

4.4 Servicing Strategy

4.4.1 Water Supply and Servicing

4.4.1(1) Water Demand Projections

Overall Pressure Zone Demands

The following presents a summary of the projected populations for Zone 3W and for the entire WUC (Stantec, October 2001 - Draft). These values were used in the draft study to determine the “external” infrastructure needs for the WUC.

Zone:	1999	2001	2006	2011	2021	2031 (build-out)
3W (Oct 2000)	-	55,684	64,208	72,824	92,065	-
3W (July 2001)	54,000	65,959	87,085	106,064	131,271	147,042
3W (January 2002)	-	65,732	-	-	131,549	146,520
Entire WUC (July 2001)	62,640	76,260	100,786	122,985	152,428	170,785

Notes:

- The July 2001 revisions to the population projections are used herein – the Oct 2000 and January 2002 values are shown for comparative purposes only.
- The projected populations for Zone 3W initially used the “B” development projection for the entire West Urban Community (excluding Stittsville) and then considered that 16% of this population resided in Zone 2W west (16% derived from a spatial analysis of transportation land area breakdown which remained consistent at this value from 2001 to build-out as provided by the City)
- The January 2002 Build-Out population for Zone 3W is projected for 2025

Table 4-17

In October 2000 the (former) Region of Ottawa-Carleton provided future projected water demands for each individual water pressure zone as well as the entire central system. These were based on “Current Use Projections”, which differed from those provided in the 1997 Water Master Plan. The Water Master Plan projections considered the implementation of specific water efficiency strategies to reduce peak water demands these have not yet been put into practice. It is noted that the Current Use Projections for maximum day water demands consider the 5 year return period only – slightly lower projections would be realized if shorter return period calculations were used. The following summarizes the per capita demand estimates (blended – includes ICI and allowance for unaccounted-for-water) as developed for the 2000 Current Use Projections (which are based on recent actual demand information) – these are used to project the future overall zone demands, regardless of the growth levels (Stantec, October 2001 - Draft):

“Blended” Unit Demands	Zone 3W
Basic Day	358 Lpcd
Max Day (5 year return)	920 Lpcd
Peak Hour Factor (PkJr/MxDy)	2.2

Table 4-18

The following represent the current overall demands for Zone 3W (1999 SCADA data and Stantec, October 2001 - Draft) which are based on the July 2001 development projections:

Zone 3W (ML/d)	1999	2001	2006	2011	2021	2031 (build-out)
Basic Day	17.8	24.0	31.0	38.0	47.0	53.0
Max Day	45.1	61.0	80.0	98.0	121.0	135.0
Peak Hour	99.1	134.2	176.0	215.6	266.2	297.0

WUC (ML/d)	1999	2001	2006	2011	2021	2031 (build-out)
Basic Day	20.6	28.0	37.0	45.0	56.0	63.0
Max Day	52.3	70.0	92.0	112.0	139.0	156.0
Peak Hour	115.0	154.0	202.4	246.4	305.8	343.2

Table 4-19

Note: “Basic Day” represents average demands from Jan. 1 to Mar. 31, 1999

The above calculated water demand projections have been developed considering a broad range of mixed land uses across the entire pressure zone. More detailed and specific water demand rates, considering different land uses, must be used to determine actual water consumption within smaller areas, such as the KWCP development and for determining the internal servicing requirements (i.e. internal watermains).

Unit Water Demand Estimates

The unit water demands for the individual areas are of particular importance in developing these demand projections.

The City indicated that a value of 160 L/employee/day for water use has been recorded for typical industrial, commercial and institutional areas within the City (this does not necessarily include a high manufacturing component which may require a higher unit demand rate). For projecting future demands, a 50% allowance has been added to this figure, resulting in an overall average day demand estimate of 240 L/employee/day. The 1997 Water Master Plan provided a maximum peaking factor of 1.5 to the average, resulting in a maximum day demand of 360 L/employee/day. Similarly, the daytime peak for the ICI demand is an additional 50% (or 540 L/employee/day), and the evening peak is estimated at 80%

(or 288 L/employee/day) of the maximum day (Water Master Plan, 1997). These values are appropriate for areas with a small or no heavy manufacturing component. Because of the high employment expected, at least in the Kanata West Concept Plan development lands, estimates have been developed for daytime and evening peaks separately, since employment and residential peaks are not expected to occur simultaneously (consider those presented in the 1997 WMP).

It is noted that the non-revenue water component of demand will be applied to the residential demand estimates, and therefore these values do not include a large NRW figure, and can thus be considered conservative at this time.

For the residential component alone, the unit average day demand has been calculated as 345 Lpcd, based on calibration to the initial figures provided by the City for Zone 3W (note this includes the non-revenue water component for the entire area). This compares very closely to the Water Master Plan value of 355 Lpcd. A similar calibration was made to determine the unit maximum day and peak hour demands, which have been calculated as 828 Lpcd and 1904 Lpcd respectively. As indicated, these values do not include the ICI portion, but do include an allowance for NRW.

The resulting unit rates used in this study are presented following:

Unit Water Demands (internal servicing)							
Employment <i>(L/employee/day)</i>				Residential <i>(L/person/day)</i>			
AVDY	MXDY	PKHR (day)	PKHR (evening)	AVDY	MXDY	PKHR (day)	PKHR (evening)
240	360	540	288	345	828	1242	1904
Based on City value of 160 plus 50%	Estimated @ 1.5 x AVDY (1997 WMP)	Estimated @ 1.5 x MXDY (1997 WMP)	Estimated @ 0.8 x MXDY (1997 WMP)	Calibrated and includes NRW allowance (WMP @ 355)	Calibrated @ 2.4 x MXDY (using large area projection)	Estimated @ 1.5 x MXDY	Estimated @ 2.2 x MXDY (current peak factor)

At an estimated 40-125 jobs/ha for the commercial area (FoTenn Consultants - "Kanata West Concept Plan – Land Use Distribution by Block" - which are based on Concept 3 – revised January 2, 2002) and 240 L/employee/day, the resulting water demand rate, on an area basis, is 9,600 to 30,000 L/ha/day. This agrees with 1997 WMP figures of 14,000 to 19,000 L/ha/day for ICI combined areas. It is estimated that there will be roughly 60 employees/ha for retail space (considering an average or typical employment area similar to other parts of the KWCP). With a net unit water demand of 240 L/employee/day, the resulting retail demand is

Table 4-20

estimated at 14,400 L/ha/day. This value is considered reasonable (it lies within the WMP projections).

Internal Pressure Zone Demand Distribution

In March 2001, the City of Ottawa provided a detailed breakdown of projected development within the western community (including Kanata, Stittsville, and the subject lands). Figure 4-46 shows the spatial delineation of land areas used. Employment projections, dwelling unit projections, and population forecasts are available for 2000, 2016 and 2025 (which is considered build-out). The resulting Zone 3W demands, based on water demands for each individual development area, can be summarized as follows (previous “gross” land area delineation compared to current “detailed” land use breakdown):

Zone 3W Water Demands						
	AVDY (ML/d)		MXDY (ML/d)		PKHR (ML/d)	
	<i>Gross</i>	<i>Detailed</i>	<i>Gross</i>	<i>Detailed</i>	<i>Gross</i>	<i>Detailed</i>
<i>2001</i>	26.7	26.8	61.0	60.6	134.2	130.1
<i>2016</i>	47.2	47.7	109.5	107.7	240.9	230.9
<i>2025/31 (buildout)</i>	58.9	70.0	135.0	150.4	297.0	302.3

Table 4-21

The above table demonstrates that the gross land area breakdown and the detailed area land use breakdown result in reasonably similar water demands for the entire study area. The major difference occurs at the build-out level, as the impact of the higher ICI sector development results in a higher average day (19%) and maximum day (12%) demands, while the peak hour does not reflect a similar difference.

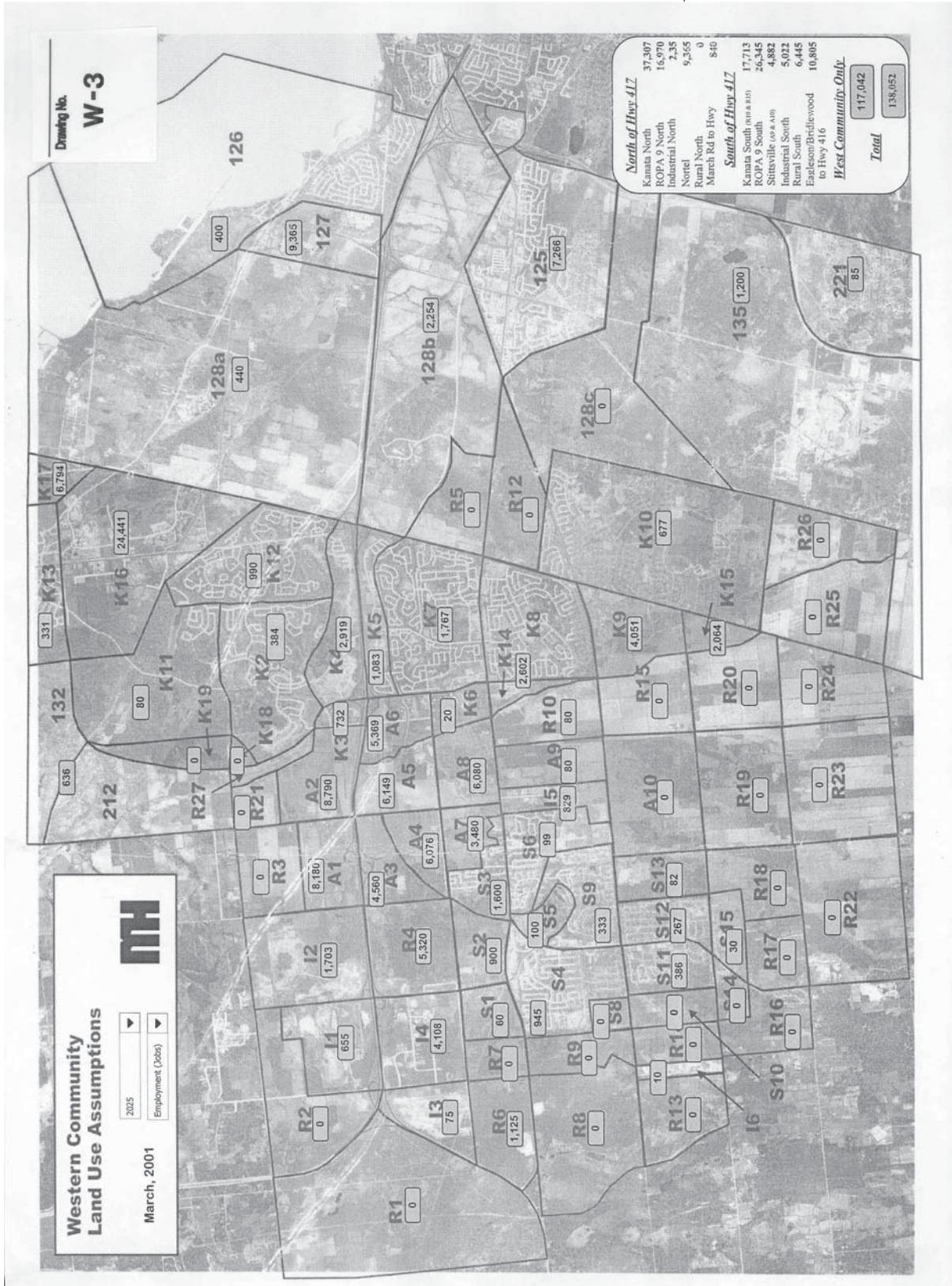


Figure 4-46

KWCP Development Demands

A detailed breakdown of employment projections, retail space and residential dwelling units for the Kanata West Concept Plan was provided to the Study Team in a table entitled “Land Use Distribution Analysis by Block” dated January 2, 2002. The retail floor space was used to develop employment estimates considering 60 employees/ha for retail development and the dwelling units were used to develop population estimates using 3.0 persons per home. For the KWCP alone, these result in the following (at full development):

- Employment 25,315 employees
- Population 15,285 persons

Water demands are summarized following (at build-out):

	<u>KWCP</u>	<u>KWCP (% of Zone 3W)</u>
AVDY	11.3 ML/d	16 %
MXDY	21.8	14 %
PKHR (day)	32.7	-
PKHR (evening)	36.4	12 %

4.4.1(2) Water System Modelling***Model Preparation***

Two hydraulic models provided by the City of Ottawa were used to develop a new detailed model for the study. Each model was developed using the software program WaterCAD™ by Haestad Methods. The first model, labeled Core.wcd, included major hydraulic infrastructure of the entire City of Ottawa distribution system including, treatment plants, clearwells, pump stations, reservoirs, elevated storage and large diameter watermains. The second model, a detailed model of Zone 3W, included all existing watermains of various diameters and also provided information on local elevations. Using the element characteristics of these two models, a third model called the KWCP model was developed.

The original distribution of maximum day demands in the core model was updated to reflect the revised demands as provided by the City in October 2000. This was accomplished by applying a multiplying factor to each of the nodes in the model. Maximum day demands within Zone 3W were distributed according to the projected land uses in this region.

In order to setup the model for future conditions, several assumptions were made and upgrades to the model were implemented. For example, on the suction side of Zone 3W (Zone 2W), it was assumed that the treatment and pumping capacity at the Britannia Water Purification Plant would be upgraded to provide sufficient water to this and other areas through time. As well, a new feedermain to the west along Corkstown Rd. would be constructed and the storage capacity at the Glen Cairn

Reservoir would be doubled through the expansion/twinning of the existing reservoir in the future.

Within Zone 3W, it was assumed that prior to build-out, additional pumping would be installed at the existing Glen Cairn Pumping Station and that a second pumping station located in the area referred to as Kanata North would be constructed. As well, it is expected that the elevated storage tank (EST) in Stittsville would be replaced with a new larger tank within Zone 3W. Two possible locations for the new (9.0ML) tank were considered in this study – the existing location in Stittsville and a location in Kanata North as proposed in earlier studies.

The new KWCP hydraulic model provided an accurate description of the existing network conditions within Zone 3W. However, in order to model future conditions, additional pipes were required in the model. New pipes were added based on the road layout detailed in the Kanata West Concept Plan. It is assumed that in the future, a second “twin” pump station feeding Zone 3W would be located in the north end of Zone 3W (serviced from Corkstown Rd.). Therefore, any additional pipes within the zone, particularly in the area of KWCP, will have to be adequate to assist in supplying the zone in the event of a failure of the existing Glen Cairn Pump Station. The pipe network for the KWCP was created by first placing a new 610mm diameter watermain on Huntmar connecting to both a 610mm diameter watermain on Campeau in the northeast and to a 610mm diameter watermain along Hazeldean in the south. One section of existing pipe near the Corel Centre on Huntmar will likely need to be upgraded (or twinned) from a 305mm diameter pipe to a 610mm diameter pipe. Several new watermains branching off and looping to the 610mm diameter watermain through KWCP were sized with a diameter of 305mm. It is noted that as the KWCP is developed, additional smaller diameter watermains will be constructed as part of the internal KWCP pipe network.

Model Calibration

The operating settings of the Brit 2W and the Glen Cairn pump stations were set to be controlled by the water levels of the various floating storage tanks in the distribution system. By controlling the pumps, the capacity in the storage tanks can fluctuate between 60% and 100% full during extended period simulations. Within Zone 3W, a PRV following the pump station was set to regulate the HGL below 162m. The maximum allowable HGL within Zone 3W is 164m which corresponds to 690kPa (100 psi) at the point of lowest elevation in the system. To calibrate the model, flows through pump stations, HGLs in the system and levels in the tank were compared with existing operational data and design limitations (for future conditions).

Model Results – 2002 Max Day

Zone 3W was initially modeled for 2002 max day conditions without the KWCP. The model was first tested during an extended period simulation (EPS). The results indicate that the existing system is capable of filling and drawing from the elevated tank in Stittsville in a manner that the

water level remains between 60% to 100% full in the tank. This indicates that the elevated storage is effective in balancing the 2002 peak hour demands on the system.

Following the extended period analysis, a steady state fire flow analysis was completed for several key junction locations within Zone 3W. The analysis indicates that during max day, a fire flow greater than 13,000L/min can be provided at most locations within the zone with an acceptable residual pressure (>138kPa or 20 psi). Several junctions located at the end of a small diameter watermain on Carp Road cannot provide a fire flow greater than 2750L/min under max day demand conditions.

Model Results – 2025 (Build-Out) Max Day

The 2025 Max Day conditions were modeled with the KWCP network in place. As previously described, the proposed KWCP pipe network consists of a 610mm diameter pipe along Campeau and Huntmar with several 305mm diameter pipes branching off this 610mm pipe. The results from the EPS indicated that the system is not capable of balancing the storage in the Stittsville tank due to the peak hour demands on the system. Several nodes in the higher elevation region of Stittsville experienced pressures less than 275kPa (40 psi) during max day/peak hour demands. During peak hour demands, the resulting HGL was approximately 146m. The target minimum HGL for this area is 156m.

Alternative pipe network configurations were evaluated to determine the optimum network configuration for future conditions. Firstly, it was determined that a larger pipe or a secondary “main line” through the area does not dramatically change the resulting HGL in the high elevation region of Stittsville. As well, it was also concluded that it would be preferential to avoid constructing two new watermain crossings under the Highway within the study area. The modeling indicates that the existing Glen Cairn Pump Station (GCPS) would remain as the primary pumping source into Zone 3W with the new Kanata North Pump Station (KNPS) as a secondary backup. The reason for this is that even with a second pump station in the north, the GCPS directly feeds the region to the south of the GCPS along Eagleson, the region to the west along Hazeldean and areas to the north of the GCPS. Therefore a higher demand will be exerted on the GCPS.

The existing Glen Cairn Pump Station supplies water to the western region of Zone 3W through a single pipe along Hazeldean Road (1067mm reducing to a 914mm reducing to a 610mm diameter). Relining, replacing or twinning this supply line can strengthen this watermain and improve its performance in order to meet the minimum target HGLs in the elevated areas of 3W in the Stittsville area.

An increase in the Hazen Williams “C” value of the existing Hazeldean watermain was analyzed to determine its effect on the system. This may be accomplished through a reline of the existing watermain. The results indicate that an increase in the “C” value alone is not sufficient in increasing the HGLs to the high elevation regions under the build-out scenario.

The optimum pipe diameters were determined for the lengths of pipe between the GCPS and the Stittsville EST. This was accomplished by performing a series of model runs with varying pipe diameters that were greater than the existing pipes along Hazeldean. The following table details the recommended upgrades to achieve the target HGL of 156m in the high elevation regions.

Proposed Pipe Sizing on Hazeldean						
Street	From	To	Length	Existing Diameter	Twinned Pipe Diameter	Single Pipe Diameter
GCPS Drive	GCPS	Hazeldean	390m	1067mm	914mm	1220mm
Hazeldean	GCPS Drive	Castlefrank	470m	914mm	762mm	1067mm
Hazeldean	Castlefrank	Iber	2,280m	610mm	762mm	914mm
Hazeldean	Iber	Stittsville Tank	2,640m	610mm	N/A	610mm *

Table 4-22

*The existing 610mm diameter watermain on Hazeldean between Iber and the Stittsville EST (along with the proposed pipe upgrades between the GCPS and Iber) is sufficient to meet minimum pressure requirements in Stittsville.

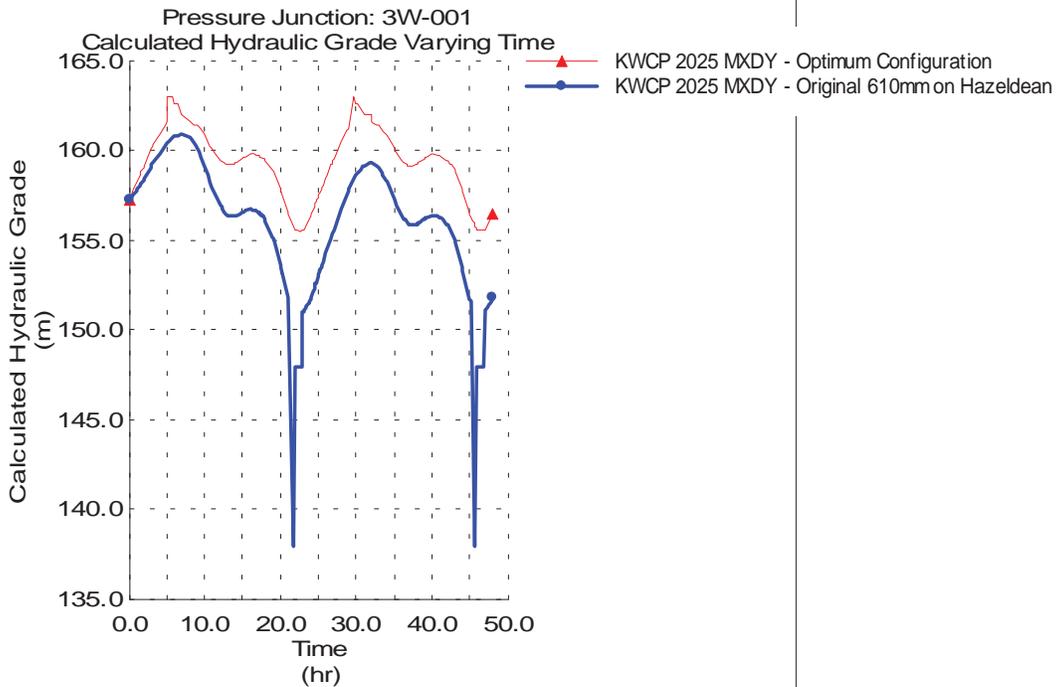


Figure 4-47

The preceding shows the resulting HGL at a node adjacent to the Stittsville EST during a 48-hour EPS simulation (HGL at node located adjacent to Stittsville EST with existing 610mm diameter watermain on Hazeldean and same test following Hazeldean Road upgrades).

Similar to the 2002 fire flow simulations, a steady-state fire flow analysis was completed for Zone 3W under 2025 max day fire flows. The fire flows were analyzed with the KWCP pipe network in place. As well, the model was tested with the existing 610mm on Hazeldean and with the proposed pipe diameter upgrades along Hazeldean. The results indicate that fire flow is not as critical a factor as peak hour flows. In fact, both network configurations, one with the old 610mm on Hazeldean and one with the upsized pipes were both capable of providing 13,000L/min fire flows at greater than acceptable residual pressures (i.e. >138kPa or 20 psi) to all areas of the zone.

Replacement of the existing watermains from the Glen Cairn PS and along Hazeldean may not be physically possible and may not be feasible because of their impact on the supply to Zone 3W. Therefore, it will likely be more feasible (and possibly more cost-effective) to twin the existing Hazeldean pipes rather than replace them. Alternatives for pipe twinning have been determined which provide similar hydraulic capacity to the proposed future pipes presented above (for this exercise, the “C” factor for the existing pipes was assumed to be 100, and all new pipes were set at 120 to simulate future conditions).

Other Recommended Upgrades

A section of the existing pipe network in Kanata North will have to be upgraded from a 406mm diameter watermain to a 610mm diameter watermain to provide a continuous large diameter watermain loop between the proposed Kanata North Pump Station and the elevated water storage tank in Stittsville. This is presented as an “internal” watermain within the KWCP.

4.4.1(3) Preferred Water Servicing Scheme

The existing water distribution system is capable of meeting Zone 3W 2002 max day/peak hour demands as well as max day plus fire flow. It is recommended that the KWCP be designed with a primary 610mm watermain running north-south along Huntmar connecting Kanata North to Hazeldean (Stittsville and Kanata South). Other major pipes in the KWCP should be sized to 305mm to ensure adequate fire flows, particularly in the area of high-density businesses and residential neighbourhoods.

A second pump station feeding Zone 3W (on Campeau Drive) and increased pumping capacity at the existing pump station are required to meet future demands. As well, it is anticipated that the Stittsville EST will likely have to be decommissioned in the future as it reaches the end of its useful life. A larger EST (9.0ML) is recommended to replace the 4.5ML tank in Stittsville.

In order to meet future peak hour demands, the bottleneck created by the 610mm diameter watermain on Hazeldean will have to be alleviated by either replacing portions of the watermain with larger pipes or twinning existing mains.

Note: AutoCAD drawing W4-O2-O4-O1 presents the recommended infrastructure that will be required by Build-Out (2025). This drawing is available on the CD version of this report. If you do not have AutoCAD capabilities, a hard copy of the drawing can be viewed at the Corporate Resource Centre - City Hall, 110 Laurier Ave., 2nd Floor.

4.4.1(4) Estimated Costs and Cost Allocations

Estimated costs for the internal piping requirements (watermains within the KWCP) are presented following (timing and location for this infrastructure is based on growth within the KWCP):

KWCP Internal Watermain Requirements					
New Pipe Diameter	New Pipe Length	Location	Estimated Unit Cost*	Total Estimated Cost	Benefiting Areas
152mm	TBD	Local Roads & Streets	\$ 265 /m	TBD	New KWCP
203mm	TBD	Local Roads & Streets	\$ 355 /m	TBD	New KWCP
305mm	7,900m	Major Roads (see Figure W-4)	\$ 530 /m	\$ 4.190 M	New KWCP
610mm	4,175m	Major Loop through KWCP (see Figure W-4)	\$1,056 /m	\$ 4.450 M	New KWCP & New Stittsville
610mm	TBD	Highway 417 Crossing		\$ 1.000 M	New KWCP & New Stittsville

Note: Estimated unit costs include allowances for contingency, engineering, etc.

Table 4-23

Estimated costs for upgrading the watermain from the Glen Cairn PS along Hazeldean to Stittsville have been calculated separated for the replacement and twinning options as follows (this clearly shows the twinning option is preferable to full replacement of the existing pipes):

Glen Cairn Discharge and Hazeldean Road Watermain Requirements					
New Pipe Diameter	New Pipe Length	Location	Estimated Unit Cost	Total Estimated Cost	Benefiting Areas
<i>Replacement Option</i>					
914mm	2,280m	Hazeldean	\$1,650 /m	\$ 3.760 M	New Stittsville west of Iber
1067mm	470m	Hazeldean	\$1,880 /m	\$ 0.885 M	New 3W
1220mm	390m	GCPS to Hazeldean	\$2,035 /m	\$ 0.795 M	New 3W
Total	3,140m			\$ 5.440 M	
<i>Twinning Option (Preferred)</i>					
762mm	2,280m	Hazeldean	\$1,375 /m	\$ 3.135 M	New Stittsville west of Iber
914mm	470m	Hazeldean	\$1,650 /m	\$ 0.775 M	New 3W
1067mm	390m	GCPS to Hazeldean	\$1,880 /m	\$ 0.735 M	New 3W
Total	3,140m			\$ 4.645 M	

Note: Estimated unit costs include allowances for contingency, engineering, etc.

Table 4-24

Estimated costs for the external infrastructure requirements (generally infrastructure which services all of Zone 3W and other areas as indicated) are presented following (includes infrastructure identified in the “Barrhaven, 2W and 3W Pressure Zones Infrastructure Assessment – Predesign Study – DRAFT”):

Infrastructure Needs to Service Zone 3W and Other Areas (External)		
<i>Infrastructure (external)</i>	<i>Total Estimated Cost</i>	<i>Benefiting Areas</i>
Expand Glen Cairn PS capacity by 30ML/d including diesel backup	\$ 0.95 M	New 3W
Construct new 75ML/d Pump Station to Zone 3W	\$ 2.36 M	New 3W
Construct 1,075m of new 610mm watermain to new Zone 3W PS	\$ 1.28 M	New 3W
Add 110ML/d treatment capacity to Lemieux Island WPP	\$ 16.22 M	New 1W+
Construct 1,400m of new 762mm watermain from Britannia 2W to Zone 1W	\$ 2.06 M	New 1W+2W+
Construct 9,000m of new 762mm watermain to WUC from Britannia WPP	\$ 13.47 M	New 3W+2Ww (existing 3W+2Ww)
Expand Glen Cairn Reservoir by 34ML	\$ 11.07 M	New 2W+
Expand Glen Cairn or new 3W PS by 50ML/d including diesel backup	\$ 1.10 M	New 3W
Add 100ML/d treatment capacity to Lemieux Island WPP	\$ 29.14 M	New 1W+2W+
Construct new 9.0ML elevated water tank in Zone 3W	\$ 6.35 M	Exist and New 3W

Table 4-25

Note: Estimated cost includes an allowance for engineering & contingencies

4.4.1(5) Staging and Phasing

The construction of the Kanata West Concept Plan will likely proceed in stages as development pressures increase in both the residential and commercial sectors. It is currently anticipated that the first residential development will likely occur in the southern portion of the KWCP, north of Hazeldean and west of Terry Fox Drive. The existing commercial development in and around the Corel Centre lands (primarily to the east) is expected to grow in the short term as well. It is also anticipated that new commercial development will occur early on in the northeast portion of the KWCP, north of Highway 417 and west of Terry Fox Drive.

The timing requirements for the external servicing needs were identified in the “Barrhaven, 2W and 3W Pressure Zones Infrastructure Assessment – Predesign Study – DRAFT”. Although the “trigger” for construction is determined from an assessment of the flow demands (generally maximum day demands) in different areas, the approximate year and population levels associated with these were also provided. The internal servicing needs, which are comprised solely of water transmission and distribu-

tion system water mains, are generally to be constructed as development proceeds in different areas in the KWCP.

The following table provides a list of each infrastructure element identified in this report (internal and external) as well as the timing need for the item. The cost allocated to the KWCP and others is also identified in the table.

Kanata West Concept Plan Fotenn Consultants Inc. DRAFT Recommendations - Water Supply											
Infrastructure Needed	Required ("trigger")		Timing		Estimated Costs		MxDy (New KWBP)	MxDy (Exist 3W)	MxDy (New KWBP & Sittesville)	MxDy (New 3W)	MxDy (New & Exist 2Ww)
	MxDy	Zone	Year	3W Population	Total						
EXTERNAL SERVICING - DIRECT BENEFIT TO KWCP											
30 ML/d Glen Cairn PS Expansion (with backup power)	48ML/d	3W	immediate		\$0.95		22			90	
75 ML/d New Twinned PS to Zone 3W	61ML/d	3W	2002		\$2.36		22			90	
Watermain - Supply/Discharge New 3W PS (1,075m @ 610mm)	61ML/d +	3W	2002 +		\$1.28		22			90	
Watermain - Britannia to Kanata (10,375m @ 760mm) (**)	92ML/d	3W+2Ww	2006		\$15.53		22	61		90	21
50 ML/d 3W Pumping Expansion with Diesel	98ML/d	3W	2011		\$1.10		22			90	
9.0 ML Storage in Zone 3W	112ML/d	3W	2017		\$6.35		22	61		90	
MAJOR INTERNAL SERVICING - DIRECT BENEFIT TO KWCP											
1067mm W/M - Glen Cairn PS Discharge (390m)			immediate		\$0.74		22			90	
914mm W/M - Hazeldean to Huntmar (470m)			immediate		\$0.78		22			90	
762mm W/M - Hazeldean to Iber (2,280m)			-		\$3.14		22		78		
610mm W/M - Campeau from First Line to Huntmar (1,710m)			-		\$1.82		22		78		
610mm W/M - Huntmar from Campeau to Palladium (650m+Hwy Xing)			-		\$1.69		22		78		
610mm W/M - Huntmar from Palladium to Hazeldean (1,815m)			-		\$1.93		22		78		
305mm W/M - varies			-		\$4.19						
Zone 3W MxDy (1999) = 45ML/d Zone 3W+2Ww MxDy (1999) = 52ML/d (3W+15%) Zone 2W+ MxDy (1999) = 173ML/d (*) Maximize PS expansion (**) Staging of this watermain should be considered *Total Estimated Costs* includes allowance for engineering, contingency, City costs, GST											

Table 4-26

4.4.2 Stormwater Management Plan Conceptual Designs

The drainage systems within the KWCP would follow the Dual Drainage Principle in which storm sewers are sized to convey the flows from frequent storms up to the 5 year return period and the streets are designed with net effective continuous slopes, to convey flows in excess of the 5 year storm flows to suitable outlets which can either be to park areas for temporary detention and control of major system flows or to the receiving streams. In a Dual Drainage system, inlet flow controls devices are required on catch basins to prevent storm critical sewer surcharge during major storms up to the 100 year return period.

4.4.2(1) Storm Sewer

The conceptual layout of the storm sewer system was developed considering the existing topography of the site and the need to collect the storm runoff from the development and convey it to centralized locations. Considering the locations of the existing watercourses a minimum of five storm sewer outlets are required to drain the KWCP lands.

The storm sewers were sized to convey the storm runoff from a 5-Year storm using the Rational Method, accounting for the different land uses. The runoff coefficients associated with the land uses within the Kanata West Concept Plan are:

Land use	Runoff Coefficient
Single Family Residential	0.40
Townhouses and Apartments	0.60
High Profile Employment, Entertainment	0.70
Community Level Retail	0.80
Prestige Business Park	0.50
Major Civic Complex	0.50
Institutional/ Corporate Campus	0.70
Mixed Uses	0.80

The storm sewer sizing calculations including sewer profile indicates filling of the site near the outlets is required to ensure that there is a sufficient depth of cover over the sewers for frost protection. The outlet sewers, top of pipe elevation in the preliminary design are either below the 100 year water levels on Carp River or no greater than 200 mm below the 100 year water level.

4.4.2(2) Major System

For control of flows from the proposed development during storms events less frequent than the 5 year storm such as the 100 year storm, onsite storage is recommended for the commercial / industrial areas. For the residential areas flow can be routed along the streets and conveyed to the storm drainage outlet(s). All streets are to be designed with a net continuous slope with low points provided to convey overland flows during

Note: AutoCAD drawing 60400132 SWM-1 shows sewershed areas tributary to each storm outlet. This drawing is available on the CD version of this report. If you do have AutoCAD capabilities, a hard copy of the drawing can be viewed at the Corporate Resource Centre - City Hall, 110 Laurier Ave., 2nd Floor.

major storms to park storage areas and / or to the receiving streams. It is noted that while all the minor system flow from the KWCP development will outlet to the Carp River, Poole Creek and Feedmill Creek will serve as outlets for the major system.

4.4.2(3) Stormwater Management Ponds

The SWM plan proposed for the KWCP area includes a stormwater management pond at each storm sewer outlet. The total area tributary to each stormwater management pond and corresponding sewershed imperviousness ratio are summarized in Table 4-27. The stormwater management ponds are required to provide storage for protection of Type 2 fish habitat as well as for erosion control. The storage volume requirements for protection of Type 2 fish habitat as given in the Storm Water Management Practices Planning and Design Manual (SWMP) are also provided in Table 4-27. For wet pond designs, the manual recommends that all of the storage volume except 40 m³/ha be used for the permanent pool volume. The 40 m³/ha storage volume would represent the active storage volume which is to be released over a 24-hour duration.

The active storage volume is required for both erosion and quality control. The required volume for erosion control was assessed using the SWMHYMO hydrologic computer model and a 25 mm storm with a Chicago design storm distribution. The storage volumes at each pond required to detain the runoff from the 25 mm storm for a 24-hour duration are also summarized in Table 4-27. The erosion control storage volume being greater than the active water quality control volume would govern and is used for the sizing of the pond.

The design guidelines for the pond dealing with the permanent pool depth, and length to width ratio, as given in the SWMPPD manual were used in the sizing of the pond.

Table 1: SWM Pond Tributary Area Characteristics and Storage Volume Requirements

Pond ID	Tributary Area (ha)	Imp. (%)	Water Quality Volume (m ³ /ha)	Permanent Pool Volume (m ³)	Active Volume Erosion	Pond Average Release Rate(m ³ /s)
1	147.3	55	110	10310	22700	0.140
2	17.3	68	130	1560	3200	0.020
3	24.6	60	120	1970	4000	0.035
4	276.0	53	110	19320	38000	0.042
5	79.4	44	100	4675	10500	0.050

Note: The pond locations and area requirements are as shown on Drawing SWM 1. Preliminary cross sections of the ponds are provided in Appendices.

Table 4-27

Operation and Maintenance for SWM Facilities

Operation and maintenance manuals for the SWM facilities are to be completed following the detailed design and construction of the facilities. The manual will address frequency of inspections, provide guidelines for sediment removal intervals in accordance with the SWMPD manual. The manual will also address monitoring requirements as required for the facility to be developed in consultation with the Ministry of Environment and the City of Ottawa.

Conclusions and Recommendations

The stormwater management control is required for the Kanata West Concept Plan to protect the resources of the receiving streams as well as to avoid local flooding problems within the development. The stormwater management pond will provide water quality and erosion control. The water quality control volume provided will satisfy Type 2 fish habitat protection requirements.

In addition to the stormwater management pond it is recommended that the lot level control BMPs outlined, Volume 2 - Appendix A, also be implemented to assist in the performance of the ponds, mitigate potential base flow impacts and to also avoid local flooding problems within the development.

This study addresses the stormwater management requirements for the Kanata West Concept Plan. A detailed servicing study will be required to confirm the storm sewer sizes and grades as well as fill requirements for the site. Detailed surveys at the pond locations are also required to confirm operating levels of the ponds considered in the conceptual design. A geotechnical analysis at the pond locations is also required to provide design inform information related to the allowable pond side slopes and outlet structure foundation requirements.

Estimated Costs

	<i>Cost</i>
	<i>(\$m)</i>
Storm Ponds	5.6
Infiltration System	0.9
Storm Sewers	17.0
Sub-Total	23.5

4.4.3 Sanitary Servicing Analysis

Analysis used the preferred concept plan, which was based on land use, to generate jobs, population and land design data. This data, using the design criteria, was put through the spread sheet model in order to generate flows. The flows were used to determine the infrastructure needed to convey the predicted flows.

4.4.3(1) Modeling

Design criteria were used to calculate the anticipated sanitary flows resulting from the development of land in the preferred concept plan, which is discussed in later sections of this report. Based on the anticipated flows, the existing system, and existing site features, the recommended servicing strategy was developed for the KWCP, with strategies for interim servicing to allow development to commence, and ultimate servicing for full development completion.

4.4.3(2) Design Criteria for Kanata West Concept Plan

The KWCP development includes land areas for residential, commercial, institutional, and retail space. The following table shows the standard City of Ottawa design criteria, as well as the proposed design criteria that will be used for KWCP.

Land Use	Standard City of Ottawa Design Criteria	Proposed Kanata West Concept Plan Design Criteria
Residential	350 L/c/d Peak Factor: modified Harmon equation, 2.0 = peak factor = 4.0 2.3 to 4.0 people per unit dependent on unit type (apartment, house, etc.)	350 L/c/d Peak Factor: modified Harmon equation, 2.0 = peak factor = 4.0 3.0 people per unit (average)
Commercial/ Institutional	50,000 L/ha/d Peak Factor: 1.5 constant	240 L/employee/d Peak Factor: 1.5 Apply non-simultaneous peak factors
Retail	50,000 L/ha/d Peak Factor: 1.5 constant	14,400 L/ha/d (based on 240 L/employee/d using an average of 60 employees/ha) Peak Factor: 1.5 Apply non-simultaneous peak factors
Infiltration Allowance	0.28 L/s/ha	0.28 L/s/ha

The City has an ongoing flow-monitoring program that, over the last several years, has shown that the current standard design criteria are very conservative and theoretical flows are not being realized. Therefore the City recommends that modified design criteria be used to estimate flows for sizing of infrastructure in the Kanata West Concept Plan development and as shown in the above table.

Table 4-28

4.4.3(3) Preferred Sanitary Servicing Scheme

The preferred servicing scheme was split into two phases for analysis: Interim servicing for the KWCP and Ultimate Servicing for the KWCP.

Interim Servicing for the KWCP

The interim servicing strategy is used to allow development to commence within the KWCP by utilizing existing infrastructure if possible, which would delay large capital expenditures for new major infrastructure.

Signature Ridge Pumping Station (SRPS)

Currently the SRPS pumps have the ability to pump about 140 L/s, half of the firm capacity of the pump station of 280 L/s. To increase the capacity to 280 L/s the pumps will require replacement.

As per documentation provided by the City of Ottawa in previous studies, the ultimate flow allocation for planned development to the SRPS is 263 L/s. This consists of 192 L/s for the commercial area and 71 L/s for the Corel Center. As not all area is built-up and the allocation has been calculated on flow design criteria, flows observed are well below theoretical. Flow monitoring of the Corel Center in recent years has shown a maximum flow (during hockey games) of approximately 30 L/s. This was reconfirmed with a flow monitoring study at two manhole locations from April 15 2002 to May 21, 2002.

Therefore, if the spare capacity can be used for development of the Kanata West Concept Plan it may allow for the deferral of capital expenditures. This also considers the City's approach to "Just in Time" infrastructure. The Kanata West Concept Plan must also realize that this is only borrowing spare capacity by using other developers' flow allocations. The other developers may request their allocation back at any time. It is suggested that this issue be reviewed by those it impacts and determine if this deferral is possible, and if so, some form of agreement would be required.

Current Flows to Signature Ridge

The City of Ottawa provided results of flows to the Signature Ridge Pumping station for various periods (six in total) in 2001. The maximum flow observed in 2001 was 27.2 L/s and 33.7 L/s in 2002. Since the area is continuing to develop, and only six periods of time were monitored for flow, an additional allowance (or safety factor) should be applied to the existing flows to consider unknowns.

Proposed Flow

It is recommended that an existing flow of 70 L/s to the SRPS be considered. This allows for continued growth within the existing area to occur over time. This would leave about 70 L/s for the Kanata West Concept Plan, based on the existing pump station capacity of 140 L/s.

To allow growth to occur in the near future for the KWCP, it is recommended that the current spare capacity in the SRPS be used. A regular

flow monitoring program should be implemented to ensure flows at the pump station are below the allowable, as well as flow monitoring in the sewers upstream of the pump station, namely the First Line sewer south of the Queensway.

Maximize the Signature Ridge Pumping Station (borrow capacity):

- Flows up to 140 L/s. No changes would be required to the current external sewer system. It must be noted that the North Kanata Trunk Sewer project which replaces the lower portion of the Tri-township Collector is required to allow development to proceed in the KWCP. This project is scheduled for construction in spring/summer 2003.
- **Cost is estimated at \$5 Million.** Only a portion of this would be allocated to the KWCP. The actual amount would most likely be negotiated between the various parties.

Considering an existing flow in the SRPS of 70 L/s, there would be 70 L/s available to the Kanata West Concept Plan. The following table shows two scenarios for development within KWCP that would account for approximately 70 L/s, using the proposed design criteria for KWCP based on residential and commercial flow, plus the infiltration allowance.

Scenario	Land Use	Area (ha)	Residential Units	Jobs	Total Area (ha)	Peak Flow (l/s)
1	Commercial	115	0	8625	115	68.1
2	Residential	42	1400	0	42	68.2

Table 4-29

Note: The land area for residential units was calculated based on 0.03 ha per unit, which is consistent with development values provided, and the average number of employees used is 75 jobs/hectare of commercial land.

There are various permutations combining both residential and commercial development that will also reach 70 L/s, which can be calculated using the proposed KWCP design criteria, but depends on how the phasing of development will occur in the KWCP.

- **Flows from 140 L/s to 280 L/s (borrow capacity).** Required infrastructure would consist of:
 - Up size pumps at SRPS,
 - Install diversion chamber at Castlefrank and Campeau,
 - Install 680 m of 750 mm diameter sewer on Castlefrank,
 - Replace 620 m of sewer on Penfield Drive and Teron Road.

- **Cost for the above is estimated at \$2.2 million**, and consists of the following:
 - Pumps at SRPS \$300,000
 - Diversion chamber \$80,000
 - Castlefrank sewer \$930,000
 - Penfield Road sewer \$890,000

There are two development scenarios considered in this case, based on approximately 140 L/s and 100 L/s spare capacity available to the Kanata West Concept Plan. Again, there are permutations combining both residential and commercial development that are possible. The following table illustrates the amount of developable land based on the above.

Scenario	Land Use	Area (ha)	Residential Units	Jobs	Total Area (ha)	Peak Flow (L/s)
3	Commercial	235	0	17625	235	139.2
4	Residential	93	3100	0	93	138.5
5	Commercial	165	0	12375	165	97.8
6	Residential	63	2100	0	63	98.0

Table 4-30

- **Flows above 280 L/s at SRPS.** It must be noted that when total flows (including KWCP and existing development) exceed 280 l/s, the ultimate servicing strategy should be in place to allow development to continue.

Ultimate Servicing for the KWCP

There are two major geographical areas to be considered in the discussion of ultimate sanitary sewer servicing for the KWCP development: the area north of the Queensway, due to its proximity to the Signature Ridge Pumping Station (SRPS), and the area south of the Queensway. The Queensway is one of the major obstacles in servicing the overall area within the KWCP.

North of the Queensway:

Based on the development areas proposed, and the KWCP design criteria, the peak flow to SRPS would be 106 L/s. Due to the proximity of this area to the SRPS, it is recommended to service this area to the existing pump station. There are agreements and logistics to be worked out, as described above, regarding previously allocated flow to the SRPS.

In order to compensate for the additional flow of 106 L/s, the existing First Line sewer (south of the Queensway) would ultimately be disconnected from the SRPS, and connected to the new KWCP pump station.

The major infrastructure required in this case would be the sanitary sewer pipes along the major roadways. The sanitary sewer would flow from west to east, along Campeau Drive to connect into the 450mm diameter First Line Sewer at the corner of First Line and Campeau, just upstream

of the pump station. Based on preliminary calculations, it is not likely that a siphon would be required under the Carp River.

The approximate length of sanitary sewer to service the 181 hectares of development north of the Queensway, is 1360m of 375mm diameter pipe and 1450m of 450mm diameter pipe.

South of the Queensway:

The development area south of the Queensway consists of 351 hectares of land and is best serviced by a new KWCP pump station, which will discharge to the Glen Cairn Collector.

In addition to the KWCP pump station, a small pump station is recommended based on the southeast corner, that has existing elevations that are relatively low, which would result in sanitary sewer inverts at the north end (based on drainage from south to north) that would be in excess of 6 m deep if drained by gravity. Due to the low ground elevations of these blocks, a gravity sewer connection to the First Line sewer is not feasible. Therefore a small pumping station will service this area, and connect to either the First Line sewer or sewers within KWCP, and ultimately the KWCP pump station.

Based on preliminary calculations, the rest of the development can be drained by gravity to the new KWCP pump station, with sanitary sewer inverts that are not overly deep (i.e. less than 6 m deep). The placement of the pump stations and the routing of the sanitary sewer would dictate whether a siphon(s) would be required under the Carp River.

Based on the development areas and design criteria, the peak flow to the small pump station would be 77 L/s, and to the KWCP pump station would be 308 L/s (does not include flow from First Line outside of the KWCP area). The First Line sewer consists of two sections: a 375mm diameter with a capacity of 85 to 110 L/s, and a 450mm diameter with a capacity of 100 to 175 L/s (the 450mm diameter sewer commences just south of the Queensway, at the corner of First Line and Frank Nighbor Way). These values are the capacity of the pipe, as opposed to design flows, and therefore would be the absolute highest flow that would reach the KWCP pump station. It is estimated that the actual total flow to the KWCP pump station would be approximately 400 L/s.

The approximate length of sanitary sewer to service the development south of the Queensway, is 7780m of pipe ranging in size from 250mm diameter up to 675mm diameter.

New Pump Stations:

Small Pump Station

The optimal location for the small pump station would be on the south side of Maple Grove Road, either west or east of the Carp River. The station could be as far east as First Line Road, and connect to the First Line gravity sewer. If the pump station is west, towards the proposed

Note: AutoCAD drawing sanitary sewer shows the proposed system for the Kanata West area. This drawing is available on the CD version of this report. If you do not have AutoCAD capabilities, a hard copy of the drawing can be viewed at the Corporate Resource Centre - City Hall, 110 Laurier Ave., 2nd Floor.

transit corridor, it could discharge to the internal KWCP gravity sewer network.

The existing area is currently undeveloped. The land ownership and availability for a pump station in this area would have to be determined.

KWCP Pump Station

The land area required for the station is approximately 1000 to 1500 m², dependant on the site configuration and access. There are three locations that could be considered for the KWCP pump station: (1) Palladium Drive (east or west of the Carp River); (2) at the Queensway on the east or west side of the Carp River; or (3) at the Queensway and First Line Road. For all pumping station locations, the land ownership would have to be determined and costs considered to purchase the land, if applicable.

(1) West side of Carp River at Palladium Drive: The north side is fully developed, the south side is currently undeveloped.

East side of Carp River at Palladium Drive: The south side is currently undeveloped. The north side is the Nortel Palladium building, however there is an undeveloped area immediately adjacent to the River that could accommodate the new pump station.

(2) Queensway east of Carp River: There is a large parcel of land, behind the Home Depot store, that is currently undeveloped.

Queensway west of Carp River: This area is fully developed, consisting of Corel Centre parking areas. This location could be considered if it is possible to purchase adequate lands, although it would require construction and reinstatement in a built-up area.

(3) First Line at the Queensway: The existing configuration at the end of this road is a turnaround, bordered by the Home Depot parking lot to the west and undeveloped land to the east. Installing the pump station on the west would require moving the turnaround south and purchasing land (approximately 500 to 1000m²) from the Home Depot owners. On the east side there is a triangle of land approximately 1000m² (ownership unknown) between the MTO right-of-way and a water main easement - followed by private land (ownership also unknown) with development feasibility being considered at this time.

4.4.3(4) Costs

The cost estimates provided in this document are to be used at a budget level only, and were prepared without geotechnical investigation. To provide more accurate costs, a full geotechnical investigation is recommended to determine soils characteristics, rock and water levels, and other geotechnical aspects that may affect construction.

Estimated Costs

Main sewers north of Queensway

The cost estimates are as follows (does not include rock excavation):

Length (m)	Diameter (mm)	Unit Cost (\$/m)	Cost
340	375	450	\$240,000
1450	450	500	\$1,140,000
Total			\$1,380,000

Table 4-31

Main sewers south of Queensway

The cost estimates are as follows (does not include rock excavation):

Length (m)	Diameter (mm)	Unit Cost (\$/m)	Cost
Small Pump Station			
500	250	350	\$175,000
250	300	400	\$100,000
200	375	450	\$90,000
Sub-Total			\$365,000
South of Queensway			
2070	250	350	\$724,500
1550	300	400	\$620,000
550	375	450	\$247,500
660	525	650	\$429,000
1400	600	800	\$1,120,000
600	675	850	\$510,000
Sub-Total			\$3,651,000
<i>Total</i>			\$4,016,000

Table 4-32

Small Pumping Station

For the small pump station, with an ultimate capacity of 80 L/s, cost is considered similar in the locations identified. Cost is estimated at \$700,000. Costs for forcemain connections will depend on the connection location, as follows:

- a. Forcemain connection to First Line sewer would be considered temporary due to the capacity of sewer, alternately the sewer could be upsized for permanent connection. **Cost varies between \$250,000 and \$450,000**, and depends on the pumping station location. Considered only one forcemain as a temporary solution.
- b. Forcemain connection to 250 mm sewer crossing Terry Fox north of Katimavik Road. This is a temporary solution as only 20 to 30 L/s spare capacity is available. **Cost varies between \$750,000 to \$950,000**, and depends on the pumping station location. Considered only one forcemain as a temporary solution.
- c. Forcemain connection back into gravity sewer which drains to the proposed KWCP pump station. It must be noted that option this relies on the large pump station and connecting network to be constructed first. **Cost varies between \$350,000 to \$550,000**, and again depends on the pumping station location. Considered two forcemains installed at once for system redundancy.

KWCP Pump Station

The KWCP pump station will have a capacity of approximately 400 L/s, with a **cost estimated at \$2.5 million for the pump station, plus \$4.7 million for the forcemain to the Glen Cairn Collector**. Based on the pump station location, there are additional forcemain costs and gravity sewer to connect from First Line sewer. Note; required land costs have not been included in the cost estimates at this time.

- a. Pump station at Palladium Drive. Requires 1290 m of forcemain and 1290 m of gravity sewer from First Line Sewer. **Estimated cost is \$2.4 million.**
- b. Pump station at Carp River adjacent to Queensway. Requires 740 m of forcemain and 740 m of gravity sewer from First Line Sewer. **Estimated cost is \$1.3 million.**
- c. Pump station at First Line. No extra forcemain is required. It must be noted that the gravity sewer along First Line would require up-sizing with approximately 600m of 675mm diameter pipe at a **cost of \$0.5 million**. It is our understanding that existing development charges apply to the First Line Sewer. Therefore, a new agreement must be negotiated between all relevant parties, cost of which is unknown at this time.

Summary

The above costs and options must be finalized once and if an agreement can be reached using the existing system spare capacity.

Cost Allocation

In addition to the costs and proposed sanitary sewer work that have been shown above, there are City-wide external sanitary sewer projects that may include some allocation of costs to the KWCP. The following table outlines the approximate timing and cost, and an estimate of the potential costs that could be allocated to the KWCP.

Infrastructure Needed	Timing	Estimated Costs (Millions)	% Allocated to KWCP	\$ Allocated to KWCP
	Year	Total		
EXTERNAL SERVICING (1) - DIRECT BENEFIT TO KWCP				Total = \$ 1,157,400
Glen Cairn Collector	2001	\$9.59	1%	\$ 95,900
March Road/Tri-Township Collector	2004	\$3.13	5%	\$ 156,500
March Area (North Kanata Sewer)	2002&2007	\$10.60	5%	\$ 530,000
March Ridge Trunk Diversion	2015	\$2.50	15%	\$ 375,000
MAJOR INTERNAL SERVICING - DIRECT BENEFIT TO KWCP				Total = \$ 12,510,000
1350 m of 450 mm pipe north of Queensway		\$1.14	100%	\$ 1,140,000
340 m of 375 mm pipe north of Queensway		\$0.24	100%	\$ 240,000
Small pumping station		\$0.70	100%	\$ 700,000
600 m of forcemain from small pumping station		\$0.40	100%	\$ 400,000
KWCP pumping station		\$2.50	100%	\$ 2,500,000
Forcemain from KWCP to Glen Cairn Collector		\$4.70	100%	\$ 4,700,000
1400 m of 600 mm pipe		\$1.32	100%	\$ 1,320,000
660 m of 525 mm pipe		\$0.68	100%	\$ 680,000
600 m of 675 mm pipe along First Line (upsizing needed due to KWCP)		\$0.83	100%	\$ 830,000
EXTERNAL SERVICING (1) - DIRECT BENEFIT TO KWCP (under existing Development Charge By-law)				
Future Pickard Centre Expansion	2003-2010	\$345.30		
WEPD Facilities Upgrade	2005	\$0.56		
Watts Creek Relief System	2006	\$25.84		
Pickard Centre Upgrades	2003-2015	\$22.61		
Pickard Centre Digester Gas Cogen.	2006	\$4.77		
WEPD Facilities Upgrade	2004-2010	\$10.35		
TOTAL		\$409.43		
<p>(1) Projects and gross cost were extracted from "Region of Ottawa-Carleton Development Charge Background Study, May 99</p> <p>(2) Cost allocation based on peak flows considering upsizing needs</p> <p>(3) Cost allocation based on upsizing needs</p> <p>(4) Cost for manhole tie in to Glen Cairn Trunk only</p> <p>(5) Cost allocation for flows in March Ridge from KWCP</p> <p>(6) Only considering 375 mm dia pipe and larger or 170 L/s</p> <p>If the Signature Ridge Pumping Station excess capacity can be used in the interim, some infrastructure will need to be completed sooner than required. This includes changing of pumps at SRPS, Diversion Chamber, Castlefrank sewer and Penfield Road Sewer. This is anticipated at a cost of \$2.2 million.</p> <p>"Total Estimated Costs" includes allowance for engineering, contingency, City costs, GST</p>				

*Projects and gross cost were extracted from the "Region of Ottawa-Carleton Development Charge Background Study, May 1999"

4.4.3(5) Staging and Phasing

It is anticipated that the interim servicing scheme will help defer the cost of new construction by accommodating new development flows within the existing system. Regular flow monitoring will be essential to predict the needs for new infrastructure as the existing system approaches capacity. After the need to increase capacity is identified it is anticipated that construction will take place in phases.

4.5 Financial Strategy

4.5.1 Background

This section outlines a Financial Strategy for development of the Kanata West Concept Plan (KWCP). The strategy was developed based on past and current policies in effect in the City, experience in other jurisdictions, requirements of applicable legislation, input from the team consultants (particularly the engineering consultants), and City staff. Key background information for the Financial Strategy is set out in the “Financial Analysis: Existing Conditions and Best Practices,” contained in Appendix D of this report.

The major funding instrument used by most municipalities, including the City of Ottawa, to finance major growth-related works is development charges (DC) implemented through by-laws under the *Development Charges Act, 1997*. Due to the recent amalgamation of the City of Ottawa, the DC by-laws and rates implemented by the former Region and area municipalities remain in effect until they are replaced with new City policies (or they expire). This will occur prior to mid-2004. The KWCP Financial Strategy is, therefore, based on current policies for the former Region of Ottawa-Carleton and former City of Kanata⁶. Some adjustments may be required once the new City policies are in place.

The requirement for the development of a Financial Strategy was established, in large part, by the inclusion of a financial policy in ROPA 9, as follows:

“7. The costs of infrastructure required to support development in the Kanata West Business Park and the area between Maple Grove Road and Hazeldean Road (exclusive of infrastructure on Table 6 of the Plan) will be funded primarily by the development through such means as the *Municipal Act* Section 221, a special area development charge levied within the area or by other means exclusive of the property tax. The contributions to these costs by the Palladium Auto Park development shall take into account the nature of the uses permitted on these lands by policy 10.3.3.2 and the contributions already made, or agreed to, for the servicing of these lands. This policy shall not apply to development approved for the Corel Center in policy 3.5.2.10.”

4.5.2 Financial Strategy Objectives

In considering Kanata West development in the broader context, the objectives of the Financial Strategy need to extend beyond meeting the

⁶ Sections of the KWCP are located in the former Townships of Goulbourn and West Carleton which have different DC by-laws and rates in effect. Kanata’s by-law/policies were used, since they represent full urban standards, which is more consistent with the nature of future development of Kanata West.

requirements of the ROPA 9 financial policy (as set out in Section 4.5.1). The objectives should consider:

- the marketability of the development in the context of charges in competing “high tech” municipalities in the Province, for which DCs range from \$30 to \$68 per s.m;
- the role of the development in meeting the new Official Plan growth forecast (which was not a consideration at the time of the ROPA 9 approval);
- the fairness and equity of the treatment of KWCP lands with other (similar) development lands (within the context of the Policy 4.4.7);
- the current legislative opportunities for municipalities to recover growth-related costs.

In addition, the City’s 2002 Capital Budget process identified a funding shortfall of \$345 million in capital financing over the next five years. The KWCP Financial Strategy needs to ensure minimal (if any) impact on other City financing issues.

Finally, the Financial Strategy needs to provide some perspectives on up-front financing requirements (based on the level of phasing information available).

Schedule A below summarizes the Financial Strategy Objectives. In assessing these objectives, it is recognized that there are inherent conflicts, between, for instance, the ROPA 9 Financial Policy and the marketability of the development. The process of developing the Financial Strategy includes determining the appropriate balance among the competing objectives.

Schedule A

Kanata West Concept Plan - Financial Strategy Objectives

1. Consistency with the ROPA 9 Financial Policy (4.4.7)
2. Marketability of the development and assistance in meeting the City’s growth forecast
3. Provision of fair and equitable treatment for KWCP lands with other development lands
4. Implementation under the current legislative framework
5. Recognition of the City’s financial capabilities
6. Commentary on a front-end financing strategy

4.5.3 Approach

4.5.3(1) Analysis of ROPA 9 Financial Policy

In reviewing Policy 4.4.7 in the context of the *Development Charges Act, 1997* (DCA, 1997) and other legislative provisions, as well as current Ottawa-Carleton practice, the prime considerations in developing the approach to the Finance Strategy are as follows:

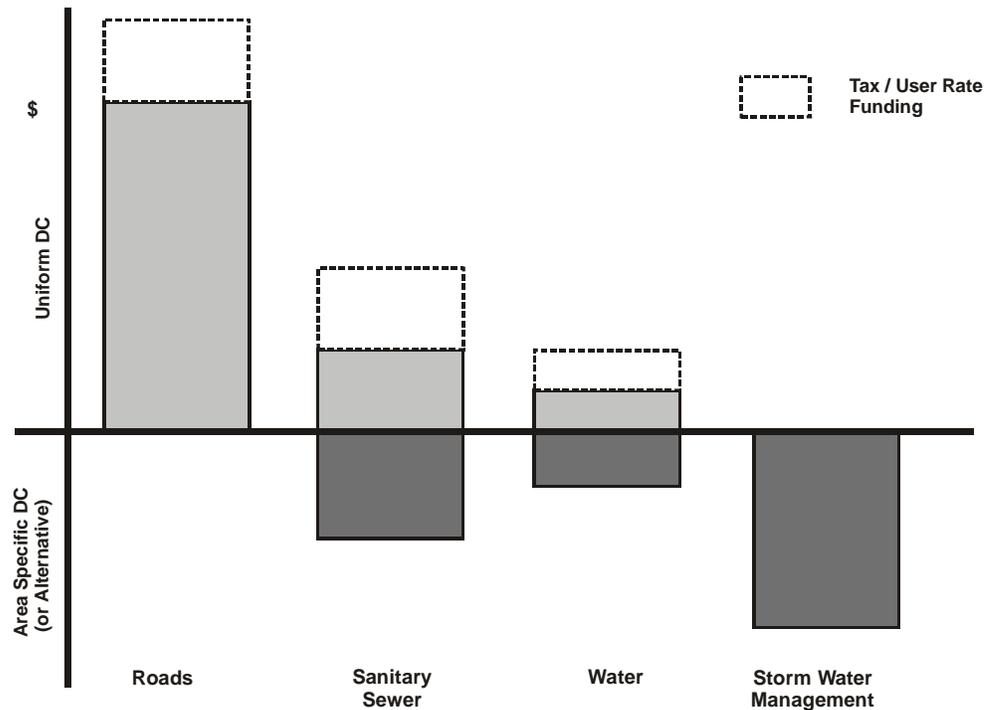
- s.4.4.7 requires the use of an area-specific charge to fund KWCP infrastructure (eg. area-specific development charge, *Municipal Act*, 221);
- s.4.4.7 requires ROPA 9 to contribute to funding its **required** infrastructure, indicating the need to identify an allocation or attribution of each work to ROPA 9 needs (“the costs of infrastructure required to support development...will be funded...by the development...”). This is consistent with the requirement to calculate a development charge (s.5(1) of the DCA, 1997), which requires such attributions to growth within the by-law area;
- s.4.4.7 states that the KWCP is “**primarily**” responsible (i.e. not exclusively) for funding its infrastructure requirements, which indicates the potential for other funding sources;
- The area specific by-law(s) applicable to Kanata West must be fairly and equitably linked to the requirements of any other DC by-laws in effect in the same area. Otherwise, Kanata West development would fund its own requirements as well as (equivalent) works which service other developments (i.e. the potential for double charging);
- s.4.4.7 does not identify the relevant infrastructure to which the policy applies. However, the policy identifies some implementation options including “*Municipal Act*, s.221.” The *Municipal Act*, s.221 applies only to water, sanitary sewer and (potentially) storm water management. The policy, therefore, provides a clear direction that the focus is on “hard services”;
- Further, the current Regional DC by-law provides for a uniform Regional charge for all fully serviced areas outside the Greenbelt and uniform charges for most of the “soft” services throughout the new City. As well, all of the former area municipalities used uniform by-laws for soft services (eg. fire, recreation, parkland development, library) throughout their jurisdictions. This approach to soft service financing is virtually universal throughout municipalities in the Province. This reinforces the interpretation of the ROPA 9 Financial clause as applicable to engineered services only.

4.5.3(2) Definition of Infrastructure

ROPA 9 Policy 4.4.7 states that KWCP must fund required “infrastructure.” As noted above, the reference to the potential use of *Municipal Act*, s.221 for the area specific charge, in conjunction with the wide-spread practice of funding soft services through uniform DCs, provides direction that the infrastructure to be considered under the policy should relate to engineered services only, namely: roads, water, sanitary sewer and storm water management. The Kanata West development will contribute to the growth-related costs for all other services through uniform development charges.

With respect to transitways, the Kanata West will contribute to construction funding requirements through its uniform development charge payments (estimated at more than \$15 million on Schedule J) in addition to providing land for the transit corridor. The transit corridor to the Corel Centre pre-dated ROPA 9, and was already included in the Region’s 1997 Official Plan (unlike the other works considered for the ROPA 9 area-specific DC by-law). Further, the provisions of the *Development Charges Act, 1997* restrict the level of service which may be included in an area-specific DC by-law to the same level as that which would be applicable to the municipal-wide service area. Since the current Regional DC by-law contains a transit DC based on a municipal-wide level of service, this implies that an area-specific DC for Kanata West could not generate revenue additional to that under the uniform by-law.

Schedule B
Schematic Illustration of Current Funding Basis
for Growth-Related Engineered Services Infrastructure



7 In the case of the former Region, these charges apply only to the “Outside the Greenbelt” area. In the former Kanata, the roads charge is City-wide.

4.5.3(3) Current Funding Policy for Engineered Servicing Infrastructure

Schedule B above outlines schematically, the current funding basis for growth-related engineered services infrastructure under Region/Kanata policy. Major roads, sanitary sewer and water works are all funded through uniform development charges⁷. The dashed box illustrates that, under the provisions of the *Development Charges Act, 1997*, some funding must be provided through taxes or water/sewer rates, to recognize

benefit to existing development of the works. For instance, the tax contribution to major arterial growth roads represented 20% of total costs.

As well, for internal sanitary sewers, water and storm water management, area-specific charges (or private cost sharing arrangements) are levied to cost share oversized works among benefiting owners. Storm water management is exclusively funded on an area-specific basis. For these services, Kanata West will utilize area specific DC by-law(s), or alternative means, similar to all other developments in the new City.

4.5.3(4) Approach to Meeting ROPA 9 Financial Requirement

Schedule C illustrates the proposed approach to meeting the ROPA 9 Financial Policy Requirement. Development of the Kanata West lands represents an addition to the new City's urban development area as defined in the current planning and financing documents (i.e. the approved 1997 (current) Official Plan, the 1999 Development Charge Background Studies and by-laws and the 2002 Capital Budget and Forecast). The projects required to service the City's 20 year growth and their associated funding plan have already been established. These works/DC revenues are illustrated by Circle 1 in Schedule C.

Kanata West represents a separate and distinct development area which is additional to the current OP designated urban area (and the current DC works/revenue pool). However, this area will be subject to the uniform DC by-laws and generate additional revenue under that by-law (Circle 3). This revenue is over and above that included in the funding plan for the existing DC work program. Therefore, the additional uniform DC revenue generated by Kanata West, for the relevant services should be available to, in part, offset the costs of the additional infrastructure required.

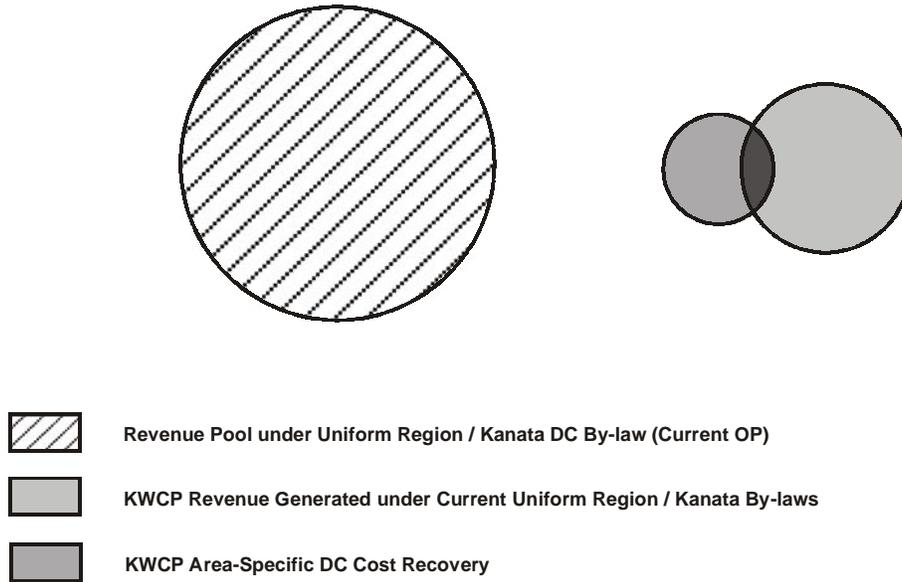
More specifically, the uniform Kanata/Region development charge was established to fund a full range of municipal services, including engineered services. ROPA 9 policy 4.7.7 requires the use of some form of area specific development charge to fund the same type of infrastructure (Circle 2). Given the overlap between the hard service component of the uniform DC and the same services included in the area specific charge, the area would be double-charged, without some off-setting or crediting. This is illustrated on Schedule C by the dark overlapping area of Circles 2 and 3.

The Kanata West Concept Plan Financial Strategy is based on the following principles:

1. KWCP will pay uniform Region/Kanata DC rates (or whatever uniform DC rates are in force).
2. KWCP will fully fund its cost attribution related to "triggered" hard service works, through a combination of uniform DC payments and a special area specific charge.

3. KWCP tax revenue will fully fund the benefit attributed to existing development of the works.

Schedule C
Schematic Illustration of Approach to Meeting ROPA 9 Financial Requirement



4.5.4 Major Infrastructure Requirements

The required additional major infrastructure (and estimated costing) for the development of the Kanata West Concept Plan has been identified by Stantec (water, sanitary sewer and storm water management) in Section 4.4, and by Delcan (major roads) in Section 4.3. Schedules D, E, and F summarize the projects and the share of the works which are specifically required for Kanata West for each of the four types of works. They are described briefly below:

- Major Roads (Schedule D) – These major road works constitute arterial roads, of a similar size and classification to those included in the former Region of Ottawa-Carleton development charge (DC) by-law and those of the former (urban) area municipal development charge by-laws. All of the works are additional to those in the current DC by-laws in effect in the new City (although a number of the external works represent widening of roads in the current DC work programs).

Two programs (with costing) have been provided – assuming that Highway 417 is built to 6 lanes or to 8 lanes, since a decision has not been taken as yet. The rationale for the differences is set out in Section 4.3.

Kanata West “triggers” the construction of these road works but does not utilize the full capacity generated by their construction. Accordingly, an attribution to KWCP has been developed to reflect utilization, as shown on Schedule D⁸.

The attribution for the 6 lane Highway 417 works represents 78% (\$59.5 million) of the total costs and the 8 lane, 56% (\$28.4 million).

The attribution of the 6 lane Highway 417 works (78%) is generally equivalent to the share of the growth-related road works included in the Region’s 1999 DC study (80%), with the remainder being benefit to existing funded from a non-DC service.

- Major Water Works Additional to Current DC (Schedule E) – A total of \$4.03 million of additional works (beyond those in the current Regional DC) were identified, mainly relating to major internal watermains (of a diameter which would be included in the Regional DC policy). These are shown in Schedule E. Most of the required works are already in the DC program.
- Major Sanitary Sewer Works Additional to Current DC (Schedule E) – Most of the works are already in the Regional DC program. For the remaining four works shown in Schedule E, an attribution to Kanata West has been calculated based on share of capacity. The total allocation to KWCP is \$1,157,000⁹.
- Estimated Internal Sanitary Sewer and Storm Water Management Works (Schedule F) – These works comprise pumping stations, forcemains, storm ponds and larger sanitary and storm sewers which are “oversized” (i.e. serve more than a single ownership within the Kanata West boundaries). Under the current policy in effect in the former Region/Kanata, these would not be included in the uniform development charge calculations but would be cost shared among benefiting owners, either on the basis of area-specific DC by-laws (or an alternative) or through private cost sharing agreements. Land costs for storm water management and potentially other services may also be cost shared through area specific development charges. For purposes of the Financial Strategy, it has been assumed that this practice would continue, and that these works would be fully funded by the KWCP owners (similar to all other developments in the municipality). Therefore, they are not considered in the ROPA 9 Financial Policy area-specific DC.

8 The *Development Charges Act, 1997* does not permit the inclusion of the full cost of “triggered works” in a DC calculation. s.5(1) sets out a calculation process which requires, among other items, a reduction for the share of a work which services growth outside the by-law area, and for any benefit derived by existing development.

9 These works are anticipated to be included in the uniform DC at the next by-law review.

10 All works are additional to the current development charge work program.

Schedule D
Kanata West Concept Plan
Proposed Major Road Projects
Triggered by KWCP Development¹⁰

Category/Link	Description	Estimated Cost (\$M)	
		If 6-lane Highway 417 provided	If 8-lane Highway 417 provided
Internal Road Network			
Campeau Drive	Extension westerly from Terry Fox to Huntmar	\$6.3	\$6.3
	Extension westerly from Huntmar to North-South Arterial	\$1.6	\$1.6
Palladium Drive	Extension westerly from Huntmar to North-South Arterial	\$1.4	\$1.4
Maple Grove Road	Relocation between Huntmar and North-South Arterial	\$2.2	\$2.2
	Widening (2 to 4 lanes) between Huntmar and Terry Fox	\$4.2	\$4.2
Huntmar Road	Upgrading between Richardson and Campeau (extension)	\$3.3	\$3.3
	Widening (2 to 4 lanes) between Campeau (extension) and Maple Grove (includes \$4.5 million structure)	\$7.7	\$7.7
	Extension southerly from Maple Grove to North-South Arterial	\$1.7	\$1.7
	Extension southerly from North-South Arterial to Hazeldean	\$2.0	\$2.0
North-South Arterial	Extension southerly between Palladium (extension) and Huntmar	\$3.9	\$3.9
	Extension southerly between Huntmar and Hazeldean	\$2.3	\$2.3
	Sub-Total	\$36.6	\$36.6
External Road Network			
Campeau Drive	Widening (4 to 6 lanes) between Terry Fox and Castlefrank	\$0.7	
Iber Road	Extension southerly to Fernbank	\$4.1	
Terry Fox Drive	Widening (4 to 6 lanes) between Campeau and Hazeldean	\$4.7	\$4.7
	Widening (4 to 6 lanes) between Hazeldean and Eagleson	\$8.2	
Hazeldean Road	Widening (4 to 6 lanes) between Huntmar and Terry Fox	\$3.5	\$3.5
Eagleson Road	Widening (2 to 4 lanes) between Hope Side and Fallowfield	\$5.5	\$5.5
Fallowfield Road	Widening (2 to 4 lanes) between Eagleson and Hwy 416	\$12.9	
	Sub-Total	\$39.7	\$13.7
	Total	\$76.3	\$50.3

¹All works are additional to the current development charge work program.

Attribution of Road Works to Kanata West	6 Lane 417	8 Lane 417
	\$ m	\$ m
Internal Roads	22.9	20.8
External Roads	35.9	7.0
	58.8 (78%)	27.8 (56%)

Source: Delcan

Schedule E
Kanata West Concept Plan
Attribution of Water and Sanitary Sewer Works Additional
to Regional DC Program

Service Component	Item	Total Gross Cost (\$m)	% Allocated to KWCP	KWCP Attribution (\$m)
<u>Water</u>				
	610mm W/M - Campeau from First Line to Huntmar (1,710m)	1.8	66%	1.2
	610mm W/M - Huntmar from Campeau to Palladium (650m+Hwy Xing)	1.7	66%	1.1
	610mm W/M - Huntmar from Palladium to Hazeldean (1,815m)	1.9	66%	1.3
	762mm W/M - Hazeldean to Iber (2,280m)	3.1	14%	0.4
	<i>Water Total</i>	8.6	47%	4.0
<u>Sanitary Sewer</u>				
	Glen Cairn Collector	9.6	1%	0.1
	March Road/Tri-Township Collector	3.1	5%	0.2
	March Area (North Kanata Sewer)	10.6	5%	0.5
	March Ridge Trunk Diversion	2.5	15%	0.4
	<i>Sanitary Sewer Total</i>	25.8	4%	1.2
	<i>Total</i>	34.4	15%	5.2

Schedule F
Kanata West Concept Plan
Estimated Sanitary Sewer and Storm Water
Management Costs Internal to the Kanata West Concept Plan¹

Service Component	Item	Total Cost (\$m)	% Allocated to KWCP	KWCP Attribution (\$m)
Sanitary Sewers				
	1350 m of 450 mm pipe north of Queensway	1.1	100%	1.1
	340 m of 375 mm pipe north of Queensway	0.2	100%	0.2
	Small pumping station	0.7	100%	0.7
	600 m of forcemain from small pumping station	0.4	100%	0.4
	KWCP pumping station	2.5	100%	2.5
	Forcemain from KWCP to Glen Cairn Collector	4.7	100%	4.7
	1400 m of 600 mm pipe	1.3	100%	1.3
	660 m of 525 mm pipe	0.7	100%	0.7
	600 m of 675 mm pipe along First Line (upsizing needed due to KWCP)	0.8	100%	0.8
	Sub-Total	12.5	100%	12.5
Storm				
	Storm Ponds	5.6	100%	5.6
	Infiltration System	0.9	100%	0.9
	Storm Sewers	17.0	100%	17.0
	Sub-Total	23.5	100%	23.5
	Total	36.0	100%	36.0

¹ Works would be included in one or more area specific development charges (or alternative), similar to all other developments. Land costs are not included in total costs but may form part of the area specific development charge. Table excludes local service works which are a direct development responsibility.

Source: Stantec Consulting Ltd.

4.5.5 Uniform Development Charge Revenue

The KWCP will be subject to uniform development charge (DC) by-laws, similar to all other developments in the new City. The basis for estimating the uniform DC revenue generated by Kanata West is as follows:

- The amount and type of residential and non-residential development, based on the Concept Plan (Schedule G).
- The current (2002) development charge rates for the former Region¹¹ and former City of Kanata (Schedules H and I, respectively), by service.
- The total uniform DC revenue generated by Kanata West under both the Kanata and Regional by-laws by service component (Schedule J).

For the KWCP infrastructure considered in policy 4.7.7, uniform DC revenues will raise the following revenues:

11 An amendment to the Regional by-law was passed on June 26, 2002. It increased the roads service charge by \$677 per single-detached unit (+7%) for units outside the Greenbelt, with corresponding increases for other types of units and \$22.50 per s.m. (+98%) for non-residential development.

	<u>\$m</u>
Roads	\$52.6
Wastewater (Sanitary Sewers)	\$ 2.9
Water	\$ 6.2

Funding to construct growth-related works for other services such as police, fire, libraries, parkland development and recreation will be provided through the uniform DCs, on a similar basis and on the same level of service as other developments in Kanata.

Further, the uniform development charge will generate \$15.3 million for transitways and \$7.8 million for buses, as the contribution towards the provision of transit service, reflecting the system-wide nature of this service. This approach is consistent with all other developments in the City.

In discussions with City Finance staff, an issue was raised concerning the approach of using the total uniform DC revenue for roads as an off-set to Kanata West requirements. In this case, no residual revenue would be available to fund other types of growth-related works which form part of the DC calculation, but are not major growth-related roads (for example, for other components such as collector road oversizing, roadway retrofit, safety improvements, cycling, streetlighting on existing roads)¹². After reviewing the components of both the Kanata and Regional DCs, the following percentages of the total roads DC revenue were considered to be available to fund major growth-related arterial roads (similar to those in Schedule D for Kanata West):

Regional Roads DC Revenue	- 82% of total
Kanata Roads DC Revenue	- 47% of total.

The remainder of the DC revenues would be available to the City for funding other growth-related road costs.

For the sanitary sewer and water DCs, which are included as services only in the Regional DC, projects with a KWCP attribution are those not currently included in the Regional DC (Schedule E). Similar to the road works, it has been assumed that excess capacity available in DC works is available to KWCP as they are part of an existing funding program. Accordingly, 100% of the DC revenue is available to offset Kanata West costs¹³

Schedule K summarizes the uniform DC revenue available for the major roads, sanitary sewers and water works required for the development of the Kanata West Concept Plan (as per policy 4.7.7). This provides for the exclusion of \$19 million of roads DC revenue, making this available for other City growth-related road uses.

12 Consideration was also given to the issue of a KWCP share of growth-related road works in the existing DC program. However, the use of an approach where Kanata West funds its own required infrastructure over and above that required for the existing OP largely eliminates the issue. The 1999 DC By-law established a funding program for the existing DC works.

13 These assumptions were developed through discussions with City staff.

**SCHEDULE G
KANATA WEST CONCEPT PLAN
KEY DEVELOPMENT DATA (DRAFT) FOR
DEVELOPMENT CHARGE REVENUE CALCULATION**

		Estimated Units	
		By Type	
		No.	%
Residential	Single/Semi-Detached	2,242	44
	Townhouses	2,100	41
	Apartments	741	15
		5,083	100
Non-Residential (Retail/Office/Business Park)			
	Gross Floor Area (sq.m) ¹		
	Retail	127,756	14
	Other Employment Space	757,702	86
	Total	885,459	100
Employment		25,000	
Land Area (Ha)	Residential	162.76	32
	Retail	42.21	8
	Prestige Business	178.63	35
	Intensive Employment	78.66	15
	High Profile Hub Employment	16.00	3
	Mixed Use Node Employment	11.85	2
	Mixed Use Residual	20.87	4
	Total	510.98	96
Total (less 15% to exclude local DC exempt uses)		434.33	

¹ Excludes development on Corel Centre lands (as per policy 4.7.7) & Civic uses.

Notes on Land Area:

1. Excludes Corel Centre lands (totalling 40 ha including 6 ha in Block 13).
2. Excludes major roads and environmental areas.

Source: FoTenn Consultants Ltd.

**Schedule H
Region of Ottawa-Carleton**

Uniform Development Charge Rates by Service Component¹ (\$2002)

Services	Residential (\$/unit)					Non-Residential (per sq.m. of GFA)	
	%	Singles/ Semis ²	Row Housing & Multiples ²	Apartments		%	Charge
				Bachelor & 1 Bedroom	2 Bedroom +		
Wastewater	5.9%	540	429	222	350	2.9%	0.66
Water	12.3%	1,124	892	462	727	7.0%	1.61
Roads	36.1%	3,293	2,615	1,356	2,131	55.8%	12.80
Transitways	27.8%	2,531	2,010	1,042	1,638	22.5%	5.15
Bus	14.3%	1,301	1,033	536	842	11.1%	2.54
RDC Study	0.1%	8	7	3	5	0.1%	0.03
Child Care	2.1%	193	153	80	125	0.3%	0.07
Police	1.3%	121	96	50	78	0.3%	0.07
Total	100.0%	\$9,112	\$7,237	\$3,751	\$5,897	100.0%	22.93

¹ Applicable Charge is assumed to be "Area 2 Urban - Outside Greenbelt" (3 Area Charge).

² Over 1,100 sf.

NOTE: Numbers may not add precisely due to rounding.

Source: Bylaw 64 of 1999 and City of Ottawa Finance Department.

**Schedule I
City of Kanata**

Uniform Development Charge Rates¹ by Service Component (\$2002)

Services	Residential (\$/unit)					Non-Residential (per sq.m. of GFA)			
	%	Singles/ Semis ²	Townhouses ²	Apartments		%	Industrial	%	Commercial / Institutional
				Bachelor & 1 Bedroom	2 Bedroom +				
Roads & Related	42.0%	3,260	2,404	1,119	1,759	64.8%	15.14	67.7%	15.74
Administrative	4.1%	318	235	109	172	4.7%	1.10	6.6%	1.53
Library	6.1%	474	349	163	255	0.0%	0.00	2.2%	0.51
Parks & Recreation	36.0%	2,795	2,060	959	1,508	12.3%	2.87	4.4%	1.02
Protective	5.2%	404	298	139	218	8.1%	1.89	8.4%	1.95
Public Works	6.6%	512	378	176	276	10.2%	2.38	10.6%	2.46
Total	100.0%	\$7,763	\$5,723	\$2,664	\$4,188	100.0%	\$23.38	100.0%	\$23.23

¹ All storm water management costs are funded through area-specific charges (DC or Municipal Act, s.221).

² Over 1,000 sf.

NOTE: Numbers may not add precisely due to rounding.

Source: Bylaw 144-99 and City of Ottawa Finance Department.

Schedule J
Kanata West Concept Plan

Uniform Development Charge Revenue by Service Component
(\$2002)

Services	Residential			Non-Residential			RDC Total (Res. + Non-Res.)	Kanata Total (Res. + Non-Res.)	Grand Total
	RDC Bylaw	Kanata Bylaw	Total	RDC Bylaw	Kanata Bylaw	Total			
Roads & Related	14,023,708	13,305,302	27,329,011	11,334,154	13,937,482	25,271,636	25,357,863	27,242,784	52,600,646
Wastewater	2,301,068	0	2,301,068	580,614	0	580,614	2,881,682	0	2,881,682
Water	4,784,514	0	4,784,514	1,423,113	0	1,423,113	6,207,627	0	6,207,627
Sub-Total Infrastructure	21,109,290	13,305,302	34,414,592	13,337,882	13,937,482	27,275,363	34,447,171	27,242,784	61,689,955
Transitway	10,779,707	0	10,779,707	4,561,677	0	4,561,677	15,341,385	0	15,341,385
Buses	5,541,189	0	5,541,189	2,251,402	0	2,251,402	7,792,591	0	7,792,591
RDC Study	34,923	0	34,923	22,331	0	22,331	57,255	0	57,255
Child Care	822,641	0	822,641	64,964	0	64,964	887,605	0	887,605
Police	636,153	0	636,153	62,934	0	62,934	699,087	0	699,087
Administrative	0	1,298,851	1,298,851	0	1,358,750	1,358,750	0	2,657,601	2,657,601
Library	0	1,932,437	1,932,437	0	452,917	452,917	0	2,385,353	2,385,353
Parks & Recreation	0	11,404,545	11,404,545	0	905,833	905,833	0	12,310,378	12,310,378
Protective (fire)	0	1,647,323	1,647,323	0	1,729,318	1,729,318	0	3,376,641	3,376,641
Public Works	0	2,090,833	2,090,833	0	2,182,235	2,182,235	0	4,273,068	4,273,068
Sub-Total	17,814,614	18,373,989	36,188,602	6,963,308	6,629,053	13,592,361	24,777,922	25,003,042	49,780,964
Total	38,923,903	31,679,291	70,603,194	20,301,190	20,566,535	40,867,725	59,225,093	52,245,826	111,470,919

Source: Schedules G, H and I

Schedule K
Kanata West Concept Plan
Uniform Development Charge Revenue Related
to Major Growth-Related Works
(\$000)

Service	Region	Kanata	Total
Roads			
Total	25,358	27,243	52,601
% Related to Growth Projects	82.4	46.8	
Revenue Available to Fund KWCP Road Requirements	20,895	12,750	33,645
Sanitary Sewer			
Total	2,882	-	2,882
% Related to Growth Projects	100.0	-	
Revenue Available to Fund KWCP Sewage Requirements	2,882	-	2,882
Water			
Total	6,208	-	6,208
% Related to Growth Projects	100.0	-	
Revenue Available to Fund KWCP Water Requirements	6,208	-	6,208

Source: Schedule J & Text.

4.5.6 KWCP Area Specific Funding Requirement

Schedule L sets out the calculation of the additional funding requirement over and above the uniform development charge payment to meet the requirements of ROPA policy 4.7.7. The uniform development charge revenue¹⁴ generated by Kanata West for each service (adjusted for the roads service as per Section 4.3) has been deducted from the KWCP attributable costs. The roads requirement is ranged to illustrate the difference between a 6 lane and 8 lane Highway 417. The result is a requirement for a KWCP area specific charge¹⁵ to raise \$25.9 million if Highway 417 is built to 6 lanes. In the case of an 8 lane Highway 417, the uniform DC revenue generated by Kanata West will be sufficient to fund the KWCP attributable costs.

For sanitary sewer and water, there is excess uniform DC revenue available to contribute to other projects than those identified in Schedule E, totalling \$1.7 million and \$2.2 respectively (Schedule L).

14 Note that changes to the uniform DC will affect the calculation of the ROPA 9 area-specific DC requirement under policy 4.4.7.

15 This requirement is in addition to the local area funding requirements for internal water, sanitary sewer and storm water management works set out in Schedule F.

Schedule L
Kanata West Concept Plan
Calculation of Area Specific Development Charge
Requirement re ROPA 9 Policy 4.7.7
(\$000)

Service	Available Growth-Related Uniform DC Revenues	KWCP Attributable Costs	ROPA 9 Area Specific DC Requirement to Fully Fund Attributable Works
Roads	\$ 33,600	\$28,400 - 59,500	0 - 25,900
Sanitary Sewer (Wastewater)	2,900	1,200	-
Water	6,200	4,000	-
TOTAL			0 - 25,900

Sources: Schedules D, E and K

4.5.7 Funding of “Benefit to Existing” and Mandatory 10% DC Deduction

The *Development Charges Act, 1997* requires a deduction from total costs of a growth-related project for any share of the works which benefit existing development. This “benefit to existing” must be funded through taxes and/or water and sewer rates. Where works can be designed in such a way to provide capacity only for growth areas (eg. water, sanitary sewer and storm water management), the benefit to existing is often limited or non-existent. For services such as roads, which comprise a system used by both existing and new residents, a deduction for benefit to existing is a component of virtually all development charge calculations.

The benefit to existing share of growth-related arterial road works in the 1999 calculation of the Region of Ottawa-Carleton DC was included at 20% (i.e. 80% DC funded and 20% tax funded) for all projects. Applying the same principle to KWCP road works would generate a benefit to existing tax funding requirement as follows:

	\$ million	
	6 Lane <u>Highway 417</u>	8 Lane <u>Highway 417</u>
Total Estimated Cost	76.3	50.3
Estimated Benefit to Existing (20%)	15.3	10.1

16 Policy 4.7.7 excludes property taxes as a funding source for KWCP required infrastructure. However, the property tax generated by Kanata West, itself, is additional to the existing (and the current OP urban area) property tax base. Accordingly, it should be considered available to fund the non-DCable portion of the major growth related road works (and other non-DCable costs).

Schedule M calculates an overview property assessment and tax estimate generated by the KWCP¹⁶ at full development. The annual City tax revenues generated an estimated \$49.8 million. Property taxes (and other revenues) are used by the City mainly to fund operating costs and capital repair/replacement. However, a portion of the tax revenues is used to fund major capital works through debentures and pay-as-you-go (PAYG) reserves. The share of revenue (operating) fund expenditures allocated to these two (capital) purposes over the past few years has been approximately 12.5% of total taxes, with debt payments totalling about 5%.

Schedule M shows the calculation of debenture capacity created by applying a similar share (5%) to the KWCP taxes. This annual expenditure would leverage debt in the range of \$36 million, approximately 2.5 times the maximum requirement (\$10-15 million) to fund the benefit to existing component of the KWCP roads program (as set out above).

In addition, the DCA, 1997 requires mandatory deduction of 10% from eligible costs for specific soft service works (eg. parks and recreation, libraries, transitways, buses). KWCP development charge revenues for services which are subject to the 10% deduction total approximately \$46 million (Schedule J). The \$5 million non-DC funding requirement generated by these services could also be accommodated within the \$36 million debt capacity generated by the KWCP tax base, in addition to the \$10-15 million for the major roads noted above.

Even considering these two tax funding requirement, there would be residual KWCP capital funding capacity of \$16 million+, which could be used by the City for other purposes.

Schedule M
Kanata West Concept Plan
Preliminary Calculation of Property Assessment, Taxes &
Debt/PAYG Capacity
(\$000)

Land Use	Units / Sq.M.	Property Assessment	Annual City Taxes (2001 Rates)
<u>Residential</u>			
Single/Semi-Detached	2,242	573,952	7,749
Townhomes	2,100	336,000	4,536
Apartments	741	44,460	600
Sub-Total	5,083	954,412	12,886
<u>Non-Residential</u>			
Intensive Employment	462	796,035	21,280
Prestige Business Park	295	413,489	11,053
Retail	128	171,896	4,595
Sub-Total	885	1,381,421	36,928
Total		2,335,833	49,814

Portion related to PAYG and Debentures:	12.5%
KWCP PAYG / Debt Revenue:	\$6,226,703
Portion related to Debentures Only (40%):	\$2,490,681
Debt Portion will Leverage Annual Expenditures of:	\$36,081,410
Annual PAYG and Leveraged Financing Available:	\$39,817,432

4.5.8 Conclusions

- The Kanata West Concept Plan Financial Strategy must consider a full range of objectives beyond the ROPA 9 Financial Policy (4.4.7), including the marketability of the development, its role in accommodating the City's growth forecast, recognition of the City's financial capabilities, equitable treatment under the DC policy structure, and the appropriate legislative implementation process.
- Policy 4.4.7 requires the KWCP to fund its cost attribution related to hard service works, including major roads, water, sanitary sewer and storm water management.
- The KWCP will contribute to transitway through its uniform development charge payment of \$15 million, similar to all other developments in the City.
- The approach to meeting ROPA 9 Financial Policy (4.4.7) should take into consideration the contribution of the development through the uniform DC bylaws, such that a combination of the uniform DC payments and a special area charge will fund the Plan's cost attribution.
- Kanata West's total share of the additional major roads program (Schedule D) ranges from \$28-60 million, with the higher cost associated with a 6 lane 417 and the lower cost with an 8 lane roadway. Water and sanitary sewer attributions of major works, totalled \$4.0 million and \$1.2 million respectively (Schedule E).
- Revenue generated under the uniform DC bylaw from KWCP is more than sufficient to fund all of the attributable water and sanitary sewer costs (beyond those included in the current Regional DC).
- Applicable revenue generated under the uniform DC by-law for major Kanata West roads would fund all of the attributable road costs under the 8 lane Highway 417 option. Under the 6 lane option, an area-specific DC charge to fund \$25.9 million would be required.
- Under the 6 lane Highway 417 option, the ROPA 9 Financial Policy area-specific development charge would be approximately \$60,000 per net hectare¹⁷ (\$24,300 per net acre¹⁸). Assuming 25% coverage, this translates to a charge of \$24 per s.m. of gross floor area. This represents a 50% surcharge on the existing uniform DC rates in force in the Region/Kanata (\$46 per s.m.) and is in the top end of the range of rates in competing high "tech" municipalities included in Annex A (e.g. Mississauga at \$68/s.m., Brampton at \$54/s.m.)

17 $\$26,000,000 \div 434 \text{ ha}$, as per Schedule C

18 The City passed an amendment to the Regional DC by-law on June 26, 2002 which increased the roads charge. The KWCP area-specific DC funding requirement under the ROPA 9 Financial Policy (6 lane 417) would reduce to \$16 million and the approximate DC rate to \$37,000/ha.

- Finally, KWCP will generate tax revenue to fund debenture capacity significantly exceeding the Benefit to Existing (tax) funding requirement for its major road works, as well as the mandatory 10% deduction for non-engineered services, as required under the DCA, 1997.

4.5.9 Economic Benefits from Kanata West

The Financial Analysis has identified the following key economic benefits expected from the Kanata West development:

- Significant private investment- over 9.5 million square feet at build out, at a cost of \$1.2 billion;
- 8,400 person years of direct employment, including construction, engineering, and administration jobs;
- A further 4,300 jobs created indirectly in Ontario, most in Ottawa;
- Based on an overall park employment of 27,000 jobs, a further 9,000 jobs created at other businesses;
- Spending by persons employed in Kanata West estimated in the range of \$533 million annually; and
- The development will generate annual property tax revenue for the City of Ottawa, estimated at more than \$37 million.

Summary of Key Economic Benefits

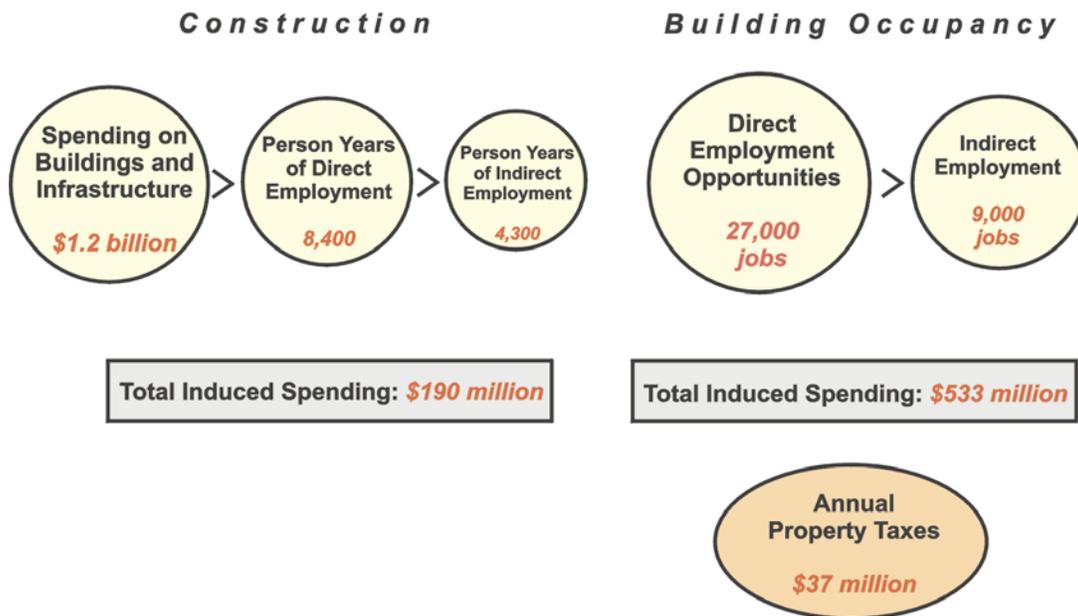


Figure 4-48

4.6 Phasing Strategy

The key to initiating development in the area relies primarily on two interdependent factors:

1. The ability to provide cost-effective municipal services to support this initial development – sewer, water and stormwater; and
2. The logical expansion of area roads to support anticipated growth and to allow for the logical extension of bus service to the area (until rapid transit arrives).

A number of factors were taken into account in devising an integrated phasing strategy for these lands, as follows:

4.6.1 Municipal Servicing

4.6.1(1) Options to Facilitate Development

Option 1 - Utilise Residual Capacity in Signature Ridge Pumping Station

As described in the servicing analysis, observed flows to the Signature Ridge Pumping Station (SRPS) are well below theoretical capacity. Therefore, if the KWCP area has right to access the Signature Ridge Pumping Station, and defer the expenditure for the new major Pumping Station (\$8.7M), this would allow for the initial development of **8,625 jobs of 1,400 units** (or some combination of the two).

The cost of accessing the First Line Road Sewer is still under discussion and will have to be considered relative to the cost and timing of building the new major Pumping Station (\$8.7M). This issue will continue to be reviewed by those it impacts to determine if this deferral is possible, and if so, some form of agreement will be required.

This option also requires the completion of the City of Ottawa's expansion of the Glen Cairn Pumping Station, which is scheduled for construction in the summer of 2002. Depending on the growth within the entire Kanata area two other water projects required to strengthen the entire distribution system are needed in the short term:

- A new 75 ML/D pumping station; and
- A new watermain connection from the Glen Cairn Pumping station to the existing distribution system.

The total estimated cost for these works is \$4.59M, and the allocation to the KWCP based on percentage growth would be in the order of \$1.1M. These costs are factored into the overall financial strategy.

Option 2 – If Unable to Use Residual Capacity in SRPS, Build New Pumping Station

If KWCP area cannot access the Signature Ridge Pumping Station, then the expenditure for the new major Pumping Station is required. This would provide sanitary capacity for the entire area to proceed, in keeping with the timing of growth-related improvements planned by the City of Ottawa, to be funded through development charges.

4.6.1(2) Logical Areas To Proceed With Services

The following considerations will dictate the cost-effective delivery of services to the KWCP area. This can result in a combination of lands proceeding in response to market demand and the willingness to front-end the cost of extending services to connect into the existing infrastructure.

Proceed from East to West

Major infrastructure required to initiate development is generally located along the east boundary of the site. Logically, cost-effective development should proceed from east to west. As mentioned, this can be any combination of land choices depending on the market place and the willingness of the land developer to front-end the cost of extending services to connect into the existing infrastructure.

Lands in the Vicinity of Corel Centre Area the Most Economic to Develop

The area around the Corel Centre offers the most economical area to expand, since it is the only area within the KWCP with full urban services allowing for expansion at the least initial cost. This would include the Auto-Park project currently in the planning stages and lands south of Palladium Drive.

Lands North of 417, West of Carp River Next Most Economic to Develop

This area is the next most economic to develop because of its close proximity to First Line road services. It will require the extension of sanitary and water services immediately adjacent to the site and require the construction of a storm water management facility.

Lands Located South of Poole Creek, North of Hazeldean Road Require and Additional Sanitary Pumping Station to Proceed

The lands in this area require the construction of a second pumping station to move sanitary to the new major Pumping Station at an estimated cost of \$1.1M.

4.6.2 Transportation

4.6.2(1) Logical Areas To Proceed With Development

From a transportation perspective, land use development could proceed approximately as follows to minimize road costs and traffic impacts:

Initial Areas for Development

The following land use areas could proceed initially with minimal road costs and traffic impact:

- Retail along Hazeldean Road;
- Lands adjacent to Palladium Drive east of the interchange;
- Lands adjacent to Huntmar Road north of Highway 417; and
- Lands between Huntmar Road and interchange north of Highway 417.

Next Areas for Development

The following areas would logically be the next to develop:

- **Campeau Drive Extension**
The Campeau Drive Extension, in conjunction with City's planned upgrading of Terry Fox Drive interchange would allow most land north of Highway 417 to go. At some point, Huntmar Road north of Highway 417 would have to be widened/urbanized.
- **Huntmar Road Extension**
With this road in place would allow lands between Huntmar Road to Terry Fox Drive and from Palladium Drive to Hazeldean Road to go, particularly if City has widened Terry Fox Drive and Hazeldean Road, as proposed.
- **North-South Arterial**
The north-south arterial is required for lands generally located west to Huntmar Road and south of Palladium Drive.

4.6.2(2) Phasing Overview – Areas for Development

When the following projects are in place, there are few, if any, off-site restrictions that would affect the phasing of on-site development. A 5-year horizon is considered a reasonable time frame for the completion of these projects:

- Widening/extend Terry Fox Drive;
- Upgrade Terry Fox interchange;
- Construct Castlefrank Road interchange;
- Widen Hazeldean Road; and
- Widen Highway 417 to 6 or 8 lanes.

4.6.2(3) Phasing Strategy for Transit

Prior to rapid transit, the site would be best served by an efficient extension of the area's existing bus service, as follows:

- Initial development along Hazeldean Road and Palladium Drive would be most compatible with existing transit service;
- The extension of Campeau Drive would facilitate providing transit service to the area. It would allow for efficient extension of the Town Centre's transit service. This roadway extension should be a priority with the development of lands north of Highway 417 between the Carp River and Huntmar Road;
- The extension of Huntmar Road south to Hazeldean Road would also facilitate transit service, as it would provide more direct linkages between Hazeldean Road, Maple Grove Road, Palladium Drive and the interchange. This would provide lots of bus routing flexibility. This roadway extension should also be a priority with the development of lands in this vicinity of this alignment, north of Hazeldean Road.

It is recognized that the City is responsible for providing rapid transit and deciding its technology. They are also responsible for determining how existing transit routings are best modified to pick up new development in a cost-effective manner. In summary, the City will decide how the area is serviced by transit.

4.6.3 Overlapping Municipal Services/Transportation Areas

The attached map titled 'Phasing' schematically depicts the areas where first phase development from a transportation perspective and from a municipal servicing perspective overlap. They include:

- Lands adjacent to Palladium Drive east of the Interchange
- Lands along Hazeldean Road
- Lands adjacent to Campeau Drive east of Huntmar

4.6.4 Funding Requirements for Phasing

The phasing strategy provides general comments on ease of servicing from both the municipal service and transportation perspectives, consistent with the very general level of detail in the Concept Plan. Ultimately, the market will determine the phasing and rate of development, which, with the range of land uses contained in the plan, could represent a myriad of options. Also, detailed costing for internal works requiring cost sharing is not available at this stage and accordingly only general comments can be made on funding requirements.

4.6.4(1) Municipal Services

From a municipal water servicing perspective, the major KWCP servicing requirements to commence development are, for the most part, already in place and/or included in the Regional development charge, and planned for short term implementation (e.g. the Glen Cairn Pumping Station scheduled for construction in 2002).

The phasing strategy notes that there are two additional water projects which may be required in the short term depending on growth within the entire Kanata area. These are: a new 75 ML/D pumping station and a new watermain connecting the Glen Cairn Pumping Station to the existing distribution system. The total estimated cost is \$4.59 million.

For municipal sanitary sewer servicing, the major front-ending issue is the proposed pumping station south of Highway 417 at the eastern boundary of the plan. Funding of \$8.7 million to construct this station would be required for development to commence. Under the current policy, this is a local area responsibility of KWCP owners (i.e. not part of the Regional DC) and is therefore not considered in the ROPA 9 Financial Policy area-specific DC. There is, however, an alternative if KWCP has the right to access the excess capacity in the Signature Ridge Pumping Station. This would allow a combination of 8,625 jobs or 1,400 homes to be constructed prior to constructing of the major pumping station.

This initial development phase would generate total Regional/Kanata DC revenues of \$18.3 million¹⁹, as well as a local area-specific charge for internal works which would assist in funding the other up-front requirements. The roads DC revenue would total \$8.1 million and the transitways DC, \$2.6 million.

19 Assuming 932 houses and 93,500 s.m. of non-residential space

4.6.4(2) Roads

The phasing strategy for roads identifies a number of areas for initial development which will have minimal road costs and traffic impact. These include: retail along Hazeldean Road; land adjacent to Palladium Drive east of the interchange; lands adjacent to Huntmar Road north of Highway 417; and lands between Huntmar Road and the interchange north of Highway 417.

The next area for development (following the above areas) from a transportation perspective is the Campeau Drive extension, north of Highway 417. The Campeau Drive extension from Terry Fox Drive to Huntmar would be required to allow this area to develop (\$6.3 million). The external widening of Campeau Drive between Terry Fox and Castlefrank would also likely be required (\$0.7 million), along with the extension of Huntmar to the North-South Arterial (\$1.7 million). These improvements total \$8.7 million. All of the works may not be required to allow the first phase of development to proceed.

4.6.4(3) Front-Ending Options

The Concept Plan level of detail does not allow the identification of the most appropriate front-end financing approach(es) for the required works. The *Development Charges Act, 1997* does however, provide options which could be considered. These include:

- **Early Payment of Development Charges** – An owner and the municipality enter into an agreement for the owner to pay all or part of his development charges at an earlier point in time so that

the funds can be used to emplace a work required for development to proceed.

- **Services in lieu Agreements** – An owner and the municipality enter into an agreement to permit the owner to emplace a development charge work in exchange for credits on his development charge payments (to the value of the work)
- **Front ending Agreements** –An owner (or owners) prepared to emplace or upfront finance a development charge work enters into an agreement with the municipality to recoup the appropriate share of the costs from benefiting owners when they proceed to develop

If the development represents a municipal priority and a funding source is available (e.g. reserve funds or in the case of a high priority, debentures), the municipality may agree to upfront finance a development-related work, and recoup the monies through development charge collections.

4.7 Planning Strategy to Implement the Concept Plan

A lot of discussion has occurred with the Project Steering Committee (PSC) and Landowner Steering Committee (LSC) on how the ‘vision’ and ‘guidelines’ established for the KWCP will actually be achieved over the life of the plan. It is often expressed that while the images in the concept plan may be compelling, “how can we ensure that the area will actually develop as described?”

There has also been direction by the PSC to the consultants to evaluate if a different type of ‘performance based’ zoning could be implemented for this project to achieve the goals for this new community? These are important questions, and it is imperative that there be a commitment to achieving the vision for KWCP through a clearly defined implementation strategy.

The following integrated planning strategy is recommended to achieve the ‘vision’ and ‘guidelines’ for KWCP:

4.7.1 Utilise the Established Land Use Regulatory Process as the Basis for Evaluating Applications

While a performance-based model for planning has certain advantages over the traditional planning model, it is recommended that the established regulatory processes (zoning, subdivision and site planning) be utilized, in combination with the other recommendations set out below, to achieve the vision for KWCP. This recommendation results from our opinion that:

- A new performance-based planning model will require a substantial learning curve and significant commitment of resources to develop and manage this new system.
- Performance standards are not as necessary when land use, environmental and design guidelines are already clearly identified in an over-arching plan which can guide the development of an area, as in the case of KWCP;
- The established approval process is embodied in legislation and has evolved over decades of practice. It provides the necessary checks and balances for the municipality (and the community) to measure and evaluate a proposal within the established guidelines, and is consistent with the direction established in ROPA 9.

4.7.2 The Proponent Must Demonstrate a Proposal’s Fit with Vision and Guidelines

It is recommended that a ‘Demonstration Report’ be required with the submission of any application to subdivide and rezone lands in KWCP. This report, in addition to other technical studies that may be required,

must demonstrate how the vision and guidelines for the KWCP will be met by the proposal. The Demonstration Report should include:

- A description/illustration of how the proposal will achieve the vision, guidelines, and strategies set out in the KWCP.
- A plan which shows the following:
 - The proposed alignment of local, collector or arterial roads;
 - The proposed block/lot layout;
 - The proposed location of pedestrian/cycle routes.
 - The proposed extension/provision of services (water, sewer, storm water).
 - The proposed location of land uses.
 - The proposed location of open spaces/parks, natural features and corridors.
- A description of the proposed zoning and subdivision.
- A description of the density proposed for each use in the area being planned, by units per gross hectare for residential areas, and jobs per gross hectare for employment areas. Where target densities are not met through the initial development proposals, a demonstration of how they will be accommodated over-time within the area must be provided.
- A retail study in support of zoning by-law applications in the Community-Level Retail area, the High Profile Hub and highway interchange to demonstrate that the market place can support the proposed retail uses. Absolute non-competition with the Town Centre or Main Street need not be shown, rather it should be demonstrated that similar opportunities for Main Street or the Town Centre are not precluded.
- Cross-sectional diagrams illustrating how rights-of-way and natural corridors will be designed to meet the guidelines as set out in this report.
- A strategy for the phasing and financing of capital improvements, effected by the development proposal.

This report provides an important tool for the municipality to be able to evaluate the merits of the development application against the objectives of the Plan. It also places the onus on the proponent to consider these guidelines in advance of an application.

4.7.3 Interpretation of the Concept Plan / Demonstration Plan

The Concept Plan and Demonstration Plan will guide the form and character of development. The associated guidelines provide the framework for design decisions and for the evaluation of proposals. The Concept Plan, Demonstration Plan and associated guidelines and strategies are the primary tools to guide zoning, subdivision and capital expenditure in this area. While the end product may differ in detail from the conceptual illustrations, it is intended that development will have a framework with grain, pattern and connectivity consistent with that described in this report. In this regard, the following considerations are important to interpreting the plans:

- Land use boundaries and road/transit corridors are conceptual and thereby flexible to be able to respond to market dynamics and the detailed design work that will be required during the implementation of the Plan.
- Where a road defines the boundary of character areas, the uses described for each area should be permitted on both sides of the street. The approach acknowledges and supports a transition of uses across zones.
- As a general principle, road allowances should be aligned along existing property lines, where practical, to eliminate land exchanges and other issues.
- The zoning templates provided in Appendix F are provided primarily as a tool-kit for determining the appropriate range of uses within an area. The list of uses provided is not considered all-inclusive, and other like uses may be considered. As well, the proposed regulatory provisions of the zone (e.g., set-backs, building mass and height, parking standards) must demonstrate compliance with the vision, guidelines, and strategies set out in this report.

4.7.4 Applications to Rezone and Subdivide Land Should be Submitted Concurrently

It is recommended that applications to rezone and subdivide land be submitted concurrently, so that a more complete picture of how the proposal fits with the Concept Plan is provided.

4.7.5 Establish a Committed 'Review Team' to Facilitate Approvals and Achievement of the Vision and Guidelines

It is recommended that a 'Review Team' be established in the Planning and Infrastructure Approvals Branch with the commitment to implement

the vision and guidelines for the KWCP. In our opinion, this small team should be tasked with:

- Assisting a proponent in understanding the land use, infrastructure, environment and urban design visions prior to the submission of the applications.
- Evaluating the applications once submitted within the framework of the vision and guidelines established for KWCP, and recommend to Planning and Development Committee and City Council.
- Facilitating the timely approval of applications that fit with the desired vision and guidelines for the KWCP area – clearing the ‘red tape’.

This Review Team will be the ‘gatekeepers’ of the vision and guidelines established for KWCP. Given the multiple ownership within the area, the large land area affected and the inevitable incremental evolution of this large development parcel, it is critical that a consistent team be established to pro-actively implement the concept plan.

4.7.6 Seize the Opportunity to Market the Concept Plan Globally

The City of Ottawa has the opportunity to establish KWCP as a significant ‘economic development’ tool and to market this unique mixed-use high technology park globally. Like other high tech communities around the world, the progressive vision for Kanata West can provide a specific opportunity to attract business and knowledge-based workers to our community.

4.7.7 City of Ottawa’s Role as Catalyst and Leader

The City of Ottawa is also a major landowner in the KWCP area, with the ability to influence the future character of the place. In particular, it has the potential to focus public expenditures and to uses on their lands in the Mixed-Use area as a catalyst to development. This could include the recent notion of ‘communi-plex’ (e.g., pool, arena, day-care, community facilities), and any number of public/private partnerships (e.g., recreation and athletic facilities).

At the same time, there is also the opportunity to explore and, if possible, facilitate a west-end institutional/corporate campus in the Mixed-Use area. Initial interest in this concept has been strong and this relationship is well established in other successful business parks (e.g., Plano; Waterloo, Research Triangle Park, Centennial Campus.)

It is recommended that the City of Ottawa’s Business Development Branch establish a budget and work program to explore the potential for public/private partnerships to facilitate the vision of the Mixed Use area as established in this Plan.