

North Regional Context Study





North Regional Context Study

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Part 1

North Regional Context Study

Executive Summary

The North Regional Context Study area (North RCS) was developed through consultation and collaboration with stakeholders including members of the public, area landowners, members of Council, and technical staff from the City of Calgary and Rocky View County.

The North RCS is planned to serve as a sustainable growth corridor, including residential, employment and industrial uses within Calgary's northern and northwestern sectors, an area totaling approximately 5660 hectares (14,000 acres). The North RCS will comprise a projected population of 216,000 people and 68,500 jobs upon full buildout, meeting the thresholds for population and employment intensity contained in the Municipal Development Plan.

The North RCS is a non-statutory plan intended to provide a level of strategic planning between the Municipal Development Plan (MDP) and Calgary Transportation Plan (CTP) and subsequent Area Structure Plans. Specifically, the purpose of the North RCS is to:

- refine and implement The City's broader planning objectives in the area,

- identify key land use and transportation components, and infrastructure servicing; and
- provide criteria for establishing the sequencing of subsequent area structure plan and community plan preparation to ensure that urban growth proceeds logically and efficiently.

Eight planning cells have been identified within the North RCS. Each planning cell will be the subject of a future Area Structure Plan (ASP). ASPs should proceed based on direction from the Framework for Growth and Change as contained in the Municipal Development Plan. Preparation of ASP's should be informed by the specific land use, servicing, transportation and environmental components contained in the North RCS.

The land use concept provides a framework for development of complete communities, including Activity Centres and corridors. A number of local and regional City services and facilities will be required to create complete, sustainable communities.

Significant natural features in the North RCS area include Nose Creek, West Nose Creek and a number of escarpments, coulees and wetlands.

These features will be examined in greater detail during the ASP process, and protected from development where possible.

A number of constraints to development have been identified in the North RCS, including proximity to the Calgary International Airport, the Spy Hill Landfill and sour gas wells. Land use decisions at the ASP stage should be informed by these constraints.

The Growth Management Analysis (Section 7 and Appendix C) provides capital cost estimates for infrastructure, services and facilities required for each planning cell as well as a recommended sequencing of growth; however, it does not provide a timeline for the commencement of future ASPs in the North RCS. As part of the growth management analysis, the timing of subsequent ASPs should take into account strategic direction from the Municipal Development Plan and other Council policies, the availability of the land supply on the north side of the City in relation to residential growth, the required municipal infrastructure and the ability to finance the cost of extending this infrastructure into each ASP cell.

1.0 Vision

When developed, the communities within the North Regional Context Study area will provide for residential, commercial, mixed use, institutional, industrial and employment areas, in keeping with the goals and objectives of the Municipal Development Plan. The residential communities are complete, sustainable, diverse, vibrant and inclusive. A variety of residential housing types and densities, and a broad mix of land uses are provided, with an emphasis on high quality, innovative community and building design. The ability to live, work, shop, learn and recreate within walkable communities is highlighted by a system of Activity Centres and Corridors within the communities, which will serve as vital, mixed-use hubs of activity for area residents.

Office and industrial development is concentrated in two major employment corridors, which include a variety of office and fully serviced industrial uses interfaced with adjacent residential development and open space to minimize their impact.

Essential regional services are strategically located throughout the North RCS area. These services include

institutional uses, schools, Emergency Response stations, regional recreation facilities, libraries, Light Rail Transit stations, and park & ride lots.

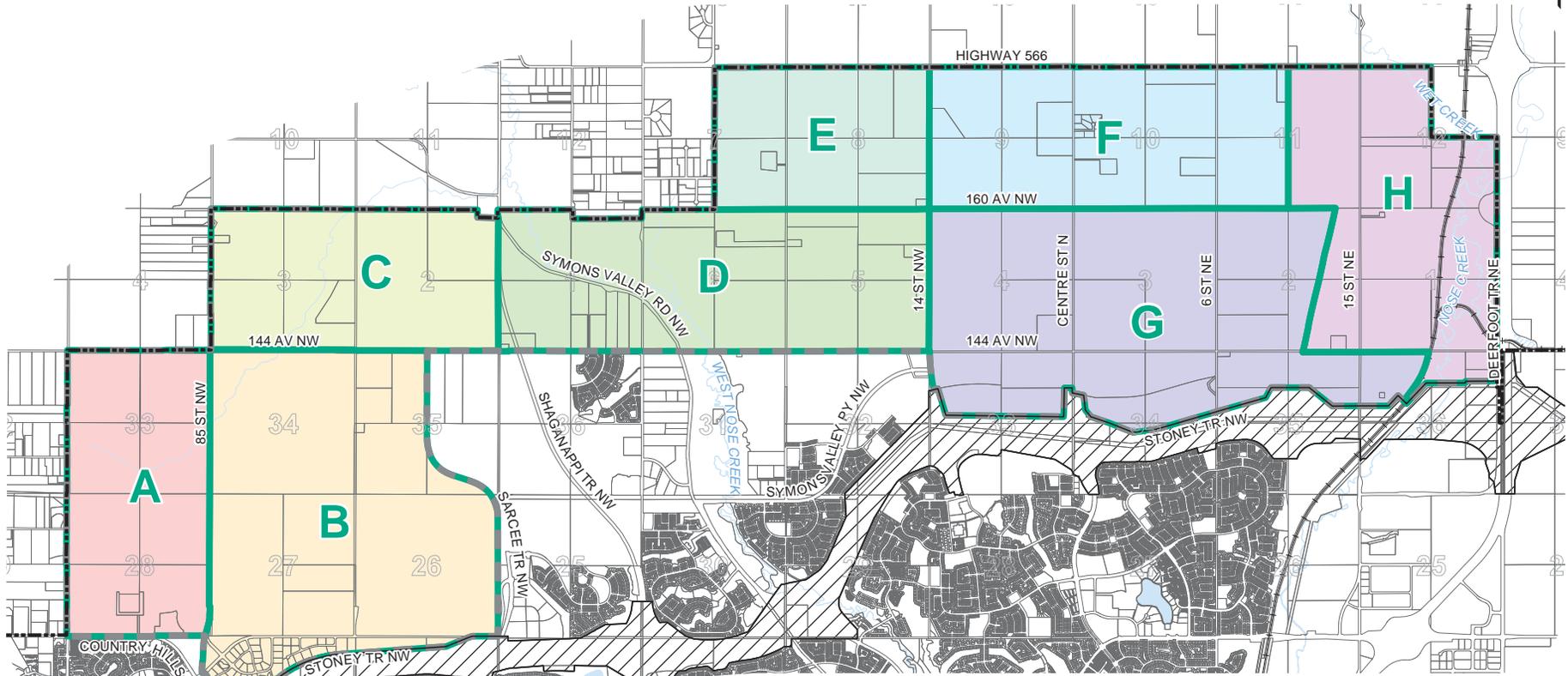
Greater mobility choices are highlighted by an extensive regional pathway and green corridor network, high quality transit service which includes a Light Rail Transit (LRT) route parallel to Centre Street N, and a wide palette of streets providing an efficient, well-connected road network. The regional road network of expressways and arterial roads includes Stoney Trail, the major east-west expressway which forms the southern boundary of the RCS area; and north-south connectors such as Highway 2, Centre Street N, Shaganappi Trail NW and Sarcee Trail NW. Collectively, the regional road network provides multiple routing options throughout the North RCS area.

The natural open space system is highlighted by Nose Creek and West Nose Creek, the major drainage courses in the North RCS area. Urban development is sensitively interfaced with natural features including wetlands, significant vegetation stands, escarpments and drainage courses, all connected by a comprehensive regional pathway system facilitating pedestrian and bicycle access within

the North RCS area. The importance of the natural environment will be emphasized in the protection of ecologically significant areas and incorporation of green infrastructure into the urban fabric.

The North RCS area comprised of complete, sustainable, liveable communities implementing the vision of the Municipal Development Plan.

MAP 2 Planning Cells



This map is conceptual only. No measurements of distances or areas should be taken from this map.



2.0 City of Calgary Strategic Policies

The application of Council's relevant strategic policies is integral to the success of the North Regional Context Study and subsequent Area Structure Plans.

2.1 Sustainability Principles

On January 8, 2007, City Council approved the Terms of Reference for the Integrated Land Use and Mobility Plan which included the 11 Sustainability Principles for Land Use & Mobility. The sustainability principles shall be considered in the formulation of ASP's.

- Principle 1:** Create a range of housing opportunities and choices.
- Principle 2:** Create walkable environments.
- Principle 3:** Foster distinctive, attractive communities with a strong sense of place.
- Principle 4:** Provide a variety of transportation options.
- Principle 5:** Preserve open space, agricultural land, natural beauty and critical environmental areas.
- Principle 6:** Mix land uses.
- Principle 7:** Strategically direct and manage redevelopment opportunities within existing areas.
- Principle 8:** Support compact development.
- Principle 9:** Connect people, goods and services locally, regionally and globally.
- Principle 10:** Provide transportation services in a safe, effective, affordable and efficient manner that ensures reasonable accessibility to all areas of the city for all citizens.
- Principle 11:** Utilize green infrastructure and buildings.

2.2 Recommended Key Directions

The North RCS and all subsequent Area Structure Plans will be required to comply with the Recommended Key Directions for Land Use and Mobility contained in the Municipal Development Plan and Calgary Transportation Plan.

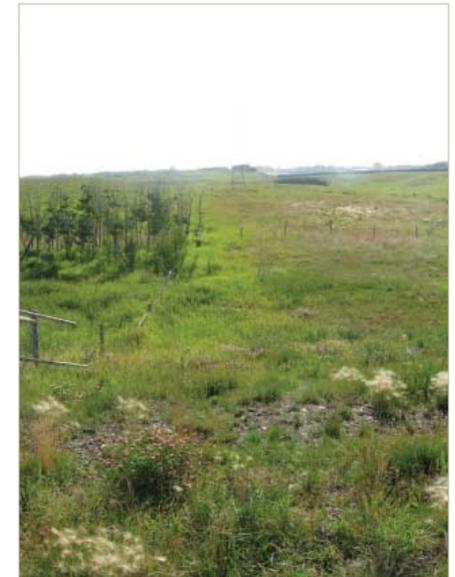
1. Achieve a balance of growth between established and Greenfield communities;
2. Provide more choice within complete communities;
3. Direct land use change within a framework of nodes and corridors;
4. Link land use decisions to transit;
5. Increase mobility choices;
6. Develop a primary transit network;
7. Create complete streets;
8. Optimize infrastructure.

2.3 Triple Bottom Line

In February 2004, Calgary City Council endorsed a Triple Bottom Line Policy Framework to ensure a more comprehensive, systematic and integrated approach to decision making. Triple Bottom Line (TBL) is an approach to decision making that considers economic, social and environmental issues in a comprehensive, systematic and integrated way.

2.4 Compliance with Other Policies

In addition to policies previously outlined, the North RCS will be required to comply with the 2006 Annexation Agreement between The City of Calgary and Rocky View County, and with all applicable statutory policies including the *Municipal Government Act*, the Intermunicipal Development Plan and the Municipal Development Plan.





3.0 Role of the Regional Context Study

3.1 Purpose of the North Regional Context Study

Regional Context Studies are non-statutory plans for larger sectors of The City which are intended to provide a level of strategic planning between the Municipal Development Plan, Area Structure Plans and Community Plans. Regional Context Studies provide direction to subsequent Area Structure Plans and Community Plans. The purpose of a Regional Context Study is to:

- refine and implement The City's broader planning objectives in the area;
- to identify key land use and transportation components; and
- establish the sequencing of subsequent Area Structure Plan and Community Plan preparation to ensure that urban growth proceeds logically and efficiently.

3.2 Interpretation of the North Regional Context Study

Interpretation of Maps and Data

Unless otherwise specified within the North RCS, the boundaries or locations of any symbols or areas shown on the maps in the North RCS are approximate only, not absolute, and shall be interpreted as such. They are not intended to define exact locations except where they coincide with clearly recognizable physical features such as water courses or fixed boundaries such as property lines or registered road and utility rights of way.

Interpretation of Terms

Most policies are written in the active tense, as deliberate statements or plans indicative of the direction that The City is proposing for future development or desired outcomes. In some of these policies, the word “should” is explicitly used to further clarify the directional nature of the statement. Policies that use active tense or “should” are to be applied in all situations, unless it can be clearly demonstrated to the satisfaction of The City that the policy is not reasonable, practical or feasible in a given situation. Proposed alternatives must be to the satisfaction of The City with regards to design and performance standards.

In some cases, policies are written to apply to all situations, without exception, usually in relation to a statement or action, legislative direction or situations where a desired result is required. The words “require”, “must”, “will” or “Shall” are used within these policy statements.

Monitoring of the Regional Context Study

The North RCS shall be monitored over time to ensure that it remains current and relevant. The North RCS shall be updated either generally or in response to a specific issue when determined necessary.

4.0 Scope of the North Regional Context Study

4.1 Scope

The North RCS provides a framework for the subsequent preparation of more detailed ASPs within the North RCS area. The North RCS preparation process involved the formulation of transportation, environmental, land use and servicing studies; input from landowners and other stakeholder groups; and public consultation.

The North RCS area is planned to accommodate residential and employment growth for The City's north and northwest sectors. Eight planning cells have been identified within the North RCS area (Map 2) with a projected total population of 216,000 people and 68,500 jobs. Major features of the North RCS area include:

- Two major drainage courses; Nose Creek and West Nose Creek;
- Two LRT stations and associated mixed use nodes;

- Two industrial growth areas; and
- One Joint Planning Area with Rocky View County, along the Highway 2 Corridor.

4.2 Location

The North RCS area comprises approximately 5,661 hectares (13,985 acres) of land in the north and northwest sectors of Calgary. The North RCS area, identified on Map 1, is bounded generally by Rocky Ridge Road NW to the west; Highway 2 to the east; Stoney Trail and 144 Avenue N to the South; and, Highway 566 to the north.

4.3 Timeframe of the North Regional Context Study

The North RCS is future oriented and depicts a broad land use and transportation pattern for the North RCS Area. The North RCS has no specific timeframe.

4.4 Joint Planning Areas/ Intermunicipal Development Plan

The joint planning area for The City of Calgary and Rocky View County, as identified on Map 1, was negotiated as a part of The City of Calgary/ Rocky View County 2006 Annexation Agreement. The joint planning area is an area of mutual interest to both Rocky View County and The City:

- (1) with common Highway entranceways to both municipalities,
- (2) in which Rocky View County and The City have determined that the integration of land use policies is desirable, and
- (3) in which there exist areas for interfacing and infrastructure planning between Rocky View County and The City.

The portion of the North RCS area within the joint planning area is adjacent to Highway 2. This joint planning area is to develop with non-residential uses, and in consideration of the environmental significance of Nose Creek. An Intermunicipal Development

Plan with Rocky View County (currently under development) will further define how matters of planning and development within this joint planning area will be addressed. Future ASP's and development applications within the joint planning area will be subject to the terms of the Intermunicipal Development Plan.

4.5 Land Ownership

There are approximately 321 titled parcels of land within the North RCS area. Of these parcels, 74 are privately held, with the remaining 247 being publicly or corporately owned. There is no single majority owner. Most of the parcels are large and consist of the unsubdivided quarter sections. In other cases, the quarter sections have been previously subdivided into smaller agricultural, industrial, or residential lots.



Conceptual visual of potential residential development

5.0 Land Use

5.1 Land Use Concept Map

Regional land uses for the North RCS area are shown on the Land Use Concept Map (Map 3). This Map consists of a series of areas and symbols that define the broad future land use components for the North RCS area. The North RCS outlines the intent of these areas and symbols. The general location, alignment and design of areas and symbols on the Land Use Concept Map will be determined through the ASP preparation process and refined at the Outline Plan/Land Use Amendment application stage.

As part of the preparation of an ASP, the location of the various components shown on the Land Use Concept Map may be re-evaluated. The re-evaluation process may result in revisions to the Map to ensure that the Map and any subsequent ASP remain consistent.

Some lands within the North RCS area will remain in agricultural uses for some time prior to development. Future ASP's within the North RCS area should include policies addressing

interim agricultural uses, including interface between urban development and adjacent agricultural lands, traffic management to allow for continued food production and drainage onto adjacent farmland.

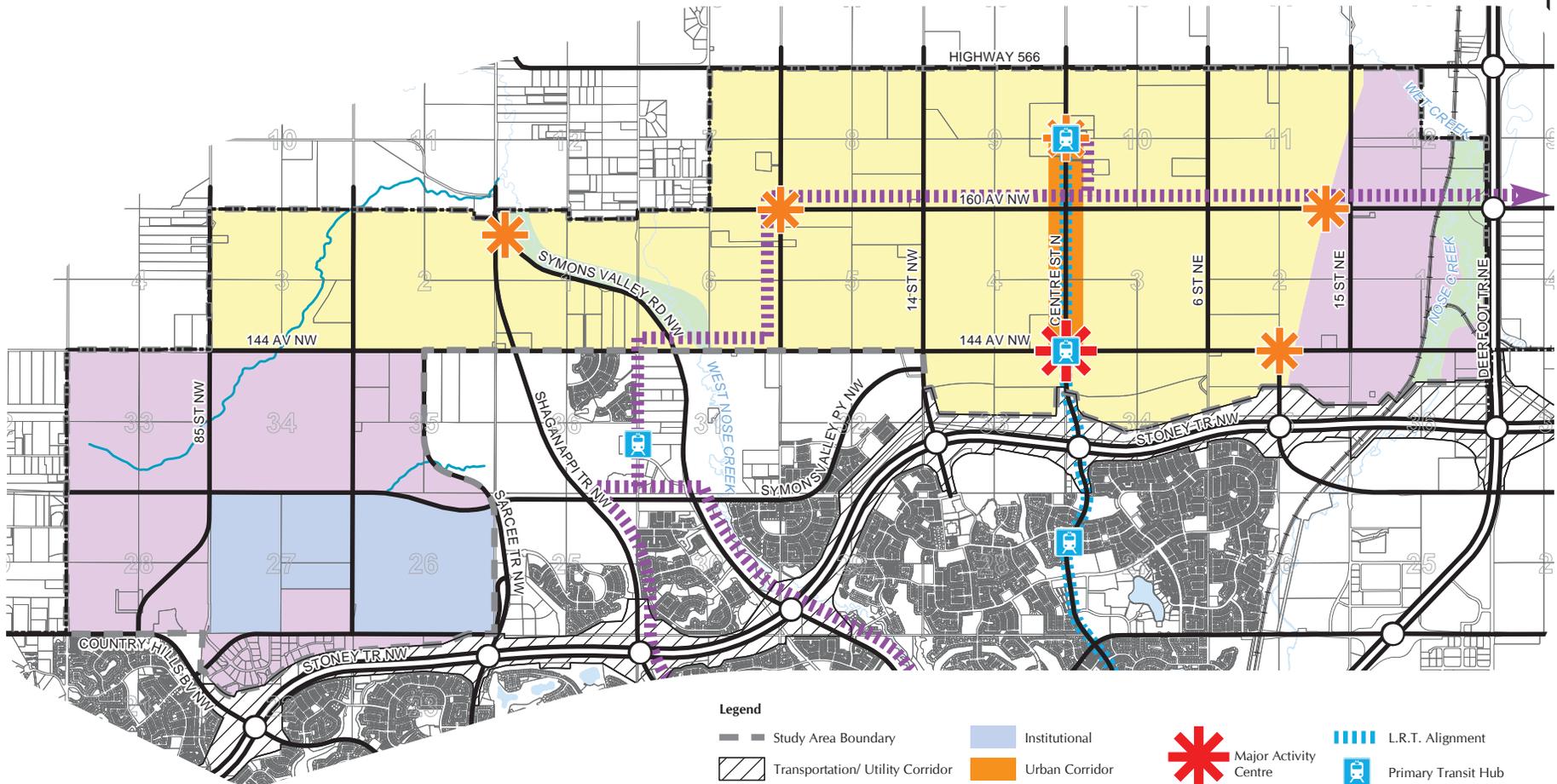
5.2 Residential Area

The predominant land use in the residential area (Map 3) should be residential, with a diversity of housing types to be provided in each community within an efficient, well-connected mobility network to create dynamic, interactive, sustainable residential communities. Recreational, institutional, public, local commercial and accessory uses should be permitted within the residential area in order to create walkable communities.

The minimum required density within the Residential Area shall be in accordance with the density requirements contained in the Municipal Development Plan.

The detailed layout of residential land use areas will be identified at the ASP stage and refined through the Outline Plan / Land Use Amendment application process.

MAP 3 Land Use & Transportation



Legend

- Study Area Boundary
- Transportation/ Utility Corridor
- City Limits
- Industrial/ Employment
- Institutional
- Urban Corridor
- Open Space
- Residential
- Community Activity Centre
- Major Activity Centre
- Expressway
- Street
- Interchange
- L.R.T. Alignment
- Primary Transit Hub
- Primary Transit Corridor



This map is conceptual only. No measurements of distances or areas should be taken from this map.



Conceptual visual of potential mixed use development

5.3 Activity Centres and Corridors

Activity Centres and Corridors include Major Activity Centres (MACs), Community Activity Centres (CACs), Neighborhood Activity Centres (NACs), Urban Corridors and Neighborhood Corridors as defined in the Municipal Development Plan. There are five CAC's and one MAC in the North RCS area. Neighborhood Corridors and Neighborhood Activity Centres, due to their smaller scale, will be identified through subsequent ASP processes. Along Centre Street N the MAC and CAC are connected by an Urban Corridor that contains the Primary Transit Network. The Primary Transit Network is well-integrated with the adjacent land uses. Activity Centres and corridors should consist of a blend of housing types and land uses, including employment uses, in a medium to high density, pedestrian-friendly and transit-oriented environment. The exact size, composition and location of mixed use nodes and corridors will be determined through the ASP preparation process.

5.4 Industrial/ Employment Areas

The predominant uses of land within industrial/employment areas (Map 3) should be mixed employment uses. It is anticipated that these areas will accommodate a wide range of fully serviced industrial, research park and office uses. In addition, institutional, local and/or ancillary commercial, recreational and other land uses considered to be appropriate and compatible may also be considered in this area. Industrial and office uses should be appropriately located to address the context of the area, particularly where development interfaces with rural residential uses. Development adjacent to rural residential uses in Rocky View County should be low-rise, non-intrusive and non-industrial in nature. Industrial uses should be buffered from existing and future residential areas by other employment uses.

The composition of industrial/employment areas shall be further refined at the ASP preparation stage.

5.5 Institutional

Two large institutional areas are located near the western edge of the North RCS area. These uses include existing correctional facilities and the Spy Hill Landfill. Throughout the North RCS area, smaller-scale institutional uses such as schools shall be accommodated within residential, mixed use and industrial/employment areas as appropriate. Additionally, one or more future regional institutional use may be developed within the North RCS area.

5.6 Spy Hill Aggregate Activities

Within the Spy Hill area of the North Regional Context Study, is the City's largest supply of non-renewable aggregate (sand and gravel) resources. The aggregate reserves in this area provide the raw material required to support development of roads, buildings, and infrastructure.

Aggregate activities are expected to continue in the Spy Hill area for up to 50 years. Although long-term in nature,

aggregate extraction operations are considered temporary and are permitted at the land use or development permit stage and may proceed prior to approval of an Area Structure Plan. Provincial and City of Calgary regulations require aggregate extraction operations to restore aggregate sites to a condition that will support the intended ultimate urban land use.

Land use and development proposals within areas of aggregate resources should demonstrate appropriate land uses, interface buffer treatments and/or setbacks from existing aggregate operations and goods movement routes to prevent conflicts.

Future ASPs within the North Regional Context Study should identify a truck route system that will accommodate truck movements between the Spy Hill area and the designated Primary Goods Movement Network as identified on Part 2, Map C of the North RCS.



Conceptual visual of potential area within the North RCS area, development in the industrial/employment area

6.0 Population and Employment Projections

The table below outlines the projected number of jobs and residents in each of the ASP Areas. These projections are subject to refinement at the ASP stage and the Outline Plan/Land Use Amendment stage.

ASP AREA	Size (ha/ac)	60 people + jobs/ha		70 people + jobs/ha	
		Population	Jobs	Population	Jobs
A	525 ha (1,297 ac)	0	10,490	0	10,490
B	1,037 ha (2,562 ac)	0	20,720	0	20,720
C	518 ha (1,280 ac)	28,283	2,797	32,997	3,263
D	699 ha (1,727 ac)	38,171	3,775	44,533	4,404
E	392 ha (969 ac)	21,387	2,115	24,951	2,468
F	654 ha (1,616 ac)	35,697	3,531	41,647	4,119
G	1,080 ha (2,669 ac)	55,299	9,989	64,266	10,820
H	563 ha (1,391 ac)	6,468	12,072	7,546	12,234
Total	5,468 ha (13,511 ac)	185,305	65,489	215,940	68,518

- Based on intensity of 60 people and jobs per gross developable hectare required in new Greenfield areas, with an eventual intensity of 70 people and jobs per hectare required over the life of the Local Area Plan as per the Municipal Development Plan.

7.0 Growth Management

This Section provides an evaluation of the feasibility of preparing subsequent ASPs for lands within the North RCS area. This evaluation requires an examination of the planning, infrastructure servicing, transportation, and development implications of all ASP cells.

7.1 Future Planning Areas

The North RCS area is divided into eight planning cells as identified on the Planning Cells Map (Map 2). Each planning Cell will be the subject of an ASP prepared in accordance with the requirements of the *Municipal Government Act*.

7.2 Timing of Area Structure Plans

An Area Structure Plan is the primary mechanism for controlling the location and extent of new suburban growth. As such, a comprehensive evaluation of the timing of each ASP will need to be carried out.

The timing for the preparation of an ASP shall be determined by Council in accordance with the criteria outlined in the Municipal Development Plan, including but not limited to:

- Advancing the objectives of the Municipal Development Plan, Calgary Transportation Plan, and other corporate strategic initiatives;
- An assessment of The City's financial capacity;
- A demonstrated need for planned land within The City;
- Consideration of the operating and life-cycle costs to The City in supplying and maintaining infrastructure;

“An Area Structure Plan is the primary mechanism for controlling the location and extent of new suburban growth.”

“Until such time as an ASP is approved for a future planning area, applications for Outline Plans, Land Use Amendments, Subdivision or Development Permits will be considered premature.”

- The City’s ability to provide efficient and cost-effective utility servicing;
- Opportunities for land use that supports the Primary Transit Network;
- Landowner interest; and
- Community interest.

The decision to commence preparation of an ASP shall be made by City Council, and be subject to the policies as identified in the Municipal Development Plan. To support Council’s decision making, Administration will prepare a report on commencing an ASP, including the necessary amendment to the Municipal Development Plan.

7.3 Development Prior to an Area Structure Plan

Until such time as an ASP is approved for a future planning area, applications for Outline Plans, Land Use Amendments, Subdivision or Development Permits should be considered premature. Exceptions to this may be made by the Approving Authority for essential public services/ facilities, or uses that will not compromise future urban growth. Temporary uses may be subject to a limited time frame, to be determined at the time of application.

7.4 Estimated Capital Costs of Development

The municipal infrastructure costs to enable development of each of the eight cells within the North RCS area are illustrated on Map H, Map I and in Section C.1.9 of Appendix C of the RCS document.

The Core Infrastructure Costs table contained in Section C.1.9 summarizes the current estimated costs for deep utilities servicing, transportation infrastructure and fire protection for each cell. The purpose of the costing information is to provide an approximation of the magnitude of the required municipal investment. At the Area Structure Plan stage of planning, a high level review of the operating costs of City services related to community form and staging of development should be included in the ASP document.

7.5 Sequencing of Area Structure Plans

It is recommended that Cell G be the first residential Cell in the North RCS area. Preparation of subsequent ASPs should be considered when market conditions warrant, and in consideration of the growth management criteria contained in this document.

“The purpose of the costing information is to provide an approximation of the magnitude of required municipal investment.”



Part 2

Appendices to the North Regional Context Study

A.0 Natural Areas and Land Use Constraints

A.1 Natural Features

A.1.1 Natural Inventory

A preliminary natural inventory and biophysical analysis has been conducted for the North RCS area (Map A). The predominant natural features in the study area are the Nose Creek and West Nose Creek corridors. Other natural features identified include the following:

- The Symons Valley regional corridor including escarpments, sandstone outcrops, steep slopes, viewscapes, semi-native grassland, springs, lower surficial aquifers, and the floodplain and meander belt along West Nose Creek;
- The Nose Creek Valley regional corridor, including native and semi-native grasslands and shrublands, steep slopes, and the floodplain and meander belt along Nose Creek;
- Five coulee systems in the western portion of the area characterized by steep slopes, small wetlands, and native/semi-native shrub and grassland communities;
- Two smaller coulee systems in the eastern half of the North RCS area;
- Two relatively large wetland complexes in the eastern half of the North RCS area;
- Ephemeral drainage channels;
- A glacial landform feature with surrounding views of the landscape; and
- Several other patches of semi-native and native grasslands, trees, and small wetlands that act as habitat stepping stones.



The inventory of natural features in the North RCS area shall be subject to further analysis and refinement at the ASP and Outline Plan/ Land Use Amendment application stage. The protection of wetlands will be subject to the City of Calgary's Calgary Wetland Conservation Plan and other City policies and / or provincial and federal legislation. Subsequent ASPs shall identify those wetlands and other features of environmental significance to be dedicated, acquired or otherwise protected. The ASP shall identify the measures and process for the conservation of the identified natural features.

A.1.2 Open Space System

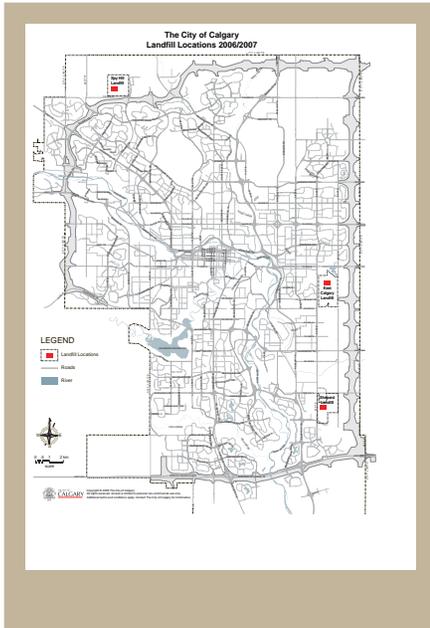
A conceptual open space network provides opportunities for connecting areas delineated as Environmentally Significant Areas as well as through corridors and stepping stones to ensure viable ecosystem processes are maintained by facilitating unimpeded movement of water, plants and animals. The open space system can be designed to incorporate passive recreational opportunities and other public benefits including regional pathways linking multiple communities together, and integrating stormwater infrastructure to enhance water quality entering both Nose Creek and West Nose Creek.

A.1.3 Potential Green Corridors

A region-wide system of Green Corridors will extend throughout the North RCS area. A part of the regional pathway network, these Green Corridors will be comprised of a connected system of culturally or ecologically significant natural features, recreation areas, and ecological corridors, while being contiguous and multi-purpose oriented. This system will potentially form part of the city-wide regional pathway and bikeway network, and be easily accessible to residents. The Green Corridors will provide the potential opportunity to integrate treated and managed stormwater flows through the drainage watercourse as part of the open and natural drainage system. The conceptual alignment of Green Corridors is shown on the Regional Pathways and Green Corridors Map (Map D). Acquisition of land for Green Corridors may occur through reserve dedication, use of utility corridors and rights-of-way, purchase,

or other practical and appropriate means. These opportunities should be further investigated at the ASP stage. The conceptual location, alignment and design of the Green Corridors and regional pathway network will be refined at the ASP preparation and Outline Plan/Land Use Amendment application stages.





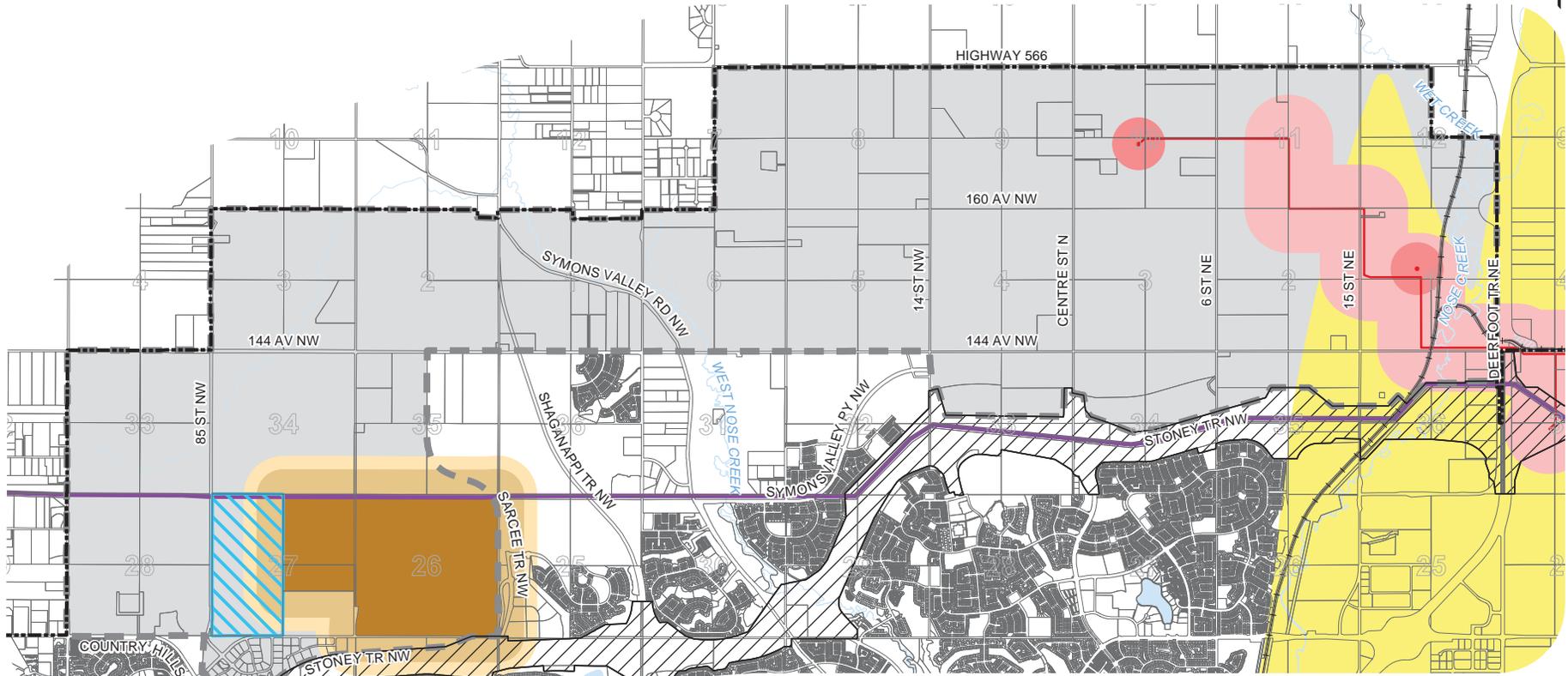
A.2 Land Use Constraints

A.2.1 Landfill Sites

The Spy Hill Landfill is located adjacent to the North RCS area, west of Sarcee Trail NW.

The 300 metre permanent setback areas for the Spy Hill Landfill site, as required by the Subdivision and Development Regulations. In addition, a temporary setback of 450 metres from the working face of the landfill may apply at the time of development. These setbacks are shown conceptually on the Constraint Areas Map (Map B). Additional assessment may be required at the ASP stage to refine the location of any applicable setbacks and to determine the appropriateness of uses within and adjacent to the setback area pursuant to provincial and municipal legislation.

MAP B Land Use Constraints



Legend

- Study Area
- Transportation/ Utility Corridor
- City Limits
- Landfill Site
- Landfill 300m Permanent Setbacks
- Landfill 450m Working Area Setback
- Sour Gas Well
- Sour Gas Pipeline
- 300 m Sour Gas Nuisance Setback (City of Calgary)
- Sour Gas Well/Pipeline Setback (E.R.C.B.)
- N.E.F. Contours 30
- 240 kV Power Lines
- Correctional Facilities



This map is conceptual only. No measurements of distances or areas should be taken from this map.

Sour Gas Wells

Level 1

Cells F and H

Sour Gas Pipelines

Level 2

Cells F, G and H

A.2.2 Sour Gas Setback

Level 1 sour gas wells are located in Cells F and H, and a Level 2 sour gas pipeline is located in Cells F, G and H within the North RCS area, as shown on the Land Use Constraints Map (Map B). The Energy Resources Conservation Board (ERCB) requires a 100 metre safety setback area for Level 1 sour gas wells and a 500 metre safety setback for Level 2 sour gas wells. The ERCB requires a 30 metre safety setback for Level 1 sour gas pipelines and a 500 metre safety setback for Level 2 sour gas pipelines.

Existing Council approved planning documents require an additional 200 metre nuisance setback from Level 1 sour gas wells located within non-industrial areas. These nuisance setbacks are conceptually identified on the Land Use Constraints Map (Map B). Additional assessment may be required at the ASP stage to determine the appropriateness of uses within the nuisance setback and adjacent to the ERCB safety setback areas.

The designated levels of facilities, wells and pipelines may be subject to change. The sour gas facilities within the North RCS area are currently expected to remain in place and be in use for

approximately 10 to 15 years. The planning impacts should be reviewed at the time of subsequent planning processes.

Future development areas in the vicinity of sour gas facilities may be subject to facility specific Emergency Response Plans. The planning impacts (e.g. Notification, Emergency Response Planning, etc.) should be reviewed at the time of subsequent planning processes.

A.2.3 Historical Resources Overview

The City-commissioned “*Open Space Study for the North Stoney Annexation Lands*” conducted in 2009 identified a number of culturally and historically significant sites in the vicinity of Nose Creek and West Nose Creek. A Historical Resources Overview (HRO) should be undertaken at the ASP stage to further investigate these sites and identify any other potentially significant historical areas or sites in the North RCS area. The HRO will be reviewed by the Heritage Resource Management Branch, Province of Alberta. Based on the results of the HRO, specific areas within the North RCS area may require further assessment and evaluation at

the Outline Plan/Land Use Amendment application stage to determine their significance for protection.

A.2.4 High Voltage Transmission Lines

The North RCS area is currently bisected by an existing east-west AltaLink 240 kV transmission line in a 50 metre right of way.

The Alberta Electric System Operator (AESO) has indicated the potential need for additional transmission lines in the future, including a possible routing through the North RCS area for the Calgary-Edmonton HVDC transmission line. ENMAX Transmission has identified the potential for a new point-of-delivery (PoD) in the NW area that may be located in the North RCS.

Further review of the transmission line network and future requirements should be conducted at the ASP stage.

A.2.5 Calgary International Airport Vicinity

Protection Area Regulation

The *Municipal Government Act* controls land use in noise sensitive areas around the Airport through the Calgary International Airport Vicinity Protection Area (AVPA) Regulation. Noise Exposure Forecast (NEF) contours included in the AVPA regulation predict the accumulated perceived noise levels, in decibels, experienced in the vicinity of Calgary International Airport during an average day. These contours provide a schedule of permitted land uses in the vicinity of the airport. Residential development is not permitted in areas where NEF contours indicate a noise Level of 30 decibels or greater. These areas are shown on the Land Use Constraints Map (Map B).

“Residential development is not permitted in areas where NEF contours indicate a noise Level of 30 decibels or greater.”

“An efficient, well-connected road network will contribute towards the North RCS area’s sustainability.”

B.0 Transportation, Utility Servicing and Facilities

B.1 Transportation Network

B.1.1 Regional Transportation Network

The Transportation Map (Map C) identifies the regional transportation network for the North RCS area. An efficient, well-connected transportation network will contribute towards the North RCS area’s sustainability. Regional roads include skeletal roads and streets bordering and intersecting the North RCS area that accommodate through traffic, local traffic and bus transit service within the future planning sub areas. The internal collector street network serving the future planning sub areas, which will serve pedestrians, cyclists, transit vehicles and motor vehicles, will be developed at the ASP stage. Major transit routes include an LRT line and a primary transit line servicing the future planning sub areas.

Transportation Analysis

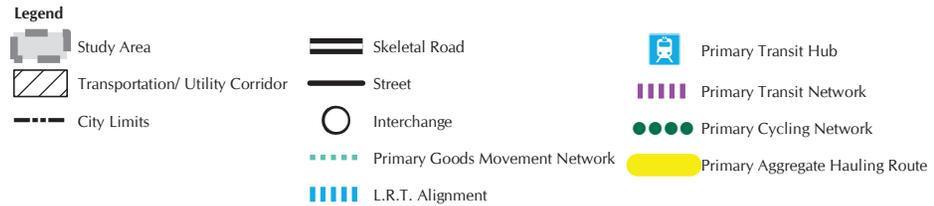
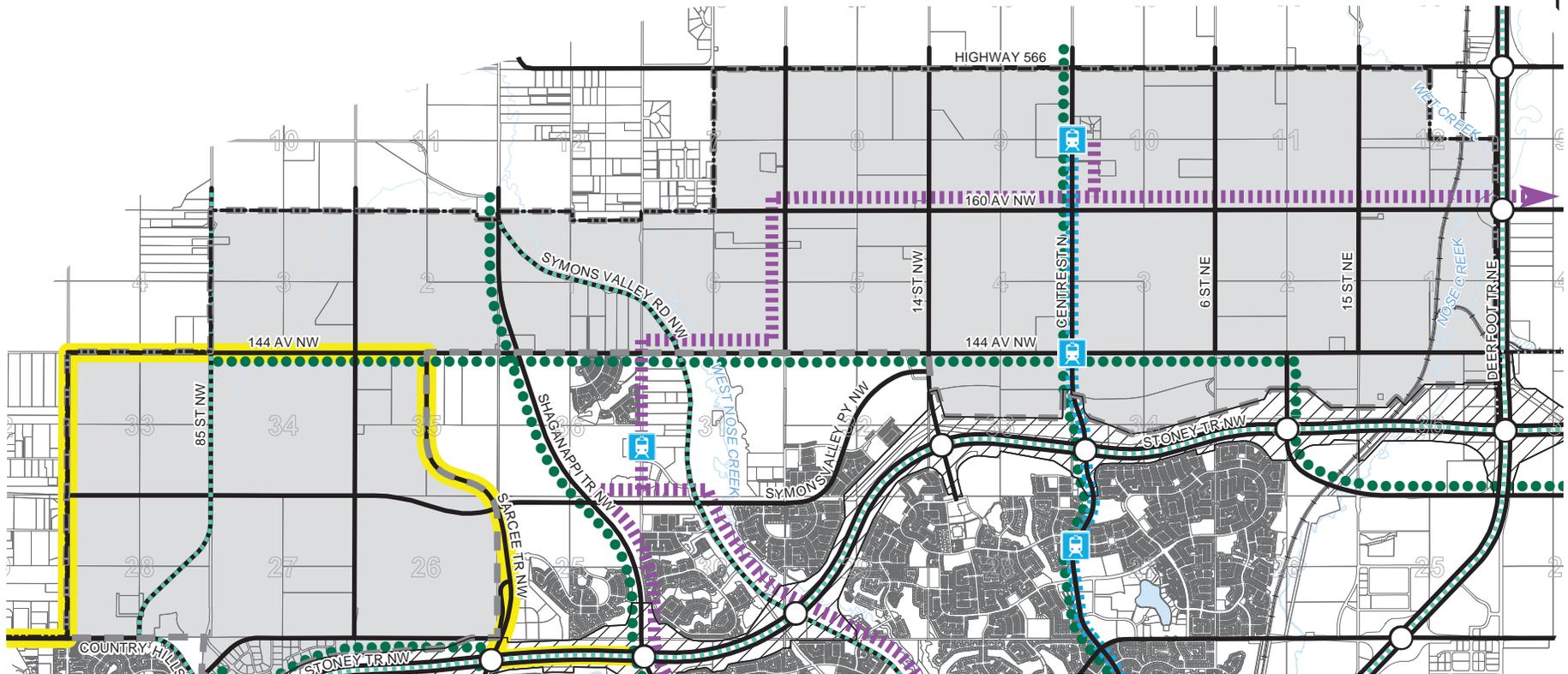
Additional transportation analysis or functional design may be required at the ASP stage, or if the Level of development warrants the need to re-evaluate the adequacy of the street, cycling, pedestrian and transit networks. The identified transportation network is conceptual and will be refined as required at the ASP preparation stage. Additionally, each of the required streets, primary transit and LRT lines will be comprehensively reviewed with respect to alignment and function through the ASP preparation process. As determined appropriate, an ASP should address interface and character of key entranceway streets.

Transportation Network Design

The regional transportation network should be designed to:

- accommodate efficient and safe traffic flow, including safe pedestrian and bicycle circulation;
- provide for appropriate goods movement connections;
- provide for appropriate and safe transit service;

MAP C Transportation



This map is conceptual only. No measurements of distances or areas should be taken from this map.

“As determined appropriate, an ASP should address interface and character of key entranceway streets.”

- be efficient and well-connected to contribute towards sustainable communities;
- create a logical community structure;
- avoid, where feasible, lands of higher environmental significance;
- implement appropriate mitigation measures where roads or transit lines are deemed to be warranted on lands of higher environmental significance; and
- accommodate emergency services' ability to provide emergency response.

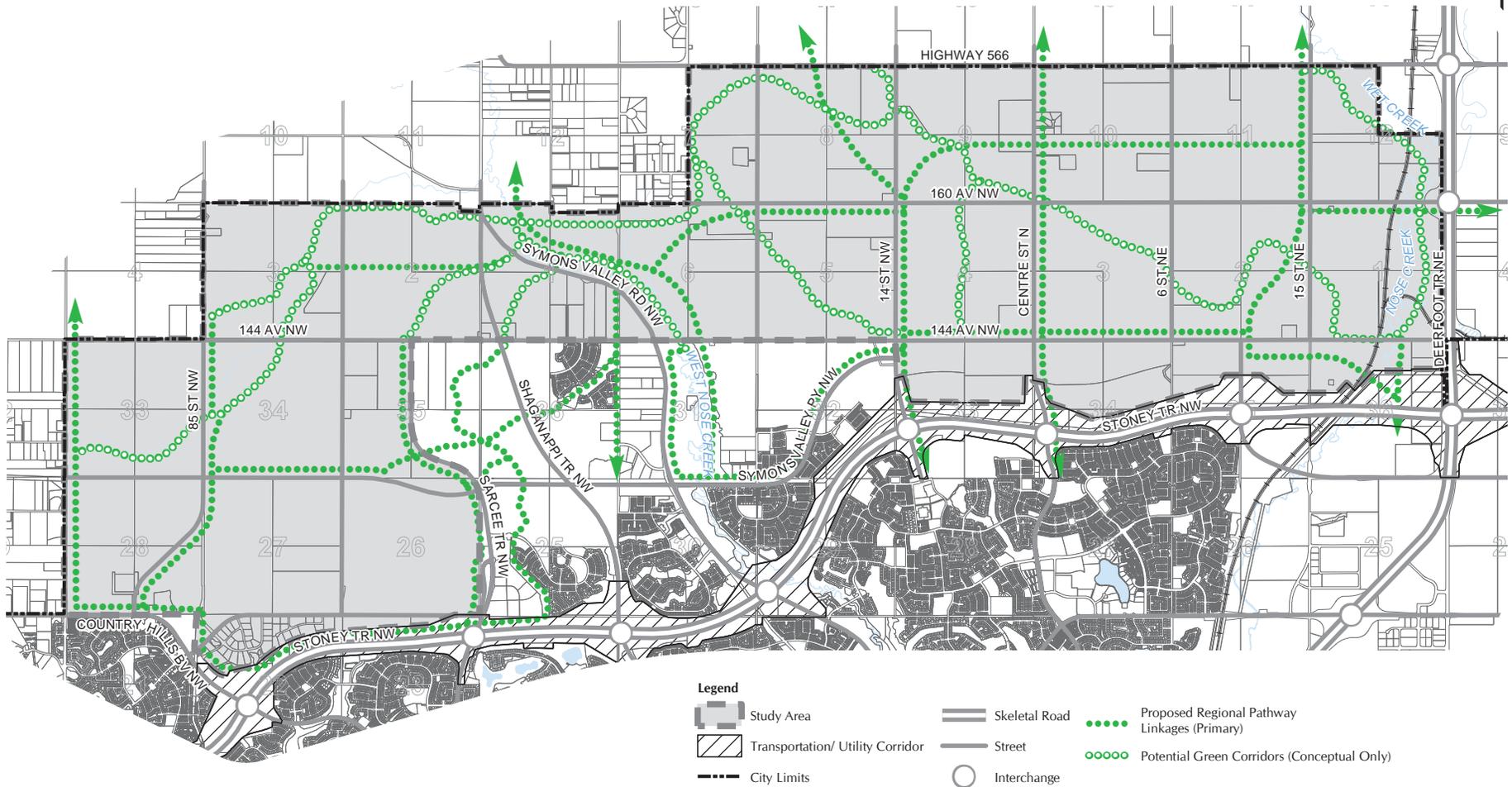
B.1.2 Cycling Network

The Cycling Network, including a system of on-street bikeways, will be extended throughout the North RCS area to provide connections to regional pathways, Green Corridors and key destination points within and beyond the North RCS area. The Primary Cycling Network is identified on the Transportation Map (Map C).

The regional pathway, on-street bikeway and sidewalk network will include connections to transit stops, schools, regional recreational facilities, employment and commercial areas, major parks and natural areas and residential areas. It may also form a part of and/or link to a possible future multiuse Green Corridor network in the North RCS area, as shown conceptually on the Regional Pathways and Green Corridors Map (Map D).

The location, alignment and design of the Cycling Network including regional pathways and on-street bikeways will be determined through the ASP preparation process and refined at the Outline Plan/Land Use Amendment application stage.

MAP D Regional Pathways and Green Corridors



This map is conceptual only. No measurements of distances or areas should be taken from this map.

“Stoney Trail is classified as a skeletal road and is under the jurisdiction of the Province of Alberta.”

B.1.3 Transit Service

The transit system for the North RCS area will comprise a hierarchy of transit routes serving different functions.

An LRT route has been identified and is shown on the Transportation Map (Map C). This route will operate along the Centre Street N corridor to service the mixed use corridor. The opportunity exists to extend the LRT further northward to connect with regional destinations in the future. In the interim, prior to LRT accessing the North RCS, a primary transit bus rapid transit (BRT) line will be implemented along Centre Street N.

A Primary Transit line has also been identified in the North RCS area and is shown conceptually on Map C. The location of primary transit and/or other bus routes and design of LRT Stations, Park and Ride areas and primary transit hub facilities should be addressed at the ASP stage and refined at the Outline Plan /Land Use Amendment stage and should be provided in accordance with approved policies. Development adjacent to transit stations and within Transit Oriented Development (TOD) areas, including Activity Centres and Corridors, shall be subject to the requirements of the Calgary Transportation Plan and the

TOD Guidelines and include increased residential densities and a more intensive mix of uses.

B.1.4 Road and Street Network

Skeletal roads and higher classification streets have been identified and are shown in the Transportation Map (Map C). Collector streets and other lower classification streets will be developed at the ASP stage.

Skeletal Roads

■ Stoney Trail

Stoney Trail is classified as a skeletal road and is under the jurisdiction of the Province of Alberta.

An Interchange is built at Country Hills Boulevard and interchanges are planned at Sarcee Trail NW, 14 Street NW, Centre Street N, 11 Street NE and Deerfoot Trail. No further access to Stoney Trail will be provided.

■ Highway 566

Highway 566 is classified as a skeletal road and is under the jurisdiction of the Province of Alberta.

Access will be provided at Panorama Road, 14 Street NW, Centre Street N, 6 Street NE and 15 Street NE.

■ Deerfoot Trail (Highway 2)

Deerfoot Trail (Highway 2) is classified as a skeletal road and is under the jurisdiction of the Province of Alberta.

An Interchange is planned at 160 Avenue NE and an interchange exists at Highway 566. No further access to Deerfoot Trail will be provided.

Streets

112 Avenue N, Symons Valley Parkway (128 Avenue N), 144 Avenue N, 160 Avenue N, 101 Street NW, 85 Street NW, Country Hills Boulevard, 69 Street NW, Sarcee Trail NW, Shaganappi Trail NW, Symons Valley Road NW, Panorama Road NW, 14 Street NW, Centre Street N, 6 Street NE, 11 Street NE and 15 Street NE are classified as streets. Further specific classification of these streets will be determined through ASP preparation processes and may include any or all of the following types: arterial, industrial arterial, urban and neighbourhood boulevards and parkways. All street classifications, and specifically the function and character of all streets, shall be determined at later stages of planning and should follow the principles and direction of the Complete Street Guidelines at later planning stages.

Goods Movement

Primary Goods Movement routes, as laid out in the Calgary Transportation Plan, have been identified and are shown in the Transportation Map (Map C).

Further Goods Movement routes will be identified and designated by Council by Bylaw and will be examined in more detail at further planning stages. All arterial and industrial arterial streets in the North RCS area should serve as goods movement (truck) routes. Urban Boulevards may also serve as goods movement routes.

Aggregate hauling routes which minimize travel through or adjacent to residential development within the North RCS area will be identified and classified as Primary Aggregate Hauling Routes. At minimum, aggregate hauling routes forming part of the primary road network will be built to an enhanced major standard, and those abutting residential communities will be provided with noise attenuation. The Alberta Sand and Gravel Producers Community Aggregate Levy will be considered as a contributing source of funding for enhanced maintenance of the roadway, intersection improvements and noise attenuation features constructed to mitigate issues arising from this use.

Intermunicipal and Regional Jurisdiction

The design and alignment of regional pathways, regional roads and associated interchanges and intersections, where those facilities cross jurisdictional boundaries, shall be co-ordinated with Rocky View County and the Province of Alberta.

B.2 Utility Services

The North RCS area will be serviced with water, sanitary and stormwater infrastructure. Without these municipal services, development should not occur.

The ability to finance and provide servicing for an ASP shall be a key consideration in the timing of all ASPs.

A servicing analysis to determine the type, alignment and capacity of the municipal utilities required to support urban development for each planning Cell within the North RCS area shall be undertaken through the ASP and Outline Plan preparation processes.

B.2.1 Water Servicing

The general alignments of water feeder mains required to service the North RCS area are identified

on Map E. These alignments are conceptual, with the final alignment to be determined at the ASP and/or Outline Plan stage.

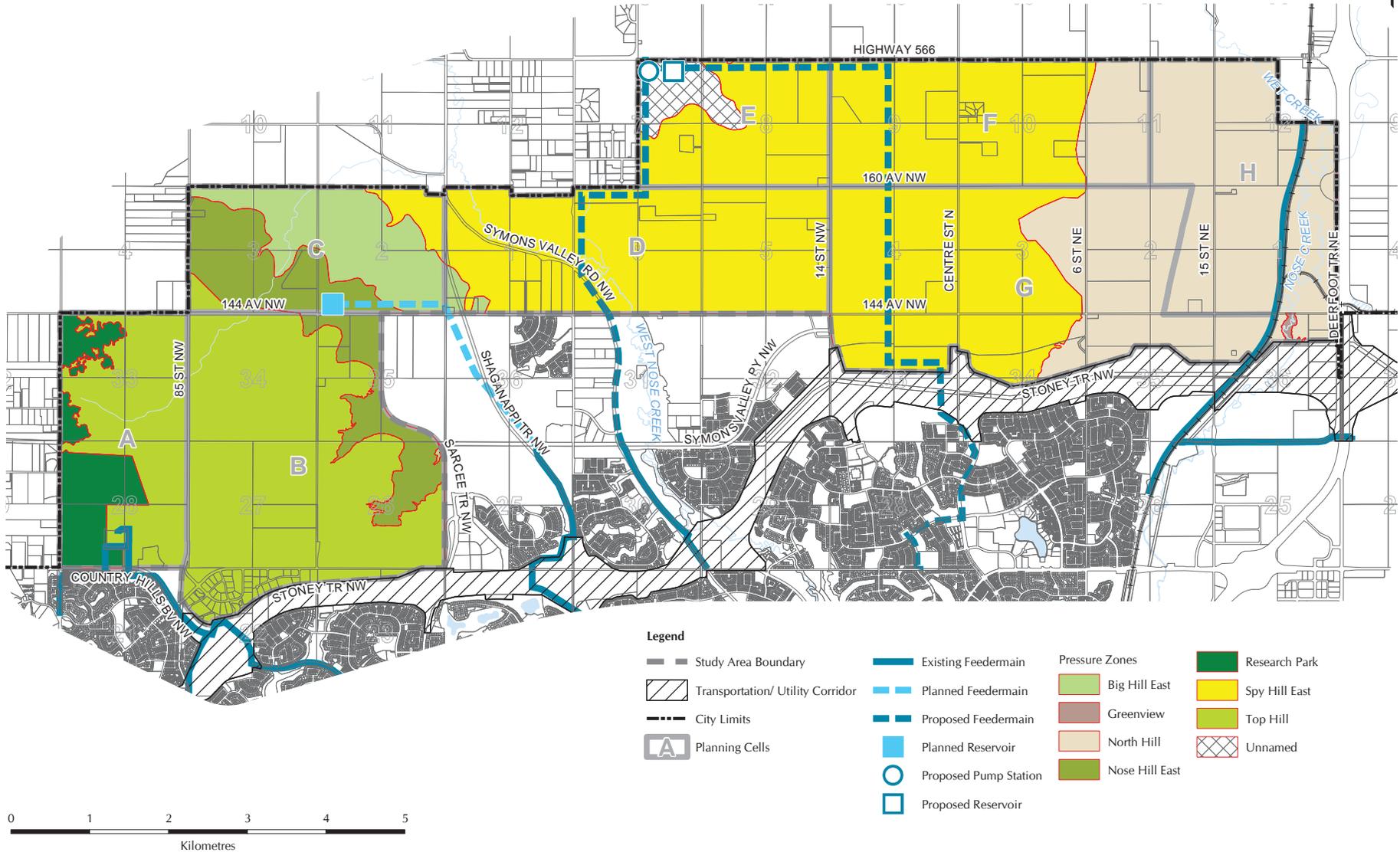
The North RCS area contains the following seven pressure zones: North Hill, Spy Hill East, Big Hill East, Nose Hill East, Top Hill, Research Park and an Unnamed Zone. The following describes the ultimate water infrastructure required to service each of these pressure zones within the North RCS area; however, some staging can occur.

A small portion of the study area is located within the Research Park Pressure Zone. Upgrade of pump capacity will be needed to meet the fire flow requirements.

Top Hill and Nose Hill East Pressure Zones are considered together as the latter is a pressure reduced sub-zone of Top Hill. No additional major feeder mains (i.e. diameter of 600 mm and greater) will be required to service these zones within the North RCS area; however, upgrade of pump capacity will be required.

Big Hill East Pressure Zone will be serviced by a planned feeder main extending from the Shaganappi Trail feeder main, which will run westward

MAP E Water Servicing



This map is conceptual only. No measurements of distances or areas should be taken from this map.

Cell A

Located within Top Hill and Research Park Pressure Zone

Cell B

Located entirely within Top Hill and Nose Hill East Zone

Cell C

Covers three pressure zones: Nose Hill East, Big Hill East and Spy Hill East

along 144 Ave NW and connect to the planned Big Hill East Reservoir near 69 St NW. This infrastructure is required for development south of 144 Ave as well as lands within the North RCS area.

Spy Hill East Pressure Zone is located in the central portion of the North RCS area, which will be serviced by a feedermain loop extended from the existing city network. A second Spy Hill East Reservoir and upgrade of the Spy Hill North Pump Station will also be required. The east leg of the proposed feedermain loop will come from the planned Northridge feedermain, run northward between Centre St and 14 St NW to 176 Ave NW and connect to the new reservoir; while the west leg of the loop will be extended from the existing Symon's Valley feedermain, running along Symon's Valley and 37 St NW, following the existing city limits, and ultimately connecting to the new reservoir. Substantial upgrades are required to the existing system to support the full build out of this pressure zone. They include the Nose Hill Feedermain, the Country Hills Boulevard Cross Town Feedermain, as well as some pump station upgrades.

The northwest corner adjacent to 176 Ave NW is an Unnamed Pressure Zone, which will require a pump station

and function as a pumped sub-zone from Spy Hill East Pressure Zone.

The area within the North Hill Pressure Zone will be serviced by the existing 900 mm Airdrie feedermain, which runs parallel to the railway. In order to service the North RCS area by this Airdrie feedermain, the existing water meter chamber will need to be relocated northward to the current city boundary and ownership of the feedermain will need to be transferred to the City of Calgary.

■ Cell A

Cell A is located within the Top Hill and Research Park Pressure Zones. Development of Cell A will require only minimal costs for pump station upgrades to meet new development demands and fire flow requirements.

■ Cell B

The entire area of Cell B is within Top Hill and Nose Hill East Pressure Zones. Cell B will require only minimal costs for pump station upgrades to service projected development.

■ Cell C

Cell C covers three different pressure zones: Nose Hill East, Big Hill East and Spy Hill East. The planned Big Hill East

Reservoir and Feedermain extension as well as the Spy Hill East Feedermain extension (west leg) have to occur prior to the development in this ASP area.

■ **Cell D**

Cell D is almost entirely located within Spy Hill East Pressure Zone. Development of this ASP Cell will require at least the west leg extension of Spy Hill East Feedermain, provided no other area within the Spy Hill East Pressure Zone is developed. A small portion of Cell D is within the Big Hill East Pressure Zone.

■ **Cell E**

There are two pressure zones in Cell E: the Spy Hill East, and an unnamed zone. Development of Cell E should only occur after the Spy Hill East Feedermain extension and new reservoir become available. A pump station is required to service the unnamed pressure zone in the northwest corner of this cell.

■ **Cell F**

The majority of Cell F is located within the Spy Hill East Pressure Zone, and will require the east leg of Spy Hill East Feedermain extension as well as the

new reservoir in operation for servicing. The remainder of the Cell is in the North Hill Pressure Zone.

■ **Cell G**

The majority of this cell is within the Spy Hill East Pressure Zone and will require the east leg of the Spy Hill East Feedermain, some pump station upgrades and the new Spy Hill East Reservoir.

Without the new reservoir and pump station upgrades, the current capacity of Spy Hill East Pressure Zone can only supply approximately 85% of the projected population in Cell G, provided no other area within the Spy Hill East Pressure Zone is developed.

Development of the small eastern portion of Cell G is within the North Hill Pressure Zone and will only require relocation of the water meter chamber from the south to the current city limits.

■ **Cell H**

All of Cell H is located within North Hill Pressure Zone; therefore, development of ASP Cell H will only require relocation of the water meter chamber from current location to the city limits.

Cell D

Located almost entirely within Spy Hill East Pressure Zone

Cell E

Covers two pressure zones: Spy Hill East and an Unnamed Pressure Zone

Cell F

The majority located within the Spy Hill East Pressure Zone

Cell G

The majority of development is within the Spy Hill East Pressure Zone

Cell H

Located within North Hill Pressure Zone

“The North RCS area has three major sanitary basins, the west, central and east basins, each of which have several sanitary catchments that contribute to a major sanitary trunk system.”

B.2.2 Sanitary Servicing

The general alignments of the sanitary trunks required to service the North RCS area are identified on Map F. These alignments are based on both contour data and ownership boundaries where possible and are conceptual, with the final alignment to be determined at the ASP and/or Outline Plan stage. Trunk sizing will also need to be confirmed at the Outline Plan stage.

Further analysis will be required at the ASP stage to determine catchment boundaries and refine the above information as deemed necessary.

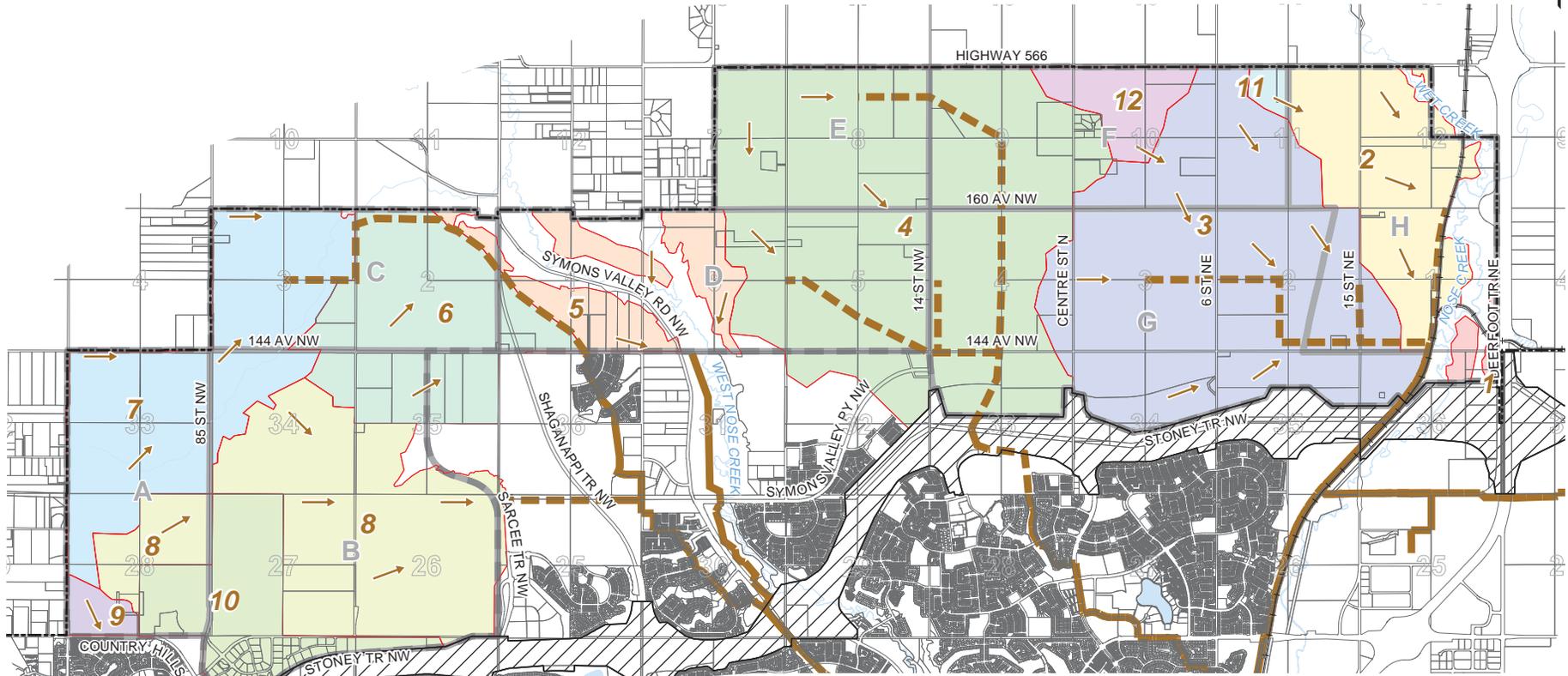
The North RCS area has three major sanitary basins, the west, central and east basins, each of which have several sanitary catchments that contribute to a major sanitary trunk system. The catchments are also based on contour data and ownership boundaries where grading appears feasible.

The west sanitary basin of the North RCS area drains to the north and to the east and will connect to the East and West Legs of the Beddington Sanitary Trunk. The central sanitary basin drains to the south and will connect to the Panorama Hills Sanitary Trunk. The

east basin drains to the east and will connect to the Nose Creek Sanitary Trunk.

The following describes the ultimate sanitary infrastructure required to service each of the ASP Cells located within the North RCS area.

MAP F Sanitary Servicing



This map is conceptual only. No measurements of distances or areas should be taken from this map.

Cell A

Catchments 7, 8, 9
and 10

Cell B

Catchments 6, 7, 8
and 10

■ Cell A

There are four catchments within Cell A, Catchments 7, 8, 9 and 10. Catchments 7 and 8 tend to drain to the north and east while Catchments 9 and 10 drain to the south.

Catchment 10 is anticipated to have little development beyond its current state as it is comprised of Province owned land used for university campus facilities. Any development that does occur will require sanitary servicing from the south via the existing City sewer mains. No city funded infrastructure is needed for Catchment 10.

Catchment 9 will be serviced from the south via the existing City sewer mains. No City funded infrastructure is required to develop this catchment.

Catchment 8 drains to the east and will be serviced by future infrastructure in Cell B which ultimately drain to a future Trunk along 128th Avenue NW. This future trunk will be an extension from the existing stub to the east of the North RCS boundary. All of this infrastructure is required to service Catchment 8 within Cell A.

Catchment 7 drains to the northeast and requires the proposed Trunk in Cells C and D. This Trunk is an extension of the west leg of the Beddington Sanitary Trunk and is required in order to service Catchment 7 within Cell A.

■ Cell B

There are four catchments within Cell B, Catchments 6, 7, 8 and 10. Catchments 6 and 7 tend to drain to the north and east while Catchment 8 will drain to the east. Catchment 10 will drain to the south.

Catchments 7, 8 and 10 are described in Cell A.

Catchment 6 drains to the northeast and requires the proposed Trunk in Cells C and D. This Trunk is an extension of the west leg of the Beddington Sanitary Trunk and is required in order to service Catchment 6 within Cell B.

■ Cell C

There are three catchments within Cell C, Catchment 5, 6 and 7. All three of these catchments within the Cell will drain to the east.

Catchment 7 is described in Cell A.

Catchment 6 is described in Cell B.

Catchment 5, being in the lower part of Symons Valley will drain to the East Leg of the Beddington Sanitary Trunk which needs to be extended to approximately 144 Avenue.

■ Cell D

There are three catchments within Cell D, Catchments 4, 5 and 6. Catchment 4 drains in a south eastern direction while Catchment 5 collectively drains to the south. A small portion of Catchment 6 is within Cell D and drains generally to the northeast.

Catchment 6 is described in Cell B.

Catchment 5 is adjacent to West Nose Creek and will require a siphon under West Nose Creek to drain to the East Leg of the Beddington Sanitary Trunk.

Catchment 4 will drain to the south east. Trunks within Cell G will need to be installed prior to servicing of Cell D. The trunks that border both Cells D and G may be constructed by either ASP development as needed.

Cell C
Catchments 5, 6 and 7

Cell D
Catchments 4, 5 and 6

Cell E
Entirely within
Catchment 4

Cell F
Catchments 3, 4, 11
and 12

■ Cell E

This Cell is entirely within Catchment 4 and generally drains to the east and to the south. The sanitary trunks in this catchment drain to the trunks in Cells D, F and G which will need to be installed prior to the servicing of Cell E. These trunks ultimately tie into the Panorama Hills Trunk.

■ Cell F

There are four catchments within Cell F, Catchments 3, 4, 11 and 12. Catchment 3 drains to the southeast whereas Catchment 4 mirrors this and drains to the southwest. Catchment 11 and 12 will prove more difficult to service as their topography drains to the north and away from the City limits.

Catchment 4 will connect to the same trunk described in Cell E. As with Cell E, the downstream trunk will need to be installed prior to servicing of Cell F.

Catchment 3 will connect to branches of the Nose Creek Sanitary Trunk system in Cells G and/or H. The trunks that border both Cells G and H may be constructed by either ASP development as needed.

Catchments 11 and 12 tend to drain to the north. Because of this, gravity servicing this catchment southward is anticipated to be unachievable.

The required capacity for Catchments 11 and 12 has been accounted for via the sanitary networks in Catchments 2 and 3 respectively. It is anticipated that (given their small size) developer paid lift stations will be needed to provide sanitary servicing to their respective sanitary networks.

■ Cell G

There are two catchments within Cell G, Catchments 3 and 4. Catchment 3 drains to the east while Catchment 4 will drain to the south.

The western portion of Cell G is within Catchment 4 and generally drains south. This catchment will require extensions to the existing Panorama Hills Trunk which is approximately 500m south of the TUC. The servicing of ASP Cells D, E and F also require this infrastructure.

The east half of Cell G is within Catchment 3. Several kilometers of trunk are required for this catchment. The trunk network servicing this catchment connects to the Nose Creek Trunk just north of the TUC and will be needed to service Cells F and H. Sanitary servicing will be somewhat challenging near the border of Cells G and H due to a relatively large hill in the topography. Deeper mains are anticipated in this catchment.

■ Cell H

There are three catchments within Cell H, Catchments 1, 2 and 3. Catchment 1 drains to the west, Catchment 2 drains to the east then to the south and Catchment 3 will drain to the east.

Catchment 3 is described in Cell G; however, the trunks that border both Cells G and H may be constructed by either ASP development as needed.

Catchment 2 will be serviced by an extension of the Nose Creek Sanitary Trunk which will somewhat parallel Nose Creek. The NW quarter section located in section 12-26-1-5 will require a local, developer paid, lift station. Pumping can be avoided if an easement can be created through the NE quarter section, outside of City limits.

The sanitary system in Catchment 1 will require a siphon to cross Nose Creek. The downstream sanitary infrastructure is currently in place for this development to occur.

Cell G
 Catchments 3 and 4

Cell H
 Catchments 1, 2 and 3

“The North RCS area contains three major storm trunks that service nine storm catchments.”

B.2.3 Stormwater Management

Stormwater management for the North RCS area must align with The City of Calgary Stormwater Management Strategy and the Nose Creek Watershed Management Plan.

Peak flow discharge control and runoff volume will be required for development within the North RCS area. Stormwater source control practices and approved Low Impact Development (LID) strategies will need to be implemented within the study area to meet the stormwater targets.

Practices such as re-use of stormwater can be considered for the North RCS area as a tool to achieve volume reduction targets.

In coordination with the storm servicing scheme presented herein, a Master Drainage Plan is being undertaken that will identify the drainage requirements and infrastructure needed to service these lands. This will include conceptual locations of developer paid storm ponds, outline release rates, quality and quantity controls, etc. Each ASP will be required to undertake a more detailed, site specific stormwater report which must reference this Master Drainage Plan and adhere to the conceptual principles outlined within.

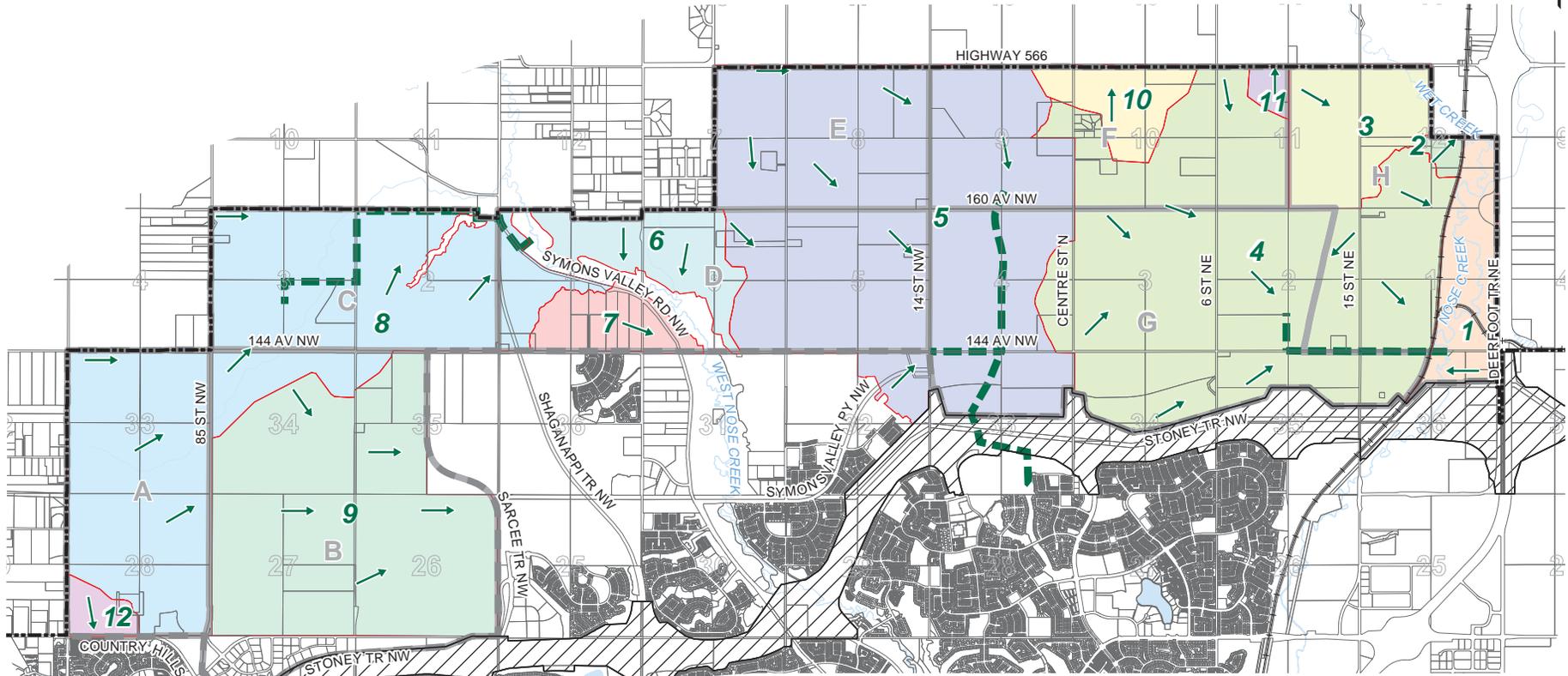
Storm Servicing

The general alignments of storm trunks required to service the North RCS area are identified on Map G. These alignments are based on both contour data and ownership boundaries where possible and are conceptual, with the final alignment to be determined at the ASP and/or Outline Plan stage.

The North RCS area requires three major storm trunks that will service nine storm catchments. The catchments are also based on contour data and ownership boundaries where grading appears feasible. The west half of the North RCS area drains to West Nose Creek. The east half generally drains to Nose Creek.

The following describes the ultimate storm infrastructure required to service each of the ASP Cells located within the North RCS area.

MAP G Storm Servicing



- Legend**
- Study Area Boundary
 - ▨ Transportation/ Utility Corridor
 - City Limits
 - Ⓐ Planning Cells
 - Proposed Storm Trunk
 - Storm Flow Direction
 - 1 Storm Catchment



This map is conceptual only. No measurements of distances or areas should be taken from this map.

Cell A
Catchment 8 and 12

Cell B
Catchments 8 and 9

Cell C
Entirely within
Catchment 8

Cell D
Catchments 5, 6, 7
and 8

■ Cell A

There are two storm catchments within Cell A, Catchments 8 and 12. Catchment 12 drains to the south and connects to existing infrastructure south of 112 Ave. Catchment 8 drains in a northeast pattern and will be serviced by future trunks in Cells C and D which will require a new outfall to connect to West Nose Creek.

■ Cell B

There are two storm catchments within Cell B, Catchments 8 and 9. Catchment 8 is described in Cell A. Catchment 9 will drain to the east. This catchment will connect to three future storm mains to be built by the adjacent development to the east. The stormwater discharge will then be conveyed to West Nose Creek.

■ Cell C

Cell C is entirely within Catchment 8. Catchment 8 is described in Cell A.

■ Cell D

There are four storm catchments within Cell D, Catchments 5, 6, 7 and 8. The drainage for this Cell is distributed to both Nose Creek and West Nose Creek, respectively.

A small portion of Catchment 8 is within Cell D. Catchment 8 is described in Cell A.

Catchment 7 drains to the east and is directly serviced by West Nose Creek. This catchment will either require a new outfall or may share the existing adjacent outfall to the south subject to capacity.

Catchment 6 generally drains to the south and will discharge to West Nose Creek.

Catchment 5 will generally drain to the southeast and will connect to the future trunk at the SE corner of this cell. Over 2.5 km trunks are required in Cell G, south crossing TUC and day lighting to the existing open channel system at around 128th Avenue which ultimately drains to Nose Creek. This is required prior to servicing Cell D.

■ Cell E

Cell E is entirely within Catchment 5 and will ultimately discharge to Nose Creek via trunks described in Cell D. The drainage pattern within Cell E is split. Some quarter sections will drain to the east and then south connecting to the infrastructure in Cell G and the rest will drain south, connecting to the infrastructure in Cell D. Either way, all of the trunks for Catchment 5 located in Cell G will need to be installed prior to servicing Cell E.

■ Cell F

There are four catchments within Cell F, Catchments 4, 5, 10 and 11. Catchment 5 will drain west and south to connect to the same trunk system as Cell E. Similarly the downstream trunk piping within Cell G will need to be installed prior to servicing this portion of Cell F.

Catchment 4 will drain to the south and east where it will connect to infrastructure on the border of Cells G and H. This trunk is required prior to the servicing Cell F. This catchment will ultimately discharge to Nose Creek.

Catchments 10 and 11 drain northward beyond the City limits and flow towards Wet Creek, a tributary of Nose Creek. In order to mimic the natural drainage patterns and preserve the hydrologic cycles of the receiving water bodies for Nose Creek and its tributaries, it is agreed between the City and the Rocky View County to maintain this flow regime in the post development state using a pipe and outfall approach designed under the Nose Creek drainage criteria. Utility right of ways may be needed to achieve this and shall be coordinated at the time of Outline Plan.

Should development in the County, immediately downstream of Catchments 10 & 11, occur prior to the development within these catchments, it is also agreed by the County to account for both pre-existing drainage from Catchments 10 & 11 and post development drainage at allowable discharge rates for the Nose Creek watershed.

Cell E
 Entirely within
 Catchment 5

Cell F
 Catchments 4, 5 10
 and 11

Cell G
Catchments 4 and 5

Cell H
Catchments 1, 2, 3
and 4

■ **Cell G**

There are two catchments in Cell G, Catchments 4 and 5, which ultimately drain to Nose Creek. A large portion of the city funded trunks for the North RCS area reside in this cell.

Catchment 5 is described in Cell D.

Catchment 4 is described in Cell F.

■ **Cell H**

There are four stormwater catchment areas within Cell H, Catchments 1, 2, 3 and 4. Catchment 4 is described in Cell F. Catchments 2 and 3 will generally drain to the northeast and connect to Wet Creek which is a tributary of Nose Creek. Catchment 1 spans Nose Creek and as such will drain to it by several directions.

B.2.4 Transportation and Utility Corridor

The North RCS area is bounded to the south by the Transportation Utility Corridor (TUC) containing Stoney Trail. Alberta Infrastructure is responsible for the administration, management and coordination of approvals for all activities within the TUC. High Voltage Transmission Lines may be routed through TUC, if room allows. Municipal utilities shown paralleling the TUC but located outside the corridor could potentially be realigned into the TUC. Utilities crossing or located within the TUC require approval from Alberta Infrastructure.

B.3 Regional Facilities & Services

B.3.1 Regional Facility Requirements

The regional facilities and services required in the North RCS area, and their general locations, are identified on the Regional Facilities and Services Map (Map H). These facilities should be located to optimally serve their catchment areas, recognizing the flexibility to adjust their location through the ASP preparation process. In addition, opportunities for co-location with compatible facilities should be explored at the ASP preparation stage.

B.3.2 Recreational Facilities

Regional Recreation Facilities

Facilities to meet regional social, sport, recreation and arts and cultural needs are required for the North RCS area. The actual activities to be accommodated will be identified through needs and preference studies that will be conducted as part of the ASP preparation process. The provision of regional recreation facilities should be considered in conjunction with the provision of facilities within senior high schools.

B.3.3 Operational Workplace Centre

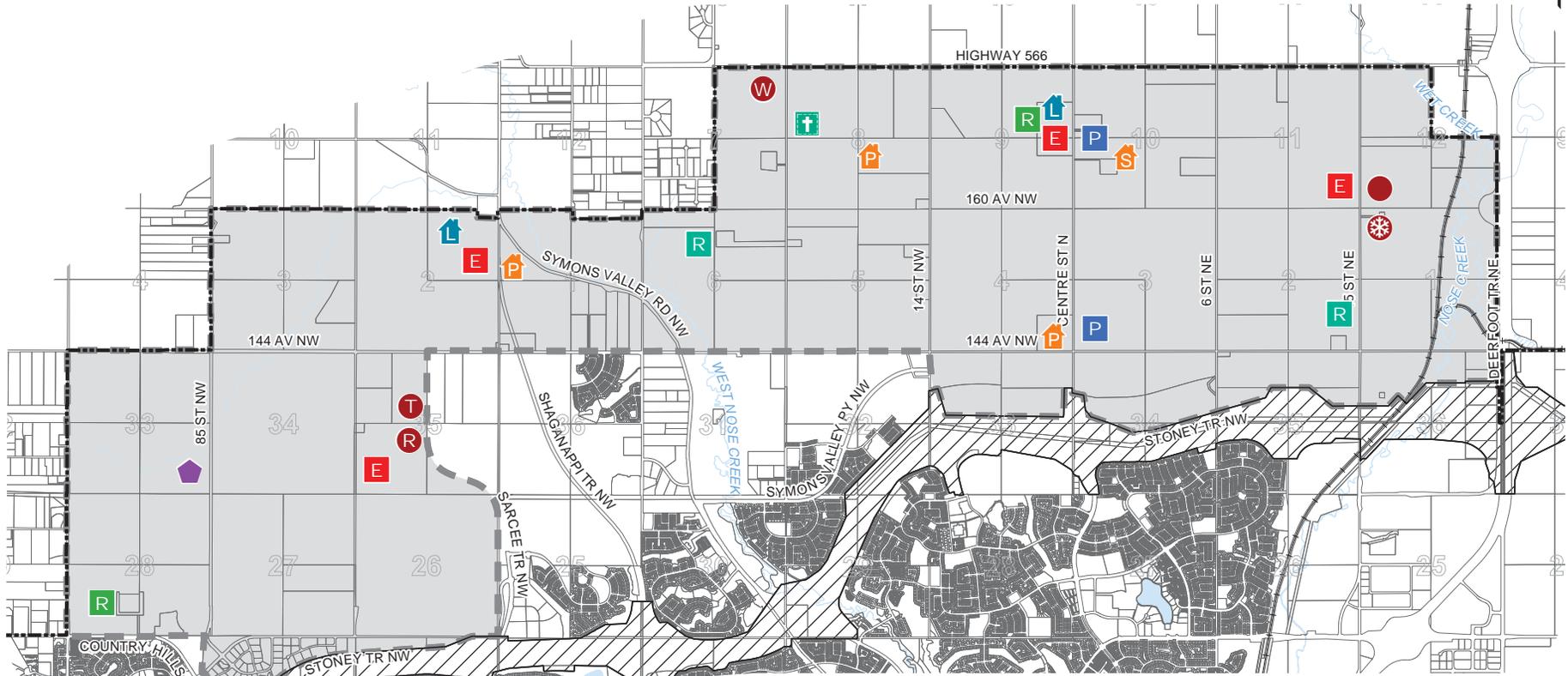
A regional Operational Workplace Centre (OWC) will be located in Cell A or B as conceptually shown on Map H. It will meet the future requirements of usual OWC participating business units and will house and facilitate such City of Calgary services as roads and parks maintenance, water resources and water services, as well as fleet services and supply.

The following regional facilities and services are required in the North RCS area:

Required Regional Facilities and Services		
Facility	Number Required	Size per facility
Emergency Response Station	4	0.8 ha (2 ac)
Library Site	2	2 ha (5 ac)
Cemetery Site	1	32 ha (80 ac)
Large Regional Recreation Facilities	2	11 ha (27ac) ²
Small Regional Recreation Facilities	2	5 ha (12 ac) ²
Operational Workplace Centre	1	55 ha (135 ac)
LRT station/Park N Ride	2	Cell G: 1.2 ha (4 ac) Cell F: 1.2 ha (4 ac)
Bulk Water Fill Station	1	0.4 ha (1 ac)
Construction and Materials Depot	1	6 ha (15 ac)
Traffic Field Operations Depot	1	0.8 ha (2 ac)
Snow Storage Site	1	4 ha (10 ac)
Roads Maintenance Depot	1	2 ha (5 ac)
Satellite Roads Depot	1	2 ha (5 ac)
Public High School site	3	9 ha (23 ac) ¹
Calgary Catholic School District High School site	1	9 ha (23 ac)
Community Recycling Facilities	4	Hosted by commercial operations

1. High school site size based on CBE criteria.
 2. Size for recreation centres does not include playing fields and Community Association sites that may co-locate with these facilities.

MAP H Regional Facilities & Services



Legend

- Study Area Boundary
- Study Area
- Transportation/ Utility Corridor
- City Limits
- Emergency Response Station
- L.R.T. Park & Ride
- Small Regional Recreation Facility
- Large Regional Recreation Facility
- Library
- Cemetary
- Public High School
- Separate High School
- Operational Workplace Centre
- Construction and Materials Depot
- Roads Maintenance Depot
- Traffic Field Operations Depot
- Bulk Water Fill Station
- Snow Storage Site (Road Maintenance)



This map is conceptual only. No measurements of distances or areas should be taken from this map.

C.0 Growth Management

C.1 Growth Management Sequencing and Costing

C.1.1 Population and Employment Distribution

The Municipal Development Plan requires a minimum of 60 jobs and people per hectare for new communities in Future Greenfield Areas, excluding Major Activity Centres and industrial areas, with an eventual intensity of 70 people and jobs per hectare over the life of the Local Area Plan. The table below outlines the projected number of residents and jobs in each of the ASP areas. These projections are subject to refinement at the ASP stage and the Outline Plan/Land Use Amendment stage.

ASP AREA	Typology	Size (Gross Dev. ha/ac) ¹	60 people + jobs/ha		70 people + jobs/ha	
			Population	Jobs	Population	Jobs
A	Industrial	525 ha (1,297 ac)	0	10,490	0	10,490
B	Industrial	1,037 ha (2,562 ac)	0	20,720	0	20,720
C	Future Greenfield Area	518 ha (1,280 ac)	28,283	2,797	32,997	3,263
D	Future Greenfield Area	699 ha (1,727 ac)	38,171	3,775	44,533	4,404
E	Future Greenfield Area	392 ha (969 ac)	21,387	2,115	24,951	2,468
F	Future Greenfield Area	654 ha (1,616 ac)	35,697	3,531	41,647	4,119
G	Future Greenfield Area + Major Activity Centre	1,080 ha (2,669 ac)	55,299	9,989	64,266	10,820
H	Industrial + Future Greenfield Area	563 ha (1,391 ac)	6,468	12,072	7,546	12,234
Total		5,468 ha (13,511 ac)	185,305	65,489	215,940	68,518

ASP AREA	Typology	Size (Gross Dev. ha/ac) ¹	60 people + jobs/ha		70 people + jobs/ha	
			Population	Jobs	Population	Jobs
1.	Gross developable area calculations for each ASP area excludes potential Environmental Reserve, expressways and interchanges, railways and other non-developable lands.					
2.	Based on intensities of 60 and 70 people and jobs per gross developable hectare.					

C.1.2 Land Supply

The City strives to ensure that a suitable supply of land exists to meet established targets. The following table summarizes The City’s land supply status in relation to these targets.

City-Wide Land Supply

Vacant City-Wide Land Supply Targets		
Land Supply	Target	Current Status 2009
Vacant Suburban Land Supply ²	30 year supply	Exceeds 30 years
Vacant Planned Suburban Land Supply ³	Up to 15 year supply	Approximately 12 years ¹
Vacant Serviced Suburban Land Supply ⁴	Up to 5 year supply	Approximately 5 years

1. Based on current forecasted growth; reviewed annually and subject to change.
 2. Vacant Suburban Land Supply are undeveloped lands within The City’s corporate limits likely to be developed for predominately residential use.
 3. Vacant Planned Suburban Land Supply are undeveloped lands within the Area Structure Plan or Community Plan.
 4. Vacant Serviced Land Supply are undeveloped lands for which there is existing servicing capacity to develop without requiring significant City expenditures for storm trunks, water mains, reservoirs, etc.

The *Suburban Residential Growth 2009-2013* document estimates the unbuilt capacity for the suburbs city-wide. The capacity of both vacant subdivided and unsubdivided land with approved Community Plans or ASPs in place represents the potential for approximately 101,404 residential units that could house 269,000 people.

C.1.3 Sector-Based Land Supply

While the city-wide land supply is indicative of the residential development potential of the city as a whole, it is also necessary to examine the residential development potential of the sectors in which the North RCS area lands are located.

Most of the North RCS area, including all of the residential cells, fall within the city's north sector. The *Suburban Residential Growth 2010-2014* document indicates that the total estimated unbuilt residential capacity for the North Sector, combining both vacant subdivided and unsubdivided capacity with approved Community Plans or Area Structure Plans in place, is 889 hectares (2,200 acres).

C.1.4 Constraints Summary

A number of constraints have been identified within the North RCS area, as identified on Map B, Section A.2, particularly airport Noise Exposure Forecast contours (NEF contours), landfill setbacks, sour gas wells, electric transmission lines, and pipelines. Both Energy Resources Conservation Board (ERCB) sour gas safety setbacks and, where applicable, City of Calgary nuisance setbacks may apply to the sour gas wells and pipelines. However, these setbacks do not preclude the potential development of any of the future planning cells over the long term after decommissioning and reclamation of sour gas wells is undertaken.

Two level 1 sour gas wells, requiring a 100 metre ERCB safety setback, are located in Cells F and H. The Level 1 wells may require an additional 200 metre City of Calgary nuisance setback from future residential uses.

A Level 1 sour gas pipeline is located in Cell F and a Level 2 sour gas pipeline that requires a 500 metre ERCB safety setback is located in Cell H.

C.1.5 Transportation Summary

The regional transportation network is identified on Map C, and in Section B.1.

C.1.6 Deep Utilities Summary

The City Water Resources Department has completed an analysis of the infrastructure required to service each of the future ASP Cells.

Section B.2 of the North RCS provides a summary of the required core municipal infrastructure including deep utilities.

C.1.7 Redevelopment of Small Landholdings

Portions of the North RCS area were previously subdivided for country residential uses when these parcels were located within Rocky View County. It is expected that following the approval of an ASP, these areas will eventually be redeveloped for general urban uses. To ensure that redevelopment occurs in a comprehensive manner, an ASP shall contain policy that identifies redevelopment cells and the information that will be required at the Outline Plan/Land Use Amendment Stage in order to demonstrate that servicing and development of these landholdings occurs in a logical manner. Landowners will be strongly encouraged to co-ordinate development with neighbouring landowners.

C.1.8 Summary of Growth Management Issues

Cell	Estimated Cost of Development (Core infrastructure only - \$1 millions)	Growth Management Considerations
A	\$12.4	<ul style="list-style-type: none"> • Future industrial/employment area • Land to south is built-out.
B	\$30.8	<ul style="list-style-type: none"> • Future industrial/employment area • Land to south is built out. • Constraints include landfill setback • Current uses include aggregate extraction, correctional facilities
C	\$47.7	<ul style="list-style-type: none"> • Area to south has planned land with zoning in place • Utility extensions required from southeast and via Cell D • No major land use constraints
D	\$74.2	<ul style="list-style-type: none"> • Area to south has planned land with zoning in place; logical extension of development from the south. • Extension of services from south and from Cell G required • Supports development of primary transit network • No major land use constraints
E	\$43.7	<ul style="list-style-type: none"> • Services must be extended through Cell G, D, F • Future Community Activity Centre • No major land use constraints

Cell	Estimated Cost of Development (Core infrastructure only - \$1 millions)	Growth Management Considerations
F	\$63.1	<ul style="list-style-type: none"> • Services must be extended through Cell G • Future community activity centre and LRT station • Supports development of primary transit network • Short term constraints include sour gas wells
G	\$77.6	<ul style="list-style-type: none"> • Cell G is closest residential planning cell to existing urban development. • Utility services available from south • Components of a complete community including Major Activity Centre and LRT station • Supports development of primary transit network • No major land use constraints
H	\$22.8	<ul style="list-style-type: none"> • Future Industrial/Employment area • Water and sanitary services via Airdrie trunk. • Industrial/employment, mixed use and residential land uses. • Constraints include sour gas wells and airport NEF contours
<p>The purpose of the costing information is to provide an approximation of the magnitude of the investments. Infrastructure costs will be addressed in accordance with the Standard Development Agreement.</p>		

C.1.9 Infrastructure Costs

Core Infrastructure ¹								
	Cell A	Cell B	Cell C	Cell D	Cell E	Cell F	Cell G	Cell H
Utility Servicing⁵								
Water	\$0.2 M	\$0.1 M	\$15.1 M	\$54.8 M	\$37.5 M	\$39.3 M	\$47.4 M	\$0.1 M
Sanitary	\$6.6 M	\$9.3 M	\$11.8 M	\$9.7 M	\$3.4 M	\$4.2 M	\$14.4 M	\$3.1 M
Storm	\$3.6 M	\$3.6 M	\$3.6 M	\$5.1 M			\$9.5 M	
Transportation Infrastructure								
Roads								
Primary Transit and Bus	\$2 M	\$2 M	\$1.4 M	\$4.6 M	\$2.8 M	\$3.8 M	\$6.3 M	\$3.8 M
Emergency Response Stations		\$15.8 M	\$15.8 M			\$15.8 M		\$15.8 M
TOTAL²	\$12.4 M	\$30.8 M	\$47.7 M	\$74.2 M	\$43.7 M	\$63.1 M	\$77.6 M	\$22.8 M

The purpose of the costing information is to provide an approximation of the magnitude of the investments. It is recognized that acreage assessments will offset some of the costs incurred by development of lands within the RCS area.

Notes:

- i. Above are costs for infrastructure inside and outside the North RCS area that are required to service the study area.
- ii. Infrastructure costs will be addressed in accordance with the Standard Development Agreement.
- iii. Portions of Cells B and G, and the majority of Cells C, D, E, F and H are located outside of Calgary Fire Department's 10-minute response time.
- iv. Utility servicing costs may include double-counting. Total cost for water services for all cells is \$192.4 million, cost of sanitary servicing for all cells is \$49.2 million and cost of stormwater servicing for all cells is \$13.1 million

Assumptions:

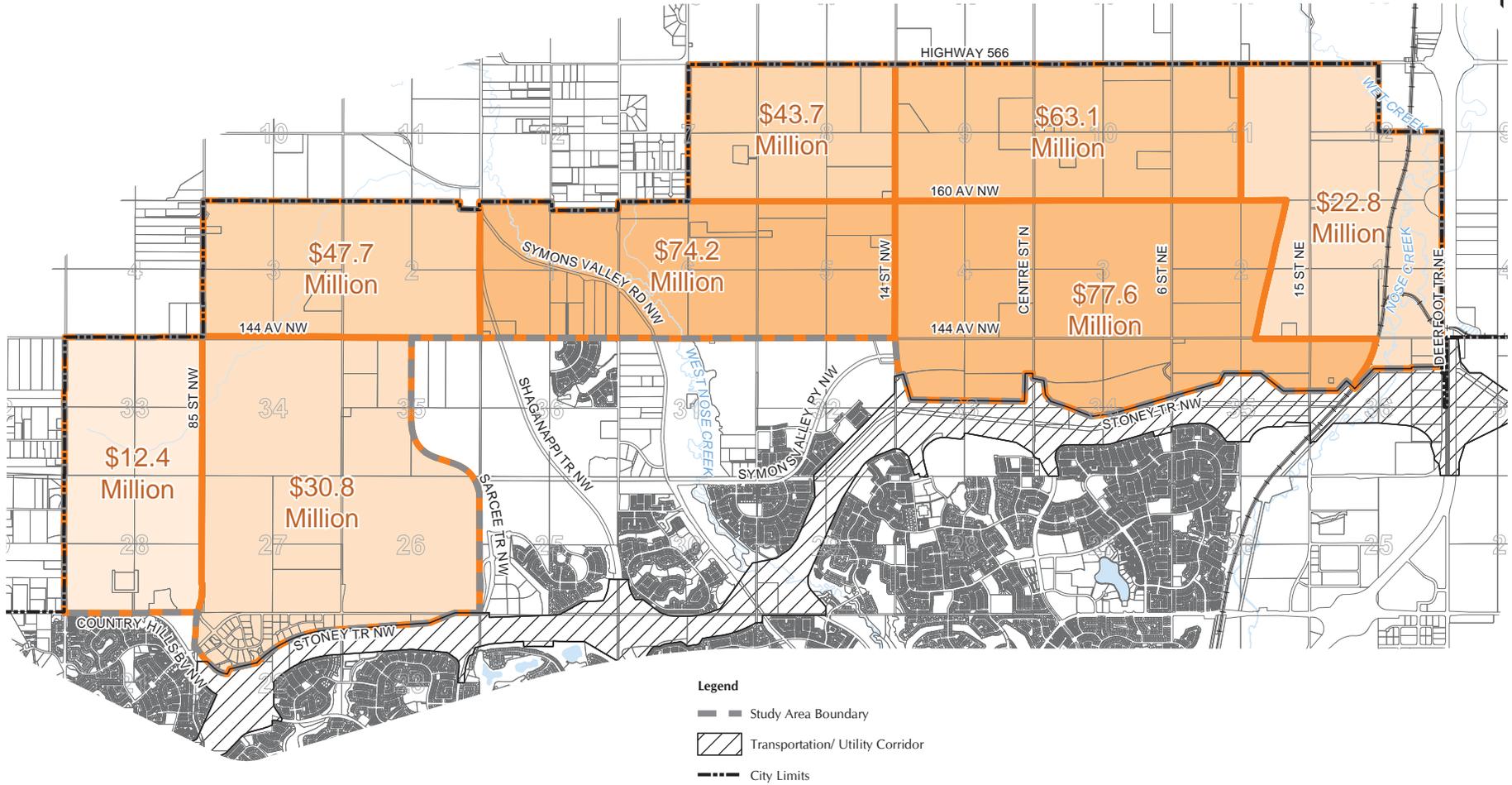
- 1. The cost estimates for Cell E, F and H are based on the assumptions that these northern ASP cells will be built after cell D and/or G. The water infrastructure in the southern RCS area will be in place prior to further development in the northern RCS area.
- 2. The reservoir cost (\$86 million) has been prorated by water demands (i.e. forecasted population and jobs) of each cell. However, the new Spy Hill East Reservoir must be built when the current pressure zone capacity is reached.
- 3. Some water infrastructure between cells may be double-counted in order to compare the cost of servicing cells independently.
- 4. Infrastructure costs do not include cost of land.
- 5. Costs include downstream upgrades

¹ All dollar amounts in millions

² Numbers may not add up due to rounding

³ All costs are preliminary estimates only and are subject to change.

MAP I Core Municipal Infrastructure Costs



This map is conceptual only. No measurements of distances or areas should be taken from this map.

Complete Community Infrastructure ¹								
	Cell A	Cell B	Cell C	Cell D	Cell E	Cell F	Cell G	Cell H
Utility Servicing⁵								
Water	\$0.2 M	\$0.1 M	\$15.1 M	\$54.8 M	\$37.5 M	\$39.3 M	\$47.4 M	\$0.1 M
Sanitary	\$6.6 M	\$9.3 M	\$11.8 M	\$9.7 M	\$3.4 M	\$4.2 M	\$14.4 M	\$3.1 M
Storm	\$3.6 M	\$3.6 M	\$3.6 M	\$5.1 M			\$9.5 M	
Transportation Infrastructure								
Roads								
LRT						\$128 M	\$128 M	
Primary Transit and Bus	\$2 M	\$2 M	\$1.4 M	\$4.6 M	\$2.8 M	\$3.8 M	\$6.3 M	\$3.8 M
Emergency Response Stations		\$15.8 M	\$15.8 M			\$15.8 M		\$15.8 M
Libraries			\$12 M			\$12 M		
Recreational Facilities								
Large Regional	\$120 M					\$120 M		
Small Regional				\$35 M				\$35 M
TOTAL⁴	\$132.4 M	\$30.8 M	\$59.7 M	\$109.2 M	\$43.7 M	\$323.1 M	\$205.6 M	\$57.8 M

The purpose of the costing information is to provide an approximation of the magnitude of the investments. It is recognized that acreage assessments will offset some of the costs incurred by development of lands within the RCS area.

The figures contained in this table can be refined at the Outline Plan/Land Use Amendment stage without requiring an amendment to this plan.

Notes:

- i. Costs for infrastructure inside and outside the North RCS area that are required to service the study area.
- ii. Infrastructure costs will be addressed in accordance with the Standard Development Agreement.
- iii. Portions of Cells B and G, and the majority of Cells C, D, E, F and H are located outside of Calgary Fire Department's 10-minute response time.
- iv. Utility servicing costs may include double-counting. Total cost for water services for all cells is \$192.4 million, cost of sanitary servicing for all cells is \$49.2 million and cost of stormwater servicing for all cells is \$13.1 million

Assumptions:

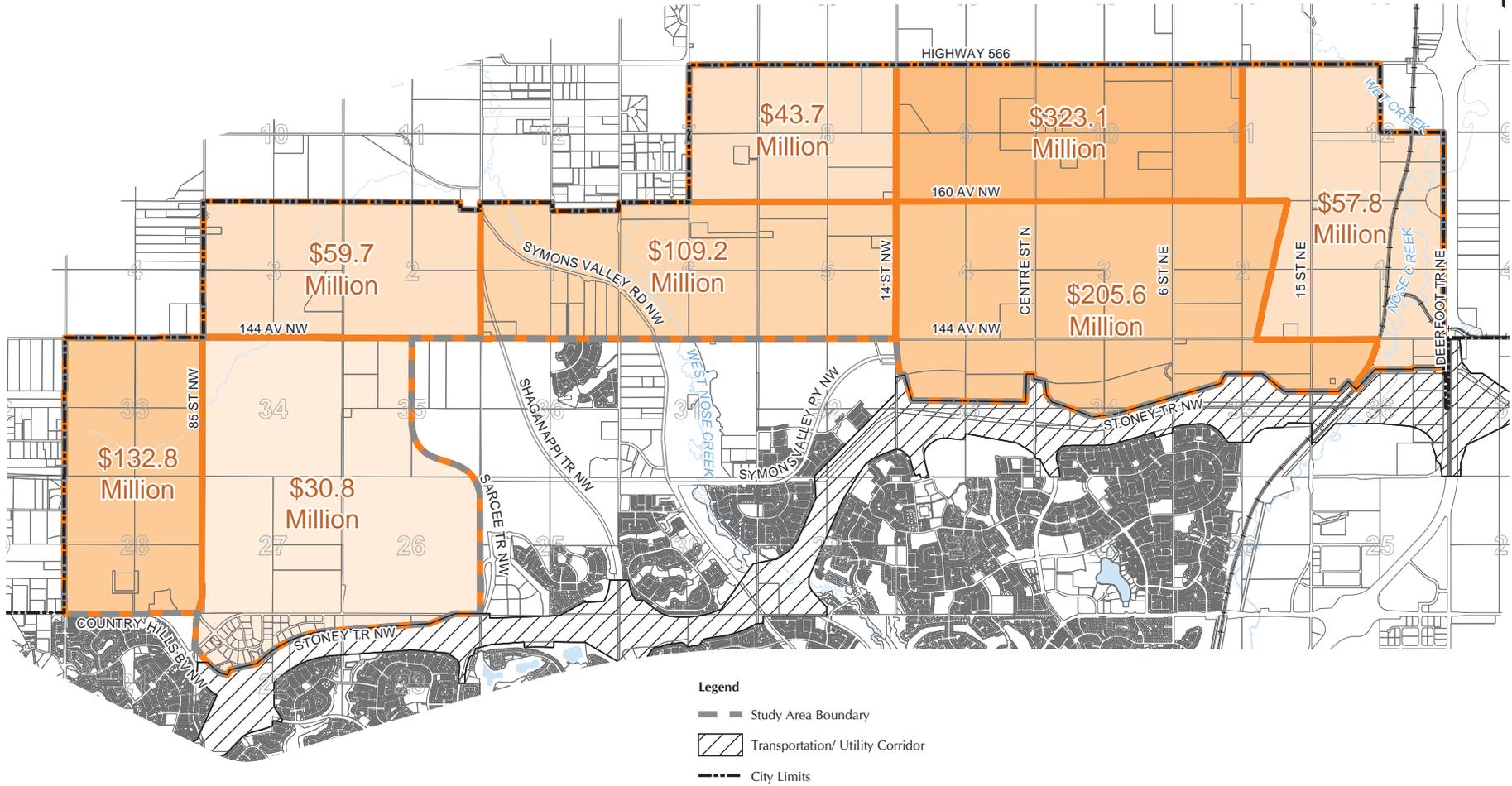
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3. Some water infrastructure between cells may be double-counted in order to compare the cost of servicing cells independently.
4. Infrastructure costs do not include cost of land.
5. Costs include downstream upgrades.

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MAP J Complete Community Costs



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