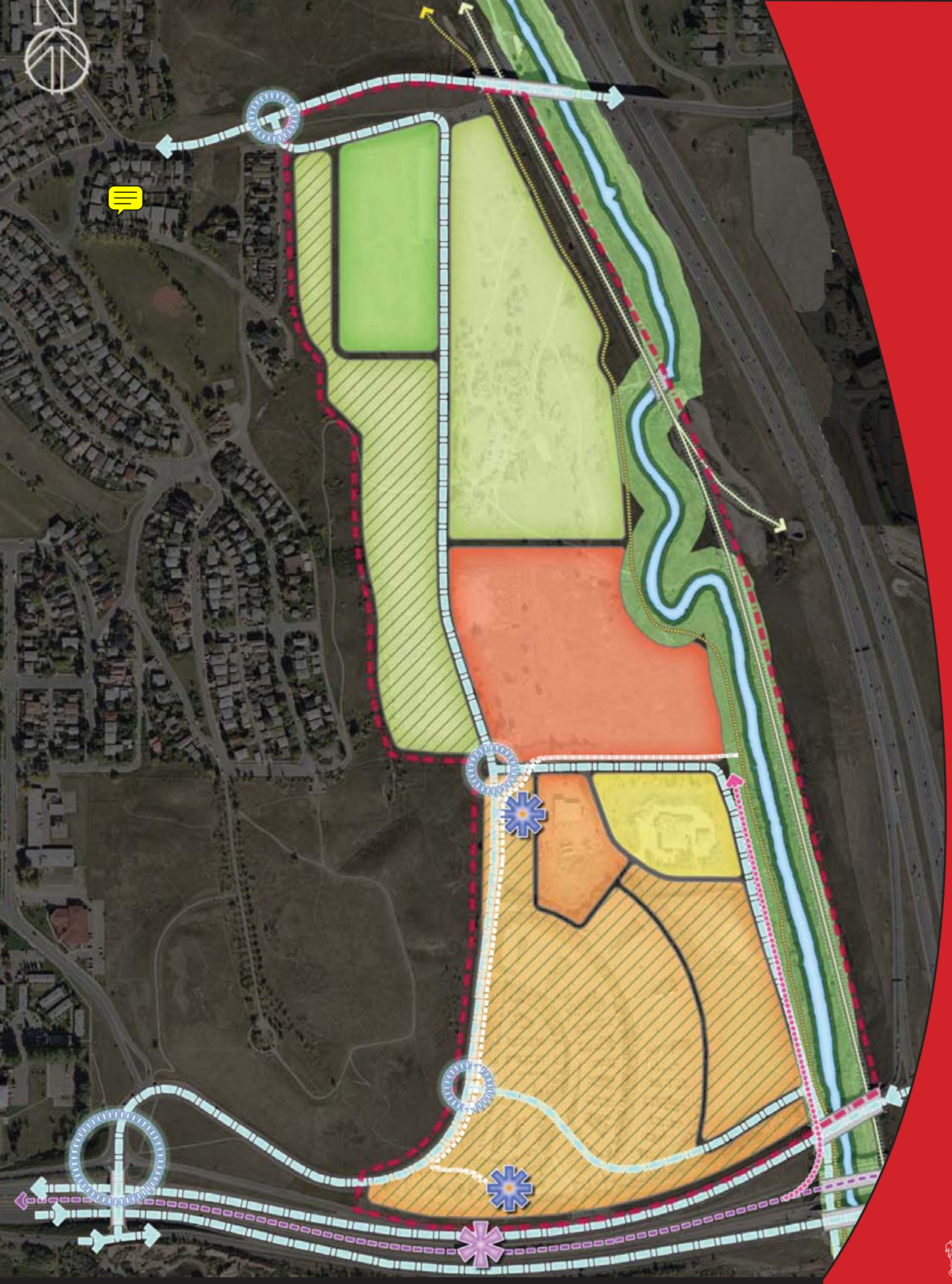

South Nose Creek Site Plan

THE CITY OF
CALGARY
LAND USE PLANNING
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EXECUTIVE SUMMARY

Background Information

The South Nose Creek Site Plan area serves as the northern gateway to The City of Calgary Rivers District revitalization area, holding great potential as a key cultural, educational and recreation-based destination zone for Calgarians and visitors to the city. The Plan area comprises approximately 53 hectares (131.5 acres) of land bound by 8th Avenue N to the north, Deerfoot Trail and Nose Creek to the east, Memorial Drive and the Calgary Zoo to the south and the Tom Campbell's Hill escarpment to the west.

The process of developing the South Nose Creek Site Plan has been guided by a series of Council motions and directions as they relate to locating the new Telus World of Science and Creative Kids Museum (the Science Centre) north of the Calgary Zoo north parking area, consideration of other land uses and connections within the Site Plan area, and the potential to accommodate the North Central LRT line. These motions of Council are summarized below:

- On 2004 April 26 Council approved in principle NM2004-17 'Community Investment Fund' contributing funds towards the construction of a new or expanded Science Centre facility.

- On 2004 June 21 Council approved LAS2004-162 'Proposed Method of Disposition – Renfrew – Ward 9' committing approximately 6 hectares (15 acres) of land north of the Calgary Zoo for use as a future Science Centre facility until a long term lease is negotiated with Corporate Properties on or before June 30, 2008. As part of the Council report, JUCC recommended that The City consolidate a number of City owned parcels and right-of-ways north of the Centre Avenue right-of-way into two parcels. One parcel would accommodate the Science Centre and not be subject to Environmental Reserve requirements while the other would be adjacent to Nose Creek and dedicated as Reserve Land for recreational purposes.

- On 2006 April 10, Council approved LPT2006-27 'Future LRT Network Studies' which directed Administration to conduct a comprehensive functional planning study to identify the details of the future North Central LRT line within the Nose Creek valley between Harvest Hills Boulevard / Beddington Trail and to connect to the downtown via the existing Northeast LRT line.

- On 2006 June 19 Council approved CPS2006-36 'Nose Creek Landfill Remediation and Proposed Science Centre and Creative Kids Museum Site – Update' directing Administration to provide an update on landfill remediation of the proposed site and on other challenges to using this site for a new Science Centre no later than March 2007.

- On 2007 March 26 Council approved CPS2007-12 'Calgary Science Centre & Creative Kids Museum Society Relocation' directing Administration to develop an overall land use plan for the area to ensure future developments are complementary and make best use of the site, and to report back to the SPC on Community and Protective Services no later than November 2007.

- On 2008 January 14 Council approved CPS2007-70 directing Administration to direct future reports on the overall land use plan for the South Nose Creek and issues pertaining to the redevelopment of the area to the SPC on Land Use, Planning and Transportation no later than March 2008.

South Nose Creek Site Plan

The South Nose Creek Site Plan establishes a land use framework intended to guide future decisions regarding land use, subdivision and development within the Site Plan area, with the goal of ensuring compatibility, interconnectivity and synergies between short and long term land utilization within the Site Plan area. The framework is comprised of a set of core land uses augmented by other uses and a network of connections between the uses and to areas external to the Site Plan boundary.

The City of Calgary has committed approximately 6 hectares (15 acres) of land north of the existing Calgary Zoo north parking area as the new location for the Science Centre. As part of this commitment, The City of Calgary should continue to work with Science Centre representatives in the development of the Science Centre site north of Centre Avenue within the Site Plan area through the land use redesignation, subdivision and development permit processes. In doing so, The City of Calgary, the Science Centre and the Calgary Zoo should work cooperatively to promote the coordination of planning and site design to maximize land use, interfacing, urban design and circulation and programming synergies, opportunities, and efficiencies to make the best use of the area. Pedestrian connectivity between the Science Centre site and the existing Zoo LRT station entrance area north of Memorial Drive and provision of public transit accessibility and pedestrian connectivity to the Site Plan area will be core considerations in the planning and development of the Science Centre and Calgary Zoo north lease areas.

Since development of the Science Centre will occur within the prescribed setback from a landfill, a variance from the Deputy Minister of Alberta Environment will be required at the subdivision or development application stage. A review of the application for variance by the Calgary Health Region will also be needed, typically before Alberta Environment will grant a variance. The Nose Creek Landfill Risk Management Plan should be reviewed and incorporated into any development plans.

Recommendations contained in the Urban Parks Master Plan to develop strategic opportunities for renaturalization and park enhancement in key areas of Bottomlands Park should be pursued strategically by The City of Calgary in association with the development of the Science Centre site. The Urban Parks Master Plan should be amended to reflect prior decisions regarding the use of portions of the Site Plan area, as well as the change in direction presented in this Plan.

A study was prepared by Calgary Transit in conjunction with this Site Plan, which identified three feasible alignments for the proposed North Central LRT line within the Site Plan area. Calgary Transit will coordinate with the Science Centre and City business units through a future functional planning study to determine the preferred alignment for the North Central LRT. Potential environmental regulatory items associated with the North Central LRT alignment will require evaluation through functional planning and further study and compliance through future design and construction stages. Additional environmental studies should be undertaken to determine what impacts the proposed development and LRT alignment will have on Nose Creek and the surrounding natural environment and to determine what mitigation strategies will need to be implemented to ensure environmental viability for the Site Plan area.

Opportunities and Constraints Analysis

The Site Plan area has a number of characteristics that give the site enormous potential, including a unique opportunity to become a major "Destination Attraction" area. Proximity to downtown, rapid transit, the Regional Pathway system and a major Provincial highway give this area a unique advantage as The City of Calgary sets forth to redevelop the area.

A major challenge to the development of the Site Plan is the extensive history of landfill activity extending throughout much of the 20th Century, leaving behind significant environmental and regulatory constraints, which limit future land uses within the Site Plan area. Provincial regulations restrict the types and intensity of land uses permitted on former landfill sites and a 300 metre setback is required for many uses without a Provincial setback variance. As such, it is recognized that in order to proceed with the Plan as proposed, remediation and/or environmental risk management programs will be required, in addition to regulatory approvals from the Province.

The majority of the Site Plan area is designated as either Manicured or Naturalized Park in the Urban Parks Master Plan. The Site Plan proposes policies encouraging future cultural and educational uses within the Plan area that are complementary to park use, but not currently contemplated in the Urban Parks Master Plan. It is recognized that amendments to the Urban Parks Master Plan, involving a full public process to determine the suitability of such changes will be required to accommodate this proposed Site Plan and any future change to land uses within the Site Plan area.

The stakeholder engagement process also identified a number of key considerations, which form the direction for the development of this Site Plan. These considerations are:

- Ensuring land uses that are appropriate for the area;
- Ensuring environmental considerations related to the former landfill are addressed;
- Ensuring future development, which is consistent with the Transit Oriented Development Policy Guidelines;
- Ensuring sufficient parking for the Calgary Zoo, Calgary Transit and the proposed Science Centre in the short term, while acknowledging the need for a Transportation Demand Management Plan;
- Maintaining and enhancing internal and external pathway and bike connections throughout the area;
- Ensuring adequate interfacing with Nose Creek and promoting possible restoration/ renaturalization efforts;
- Developing the area to serve as a focal point for the community and the city as a whole;
- Developing the area as an attractive gateway to the downtown core as people enter from Deerfoot Trail; and,
- Further analyzing internal and external vehicular access and ensuring functionality of the intersections at 8th Avenue N and Memorial Drive.

The recommendations presented in this Plan reflect previous Council direction in addition to approved City policies, including the vision for this area contained in the Rivers District Community Revitalization Plan and the input received through the internal and external stakeholder process. The implementation of policies provided will help ensure that future developments will remain complementary and represent 'best use' of the Site Plan area, while respecting environmental sensitivities.

1 INTRODUCTION TO THE PLAN

1.1 PURPOSE

As the northern gateway to The City of Calgary Rivers District revitalization area, the lands located between Tom Campbell's Hill and Deerfoot Trail on the north side of Memorial Drive hold potential as a key cultural, educational and recreation-based destination zone for Calgarians and visitors to the city. In order to realize the potential of these lands as a major urban attraction zone of benefit to the entire city, it is necessary to develop an overall vision and plan for the area, balancing the legacy of historical land uses with user demands and expectations for the area, the visual and physical contexts of the land and a network of connections within and external to the area. The purpose of the South Nose Creek Site Plan (the Site Plan) is to establish a conceptual land use framework in the form of a site development plan for the area bounded by Memorial Drive, Deerfoot Trail, Tom Campbell's Hill and 8 Avenue N, with the core objective of ensuring future developments are complementary and make the best use of the area. In order to address this core objective, this Site Plan is based on the following major directions within the context of The City of Calgary Triple Bottom Line decision-making framework for City-owned lands west of Nose Creek:

- Recognize The City of Calgary Council commitment of approximately 6 hectares (15 acres) for a site north of the Calgary Zoo to accommodate relocation and development of the Science Centre.

- Incorporate and coordinate the ongoing planning by the Calgary Zoo for redevelopment and new development of lands within the existing lease area north of Memorial Drive.

- Incorporate planning for significant transportation and utility projects, including the North Central Light Rail Transit corridor and major sanitary sewer trunk upgrades.

The Site Plan provides a framework to ensure that developments are compatible and complementary, make the best use of the site and address environmental risk management associated with the former landfill areas. This Site Plan is a non-statutory policy document that was developed in consultation with stakeholder groups to ensure the Plan best reflects the interests of affected parties and stakeholders. This Plan represents City Council's views with respect to the future planning and development of the Site Plan area and must be taken into account by the approving authority and the public when reviewing subdivision, land use and development proposals.

1.2 SITE PLAN CONTEXT

1.2.1 SITE PLAN AREA

The Site Plan area is comprised of approximately 53 hectares (131.5 acres) of land in the Bridgeland-Riverside and Renfrew areas. The site is generally bound by Deerfoot Trail to the east, Memorial Drive to the south, St. Georges Drive and Tom Campbell's Hill / escarpment to the west and 8th Avenue N to the north. The Site Plan area is home to a number of existing uses and facilities, including Nose Creek, the Calgary Zoo north parking lot, Calgary Zoo maintenance area, Calgary Zoo Animal Health Centre, Bottomlands Park and soccer fields, and the former Nose Creek landfill site.

Land uses adjacent to the study area west of St. Georges Drive include single detached residential housing (Bridgeland-Riverside and Renfrew) and open space (Tom Campbell's Hill). Land uses east of Deerfoot Trail include light industrial and business park use and the residential community of Mayland Heights. To the south is the Calgary Zoo and Bow River and to the north is the Nose Creek Valley Memorial Forest and residential community of Renfrew.

See **Figure 1.1 South Nose Creek Site Plan Context** and **Figure 1.2 South Nose Creek Site Plan Study Area.**

1.2.2 SITE HISTORY

Nose Creek is designated as a navigable water way, which flows from north to south and empties into the Bow River south of the Site Plan area. Though portions of the creek have been channelized and straightened, the Site Plan area was once the home of a wetland area characterized by the oxbows of Nose Creek. The oxbow lakes were naturally abandoned prior to human activity in the area and were subsequently filled when the area became the site of the Nose Creek Landfill.

The Nose Creek Landfill included lands between the Bow River to the south and the current location of 8th Avenue N to the north, also bounded by the current location of St. Georges Drive to the west and Nose Creek to the east. These lands, within the Nose Creek valley, were initially utilized as farmlands. City records indicate operation of a Nose Creek garbage incinerator as early as 1914. Official operation of the Nose Creek Landfill ended in 1967. Beyond these City records, air photo records of the area show infilling of lands to have occurred in the northern half of the Site Plan area starting as early as the 1920s and extending into the early 1980s. Also, landfill material relocation occurred within the study area during construction of the Memorial Drive and Deerfoot Trail interchange.

The Calgary Zoo has existed in its present location on St. Georges Island since it opened in 1929. At present, the southern portion of the Site Plan area is used as parking facilities for the Calgary Zoo in addition to housing a maintenance facility and animal health and quarantine facility.

Figure 1.1 South Nose Creek Site Plan Context

1.2.3 RIVERS DISTRICT COMMUNITY REVITALIZATION PLAN

The Rivers District is located immediately east of the downtown core, and consists of a number of underused, derelict or brownfield sites. Generally, the area is defined as containing the Manchester Public Works Yard, Calgary Exhibition and Stampede, the Victoria Neighbourhood, Fort Calgary, the East Village and much of the South Nose Creek Site Plan area. Due to its location adjacent to downtown and at the confluence of the Bow and Elbow Rivers, the Rivers District was identified as having a great deal of potential for reclamation, redevelopment and revitalization. As it relates to the South Nose Creek Site Plan area, the Rivers District Plan envisions the site as a destination zone, consisting of an array of civic institutions that enhance the Calgary Zoo and Science Centre. Furthermore, it lays out a vision of the restoration and rehabilitation of the former landfill sites in addition to the Site Plan area, and the integration of area attractions with the creek to act as a 'shining example of successful sustainable development in practice'.

1.2.4 NATURAL AND PHYSICAL CONSIDERATIONS

The Site Plan area is generally characterized by parkland and vacant parcels of land. A number of considerations, particularly the alignment of Nose Creek and the Nose Creek Landfill site, present challenges to future development of the area. Environmental and regulatory limitations restrict the types and intensity of uses that will be permitted on the site without major remediation and environmental risk management efforts and associated budgetary implications.

Nose Creek runs in a north-south direction through the Site Plan area. In recent years, flow of the creek consists increasingly of runoff from urban areas resulting in significant reduction in water quality. In response to flooding potential and localized erosion problems, extensive lengths of the creek have been straightened and channelized, eliminating natural meanders. Due to its location within the site, much of the area between the Calgary Zoo lands and 8th Avenue N lies within the 1:100 floodplain.

Tom Campbell's Hill is a natural open space area that lies west of the Site Plan area and consists of steep topography and escarpment, which forms the western boundary of the Site Plan area. Due to its status as a municipally designated natural area and topographical constraints, development in this area is likely not possible, nor would it be desirable.

Due to its location, the Site Plan area serves as a major strategic gateway to the downtown core. The site is highly visible from Deerfoot Trail, Memorial Drive and the Northeast LRT. Proximity to downtown and these major transportation networks give this area the potential to become a major focus for the community and the city.

1.2.5 LANDFILL, SITE REMEDIATION AND RISK MANAGEMENT CONSIDERATIONS

The Nose Creek Landfill operated within the Site Plan area for a significant portion of the 20th Century, leaving behind waste material in the abandoned oxbow areas and in other subsurface locations. Environmental assessment and remedial planning/implementation are currently being conducted for the landfill area. A comprehensive Risk Management Plan to address the environmental issues related to the landfill is anticipated to be completed in 2008 and is driven by The City's due diligence and the Alberta Environmental Protection and Enhancement Act, R.S.A. 2000, c. E-12.

Figure 1.2 South Nose Creek Site Plan Study Area

For the Site Plan area, the following risk management controls are currently anticipated as a minimum requirement:

- Surface capping – Buildings and paved areas will act as controls within the Site Plan area. Any open areas (those not paved or built upon), which are identified with surface soil impacts will require a soil cap of a minimum 0.5 metre thickness. Additionally, the following safety precautions need to be undertaken for new development:
    - Any excavated soil and waste needs to be handled and disposed of appropriately;
    - Any cap that is removed during construction must be replaced when construction is completed;
    - All soil caps must be maintained and monitored to preserve function.
- Groundwater interception and treatment – This aspect is not currently anticipated to be required for the Site Plan area; however, it may become necessary as part of a contingency plan or due to regulatory requirements. Implications to development in the area of such a system are as follows:
    - Overlying development is restricted over the linear area of the trench and access must be protected by means of a registered utility right-of-way;
    - Excavation through the area of the trench will be restricted. Any temporary excavations should be either incorporated into the design or evaluated by an engineer qualified to ensure system function is not degraded;
    - A treatment system will be needed, likely at the surface. This can be provided by either a mechanical system within an enclosure with discharge to the sanitary sewer system or surface water, or through a constructed wetland discharging to the surface water;
- Methane (and other soil vapour) management systems – Any enclosed spaces that are in direct contact with the ground (such as buildings, tunnels, or manholes) will need the following:
    - Monitoring of the occupied spaces and any installed vapour management system;
    - Should soil vapour levels be significant, a vapour management system may be required. This may consist of one or more of the following:
        - Collection of vapours and venting them to outdoor air prior to entry into enclosed spaces, consisting of a network of piping beneath a building connected to a roof vent and potentially a powered fan;
        - A physical barrier or mechanical system preventing migration of the vapours into enclosed spaces, consisting of a robust and sealed vapour barrier installed during construction and potentially a sub-slab depressurization system;

- An elevated level of air exchange within occupied spaces to maintain a low level of accumulated vapours; and

- Contingency Plans and Emergency Response Plans.

All of the above controls will require implementation of a management system that ensures the systems are maintained, monitoring is conducted, monitoring results are evaluated by qualified personnel, and proper responses to the monitoring results are implemented when needed. The selected combination of the above controls will be designed with a high level of conservatism to maintain a very high level of protection of the public and environment.

1.2.6 REGULATORY REQUIREMENTS

Section 13 of the Subdivision and Development Regulation, Alberta Regulation 43/2002 and 44/2002 (the Subdivision and Development Regulation), enabled under the *Municipal Government Act*, R.S.A. 2000, C. M-26 (the MGA) defines a 300 metre setback requirement for school, hospital, food establishment and residential uses from a non-operating landfill operation. The Subdivision and Development Regulation does provide for a variance of the setback distance upon application to Alberta Environment and receiving written consent from the Deputy Minister of Alberta Environment. Applications for variance are generally accompanied by a risk management plan that is specific to proposed land uses and addresses the environmental impacts associated with their proximity to the abandoned landfill operation.

The Site Plan area is located within the authority of the Calgary International Airport Vicinity Protection Area Regulation, Alberta Regulation 318/1979 (AVPA). Under the AVPA, some commercial and public uses within the Site Plan area are either restricted or subject to acoustic insulation building requirements as per the AVPA and Alberta Building Code. Depending on the specific uses contemplated in the Site Plan area at the development stage, provincial waivers and appropriate sound attenuation techniques may be required under the AVPA.

1.2.7 TELUS WORLD OF SCIENCE AND CREATIVE KIDS MUSEUM

At present, the Science Centre operates on the western edge of the downtown core, adjacent to Millennium Park and south of 6th Avenue SW. The current facility does not have the capacity to meet growing demand and forecasted attendance numbers. Furthermore, the approved alignment of the West LRT line and widening of 6th Avenue SW will have serious impacts to accessibility and parking at the existing site. In partnership with The City of Calgary, a number of properties were identified as potential sites for a new facility and after a lengthy site selection process, the proposed South Nose Creek site was chosen. In 2004, as part of the Community Investment Fund, The City of Calgary committed approximately 6 hectares (15 acres) of land in the Site Plan area and $20 million for use by the Science Centre towards the construction of a new or expanded facility (NM2004-17). The City initiated this Site Plan process in part to determine the suitability of the site for the proposed Science Centre and to ensure that potential conflicts and interfacing issues are identified and addressed early on in the process.

1.2.8 CALGARY ZOO

The Calgary Zoo has operated at its present location since 1929. Within the context of the Site Plan area, the Calgary Zoo maintains and operates a parking lot for approximately 1300 stalls, a maintenance yard of approximately 10,000 square metres and a federally regulated Animal Health Centre and quarantine facility. In addition to servicing guests of the Calgary Zoo, it should be noted that parking facilities also provide services for users of Calgary Transit who park and use the Zoo LRT station. The Calgary Zoo estimates that approximately 400 to 500 parking spaces are utilized each day by transit customers and other users.
In terms of future needs for the Calgary Zoo, projections indicate that a further 500 parking stalls are required in the short term in order to meet current demand. This does not include usage of the stalls by transit users, particularly during high peak times and events, such as the busier summer months and the Calgary Stampede. Taking into account the forecasted expansion, the total amount of parking provided by the Calgary Zoo would be approximately 1800 stalls.

The current maintenance building and yard are in poor physical condition and visually unappealing. It is anticipated that this facility will require replacement in the near future. There are opportunities for the Calgary Zoo and the Science Centre to provide a joint maintenance facility for their respective facilities. The Calgary Zoo and the University of Calgary have jointly formed a new School of Veterinary Medicine, which will require a modest expansion of the Animal Health Centre. Due to federal regulations associated with the quarantine nature of this facility, a combination of constructed and landscaped barriers are necessary to provide both visual and security separation from publicly accessible areas. In addition, it is anticipated that road access to the facility will be reoriented from the south side of the site to run along the Centre Avenue right-of-way on the north side of the facility.

1.2.9 BOTTOMLANDS PARK

Bottomlands Park is identified in the Urban Parks Master Plan (PR93-85) as comprising a combination of Naturalized and Manicured Park Space within Planning Units 116 (Zoo Parking Perimeter), 117 (East Facing Slope North of Tom Campbell's Hill) and 118 (Riverside: Bottomlands). The Urban Parks Master Plan also identifies areas within the Site Plan area for the renaturalization of Nose Creek. A portion of the park area west of St. Georges Drive is currently utilized for soccer pitches by the Calgary Foothills Soccer Club, and the existing Calgary Zoo north parking area, maintenance facility and Animal Health Centre occupy areas identified for Naturalized and Manicured Park Space.

1.2.10 IDENTIFICATION OF KEY CONSIDERATIONS

Key issues identified through the stakeholder engagement process in preparation of this Site Plan are as follows:

i. Land uses need to be appropriate for the area;

ii. Environmental considerations need to be addressed with respect to the former landfill;

iii. Future development needs to be consistent with the Transit Oriented Development Policy Guidelines (Approved December, 2004);

iv. Provision of sufficient parking in the short term for the Calgary Zoo, Calgary Transit, and the proposed Science Centre, while acknowledging the need for a Transportation Demand Management Plan;

v. Pathway and bike connections are essential to the area;

vi. Interface considerations with Nose Creek and possible remediation/renaturalization efforts;

vii. The area needs to serve as a focal point for the community and the city as a whole;

viii. The area should serve as an attractive gateway to the downtown core as people enter from Deerfoot Trail; and,

ix. Vehicular access to the area and revisions to intersections at 8th Avenue N and Memorial Drive.

2 VISION & GUIDING PRINCIPLES

The Vision and Guiding Principles were developed through a stakeholder consultation process involving representatives from various City of Calgary Business Units and in close consultation with approved City of Calgary policy documents such as the Calgary Plan, Council's 11 Sustainability Principles, the Urban Parks Master Plan and the Rivers District Community Revitalization Plan.

2.1 VISION

As the north gateway to the Rivers District revitalization area, the South Nose Creek "experience zone" is a place that stimulates imagination and enriches life through discovery, education and adventure grounded in an awareness of nature, ecology, science and culture. It is a place of virtually unlimited experiential opportunity in the celebration of global and local natural environments and ecology, culture and the arts, humanity and technology. It is a place that reinstates an underlying human awareness that future generations – represented in the children and youth of today – are the foundation for our collective future, so it provides them with opportunity to explore, learn, create and gain awareness of themselves and their environment.

The South Nose Creek "experience zone" is a place that:

- ***Promotes Ecological Awareness*** through sensitive integration with natural and human surroundings, by celebrating and enhancing biodiversity and the natural environment, and through the promotion of sustainability;
- ***Welcomes and Connects People and Place*** by creating a landmark area that is accessible, beautiful, safe, efficient, inclusive, innovative in design and financially sustainable; and
- ***Educates, Inspires and Excites*** by providing opportunities to actively engage in learning experiences centered on science, technology, culture and history, as well as recreation and physical activities and experiences.

2.2 GUIDING PRINCIPLES

1. Ensure Compatibility and Synergy between Major Land Uses

- Ensure compatibility and connectivity between major land uses
- Encourage adaptive planning over time

2. Provide Accessibility for Residents and Visitors

- Promote transit-oriented development
- Encourage high LRT ridership
- Provide efficient public/private transportation

- Provide multi-modal access that emphasizes transit and pedestrian access both to the site and within the site
- Ensure accessibility to all (culturally, physically, economically)
- Provide good site access (LRT, road, parking)
- Ensure easy pedestrian movement and existing trail systems are enhanced

3. Develop and Nurture Culture

- Concentrate key cultural facilities
- Promote the area as a City of Calgary 'cultural node'
- Encourage intensive public use
- Promote the area as a cultural tourist attraction and semi-natural cultural district
- Develop the area as a home to various cultural destinations (Calgary Zoo, Science Centre) and potential future cultural destinations

4. Promote Environmental and Natural Viability

- Manage the site in compliance with environmental guidelines, while promoting environmentally sustainable development through reuse of brownfield sites
- Protect viable open space
- Maintain Nose Creek open space linkages
- Restore and enhance Nose Creek interface and riparian zones
- Provide additional conservation / recreation areas (pathways, natural grasslands)
- Manage environmental risk

5. Provide a Functional Space

- Consider alternative uses – cultural, educational and recreation based activities
- Consider accommodation - hotels, hostels, etc.
- Combine and connect active and passive environments
- Enhance pedestrian connectivity and experience
- Consider how parking will be integrated and limited over time
- Efficiently use available land

6. Support Social Needs

- Celebrate leadership in science, arts, and the environment
- Provide a holistic approach to art and science
- Balance natural and urban development
- Integrate learning opportunities
- Incorporate active and passive park and natural land
- Intensify built-use connected respectfully to natural environment

7. Ensure Compatibility, Synergy and Flexibility over Time

- Facilitate opportunities to improve the use of the land
- Encourage synergies and strong connections between significant land uses and place-making infrastructure
- Establish sufficient flexibility and a framework for future planning and development over the long term

3 SITE PLAN AND LAND USE FRAMEWORK

3.1 SOUTH NOSE CREEK SITE PLAN AND LAND USE FRAMEWORK

The South Nose Creek Site Plan establishes a land use framework intended to maintain compatibility and facilitate interconnectivity and synergies between short and long term land utilization within the Site Plan area. The framework is comprised of a set of core land uses augmented by other uses and a network of connections between the uses and to areas external to the Site Plan boundary. See **Figure 3.1 South Nose Creek Land Use Plan**. The short term land use framework is discussed in the following Section while techniques to address functional considerations for future land use, subdivision, and development decisions associated with the land use framework are provided through the recommendations and policies in Section 4.

3.2 CORE LAND USES

3.2.1 TELUS WORLD OF SCIENCE AND CREATIVE KIDS MUSEUM

Calgary City Council has committed approximately 6 hectares (15 acres) of land and $20 million toward the construction of a new facility for the Science Centre within the Site Plan area (NM2004-17). Through the direction given at that time, it was generally agreed that it would be located north of the current Calgary Zoo parking area. The considerations and opportunities associated with determining the location of the Science Centre are outlined below:

- Much of the Site Plan area was used for landfill operations throughout much of the 20th Century. Remediation and Environmental Risk Management Plans for the portion of the Site Plan area between the Calgary Zoo leased lands and Bottomlands Park were to a level suitable for park and open space use.

- Under the Subdivision and Development Regulations, development of a school, hospital, food establishment or residential use on this site would require a variance from the Province of Alberta to allow certain uses within the 300 metre landfill setback. As the Nose Creek Landfill Risk Management Plan addresses only existing land uses, such a variance would typically require that additional remediation and/or risk management plans be developed to address risk under the new proposed land use.

- The existence of the 1800 mm sanitary sewer line through the west-central portion of the proposed parcel presents challenges to development of the site north of the Calgary Zoo parking lot. Uses permitted on top of the utility easement are limited to those that still provide emergency and maintenance access to the line. This limits the location, size and configuration of a building envelope for the construction of the new building.

- The alignment of the North Central LRT line within the Nose Creek Valley will have significant impacts on the use of lands within the Plan Area because of the limited building site area available between the Calgary Zoo parking lot and Bottomlands Park. However, through the planning process it was determined that the alignment of the North Central LRT line does not prevent the Science Centre from locating on the proposed site.

- Although approximately 4% of Calgary Zoo and 10% of Science Centre (presently located adjacent to the 10th Street SW LRT Station) patrons utilize Calgary Transit as their mode of transportation, promoting transit oriented development and design is a priority for The City of Calgary whenever possible. The proposed location north of the current Calgary Zoo parking lot is within 600 metres of the Zoo LRT station; however, in the short term the Calgary Zoo parking lot would potentially create a distance barrier and make interfacing and synergy opportunities between the two facilities more challenging. It should also be noted that approximately 4% of Calgary Zoo and 18% of Science Centre patrons utilize school buses as their mode of transportation.

3.2.2 CALGARY TRANSIT / NORTH CENTRAL LRT ALIGNMENT

Calgary Transit has identified the construction of a North Central LRT line in its long term capital plan, when the city's population reaches 1.5 million people. Although lands have been protected north of Beddington Trail for the LRT to run within the Harvest Hills Boulevard right-of-way, the alignment south of Beddington Trail has yet to be determined. On 2006 April 10 Calgary City Council directed Administration to conduct a functional planning study to identify the details of the future North Central LRT line within the Nose Creek valley between Harvest Hills Boulevard/Beddington Trail and to connect to the downtown via the existing Northeast LRT line (LPT2006-27). It is anticipated that this study will be complete late in 2008 or early in 2009.

A study was prepared by Calgary Transit in conjunction with this Site Plan to identify a potential alignment of the proposed North Central LRT line within the Site Plan area. Three feasible alignments were identified (See Appendix B, Figure B.5). These three options do not prevent the Science Centre from locating on the proposed site. Calgary Transit will coordinate with the Science Centre and City business units to determine the preferred alignment.

3.2.3 CALGARY ZOO

Having experienced steady and significant growth in attendance, the Calgary Zoo is presently undertaking a major regeneration and expansion program including a new north entrance, and expanded Animal Health Centre and its Project Discovery development. As part of these plans, the Calgary Zoo anticipates an additional 500 parking spaces are required in the short term. The Calgary Zoo anticipates expanding the current surface parking facility eastward within the boundary of the existing lease to provide additional parking capacity. The implications associated with this site include:

- Much of the landfill activity that took place within the Site Plan area occurred within the area presently used for Calgary Zoo parking. In accordance with the Nose Creek Landfill Risk Management Plan, currently under preparation, it is anticipated that additional methane venting measures will need to be undertaken in coordination with an expansion of the parking facility as well as implementation of a more comprehensive and integrated methane management plan for existing facilities. Ongoing monitoring and contingency plans will also be required for groundwater management. Furthermore, any future uses beyond surface parking on this site would likely require additional forms of remediation or environmental risk management efforts. Some of those future uses may require a landfill setback variance from Alberta Environment.

Figure 3.1 South Nose Creek Land Use Plan

- The Animal Health Centre will be expanded as part of a partnership between the Calgary Zoo and the new University of Calgary School of Veterinary Medicine. The present location of the Animal Health Centre was chosen partly in accordance with federal regulations regarding the quarantine of animals and the Calgary Zoo has stated that they have no plans to relocate this building. Furthermore, additional berming and landscape barriers are required for health and safety reasons as part of the expansion.

- The Calgary Zoo maintenance facility located south of Centre Avenue is aged and in poor physical and visual condition. The Calgary Zoo plans to replace this facility with an updated maintenance facility. It is possible that a larger facility jointly operated between the Calgary Zoo and the Science Centre could be constructed on the present site.

3.2.4 BOTTOMLANDS PARK

Bottomlands Park is designated as both Manicured and Naturalized Parkland in the Urban Parks Master Plan. It is anticipated that the majority of the park will remain in use as parkland and open space. With the limitations that the proposed Science Centre site to the south presents in determining a building location and the possibility of further limitations caused by the North Central LRT, a portion of Bottomlands Park may be required to accommodate the required site development program for the Science Centre. Although removing active parkland is not an ideal sutuation, the Science Centre and associated outdoor space and improvements may be viewed as an acceptable alternative use as it benefits the entire city. However, it would be necessary to engage the public and undertake a review to determine the best course of action.

3.2.5 NOSE CREEK

Although Nose Creek has been channeled over the years and has suffered degradation as a result of runoff from surrounding upstream development, the Urban Parks Master Plan calls for the renaturalization and remediation of the creek over the long term. Both The City of Calgary and the Government of Alberta maintain policies restricting activity within the creek. The City of Calgary's Land Use Bylaw 2P80 and Land Use Bylaw 1P2007 (effective June 2008) establish a 30 metre building setback from the edge of Nose Creek. As well, pursuant to Section 664(1) of the MGA the dedication of Environmental Reserve may be required at the time of subdivision. Furthermore, Section 677 of the MGA states that to construct a public utility on, in, over or under Environmental Reserve land it must be demonstrated that doing so will not have adverse effects on the public interest or the environment. Techniques to mitigate the impact of the LRT corridor along the length of the Nose Creek alignment north of Memorial Drive should also be pursued through the functional planning and detailed design stages (expected late in 2008 or early in 2009). Potential also exists for the Science Centre and Calgary Transit to coordinate their efforts renaturalize and reconstruct the former wetlands on the portion of the creek adjacent to their lands to provide educational opportunities.

3.3 OTHER USES

3.3.1 BOTTOMLANDS PARK SOCCER PITCHES

The City of Calgary currently operates two soccer pitches on the northwest portion of the Site Plan area. As a number of organizations and user groups utilize the site it is unlikely that there will be change in use of this facility in the long term.

3.3.2 BOW RIVER BOAT LAUNCH FACILITY

Although outside the Site Plan area, plans have been developed to construct a boat launch facility on the north side of the Bow River on the west side of the terminus of Nose Creek. Access to this facility will be provided via a public access road running parallel to Nose Creek from Centre Avenue. The facility will include a public parking lot south of Memorial Drive, road turn-around and boat launch ramp.

3.3.3 TOM CAMPBELL'S HILL / ESCARPMENT AREAS

The area west of St. Georges Drive is characterized by an escarpment and Tom Campbell's Hill. It is anticipated that this area will remain in its natural state due to geotechnical constraints and the status of Tom Campbell's Hill as a natural park area.

3.3.4 CP RAIL / FUTURE HIGH SPEED TRAIN ALIGNMENT

The CP Rail line forms the eastern boundary of the Site Plan area. Early plans explored the possibility of running the North Central LRT in the CP Rail right-of-way. However, plans are underway to provide a high speed rail link between Calgary and Edmonton through the CP Rail right-of-way.

3.3.5 MAJOR UTILITIES

A major sanitary sewage trunk runs from north to south through the Site Plan area approximately 100 metres to the east of St. Georges Drive. The trunk turns east to follow the Centre Avenue right-of-way before again turning south and paralleling Nose Creek and crossing the Bow River south of the Site Plan area. In its present location, this sewage line presents a major constraint to development efforts on the lands to the east of St. Georges Drive and north of Centre Avenue. As a utility easement, most construction over the easement is limited to uses such as open space or surface parking to facilitate emergency and maintenance access to the utility infrastructure. Recently, Calgary Water Resources has indicated that major upgrades and possible replacement of the 1200 mm x 800 mm sanitary trunk running along St. Georges Drive are required in the near future. Water Resources is currently evaluating alignment options for the upgrade and the work is anticipated to be complete later this year. If possible, timing of the construction of the Science Centre site development (notably the site preparation stages) should be coordinated with the planned upgrades / replacement of the St. Georges Drive Sanitary Sewer trunks and any upgrades to the St. Georges Drive roadway to maximize efficiencies and minimize costs and disruption in this area.

3.3.6 ENMAX / POWER TRANSMISSION LINES

A major overhead power transmission line operated by Enmax runs along the western boundary of the Site Plan area before dispersing into smaller lines in the Bridgeland-Riverside neighbourhood. Much of the land the line is located on consists of steep topography and impacts to redevelopment plans should be minimal. In the southwest portion of the Site Plan area the transmission lines dissect the Calgary Zoo parking lot. Enmax has identified the possibility that a small-scale power plant may be required within the Site Plan area.

3.4 MOVEMENT, ACCESS AND CONNECTIONS

3.4.1 INTERSECTION AND ROADWAY UPGRADES

A transportation study was undertaken by the Science Centre to determine the capability of the road network to support the increased traffic resulting from the proposed development of the new Science Centre. The study assumed that primary access to the site would be from Memorial Drive via St. Georges Drive and 12 Street SE with secondary access provided at 13A Street and 8th Avenue N. The report determined that the proposed development will have impacts on the functionality of the St. Georges Drive / 12 Street SE and 8th Avenue N / 13A Street NE intersections, but that improvements to those intersections are not warranted given the expected traffic volumes. Additionally, signal warrant analysis for the 8th Avenue N / 13A Street NE intersection concluded that improvements to the intersection would lead to increased shortcutting through the Site Plan area for drivers accessing the communities to the north. This transportation study has not been reviewed by The City of Calgary.

The Science Centre's traffic study did not examine the use of Centre Avenue within the site or the impact of the kayak and boat launch facilities being constructed along the Bow River south of the Site Plan area. As part of those plans it is expected that the service road, which runs off the Centre Avenue right of way south of the Animal Health Centre will be realigned to run along the north side of the Animal Health Centre before it turns south parallel to the creek to provide access to the Bow River facilities. It is also expected that this roadway will be upgraded to a public gravel access standard. In light of the additional development potential for the Site Plan, future traffic studies should be conducted and reviewed by The City of Calgary, including the review of potential required upgrades needed for a strategy to mitigate the potential shortcutting through the site between 8th Avenue N and Memorial Drive.

3.4.2 PARKING

Presently, the Calgary Zoo operates a parking facility consisting of 1,300 surface parking spaces north of Memorial Drive. It is estimated that approximately 400 to 500 of these spaces on average are utilized by Calgary Transit riders who access the Zoo LRT station. Due to attendance growth, the Calgary Zoo has outgrown the present capacity of its parking facility and is planning to increase current capacity by 500 spaces while guaranteeing access for the 400 to 500 LRT users. These estimates do not take into consideration potential growth in transit use of the lot.

Additionally, a small parking lot provides access for Bottomlands Park and there is a small paved area which provides parking for the soccer pitches in the northwest corner of the site. It is anticipated that the Science Centre will require approximately 500 parking spaces.

3.4.3 PEDESTRIAN LINKAGES AND LAND USE INTERFACING

Pedestrian linkages are key to the successful redevelopment of the South Nose Creek area and it is imperative that the current pathway network be preserved and enhanced. Furthermore, it will be necessary to ensure that adequate linkages are provided between future uses as the site develops. Particular attention should be paid to ensuring connectivity between the Science Centre and the Calgary Zoo and LRT station to the south. As these are major cultural / educational facilities, a great opportunity exists to develop the area as a major destination and ensuring appropriate interfacing between the two uses is crucial to the success of the Site Plan area. It will also be necessary to ensure that connections are provided to both the existing Zoo LRT station and a future station associated with the North Central LRT near the Science Centre.

3.4.4 VIEW CORRIDORS / VISITOR EXPERIENCE

As a major entranceway to the downtown core and the Rivers District revitalization area, the South Nose Creek area maintains high visibility and has the potential of becoming a major gateway feature as people enter the inner city. The development of the Science Centre will serve as a visual draw without overly impacting the natural landscape of Tom Campbell's Hill as people enter via Deerfoot Trail and Memorial Drive. Thus, future development must consider the area's status as a gateway and measures taken to ensure that the view shed is enhanced.

4 RECOMMENDATIONS FOR FUTURE DEVELOPMENT

4.1 CONSIDERATIONS FOR FUTURE DEVELOPMENT

To ensure that the best use of the land is achieved within the Site Plan area, and that future development is complementary and optimizes relationships and interaction between existing and future uses in the short and long term, the following should be considered:

Achieving a "Destination Attraction" Area

The presence of two major Calgary institutions – the Calgary Zoo and the Science Centre – gives the South Nose Creek area a unique opportunity to become a major cultural and tourist destination for Southern Alberta. The potential of the site is further enhanced by its proximity to downtown, rapid transit, the regional pathway system and a major provincial highway. As such, future planning for the area should consider uses that would enhance the Site Plan area as a 'destination' attraction. Such uses could include other cultural facilities such as museums, art galleries and other educational facilities as well as accessory visitor-oriented uses including visitor accommodation and limited service commercial uses.

Landfill, Remediation and Regulatory Requirements

Section 13 of the Provincial Subdivision and Development Regulation defines a 300 metre setback requirement for school, hospital, food establishment and residential uses from a non-operating landfill operation. Development of these uses within the prescribed setback requires a variance from the Deputy Minister of Alberta Environment. This condition is applicable to the Science Centre development site and would be required at the land use application stage. A review of the application for variance by the Calgary Health Region will also be required.

The use of lands associated with the Nose Creek Landfill will be subject to the implementation of the Nose Creek Landfill Risk Management Plan. Any future development must consider and accommodate this Risk Management Plan, or amend it appropriately, to ensure that humans and the ecology continue to be adequately protected throughout and beyond any future changes in site use or development.
As the reclamation and re-use of brownfield sites becomes economically viable and as The City of Calgary develops and implements a comprehensive Brownfield Strategy, the potential redevelopment of parking areas or other underdeveloped lands in the Site Plan area may become increasingly feasible. Opportunities for redevelopment should be monitored and evaluated over time in conjunction with other recommendations and policies contained in this Site Plan.

The Site Plan area is located within the authority of the Calgary International Airport Vicinity Protection Area Regulation, Alberta Regulation 318/1979 (AVPA). Under the current regulations of the AVPA, some commercial and public uses within the Site Plan area, including elements of the Science Centre and the Calgary Zoo Animal Health Centre, are either restricted or subject to acoustic insulation building requirements as per the AVPA and Alberta Building Code. Therefore, Provincial waivers and appropriate sound attenuation techniques may be required at land use or development permit application stage. The AVPA regulation is undergoing review, and depending on the timing of development applications relative to this review, requirements to accommodate various non-residential development components within the Site Plan area could potentially be included with the ongoing AVPA regulation revision, or through future revisions to the AVPA regulation.

Integration of Light Rail Transit

Accommodating the future North Central LRT line through the Site Plan area is expected to improve rapid transit accessibility to the Science Centre site and for the Site Plan area generally in the longer term. Although modal split to transit for patrons of the Calgary Zoo and the Science Centre is relatively low currently, improvements to transit share could improve somewhat over time due to internal factors (e.g., development of the Site Plan area, location of major attractions in close proximity) and external factors (e.g.. fuel costs, parking charges, environmental constraints, and enhanced transit availability, capacity and efficiency).

Zoo Parking Area Development Strategy

Although this Site Plan has indicated that the present Calgary Zoo surface parking lot will be maintained and possibly expanded in the short term, it is reasonable to consider the surface parking as an interim use; consideration should be given to ongoing study of the Calgary Zoo lease area to determine the best use of this land in the long term in addition to an overall South Nose Creek Transportation Demand Management strategy to make more efficient use of transportation resources throughout the Plan area. Given the remediation and risk management requirements for this area, substantial weight is given to economic factors, however, environmental and social benefits to improving the best use of this site must also be considered.

Maintain / Enhance Nose Creek

Nose Creek has been substantially altered from its natural alignment through the Site Plan area over time as the result of historical development and use of the area. Opportunities to improve the restoration of Nose Creek, including re-establishment of natural oxbows, riparian area enhancement and access / enjoyment of the creek interface as an amenity and educational asset should be pursued as development occurs within the Site Plan area.

Facilitating a Pedestrian Environment

Improvement of key entranceways and activity nodes identified in the Site Plan, development of a consistent signage plan and intuitive way-finding techniques and general aesthetic and comfort improvements within the area south of Centre Avenue should be pursued in the short term. Significant functional and aesthetic improvements to the entry experience into the Science Centre site in the area west of the existing Calgary Zoo maintenance facility and consolidation of Calgary Zoo and Science Centre maintenance functions into a single redeveloped site should be pursued.

Creating efficient pedestrian connections in a comfortable and safe pedestrian environment between the Science Centre and the Zoo LRT / North Zoo entrance area in the short and long term will be critical to enhancing the pedestrian experience of the Site Plan area, particularly for those traveling with young children and the mobility-challenged. This will be especially important until the North Central LRT line and additional rapid transit stations are developed through the Site Plan area.

Optimization of Bottomlands Park

A park enhancement and management review program should be established to evaluate use characteristics and determine optimal programming and design for Bottomlands Park in accordance with the policies contained in the Urban Parks Master Plan. Although location of the Science Centre adjacent to the south boundary of Bottomlands Park should improve surveillance over the park, a Crime Prevention Through Environmental Design evaluation should form a core component of the review program. The review should also consider the possibility of redeveloping portions of Bottomlands Park, with the intent to balance the recreational needs of Calgarians with the educational, cultural and attraction destination objectives of this precinct within the Rivers District revitalization area. Redesign of the park may result in higher utilization of the site in addition to more efficient management and increased perception of safety. It would be critical to engage the public, user groups and stakeholders in any review of Bottomlands Park.

Transportation

Transportation network upgrades associated with development of the Science Centre site, Bow River boat launch access and future relocation of Centre Avenue to the north side of the Calgary Zoo Animal Health Centre and quarantine facility are anticipated in the short term. Additional transportation network improvements should consider the entry experience to the Site Plan area at the Memorial Drive / St. Georges Drive intersection and evaluation of the potential for shortcutting in adjacent residential areas to gain access to the Site Plan area via 8th Avenue N. Transportation network upgrades, including emergency access considerations, would be completed in conjunction with future subdivision and development proposals within the Site Plan area.

4.2 IMPLEMENTATION

Implementation of the Site Plan will occur through land use redesignation, subdivision or development permit applications, at which time there will be further opportunities for public input. As the Site Plan is implemented, actual development, site information and design details may differ from those provided in the Site Plan, but should follow the intent of the concept and policies contained herein.

4.3 POLICIES

The policies in this section should be used in conjunction with the concepts included in this Site Plan in assessing planning applications throughout the South Nose Creek Site Plan Area.

4.3.1 LAND USE AND DEVELOPMENT COMPATIBILITY

a. Reinforce the South Nose Creek Site Plan area as an important gateway and destination attraction within the Rivers District revitalization area.

b. Work with Science Centre representatives to establish a site approximately 6 hectares (15 acres) in size, north of Centre Avenue within the Site Plan area through the land use redesignation, subdivision and development permit processes.

c. Identify other land uses for future development / redevelopment on the Calgary Zoo surface parking and expansion areas and portion(s) of Bottomlands Park (subject to a comprehensive review of the Park) that would enhance the Site Plan area as a destination area, and maximize

opportunities for transit oriented development, where possible. Such uses may include, but not be limited to, cultural, educational, entertainment and visitor accommodation uses, as well as limited supportive commercial uses where appropriate.

d. Require that future development plans address interfacing with adjacent uses.

e. Promote coordination of planning and site design initiatives between the Science Centre and the Calgary Zoo.

f. Promote the consolidation of Calgary Zoo and Science Centre maintenance functions into a single redeveloped site in a location agreeable to the Science Centre and the Calgary Zoo within the Plan Area.

g. Reserve consideration for a possible small-scale power plant within the Site Plan area of a minimum parcel size of 150 metres by 150 metres. If incorporated into the Site Plan area, a power plant should generally be located east of St. Georges Drive.

h. Ensure that the regulations contained in the Calgary International Airport Vicinity Protection Area are addressed through future development applications on an individual basis.

i. Consider views into the site from adjacent residential communities, the Tom Campbell's Hill / escarpment and Deerfoot Trail as part of the development permit process.

j. Implement functional and aesthetic improvements to the entry experience into the Science Centre site at the intersection of St. Georges Drive and Centre Avenue in the area west of the existing Calgary Zoo maintenance facility.

4.3.2 ENVIRONMENTAL RISK MANAGEMENT

a. The necessary variance from Alberta Environment will be required for development of prescribed land uses proposed within the 300 metre landfill setback at the subdivision or development permit application stage.

b. Require that the Nose Creek Landfill Risk Management Plan (2008) be reviewed and incorporated into any land use/outline plan or development permit applications on the landfill site.

4.3.3 TRANSPORTATION, ACCESS AND THE PEDESTRIAN ENVIRONMENT

a. Protect the potential for the three options for the North Central LRT alignment identified in Appendix B and explore other potential options through a North Central LRT Functional Planning Study.

b. Improve legibility, visibility and consistency of theme for vehicular and pedestrian access at key entranceways identified in the Site Plan.

c. Pursue implementation of a district-wide signage, way-finding, lighting and thematic program intended to reinforce the Site Plan area as a distinct, integrated zone.

d. Work with Calgary Parks to ensure that the Nose Creek Regional Pathway is not interrupted by future development in the Site Plan area.

e. Create a comprehensive and connected open space system that links attractions, parks and plazas, Nose Creek, Tom Campbell's Hill escarpment and the existing and future LRT station areas.

f. Promote cycling as a mode of transportation and for recreational purposes by providing connections to the Regional Pathway and within the Site Plan area.

g. Create efficient pedestrian and/or transit connections that are comfortable, efficient and safe during daylight and dark hours of the day, linking the Science Centre, Zoo LRT station / North Zoo entry area and the Nose Creek Regional Pathway. This connection must consider the needs of those traveling with young children and the mobility-challenged.

h. Site planning for the Science Centre should support direct and convenient pedestrian access to both the existing Zoo LRT Station and the proposed LRT station along the North Central LRT alignment, as well as the Nose Creek Regional Pathway.

i. Explore methods for providing increased visual and security barriers between pedestrians and the Calgary Zoo Animal Health Centre facility that are compatible with Crime Prevention Through Environmental Design principles.

j. Identify transportation network upgrades, including emergency access considerations, through traffic impact analyses in conjunction with future subdivision and development proposals within the Site Plan area.

k Reinforce the intersection of Memorial Drive / St. Georges Drive as the primary entrance to the South Nose Creek Site Plan area.

l. Conduct further transportation studies to account for the development potential of the site in addition to the Science Centre, identifying required roadway and interchange upgrades and evaluating the potential for shortcutting in adjacent residential areas to gain access to the Site Plan area via 8th Avenue N and implement the mitigation strategies identified in the studies.

m. Pursue a Transportation Demand Management Plan at land use/outline plan or development permit application stage to examine strategies for making more efficient use of transportation resources in the area.

4.3.4 NATURAL ENVIRONMENT AND OPEN SPACES

a. Pursue opportunities for the restoration of Nose Creek, including re-establishment of natural oxbows and riparian areas.

b. Approach Calgary Parks regarding consideration of the preferred LRT alignment as a public utility to determine if the LRT corridor would adversely affect the interests of the public relative to Environmental Reserve land adjacent to Nose Creek and to evaluate the alternatives.

c. Pursue techniques to mitigate the impact of the LRT corridor in areas along the length of the Nose Creek alignment north of Memorial through the functional planning and detailed design stages.

d. Develop a park enhancement and management review study that evaluates the function / role of Bottomlands Park, including a Crime Prevention Through Environmental Design evaluation.

e. Initiate a public engagement process to involve the public, user groups and stakeholders in any review of Bottomlands Park.

f. The following studies may be required to address creek restoration, habitat enhancement and wetland creation as part of an application for land use/outline plan or development permit within the Site Plan area:

- Biophysical Impact Assessment;
- Biophysical Study;
- Hydrological Study;
- Preliminary Grading Plan; and
- Restoration Plan for on-site and adjacent natural areas that are damaged or disturbed.

APPENDIX A – POLICY CONTEXT

A.1 MUNICIPAL GOVERNMENT ACT / SUBDIVISION AND DEVELOPMENT REGULATION

The *Municipal Government Act*, R.S.A. 2000, c. M-26 (the MGA) and the Subdivision and Development Regulation, Alberta Regulation 43/2002 (the Subdivision and Development Regulation) provide direction on planning and development matters throughout the Province of Alberta. As it relates to the South Nose Creek Plan Area, Section 13 of the Subdivision and Development Regulations specifically discuss development distance from landfill and waste sites. The Subdivision and Development Regulations state that a subdivision authority shall not approve subdivision or development permit applications for school, hospital, food establishment or residential uses in areas within 300 metres of the disposal area of an operating or non-operating landfill. However, the Subdivision and Development Regulations go on to state that the setback requirements may be varied with the written consent of the Deputy Minster of Environment. As such, prior to any development occurring within the Site Plan Area, it will be necessary to seek a setback variance from Alberta Environment under Section 13(5) of the Subdivision and Development Regulations.

A.2 THE CALGARY PLAN

The Calgary Plan, 10P98 (the MDP) was adopted in 1998 to provide a strategic framework for the long term growth and development of Calgary. The Plan addresses future land use, development and transportation, relationships with municipal neighbours, provision of municipal services and facilities. It also includes The City's policies regarding the dedication of reserve land and the environmental, social and economic health of the city. The overall objectives and policies outlined in the MDP are to be incorporated in a more detailed and specific manner through local community plans and policy documents such as this one. In terms of the South Nose Creek Site Plan, the Calgary Plan's Future Conceptual Urban Structure figure identifies the Subject Lands as 'Existing General Urban Use' and 'Existing Open Space'. Future land use and development applications within the Site Plan area will have to maintain the intent of the MDP and will be evaluated against the policies and objectives of the Plan. The MDP also addresses policy for development in river and creek valleys:

- Give highest priority to the protection of environmentally significant areas in the allocation of land uses (2-1.4A).
- The overall structure of the River Valley Park System will be based upon protection, rehabilitation and/or re-establishment of naturally sustainable landscapes, waterways and ecosystems (2-1.4.1A).
- Undertake environmental impact assessments when transportation corridors or river crossings are proposed within the river valleys system (2-1H).
- The River Valley Park System will include a continuous river valley pathway; not always adjacent to the river's edge (2-1.4.1E).
- Landscape features contributing to the visual continuity and aesthetic quality of the River Valley Park System will be protected, maintained and enhanced where appropriate (2-1.4.1L).

A.3 CITY OF CALGARY'S 11 SUSTAINABILITY PRINCIPLES

The City of Calgary utilizes 11 Sustainability Principles to evaluate development proposals throughout the city. The 11 Principles are:

1. Create a range of housing opportunities and choices;
2. Create walkable environments;
3. Foster distinct, attractive communities with a strong sense of place;
4. Provide a variety of transportation options;
5. Preserve open space, agricultural land, natural beauty and critical environmental areas;
6. Mix land uses;
7. Strategically direct and manage redevelopment opportunities within existing areas;
8. Support compact development;
9. Connect people, goods and services locally, regionally and globally;
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; and
11. Utilize green infrastructure and buildings.

While some of the Sustainability Principles, such as the provision of a range of housing opportunities, are not appropriate within the context of this Site Plan, the majority of these principles have been incorporated into the policy sections of this document.

A.4 TRANSIT ORIENTED DEVELOPMENT POLICY GUIDELINES

The City of Calgary Transit Oriented Development Policy Guidelines provides direction for the development of areas typically within 600 metres of a Transit Station (existing or future). Transit Oriented Development (TOD) typically seeks to take advantage of proximity to transit by creating a higher density, walkable and mixed-use environment. The Transit Oriented Development Policy Guidelines contain six key policy objectives for areas within the 600 metre TOD requirement:

1. Ensure transit supportive land uses:

    - Ensure land uses around transit stations support ridership by generating high levels of transit use and provide a mixed-use activity node for the local community with increased services, employment, and housing options within their community;

2. Increase density around transit stations:

    - Increase density around all transit stations to support high frequency, rapid transit service and provide a base for a variety of housing, employment, local services and amenities that support a vibrant station area community;

3. Create pedestrian-oriented design:

    - Create convenient, comfortable, direct and safe pedestrian linkages to and from all transit stations in order to support a walkable station area and promote the use of transit;

4. Make each station area a "place":

    - Each station area should be developed as a unique environment, transforming a utilitarian transit node into a community gateway and a vibrant mixed-use hub of activity;

5. Manage parking, bus and vehicular traffic:

    - Accommodate transit bus and private automobile circulation and parking needs, while creating a comfortable pedestrian environment;

6. Plan in context with local communities:

    - TOD should benefit the local community. Through consultation with local communities, TOD should provide a wide range of supporting benefits for local communities, including increased uses and services, a variety of housing, increased transportation options, and a more walkable environment and community amenities.

Given the presence of the existing Zoo LRT station on the Northeast LRT Line and the planned alignment of the future North Central line along the eastern portion of the Site Plan area, much of the South Nose Creek Site is within the 600 metre TOD guideline distance. The goals and objectives of these guidelines have been reflected in the policy formation of this document and it is anticipated that future development applications within the Subject Lands will provide more detailed reference to how those policies and goals will be implemented throughout the Site Plan area.

A.5 URBAN PARKS MASTER PLAN

The Site Plan area is located within the Nose Creek Policy Area as identified in the Urban Parks Master Plan. The City of Calgary Urban Parks Master Plan establishes a vision for the future of parks and open space throughout the city. The primary goal of the Plan is to ensure open spaces protect, revitalize, or re-establish naturally sustainable landscapes, waterways and ecosystems. The Plan divides the city into different ecological zones, each with its own set of policies and objectives. For the Nose Creek Area, the following policies and objectives are identified:

1. Improve the water quality of the Creek, which has been degraded by the surrounding development and denaturalization of the stream flow and habitat.

2. Ensure adequate provision of public access to the Creek in order to provide passive recreational facilities and opportunities, protect and restore the natural environment, and ensure important movement corridors for wildlife between the Creek and surrounding natural areas.

Furthermore, the Nose Creek Master Plan identifies the Subject Lands as containing both 'Manicured Park' and 'Naturalized Park' areas. Manicured Parks are defined as areas, which are proposed as parks that are "special use areas" within the Urban Park. They imply some development and maintenance which is relatively intense compared to Preservation Parks. Alternatively, Naturalized Parks are defined as disturbed, partially disturbed and/or existing manicured areas, which are proposed for reclamation to as natural a state as possible. As a result of these designations, development proposals for the subject lands must recognize the policies of the Urban Parks Master Plan or a process must be undertaken to alter the designation of the lands.

A.6 ENVIRONMENTAL RESERVE SETBACK GUIDELINES

In May 2007, Calgary City Council approved the Environmental Reserve Setback Guidelines, which set out Environmental Reserve dedication requirements in addition to those provided in section 664(1)(c) of the MGA. According to the Guidelines, as a tributary of two 2nd order streams, Nose Creek qualifies as a 3rd order stream with a recommended setback of 50 metres.

A.7 NOSE CREEK WATERSHED MANAGEMENT PLAN

The Nose Creek Watershed Management plan was created under the direction of the Nose Creek Watershed Partnership in collaboration with Alberta Environment, The City of Calgary, The City of Airdrie and The Municipal District of Rocky View. The goal of the Plan is to protect the riparian areas and improve water quality in the Nose Creek Watershed and its tributaries. A major component in reaching this goal includes an integrated approach to stormwater management practices by implementing maximum allowable release rates and runoff volume control targets that can be achieved through Low Impact Development Practices. Site-specific riparian protection recommendations should also be established based on the 1:100 year floodplain, escarpment and meander belt widths. Additional recommendations include a "no net loss" of channel lengths, maintenance of native vegetation on critical slope areas, preservation of vegetation cover during construction, and avoidance of construction in gullies, ravines and coulees. Mitigation and restoration techniques are also encouraged to protect the Nose Creek Watershed.

A.8 THE CITY OF CALGARY BROWNFIELD STRATEGY

A brownfield development includes an abandoned, vacant, derelict or under-utilized property where there is potential for redevelopment. While there are great social, economic and environmental benefits of brownfield development, the Strategy acknowledges that there are also liability and financial concerns associated with redevelopment. The City of Calgary Brownfield Strategy encourages linking contaminated site remediation or risk management objectives with redevelopment objectives while protecting human health and the environment. The City of Calgary recognizes the Nose Creek Landfill as a brownfield site ready for redevelopment based on its location, ability to adhere to Transit-Oriented Designs and Sustainability Principles, Triple Bottom Line Principles, complexity and technical requirement, cost, current and proposed use. Three Provincial acts also address development of brownfield sites: the MGA, Alberta Environmental Protection and Enhancement Act, R.S.A. 2000, c. E-12 and the Public Health Act, R.S.A. 2000, c. P-37.

A.9 CALGARY INTERNATIONAL AIRPORT VICINITY PROTECTION AREA

The Site Plan area is located within the authority of the Calgary International Airport Vicinity Protection Area Regulation, Alberta Regulation 318/1979 (AVPA). The main regulatory measure which the AVPA uses to control development is the noise exposure forecast (NEF). The NEF is a series of contours and associated values located on a map to determine the magnitude and impact of noise generated by aircraft using the airport. NEF contour values generally lie between 0 and 40+. The greater the NEF value the greater the amount of noise experienced at the location and the greater its potential impact on the use of that land. The regulations of the AVPA restrict certain development within some NEF contours in order to minimize this land use conflict. Significant portions of the Site Plan area fall within NEF contours pursuant to the Calgary International AVPA and some portions fall within the 35 NEF and greater contours. Under the current regulations of the AVPA, some commercial and public uses within the Site Plan area, including elements of the Science Centre and the Calgary Zoo Animal Health Centre, are either restricted or subject to acoustic insulation building requirements as per the AVPA and Alberta Building Code. Depending on the specific uses contemplated at the development stage there is a possibility waivers may be required under the AVPA regulations and/or appropriate sound attenuation techniques employed in the construction of buildings within the Plan area. At the time of writing of this Site Plan, the AVPA regulation is undergoing review. Depending on the timing of development applications relative to this review, requirements to accommodate various non-residential development components within the Site Plan area could potentially be included with the ongoing AVPA regulation revision, or through future revisions to the AVPA regulation.

A.10 CALGARY LAND USE BYLAW

Under the current Land Use Bylaw (2P80) the Site Plan area is governed by three (3) different land use designations and two (2) Direct Control Bylaws: Agricultural and Open Space District (A), Public Park, School and Recreation District (PE), Urban Reserve District (UR), DC 157Z81 and DC 550. With the recent adoption of Land Use Bylaw 1P2007, to come into effect on June 1, 2008, lands in the Site Plan area will be governed by six (6) land use designations and one (1) DC bylaw: Special Purpose – Future Urban Development District (S-FUD), Special Purpose – Recreation District (S-R), Special Purpose – Community Service District (S-CS), Special Purpose – City & Regional Infrastructure District (C-CRI), Special Purpose – Urban Nature District (S-UN), Special Purpose – School, Park and Community Reserve District (C-SPR) and Direct Control Bylaw DC157Z81. Land Uses and guidelines contained in Direct Control Bylaw DC757281 do not contemplate the Science Centre and accordingly a land use redesignation will be required to implement the proposal.

APPENDIX B – SUMMARY OF ALTERNATIVES

B.1 SUMMARY OF ALTERNATIVES

See Figure B.1 Landfill Considerations, Figure B.2 Former Oxbow Locations, Figure B.3 Parks and Open Space, Figure B.4 Major Sanitary Sewage Line and Figure B.5 North Central LRT Alignment Options.

Two main alternatives for the location of the Science Centre were examined as part of the Site Plan exercise with a number of sub-options relating to the alignment of the North Central LRT and the determination of a possible joint parking strategy for the Calgary Zoo lands. The alternatives are summarized below:

Alternative A — Locating the Science Centre on an approximately 6 ha (15 ac) site north of the Centre Avenue right-of-way and south of Bottomlands Park.

1. LRT Alignment Option 1 – Spanning Nose Creek
2. LRT Alignment Option 2 – 6 Metre Setback from Nose Creek
3. LRT Alignment Option 3 – 30 Metre Setback from Nose Creek

Alternative B — Locating the Science Centre within the location of the current Calgary Zoo parking lot.

1. Parking Option 1 – Combination Surface and Structure Parking for joint use by Calgary Zoo, Science Centre, LRT and other users
2. Parking Option 2 – Structured Parking only for joint use by Calgary Zoo, Science Centre, LRT and other users

A Triple Bottom Line analysis was undertaken incorporating all the presented information to determine the social, economic and environmental considerations and opportunities presented by each. A summary of the analysis is presented in the following sections.

B.1.1 PREFERRED ALTERNATIVE A

Alternative A would locate the Science Centre on an approximately 6 hectare (15 acre) parcel immediately north of the Calgary Zoo parking lot and the Centre Avenue right-of-way and south of Bottomlands Park. The considerations and opportunities associated with this alternative are summarized below:

- This alternative is consistent with the goals and objectives of The City of Calgary's Rivers District Community Revitalization Plan.
- One of the primary benefits to selecting this location is the economic feasibility of the site given anticipated timelines, costs and constraints posed by the existing science centre location, construction of the West LRT, Calgary Zoo expansion plans and parking requirements and the contamination of land within the South Nose Creek Site Plan Area. The time required to prepare another site for the Science Centre would result in prohibitive economic losses for the Science Centre, and a location elsewhere within the Plan Area would require significant capital investment in parking structures and remediation or risk management efforts.

- With this alternative, the Calgary Zoo parking lot will form a barrier between the Calgary Zoo and Zoo LRT Station and the Science Centre to the north, restricting interfacing and connectivity opportunities and limiting access to transit for the Science Centre patrons. However, these considerations may be short term as the North Central LRT proposes a station near the Science Centre and there remains potential in the medium to long term for the Calgary Zoo parking lot to redevelop for future use. This would provide future opportunities to improve interfacing and connectivity and build upon the attraction destination nature of the South Nose Creek Plan Area.

North Central LRT Alignment Options

A study was prepared by Calgary Transit in conjunction with this Site Plan to identify the alignment of the proposed North Central LRT line within the Site Plan area. Three possible alignments, which allow the Science Centre to locate on the proposed site were identified.

LRT Alignment Option 1 – Spanning Nose Creek

Option 1 passes under Memorial Drive and the westbound track of the Northeast LRT line where it runs along the east portion of the existing internal circulation road. Land available to the Science Centre or other uses is maximized through an elevated alignment above the Nose Creek oxbows near Centre Avenue. The alignment follows Nose Creek and continues north paralleling the CPR right of way, where tracks have recently been added. The proposed LRT option crosses over two oxbows before passing through the Bottomlands Park and under 8th Avenue N. While Option 1 travels within the 6 metre environmental setback as well as the 30 metre building setback area it is felt that the intent of these setbacks is maintained through an elevated LRT structure, which allows infiltration and uninterrupted access to Nose Creek for recreational and educational purposes as desired by the Science Centre.

LRT Alignment Option 2 – 6 Metre Setback from Nose Creek

Option 2 maintains a 6 metre setback from Nose Creek. Similar to Option 1, the alignment travels under the Memorial Drive westbound lanes, remaining east of the existing internal circulation road. The alignment can be elevated near Nose Creek to provide uninterrupted access to Nose Creek for recreational and educational purposes as desired by the Science Centre. This option conforms to Alberta Environment regulations but not to the City Land Use Bylaw, which requires a 30 metre building setback. It is felt that an elevated structure would address the intentions of the Land Use Bylaw as it would allow access to the creek and ground infiltration.

LRT Alignment Option 3 – 30 Metre Setback from Nose Creek

Option 3 meets all Nose Creek setback requirements. The alignment travels below the Memorial Drive westbound lanes and then proceeds via an at-grade or elevated alignment through the plan area. The general horizontal alignment adheres to the Land Use Bylaw and parallels Nose Creek at a distance of 30 metres.

North Central LRT Functional Planning Study

These three options and other potential options will continue to be explored through the North Central LRT Functional Planning Study that is currently being prepared by Calgary Transit. It is anticipated that this study will be complete late in 2008 or early in 2009.

B.1.2 ALTERNATIVE B

This alternative would locate the Science Centre on a portion of the existing Calgary Zoo parking lot. In order to accommodate the Science Centre and compensate for the loss of parking, a joint parking strategy would need to be undertaken. The considerations and opportunities associated with this alternative are summarized below:

- This alternative is consistent with the goals and objectives of The City of Calgary's Rivers District Community Revitalization Plan.

- In terms of land use and site layout, locating the Science Centre on the existing parking lot presents an opportunity to maximize lay-out options and expansion opportunities for the Science Centre. Interfacing and connectivity between the Calgary Zoo, Zoo LRT Station and the Science Centre would be maximized which could have beneficial impacts on the operation and attendance of both institutions. Furthermore, proper interfacing between these institutions and transit would help to enhance the establishment of the South Nose Creek Site Plan Area as a major cultural destination.

- Locating the Science Centre in such close proximity to the existing Zoo LRT Station would potentially negate the necessity for a future station within the Plan Area on the North Central LRT line, thereby reducing capital costs associated with the proposed LRT line.

- In order to develop the site as a Science Centre, it is estimated that extensive remediation or risk management efforts would be necessary and may include removal of some or all landfill waste and associated fill soil, capping of any remaining impacted areas of the site and installation of a vapour management system. Both the Science Centre and Calgary Zoo have indicated that this is not feasible to them at the present time to pursue the high costs of undertaking these efforts.

- The recently approved West LRT will have serious impacts upon the existing Science Centre location on the western edge of downtown Calgary when it opens in 2011. Delays associated with remediating the site presented in this option may have negative impacts upon the operations of the Science Centre and construction of the West LRT as the Science Centre will have to remain in its present location for longer than anticipated.

Joint Parking Strategy

If Alternative B were to be pursued, it would result in the loss of existing surface parking stalls for the Calgary Zoo, LRT riders and other users. Furthermore, additional parking would be required to accommodate the new Science Centre facility. As such, a joint parking facility would be required which could accommodate all users. It is anticipated that approximately 2300 parking stalls would be required in the short term to accommodate all users. Through this analysis, two parking options were identified which could meet these needs. These parking options are discussed below:

Parking Option 1 – Combined Structured and Surface Parking Lots

This parking option would use a combination of approximately 1000 surface parking stalls and 1300 parking stalls contained in a parkade facility. This parking option was pursued due to the lower costs associated with surface parking over structured parking. However, when the necessary remediation and risk management costs are accounted for, this parking option becomes unfeasible to both the Science Centre and the Calgary Zoo. Furthermore, the Calgary Zoo has voiced concern over the operational impacts that would result from construction and the interim loss of parking. In light of the cost, this parking option does have the potential to increase the efficiency of land use within the Site Plan area by minimizing the amount of land required for parking facilities.

Parking Option 2 – Structured Parking Facility

This parking option would see a 2300 stall parkade constructed to service the Science Centre, Calgary Zoo and other users presently utilizing the Calgary Zoo parking lot. Considering that the per-stall costs of structured parking are significantly higher than surface parking, this parking option would result in even higher financial implications than Parking Option 1 above. This is too cost-prohibitive for the Calgary Zoo and the Science Centre and would require significant investment from The City of Calgary or other funding sources.

Figure B.1 Landfill Considerations

Figure B.2 Former Oxbow Locations

Figure B.3 Parks and Open Space

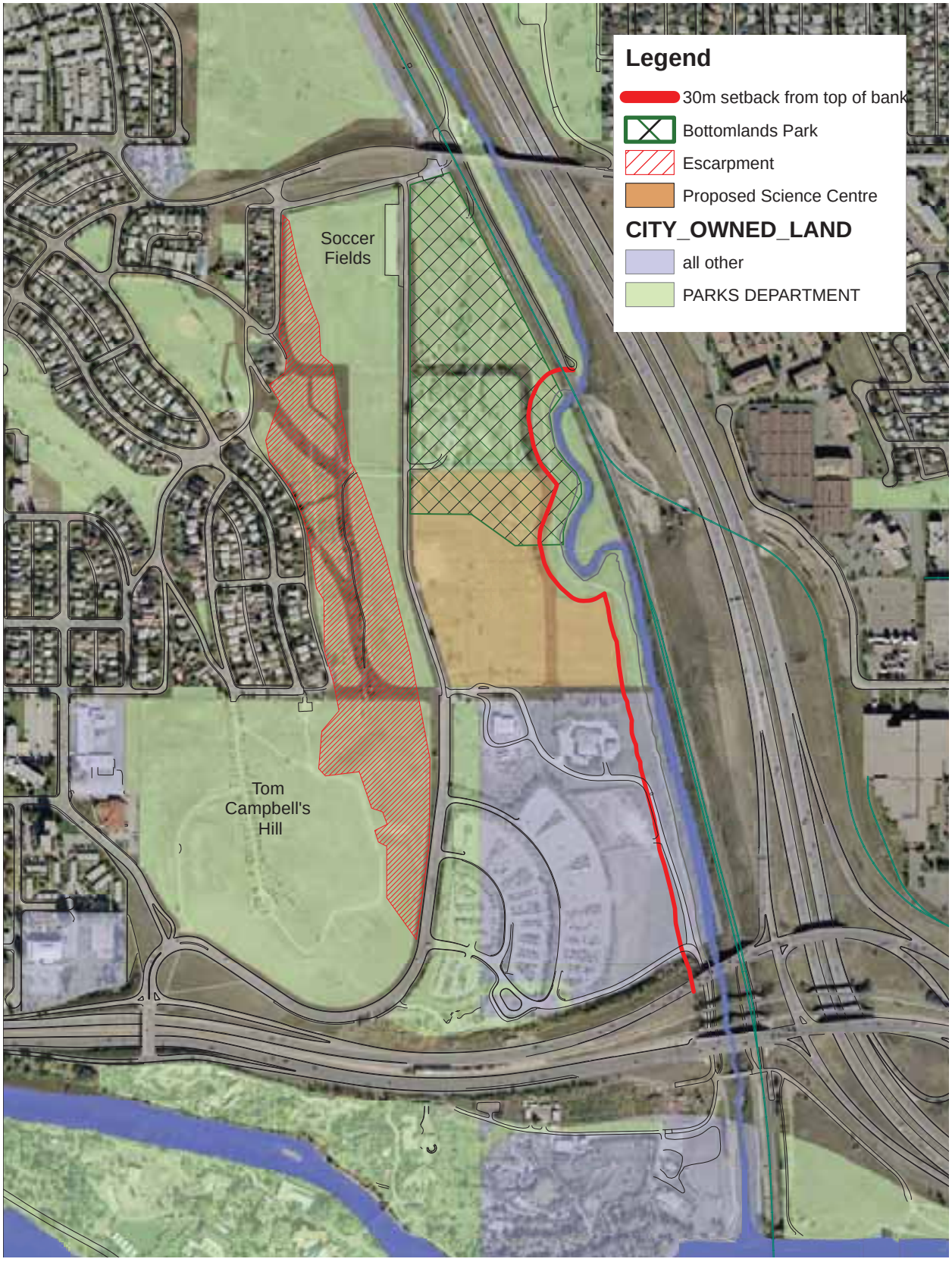

Figure B.4 Major Sanitary Sewage Line

Figure B.5 North Central LRT Alignment Options

APPENDIX C – STAKEHOLDER ENGAGEMENT

A series of Stakeholder meetings were held between June 2007 and January 2008 as part of a coordinated process designed to receive and synthesize the visions, aspirations and requirements of City of Calgary staff, the Science Centre, the Calgary Zoo and other key stakeholders. The engagement approach assigned a high priority to appropriately informing and involving stakeholders throughout the study and was aligned with The City's engage! Policy's guiding principles of accountability, inclusiveness, transparency, commitment and responsiveness.

The Internal Stakeholder team included staff from the following City departments and agencies:

Land Use Planning and Policy

Corporate Properties

Law

Environmental and Safety Management

Development and Building Approvals

Infrastructure Services

Calgary Zoo

ENMAX

Waste and Recycling Services

Arts and Culture

Water Resources

Parks

Calgary Transit

Transportation Planning

Telus World of Science

Calgary Parking Authority

June 20, 2007 Internal Stakeholder site visit. Participants are standing on the pathway between Nose Creek and the north Calgary Zoo lease lands. Memorial Drive is in the background.

Representatives of the following External Stakeholder groups provided with the opportunity to review key concepts contained within the draft South Nose Creek Site Plan early in 2008:

Nose Creek Watershed Partnership

River Valleys Committee

Calgary Bikeways and Pathways Advisory Council

Bridgeland/Riverside Community Association

Crossroads Community Association

Renfrew Community Association

Canadian Pacific Railway

Calgary Municipal Land Corporation