Spruce Grove City Centre Area Redevelopment Plan

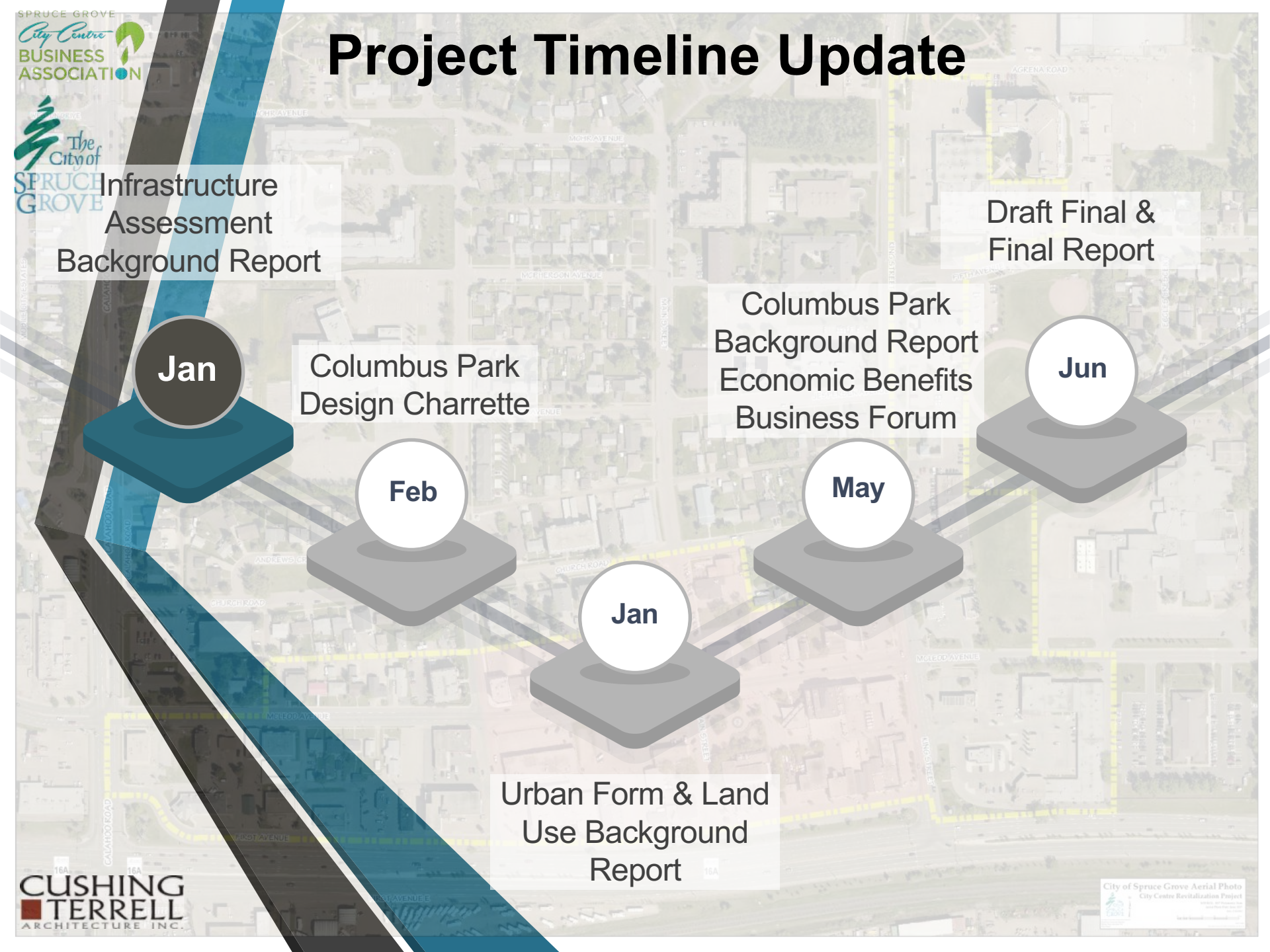
Phase 1
Infrastructure Assessment Background Report

Findings & Preliminary Recommendations

January 22nd, 2018

A Planned Investment in Infrastructure

Project Timeline Update



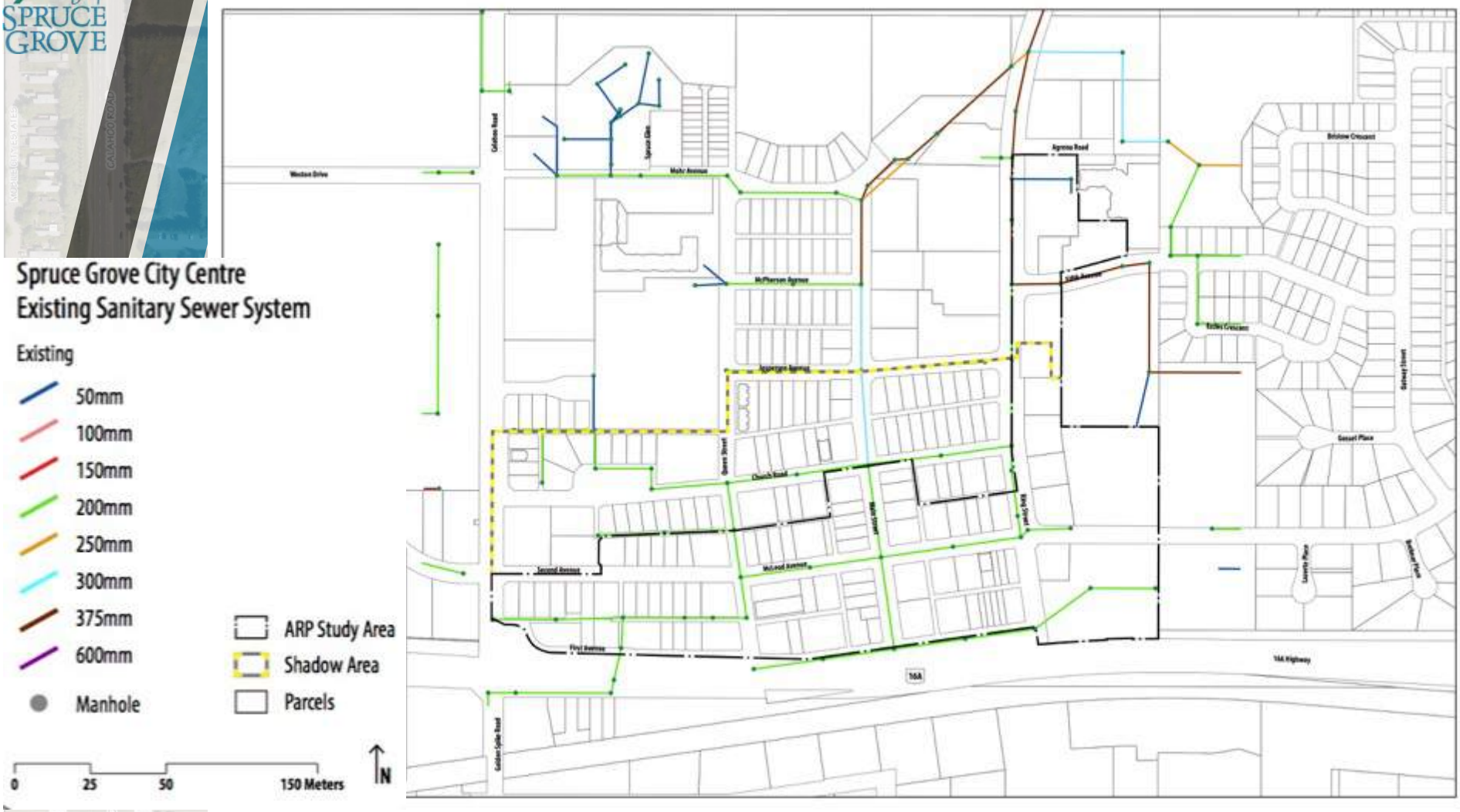
Why Invest in Infrastructure in the City Centre

1. Infrastructure is aged and in need of replacement or refurbishment.
2. Catalyst for further private investment
3. Supports residential & commercial development
4. Retain and attract new businesses
5. Creates a viable destination for events

Infrastructure Assessment Outline

- Review the existing sanitary collection system, water distribution and storm water collection;
- Evaluate each current systems performances, condition and capacities for current and future City Centre needs; and
- Provide recommendations for replacement schedule with costs, based on the present day conditions of the current infrastructure.
- Review existing street lighting;
- Review existing traffic patterns, traffic control, bike access, pedestrian traffic patterns and roadways;

Infrastructure Assessment
SANITARY SEWER



Infrastructure Assessment
SANITARY SEWER

- Current collection system is primarily vitrified clay tile (VCT) installed in 1957 and 1972.
- VCT material has a long service life, but based on installation timeframe, the material is reaching its recommended service life and is no longer widely used.
- In areas where full street rehabilitation is planned or watermain upgrades are taking place, sanitary sewer should be upgraded from the VCT to polyvinyl chloride (PVC).
- Any street not planned to have upgrades should be further studied to ensure no cracks or breaks are present.

Infrastructure Assessment
WATER DISTRIBUTION SYSTEM

- City Centre's water distribution network includes watermains comprised mainly of polyvinylchloride (PVC) and asbestos cement (AC). It is recommended that all **AC (asbestos cement) pipes be replaced** with PVC (polyvinylchloride) pipes.
- Regardless of future redevelopment densities, existing systems **do not have the capacity** to provide adequate fire flow, due to undersized distribution network.
- Existing fire flow system **does not meet** requirements for demand and fire flow. Recommended upgrades to the distribution system are outlined City Centre and Shadow Study Areas.

Infrastructure Assessment
WATER DISTRIBUTION SYSTEM

City Centre Study Area

1. Fire pump is required to meet the required 300 L/s as per the PPD plus fire flow;
2. Add one 300mm diameter tie in connection to the existing 600mm watermain, north of Mohr Ave. Provide a 300mm diameter tee connection to allow for future extension to the south to service potential developments.
3. Upgrade existing 150mm watermain north of Highway 16A and along the east of Queen St. to 300mm;
4. Upgrade existing 150mm watermain from Queen St. west within the alley between McLeod Ave and First Avenue to 300mm to include south connection midblock south to First Ave;

Infrastructure Assessment
WATER DISTRIBUTION SYSTEM

City Centre Study Area

5. Upgrade existing 150mm watermain along Calahoo Road from First Ave to the north right-of-way of McLeod Avenue;
6. Upgrade 150mm to 300mm mid-block 1st Ave North to the alley between Calahoo Road and King Street;
7. Upgrade 150mm to 300mm alley north of McLeod Avenue from Queen Street;
8. Upgrade all existing 150mm diameter watermain within the City Centre to 250mm diameter pipe; and
9. Install additional two hydrant to provide the required hydrant coverage to meet the fire flow protection within the City Centre Study Area.

Infrastructure Assessment
WATER - Proposed City Centre

Infrastructure Assessment
WATER DISTRIBUTION SYSTEM

Shadow Study Area

1. Install two additional hydrants to provide the required hydrant coverage to meet the fire flow protection within the Shadow Study Area;
2. Replace existing 150mm with 250mm PVC along Church Road from King Street to Calahoo Road; and
3. Replace all Asbestos Cement (AC) pipes with equivalent size PVC. Minimum diameter to be 250mm.

Infrastructure Assessment
WATER - Proposed Shadow Area

Infrastructure Assessment
WATER – Fire Hydrants

SPRUCE GROVE City Centre BUSINESS ASSOCIATION

The City of SPRUCE GROVE

CUSHING TERRELL ARCHITECTURE INC.

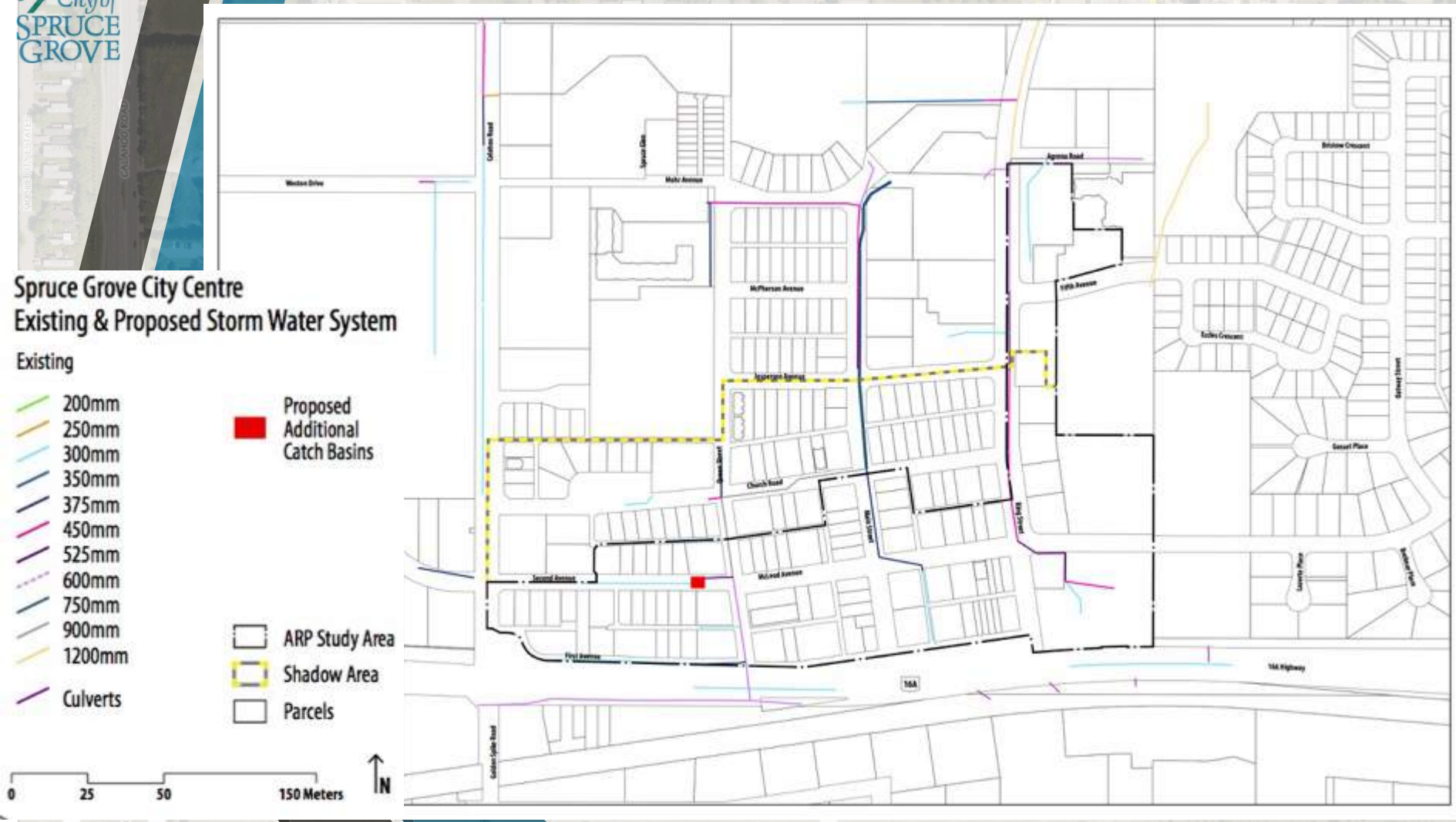
City of Spruce Grove Aerial Photo
City Centre Revitalization Project

WATER DISTRIBUTION SYSTEM
Infrastructure Cost Estimates

The total for the recommended water system improvements is estimated to be **$3,312,301.**

Each listed improvement can be upgraded on a street-by-street basis except for the pump upgrade, tie connection at Mohr Avenue and the upgrades to Calahoo Road.

Infrastructure Assessment
STORM DRAINAGE



Infrastructure Assessment
STORM DRAINAGE

- The 100 year 4-hour storm model indicates there are multiple locations showing a street ponding depth of 0.150m to 0.300m. At this depth, there is a potential of water cresting the curb and flowing back into adjacent lots.
- This should be taken into consideration when developing adjacent lots to ensure adequate building grades.
- McLeod Avenue had one location where ponding was greater than 0.400m.
- Additional catchment will need to be provided at this area to alleviate this ponding depth.

Infrastructure Assessment
STORM DRAINAGE

- To reduce ponding on McLeod Avenue, two additional catch basins should be installed.
- Cost of additional catch basins is estimated to be $30,000.
- Work should be in conjunction with future recommended streetscape and infrastructure improvements for the City Centre. Road cross-section is likely to be altered, whereby existing catch basins may be relocated and additional new catch basins installed into the system.

STREET	ITEM	Units	UNIT COST	TOTAL ($)
McLeod Avenue	Additional catch Basin	2	$15,000.00	$30,000.00
			TOTAL	$30,000.00

Infrastructure Assessment
TRANSPORTATION

- In order to create a safer operating conditions at King St & First Ave intersection, a **raised centre median should be constructed along King Street** between Highway 16A and north of First Avenue.
- Strong consideration should be given to **closing access from Highway 16A at Queen Street**, to enable other more prominent streetscape and infrastructure improvements to take place, while managing better and safer vehicular movements
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Infrastructure Assessment
TRANSPORTATION

- A parking study is underway to assess full utilization/occupancy of the stalls as well as turnover, to determine if there is in fact a need to have additional parking.
- Angle parking along MacLeod is likely to make addition of transit stops difficult. A review of the City's future Transit plans, particularly on McLeod Avenue and in the City Centre Study Area is recommended as a critical tool in assessing whether angle parking is viable or required.
- Possibility exists to put in transportation measures on a temporary basis for a period of time (typically one year) to evaluate their success.

Infrastructure Assessment
KEY FINDINGS

- **Sanitary** - It is recommended that all VCT pipe be replaced with the equivalent diameter PVC.
- **Water** - Upgrades to water distribution system are required to meet required capacities including an upgraded fire pump, 300mm tie in connection at Mohr Ave and a 300mm upgrade along Calahoo Road from existing 150mm diameter pipe.
- **Water** - All AC pipe material to be removed and replaced with minimum 250mm PVC or 300mm PVC.
- **Stormwater** - Considered to have adequate capacity, though two (2) additional catch basins are recommended.

Infrastructure Assessment
KEY FINDINGS

Sanitary Sewer Improvements Water Supply Improvements Storm Collection Improvements	$1,566,600.00 $3,312,301.00 $ 30,000.00	$4,908,901.00

Phasing considerations

- Redevelopment and infill development can't be undertaken without infrastructure upgrades.
- Upgrades should be completed in conjunction with streetscape construction of City Centre ARP.
- Sanitary sewer upgrades should be completed with either streetscape upgrades or in conjunction with any watermain improvements.