8 Servicing

The following is a review and summary of available documentation pertaining to water and wastewater servicing capacity **in Kleinburg-Nashville. The purpose of this** summary is to highlight key primary servicing issues and associated strategies based on **existing documents and analysis available.**

8.1 Background Documents

The following documents serve as the basis for this summary:

- Class Environmental Assessment – Water Supply and Storage Capacity for Kleinburg-Nashville (May 2007), prepared by KMK Consultants Limited for York Region
- Class Environmental Assessment – Wastewater Servicing Capacity for Kleinburg-Nashville (May 2007), prepared by KMK Consultants Limited for York Region (carried out concurrently with the above)
- Memorandum on Wastewater Servicing Strategies (June 13, 2008), prepared by UMA | AECOM for the City of Vaughan
- Memorandum on Water Servicing Strategies (June 17, 2008), prepared by UMA | AECOM for the City of Vaughan

8.2 Summary of Findings

8.2.1 Water Supply and Storage Capacity

Concurrent Class EA processes addressing water supply/ storage capacity and wastewater servicing capacity, were initiated to identify preferred approaches to ensuring capacity existed to meet the projected growth of the Kleinburg-Nashville community to 2021, as per OPA 601, the Kleinburg-Nashville Community Plan, of the Vaughan Official Plan.

Kleinburg's existing water system consists of two wells (Kleinburg Well No. 2 and No. 3) and an elevated storage tank near Highway 27 and Nashville Road.

Well No. 2 was constructed in 1960 and is in good condition, maintaining compliance with MOE requirements. Well No. 2 has a rated capacity of 660L/min (950 m3/d).

Well No. 3 was constructed in 1990 and serves as the main production well with a rated capacity of 2,280 L/min (3,283 m3/d). A Stage 2 mandatory outdoor water use ban was implemented in 2006 following problems with plugged screens. This issue highlighted the limitations of Kleinburg's water system, given that Well No. 2 is inadqueate to provide contingency capacity in the event of problems with the main production well.

The storage tank has a storage capacity of 1,819 m3. The tank was deemed to be in good condition at the time of the Class EA, and was expected to remain in service for the planning period.

The current water system services a population of approximately 3,500, in addition to local businesses. However, issues with contingency capacity and aesthetic water quality are known.

Four alternative solutions were evaluated as part of the Class EA process, based on a serviced population of 7,745 persons, including an allowance for servicing 500 persons currently serviced by private wells. Based on the projections at the time, a total supply capacity of 7,045 m3/d together with a total storage capacity of 3,701 m3 was required to service the projected population to 2021. A preferred design concept, including provisions for two new watermains, a new elevated storage tank, upgrades to Well No. 3 and the division of Kleinburg-Nashville into two pressure districts together with the construction of a new pumping station to service one of the new districts, was developed on this basis.

However, as noted in the memorandum prepared by UMA | AECOM (June 17, 2008) on Water Servicing Strategies, the City of Vaughan subsequently developed population and growth projections exceeding those identified in the Class EA study, with an ultimate build-out population of 41,361 persons.

As a result, UMA | AECOM, in consultation with the City of Vaughan, developed three growth scenarios to examine servicing requirements and potential measures to meet those requirements, as follows (corresponding illustrative schedules were prepared for each scenario):

Scenario 1: Service Existing Population and Development Up To Capacity of Proposed Elevated Tank

Scenario 1 is based on servicing the existing serviced and unserviced populations, and proposed growth in Community Plan areas up to the capacity of the existing and proposed elevated tanks, of 1,189 m3 and 3,800 m3, respectively, with a total population of 9,349.

The scenario would allow for growth of 2,760 persons in the PD-6 pressure zone, and growth of 570 persons in the PD-KN pressure zone. This scenario requires a number of new watermains, however, some of the required watermain upgrades are not specifically growth related, but rather are required to comply with City of Vaughan standards for fire flows.

Scenario 2: Full Servicing of Approved Community Plan and Active Development Application Areas

Scenario 2 is based on full build-out of all Community Plan approved and active development application areas, to a total population of 27,856 persons

In this scenario, storage volumes of 11,600 m3 (PD-6) and 2,200 m3 (PD-KN) are required to provide for equalization storage and fire flows. Alternatively, this capacity could be provided by allocation of peak capacity from the York-Peel feedermain, and increased sizing of the booster pumping station between PD-6 and PD-KN.

This scenario requires a number of new and extended watermains to provide servicing to new growth areas.

Scenario 3: Full Servicing of Ultimate Build-out

Scenario 3 is based on full build-out of the entire study area, up to a population of 41,361 persons.

In this scenario, storage volumes of 14,000 m3 (PD-6) and 3,600 m3 (PD-KN) are required to provide for equalization storage and fire flows. Alternatively, this capacity could be provided by allocation of peak capacity from the York-Peel feedermain, and increased sizing of the booster pumping station between PD-6 and PD-KN.

This scenario also requires a number of new and extended watermains to provide servicing to new growth areas.

8.2.2 Wastewater Servicing Capacity

As previously indicated above, a Class EA to address wastewater servicing capacity with in the Kleinburg-Nashville Community was carried out concurrently with the Class EA to address water supply/storage capacity. Both processes were initiated to identify preferred approaches to

ensuring capacity exists to meet the projected growth of the Kleinburg-Nashville community to 2021, as per OPA 601, the Kleinburg-Nashville Community Plan, of the Vaughan Official Plan.

At present, municipal wastewater generated within the Kleinburg-Nashville community is collected and gravity-conveyed to the Kleinburg Water Pollution Control Plant (WPCP1) where it is treated. The Kleinburg WPCP has an approved capacity of 1,205 m3/d.

As part of the Class EA process, it was determined that while existing aeration tanks have performed well, they do not have have adequate capacity with respect to existing approved plant capacity with typical municipal loadings and nitrification requirements, firm oxygenation capacity for peak flows and sludge digestion/retention.

Three alternative solutions were evaluated as part of the Class EA process, based on a serviced population of 7,505 persons requiring a total capacity of 2,874 m3/d. The alternatives explored both upgrades and expansions to the existing WPCP as well as new potentional connections.

The evaluation resulted in a preferred design concept to meet the projected population and associated capacity requirements. The preferred concept included the construction of new secondary treatment facilities and specific upgrades to the existing Kleinburg WPCP.

As per the UMA | AECOM memorandum (June 13, 2008) on wastewater servicing strategies, work to expand the existing facility was underway as of June, 2008, following the recommendations of the Class EA.

The purpose of the UMA | AECOM memorandum was to outline the consideration of five growth scenarios – developed in consultation with the City of Vaughan – to provide capacity to the ultimate service area. UMA | AECOM relied on the following factors when considering servicing scenarios for the various stages of growth:

- The Kleinberg WWTP is currently being expanded, following a Schedule C Class Environmental Assessment completed in 2007 by York Region, to a flow capacity of 2,874 m3/d;

- The Kleinberg WWTP site has an ultimate capacity of approximately 4,500 m3, and preliminary evaluation indicates the receiving water has adequate assimilative capacity for this flow;

- Wastewater from the service area west of Highway 27 and south of Nashville Road (Areas H and EE2) can flow by gravity to future sanitary systems planned in the York Durham Sewerage System (YDSS);

- Wastewater from the above service area (south of Highway 27 and south of Nashville Road) requires pumping if it were directed to the Kleinberg WWTP site; and,

- Wastewater from the service area mostly south of Major Mackenzie Drive and mostly east of Highway 27 (a small portion north and west) (CC3 and CC4) must be pumped, and can be pumped either to Woodbridge (south

of Major Mackenzie Drive) or into the Kleinberg WWTP service area.

Based on these conditions, the five scenarios are premised on one of two opposing approaches:

1. Allocate capacity to new growth areas (prioritizing allocation to approved areas within the Community Plan) while deferring servicing to existing unserviced areas; and,

2. Prioritize capacity allocation to existing unserviced areas, with remaining capacity allocated to new growth areas.

The following is a summary of the five scenarios examined and their potential outcomes (corresponding illustrative schedules were prepared for each scenario):

Scenario 1: Approved Plant Capacity of 2,874 m3/d with No Servicing of Existing Unserviced Areas

In this scenario, the following areas could be serviced by the Kleinberg WWTP:

- Existing service areas

- Full build-out of new growth areas F, H, M, CC1, CC3, CC4

- Partial build-out of new growth area V

Scenario 2: Approved Plant Capacity of 2,874 m3/d with No Servicing of Existing Unserviced Areas
In this scenario, the following areas could be serviced by the Kleinberg WWTP:

- Existing service areas
- Full build-out of new growth areas F, H, M, CC1 and V

In addition, areas CC3 and CC4 could be fully built-out, with wastewater directed to the YDSS through Woodbridge (if the collection system in this area provides adequate capacity).

Scenario 3: Approved Plant Capacity of 4,500 m3/d with No Servicing of Existing Unserviced Areas

In this scenario, with expansion of the Kleinberg WWTP to its ultimate site capacity, the following areas could be serviced at the existing plant:

- Existing service areas
- Full build-out of areas F, H, M, CC1, CC3, CC4 and V
- Partial development (2,000) of area EE1 and EE2

Scenario 4: Approved Plant Capacity of 4,500 m3/d with Servicing of Existing Unserviced Areas

In this scenario, with expansion of the Kleinberg WWTP to its ultimate site capacity, the following areas could be serviced:

- Existing serviced and unserviced areas
- Full build-out of areas F, H, M, CC1, CC3, CC4, S and V

In addition, based on the YDSS system being extended to Major Mackenzie Drive in the future, areas EE1, EE2 and T could be fully serviced by gravity to the YDSS system.

Scenario 5: Ultimate Growth, Approved Plant Capacity of 4,500 m3/d, Servicing of Existing Unserviced Areas

In this scenario, to provide capacity to the ultimate growth in the community, allowing for a maximum of 4,500 m3/d capacity at the Kleinberg WWTP, the following areas would need to be serviced by the YDSS:

- Areas EE1, EE2, CC3 and CC4; and,
- Most of area H (approximately 500 people could be serviced at the Kleinberg WWTP).

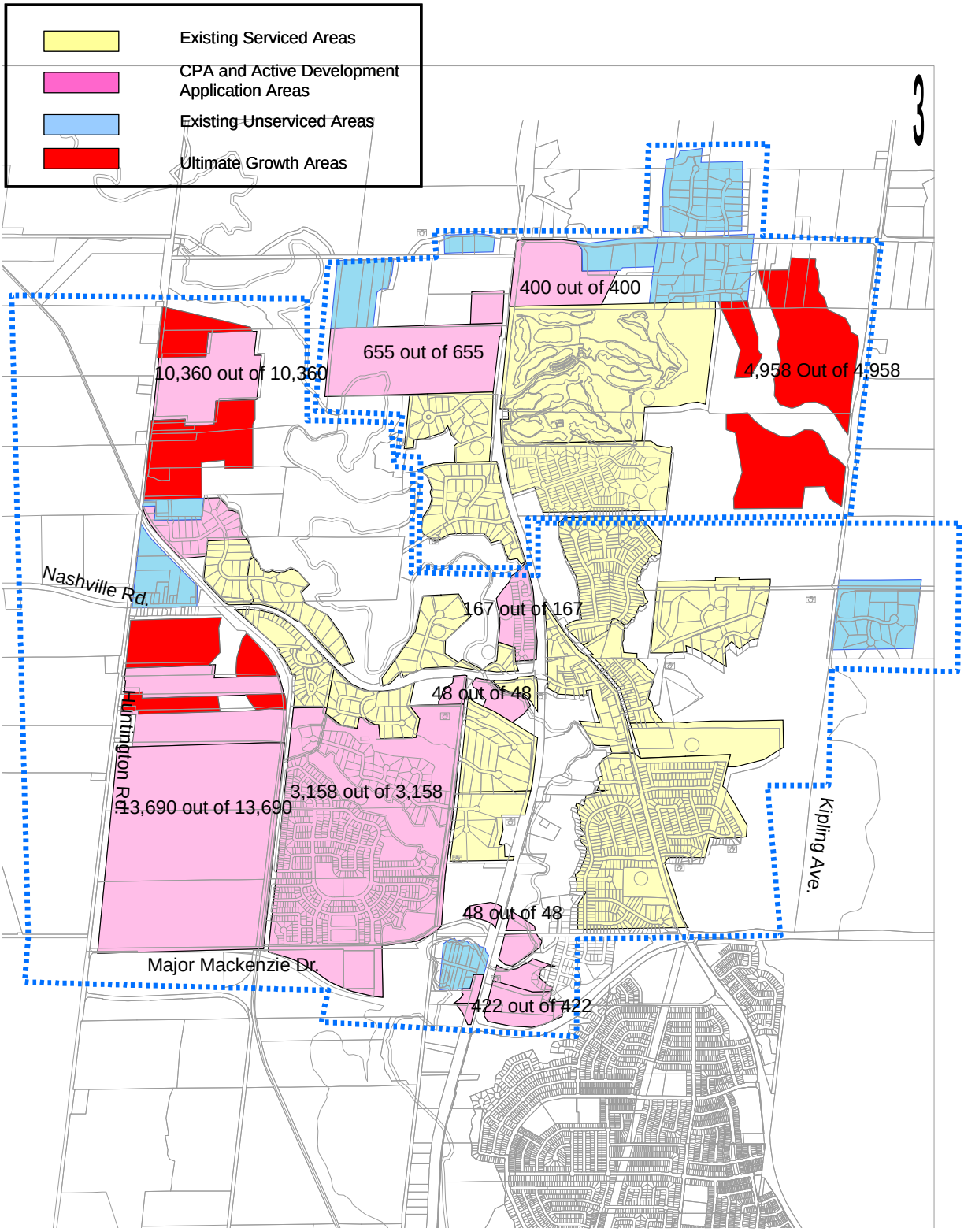
An additional schedule illustrates the location of new pumping stations, gravity sewers and forcemains as well as the location of existing sewers requiring replacement.

8.3 Conclusion

This overview has identified that current work carried out through the EA process is considering the full built-out of the Kleinburg-Nashville Area, but that population and employment generation forecasts will need to be established and input into the process.

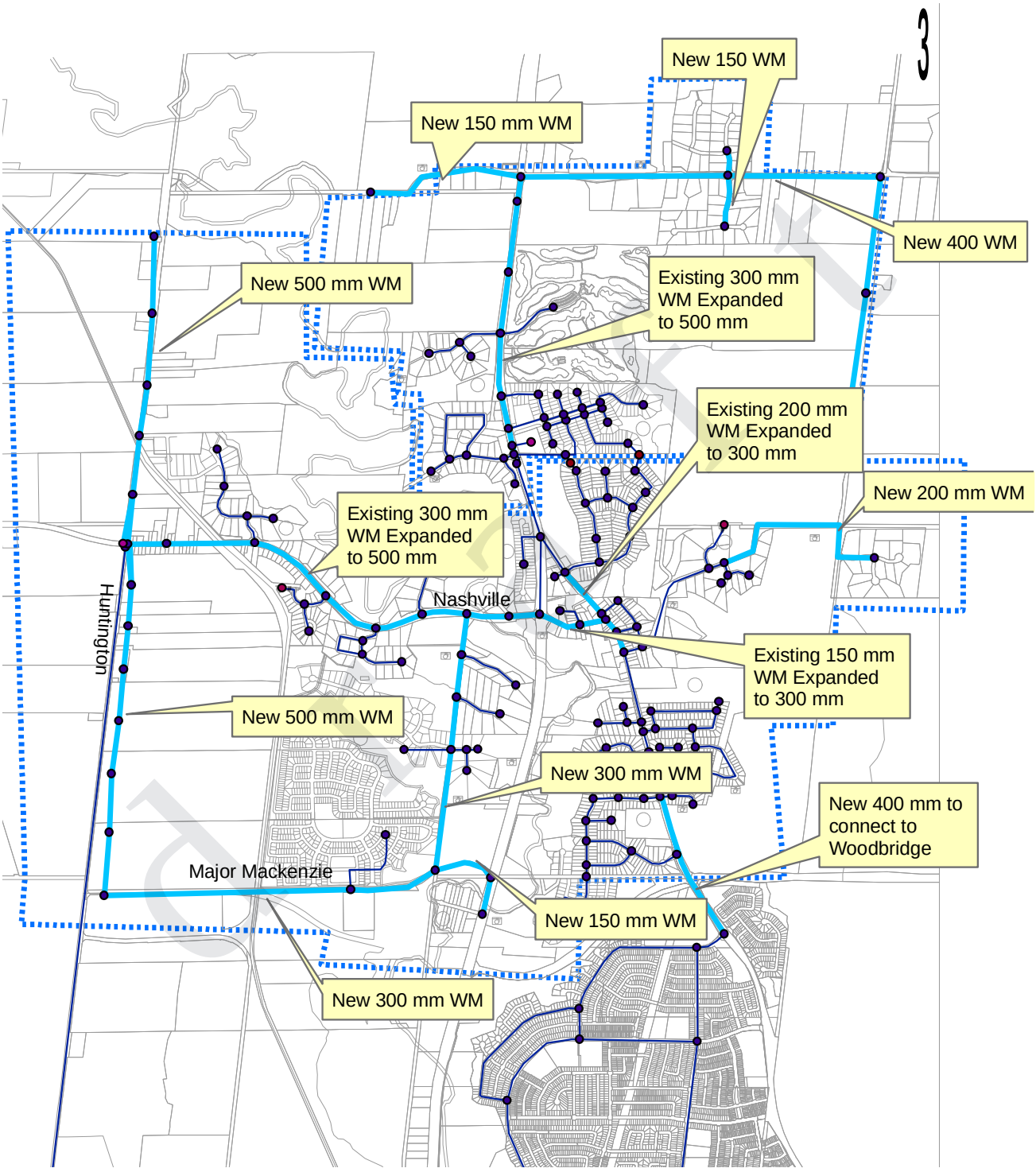
The provision of urban servicing is considered a key element of implementation, and will need to be further explored once a preferred plan has been developed.

Figure 9. Ultimate Serviced Population (Water Servicing)



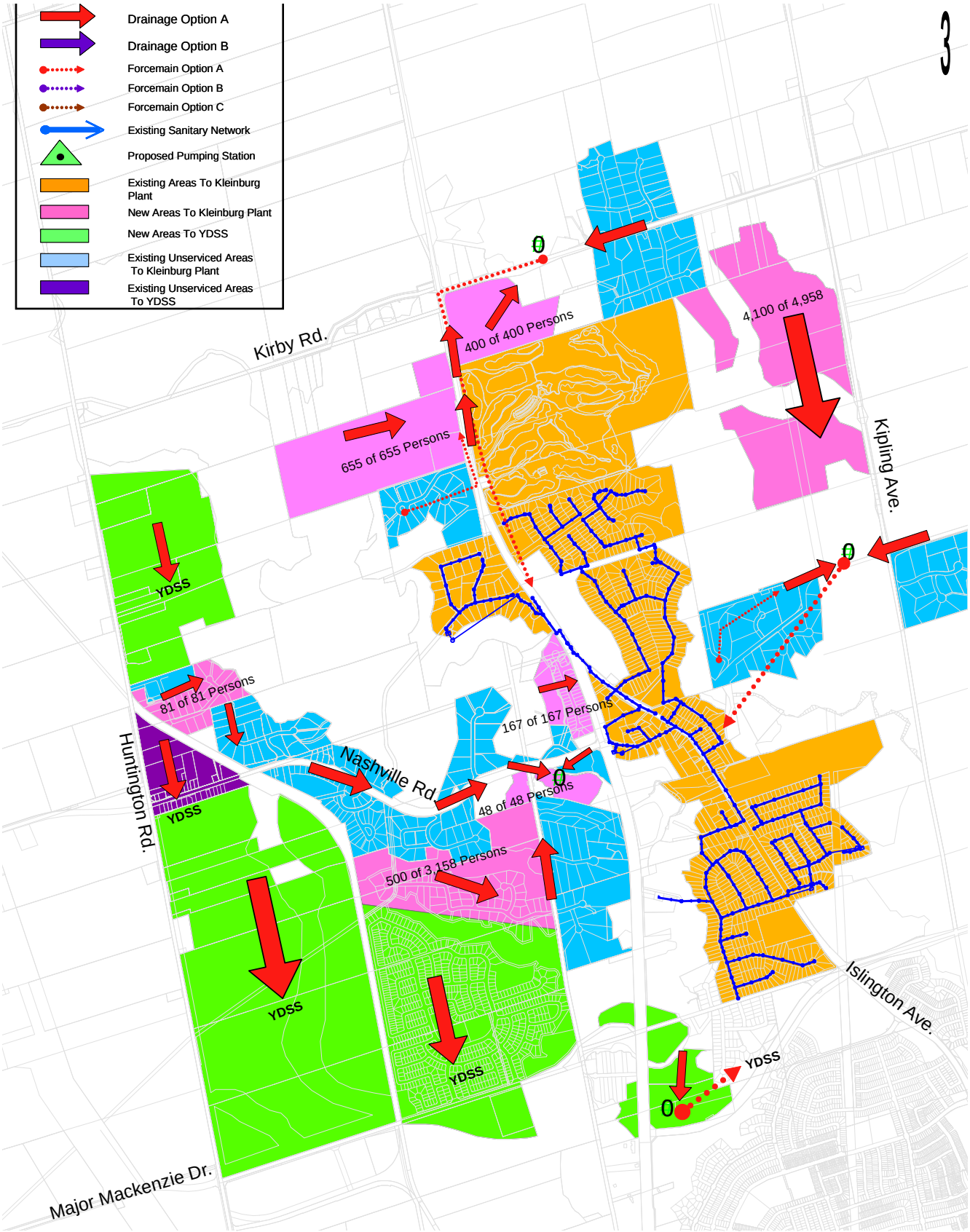
Source: UMA | AECOM (2007)

Figure 10. Ultimate Infrastructure Requirements (Water Servicing)



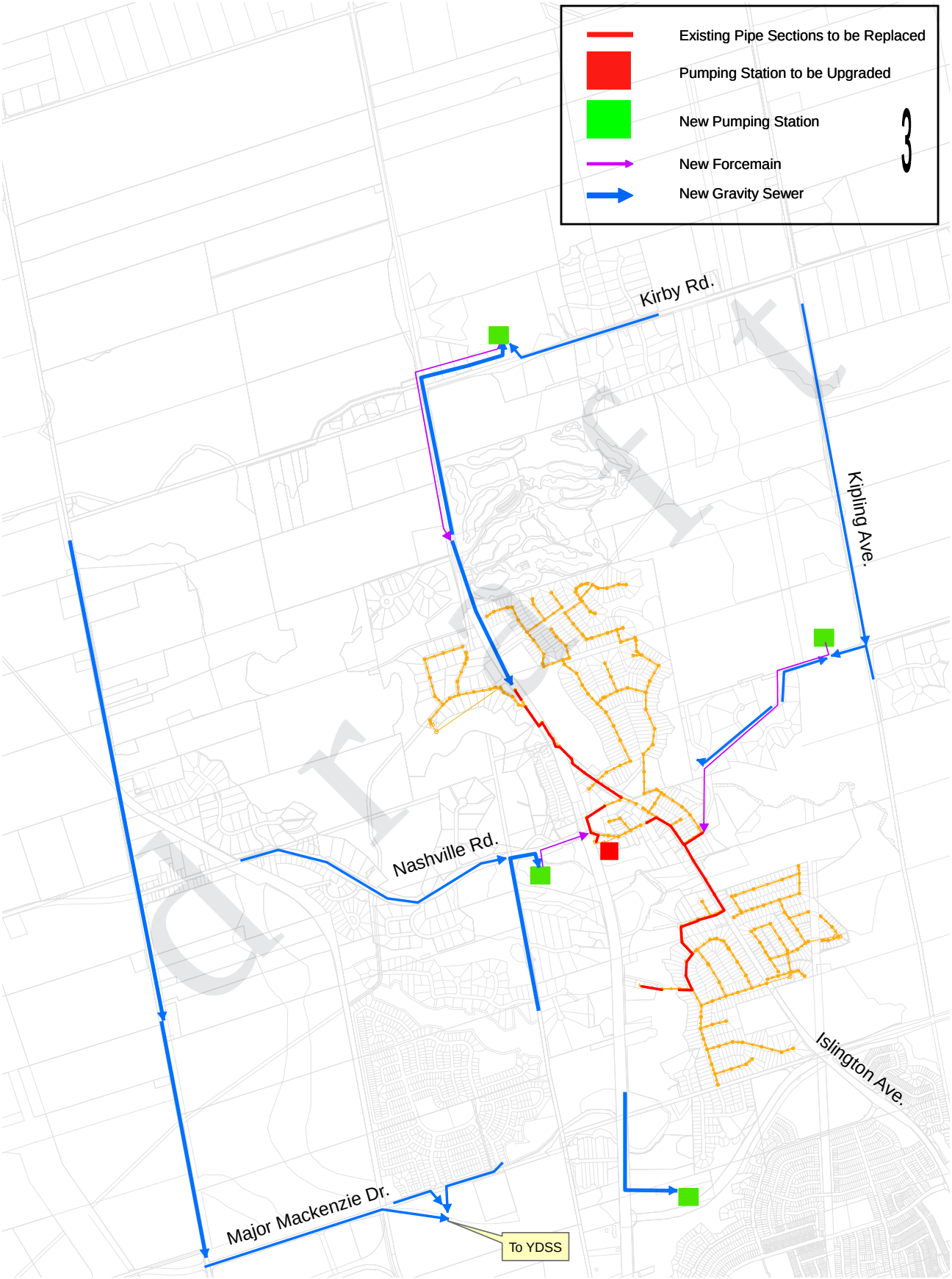
Source: UMA | AECOM (2007)

Figure 11. Ultimate Growth Scenario, Plan Capacity 4500 m3/d (Wastewater Servicing)



Source: UMA | AECOM (2008)

Figure 12. Ultimate Growth Scenario, Plan Capacity 4500 m3/d (Wastewater Servicing)



Source: UMA | AECOM (2008)