

The original East Clayton NCP had a number of unique features and challenges that have been reviewed in this expansion, including:

- Extensive sustainable development initiatives throughout the NCP;
- Significant downstream drainage constraints;
- Two main servicing catchment areas defined by topography; and
- Until recently, limited existing servicing due to the rural nature of current land uses.

Since large portions of the original East Clayton NCP have been developed or are currently being developed, some of the servicing upgrades have been completed and present servicing opportunities for this Western expansion.

Sanitary Sewer

This area of East Clayton (Catchment B) sends sanitary sewer flows into the existing 68 Avenue trunk sewer located west of 188 Street. This existing trunk sewer discharges flows to an existing pump station located at 176 Street. Sewerage flows are pumped south via an existing forcemain from this pump station to the GVS&DD regional trunk sewer.

The existing pump station located at 176 Street has a capacity of 100 l/s and could be upgraded, in the future, to an ultimate capacity of 400 l/s. The proposed upgrade will be undertaken when required and will be funded through DCC contributions collected from the entire west catchment of the East Clayton area.

The expansion area is to be serviced by the existing sanitary sewer system on 188 Street and 68 Avenue. Trunk sanitary sewers exist along the frontages of the expansion area including a 300mm diameter pipe on 188 Street and 375mm diameter pipe fronting 68 Avenue.

The original East Clayton NCP recommended that four sections of the sanitary system be upgraded (along 188 Street and 68 Avenue) to accommodate development. Recent analyses based on more accurate land use assumptions have indicated that even with the proposed NCP expansion, only two sections of the 188 Street sewer require upgrading.

There will be no adverse impact on the original East Clayton NCP servicing concept or downstream infrastructure for sanitary sewers.

Drainage

The NCP expansion area lies in the western catchment area (Catchment B) of the original East Clayton NCP. The catchment slopes in a westerly direction and drains to North Cloverdale Creek which is tributary to the Serpentine River via the Fry's Corner pump station.

Stormwater management is a cornerstone of the ecological sustainability strategy of the East Clayton NCP and this expansion must meet the same objectives. The requirements for infiltration systems and landscaping are outlined in the “Green Infrastructure Performance Standards and Guidelines” provided in the original NCP. It is proposed that the same requirements be incorporated in this expansion area.

The infiltration and low impact development strategies proposed in the NCP deal with small frequent rain events to protect ecological features but are not designed to deal with the large less frequent storms that lead to flooding. In order to meet our servicing requirements of protecting life and property for these less frequent larger events, a conventional conveyance and detention system is required. Under the original NCP, a detention pond (Pond E in the original NCP) and a 1050mm diameter trunk sewer along 68 Avenue west of 188 Street was proposed. These were constructed in part over the last three years and were designed with enough capacity to accommodate flows from the expansion area assuming full development. The actual land use proposed in this expansion plan will lead to no

increase in detention requirement that were originally anticipated and accounted for in the NCP's funding analysis.

However, the final stage of the pond has yet to be completed and must be constructed before development in the expansion can proceed (or interim detention must be provided on subject sites).

Water

The expansion area is located in the "Clayton" pressure zone and is fed by an existing 400mm diameter grid main on 188 Street from the existing GVRD's Whalley/Clayton 900mm diameter water main on 72 Avenue, and the Clayton Reservoir and Pump Station located at 72 Avenue and 190 Street.

The water demand for the residential areas within the expansion area have been calculated in accordance with the City's design criteria. The additional water demands are being added to the City's network model to confirm the capacity of the existing 400mm diameter feeder water main on 188 Street and proposed 350mm diameter water main on 68 Avenue, east of 188 Street.

In addition to the water demand calculations, an analysis of the distribution network was completed, in order to determine sizing for a proposed water main on 68 Avenue, west of 188 Street to Fraser Highway, and on 68A Avenue cul-de-sac road west of 188 Street. In order to provide fire flow requirements for the study area, it was determined that a 250mm diameter water main was required on 68A Avenue and a 300mm diameter water main was required on 68 Avenue. These mains are local servicing requirements that are the responsibility of the developers of individual properties.

Based upon the East Clayton NCP engineering servicing report, the addition of the proposed study area will not adversely impact the East Clayton water supply system, provided that the new pump station is operational by the summer of 2006, subject to confirmation of water main sizing by water main modeling.

There are no DCC eligible water infrastructure elements required for construction in the study.

Transportation

All roads in the area will require upgrading from the existing rural cross-sections to urban standards. The neighbourhood traffic analyses undertaken as part of this expansion focused on the following impacts and access provisions:

- Impact at the Fraser Highway: 188 Street and 68 Avenue, and 188 Street/68 Avenue intersections with and without the extension of 72 Avenue to Fraser Highway; and
- Access locations on 68 Avenue and 188 Street considering need and access for currently approved developments.

In order to maintain a four-lane cross-section at Fraser Highway, extension of 72 Avenue to Fraser Highway is recommended by 2016. 72 Avenue would also be a four-lane facility west of 192 Street. Detailed intersection and cross-section requirements corresponding to the 2016 recommendations are listed in the report and must be implemented as development progresses. These are consistent with the recommendations made in the original NCP. The City will ensure that all driveways to fronting properties along 68 Avenue are located such that the operation of 68 Avenue, 188 Street and Fraser Highway is not compromised.

Financing

It is anticipated that west extension of the East Clayton NCP will generate approximately \$1,917,500 of DCCs for engineering services (\$127,000 for sanitary, \$450,000 for drainage, \$224,000 for water, \$1,116,500 for transportation). There are enough DCC revenues to compensate for extra DCC expenditures off-site such as water, sanitary pump stations, stormwater detention facilities, and

roadworks.

Development Phasing

Development has proceeded quickly to date in the East Clayton NCP. Development within this expansion can progress as local infrastructure is provided by others or by the subject developers. Also, verification of major regional infrastructure (water supply and sanitary pump stations) will continue to ensure development does not out pace upgrades listed above. Ultimately, as in other NCP areas, the market will determine the actual development patterns and phasings.

CONCLUSION

A comprehensive servicing and financial plan has been developed for the West Expansion to the East Clayton NCP. Based on this plan, development within the expansion area can proceed in accordance with the overall objectives of the original East Clayton NCP.

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