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SASKATOON NORTH PARTNERSHIP FOR GROWTH REGIONAL PLAN

Regional Servicing Strategy



SASKATOON NORTH
PARTNERSHIP FOR GROWTH
REGIONAL PLAN

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Introduction

The Regional Servicing Strategy provides recommendations to the P4G member municipalities for strategic investments in regional infrastructure development and service delivery. As the development identified in Land Use Concept takes place, capital investments and extensions of infrastructure will be required to support this growth.

The benefits of regional cooperation with infrastructure and servicing include the following:

- Costs for planning, construction, operations, and maintenance of infrastructure can be reduced through **economies of scale**, especially for smaller municipalities that would otherwise need to build and maintain facilities independently.
- Smaller municipalities can achieve **higher levels of service** through joint infrastructure projects and systems.
- Funding for new capital facilities can be pooled through **cost-sharing** and joint efforts to petition senior governments for support can help the P4G Region draw on additional resources.
- Growth planning can be supported and promoted through timely and efficient **sequencing of infrastructure and services** to new development areas.

Considering these goals, the Strategy provides a coordinated approach for the following infrastructure systems in the P4G Region:

- **Potable water**
- **Wastewater**
- **Stormwater management and drainage**
- **Transportation**

The Strategy also discusses the following topics related to the coordination of infrastructure across the P4G Region:

- **Other infrastructure.** Although the four identified infrastructure systems are the primary focus of the Strategy, considerations of other types of infrastructure will be needed for long-term regional planning and coordination.
- **Infrastructure corridors.** Providing for shared rights-of-way between different infrastructure systems can reduce the costs of land acquisition and improve efficiency of regional service delivery.
- **Fees, levies, and intermunicipal servicing agreements.** Coordination between municipalities is needed to ensure regional and local extensions of services are properly funded and development can pay for itself without burdening ratepayers with the costs of growth. Mechanisms considered may include common agreements for providing urban servicing, and approaches for cost recovery for infrastructure projects.
- **Sequencing.** Given that development in the P4G Region, identified in the Land Use Map, will occur over an extended period, an understanding of the initial investments in infrastructure can help present immediate priorities versus long-range considerations for planning.

The Servicing Strategy focuses on regional infrastructure solutions where coordination between municipalities is necessary. While this Servicing Strategy currently includes water, wastewater, stormwater, and transportation systems, future areas of regional coordination may include other public services, such as recreation facilities, transit or emergency services, or services provided by the private sector or Crown corporations. The Servicing Strategy should be expanded as required to accommodate these services.

Potable Water

OBJECTIVES

- Provide safe, clean drinking water for residents and businesses in the P4G Region
- Coordinate the orderly development of potable water infrastructure to support regional and local land-use policies
- Minimize potable water infrastructure costs through coordination between municipalities
- Support water providers in securing emergency water supplies for the P4G Region
- Promote the efficient use of potable water across the P4G Region

CONTEXT

A summary map for the regional potable water strategy is provided in Exhibit 1. Key elements of this map include the following:

- **Saskatoon Water Treatment Plant.** The current City of Saskatoon Water Treatment Plant (WTP) provides water supplies across the P4G Region. The capacity of the WTP will increase from 258 million litres per day (ML/d) to 300 ML/d with shorter term facility expansion, with the potential to further expand capacity to 350 ML/d on the current site. There is also potential to build a second WTP nearby to increase treatment capacity.
- **SaskWater pipelines.** SaskWater provides water services across the P4G Region, outside of the City of Saskatoon. To supply these communities, which currently include the other P4G members, SaskWater has eight major connections to the City network.
- **Conceptual Martensville-Saskatoon connection.** A memorandum of understanding (MOU) was developed in

2014 to negotiate an agreement for Saskatoon to provide water and wastewater services to Martensville. The alignment for this connection has not been determined, but water delivery services from Saskatoon would replace those currently provided by SaskWater.

Water Supply

At present, potable water for the P4G Region is supplied by the City of Saskatoon Water Treatment Plant (WTP). This facility draws water from the South Saskatchewan River in the south of Saskatoon, and currently has a supply capacity of 258 ML/d that is distributed to customers in the City by Saskatoon Water and in the rest of the P4G Region by SaskWater.

Information on planned expansion of water treatment facilities in Saskatoon indicates this will follow three general stages:

- **Further expansion of the existing WTP** could accommodate a peak daily capacity increase of up to 450 ML/d.
- **Construction of a second WTP** using current inlet structures and water licenses can accommodate a peak daily capacity of 540 ML/d.
- **Expanding water intakes** will be required to accommodate a peak daily capacity beyond 540 ML/d.

Projections of expected regional water demands using available population projections (see Appendix A) are provided in Appendix B. This assessment considers potential high/low scenarios for water consumption over the next few decades to determine how current capacity will meet future demand. Several conclusions can be reached from this assessment, assuming the City of Saskatoon maintains its role providing potable water to the regional system:

- **Short-term facility expansion.** Expected short-term WTP capacity expansions to 300 ML/d are expected to

accommodate peak water demand until about 2021–2031, based on the scenarios assessed.

- **Long-term facility expansion.** Additional capacity expansions to the current WTP would address peak demand until about 2036–2051. After this time frame, a new WTP would be necessary. This will occur near the end of a 20 to 25-year capital facilities planning cycle and should be the focus of long-term facilities planning.
- **Additional water treatment facility.** A second WTP would boost regional water supplies to meet needs until 2043–2059, after which new water licenses would be needed from the province for additional withdrawals.
- **Coordination of regional funding for capital facilities.** Levies, fees, and service charges should be coordinated on a regional basis to ensure capital facilities for water treatment can be funded.
- **Emergency raw water supplies.** Long-term planning to provide safe and sufficient supplies of potable water should be a consideration of the Regional Plan. This would involve the provision for emergency supplies from other sources if the South Saskatchewan River is impacted.
- **Regional coordination and system efficiency.** Regional coordination will be essential for effectively managing long-term water supplies and reducing per-capita demand through conservation. Measures should include more specific requirements for water allocation to communities, incentives for water conservation, and connection fees designed to support future upgrades to treatment capacity.

Water Delivery

In addition to providing an adequate supply of water, the physical delivery of water to the smaller urban municipalities and surrounding rural areas is also a significant regional issue. Water from the City of Saskatoon is supplied by SaskWater to the individual municipalities via the Saskatoon North Treated Supply Pipeline that links to the City system at the 71st Street and Wanuskewin Road booster station.

The Saskatoon North Treated Supply Pipeline has the following capacity characteristics:

- The **point of delivery** to the pipeline has a maximum capacity of 27.0 ML/d. The average supply rate under the existing Master Supply Agreement is 8.3 ML/d and the maximum supply rate is 15.6 ML/d. Delivering water to the pipeline beyond the maximum supply rate, especially given reductions in capacity from new growth within the City, may require upgrades to the mains in this area.
- The **City of Martensville** is supported by two pipelines with capacities of 6.3 ML/d (north) and 2.3 ML/d (south) at the points of delivery.
- The **City of Warman** is supported by a section of the pipeline that can provide 15.7 ML/d at the point of delivery.
- Delivery into the **Town of Osler** is supported by a SaskWater connection, and the municipal waterworks system is expected to support 2,200 residents.
- Additional pipelines provide water delivery to **municipalities outside the P4G Region**, including Dalmeny, Hepburn, and Hague, as well as rural customers of Intervalle Water, Inc. and other commercial and industrial customers in the region.

The assessment of long-term regional water demands included in Appendix B raises concerns with the capacity of this pipeline:

- **Contracted delivery rates exceeded.** Contracted water delivery from Saskatoon Water to SaskWater has been exceeded and future negotiations about additional delivery to the SaskWater system are unresolved.
- **Short-term capacity issues at point of delivery.** Peak water demand will exceed the maximum supply rate of 15.6 ML/d at the point of delivery to the pipeline by 2019–2024. Water delivery exceeding 15.6 ML/day will likely require upgrades to support higher flow rates.
- **Mid-term pipeline capacity issues.** The maximum pipeline capacity of 27.0 ML/d will be exceeded by the assessed customers by 2035–2044 under the presented scenarios.

Although negotiations between Saskatoon Water and SaskWater are ongoing, and may result in changes to regional water delivery, the proposed Martensville-Saskatoon water pipeline, noted above, would resolve certain capacity issues. This solution would need to consider certain issues:

- **Increased capacity for remaining customers on the pipeline.** If demand from Martensville can be fulfilled through a separate pipeline (as suggested in the Saskatoon-Martensville MOU), the Saskatoon North Treated supply pipeline system will have the capacity to service the remaining customers using the SaskWater maximum supply rate until 2035–2043, and the maximum capacity of the pipeline until 2051 at the earliest.
- **Other P4G municipalities may not require new pipelines.** This assessment indicates that providing a pipeline to Martensville would allow the capacity of the remaining system to continue to serve Warman and Osler over the next 30 years or more, as well as Dalmeny, Hague, Hepburn, and Intervalley Water. Building additional pipelines to service other P4G members would therefore result in unnecessary and redundant regional capacity. Improvements to the connection tie-ins to the north of the City system may still be necessary, however.
- **Statutory concerns about water delivery outside Saskatoon.** As directed by the province, SaskWater exclusively manages water delivery outside the City of Saskatoon. As a result, Saskatoon Water is only allowed to provide water to customers in other P4G municipalities through SaskWater. This complicates efforts to develop regional connections for potable water, and would require provincial action to change.

Other relevant points to consider about regional water delivery include:

- **System redundancy and emergency supplies.** The linear design of the pipelines in the regional system means there is a lack of redundancy in the case of pipeline breaks or other service interruptions. For the smaller urban municipalities in the system, the WSA recommends a minimum water storage capacity equal to two days of average demand,

and at least this volume of storage should be maintained to provide an emergency supply. However, in the long term, the development of a regional system should work to provide additional lines for water supplies into these communities to provide redundancy.

- **Support for implementation of the Regional Plan and certainty of development.** Regional water servicing can support the coordination and information exchange necessary to provide clear requirements for the provision of water supplies. This can reduce uncertainty about the availability of water servicing in the P4G Region, and support the development patterns identified in the Regional Plan.

REGIONAL ACTIONS

Considering the current regional context and projected needs for water, P4G should pursue the following actions:

- **Develop a Regional Potable Water Servicing Study and Plan.** P4G should work to coordinate a Regional Potable Water Servicing Plan which can clearly define the expected long-term roles of regional stakeholders in water treatment and delivery. In partnership with regional providers, this document should define how extensions of water servicing and allocations of capacity are managed, and outline how providers must consider the Plan in decision making. This shall be supported by a regional study of key components of the water distribution system.
- **Improve regional water efficiency.** Even with sufficient supplies in the short term, the need for new infrastructure investment can create challenges for growth in the P4G Region. As such, all municipalities should work to improve water efficiency and extend current capacity through conservation programs, technology pilots, and infrastructure upgrades.
- **Assist in the development of a second WTP as required.** There is a long-term need for a second WTP to support the regional water system. P4G should work to assist P4G members to adjust servicing plans as necessary to account for changes in the system.

- **Support negotiations between P4G municipalities and SaskWater regarding long-term service provisions.**

SaskWater and P4G municipalities will need to negotiate the future management of the Saskatoon North Treated supply pipeline to determine a cost-effective solution for all parties. P4G should support these negotiations and encourage infrastructure planning to help coordinate growth planning under the Regional Plan.

- **Support the development of emergency water supplies.**

Considering the potential severity of the impacts of emergency situations on water supplies, the P4G Region should work to support the City of Saskatoon in securing options for emergency supplies in the case of contamination or service interruption.

- **Address requirements for large industrial customers.**

Potential industrial customers of the regional potable water system may require sufficient capacity in the system. This may include users such as food-related industrial operations and value-added agri-businesses. Planning as part of a regional system should work to coordinate these needs with long-term allocation of infrastructure.

- **Coordination with First Nations.** P4G should work with Saskatoon Water, SaskWater, First Nations, and municipalities to identify needs for potable water servicing on First Nations lands, and determine potential options for planning and constructing joint infrastructure projects.



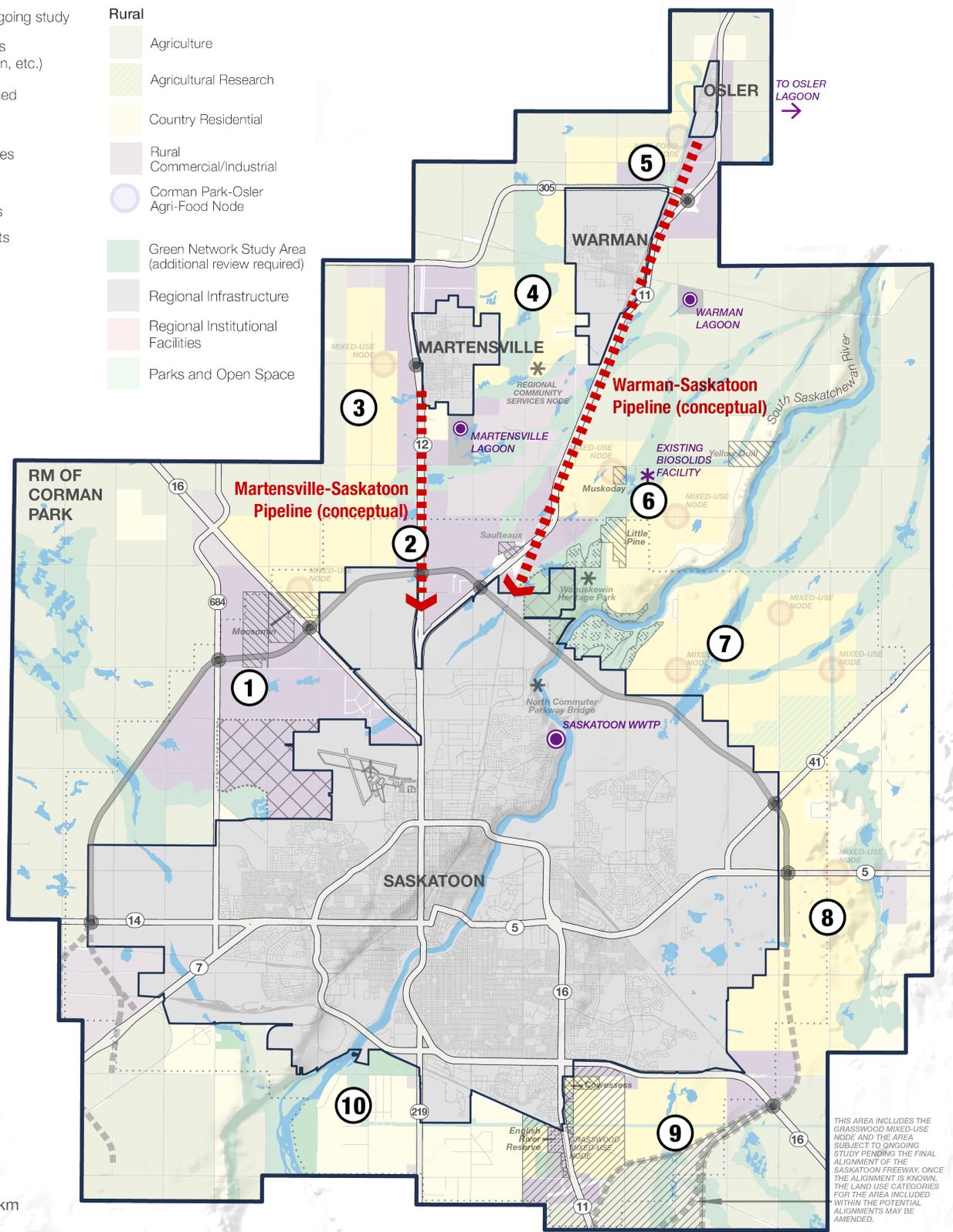
- Existing Urban Municipality
- Corman Park - Saskatoon Planning District
- First Nations TLE Land Holdings
- First Nations Reserves
- Areas subject to ongoing study
- Potential Expansions (Airport, Wanuskeewin, etc.)
- Wanuskeewin viewshed
- Major Roadways
- Potential Interchanges

- Saskatoon Freeway**
- Potential Alignments
 - Approved Alignments
 - Water

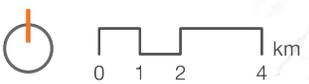
Key Location

- Land Use**
- Future Urban Growth**
- Urban Residential Neighbourhood
 - Urban Commercial/Industrial
 - Urban Mixed Use Node
- Rural**
- Agriculture
 - Agricultural Research
 - Country Residential
 - Rural Commercial/Industrial
 - Corman Park-Osler Agri-Food Node
 - Green Network Study Area (additional review required)
 - Regional Infrastructure
 - Regional Institutional Facilities
 - Parks and Open Space

- Wastewater Infrastructure**
- Regional connections (conceptual)
 - Wastewater Treatment Plant / Facultative Lagoon



THIS AREA INCLUDES THE GRASSWOOD MIXED-USE NODE AND THE AREA SUBJECT TO ONGOING STUDY PENDING THE FINAL ALIGNMENT OF THE SASKATOON FREEWAY. ONCE THE ALIGNMENT IS KNOWN, THE LAND USE CATEGORIES FOR THE AREA INCLUDED WITHIN THE POTENTIAL ALIGNMENTS MAY BE AMENDED.



Wastewater

OBJECTIVES

- Provide regional approaches to wastewater treatment and disposal that protect human health and the natural environment
- Coordinate the planning of wastewater infrastructure to support efficient patterns of regional development
- Minimize wastewater infrastructure costs through coordination between municipalities
- Support the planning and development of a second wastewater treatment plant to provide for regional needs
- Promote measures to reduce wastewater production rates per capita across the P4G Region and extend the capacity of infrastructure

CONTEXT

A summary map for the regional wastewater system is provided in Exhibit 2. Key elements of the system include:

- **Saskatoon Wastewater Treatment Plant.** The current City of Saskatoon Wastewater Treatment Plant (WWTP) provides wastewater treatment for the City, and may be expected to service the City of Martensville through a joint servicing agreement that is currently under negotiation. The current capacity of the plant is rated at 120 ML/d of average daily flow, with a peak daily flow of 216 ML/d, and a peak hourly wet weather flow of 300 ML/d. The City has outlined a long-term capital investment schedule to improve capacities over the long term, and the current site will be able to

accommodate a maximum average daily flow capacity of 170 ML/d.

- **Urban municipal treatment facilities.** The smaller urban municipalities in the P4G Region use lagoon treatment systems to support local wastewater servicing. The capacities of these facilities, including treatment and storage, are as follows:

- **Martensville:** approximately 13,000 residents
- **Warman:** approximately 14,000 residents
- **Osler:** approximately 2,000 residents

The Osler lagoon is located outside of the P4G Region, as noted on the map in Exhibit 2.

- **Conceptual Martensville-Saskatoon connection.** As noted in the potable water section, a memorandum of understanding between Saskatoon and Martensville may establish a major sewer connection to the Saskatoon wastewater system. This alignment has not been finalized, but would connect with the existing network in the short term, and use the current Martensville lagoon for storage and limited treatment.

- **Future concepts for regional wastewater collection and treatment.** Regional pipeline connections between Saskatoon and the other urban municipalities in the P4G Region would allow for efficient sharing of capacity, and delay the need to build additional treatment capacity elsewhere in the P4G Region. Conceptual alignments for these connections have been noted on the map, but will be contingent on future planning and coordination.
- **Rural lagoons and on-site systems.** In addition to the municipal wastewater collection systems noted on the

map, rural lagoons and other on-site systems provide for wastewater collection and treatment in rural areas.

Servicing Extensions

Planning major sewer main alignments is a primary concern for regional wastewater collection and treatment. The following considerations will need to be made in development and sequencing with respect to wastewater servicing (with numbered areas corresponding to the annotations on the context map in Exhibit 2):

- **Topography challenges for local servicing.** The topography of the P4G Region is a challenge for wastewater collection as it does not provide the necessary slope to allow for wastewater drainage by gravity in all areas. Force mains would be required to pump wastewater from certain flat and low-lying areas to treatment facilities, which would increase costs. This would primarily include part or all of the following areas within the current system:
 - Area 1: Saskatoon Northwest
 - Area 3: Martensville West
 - Area 4: Martensville/Warman
 - Area 6: Saskatoon Highway 11
 - Area 9: Grasswood/Saskatoon South
 - Area 10: Corman Park South
- **Limitations to Saskatoon servicing capacity in the east.** Although areas to the east and south of Saskatoon (Areas 7–9) present opportunities for wastewater collection from gravity drainage, the capacity of the Saskatoon wastewater system to make direct connections to future urban growth areas is limited east of Preston Avenue. This is due to the size of the current sewer mains and trunk lines. Because of this, the wastewater collection system in these areas will need to be connected in the north (around Area 7), and link to either the proposed new river crossing at the current WWTP, or be directed to a new treatment facility in the P4G Region. This will strongly impact the desirable sequencing of development, as development along new sewer mains may need to start in the northeast and proceed south, instead of extending directly east.

- **Coordination of infrastructure for the Agri-Food Node.** The Town of Osler and RM of Corman Park have discussed developing an Agri-Food Node, generally located around Area 5 (Warman-Osler). Support of value-added businesses related to agriculture should consider the wastewater servicing needs of this area, including potential for higher organic and contaminant loadings into the wastewater treatment system and capital costs for new infrastructure.
- **Coordination with First Nations.** For many First Nations in the P4G Region, limitations to wastewater servicing provides the major limitation to development and productive use of treaty land entitlements (TLEs) and reserve lands. Cost-sharing agreements between First Nations and municipalities can help extend services to these locations, and provide greater opportunities for housing and economic development.
- **Ongoing needs for on-site treatment.** Although the Servicing Strategy will strive to coordinate long-term regional infrastructure, the need for on-site treatment solutions will continue as rural development occurs.

Regional Treatment Capacity

An assessment of estimated regional wastewater flows is provided in Appendix C, including projections of long-term wastewater generation. From these flow projections, the following conclusions can be reached:

- **Upgrades are required for meeting Saskatoon capacity needs alone.** Additional upgrades to the Saskatoon WWTP, which has a current capacity of 120 ML/d for average daily flow, are expected to be required by 2024–2033 to accommodate Saskatoon alone.
- **Managing regional wastewater would require allocation of some capacity by Saskatoon.** Capacity of the Saskatoon WWTP will be reached earlier if some or all of the urban municipalities in the P4G Region are connected to the WWTP. This may be minimized by maintaining lagoons for wastewater storage in these communities, and providing for off-peak treatment by the WWTP. However, the additional flows will contribute to a more immediate need for plant expansions.

- **Capacity needs of the smaller urban municipalities are more immediate.** Although the measures of lagoon capacity for Warman, Martensville, and Osler are harder to fix to a specific timeline given changes in population growth and an uncertain split between commercial and residential uses, there are immediate needs for new capacity, especially in Warman and Martensville. This has been recognized as part of the ongoing discussions about Saskatoon-Martensville water and wastewater connections, but further regional growth may be constrained without a solution within the next 5–10 years.
- **A second regional wastewater treatment plant will likely be required in the long-term.** The capacity of a full build-out of the existing Saskatoon WWTP site (170 ML/d) would support Saskatoon alone until 2038–2050, and all urban municipalities over a slightly shorter period. Unless further capacity expansion is possible, a second treatment option, likely coordinated at a regional level, will be required.

Regional System Connections

Providing for connections between municipalities as part of a regional wastewater collection and treatment system would be ideal in addressing several issues, including:

- Short-term requirements to increase wastewater treatment capacity available to Warman and Martensville in a cost-efficient way
- Longer-term requirements for additional capacity for all municipalities through an additional WWTP
- Urban municipalities with immediate needs for additional treatment capacity within the next 5–10 years (e.g., Warman and Martensville) versus communities with longer-term needs for new or expanded facilities (e.g. Saskatoon and Osler)
- Increased treatment effluent quality, according to both current requirements and potential future regulations
- Challenges in local servicing over a wider area, including areas not possible to accommodate within current systems as noted above

A phased approach with specific short-term and long-term options will need to be considered and studied by P4G in the future as regional planning for infrastructure is implemented. As part of this Servicing Strategy, the following options have been provided to build the components of a regional system.

Short-Term Regional System

Within the short-term (within the next 20 years), the following steps should be explored by P4G to support a regional wastewater system:

- **Saskatoon-Martensville connection.** A Saskatoon-Martensville pipeline may be constructed to link the Martensville wastewater collection system with Saskatoon to address treatment capacity limitations. This system would provide for off-peak pumping and treatment by the Saskatoon wastewater system to minimize impacts to available capacity. This option is currently being reviewed by the two municipalities, and should be supported by P4G as a step towards regional capacity sharing.
- **Highway 11 corridor wastewater pipeline.** To accommodate wastewater flows from Warman into the Saskatoon wastewater collection system, a forcemain may be constructed to link the communities as shown in Exhibit 2. It is likely that the existing lagoon would remain for storage and emergency treatment capacity as with the Martensville connection. The Osler system would be able to connect into this pipeline as well, although the need for this capacity would not be immediate.
- **Expanded Warman treatment facilities.** A second option would be to provide new or expanded treatment facilities closer to Warman and Osler, as shown in Exhibit 2. Given the land requirements and expected growth of Warman into the future, the preferred option would be to construct a small WWTP that would replace the facultative lagoon. Although it may be possible to expand this facility later into a regional WWTP (as noted below), accommodating future expansions would likely require high up-front costs for the plant.

The recommended options in this case would include developing Martensville and Warman pipelines to allow for the use of the

Saskatoon WWTP capacity, and accommodating additional regional capacity through the Saskatoon plant only. This would require a significant policy change to the City of Saskatoon, to shift its role to one as a regional service provider for wastewater treatment. The options provided here should be explored further to provide more detailed costing information and likely regional and local investments required.

Long-Term Regional System

For the long term (20 years and later), the development of a new wastewater treatment plant will be the primary focus of a regional system. The development of a second WWTP should be triggered before Saskatoon exceeds the maximum capacity of the existing WWTP by 2037–2048. This increased plant capacity would be expected to accommodate Warman, Osler, and Martensville, as well as growth areas in certain parts of Saskatoon.

Considerations for this project include the following:

- **Location of the WWTP.** Potential sites for wastewater effluent disposal into the South Saskatchewan River are significantly constrained. The development of country residential subdivisions along the River will preclude siting in these areas, and sites within the City of Saskatoon are limited. Developing the WWTP further downstream will bring the facility closer to the smaller urban municipalities, but will require realignment of the regional pipeline network and would be further from the urban development to be serviced.
- **Management of the WWTP.** When a second WWTP is required, the management of the plant would need to be determined. This may include a role for P4G, potentially as a Planning Authority.
- **Design of pipeline system.** The location of the plant will strongly impact the configuration of the system. A facility further downstream, for example, would require the construction of longer regional pipelines, but would allow for regional gravity drainage to the new plant. Building new facilities within Saskatoon would require more forcemain systems for wastewater collection, but would keep the facility closer to significant urban growth.

- **Capital funding.** Although a new regional plant may be managed like an expansion of the current Saskatoon system, a partnership with other municipalities would provide additional resources and options for developing the facility. A regional development levy could provide additional funding for the development and construction of the WWTP, for example, and the P4G as a common lobbying bloc could help to secure federal and provincial funding.
- **Management of capacity.** If a regional facility was to be developed as a joint project, a concern would be the allocation of capacity between the partners, especially if different communities would grow at different rates than expected. This would also conflict with the current City of Saskatoon policy of only allocating surplus capacity to other jurisdictions. Clear agreements would need to be developed to tie in capacity management with expectations of the timing and nature of development under the Regional Plan.

Although the need for additional treatment capacity in the long-term is clear, planning for a new facility will be strongly dependent on the type and rate of growth experienced over the next decades, as well as the regional capacity developed to manage large projects such as these and the long-term objectives of each individual community. To this end, more detailed planning and fiscal assessments of different options for a regional wastewater treatment plant should be coordinated to provide a clearer understanding of preferred alternatives.

REGIONAL ACTIONS

Considering the current regional context and projected needs for wastewater collection and treatment, P4G should pursue the following actions:

- **Develop a Regional Wastewater Servicing Study and Plan.** P4G should work to develop a Regional Wastewater Servicing Plan to provide clear guidance regarding intended regional actions in developing a regional wastewater system. This Plan should be developed after a full study is conducted to provide a clearer understanding of the costs and benefits of regional options, and provide a strong policy direction for future work by P4G and the municipalities.

- **Support cost-effective expansion of local servicing.**

To reduce overall servicing costs, development in the P4G Region should be encouraged to consider challenges and limitations with wastewater collection and treatment. The focus of new development in communities should be on areas which will be more cost-effective to service, including areas that can employ gravity drainage collection systems.

- **Promote the economies of scale in developing a regional wastewater system.**

P4G shall support the development of shared wastewater treatment systems between Martensville and Saskatoon, and Warman and Osler. These systems should be coordinated initially as bilateral or multilateral municipal agreements, and established to provide a foundation for a region-wide wastewater system. In the short-term, P4G may function as a coordinating body for these projects, but may be more involved with the development and management of the regional system in the long term, especially if P4G transitions to an Authority model.

- **Address immediate treatment capacity needs in municipal systems.**

There is a critical need to expand treatment capacity in Martensville and Warman to meet regulatory guidelines and address future population growth. Martensville and Saskatoon are currently in negotiations to link Martensville to the Saskatoon system. Warman should look to develop a joint approach that includes the development of a pipeline to the Saskatoon system as well, and Osler may elect to link to this network to provide longer-term solutions for their own capacity needs.

- **Address requirements for large industrial customers.**

Potential industrial customers of the regional wastewater system may require sufficient capacity in the system. This may include users such as food-related industrial operations and value-added agri-businesses. Planning as part of a regional system should work to coordinate these needs with long-term allocation of infrastructure.

- **Coordinate planning for a second regional wastewater treatment plant and associated pipelines.**

A second wastewater treatment plant will be required once the capacity of the Saskatoon WWTP is reached. Planning should be coordinated at a regional level, and the preliminary siting,

design, and fiscal analysis of this plant should be conducted as soon as possible to identify any required steps to be carried out by P4G in the short-term. These steps should include the protection of a site, including development of setbacks to discourage incompatible uses, and coordination of financing options for funding the project.

- **Regional wastewater sewer use bylaw.**

As a regional system for wastewater collection and treatment is coordinated, it will be necessary to ensure that different communities are applying the same standards to their wastewater collection systems. P4G should coordinate between jurisdictions to ensure that any necessary bylaws and policies are passed to align these standards on a regional basis.

- **Explore cost-sharing relationships with other partners for servicing extensions, including First Nations.**

The development of a regional system will involve additional partners aside from P4G members. Several First Nations have land holdings in areas which will require servicing with major trunk lines and new treatment facilities, and these services can support greater development opportunities on these lands. P4G should work to engage with these partners to discuss these arrangements.

Stormwater + Drainage

OBJECTIVES

- Reduce the risks from surface ponding, flooding, and erosion to people and property in the P4G Region
- Minimize the environmental impacts of stormwater quantity and quality on groundwater, surface water, wetlands, and habitat, and encourage the use of stormwater as a resource to improve environmental performance
- Support municipalities in improving stormwater management to minimize local flooding issues and enhance system performance
- Promote innovative solutions to stormwater management that integrate cost-effective natural and engineering solutions

CONTEXT

A summary map for the regional stormwater strategy is provided in Exhibit 3. Key elements of this map include the following:

- **Existing wetlands and surface water.** Surface water features are provided on the overview map. A cursory assessment of wetland locations, based on visual identification from orthophotos and elevation data, is also included. Impacts to these features shall be considered in the planning and development of regional and local stormwater and drainage solutions.
- **Wetland DEM Ponding Model (WDPM) results.** The map indicates ponding locations following a 200-mm precipitation event in the P4G Region, modeled using a Wetland DEM Ponding Model (WDPM) “fill-and-spill” model. This is provided for reference only, and details are provided in the supporting documentation for the Green Network Study Area.
- **Green Network Study Area.** The Green Network Study Area is indicated as an important component of regional stormwater management, as it incorporates the conservation

of swales, wetlands, drainage paths, and surface water to be used for regional storage and conveyance. These features should be maintained after the refinement of this area.

- **Proposed regional drainage improvements.** The map includes the alignments for improvements proposed by the Opimihaw Creek Watershed Association (OCWA) to facilitate drainage in the Opimihaw Creek Watershed around Warman, Martensville and Osler within Corman Park.
- **Municipal drainage infrastructure.** Available information on municipal stormwater drainage infrastructure is provided where relevant.

Drainage systems to manage stormwater are typically managed at the local level in the P4G Region. However, the municipalities of the P4G have been collaborating through the OCWA to manage significant drainage issues north of Saskatoon. The OCWA has developed plans that present an engineering solution to these drainage issues through three reports, with the first and second detailing the general design and cost for regional drainage, and the third providing more detailed engineering designs for the Osler drain.

OCWA Initiatives

As noted, the OCWA has conducted a series of studies to examine options for reducing flood damage in the northern area of the RM of Corman Park, the Cities of Martensville and Warman, and the Town of Osler, as well as the Town of Dalmeny outside of the P4G Region. Three main studies for flood control have been coordinated by the OCWA to date.

For the *North Corman Park Flood Control Study Phase Two Report*, which includes the most detailed studies done to date, elements and assumptions of note include the following:

- Complete Information on culverts was not available for this study. Culverts not identified may have impacted the conclusions and recommendations of the analysis.

- Peak design flows are based on snowmelt and rainfall estimated from 1:25 year events, allowing for temporary flooding of adjacent land.
- Opportunities for wetland storage are not incorporated into the Phase Two Report design estimates.
- An additional proposed drain (“Blumenheim Primary Drain”) is located outside of the P4G Region.

The summary map in Exhibit 3 indicates the drainage system alignments within the P4G Region detailed as Option 2 (the preferred option) in the Phase Two Report. This Option includes the following, with costs provided as of August 2013:

- **RR 3052 Primary Drain North.** In the proposed system design, this drain provides the primary drainage for the areas between Warman and Martensville into Opimihaw Creek. This would require the construction of the Opimihaw Creek Primary Drain and Diversion to manage discharges into the Creek. (Estimated cost: \$12.7 million)
- **Opimihaw Creek Primary Drain.** The Opimihaw Creek Primary Drain would link the RR 3052 Primary Drain North with Opimihaw Creek to permit discharges of stormwater flow. (Estimated cost: \$9.9 million)
- **Opimihaw Creek Diversion.** This diversion mitigates increased stormwater flows into Opimihaw Creek to ensure that the volumes through Wanuskewin Heritage Park are no greater than current levels to prevent damage to the natural, cultural, and historic resources of the Park. (Estimated cost: \$1.6 million)
- **RR 3052 Primary Drain South.** This drain accommodates discharges from Martensville and the southern part of the basin, and links with Opimihaw Creek upstream from Wanuskewin Heritage Park. (Estimated cost: \$7.5 million)
- **Osler Primary Drain.** The Osler Primary Drain intercepts the southward flow of water from Buzz Slough located to the north and prevents this flow from impacting areas to the south. (Estimated cost: \$13.9 million, revised to \$15.3 million in Phase Three report)

Developing drainage infrastructure in the Opimihaw Creek watershed to date has been limited by the availability of funding for this work. Additional studies by OCWA are pending to review proposed drainage solutions and provide additional options, including the use of the Green Network Study Area to provide conveyance and storage.

REGIONAL ACTIONS

It is recommended that P4G pursue the following actions with respect to regional stormwater infrastructure:

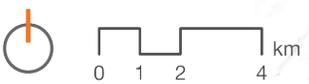
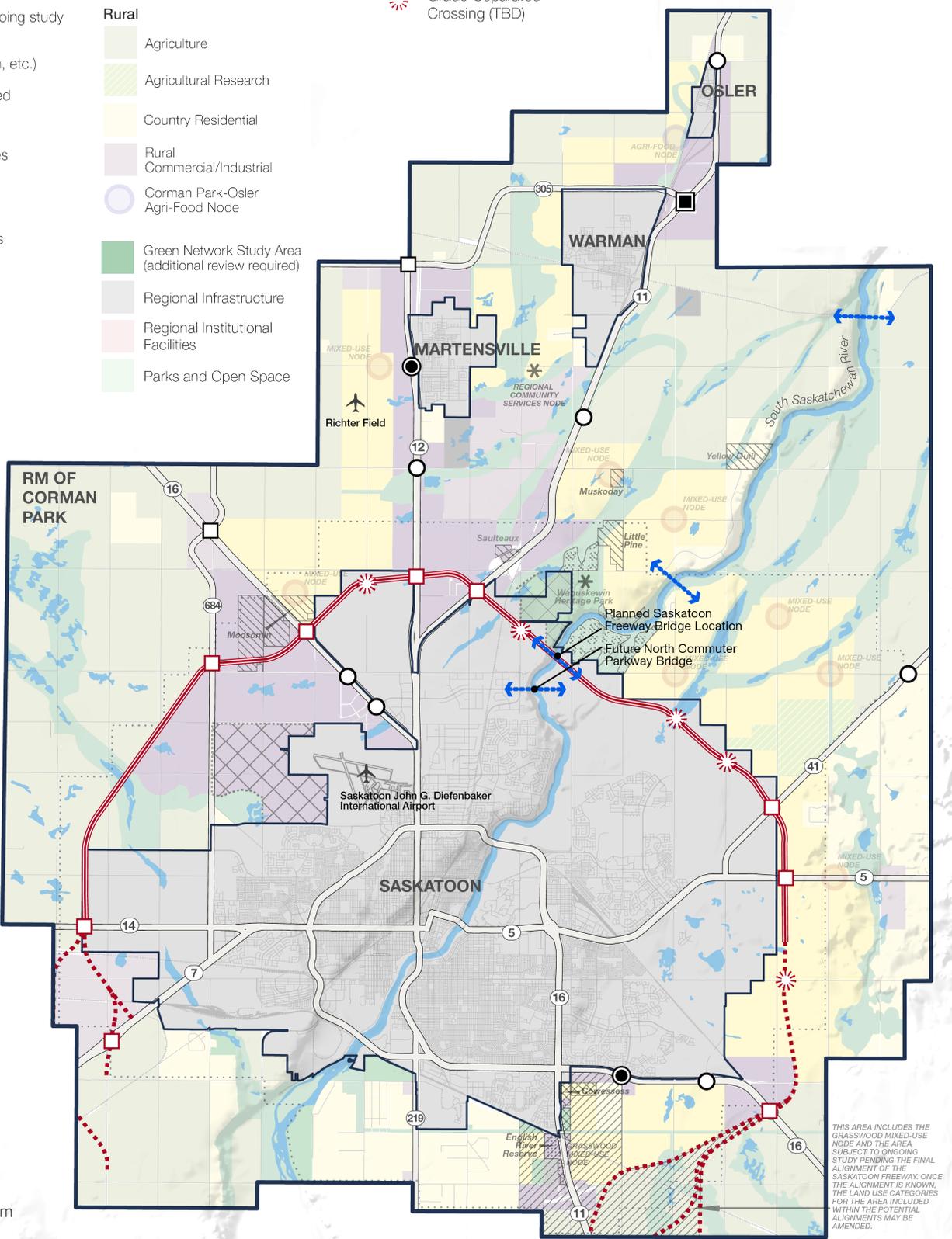
- **Coordination with the OCWA.** It is strongly recommended that ongoing efforts by P4G in regional stormwater infrastructure should be coordinated with the OCWA, given the efforts of this organization in managing drainage issues. Additional work may be coordinated between P4G and OCWA to ensure that sub-area and local stormwater infrastructure is developed to manage identified drainage issues and support identified development in the Regional Plan.
- **Inventory of stormwater drainage infrastructure.** During the development of this Plan and the Regional Servicing Strategy, regional hydrological and flood modelling was limited by the lack of information on culverts and other drainage infrastructure that could impact stormwater flows and flooding. An inventory of these structures should be performed to support long-term efforts in stormwater infrastructure planning.
- **Coordination with First Nations.** Ongoing efforts by P4G and municipalities in regional and local stormwater infrastructure should also be coordinated with First Nations. In several cases, requirements for drainage on treaty land entitlement holdings and reserves limit future development, and cooperation can help to reduce the planning, construction, and maintenance costs necessary to support productive uses in these areas.

- **Incorporation of natural infrastructure into detailed drainage design.** P4G should coordinate with OCWA in developing more detailed engineering designs that incorporate wetlands and natural drainage features for detention and storage of stormwater in the north. The future refinement of the Green Network Study Area should be coordinated with these efforts to maintain and enhance drainage and conveyance, and reduce peak design flows.
- **Coordination with other regional infrastructure projects.** Coordinating identified drainage projects with other regional infrastructure projects, especially transportation projects, can help to mitigate project costs. Planning for these projects by municipalities should be aligned with identified regional drainage infrastructure needs where possible.
- **Applications for supplementary funding from senior levels of government.** Recognizing that the municipalities impacted by this drainage system may not be able to fully fund all improvements, P4G should coordinate with individual municipalities and the OCWA where applicable in presenting grant applications to senior levels of government. Funding applications will focus on the innovative aspects of these improvements, including the integration of green infrastructure into the design to reduce costs.
- **Support regional development levies, servicing agreement fees, and other cost-sharing for drainage improvements.** New drainage infrastructure will allow areas prone to flooding to be used for more intensive development, and provide a significant benefit to impacted landowners. P4G should promote and assist in coordinating efforts between municipalities to collect development levies and servicing agreement fees to support regional drainage projects that impact multiple jurisdictions. These efforts may build a foundation for future cross-boundary efforts to manage fees and levies through regional cost-sharing mechanisms if P4G transitions to an Authority model.

- Existing Urban Municipality
- Corman Park - Saskatoon Planning District
- First Nations TLE Land Holdings
- First Nations Reserves
- Areas subject to ongoing study
- Potential Expansions (Airport, Wanuskewin, etc.)
- Wanuskewin viewshed
- Major Roadways
- Potential Interchanges
- Saskatoon Freeway**
- Potential Alignments
- Approved Alignments
- Water
- Key Location

- Land Use**
- Future Urban Growth**
- Urban Residential Neighbourhood
 - Urban Commercial/Industrial
 - Urban Mixed Use Node
- Rural**
- Agriculture
 - Agricultural Research
 - Country Residential
 - Rural Commercial/Industrial
 - Corman Park-Osler Agri-Food Node
 - Green Network Study Area (additional review required)
 - Regional Infrastructure
 - Regional Institutional Facilities
 - Parks and Open Space

- Transportation Infrastructure**
- Saskatoon Freeway**
- Potential Alignments
 - Approved Alignments
 - Potential Interchanges (system / service)
 - Grade-Separated Crossing (TBD)
 - Approved Interchanges (system / service)
 - Potential Interchanges (system / service)
 - Planned / Conceptual Crossings



THIS AREA INCLUDES THE GRASSWOOD MIXED-USE NODE AND THE AREA SUBJECT TO ONGOING STUDY PENDING THE FINAL ALIGNMENT OF THE SASKATOON FREEWAY. ONCE THE ALIGNMENT IS KNOWN, THE LAND USE CATEGORIES FOR THE AREA INCLUDED WITHIN THE POTENTIAL ALIGNMENTS MAY BE AMENDED.

Transportation

OBJECTIVES

- Support a balanced regional transportation system that provides accessibility, connectivity, mobility, and economic activity with appropriate levels of service
- Integrate transportation planning with regional land use planning and development policies to provide more effective responses to future development and mobility needs
- Support efforts by P4G members to improve local circulation and build fiscally sustainable transportation infrastructure
- Coordinate regional transportation planning with the province to support efficient, integrated solutions to mobility requirements
- Explore future opportunities to expand mobility options and improve accessibility in the P4G Region

CONTEXT

A summary map of the regional transportation system is shown in Exhibit 4. Key elements of this map include the following:

- **Saskatoon Freeway.** Once complete, the Saskatoon Freeway, a future provincial ring road around the current boundaries of the City of Saskatoon, will be an important regional transportation bypass. The map shows both the approved alignments in the north, as well as the options for routes in the southeast and southwest. Once routes are finalized, a functional study will be conducted by the province to develop the design of the freeway.
- **Freeway interchanges.** The interchanges of the Saskatoon Freeway are not yet finalized. Potential locations for interchanges are noted on the map where the freeway will cross existing provincial highways; these locations are pending a functional design by the Ministry of Highways and Infrastructure (MHI).
- **Grade-separated crossings.** The map notes locations where the Saskatoon Freeway will intersect with planned extensions of major routes. Grade-separated crossings, such as overpasses or service interchanges, will be required in these locations. These crossings should be discussed with MHI and may be adjusted or changed to service interchanges based on the final design of the freeway.
- **Additional interchanges.** In addition to the interchanges proposed for the Saskatoon Freeway, other interchanges have been proposed to improve connections between regional transportation routes. Three of these interchanges (Highway 16 at Boychuk Road, Highway 12 at Martensville, and Highway 11 at Highway 305) have been approved, with planning and construction underway.
- **River crossings.** A major obstacle for highway development and transportation access is the South Saskatchewan River. Although two new bridges associated with the North Commuter Parkway and the Saskatoon Freeway have been planned, additional river crossings will be necessary in the north to facilitate access. The locations provided are conceptual, and should be reviewed through additional studies.
- **Airports.** The Saskatoon John G. Diefenbaker International Airport is a key regional transportation component, and potential airport expansion areas are identified in Exhibit 4. Additionally, the Richter Field Aerodrome to the west of Martensville is currently in use and will impact urban development in future growth areas.

REGIONAL ACTIONS

P4G and its affiliated municipalities should pursue the following actions, given the nature of the regional system and the needs for future planning and coordination:

Regional Planning

- **Maintain the regional Travel Demand Model.** P4G members have worked with the province to develop a regional Travel Demand Model (TDM) for the P4G Region. P4G should continue to partner with the province to update and use the TDM as needed. The TDM should be used to inform transportation planning for concept and sector plans, and all members should be encouraged to use this model for transportation planning work.
- **Develop a Regional Transportation Plan.** Ongoing efforts by municipalities for developing strategies for long-term transportation investments should be coordinated with a Regional Transportation Plan developed by P4G. This Plan should be informed by the regional TDM, and identify and prioritize joint projects between municipalities.
- **Plan for road/highway crossings of the Green Network Study Area and other sensitive areas.** Transportation access to some areas in the P4G Region will depend on construction activities in sensitive areas, including locations identified as part of the Green Network Study Area. P4G should work to collaborate to ensure that transportation projects in these areas are designed to minimize impacts to natural and ecological resources, and conveyance and drainage of stormwater.
- **Coordinate with provincial highways planning.** The province is currently coordinating the planning of the Saskatoon Freeway, which will include a functional study to establish the right-of-way and determine major access points. P4G should support ongoing efforts to coordinate regional planning with provincial highway planning in this area, with a focus on:
 - The final alignments for the southwest and southeast portions of the Saskatoon Freeway

- Determination of interchanges and grade-separated crossings along the Saskatoon Freeway, especially those that provide access to rural and urban growth areas in the east and northeast
- Coordination of planning for interchanges to ensure access to future growth areas close to these alignments
- Planning for additional grade-separated crossings over other provincial highways

Airports

- **Coordinate ongoing dialogue with the Saskatoon John G. Diefenbaker International Airport.** As a key transportation and logistics resource for the P4G Region, coordination of development surrounding the Saskatoon John G. Diefenbaker International Airport should be coordinated with the Saskatoon Airport Authority. This should not only be performed to minimize land use conflicts, but also promote expansion of airport facilities and supporting commercial/ industrial development in areas identified on the Regional Land Use Map.
- **Coordinate ongoing dialogue with the Richter Field Aerodrome.** The area surrounding Richter Field west of Martensville will experience urban development pressures over time, and the potential for land use conflicts with the Aerodrome should be managed. Ongoing dialogue should be coordinated to ensure that impacts of both the Aerodrome and surrounding urban development are considered.

Local Actions

- **Support the identification of local transportation improvements in detailed secondary planning.** Identifying and prioritizing local transportation improvements, including the joint projects identified as part of the Regional Transportation Plan noted above, should be coordinated for future urban growth areas through the development of Concept Plans and other detailed secondary planning. Future plans should identify the required improvements necessary to support planned development in these areas, and link with the Regional Transportation Plan to coordinate investment.

- **Plan for additional river crossings.** Future regional mobility will be dependent on coordinating additional river crossings across the South Saskatchewan River. P4G should work to coordinate planning between P4G and the province to identify potential river crossings and protect these areas from incompatible development.
- **Coordinate with First Nations on transportation improvements.** As with other infrastructure systems, municipalities should work to coordinate with First Nations on joint planning and funding for transportation projects that would service treaty land entitlements and reserve lands. This may include cost-sharing arrangements, as well as joint applications of funding for transportation improvements.

Other Transportation

- **Future work in regional transit planning.** For the purposes of the Servicing Strategy, the consideration of regional transit planning is outside of the scope of this work, but should be considered by P4G as the Region grows. During regular reviews of the Regional Plan and supporting infrastructure and servicing policies, P4G should examine the potential role of regional transit and determine whether further work should be coordinated.
- **Future work in rail transportation planning.** Rail systems in the P4G Region provide important links for cargo transportation that support commercial and industrial activity, and two major regional rail yards are currently located within the City of Saskatoon. Additionally, rail lines throughout the P4G Region provide key transportation connections that support the local economy. P4G should work with rail companies and other agencies to ensure that future planning considers rail infrastructure and potential needs for expansion.

Other Infrastructure

OBJECTIVES

- Support the development and management of utilities and services by other service providers
- Ensure that ongoing regional planning efforts are coordinated by private interests and Crown corporations to promote alignment between long-term plans
- Coordinate other municipal services and infrastructure with long-term regional planning

CONTEXT

Although the Regional Servicing Strategy provides a basis for long-term coordination of major infrastructure and services, the focus is primarily on systems which are managed by the municipalities affiliated with the P4G, as this management can allow for stronger linkages between land use and infrastructure policy. These services also represent major capital investments to be coordinated by municipalities that allow regional development to proceed.

In addition to these types of infrastructure detailed in the Plan, there are also other infrastructure systems which need to be considered:

- Critical linear infrastructure that is necessary for development may be planned, constructed, and managed by private companies and Crown corporations. This includes telecommunications, electricity, natural gas, and other facilities. This type of infrastructure is important to consider for planning, given the need for planning linear corridors.
- Additional facilities and associated services may be maintained by municipalities, private interests, and Crown corporations. These would include landfills and waste management facilities, recreation facilities, emergency services, education, and other systems that would require significant capital investment.

REGIONAL ACTIONS

Although it is recommended that the scope of P4G involvement should focus on potable water, wastewater, stormwater drainage, and transportation, and extend to additional systems as regional capacity is strengthened, certain actions should be considered in the short term:

- **Provide opportunities for ongoing collaboration with other regional service providers.** P4G should look to provide detailed information about the Regional Plan and its implementation to other public and private service providers operating in the P4G Region to ensure that the Plan aligns with their internal planning for future development. P4G should also provide ongoing opportunities for consultation and review to ensure that any concerns regarding regional infrastructure development are identified and addressed promptly.
- **Support regional planning for other municipal infrastructure.** Municipalities should work to identify opportunities for future collaboration in other types of infrastructure systems. This may include support for regional cost-sharing and joint service provision, as well as the development of region-wide plans for these services.
- **Support planning for regional institutional facilities.** P4G should also support service providers' efforts to plan for regional institutional facilities, such as hospitals, regional educational facilities, and recreational facilities.



- Existing Urban Municipality
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- Wanuskewin viewshed
- Major Roadways
- Potential Interchanges

Saskatoon Freeway

- Potential Alignments
- Approved Alignments

Water

Key Location

Land Use

Future Urban Growth

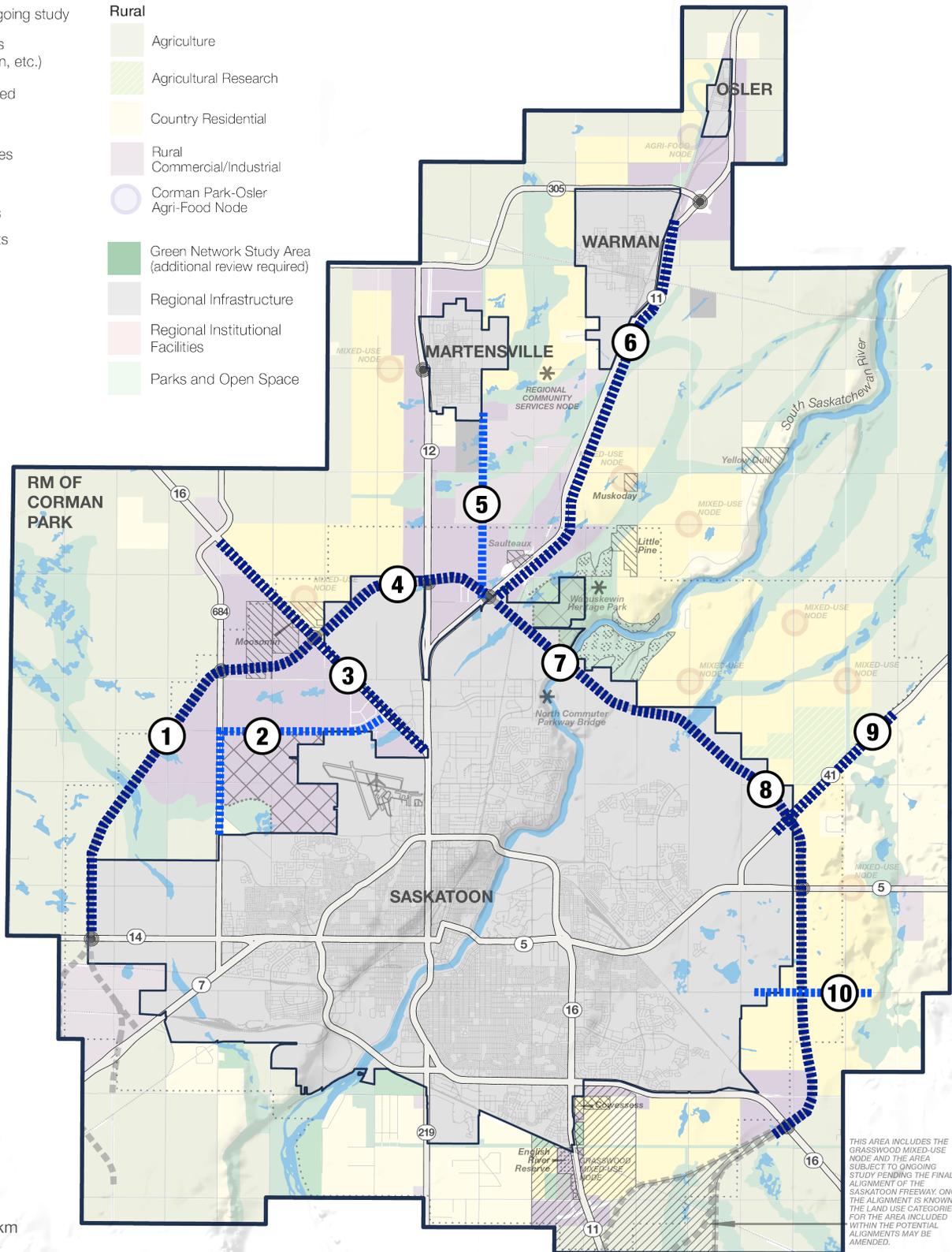
- Urban Residential Neighbourhood
- Urban Commercial/Industrial
- Urban Mixed Use Node

Rural

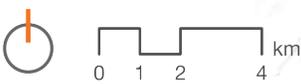
- Agriculture
- Agricultural Research
- Country Residential
- Rural Commercial/Industrial
- Corman Park-Osler Agri-Food Node
- Green Network Study Area (additional review required)
- Regional Infrastructure
- Regional Institutional Facilities
- Parks and Open Space

Corridors

- Provincial highway
- Municipal / Intermunicipal



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Infrastructure Corridors

OBJECTIVES

- Plan for the use of rights-of-way by multiple linear infrastructure systems to reduce costs of planning, land acquisition, and construction
- Coordinate with the province to utilize highways as major infrastructure corridors, including the Saskatoon Freeway alignment currently under development
- Coordinate with regional service providers on planning to use identified corridors for linear infrastructure, including telecommunications, power, natural gas, and other utilities

CONTEXT

A summary of potential regional infrastructure corridor alignments is provided in Exhibit 5. This generally considers the following:

- **Highway/road alignments.** The alignments of several major provincial highways, transportation routes, and infrastructure alignments are identified as potential locations for linear infrastructure corridors. These locations may be well-suited for siting additional infrastructure but coordination with the responsible jurisdiction is required, as are alignments designed to accommodate the infrastructure.
- **Conceptual regional alignments.** For longer-term planning, the development of broader regional corridors may be necessary to accommodate major infrastructure servicing the area. In addition to the alignments identified in the map, other efforts may extend well outside of the P4G Region and involve provincial coordination. P4G should consider these broader corridors in long-term development, and coordinate this planning with the province.

The summary map in Exhibit 5 also indicates potential infrastructure corridors of specific interest. Some characteristics of these alignments are as follows:

1. **Saskatoon Freeway Northwest.** The northwest section of the Saskatoon Freeway is a major future transportation route in the P4G Region, and it provides an opportunity to locate major wastewater forcemain alignments that will service locations in future urban growth areas. The corridor also presents an opportunity to co-locate infrastructure connections to Moosomin First Nation to support growth in this area, should they wish to participate in regional servicing.
2. **Beam Road / Highway 684.** Beam Road and the segment of Highway 684 between Beam Road and Saskatoon presents an opportunity for a corridor that links wastewater collection via a forcemain with mains on Marquis Drive in north Saskatoon. In addition, the provision of water services and improvements of the transportation route could support both interim and long-term commercial and industrial growth in this area.
3. **Highway 16.** The extension of a sewer forcemain and other services along Highway 16 could accommodate growth to the northwest of Saskatoon. This corridor could also accommodate water services extensions to support development in the rural commercial/industrial node at the Highway 16 / 684 intersection.
4. **Saskatoon Freeway North.** In the short term, this corridor could provide extensions for wastewater servicing for the urban residential neighbourhoods to the northwest of Saskatoon.
5. **Martensville Utilities Corridor.** This corridor has the potential to serve as the alignment for water and wastewater pipelines between Martensville and Saskatoon. A comprehensive corridor design that considers the alignments of these pipelines could be explored which also permits the extension of other types of regional infrastructure and utilities.

6. **Highway 11.** Highway 11 could provide an alignment for wastewater pipelines, such as the potential pipeline between Warman/Osler and the Saskatoon wastewater collection system identified in the wastewater servicing section. Additionally, water distribution lines will be needed to service the urban growth areas directly to the east of the highway which could be located in this alignment.
7. **Saskatoon Freeway Northeast.** The northeast section of the Saskatoon Freeway could be a critical infrastructure corridor for all types of utilities. This section of the freeway crosses both the South Saskatchewan River and swales northeast of Saskatoon, and co-locating infrastructure could reduce impacts to these sensitive areas.
8. **Saskatoon Freeway East.** This section of the Saskatoon Freeway provides opportunities for siting local servicing, and could also provide part of the alignment for the major wastewater trunk line proposed to service the eastern portions of Saskatoon.
9. **Highway 41.** Highway 41 will continue to be a key transportation route and includes a regional water pipeline into the RM of Aberdeen. Additionally, the topography of the area makes this alignment ideal for regional wastewater collection.
10. **8th Street East.** The extension of 8th Street East to the east is noted as an extension of planned corridor development in the City of Saskatoon. This alignment could also be recognized as an important area-wide transportation corridor.

REGIONAL ACTIONS

Considering regional infrastructure needs and the potential for colocation of many of the major systems identified in this Strategy, the P4G Region should pursue the following actions for infrastructure corridors:

- **Support the use of local rights-of-way as regional corridors.** There are several locations that could be used for regional corridors by P4G members. As they represent potential locations for a range of infrastructure systems, planning for these areas should be coordinated between multiple jurisdictions and stakeholders, including utility providers. These efforts should be managed or facilitated by P4G where applicable.
- **Coordinate with the province to use provincial highways for regional infrastructure.** Many of the key locations for corridors identified are along existing provincial highways, which provides an opportunity to co-locate major infrastructure in a wider right-of-way. Infrastructure planning for these corridors, however, will require significant coordination with MHI to ensure that it aligns with current designs and planned expansions. P4G should cooperate where possible with MHI to promote this coordination and support. This should be a particular focus for discussions with the province regarding planning for the Saskatoon Freeway.
- **Coordinate long-term needs for other corridors with the province.** Corridors identified in this Strategy provide for servicing under the time frame of this Plan, over the P4G study area. However, acquisition of land for future infrastructure may be required for both longer-term corridors and for regional servicing over a broader area. P4G should coordinate with provincial efforts to secure routes for these future corridors, and adjust the Regional Plan to consider future corridor alignments.

Fees, Levies and Intermunicipal Servicing Agreements

OBJECTIVES

- Support mechanisms for cost sharing between municipalities to allow for efficient local coordination of infrastructure
- Provide for consistent and predictable development levies and servicing agreement fees across the P4G Region
- Support funding and development solutions that provide for required intermunicipal infrastructure extensions and servicing

CONTEXT

For the funding of local and regional infrastructure, development charges are identified as the primary mechanism to receive payments from developers to support on and off-site infrastructure, including both linear infrastructure and facilities. This is intended to ensure that future growth “pays for itself”, and that there is the recovery of the cost of infrastructure necessary to support new development. Two types of charges on development are typically used:

- **Servicing agreement fees**, charged to a developer for subdivision
- **Development levies**, charged to a developer for a change in land use intensity or new development on a site

In addition to these charges, other approaches can be used to finance the costs of growth. Utility rates to customers may be used to finance infrastructure to new development, as well as funding from senior levels of government.

A municipality may also coordinate servicing agreements to allow developments to be serviced directly by a different municipality. This arrangement requires that payments are made directly to the service provider, and can require an agreement that specifies that the other municipality is responsible for capital costs, which would be passed on to the developer. However, these approaches do not allow for charges for indirect costs, such as general facilities expansion costs, which can complicate efforts to

recover costs. They also do not address future services that may be available in an area, which complicates interim development in future urban growth areas.

Within the P4G Region, there are several considerations to be made with the coordination of fees, levies, and agreements.

- **Regional funding support needed for infrastructure projects.** Development levies and servicing agreement fees will likely be important to support regional infrastructure development. This may include infrastructure that benefits the entire P4G Region, such as a regional wastewater treatment plant, or areas within a portion of the P4G Region, such as drainage improvements coordinated by the OCWA. These types of multilateral fee/levy arrangements have not yet been developed within the P4G Region, however, and may require legislative change to implement fully in the P4G Region.
- **Framework for intermunicipal servicing agreements needed for potential infrastructure extensions.** Specific areas within the P4G Region, such as the Silver Sky development, the Grasswood area, and the proposed Agri-Food Node between Osler and the RM of Corman Park, may require urban servicing to be extended to these locations. Providing urban services for growth areas should be supported by a framework for intermunicipal servicing agreements.
- **Coordination of agreements within future urban commercial/industrial areas.** Urban municipalities may be challenged by interim growth in identified future urban growth areas, if that growth does not contribute fees or levies to support infrastructure extensions. Discussions are ongoing between the municipalities to determine a workable solution that enables additional interim rural development in future urban growth areas while considering the needs

for cost recovery for infrastructure extension. This may also require legislative change to allow for cost recovery on areas incorporated into urban municipalities. Intermunicipal development agreements, which are agreements between municipalities that can address service provision and funding contributions, could also be explored.

REGIONAL ACTIONS

- **Provide support for intermunicipal agreements.**

Municipalities should facilitate intermunicipal servicing agreements and/or intermunicipal development agreements to support urban and rural development in the P4G Region that aligns with the Plan, and ensure cost recovery for the service provider.

- **Coordinate joint applications for funding.**

P4G should work to coordinate applications for funding from senior levels of government and other organizations (e.g., the Federation of Canadian Municipalities, etc.) for projects of regional benefit. These applications would be submitted jointly on behalf of the municipalities, and indicated to be supported by the entire P4G. The schedule and priority for applications should be coordinated through the P4G Business Plan.

- **Petition the provincial government for legislative change.**

P4G should continue to lobby the provincial government to change relevant legislation for development levies and servicing agreement fees to consider the needs of urban municipalities for cost recovery for future urban servicing. This shall require ongoing discussion with the Ministry of Government Relations and other agencies regarding the appropriate changes to be made.

- **Support and, where applicable, manage regional fees and levies.**

As the municipalities within the P4G cooperate on a greater range of regional projects, there will be a need to provide a consistent system to provide regional funding support through specific mechanisms. This may include both regional projects coordinated by P4G and projects coordinated separately through multilateral agreements. P4G should provide support for the calculation and use of regional fee and levy systems.

- **Coordinate servicing with First Nations.** First Nations should be engaged in the planning and development of regional services, and agreements should be explored to allow First Nations to share in the costs and receive benefits from regional infrastructure projects.

- **Support ongoing negotiations regarding servicing agreements for long-term extensions of infrastructure.**

The continuing negotiations between municipalities regarding long-term servicing agreements to support cost recovery for urban services should be supported. Policies and plans should work to support a fair and equitable approach agreed upon by both parties.



- Existing Urban Municipality
- Corman Park - Saskatoon Planning District
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- Areas subject to ongoing study
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- Major Roadways
- Potential Interchanges

Saskatoon Freeway

- Potential Alignments
- Approved Alignments

Water

Key Location

Land Use

Future Urban Growth

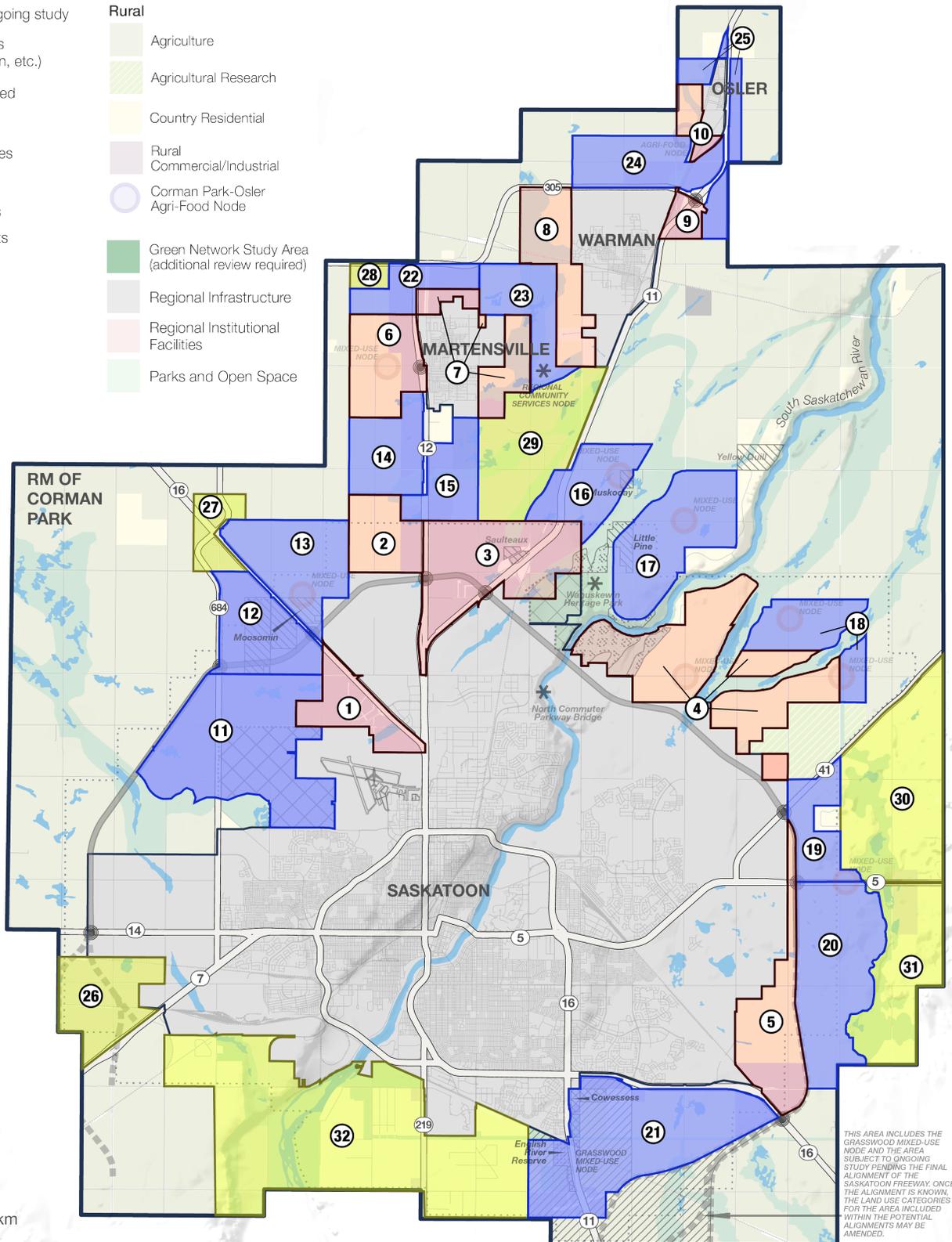
- Urban Residential Neighbourhood
- Urban Commercial/Industrial
- Urban Mixed Use Node

Rural

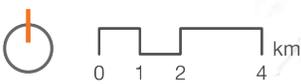
- Agriculture
- Agricultural Research
- Country Residential
- Rural Commercial/Industrial
- Corman Park-Osler Agri-Food Node
- Green Network Study Area (additional review required)
- Regional Infrastructure
- Regional Institutional Facilities
- Parks and Open Space

Development Areas

- Growth Areas to 700,000
- Growth Areas to 1 million
- Rural Growth Areas



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Sequencing

OBJECTIVES

- Coordinate land development with available infrastructure capacity and the efficient extension of servicing
- Promote the sequenced development of infrastructure that integrates municipal systems for economies of scale and higher levels of service.
- Coordinate with senior levels of government to support timing of infrastructure investments that address needs for growth

CONTEXT

Exhibit 6 provides the Regional Land Use Map divided into distinct development areas based on geography and expected general timing of development. These areas generally align with expected planning boundaries, and the lands within each cell would be coordinated and developed as a unit.

Development areas in the map are allocated as follows:

- **Growth areas to achieve a regional population of 700,000 (areas 1–10).** Development cells that are located within the Growth Areas to 700,000 from the Regional Plan are identified as those areas that would be required for the growth of urban municipalities as the P4G Region grows to a population of 700,000. These locations are priorities for Concept Plan development, and regional infrastructure planning should consider this timing in coordinating support for growth.
- **Growth areas to achieve a regional population of 1 million (areas 11–25).** Development cells outside the Growth Areas to 700,000 are expected to be required to support urban growth as the P4G Region grows from a population of 700,000 to 1 million. Planning should be coordinated for these areas to provide for interim uses, and urbanization over a longer transition period.
- **Rural growth areas (areas 26–32).** Although the focus of this Servicing Strategy is on supporting future urban growth, specific areas in the P4G Region have been identified for longer-term country residential, commercial, and industrial uses. These areas will not be impacted by capacity planning for urban infrastructure unless provided through intermunicipal agreements. However, infrastructure planning should still consider the capacities of rural water, transportation, and other rural services.

Major considerations for regional sequencing are as follows:

- **Need for development flexibility.** The general sequencing noted on this map is suggested by lands available to each community for development, projected growth rates, and ease of servicing. Within these areas, municipalities should determine development phasing to meet their own needs, while coordinating with other P4G municipalities and aligning with regional servicing plans as appropriate.
- **Long-term urbanization of commercial/industrial areas.** Planning for the commercial/industrial areas in areas 1–3 on the map shall consider future needs to urbanize and potentially redevelop these areas. Sequencing and coordination should be examined in the context of Concept Plans for these areas.
- **Coordination of planning and sequencing with First Nations.** Planning for development sequencing in areas 3, 12, 16, 17, and 21 should be coordinated with the First Nations with treaty land entitlement holdings and reserves in these locations. As these First Nations may look to develop their lands within a shorter timeframe, coordination of planning for interim uses and discussions about potential urban servicing needs may be required.
- **Need for planning of rural growth areas.** Significant employment and population growth in the RM of Corman Park into the future will be focused on both the rural growth areas identified in this Plan, and interim development in future urban growth areas will also provide for additional residential

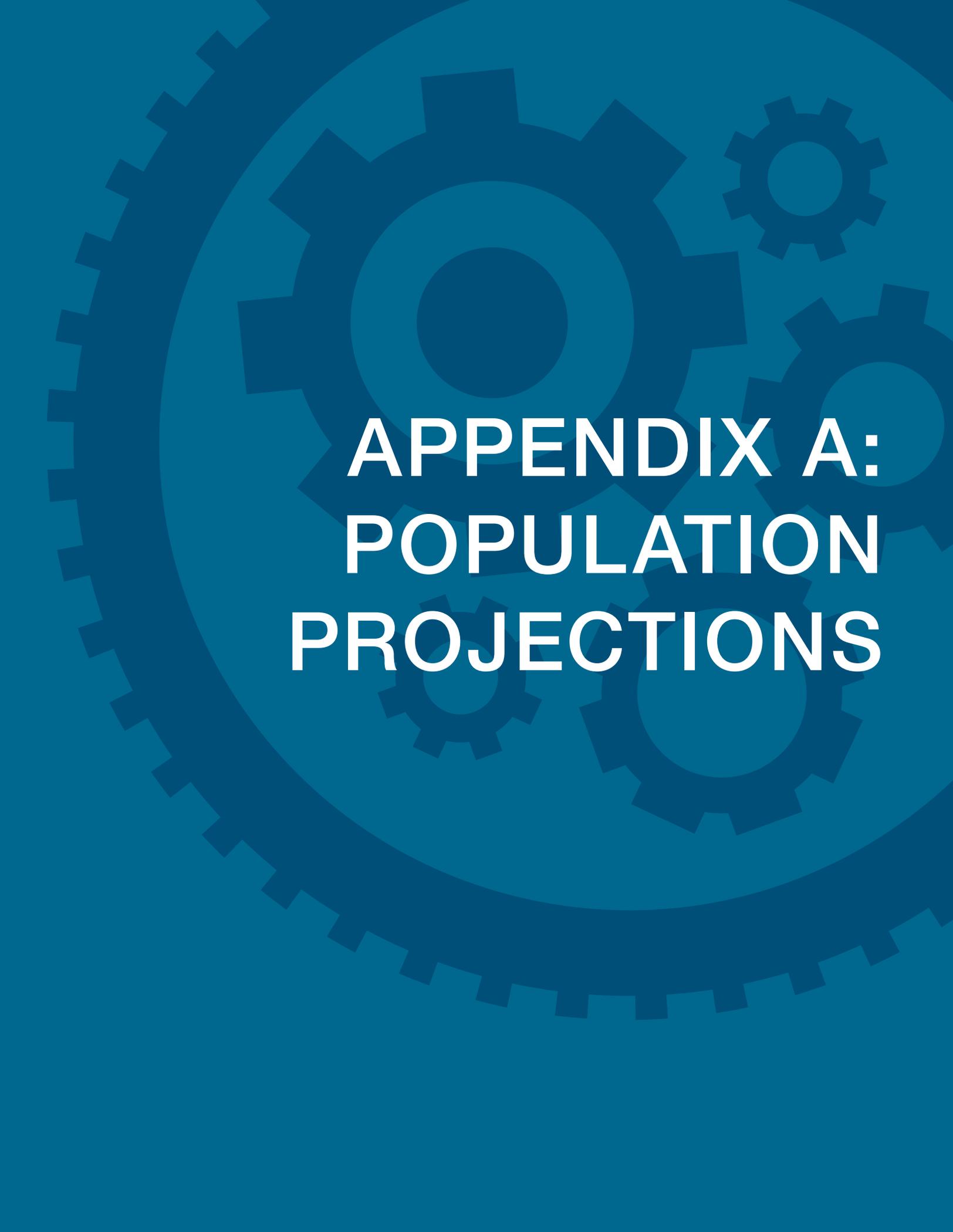
and employment uses. The RM should work to coordinate development and planning for these areas to ensure that rural growth considers local and regional servicing capacity.

identified timeframe for development. This should also include the coordination of municipal capital expenditures and cost recovery through development levies and servicing agreement fees to achieve regional infrastructure goals.

REGIONAL ACTIONS

Considering regional infrastructure needs, requirements for growth, and coordination of urban development, the following actions should be taken:

- **Develop Concept Plans for identified urban growth areas.** Urban development areas in Exhibit 6, especially those within the Growth Areas to 700,000, should be the subject of Concept Plans coordinated between the adjacent municipality and the RM. These Plans must incorporate not only the expected sequencing of urban growth, but also the sequencing of interim rural uses. These plans should outline in more detail local and regional extensions of servicing, and respect long-term needs for infrastructure capacity. Concept Plans and associated sequencing should also ensure that the extension of urban services is coordinated and sequenced to maximize the use of infrastructure investments.
 - **Phase urban development to ensure the productive use of infrastructure investments.** Areas identified as development areas to a regional population of 700,000 in Exhibit 6 largely include locations that would be less expensive to service than long-term development areas. The priority for development should be with short-term areas, with sequencing that reflects efficient extensions of infrastructure.
 - **Coordinate municipal infrastructure and capital planning to align with sequencing.** Infrastructure planning by all municipalities should align with the priorities identified in the Sequencing Map, with general sequencing respecting the
- **Coordinate growth planning and sequencing for rural growth areas.** The RM should coordinate with municipalities to ensure that rural growth areas are integrated with overall regional growth patterns. Concept Plans should be used by the RM to coordinate orderly development within identified Country Residential and Rural Commercial/Industrial areas. This process may include agreements with urban municipalities to coordinate any necessary extensions of services.



APPENDIX A: POPULATION PROJECTIONS

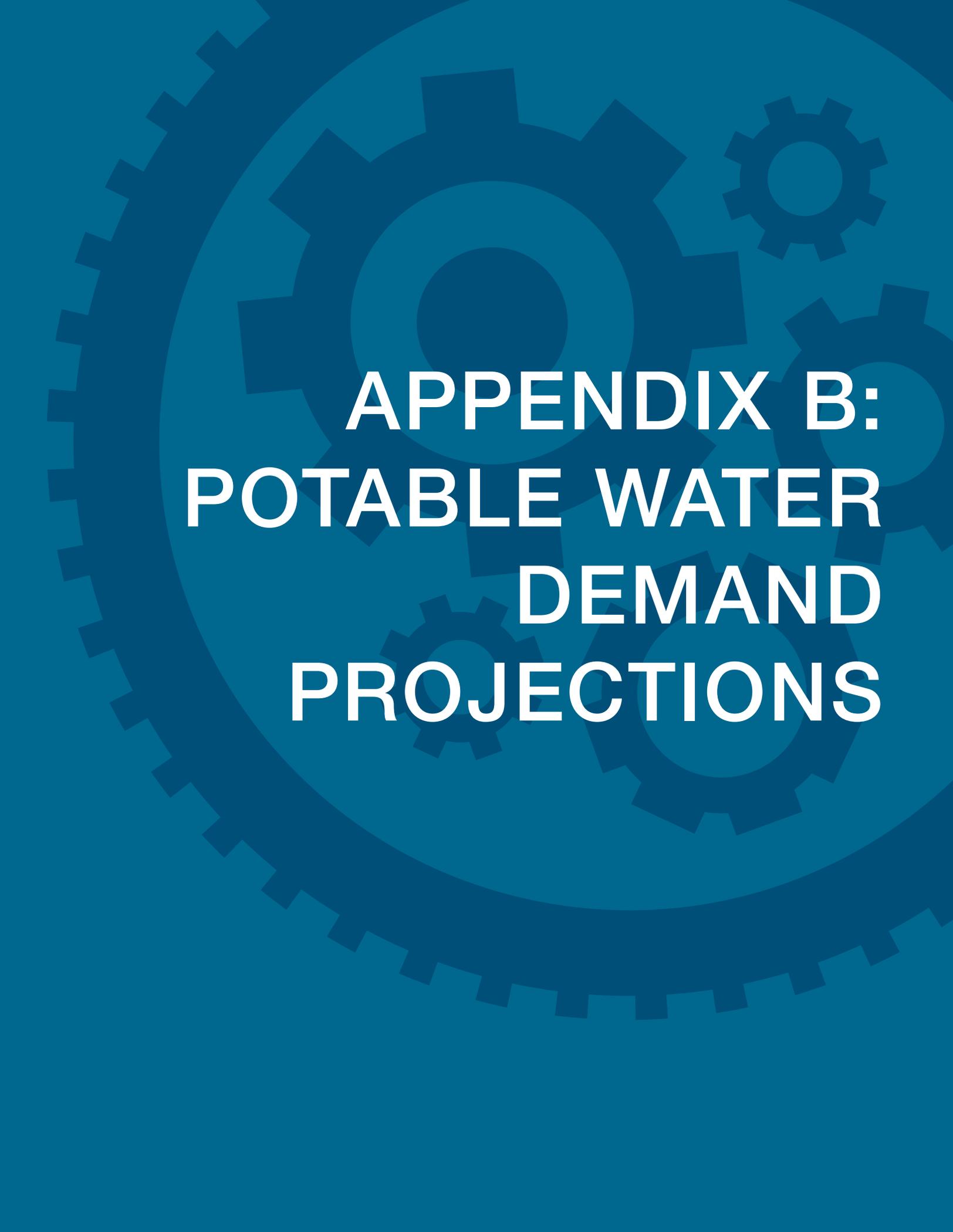
For the purposes of projecting future water demand and wastewater generation across the P4G Region, two different population projections were used:

- Scenario 1: High.** Population growth rates and projections drawn from the values used for the rest of the Regional Plan were assumed to constitute a “high” scenario. Although these growth rates have been used in the development of the Plan, they do represent a higher rate of growth than what has been used by regional and local infrastructure studies developed to date. Although these growth rates will align with Plan assumptions, it may represent a faster use of regional capacity than available engineering studies.
- Scenario 2: Low.** Population growth rates and projections used in the “low” scenario are based on the general range of values provided by existing studies developed to examine regional water and wastewater systems. This represents general alignment with earlier studies, but it does suggest a rate of growth in the P4G Region that is lower than what is proposed through the Plan.

Values for each scenario are provided in Table 1 below:

Table 1. Population Growth Scenarios for Infrastructure Capacity Analysis.

	Saskatoon	Warman	Martensville	Osler
Initial population (2011)	222,190	7,084	7,716	1,088
Population growth rate				
Scenario 1: High	2.5%	4.0%	4.0%	4.0%
Scenario 2: Low	2.0%	3.0%	3.0%	2.3%



**APPENDIX B:
POTABLE WATER
DEMAND
PROJECTIONS**

INTRODUCTION

Data on municipal and regional water systems was drawn from discussions with municipal staff and other sources, including:

- *Technical Memorandum 3 – Water Demand Projections: Water Treatment Plant (WTP) Long Term Capital Development and Expansion Plan* (City of Saskatoon, 2009)
- *Town of Warman Waterworks System Assessment 2010* (City of Warman, February 2011)
- *Saskatoon North Regional Partners Planning for Growth Corridor* (P4G, June 2011)
- *Technical Memorandum 3-1 Population Growth Projections and Water Demand Study* (City of Saskatoon, January 2013)
- *Saskatchewan Water Use Records 2000–2014* (SK Water Security Agency, November 2015)
- *City of Martensville Future Growth Plan 2040* (City of Martensville, January 2016)

Note that the 2015 Waterworks Systems Assessments were not available at the time these projections were developed, and are not incorporated into this work.

The projected populations used in this assessment are explained in more detail in Appendix A.

PARAMETERS

For this report, water demand projections were compiled at two scales:

- **Regional demand** for the entire P4G Region, for assessing regional water demand and associated needs for supplies; and
- **Individual demand** for the smaller urban municipalities (Warman, Martensville, and Osler) and other regional customers, for evaluating regional water delivery.

This report assesses two water demand scenarios:

- **Scenario 1 (high)**. This scenario assumes relatively high water consumption in the P4G Region. Per capita water consumption rates for Saskatoon are drawn from the Technical Memo 3-1 and for smaller municipalities from the 2011 Corridor study.
- **Scenario 2 (low)**. This scenario assumes lower water consumption in the P4G Region. Per capita water consumption rates and peak demand factors for smaller urban municipalities are derived from local infrastructure and growth plans or Water Security Agency assumptions where applicable. For regional consumption, per capita demand is reduced by 15% from the baseline estimate used in Technical Memo 3-1 for consistency with recent trends in consumption.

Regional water demand projections incorporate other system customers (e.g., Intervally Water Inc., Dalmeny, etc.) into regional per capita demand to maintain consistency with Technical Memo 3-1.

These scenarios do not include the potential for acquiring emergency supplies from the North Saskatchewan River or emergency storage in case of contamination of the South Saskatchewan River. Although considering emergency scenarios is outside the scope of this Strategy, further work by the P4G Region should look to support these efforts.

Table 2. Inputs for Water Demand Projections, Scenario 1 (high).

	Regional	Warman	Martensville	Osler
Gross per capita demand (Lpcd)	537.8 ¹	300	300	300
Peak demand factor	1.85	WSA recommended values based on population ²		
Required storage	25% max. daily demand	2x average daily demand		

¹ Note that this gross per capita demand incorporates water demand from Saskatoon and surrounding rural areas.

² Saskatchewan Water Use Records 2000–2014 (Water Security Agency, 2015)

Table 3. Inputs for Water Demand Projections, Scenario 2 (low).

	Regional ¹	Warman	Martensville	Osler
Gross per capita demand (Lpcd)	457.1 ¹	250	250	200
Peak demand factor	1.85	2.33	2.16	2.5
Required storage	25% max. daily demand	2x average daily demand		

¹ Note that this gross per capita demand incorporates water demand from Saskatoon and surrounding rural areas.

PEAK DAILY WATER DEMAND PROJECTIONS (REGIONAL)

Table 4 provides a summary of estimated peak daily demand over the next 40 years under the two scenarios. Three projections from Technical Memo 3-1 are used for the City of Saskatoon.

The Saskatoon 2013 report projections in Table 4 assume a population growth rate of 1.49%. The “low reduction” scenario (defined as Option 2 in the 2013 Saskatoon report) assumes a 10% reduction in peak daily water demand, while the “high reduction” scenario (Option 1 in the report) assumes a 5% reduction in average daily water demand and 15% reduction in peak daily water demand.

Table 4. Estimated Regional Peak Demand (in ML/d).

Year	Scenario 1 (high)	Scenario 2 (low)	Estimates (Saskatoon 2013) ¹		
			No Reduction	Low Reduction	High Reduction
2016	269.3	223.0	264.6	248.7	233.6
2026	348.6	273.7	313.2	281.9	252.9
2036	452.0	336.1	352.3	317.0	284.5
2046	587.0	413.0	-	-	-
2056	763.9	508.0	-	-	-

¹ Technical Memorandum 3-1 Population Growth Projections and Water Demand Study (City of Saskatoon, January 2013)

PEAK DAILY WATER DEMAND PROJECTIONS (BY MUNICIPALITY)

Projections of the major customers linked to the Saskatoon North Treated Water Pipeline are provided in this section to assess the capacity of the system, and the potential need to upgrade individual segments of the pipeline.

Estimated municipal water demands under Scenario 1 (high) are provided below. Projections for water demand from other SaskWater customers (Dalmeny, Hepburn, Hague, and Intervalley

Water) are based on WSA data, and assume a 2% increase in demand per year.

The estimated municipal water demands under Scenario 2 (low) are provided below. Water demand is assumed to increase by 1.5% per year for other SaskWater customers (Dalmeny, Hepburn, Hague, and Intervalley Water) and the other parameters are consistent with those outlined for smaller urban P4G members.

Table 5. Estimated Municipal Demand, Scenario 1 (high).

	Peak Daily Demand (ML/d)							TOTAL (ML/d)
	Warman	Martensville	Osler	Dalmeny ¹	Hepburn ²	Hague ³	Intervalley Water ⁴	
2016	5.17	5.63	0.99	0.68	0.34	0.47	1.12	14.4
2026	7.27	7.92	1.47	0.83	0.42	0.57	1.37	19.9
2036	10.76	11.72	1.96	1.01	0.51	0.69	1.67	28.3
2046	15.51	16.90	2.58	1.23	0.62	0.85	2.03	39.7
2056	22.97	25.01	3.81	1.50	0.76	1.03	2.48	57.6

¹ Base Dalmeny peak demand based on calculated 2010, 2013 values from WSA.

² Base Hepburn peak demand based on 2012, 2014 average demand, 2.5 peak demand factor.

³ Base Hague peak demand based on average daily demand, peak demand factors 2003–2014.

⁴ Base Intervalley Water peak demand based on 2014 average daily demand, 2.5 peak demand factor.

Table 6. Estimated Municipal Demand, Scenario 2 (low).

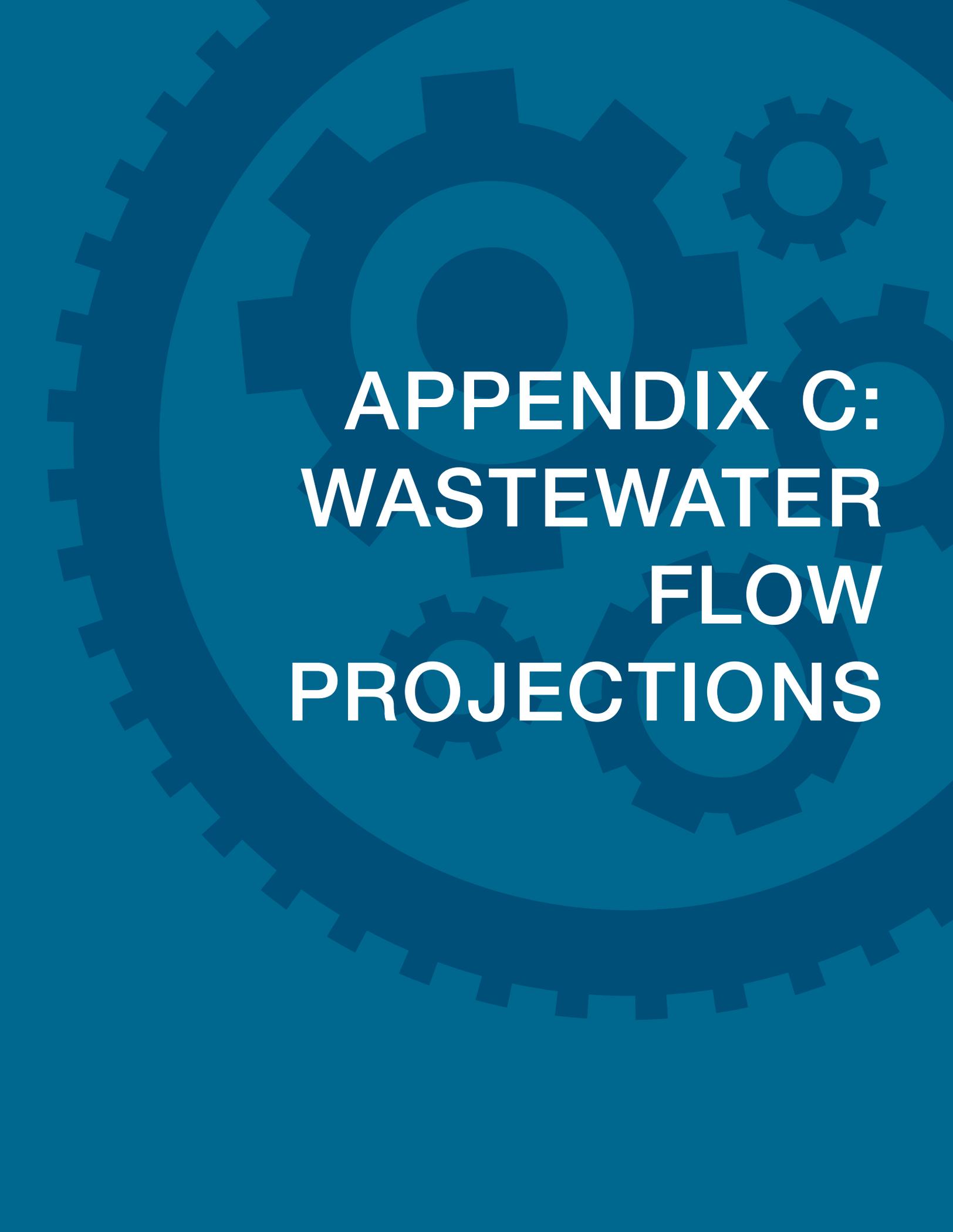
	Peak Daily Demand (ML/d)							TOTAL (ML/d)
	Warman	Martensville	Osler	Dalmeny ¹	Hepburn ²	Hague ³	Intervalley Water ⁴	
2016	4.78	4.83	0.61	0.67	0.34	0.46	1.11	12.8
2026	6.43	6.49	0.77	0.78	0.39	0.54	1.29	16.7
2036	8.64	8.72	0.96	0.90	0.46	0.62	1.50	21.8
2046	11.61	11.72	1.21	1.05	0.53	0.72	1.74	28.6
2056	15.60	15.76	1.51	1.21	0.62	0.84	2.01	37.6

¹ Base Dalmeny peak demand based on calculated 2010, 2013 values from WSA.

² Base Hepburn peak demand based on 2012, 2014 average demand, 2.5 peak demand factor.

³ Base Hague peak demand based on average daily demand, peak demand factors 2003–2014.

⁴ Base Intervalley Water peak demand based on 2014 average daily demand, 2.5 peak demand factor.



**APPENDIX C:
WASTEWATER
FLOW
PROJECTIONS**

INTRODUCTION

To assist in evaluating the future adequacy of wastewater capital facilities, flow rates are projected below for each community to 2056. The population projections detailed in Appendix A are used to provide high and low range estimates of wastewater flow rates. These flow rate estimates are used to evaluate requirements for treatment and storage in each community individually and for the regional system.

Information on municipal and regional wastewater systems was drawn from discussions with municipal staff and other sources, including:

- *Saskatoon North Regional Partners Planning for Growth Corridor* (P4G, June 2011)
- *City of Martensville Future Growth Plan 2040* (City of Martensville, January 2016)
- *Technical Memo 01: Influent Wastewater Flow and Loading Projections, City of Saskatoon H.M. Weir Wastewater Treatment Plant LTCDEP* (City of Saskatoon, April 2012)
- *Technical Memo 14: Alternate Flow Projections and Upgrade Schedule, City of Saskatoon H.M. Weir Wastewater Treatment Plant LTCDEP* (City of Saskatoon, October 2012)
- *Environmental Protection Branch Memo 203: Guidelines for Sewage Works Design* (Water Security Agency / Saskatchewan Ministry of the Environment, January 2013)
- *Environmental Protection Branch Memo 503: Sewage Works Design Standard* (Water Security Agency, November 2012)

PARAMETERS

Two scenarios are assessed:

- **Scenario 1 (high).** The first scenario, which represent the high-end estimate for wastewater flows in the P4G Region, uses projected population growth rates from existing growth plans for the urban municipalities, which is consistent with the Potable Water section. Per capita wastewater flow rates are drawn from the LTCDEP Technical Memo 01 and include considerations of infiltration and inflow. Peaking factors for the Saskatoon system are based on the design factors for the Saskatoon WWTP and the guidelines in EPB Memo 503.
- **Scenario 2 (low).** This scenario, which represents the low-end estimate of wastewater flows in the P4G Region, is consistent with the lower population growth rates used in existing reports as described in the Potable Water section. Flow rates and peak flows for Saskatoon are based on the alternate assumptions used in LTCDEP Technical Memo 14, and flow rates for the smaller urban municipalities are assumed to match water usage rates. Infiltration and inflow are incorporated into per capita rates.

Analysis of both scenarios integrated the following design standards:

- In cases where peaking factors are not provided in documentation, peaking factors for the smaller urban municipalities are provided as the greater of 2.5 or Harmon's Peaking Factor.

Table 7. Inputs for Wastewater Flow Projections, Scenario 1 (high).

	Saskatoon	Warman	Martensville	Osler
Gross per capita demand (Lpcd)	395	300	300	300
Required storage	2.5	*	*	*

* Based on Harmon's Peaking Factor, municipal population.

Table 8. Inputs for Wastewater Flow Projections, Scenario 2 (low).

	Saskatoon	Warman	Martensville	Osler
Gross per capita demand (Lpcd)	356	250	250	250
Required storage	2.4	*	*	*

* Based on Harmon's Peaking Factor, municipal population.

AVERAGE AND PEAK WASTEWATER FLOW PROJECTIONS

Projections of average and peak flows by municipality are provided in Table 9 for Scenario 1 (high) and in Table 10 for Scenario 2 (low).

Table 9. Estimated Municipal Demand, Scenario 1 (high).

	Average Daily Flow Rate (ML/d)						
	Saskatoon	Warman	Martensville	Osler	Saskatoon + Martensville	Warman + Osler	All Municipalities
2016	99.3	2.6	2.8	0.4	102.1	3.0	105.1
2026	127.1	3.8	4.2	0.6	131.3	4.4	135.7
2036	162.7	5.7	6.2	0.9	168.9	6.5	175.4
2046	208.3	8.4	9.1	1.3	217.4	9.7	227.1
2056	266.6	12.4	13.5	1.9	280.1	14.3	294.5

¹ Base Dalmeny peak demand based on calculated 2010, 2013 values from WSA.

² Base Hepburn peak demand based on 2012, 2014 average demand, 2.5 peak demand factor.

³ Base Hague peak demand based on average daily demand, peak demand factors 2003–2014.

⁴ Base Intervalley Water peak demand based on 2014 average daily demand, 2.5 peak demand factor.

Table 10. Estimated Municipal Demand, Scenario 2 (low).

	Average Daily Flow Rate (ML/d)						
	Saskatoon	Warman	Martensville	Osler	Saskatoon + Martensville	Warman + Osler	All Municipalities
2016	87.3	2.1	2.2	0.3	89.6	2.4	91.9
2026	106.5	2.8	3.0	0.4	109.5	3.1	112.6
2036	129.8	3.7	4.0	0.5	133.8	4.2	138.0
2046	158.2	5.0	5.4	0.6	163.6	5.6	169.2
2056	192.8	6.7	7.3	0.8	200.1	7.5	207.6

¹ Base Dalmeny peak demand based on calculated 2010, 2013 values from WSA.

² Base Hepburn peak demand based on 2012, 2014 average demand, 2.5 peak demand factor.

³ Base Hague peak demand based on average daily demand, peak demand factors 2003–2014.

⁴ Base Intervalley Water peak demand based on 2014 average daily demand, 2.5 peak demand factor.



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