City, the new Canadian Pacific Kansas City (CPKC) network will operate almost 33,000 kilometres of rail and employ nearly 20,000 people.[18] CEO Keith Creel pointed to grain, lumber, and shipping containers as key areas for growth, including a stronger competitive position against trucking rivals.[19] CPKC’s headquarters will be in Calgary, although CP has said previously that it would maintain key KCS offices in the U.S.[20]

From the point of view of Calgary’s industrial market – and particularly the Southeast submarket – enhanced intermodal connectivity through CPKC facilities could mean increased demand and resulting capacity for warehousing and distribution of goods shipped by container across North America. The ability to leverage strategic lands along the CPKC rail corridor to the southeast of the City of Calgary in neighbouring Rocky View County presents a compelling economic development opportunity.

6.5 Conclusions Regarding Southeast Regionally-Significant Industrial Lands

Given that the land supply and demand analysis indicates that the city has a suitable supply of land through 2076 (based on the model assumptions regarding employment growth, employment density, site coverage, and intensification potential, among other factors), there is no near or medium-term requirement to annex lands, from a supply perspective. However, there are other reasons such an initiative may be warranted, such as preserving lands for longer-term growth and ensuring connectivity of industrial areas to planned future transportation infrastructure (i.e., highway interchanges, intermodal facilities, etc.).

[17] Peel Enterprise Zone Business Case. Watson & Associates Economists et al. February 2018.

[18] https://calgary.ctvnews.ca/cp-rail-kansas-city-southern-rail-merger-now-official-1.6355730

[19] https://www.cbc.ca/news/canada/calgary/kansas-canadian-pacific-railway-1.6810695#:~:text=Combining%20Canadian%20Pacific%20Railway%20Ltd,billion%20US%20deal%20last%20month.

[20] https://www.freightwaves.com/news/canadian-pacific-and-kansas-city-southern-officially-merge

The expansion of industrial uses to the southeast is a natural extension of the thriving employment base in this area, and the extent of large development sites that could be created is well aligned with the type of demand anticipated in coming decades. In particular, if considerable growth occurs in Northeast and Southeast submarkets, and if Northwest and Southwest lands are not seen as similarly desirable among prospective industrial occupiers, then there is likely a need for additional lands across the metropolitan market to provide site selection alternatives – including continued expansion of the local industrial market beyond Calgary's urban boundary.

The subject lands in Rocky View County can offer all of the attributes sought by goods movement businesses, provided that the required investments by stakeholders are made. This will include zoning the lands for industrial and supportive commercial uses and providing the needed municipal hard infrastructure and utilities.

The goods movement sector will be a driver of industrial land demand in Calgary – particularly the warehousing and distribution industry group, which is anticipated to account for two-thirds of industrial-type job growth through 2076. There is a clear opportunity to leverage the potential for a future CPKC intermodal facility in the subject location for broader economic opportunities as a regionally-significant industrial project area focused on rail.

APPENDIX A – EMPLOYMENT FORECAST

Employment by Industry – City of Calgary

The exhibit below identifies metroeconomics' forecast of employment by industry by place of work for the City of Calgary. This data is sorted in descending order of employment by industry for 2021.

FORECAST OF EMPLOYMENT BY INDUSTRY – CITY OF CALGARY

Industry Group	2011	2016	2021	2026	2031	2036	2041
Health care and social assistance	58,505	73,980	82,850	95,001	109,317	124,129	139,627
Professional, scientific, and technical services	71,945	66,800	73,950	83,263	88,938	94,316	99,678
Retail trade	63,845	69,725	65,975	68,476	73,038	76,880	80,173
Educational services	37,070	40,530	40,160	45,290	50,058	54,596	58,989
Accommodation and food services	36,125	43,495	29,510	45,724	53,193	60,978	69,161
Transportation and warehousing	28,455	30,010	28,135	34,636	40,004	45,614	51,540
Manufacturing	34,605	31,450	27,665	28,214	27,720	27,004	26,187
Mining, quarrying, and oil and gas extraction	40,690	38,650	27,160	29,496	30,484	31,212	31,782
Construction	28,535	28,645	26,220	31,499	34,840	38,174	41,603
Finance and insurance	24,875	26,085	25,315	24,692	25,473	25,935	26,162
Other services (except public administration)	26,040	25,925	23,650	32,057	35,543	38,880	42,122
Public administration	26,105	25,240	22,890	28,870	31,357	33,621	35,719
Wholesale trade	27,655	23,520	20,070	22,057	22,046	21,730	21,206
Administrative and support, waste services	17,535	19,045	17,675	22,089	24,607	27,044	29,434
Real estate and rental and leasing	13,000	12,770	11,970	12,591	14,461	16,330	18,203
Information and cultural industries	14,180	12,750	10,680	12,884	13,455	13,854	14,124
Arts, entertainment, and recreation	10,835	12,290	7,985	12,361	14,097	15,807	17,507
Utilities	7,580	7,350	7,650	7,859	7,838	7,757	7,647
Management of companies and enterprises	1,025	3,500	2,110	1,179	1,143	1,093	1,036
Agriculture, forestry, fishing, and hunting	1,690	1,520	1,350	1,417	1,418	1,408	1,392
TOTAL	**570,295**	**593,280**	**552,970**	**639,654**	**699,030**	**756,363**	**813,291**

Sources: Statistics Canada and metroeconomics

FORECAST OF EMPLOYMENT BY INDUSTRY – CITY OF CALGARY							
Industry Group	**2046**	**2051**	**2056**	**2061**	**2066**	**2071**	**2076**
Health care and social assistance	156,224	174,236	193,894	215,232	238,194	262,681	289,668
Professional, scientific, and technical services	105,230	110,981	116,958	123,137	129,484	136,023	143,180
Retail trade	83,171	86,014	88,767	91,388	93,810	95,964	98,325
Educational services	63,398	67,922	72,610	77,429	82,321	87,217	92,358
Transportation and warehousing	77,940	87,471	97,871	109,160	121,312	134,277	148,523
Accommodation and food services	57,936	64,921	72,586	80,945	89,980	99,655	110,450
Manufacturing	25,342	24,482	23,619	22,755	21,890	21,035	20,283
Construction	32,265	32,660	32,975	33,204	33,340	33,393	33,446
Mining, quarrying, and oil and gas extraction	45,213	49,016	53,035	57,267	61,711	66,389	71,486
Finance and insurance	26,253	26,262	26,214	26,101	25,909	25,628	25,373
Other services (except public administration)	45,381	48,721	52,175	55,715	59,295	62,862	66,733
Public administration	37,749	39,762	41,780	43,773	45,698	47,510	49,446
Wholesale trade	20,576	19,898	19,199	18,482	17,745	16,987	16,346
Administrative and support, waste services	31,856	34,359	36,968	39,666	42,425	45,208	48,176
Real estate and rental and leasing	20,120	22,107	24,180	26,332	28,546	30,799	33,222
Information and cultural industries	14,323	14,484	14,622	14,737	14,821	14,868	14,960
Arts, entertainment, and recreation	19,237	21,027	22,892	24,825	26,809	28,821	30,975
Utilities	7,527	7,398	7,265	7,125	6,979	6,830	6,688
Agriculture, forestry, fishing, and hunting	977	917	860	804	750	697	647
Management of companies and enterprises	1,374	1,353	1,332	1,309	1,284	1,258	1,234
TOTAL	**872,091**	**933,992**	**999,801**	**1,069,388**	**1,142,303**	**1,218,102**	**1,301,520**

Sources: Statistics Canada and metroeconomics

Employment by Industry – Calgary CMA

The exhibit below identifies metroeconomics' forecast of employment by industry by place of work for the Calgary CMA. This data is sorted in descending order of employment by industry for 2021.

FORECAST OF EMPLOYMENT BY INDUSTRY – CALGARY CMA

Industry Group	2011	2016	2021	2026	2031	2036	2041
Health care and social assistance	60,960	77,415	87,675	101,382	117,730	135,016	153,519
Professional, scientific, and technical services	74,640	69,795	79,720	89,794	95,946	101,776	107,584
Retail trade	69,410	78,000	76,815	80,407	86,563	92,043	97,049
Educational services	39,740	43,870	44,470	50,583	56,431	62,171	67,912
Transportation and warehousing	30,635	32,995	33,245	41,510	48,638	56,289	64,588
Accommodation and food services	38,230	47,285	32,665	51,025	59,886	69,310	79,431
Manufacturing	37,155	34,335	31,220	31,972	31,535	30,831	29,995
Construction	30,840	31,810	29,905	35,897	39,676	43,444	47,317
Mining, quarrying, and oil and gas extraction	41,845	39,985	29,290	31,793	32,841	33,610	34,209
Finance and insurance	25,725	27,130	27,670	27,205	28,310	29,098	29,657
Other services (except public administration)	27,920	28,630	26,700	36,524	40,892	45,196	49,509
Public administration	27,250	26,735	25,475	32,404	35,521	38,468	41,314
Wholesale trade	28,965	25,265	22,085	24,527	24,792	24,733	24,452
Administrative and support, waste services	18,400	20,485	19,585	24,685	27,757	30,814	33,908
Real estate and rental and leasing	13,725	13,840	13,070	13,830	15,994	18,205	20,479
Information and cultural industries	14,495	13,220	11,655	14,140	14,864	15,417	15,850
Arts, entertainment, and recreation	12,400	14,375	9,660	15,109	17,413	19,741	22,115
Utilities	8,045	7,810	8,530	8,765	8,744	8,656	8,535
Agriculture, forestry, fishing, and hunting	3,380	3,490	3,030	3,170	3,163	3,130	3,084
Management of companies and enterprises	1,105	3,560	2,350	1,323	1,294	1,249	1,196
TOTAL	**604,865**	**640,030**	**614,815**	**716,046**	**787,987**	**859,199**	**931,703**

Sources: Statistics Canada and metroeconomics

FORECAST OF EMPLOYMENT BY INDUSTRY – CALGARY CMA							
Industry Group	**2046**	**2051**	**2056**	**2061**	**2066**	**2071**	**2076**
Health care and social assistance	173,788	196,299	221,465	249,515	280,599	314,848	353,441
Professional, scientific, and technical services	113,594	119,815	126,276	132,949	139,800	146,853	154,570
Retail trade	101,888	106,742	111,707	116,750	121,802	126,791	132,257
Educational services	73,858	80,149	86,876	94,039	101,608	109,542	118,097
Transportation and warehousing	73,773	84,059	95,638	108,626	123,104	139,145	157,442
Accommodation and food services	90,528	102,848	116,612	131,944	148,930	167,642	188,671
Manufacturing	29,112	28,195	27,261	26,312	25,350	24,390	23,541
Construction	51,395	55,691	60,230	65,011	70,032	75,317	81,077
Mining, quarrying, and oil and gas extraction	34,714	35,125	35,451	35,685	35,819	35,865	35,911
Finance and insurance	30,096	30,477	30,827	31,138	31,395	31,582	31,815
Other services (except public administration)	53,971	58,680	63,696	69,015	74,607	80,437	86,880
Public administration	44,178	47,129	50,205	53,386	56,632	59,902	63,457
Wholesale trade	24,058	23,611	23,143	22,652	22,135	21,587	21,167
Administrative and support, waste services	37,137	40,574	44,265	48,214	52,409	56,830	61,658
Real estate and rental and leasing	22,869	25,416	28,152	31,087	34,215	37,531	41,183
Information and cultural industries	16,224	16,578	16,933	17,289	17,639	17,976	18,387
Arts, entertainment, and recreation	24,597	27,231	30,052	33,064	36,263	39,637	43,326
Utilities	8,403	8,261	8,114	7,960	7,799	7,632	7,476
Agriculture, forestry, fishing, and hunting	3,032	2,976	2,916	2,853	2,787	2,718	2,654
Management of companies and enterprises	1,140	1,084	1,030	977	925	874	825
TOTAL	**1,008,355**	**1,090,939**	**1,180,849**	**1,278,467**	**1,383,849**	**1,497,098**	**1,623,834**
Sources: Statistics Canada and metroeconomics							