HJA Water Management Consulting

509 Foul Bay Road, Victoria, BC., V8S 4G9 5T6 | 250-885-3711 | Jack.Hull@telus.net

To: Mayor and Council, District of Oak Bay

From: Jack Hull MBA P. Eng. - HJA Water Management Consulting

Date: September 12, 2016

Subject: Uplands Combined Sewer Separation Project Update

INTRODUCTION

The provincial government's Municipal Wastewater Regulation requires all BC municipalities to have separate stormwater and sanitary sewer systems. Compliance with the provincial regulation is mandatory for the District of Oak Bay as it is for other jurisdictions in the province where single pipe infrastructure currently exists, such as Burnaby, New Westminster and the City of Vancouver. While all other Oak Bay neighbourhoods have separated stormwater and sanitary sewers, the Uplands neighbourhood in Oak Bay still has a single pipe system to accommodate both sanitary sewer and stormwater flows.

The Uplands neighbourhood with combined sewers is divided into two drainage areas or catchments – Humber in the north with 150 properties, and Rutland in the south with 263 properties. Each catchment currently drains by gravity to a CRD pump station at Humber Road and Rutland Road respectively. Both pump stations currently pump sanitary sewage and stormwater into the East Coast Interceptor Trunk Sewer. During heavy rainfall events, the capacity of the pump stations is exceeded and a combination of stormwater and sanitary sewage is discharged into the sea through shallow outfalls.

The Capital Regional District (CRD) has authority for sanitary sewage under the Municipal Wastewater Regulation in the form of a liquid waste management plan (the Core Area Liquid Waste Management Plan (CALWMP)) which is subsequently approved by the Minister of Environment. As a condition of approval of the CALWMP, and to comply with the Municipal Wastewater Regulation, the District is required to eliminate combined sewer overflows in the Uplands neighbourhood by providing separate sanitary and stormwater sewers where combined sewer exists.

PURPOSE:

This report serves as a cumulative summary of the pre-design work and public consultation undertaken in 2015 and 2016 to help Council prepare for a decision on the selection of a single technical option that will separate the existing combined stormwater and sanitary sewer system in the Uplands neighbourhood. This is an imperative decision that will see the District of Oak Bay taking definitive steps to be in compliance with the provincial government's Municipal Wastewater Regulation mandating the separation of all existing single pipe infrastructure. The intention of this report is to provide a single reference document for Council and the public in advance of receiving the final technical report and recommendation from the Engineering consultant.

PROJECT BACKGROUND:

Since 2010, in preparation for the separation of the combined stormwater and sanitary sewer in the Uplands, District staff have directed residents in the Uplands neighbourhood to separate stormwater and sanitary sewers from their homes to the property line when undergoing new construction or a major renovation. As a consequence of the active redevelopment in this neighbourhood over recent years, approximately 91 homes in the Uplands have separate stormwater and sanitary sewers to the property line.

In the spring of 2015, the District initiated a Request for Proposal and awarded a contract for a comprehensive pre-design study (the study) to identify technical options for sewer separation in the Uplands neighbourhood to McElhanney Consulting Services Ltd. (McElhanney).

To inform McElhanney's pre-design study, a number of assumptions were made by the project team including:

1. The goal of the project is to eliminate (separate) the combined sewers in the Uplands neighbourhood of Oak Bay. This is the Minister of Environment's condition for approval of the CALWMP, and is intended to eliminate overflows in order to comply with the MWR (Section 42);
2. A second pipe would not be installed in the existing easements;
3. The lining of the existing pipe is not part of this project (from the grant funding perspective);
4. The existing pipe would continue to be utilized for either sanitary sewer or stormwater conveyance;
5. A maximum practical trench depth is considered to be five metres;
6. Trenchless technology, specifically directional drilling, is not viable for the installation of the new pipe;
7. The District would be responsible for compliance with the Heritage Conservation Act on District property;
8. Property owners would be responsible for compliance with the Heritage Conservation Act on private property;
9. Given the limitation on trench depth, sanitary and/or stormwater pumps will factor in all options;
10. Stormwater would not be treated (decontaminated) prior to discharge to the sea;
11. Based on BC Hydro statistics regarding the duration of power outages, the use of pumps on private property is viable;
12. On-site stormwater management would not be an alternative to a storm sewer connection;
13. In the absence of detailed geotechnical information, assumptions would be made on the occurrence of rock in generating cost estimates;
14. The cost estimates developed for private property are the average of the total cost to all property owners; that is, cost estimates were not developed on a site specific basis; and,
15. At this stage, pre-design, operation and maintenance costs estimates are based on a percentage of the capital costs.

SETTING THE FRAMEWORK FOR IMPLEMENTATION:

At the October 26, 2015 Council meeting, following the presentation by the project manager on the pre-design (Attachment 1), Council adopted the following resolution to set out the operational framework in preparation for the advancement of the Uplands Combined Sewer Separation Project.

That:

1. *An amendment to Bylaw No. 3891 be brought forward: to mandate sewer separation for new homes and connection to the separated municipal sewers when available; to mandate sewer separation for homes undergoing major renovations, based on a value of $100,000 or greater, and connection to the separated municipal sewers when available; and to update Schedule A of the bylaw with respect fees and permits to reflect current costs; and further that Schedule A of Bylaw No. 3891 then be updated annually;*
2. *The cost of connecting properties with sewers separated prior to the municipality separating the combined sewers be included in the cost of the sewer separation construction contracts; and*
3. *Staff obtain blanket Heritage Inspection Permits covering the municipal rights of way and adjacent property owners, as the project proceeds to construction.*

To ensure that all Oak Bay residents were given the opportunity to learn about this provincially mandated infrastructure project and to provide input directly to project engineers and District staff, Council directed that the Uplands Combined Sewer Separation Project include a comprehensive public engagement and information process.

SIX TECHNICAL OPTIONS PRESENTED TO THE PUBLIC AND TO COUNCIL

McElhaney's study identified six technical options. These are summarized below.

Option 1 – New deeper gravity sewer system and existing combined sewer system to remain for stormwater conveyance.

Option 2 – New deeper gravity storm drainage system and existing combined system to remain for sanitary conveyance.

- While the goal of Options 1 and 2 is to minimize the number of pumped connections, additional properties need pumps because the existing easements, required for gravity service, are not being used and 5 metres has been established as the maximum practical and economic depth for trench excavation.

Option 3 – New pumped low pressure system for sanitary sewers collection and existing system to remain for stormwater conveyance.

- Under this option all properties in both catchments would require sanitary sewage pumps.

Option 4 – A new shallow gravity stormwater system with localized areas requiring municipally owned stormwater pumping stations for roadway runoff and existing pipe as a sanitary sewer conveyance.

- The original proposal included a new pumped low pressure stormwater drainage system with the existing combined system to remain for sanitary sewer conveyance.
- It became clear that pumping stormwater from the whole catchment area would not be cost effective either initially or from a lifecycle perspective. Under a low pressure stormwater system, either a large number of pumping stations would be required to capture and convey road runoff, or a parallel shallow gravity network would need to be installed, with fewer, but larger municipally owned stormwater pumping stations. Consequently, this option was not considered further.
- Consultant recommendation: A hybrid option was developed in which a relatively shallow new gravity stormwater system would be constructed with smaller, localized areas requiring municipally owned stormwater pumping stations for roadway runoff.

Option 5 – A hybrid of shallow gravity sanitary sewer system, pumped where necessary, and existing pipe as a stormwater conveyance.

- This option would include a shallow depth gravity sanitary sewer system, with smaller, isolated areas of catchment serviced by municipal pressure sewers.
- The initial capital cost to the municipality for both options 4 and 5 is lower than for options 1 and 2 respectively; however, the number of properties requiring pumps is greater than options 1 and 2.

Option 6 – A hybrid shallow gravity sanitary sewer system, with localized community sanitary pumping stations where necessary and the existing system as a storm drain.

- This option is a variation of Option 5. More municipally owned pumping stations would be constructed in order to increase the number of dwelling units serviced by gravity sanitary sewer connections compared to Option 5.

It was estimated that the number of pumps required (new plus existing) in each catchment would be as follows:

Option	Humber Existing + New	Sub- total	Rutland Existing + New	Sub- total	Total
1	29 + 10	39	39 +7	46	85
2	32 +7	39	40 + 6	46	85
3	140 + 10	150	229 + 7	236	386
4	65 +7	72	101 +6	107	179
5	60 + 10	70	114 +7	121	191
6	40 + 10	50	96 + 7	103	153

The greatest factors differentiating Options 1 and 2 from 4, 5 and 6 are the costs to the District related to pipe depth (trench excavation and backfilling) and the cost to homeowners in the Uplands for additional on-site private pumping systems in the latter, shallower gravity pipe network options.

PUBLIC ENGAGEMENT A PRIORITY

Extensive public consultation and engagement on the merits and considerations of each option took place over a two-month period at the end of 2015. Public feedback was collected at several open houses and through an online survey, and presented to Council as part of a project update at a dedicated Committee of the Whole meeting on February 2. (Attachment 3 – Uplands Sewer Separation Public Engagement Overview, and Attachment 4 – Uplands Combined Sewer Separation Project Survey).

The public challenged some of the pre-design study's assumptions and offered constructive insight into the technical options. In response to public feedback, and to help Council narrow down the six technical options, it was determined that more information was necessary to inform a decision. Council asked the project team to undertake additional analysis and gather more information over a period of six months, with updates to Council and the public at Council meetings and Committees of the Whole through June. The project team responded to the following Council inquiries:

- Condition of and risks to Uplands tree canopy;
- Environmental impact of combined sewer overflows;
- Alternative methods of stormwater management;
- Power requirements for residential pumps;
- Impact of minimizing requirement for residential pumps in Oak Bay;
- Use of attenuation tanks as an alternative to sewer separation;
- Assumptions on geotechnical conditions and cost implications;
- Use of existing easements;
- Conditions under which property owners must separate the sewers on private property;
- Archaeological implications;
- Alternative construction method, specifically trenchless technologies;
- Power outages and the implications for private pumps;
- Overflow data for the Humber and Rutland outfalls;
- Staging of project construction.

COUNCIL RESOLUTIONS AND STAFF RESPONSE SUMMARIES:

In response to comments at the Open Houses and at the February Committee of the Whole meeting staff undertook to:

- Explore the possibility of a new gravity sewer to carry either stormwater or sanitary sewage that would fully eliminate the need for pumps.
    - This additional option entailed trenching up to nine meters deep, which is beyond the reach of available excavators. Trench construction would have required benching to lower the excavator to reach nine meters. Installing pipe deeper than five meters is not considered practical or economic, therefore, this additional option was not considered further
- Explore opportunities for on-site stormwater management on municipal property.
    - Traffic islands, boulevards and the undeveloped Midland corridor were considered as potential locations for rain gardens for storage and attenuation of storm flows. In most cases, potential locations have mature trees, including

Garry Oaks, which would have to be removed to construct rain gardens. It was concluded that, from a stormwater management perspective, there would be insufficient attenuation or storage capacity to modify the design of the stormwater system under any of the options considered.

In 2016 Council provided direction to staff as follows:

- DIRECTION: Pursue MLA Dr. Weaver's offer to facilitate the presentation of the staged sewer separation implementation plan to the Minister of Environment; and advise the Capital Regional District (CRD) of the District's approach to the Minister.

    - The meeting with the Minister of Environment was held on May 19, 2016. The Mayor updated the Minister on progress to date on the sewer separation project and in particular the District's plan to separate the combined sewer in phases over the next 20 years, depending on funding. No objection was expressed to this phased approach. It was agreed that the District would work toward including the Oak Bay plan for sewer separation in the next amendment to the CRD's Core Area Liquid Waste Management Plan rather than as a separate amendment request.
    - The CRD established the Core Area Wastewater Treatment Project Board on May 25, 2016. The project board is charged with administering the project, including the preparation a project proposal and business case to the CRD board for submission to the Provincial Treasury Board by September 30, 2016. This will include submission of an accelerated submission of amendment to the Core Area Liquid Waste Management Plan (CALWMP). These accelerated deadlines mean that the District of Oak Bay will be required to submit a subsequent amendment request that captures the decisions made by Council in October.

OUTCOME: *Council adopted the following resolution: June 13, 2016*

That:
The District work towards providing a sewer separation plan with a phased approach for consideration in the next amendment to the Capital Regional District's Core Area Liquid Waste Management Plan;

- DIRECTION: Prepare a report about the effect of services installation on the mature tree canopy.

    - At the May 16, 2016 Committee of the Whole staff presented a report entitled 'Uplands – Assessing Service Installs and Tree Damage'. Out of the 91 properties where separate sanitary and stormwater sewers have been installed, only 2 properties show evidence of tree damage due to sewer pipe installation. Staff recommended that during the construction phase of the sewer separation project, laterals be located so as to minimize potential risks to mature vegetation. This may include pipe installation using non-invasive methods such as horizontal directional drilling as appropriate.

OUTCOME: *Council adopted the following resolution: June 13, 2016*

That:
At the time of construction, property owners be consulted on the location of sewer lateral connections to the new sewer, to minimize the risk to mature trees and other vegetation;

- DIRECTION: Arrange an educational session on horizontal directional drilling (HDD) to explore the utilization of easements as part of the technical solution.

  - At the May 16, 2016 Committee of the Whole meeting, Council received an educational presentation on HDD. Mr. David O'Sullivan President of PW TRENCHLESS CONSTRUCTION INC. presented an overview of the various trenchless technologies including: cured in place pipe rehabilitation; slip lining; pipe jacking; pipe bursting; and horizontal directional drilling. Mr. O'Sullivan's presentation focused on the application of HDD in relation to the Uplands Sewer Separation project. He addressed space requirements for the HDD rig and the entrance and exit slopes, and the geotechnical conditions in Uplands area. Mr. O'Sullivan's presentation indicated that while HDD may have some application on private property, HDD is neither a technically nor a financially feasible solution for the District to consider as part of the Uplands Combined Sewer Separation project on municipal land. Staff recommended that the use of HDD for the new sewer installation not be considered.

OUTCOME: *Council adopted the following resolution: June 13, 2016*

That:
No further consideration be given to the use of horizontal directional drilling for the new sewer installation on municipal property, with the exception of small diameter lateral connections from property lines as appropriate;

- DIRECTION: Prepare to conduct a survey of property owners on easements; report back to Council regarding the content of communications with easement holders.

  - Excluding the use of easements was one of the project assumptions made by McElhanney in defining the technical options for separating the combined stormwater and sanitary sewer system in the Uplands. In response to a Council resolution, staff embarked on a review of the easements in the Uplands to determine impacts and responsibilities for the District.
  - The Uplands neighbourhood has evolved over the past 100 years, and over that period of time, sequential easement documents were developed reflecting varying requirements. Upon preliminary review, the District does appear, under the existing easement agreements, to have the right to install a second pipe within the easement areas; however, this is subject to there being sufficient space available.
  - Existing easements are 5 feet and 10 feet wide - not sufficiently wide to install a second pipe without significant impact on private property. A new wider

easement would have to be negotiated with one or both property owners abutting an easement depending on the location of the existing pipe within the easement. The wider easements would have to be cleared to permit construction.

- The existing easements also contain mature tree, hedges, stone walls, driveways etc. Restoration of the new wider easements could represent a significant cost increase to the District such that construction in the easements would be more expensive than in the roadways.
- Staff recommended that no further consideration be given to the use of easements for the sewer separation project.

OUTCOME: *Council adopted the following resolution: June 13, 2016*

That:
No further consideration be given to the use of easements for the sewer separation project; and further, that a survey of property owners on easements is no longer necessary.

- DIRECTION: Undertake a geotechnical study of municipal property in the project area.
  - At the May 24 Council meeting, Council awarded a contract to WSP Canada Inc. to undertake a geotechnical study on municipal property in the Uplands neighbourhood.
  - A progress report was provided to Council on July 18, 2016 and received for information.

OUTCOME: *Council Meeting September 19, 2016*
The completed geotechnical investigation for the Uplands will be before Council at the September 19, 2016 meeting.

A summary of the reports to Council is included with the report (ATTACHMENT 2) and is also available on the District's web site at https://www.oakbay.ca/municipal-hall/plans-reports/uplands-sewer-separation .

CONCLUSION

Council consistently communicated their desire to include and invite the wisdom and sentiments of Oak Bay residents to help guide Council's decision making.

In order to address this desire, the following public engagement objectives were established at the outset of the community consultation:

Ensure that all Oak Bay residents:

- understand the need for the project;
- have access to clear and accurate project information in a format that is accessible and easily understood;
- have access to the consulting engineers and District staff in person, by phone and online;

- are encouraged to bring forward questions and concerns to enable meaningful discussions that test project assumptions; and,
- have an opportunity to record their opinions and that this personal feedback will be received by Council.

Ensure that the consulting engineers and District staff:

- understand how each potential option impacts all residents of Oak Bay;
- have the opportunity to meet property owners and discuss a highly technical project in plain language over a period of time;
- have the opportunity to listen to residents and to respond directly to questions and concerns;
- hear directly from residents what project considerations and impacts are most important;
- identify gaps in the information presented and respond appropriately and in a timely manner; and,
- incorporate public opinion and ideas, as appropriate, in any modifications to the options presented for Council's consideration.

In summary, the public consultation process identified the following key themes for Council to explore and consider:

- Affordability and fairness – finding the balance between cost to the District and cost to the impacted property owners while adopting a long term view;
- Most expedient positive environmental outcome;
- Protection of mature tree canopy;

Now that the project team has incorporated public feedback and addressed Council's requests for additional information, the options analysis phase of the project is almost complete. McElhanney will present their final report to the Committee of the Whole in October, highlighting the recommended decision criteria and enabling Council to choose an option for implementation that initiate the detailed design phase of the project. The anticipated decision criteria that Council will consider in order to choose an option for the next phase of the project will likely include the following:

- Most environmentally appropriate use of the existing pipe, that is, should the existing pipe carry sanitary sewage or stormwater;
- Progressively reduce the frequency and duration of overflows;
- Timeframe to completion of the project;
- Preserve the mature tree canopy;
- Minimize disruption on private property;
- Gravity service;
- Minimize the number of pumps;
- Costs to Uplands property owners;
- Costs to the District;
- Maintenance and lifecycle costs to Uplands property owners;
- Maintenance and lifecycle costs to the District.

This report summarized the pre-design and public consultation work undertaken in 2015 and 2016. The report is intended to help prepare Council to make the decisions required to positively address the provincial government's requirement for a separated stormwater and sanitary sewer system. The Uplands Sewer Separation project is complex, in terms of the influencing social factors as well as the technical challenges. The project team has progressed in a deliberate manner to address this complexity. This report, combined with McElhanney's final recommendations, will equip Council with the tools required to complete the options analysis phase and provide direction respect to the detailed design phase and construction of a solution to the sewer separation issue.

The following is a summary of the next steps in the project approval process:

1. A Special Committee of the Whole on October 5, 2016 is scheduled to address the next steps in the Uplands Sewer Separation Project. The final report from McElhanney will be presented. The aim of the Special Committee of the Whole will be to make a recommendation to Council on a sewer separation option that enables the project to proceed to detailed design and implementation.
2. Selection of a sewer separation option will enable staff to seek an amendment to the CRD's Core Area Liquid Waste Management Plan. This will provide the CRD with the District's expected implementation timelines and will signal definitively that the District intends to comply with provincial wastewater management regulations.
3. Once CRD concurrence on the District's proposed plan is obtained, staff will pursue funding opportunities for the implementation phase (design and Construction). Staff will also proceed with to develop a request for proposal to engage an engineering consultant to complete the detailed design phase and for further project implementation efforts.

ATTACHMENT 1

UPLANDS COMBINED SEWER SEPARATION – PREDESIGN

TO: Mayor and Council

FROM: J. A. (Jack) Hull, HJA Water Management Consulting

DATE: October 20, 2015

SUBJECT: Uplands Combined Sewer Separation Project – Pre-design

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BACKGROUND:

The provincial government's Municipal Wastewater Regulation (MSR) requires all BC municipalities to have separate stormwater and sanitary sewer systems. Compliance is mandatory for the District of Oak Bay (the District) as it is for other jurisdictions in the province, such as Burnaby, New Westminster, and Vancouver, where combined sewers currently exist. Separation of the combined sewers is an integral part of the CRD's Core Area Liquid Waste Management Plan (CALWMP) in compliance with the MSR.

The Uplands neighbourhood currently has a single pipe system to convey both sanitary sewage and stormwater flows. During heavy rainfall events, the volume of stormwater exceeds the capacity of the system and a combination of stormwater and raw sewage overflows into the ocean at the Rutland and Humber pumping stations. Separate stormwater and sanitary sewer pipes will render such overflows unlikely and will achieve compliance with the MWR.

Included in this report are key considerations and recommendations for Council decisions on moving forward with the Uplands Combined Sewer Separation Project. These include:

- A review of Bylaw No. 3891;
- The compliance approach taken by other municipal jurisdictions undergoing the same mandated initiative;
- The District's commitments under the CALWMP and
- Compliance with the Heritage Conservation Act with respect to the known and potential archaeological sites in the Uplands area and;

The District issued a Request for Proposals on March 20, 2015 for engineering services for the pre-design of the Uplands Combined Sewer Separation Project. Three submissions were received and a contract was awarded to McElhanney Consulting Services Limited (McElhanney) at the May 11, 2015 Council meeting. McElhanney divided the work into five activities. These are summarized in the following table along with the status of progress:

Table 1
Project Status

	Description	Progress Status
Activity 1	Project Start-up	Substantially complete
Activity 2	Options Development	Substantially complete
Activity 3	Options Assessment	In Progress
Activity 4	Phasing Plan for Construction Implementation	Not Started
Activity 5	Predesign Options Final Report	10% complete

McElhanney has completed the development of six possible options to separate the existing combined stormwater and sanitary sewer system. A summary of the options is provided below.

DISCUSSION:

Key Considerations:

The uplands neighbourhood has considerable topographic variation, sloping from about 58 metres elevation in the north west (Cadboro Road) to just above sea level in the south east. When the Uplands subdivision was developed a century ago, the developer installed a combined sewer in 3 metre (10 foot) wide easements at the side and rear of properties in certain locations to service the area with gravity sewers and to avoid having to construct deep sewers.

To install a second pipe, an additional 2 metre (6.5 foot) wide easement would have to be obtained. The total 5 metre (16.5 foot) easement would have to be cleared to allow for equipment access and working space. Over time the easement areas have grown over substantially. As illustrated in the attached photographs (Attachments 1), clearing a 5 metre (16.5 foot) wide easement would require the removal of mature trees, hedges, fences and other mature landscaping. Consequently, McElhanney has developed options to avoid using the existing easements.

1. PRE-DESIGN OPTIONS

McElhanney has investigated six options for each of the Humber and Rutland catchment areas. Options 1 and 2 are gravity sewer systems which avoid the existing easements and for which 5 metres has been established as the maximum practical and economic depth for trench excavation. All options will require the installation of pumps for sanitary sewage and/or stormwater flows.

> **Option 1 – New deeper gravity sewer system and existing combined sewer system to remain for stormwater conveyance.**

In the Humber catchment, out of a total of one hundred and fifty (150) properties, twenty nine (29) properties would require sanitary sewer pumps in addition to the ten (10) that already have a pump. In the Rutland catchment, out of the two hundred thirty six (236) properties, thirty nine (39) properties would require sanitary sewer pumps in addition to the seven (7) that already have a pump.

> **Option 2 – New deeper gravity storm drainage system and existing combined system to remain for sanitary conveyance.**

In the Humber catchment, out of a total of one hundred and fifty (150) properties, thirty two (32) properties would require stormwater pumps in addition to the seven (7) that already have a pump. In the Rutland catchment, out of a total of two hundred thirty six (236) properties, forty (40) properties would require stormwater pumps in addition to the six (6) that already have a pump.

<u>Option 3</u> –New pumped low pressure system for sanitary sewers collection and existing system to remain for stormwater conveyance.

Under this option all (100%) of the properties in both catchments would require sanitary sewage pumps.

<u>Option 4</u> – A new shallow gravity stormwater system with localized areas requiring municipally owned stormwater pumping stations for roadway runoff.

The McElhaney proposal included a new pumped low pressure stormwater drainage system with the existing combined system to remain for sanitary sewer conveyance. However, it became clear that pumping stormwater from the whole catchment area would not be cost effective either initially or from a lifecycle perspective. Under a low pressure stormwater system, either a large number of pumping stations would be required to capture and convey road runoff, or a parallel shallow gravity network would need to be installed, with fewer, but larger municipally owned stormwater pumping stations. Consequently, this option was not considered further. Instead, a hybrid option was developed in which a relatively shallow new gravity stormwater system would be constructed with smaller, localized areas requiring municipally owned stormwater pumping stations for roadway runoff.

In the Humber catchment, sixty five (65) properties would require a stormwater pump in addition to the seven (7) that already have a pump. In the Rutland catchment, one hundred and one (101) properties would require a stormwater pump in addition to the six (6) that already have a pump.

<u>Option 5</u> – A hybrid of shallow gravity sanitary sewer system, pumped where necessary, and existing pipe as a stormwater conveyance.

This option would include a shallow depth gravity sanitary sewer system, with smaller, isolated areas of catchment serviced by municipal pressure sewers.

In the Humber catchment, sixty (60) properties would require a sanitary pump in addition to the ten (10) that already have a pump. In the Rutland catchment, one hundred and fourteen (114) properties would require a sanitary pump in addition to the seven (7) that already have a pump.

The initial capital cost to the municipality for both options 4 and 5 is lower than for options 2 and 1 respectively. However, the number of properties requiring pumps is greater.

<u>Option 6</u> – A hybrid shallow gravity sanitary sewer system, with localized community sanitary pumping stations where necessary and the existing system as a storm drain.

In the Humber catchment, forty (40) properties would require a sanitary pump in addition to the ten (10) that already have a pump. In the Rutland catchment, ninety six (96) properties would require a sanitary pump in addition to the seven (7) that already have a pump. This option is a variation of Option 5. More municipally owned pumping stations would be constructed in order to increase the number of dwelling units serviced by gravity sanitary sewer connections compared to Option 5.

The greatest factors differentiating Options 1 and 2 from 4, 5 and 6 will likely be in the costs related to pipe depth (trench excavation and backfilling) and in the cost of additional on-site private pumping systems in the latter, shallower gravity pipe network options.

Alternative stormwater management

In addition to the six options describe above, the opportunities for on-site stormwater management on municipal property was also considered. Traffic islands, boulevards and the undeveloped Midland corridor were considered as potential locations for rain gardens for storage and attenuation of storm flows. Rain gardens provide the added benefit of filtering stormwater runoff from roads. In most cases the possible locations have mature trees, including Garry Oaks, which would have to be removed to construct rain gardens, although there is an open area on Midland Road at Lansdowne Road. (Attachment 3). It was concluded that from a stormwater management perspective, there would be insufficient attenuation or storage capacity to modify the design of the stormwater system under any of the options considered.

All of the options will be presented to the public for discussion and evaluation at the upcoming four public 'open houses' schedule for November.

2. RESPONSIBILITY FOR SEWER SEPARATION COSTS

It is standard practice in municipalities for basic infrastructure costs such as roads and sidewalks, water mains and sewers to be a common cost charged to all residents either in a utility rate or in property taxes on the basis of assessed value. For example, when a sidewalk is replaced or a sewer upgraded, the residents on the street directly benefiting from the work are not required to pay for the full cost of the work, rather it is a cost to which all property owners contribute. In the past, when combined sewers were separated in other parts of Oak Bay, the cost was shared by Oak Bay residents based on property assessment. It is assumed that this standard practice will apply to the sewer separation project in the Uplands.

Present Policy District of Oak Bay requirement for sewer separation on private property

For several years the District has required property owners in the Uplands to separate sanitary sewer and stormwater services on private property when undertaking major renovations or building a new home. This includes replacing the connection to the existing combined sewer in the municipal road right of way. To date over twenty nine (29) or (12%) of the homes in the Rutland catchment and fifty eight (58) or (39%) of the homes in the Humber catchment have separated sewers to the property boundary. All costs associated with the sanitary and storm sewer separation and the required new (single) connection to the municipal sewer have been borne by the property owner.

Bylaw No. 3891 - Mandatory connection to a newly separated sewer

Under Bylaw 3891, 'A Bylaw for the administration and regulation of public sewers,' Section 2 subsections (3) and (4) (Attachment 2) it is mandatory for property owners to separate their combined sewer system and connect to the municipal sewers in the event that the District provides a separate sanitary and storm sewer in an area with a combined sewer. Property owners are required to complete the sewer separation '*within*

one year from the date the Engineer certifies that the new sewer main is operational.' If the owner fails to do so the District may undertake the work at the expense of the property owner. Failure to pay would result in the cost being added to the property tax account.

Connection Policies of Other Jurisdictions

Our research into the practices of four other municipalities (Vancouver, Burnaby and New Westminster and the Village of Cumberland) engaged in a combined sewer separation program revealed:

- In all cases, new homes and homes undergoing major renovations must construct separate connections to the municipal sanitary and storm sewers.
- Sewer separation is not mandated for existing homes.
- In the case of New Westminster the threshold renovation for mandatory separation is a renovation value is $100,000.
- In the case of Vancouver, not mandating existing home to separate their combined sewers is justified by the fact that on average 1% of the housing stock is replaced each year so that over the 100 year program, commenced in 1984, all of the homes will have connected to separate storm and sanitary sewers.
- Other municipalities were concerned with the high cost to property owners and the financial stress mandatory separation may cause.

Proposed Policy on Combined Sewer Separation on private property and connection to separated municipal sewers

Given the current level of funding committed by the District to the sewer separation project, of $200,000 per year, complete separation will take several decades to complete unless significant senior government funding is obtained. During that time, many of the existing homes in the Uplands may either be replaced or undergo major renovations. The current policy of requiring new homes to have separate sewers should be continued. This would include mandatory connection to the separated municipal sewers when available.
The same policy should be applied to property owners undertaking major renovations with the suggested value of a major renovation defined as $100,000 or more.

Responsibility for the cost of connecting homes with previously separated sewers.

As noted previously, property owners who have built new homes or undertaken major renovations have paid to separate their sewers on their property, terminating in a vault at the property line, and for a single pipe from the vault to the existing combined sewer either in the municipal roadway or easement. The practice of two of the three municipalities is to connect homes with separate sewers to the new separated sewers as a project cost during construction. It is proposed that the same policy be implemented by the District.

There are seven homes where the separated sewers have been connected to the existing combined sewer pipe in an existing easement. These properties will have to pump either their sanitary sewage or stormwater to the new separate sewer in the road right of way. The responsibility for the cost of connecting these properties to a new sewer in the road right of way still needs to be evaluated.

An incentive for existing property owners to separate their sewers.

As an incentive for existing homes to separate and connect, the connection cost could be borne by the project if the sewers on the private property are separated in advance of construction of the separate municipal sewer system so that the connections could be made during construction of the separate municipal sewer.

3. THE CORE AREA LIQUID WASTE MANAGEMENT PLAN

The question of mandatory sewer separation on private property has been discussed with the Ministry of Environment given its goal of eliminating combined sewer overflows. A letter summarizing the discussions was sent to the Ministry on September 18, followed by an e-mail on October 6. In its response the Ministry reiterated that sewer separation in the District of Oak Bay is a critical component of the CRD strategy. The Ministry also noted that any changes to the current commitments in Amendment No.8 of the CRD CALWMP must demonstrate compliance with Division 2 of the Municipal Wastewater Regulation in outlining the measures (deliverables and deadlines) that will be taken in order to reduce inflow and infiltration and control overflows as part of the amended CALWMP. In the current CALWMP the Uplands sewers were to be separated by the end of 2015. As the CRD expects to submit an amendment to the CALWMP early in 2016, the District's new proposal can be included in that amendment submission.

4. THE HERITAGE CONSERVATION ACT

McElhanney's sub-consultant, Golder Associates (Golder) prepared an archaeological overview assessment. The archaeological consultant undertook a field reconnaissance to identify areas of archaeological potential, has documented previously known sites, and prepared a background report outlining the First Nations history of settlement in the area. A version of the report that does not include specific archaeological site location information will be available to the public. Golder has also identified areas of archaeological potential within the project area and recommends an Archaeological Impact Assessment in areas with archaeological potential prior to the start of construction.

A meeting was held with the senior staff at Provincial Archaeological Branch responsible for administering the Heritage Conservation Act. Ministry staff recommended that a Section 14 Heritage Inspection "Blanket" permit is the best option for the District, as it allows for a number of proponents (Oak Bay and private property owners) to be included in the permit. Property owners would also be signatories to the blanket permit in addition to the District. A blanket permit does not absolve private property owners from full responsibility for protection of archaeological sites that may be present on their property.
A Technical Memorandum from Golder entitled 'Uplands Combined Sewer Separation Project: Archaeological Guidelines' which provides details of responsibilities and procedures will be available to the public on the District's web site.

5. PUBLIC ENGAGEMENT

Four public open houses are being arranged, two in North Oak Bay and two in South Oak Bay. The dates are:

- **Saturday November 7: 2pm – 5pm,**
  Location: Neighbourhood Learning Centre, Oak Bay High School

- **Tuesday November 10: 5pm – 8pm**
  Location: Royal Victoria Yacht Club

- **Friday November 20: 5pm – 8pm**
  Location: Uplands Campus

- **Saturday November 21: 2pm – 5pm**
  Location: Uplands Campus

These meetings will inform Oak Bay residents on the project, and provide an opportunity to understand the six options being considered for each catchment area. Story Boards will address the following:

- Why is the District undertaking the Uplands Combined Sewer Separation Project?
- What are combined sewers and combined sewer overflows?
- Who pays for the separation of the municipal sewers in the Uplands area?
- What are property owner responsibilities?
- What are property owner responsibilities under the Heritage Conservation Act?
- What are the six options under consideration and what are the approximate costs?

"Story Boards" will also show homes already with separated sewers to their property boundary and homes with pumps for the Humber and Rutland catchment areas.

Information will be provided on the Heritage Conservation Act.

Oak Bay citizens will have an opportunity to provide written comments at the meetings and for the following weeks leading up to December 4, the cut-off date for public comment. All information will be available on the District website. A report will be brought to Council January 2016 summarizing public comment and recommending an option.

FINANCIAL IMPACT:

Cost estimates for each option will be presented to council in January.

RECOMMENDATIONS:

It is recommended that the District:

1. Amend Bylaw 3891 to mandate sewer separation for new homes and connection to the separated municipal sewers when available; to mandate sewer separation for homes undergoing major renovations, based on a value of $100,000 or greater, and connection to the separated municipal sewers when available and to update Schedule "A" 'Fees and Permits' of the bylaw to reflect current costs and that it be updated annually.
2. Include the cost of connecting properties with sewers separated prior to the municipality separating the combined sewers, in the cost of the sewer separation construction contracts.
3. Obtain blanket Heritage Inspection Permits covering the municipal rights of way and adjacent property owners, as the project proceeds to construction.

Respectfully submitted,

Jack Hull, Project Manager
HJA Water Management Consulting

Source of Funds/I concur with the recommendation

for PATRICIA WALKER

Patricia Walker, Municipal Treasurer

I concur with the recommendation

Helen Koning, Chief Administrative Officer

ATTACHMENT 1

Examples of existing easement locations in the Humber and Rutland catchments

Humber Catchment

Existing Easement at 3490/3460 Beach Drive

Humber Catchment
Existing Easement at 3215/3235 Midland Road

Existing Easement at 3420/3430 Upper Terrace

Existing Easement at 2450/2470 Lansdowne

ATTACHMENT 2

Bylaw 3891, 'A Bylaw for the administration and regulation of public sewers,'
Section 2 subsections (3) and (4)

(3) Where the Municipality has on its own initiative installed or is installing a new sewer main the purpose of which is to separate an existing combined sewer system into individual storm sewer and sanitary sewer systems an owner whose property was previously served by the said combined sewer and whose property was connected to the combined sewer by a combined lateral, shall within one year from the date the Engineer certifies that new sewer main is operational, separate the combined lateral serving the property into individual storm sewer and sanitary sewer laterals and make the necessary connections to the public sewer.

(4) In the event of the owner failing to apply and pay all required fees for the necessary connection to the public sewer within sixty (60) days after being notified in writing by the Engineer to do so, without limiting any other recourse or remedy available to the Municipality the Engineer may cause the Municipality, by its workers or others, to have the required work completed at the expense of such owner including but not limited to the fees set out in Schedule "A", the invoice for which if unpaid on the 31st day of December next ensuing shall be added to and form part of the taxes payable in respect of the property served by the connection as taxes in arrears.

*(**Bylaw 4333, adopted Dec. 11/06)*

ATTACHMENT 3

Potential Locations for On-site Rainwater Management

Traffic Island Beach Drive/Midland Road

Midland Undeveloped Road Right of Way at Lansdowne Road

ATTACHMENT 2

Uplands Combined Sewer Separation project
REPORTS TO COUNCIL AND COMMITTEE OF THE WHOLE

Council - Jun. 13/16	Project Manager Memo re: Supplementary Information
Council - May 24/16	Project Manager Memo re: Contract Award for Phase 1 Geotechnical Investigation
COW - May 16/16	Memo - Assessing Service Installs and Tree Damage Memo - Trenchless Technology Presentation - Trenchless 101
Council - Apr. 25/16	Acting Dir. of Engineering Services Report - Small Communities Fund
Council - Mar. 29/16	Project Manager Memo re: Phase 1 Geotechnical Investigation and RFP Chief Administrative Officer's Report
Council - Feb. 22/16	Project Manager's Report
COW - Feb. 15/16	Project Manager's Report
Sp. Committee - Feb. 2/16	CAO's Memo on Special Committee of the Whole Process Project Manager's Report Project Manager's Presentation
Council - Oct. 26/15	Summary of Six Options for Combined Sewer Separation
Council - Oct. 26/15	Powerpoint Presentation to Council by J.A. (Jack) Hull, Project Manager
Council - Jun. 22/15	Revised Grant Application - Design, Public Outreach & Construction
Council - May 11/15	RFP Evaluation and Contract Award
Council - Mar. 23/15	Grant Application - Design
Committee - Feb. 16/15	Pre-Design Study Parameters

ATTACHMENT 3
PUBLIC ENGAGEMENT OVERVIEW

Context

Separating the combined sanitary and stormwater sewers is a provincially mandated initiative for the purposes of eliminating raw sewage overflows at the Humber and Rutland pump stations in the Uplands subdivision. Overflows occur when there are heavy rains and stormwater overwhelms the capacity of the pump infrastructure.

The unique layout and topography of the Uplands subdivision presents a formidable challenge to identifying an infrastructure solution that will achieve the environmental requirements of the provincial government while balancing off the key consideration of affordability for the District (all Oak Bay homeowners), and for property owners impacted by the final decision for whom there will be addition cost implications.

McElhanney Consulting Services Ltd (Consultant) was retained by the District to undertake a pre-design study that resulted in six options to achieve sewer separation in the Uplands neighbourhood. To help guide and inform Council's decision, District staff and project consultants were asked to seek input from residents of Oak Bay. While this project will take place in the Uplands neighbourhood, it has cost implications for all taxpayers in the municipality.

Public Engagement Objectives

To ensure that all Oak Bay residents:

- understand the need for the project;
- have access to clear and accurate project information in a format that is accessible and easily understood;
- have access to the consulting engineers and District staff in person, by phone and online;
- are encouraged to bring forward questions and concerns to enable meaningful discussions that test project assumptions; and,
- have an opportunity to record their opinions and that this personal feedback will be received by Council.

To ensure that the consulting engineers and District Staff:

- understand how each option presented impacts all residents of Oak Bay;
- have the opportunity to meet property owners and discuss a highly technical project in plain language over a period of time;
- have the opportunity to listen to residents and to respond directly to questions and concerns;
- hear directly from residents what project considerations and impacts are most important;
- identify gaps in the information presented and respond appropriately and in a timely manner; and,
- incorporate public opinion and ideas, as appropriate, in any modifications to the options presented for Council's consideration.

Engagement Overview

Action Taken	Outreach	Details
Article introducing the project: Oak Bay News	November 2	Article referenced Open House schedule and call to action to become informed
Open House flyers posted throughout community	Oak Bay Recreation Centre Henderson Recreation Centre Learning Resource Centre Library Monterey Centre Windsor Park Municipal Hall	Flyer attached for reference
Open Houses (5) *see flyer/ad	Saturday Nov. 7 : • Oak Bay High School Tuesday Nov. 10 • Royal Victoria Yacht Club Friday Nov 20 and Saturday Nov 21 • Uplands Campus (Henderson Road) Monday Nov 30 • Municipal Hall	Five Open Houses were hosted by the District 247 people attended 26 presentation boards were created to share with the public 75 per cent of attendees were residents from the Uplands neighbourhood Additional Open House was added to the schedule for November 30th to encourage more attendance
Advertisement of Open Houses in Oak Bay News	October 30 November 4, 13, 18, 20, 27	Ad is attached for reference
Open House handouts	Frequently Asked Questions, Option Summaries with cost estimates, and hard copies of the Public Opinion Survey	Handouts were available at each Open House, on line and in hard copy at the Municipal Hall
District of Oak Bay website:	Home page Spot Light link Promoting Open Houses with link off the home page to all project information and public opinion survey	All information presented at the Open Houses was made available on the District's website along with two archeology reports, and the Project Manager's reports to Council
Presentation material at Municipal Hall	A complete set of the Open House presentation boards were available at the Municipal Hall to address resident's questions and concerns.	Project Manager was available by phone and email to respond to technical inquiries

Public Opinion Survey	Hosted on the District of Oak Bay's website link from the home page From the website, the survey could be filled in on line or downloaded/printed and returned to the Municipal Hall Available in hard copy at the Open Houses and at the Municipal Hall	Public Opinion Survey (Survey) was available between November 9 and December 11 Online Survey linked to Open House project information Survey was restricted to one IP address per respondent Deadline was extended to encourage more participation 117 respondents total
Oak Bay News Editorial promoting the survey	November 25	
Oak Bay News advertisement: Call to action for the Public Opinion Survey	November 18 and 20	117 survey submissions were received by the deadline of December 11
Public access to Project Manager and communications staff:	The Project Manager and the communications project team member were identified as project contacts. Both responded to resident inquiries that came to the District by phone, email and formal correspondence. Ongoing	
Social media	District of Oak Bay's twitter account	Followers retweeted call to action to get engaged
Dedicated Committee of the Whole Meeting February 2	Project update from the Project Manager and report out on the Public Engagement Opportunity for Oak Bay residents to speak directly to Council	Reports posted on the District website on January 27th

Public consultation and engagement on this important Oak Bay project focussed primarily on Open Houses, a Public Opinion Survey and the District web site which served as the "go to" source for all project information. All attendees at the Open Houses and Survey respondents gave generously of their time and their knowledge to help inform Council's decision. Their important contributions identified several themes as well as new information for consideration. While there were some very disparate opinions, there was a common desire for Council to make an informed decision that everyone can live with.

Open Houses

Five Open Houses were held throughout the month of November: two in North Oak Bay, two in South Oak Bay and one in the Uplands neighbourhood. The Open House format was chosen as it provided the public with an invitation to learn about the project from project engineers and District staff, and to have questions and concerns addressed directly in an informal format over a period of time. Residents were encouraged to provide feedback and insight as well as to identify information gaps, and test assumptions. The six options were represented along with key features and considerations for each option. Residents were asked to register and record their address. While not everyone who attended registered, the vast majority of residents who did were property owners directly impacted by the project. Some residents who attended the Open Houses were also gathering information for neighbours and a few of these mentioned specifically that their neighbour was elderly and unable to attend in person.

Twenty six presentation boards were distributed throughout the venue. In attendance to speak about the project with Oak Bay residents: McElhanney Consulting project engineer, Project Manager (engineer), District engineering and public works staff, District CAO, and the CRD's Aboriginal Liaison Officer and project communications consultants. Council members attended one or more of the Open House sessions to review the material with the project team, and to engage with residents. Hard copies of the public opinion surveys were set out on tables and people were encouraged to complete the survey at the Open House or take it home, and complete it there.

All Open House presentation materials and project related reports can be found at: https://www.oakbay.ca/municipal-hall/plans-reports/uplands-sewer-separation/story-boards#sthash.lgO10yll.dpuf

Project Information	Humber and Rutland Catchment Areas	Six Options: Cost Estimates
Why Are We Doing This? The Heritage Conservation Act What is a Blanket Heritage Inspection Permit? Why Easements are Excluded from the Project Solutions Sanitary Sewer Pumps Stormwater Management on Municipal Property Public Feedback: We Want to Hear From You! – See more at:	Project Site Plan Existing: Humber – Combined Sanitary Sewage and Stormwater System Existing: Rutland – Combined Sanitary Sewage and Stormwater System Easements: Humber Easements: Rutland. Possible Community Stormwater Storage Locations	Option 1: Humber Option 1: Rutland Option 2: Humber Option 2: Rutland Option 3: Humber Option 3: Rutland Option 4: Humber Option 4: Rutland Option 5: Humber Option 5: Rutland Option 6: Humber Option 6: Rutland Cost Estimates Summary for 6 Options

Hand out materials available at the Open House sessions and on the District website included:

- Frequently Asked Questions
- Brochure from the provincial government archeology branch
- Summary document of the six options reflecting costs
- Hard copies of Public Opinion Survey (Strategic Initiatives Inc.)

The Public Opinion Survey was also online and public feedback was collected by staff during the Open Houses. In addition, Project staff were identified at Municipal Hall as well as on the District website to assist with residents' concerns, questions and requests for more information.

Public Opinion Survey (the Survey)

The District engaged Strategic Initiatives Inc. (SII), a local survey firm to assist with the gathering and analysing of public opinion among Oak Bay residents. The purpose of the Survey was to help the District gather feedback from residents of Oak Bay about the six options under consideration to separate the combined sanitary sewer and stormwater system in the Uplands neighbourhood. A total of 117 residents completed the Survey, and the vast majority of the respondents lived in one of the two project catchment areas in the Uplands neighbourhood. See Attachment 4: *The Uplands Combined Sewer Separation Project – Report on Survey Research.*

The low public response and interest in the Survey is difficult to explain given how widely advertised it was through mainstream media as well as in high traffic areas in the community. It may be that Oak Bay residents were provided with sufficient information and are prepared to accept Council's eventual decision. It may be that some of our senior residents may not be comfortable with, or able to access online data. Alternatively, it may be that the highly technical nature of this project is an explanation for the low public uptake. The public may have found it challenging to review and process the significant amount of information provided in order to complete the Survey. Without the benefit of attending an Open House to engage directly with the information and project staff, the online format may have been daunting for some. In addition, the online Survey required that the respondents complete it in one sitting, and there was no mechanism to save the survey and start again. While only five residents recorded problems with the Survey with SII or the project team, it is possible that many more tried and gave up.

Anticipating these potential challenges in advance, information was provided on the Survey directing residents to seek assistance from SII, and efforts were made to provide broader access to the Survey other than just online. A hard copy of the Survey was available as a PDF for downloading off the District's project webpage, and hard copies were available at each Open House as well as at the Municipal Hall. Advertisements and a project editorial in the Oak Bay News focused attention on the Open Houses and the Public Opinion Survey inviting residents to attend, and informing residents that hard copies of the Survey were available for downloading or could be picked up at one of the Open Houses or Municipal Hall. Of the 117 completed Surveys, 60 were submitted in hard copy.

There is a high correlation between the Survey results and the opinions expressed in conversation at the Open Houses. While all six options are technically feasible, this is a very challenging project for everyone involved and as such, each option evokes strong opinions – both for and against – depending on how the project impacts the resident respondent (directly, as a homeowner living in the project area; or indirectly, as a taxpayer living outside of the project area).

It is significant to note that the total number of Survey respondents disproportionally represents property owners living in the Humber and Rutland catchment areas of the Uplands neighbourhood – homeowners whose properties are most likely to be impacted by this project. While the Survey findings must be interpreted within this context, several conclusions, however, can be drawn from the data.

What We Heard – Survey and Open House Themes

Affordability

The most important project consideration for property owners living in Oak Bay was affordability (costs to property owners living in the Uplands AND to property owners living outside of the Uplands neighbourhood).

For property owners living in the Uplands, minimizing costs related to necessary work on their properties as well as ongoing operations and maintenance costs were the most important considerations.

For property owners living in neighbourhoods outside of the Uplands, minimizing the capital costs to the District was the most important consideration. Knowing how the District is going to finance this project and over what timeframe was linked directly to these concerns, as was ensuring that the decision reflects the best interests of all tax payers.

Almost half of the Survey respondents (44.4%) took advantage of the opportunity to respond to the open-ended question asking what other considerations that they would like to bring to Council's attention. In this section, concern was raised regarding the absence of life cycle costs for each option and the need for these numbers to be shared with the public. Several respondents asked that Council look at the lowest long term costs over the entire life-cycle of the system. Concern was also raised regarding the risk of escalating costs on a project of this magnitude. Some residents inquired if the District would be supplying the pumps to the residents if the option chosen required the property owner to have a pump (as was considered in 2010), and for the District to consider financial concessions given the overall cost implications for impacted property owners.

At the Open Houses and in the Survey, cost estimates were presented for impacted property owners in the Uplands neighbourhood specific to each option. It was pointed out by some that these estimates are not representative of the actual costs to be borne by homeowners given the complex features and amenities on each property. The actual costs were anticipated to be significantly higher for some residents.

While the Survey data indicates that impacted property owners in the Uplands neighbourhood strongly favour a deep gravity solution, given the feedback regarding the unrealistic cost estimates from some property owners, a deep gravity solution could have far greater cost implications than costs associated with installing a pump system that requires less invasive installation requirements. Bringing these divergent project considerations together may influence the opinions of some impacted property owners.

Most Environmentally Appropriate Use of Existing Pipe

Property owners throughout Oak Bay were somewhat aligned with a decision that would see the most environmentally appropriate use of the existing pipe. If the existing pipe is to remain a sanitary sewer, then consideration must be given to addressing concerns of a leaky pipe.

Some residents at the Open Houses assessed each option against achieving the goal of reducing raw sewage overflow in a timely manner. Options that reflect a new stormwater sewer would have an immediate impact on overflows as each homeowner connected. Options that reflect a new sanitary sewer would require the entire neighbourhood to hook up before any environmental impact would be achieved.

Ensuring Project Is Completed In a Timely Fashion

Property owners outside of the Uplands neighbourhood favoured a timely completion of the project more so than residents of the Uplands. Written comments however linked the timely completion of the project to affordability and a strong concern for cost overruns if the project dragged on. How the project will be financed is a primary concern.

Several respondents to the Survey explored how compliance could be achieved over a period of time. An observation was made that if the District cannot wait for the natural cycle of renovation and rebuild to modernize the drainage systems of existing older homes, then Option 4 is the only option as affected houses could continue to direct sanitary sewage to the older existing sewer, and redirect rainwater to onsite stormwater management or a new stormwater sewer as it is installed.

Negative Reaction to Pumps

The majority of respondents to the Survey, and in anecdotal information from conversations at the Open Houses, clearly indicated strong support for deep gravity Option 1 as the preferred solution. Option 3, where 100 per cent of homes in the impacted area have pumps, received little support. Concerns expressed about pumps included complications of prolonged power outages (risk of sewer back up and stormwater flooding), and costs of purchasing, installing and maintaining pumps and generators.

The importance of perceived fairness was also noted from two very different perspectives:

- Many Uplands property owners impacted by the project felt that gravity service should be maintained as the priority for the District. Others indicated that if a pump system was going to be introduced, the District should contribute to the costs. Some Uplands residents alleged a possible negative impact on property values should pumps have to be installed.
- For property owners living outside of the Uplands, concerns were raised about the capital costs of the options being borne by all Oak Bay residents. Of importance was the need to ensure that the decision reflects the best interests (affordability) of all taxpayers and not just the wishes of those directly impacted citing that the vast majority of Oak Bay taxpayers live outside of the Uplands neighbourhood.

Discussions at the Open Houses were supported by presentation materials that included a comprehensive mapping of water and sewer infrastructure, background and contextual information, as well as a map of the Uplands showing homes that have existing stormwater and or sewer pumps.

District staff noted that several homes throughout Oak Bay have pumps, and new homes under construction, particularly those that have deep basements may have pump support for sanitary and/or stormwater services. This includes homes under construction and recently constructed homes in the Uplands neighbourhood.

Preferred Options

Property owners living in the Uplands preferred Option 1 (deep gravity new sanitary sewer) and least preferred Option 3 (100 per cent pumps).

Property owners living outside of the Uplands preferred Option 3 (100 per cent) pumps and least preferred Option 1 (deep gravity new sanitary sewer).

These findings reflect the financial impact of this project on each property owner.

For both Uplands property owners and property owners living outside the Uplands, the differences in average rankings of the remaining technical options were not significant (see figure 17, Attachment 4: *Uplands Combined Sewer Separation Project – Report on Survey Research*).

The majority of respondents indicated their preference for a new sanitary sewer system while noting the existing pipe leaks and is therefore, more appropriate for stormwater. The Survey comments also noted that a new stormwater management system may be the only solution that allows for a reduction in overflows (environmental impact) in a timely fashion.

What We Heard – Open Houses and Surveys

The opportunity to discuss this project directly with Oak Bay residents at the Open Houses, and in following up on inquiries provided valuable information. Most attendees acknowledged that stopping raw sewage discharge onto local beaches is an important goal.

During the five Open Houses, residents raised concerns, provided new information, and suggested alternative considerations. Those who attended from the Uplands neighbourhood had detailed questions specific to their properties and sought detailed information beyond what is currently available due to the restricted scope of the discovery/options exercise. Having access to more specific information in order to make an informed decision from the perspective of the impacted property owners in the Uplands was identified as an underlying concern. Residents were informed that more information specific to their property will be available to the public at the next stage of detailed design.

The following concerns and comments were raised in the Survey and the Open Houses:

- **Some residents strongly advocate for taking responsibility for stormwater management on their properties arguing that the large property footprints would allow for this and that returning stormwater to the ground is the most desirable solution.**
  This has been addressed in the Consultant's report.

- **The decision regarding the exclusion of the easements was challenged repeatedly and recommendations were made identifying directional drilling as a possible viable solution allowing the activation of easements.**
  This has been addressed in the Consultant's report.

- **There was recognition that many older homes throughout Oak Bay still have a combined sewer connection (homeowners who have not/ may not have separated stormwater from sanitary sewer from the home to the street). Discussions included the fair and equal treatment for all Oak Bay residents (incentives and compliance).**
  This has been addressed in the Consultant's report.

- **There was recognition that small areas exist in other Oak Bay neighbourhoods where separate stormwater services have not yet been installed. Discussions included the fair and equitable treatment for all Oak Bay residents (incentives and compliance).**
  This has been addressed in the Consultant's report.
- **There was recognition that more information was needed with regard to the archeological implications of this project on impacted property owners in the Uplands.**
  This has been addressed in the Consultant's report. The provincial government's archeology branch is the source for this information.
- **The question as to whether or not residents will be forced to install a pump, hook up appropriately or unhook appropriately was raised.**
  How to proceed with compliance has been addressed in the Consultant's report.
- **Protect the mature landscape and trees on private and public property.**
  This has been addressed in part within the Consultant's report under the section that discusses easements.

Other public comments captured for Council's consideration include:

- District should explore the opportunity to share capital costs of the project with other utilities such as BC Hydro, BC Tel and FORTIS BC.
- Concern whether or not the District would play a role in coordinating construction work on private property as well as public property.
- Some residents, particularly seniors, may not have adequate financial resources to comply with this initiative.
- Some homeowners living in the Uplands have already invested in separating stormwater and sanitary sewer to the property line (as directed by the District) and have paid for their connection to the combined system. Some may have to invest again to install a pump, or invest again to connect to the selected option.
- The decision making process that will arrive at a single option recommendation for Council should include local representation (Oak Bay residents including Uplands property owners).
- The final decision should reflect a long-term view (a solution that will last another 100 years).
- A new stormwater management system may be the only solution that allows for a reduction in overflows (environmental impact) in a timely fashion.
- The final decision should account for climate change which is going to have a significant impact on stormwater management.
- Concern was expressed over the negative cumulative impact of stormwater discharge to the Salish Sea. While not a requirement under the current provincial government regulation, the impact of urban discharges is a growing significant issue.

Some respondents/attendees inquired about an Option 7, and suggested other solution considerations:

- **Is this the opportunity to have 100 per cent gravity service in the Uplands?**
  This has been addressed in the Consultant's report.

- **Why is the focus of this project on one single solution being applied to both catchments? Given that the topography is different in each catchment, is it possible that each catchment area has solutions that are unique to the area and perhaps more cost effective?**
  The Consultant has advised that the two catchment areas have very similar characteristics. While this possibility (different solutions for each catchment) hasn't been explored at this stage, it could be considered at the detailed design stage.

- **Could the existing pressurized water supply be re-purposed for an appropriate use?**
  The Consultant has advised that water mains could theoretically be re-usable as a pressure sewer system, in this case however, the water main diameters are too large and would result in anaerobic conditions due to long travel time through the system. In addition, a new water distribution system would be needed to replace the existing one. The cost of this approach would exceed that of Option 3, which is a pressure sewer system but with a smaller diameter pipe than that required for a new water distribution system.

- **Is it possible to address overflows by enlarging the two pumping stations?**
  This was reviewed during an earlier study by engineering firm Kerr Wood Leidal and Associates, and was deemed to be impractical and unaffordable. It would require changes to the primary East Coast interceptor infrastructure.

Public feedback through the public engagement initiatives suggest that Council will need to reconcile the competing desires and values of taxpaying residents whose properties will be directly impacted by this project, with those desires and values of Oak Bay taxpayers living in neighbourhoods outside the project area. Finding a solution that everyone can live with is the goal.

Attachment 4: *The Uplands Combined Sewer Separation Project – Report on Survey Research*

OAKBAYNEWS

Oak Bay serious about Uplands sewer solutions

by Christine van Reeuwyk - Oak Bay News
posted Nov 2, 2015 at 4:00 PM

Oak Bay's provincially mandated sewer separation project in Uplands primarily needs public input to make a next move.

The Uplands neighbourhood currently has a single pipe system to convey both sanitary sewage and storm water.

During heavy rainfall, the volume of water exceeds the capacity of the system, sending overflows into the ocean at the Rutland and Humber pumping stations.

"The idea is to resolve the outflows to the beach," said Oak Bay Mayor Nils Jensen.

Separation is also required to comply with BC's Municipal Wastewater Regulation that all municipalities have separate stormwater and sanitary sewer systems.

Oak Bay plans to mandate sewer separation and connection to the separated municipal sewers when available for new homes in Uplands, to mandate sewer separation for homes undergoing renovations of $100,000 or more and connection to the separated municipal sewers when available and to update its permit fees to reflect current costs.

"We are looking at incentives for homeowners," Jensen said. "Our goal is to create an incentive for people already separated, to hook up."

Oak Bay will consider a policy to cover the cost of connecting properties with sewers separated prior to the municipality separating the combined sewers. Those costs would be included in the sewer separation construction contracts.

Because the district has for several years required property owners in the Uplands to separate their services during major renovations or building a new home, 12 per cent of the homes in the Rutland catchment and 39 per cent of the homes in the Humber catchment have separated sewers to the property boundary.

In May, the district hired McElhanney Consulting Services, which developed of six possible options to separate the sewer system. All six assume easements through private property are not in play.

Those easements would uproot significant trees and other green growth in swaths of five metres.

"By staying out of these easements more homes would have more pumps," said water management consultant Jack Hull.

However, using the existing easements would significantly add to both cost and time, including negotiating two additional metres of easement with private landowners (currently three metres, five are required) as well as devastating five metres of established trees and foliage.

Options include adding a deeper gravity system alongside the existing system; new pumped low-pressure system alongside the existing system; a new shallow-gravity storm water system with municipal pumping stations for roadway runoff; and a hybrid of shallow system pumped where necessary using the existing system.

A series of four public information sessions is planned:

- **Saturday, Nov. 7 from 2 to 5 p.m.** in the Neighbourhood Learning Centre, Oak Bay High;
- **Tuesday, Nov. 10 from 5 to 8 p.m.** at the Royal Victoria Yacht Club (3475 Ripon Rd.);
- **Friday, Nov. 20 from 5 to 8 p.m.** at Uplands Campus;
- **Saturday, Nov. 21 from 2 to 5 p.m.** at Uplands Campus (3461 Henderson Rd.)

The plan is to present information to attendees then solicit feedback, said communications consultant Kathi Springer.

Information boards will show homes already with separated sewers to their property boundary and homes with pumps for the Humber and Rutland catchment areas.

They will also outline the six options as presented to council, with the addition of associated cost estimates which council has not yet seen. "We see this process as an education process," Springer said, adding there will also be physical pumps on hand for residents to see.

Residents can also offer written comments at the meetings or to the municipality by Dec. 4.

Information is online at oakbay.ca.

"The cost will impact the whole community," Jensen said.

Council expects a report in January that incorporates the public feedback and cost estimates.

OAKBAYNEWS

Uplands sewer separation affects all residents

posted Nov 25, 2015 at 9:00 PM

Final open house Monday, Nov. 30

The recent heavy rain storms are a stark reminder of the responsibility the District of Oak Bay and our citizens have under the provincial government's Municipal Wastewater Regulation to separate the existing combined stormwater and sanitary sewer system in the Uplands neighbourhood.

We are obliged to separate the two pipes because combined flows during heavy rains overwhelm the two pump stations at Humber Road and Rutland Road, and raw sewage overflows in the shallow ocean waters.

When the Uplands neighbourhood was designed over a century ago, a network of easements was introduced along the sides and backs of properties where the single pipe infrastructure was placed, maximizing the influence of the area's topography to allow for a gravity system. A wider easement would be required to install a second pipe and the wider easement would have to be cleared of all vegetation and fences. The six options being examined exclude the use of easements in the solutions.

This month, more than 200 Oak Bay residents attended one or more of the four open houses to review the options and test assumptions directly with project engineers and district staff. We are fortunate to have many residents with expertise, and this opportunity to convene around this project has allowed for constructive dialogue that will help strengthen a recommendation to council in the new year. Conversations to date have touched on the merits and challenges of trench construction, the capital costs to Oak Bay taxpayers, the possibility of directional drilling, the opportunity for stormwater management solutions and the desire to see a solution that takes a long-term view with maximum environmental and community benefit.

This is a complex infrastructure initiative that requires careful and thoughtful consideration of project benefits and impacts. It's not easy and we want to hear from you. Council is grateful to all those who have given their time, expertise and passion to this important project to date, and the district is hosting one more open house Monday, Nov. 30 from 5 to 8 p.m. at the municipal hall.

If you're unable to attend in person, all information presented at the open houses is on the district's website, including a public opinion survey that can be downloaded or completed online. The online survey is also available in hard copy at the municipal hall and will be at the open house. All project surveys must be completed and handed in by Dec. 4. While this project will take place in the Uplands over several years, the capital costs on municipal property will affect everyone.

Options being examined reflect a range of total project capital costs from $13.9 million to $20.7 million. Options include:

- A new deeper gravity sanitary sewer system. The existing pipes would carry stormwater;
- A new deeper gravity system for storm water. The existing pipes would carry sanitary sewage;
- A low-pressure shallow sanitary sewer system. The existing pipes would carry stormwater;
- Shallow, gravity stormwater sewers pumped where necessary. The existing pipes would carry sanitary sewage;
- Shallow, gravity sanitary sewer system pumped where necessary. The existing pipes would carry stormwater;
- Shallow gravity sanitary sewer system with community sanitary pump systems where necessary. The existing pipes would carry stormwater.

Further community engagement will take place in January followed by the finalization of the technical report. A recommendation from district staff for a single option will be presented to council in the new year for consideration and decision.

The project will proceed to detailed design in 2016. It's anticipated this project will be phased in over several years based on available funding. Compliance with the provincial regulation is mandatory for the District of Oak Bay as it is for other jurisdictions in the province.

Visit the district website at oakbay.ca to view the project information and complete the survey. Council thanks you for your time and attention on this important project. We want to hear from you.

Nils Jensen,
Mayor, District of Oak Bay

DISTRICT OF
OAK BAY

Uplands Combined Sewer Separation Project Open Houses

The provincial government's Municipal Wastewater Regulation requires all BC municipalities to have separate stormwater and sanitary sewer systems. Compliance with the provincial regulation is mandatory for the District of Oak Bay as it is for other jurisdictions in the province such as Burnaby, New Westminster and the City of Vancouver where single pipe infrastructure currently exists.

The Uplands area is the last remaining neighbourhood to have a single pipe system to accommodate both sanitary sewer and stormwater flows. During heavy rainfall, the stormwater volume exceeds the capacity of the system and a combination of stormwater and raw sewage discharges into the ocean at the Rutland and Humber pump stations.

Six options have been identified to achieve mandatory compliance. Residents of Oak Bay are invited to attend an Open House to learn more about these options. For more information, visit www.oakbay.ca

Open House Dates

Nov 7, Saturday
2 – 5 pm
Activity Rooms 3 & 4
Neighbourhood Learning Centre
Oak Bay High School
2151 Cranmore Road
Victoria, BC

Nov 10, Tuesday
5 – 8 pm
Main Lounge – Cadboro Room
Royal Victoria Yacht Club
3475 Ripon Road
Victoria, BC

Nov 20, Friday
5 – 8 pm
Gym, Uplands Campus
3461 Henderson Road
Victoria, BC

Nov 21, Saturday
2 – 5 pm
Gym, Uplands Campus
3461 Henderson Road
Victoria, BC

DISTRICT OF
OAK BAY

Uplands Combined Sewer Separation Project Open Houses

We Want To Hear From You!

The District of Oak Bay would like to hear from residents of Oak Bay on the six options under consideration to separate the combined sewer system in the Uplands neighbourhood as mandated by the provincial government under the Municipal Wastewater Regulation.

Please join us at the Open House **November 30** or go to the District's website **www.oakbay.ca** to review all the Open House Presentation materials and to complete a short online survey.

This survey will help inform Council's decision-making moving forward.

The provincial government's Municipal Wastewater Regulation requires all BC municipalities to have separate stormwater and sanitary sewer systems. Compliance with the provincial regulation is mandatory for the District of Oak Bay as it is for other jurisdictions in the province such as Burnaby, New Westminster and the City of Vancouver where single pipe infrastructure currently exists. The Uplands area is the last remaining neighbourhood to have a single pipe system to accommodate both sanitary sewer and stormwater flows. Six options have been identified to achieve mandatory compliance.

Open House

November 30, Monday

5 – 8 pm
Oak Bay Municipal Hall
2167 Oak Bay Ave., Victoria, BC

DISTRICT OF
OAK BAY

Uplands Combined Sewer Separation Project

We Want To Hear From You!

Survey Deadline Extended to Midnight, Friday, December 11

www.oakbay.ca

Access the survey from the homepage.

The provincial government's Municipal Wastewater Regulation requires all BC municipalities to have separate stormwater and sanitary sewer systems. Compliance with the provincial regulation is mandatory for the District of Oak Bay as it is for other jurisdictions in the province such as Burnaby, New Westminster and the City of Vancouver where single pipe infrastructure currently exists. The Uplands area is the last remaining neighbourhood to have a single pipe system to accommodate both sanitary sewer and stormwater flows. Six options have been identified to achieve mandatory compliance.

The District of Oak Bay would like to hear from residents of Oak Bay on the six options under consideration to separate the combined sewer system in the Uplands neighbourhood as mandated by the provincial government under the Municipal Wastewater Regulation.

- Go online to **www.oakbay.ca** and follow links to complete an online survey.
- Download a hard copy of the survey **www.oakbay.ca**
- Pick up a hard copy of the survey at Municipal Hall and go online to review the project information.

Hard copies must be returned to Municipal Hall by December 11.

DISTRICT OF
OAK BAY

Uplands Combined Sewer Separation Project

Council is hosting a special *Committee of the Whole* meeting dedicated to the Uplands Combined Sewer Separation Project

Tuesday February 2, 2016

Monterey Recreation Centre
1442 Monterey Avenue – **7:00 PM**

Oak Bay residents are invited to attend this special project update to share views, ideas, concerns and support in relation to six options that are being considered to separate the existing combined sanitary and stormwater sewer in the 465 acre (190 hectare) Uplands subdivision.

A comprehensive staff report will be available on the District website on January 27 along with project materials presented at the Open Houses held in November and December.
www.oakbay.ca

The public is welcome to submit correspondence for inclusion on the agenda to Acting Director of Corporate Services
mjones@oakbay.ca
Deadline for submissions is 3:00 pm on February 2, 2016

About the Uplands Combined Sewer Separation Project:

The provincial government through its Municipal Wastewater Regulation requires all B.C. communities that have single pipe infrastructure to take the appropriate action to separate stormwater flow [illegible] y [illegible] flow [illegible] d[illegible]y

ATTACHMENT 4

THE UPLANDS COMBINED SEWER SEPARATION PROJECT – REPORT ON SURVEY RESEARCH

Uplands Combined Sewer Separation Project

Report on Survey Research

PREPARED BY:

STRATEGIC INITIATIVES INC.

305-5332 SAYWARD HILL, VICTORIA, BC V8Y 3H8

250-381-3376

info@StrategicInitiatives.ca

www.StrategicInitiatives.ca

January, 2016

Executive Summary

- This document reports on the findings from a survey conducted by Strategic Initiatives (SII) on behalf of the District of Oak Bay among Oak Bay residents and/or property owners. The purpose of the survey was to help the District gather feedback and understand opinions from residents of Oak Bay about the six options under consideration to separate the combined sewer system in the Uplands neighbourhood. A total of 117 completed responses were received. Of the 117 respondents, 70% owned property in the Uplands; 95% of these in the Humber/Rutland area.
- Respondents indicated that of the various considerations about which they were asked, the most important were: minimizing operations/maintenance costs to Uplands property owners (78% rated either very important or somewhat important); most environmentally appropriate use of existing pipe (67%); and minimizing capital costs to Uplands property owners (64%). The least important considerations (based on "bottom 2 box" scores, or the percentage of respondents rating the consideration either very unimportant or somewhat unimportant) were: project is completed in a timely fashion (34%); minimize capital costs to the District (32%); and minimize length of neighbourhood disruption (25%).
- Based on respondents' average ratings on a scale from 1 to 5, the most important considerations were: minimize operations/maintenance costs to Uplands property owners (4.2); most environmentally appropriate use of existing pipe (4.0); and minimize capital costs to Uplands property owners (3.9).
- Oak Bay homeowners whose property was not located in the Uplands ("Other OB Homeowners") were significantly more likely than owners of property in the Uplands ("Uplands Homeowners") to rate as important: most environmentally appropriate use of pipe (4.5 vs. 3.8); project is completed in a timely fashion (3.7 vs. 3.0); minimize capital costs to the District (4.6 vs. 2.8); and minimize operations/maintenance costs to the District (4.6 vs. 3.4). Uplands homeowners were significantly more likely than other OB homeowners to rate as important: minimize capital costs to Uplands property owners (4.4 vs. 2.6); and minimize operations/maintenance costs to Uplands property owners (4.6 vs. 2.9).
- Minimizing capital costs to Uplands property owners was rated most important by the largest percentage of all respondents to the survey (26%), followed by minimizing operations/maintenance costs to Uplands property owners (19%); and minimizing capital costs to the District (13%).
- Uplands homeowners were significantly more likely than other OB homeowners to rank as most important: minimize capital costs to Uplands property owners (37% vs. 0%); and minimize operations/maintenance costs to Uplands property owners (26% vs. 3%). Other OB homeowners were significantly more likely than Uplands homeowners to rank as most important: minimize capital costs to the District (45% vs. 2%); and minimize operations/maintenance costs to the District (28% vs. 2%).
- Almost half (44.4%) of those completing the survey took advantage of the opportunity of responding to an open-ended question asking them what other considerations they would like to make Council aware of to comment regarding cost issues – either capital or operating/maintenance. One third (32.5%) of respondents either expressed their strong preference for a gravity-based system, or indicated negative feelings about pumps and generators.
- Option 1 was the technical option preferred by the highest percentage of respondents, with 46% of all those responding to the survey ranking Option 1 first in order of preference, followed by Option 3 (10%) and Option 6 (9%).
- Based on mean ranking scores, Uplands homeowners were significantly more likely than other OB homeowners to rank Option 1 and Option 2 as their most preferred of the six technical options. Other OB homeowners were significantly more likely than Uplands homeowners to rank Option 3 as their most preferred option. The differences between Uplands homeowners and other OB homeowners in their average rankings of the remaining technical options were not significant.
- When asked for the one or two reasons why they preferred the technical option they had ranked "1", almost half of those responding to the survey (47.9%) said their preference was related to gravity systems being "better", or to negative feelings about pumps. More than one third of the responses (35.0%) indicated that the preference for a specific option was related to cost issues. One quarter of respondents (24.8%) related their preference for their first choice option to their concern that the current pipe be used for storm water and the new pipe be used for the sanitary system. Less than one quarter of people (17.1%) preferred their first choice option because they perceived it as less disruptive.

Contents

Introduction and Background

This document reports on the findings, conclusions and indicated actions from a survey conducted by Strategic Initiatives (SII) on behalf of the District of Oak Bay. The survey was conducted among Oak Bay residents and/or property owners between November 9 and December 11, 2015 in order to help the District gather feedback and understand opinions from residents of Oak Bay about the six options under consideration to separate the combined sewer system in the Uplands neighbourhood, as mandated by the provincial government under the Municipal Wastewater Regulation. Responses to the survey will help inform Council's decision-making moving forward.

The survey instrument (questionnaire) was developed by Strategic Initiatives in close collaboration with the District of Oak Bay. In addition to seven closed-ended questions, the survey included two open-ended questions. Responses to the survey questions are summarized within this report. A spreadsheet including all the responses received to the open-ended questions, verbatim, is attached as appendix 1.

The online survey was hosted by Strategic Initiatives. Respondents were directed to the online survey via a clickable link on the Oak Bay website, by mentions at open houses and via social media. Paper copies of the survey were distributed at open houses and at the Oak Bay municipal offices, for those preferring to complete the survey in hard copy. A link to a downloadable hard copy version of the survey was also included on the Oak Bay website.

Of the total of 117 completed surveys, 60 were submitted in hard copy. Hard copy responses were entered into the survey software by Strategic Initiatives. Responses to open-ended questions submitted in hard copy were transcribed, verbatim, into the survey software.

Once data collection and data entry of the hard copy surveys was complete, the raw data were cleaned and tabulated. Responses to open-ended questions were coded and tabulated. Cross-tabulations were run to calculate responses to each question in the online survey according to whether respondents owned property in the Uplands. (Unfortunately, due to the small sample size, it was inappropriate to cross-tabulate responses by other variables.) Significance tests were performed at the 95% confidence level (described in the report as “significantly more likely”). Statistically significant differences between Uplands property owners and non-owners have been called out in the report. Otherwise, the reader may assume that no statistically significant differences were observed.

With a sample size of 117, survey results are accurate to within an estimated margin of error of ±9.06% at a 95% level of confidence (i.e. 19 times out of 20).

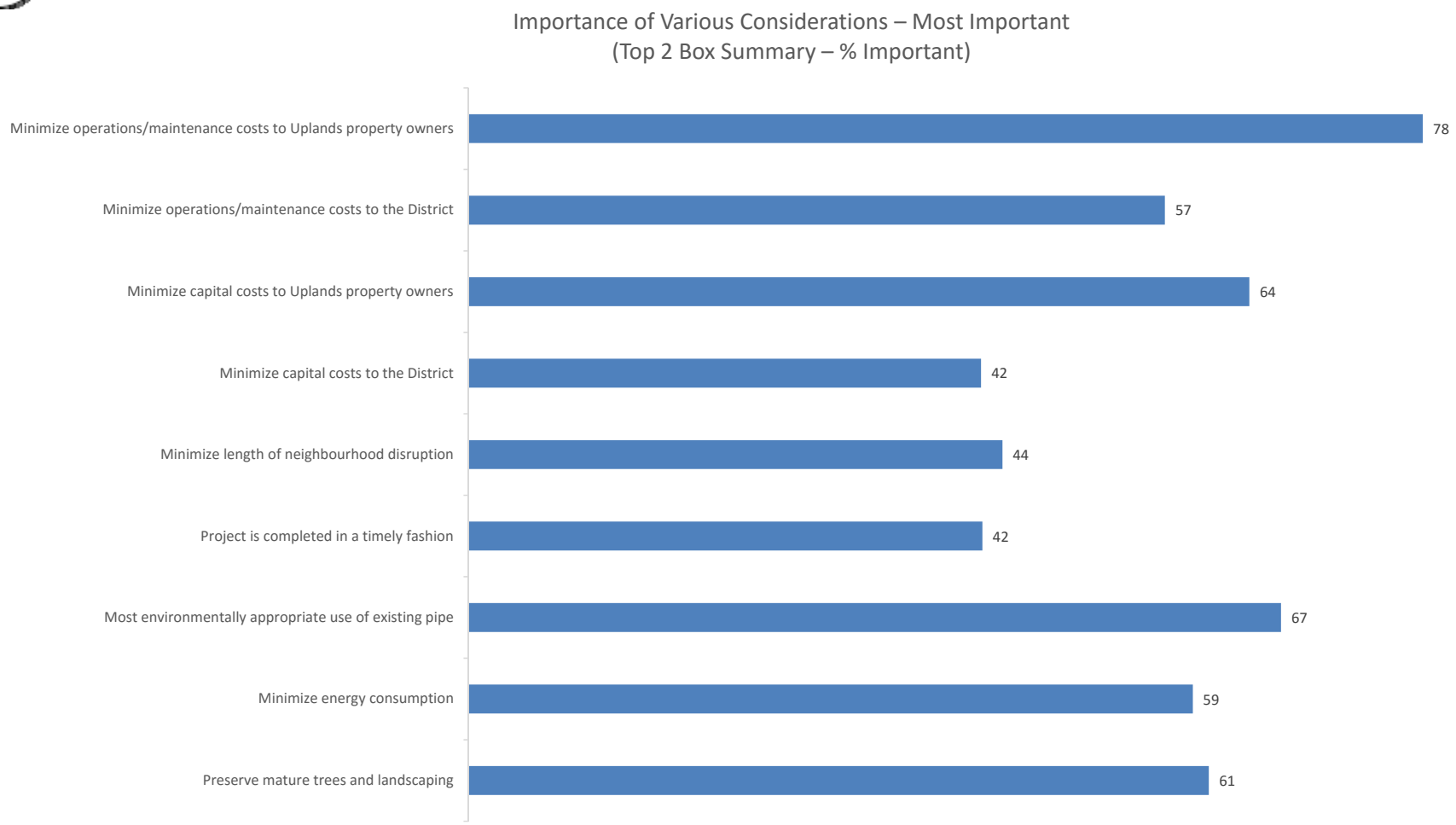
Respondent Demographics

The first four questions of the survey (Q1 through Q4) were used to screen and classify respondents. Individuals who were not either residents of Oak Bay or Oak Bay property owners were disqualified from completing the survey.

The base of 117 survey respondents broke down as follows:

- 93% of those beginning the survey identified themselves as residents of Oak Bay;
- 93% of all respondents said they owned property in Oak Bay;
- 70% of Oak Bay property owners indicated their property was in the Uplands (82 respondents); and
- 95% of Uplands property owners said their property was located in the Humber/Rutland catchment area (78 respondents).

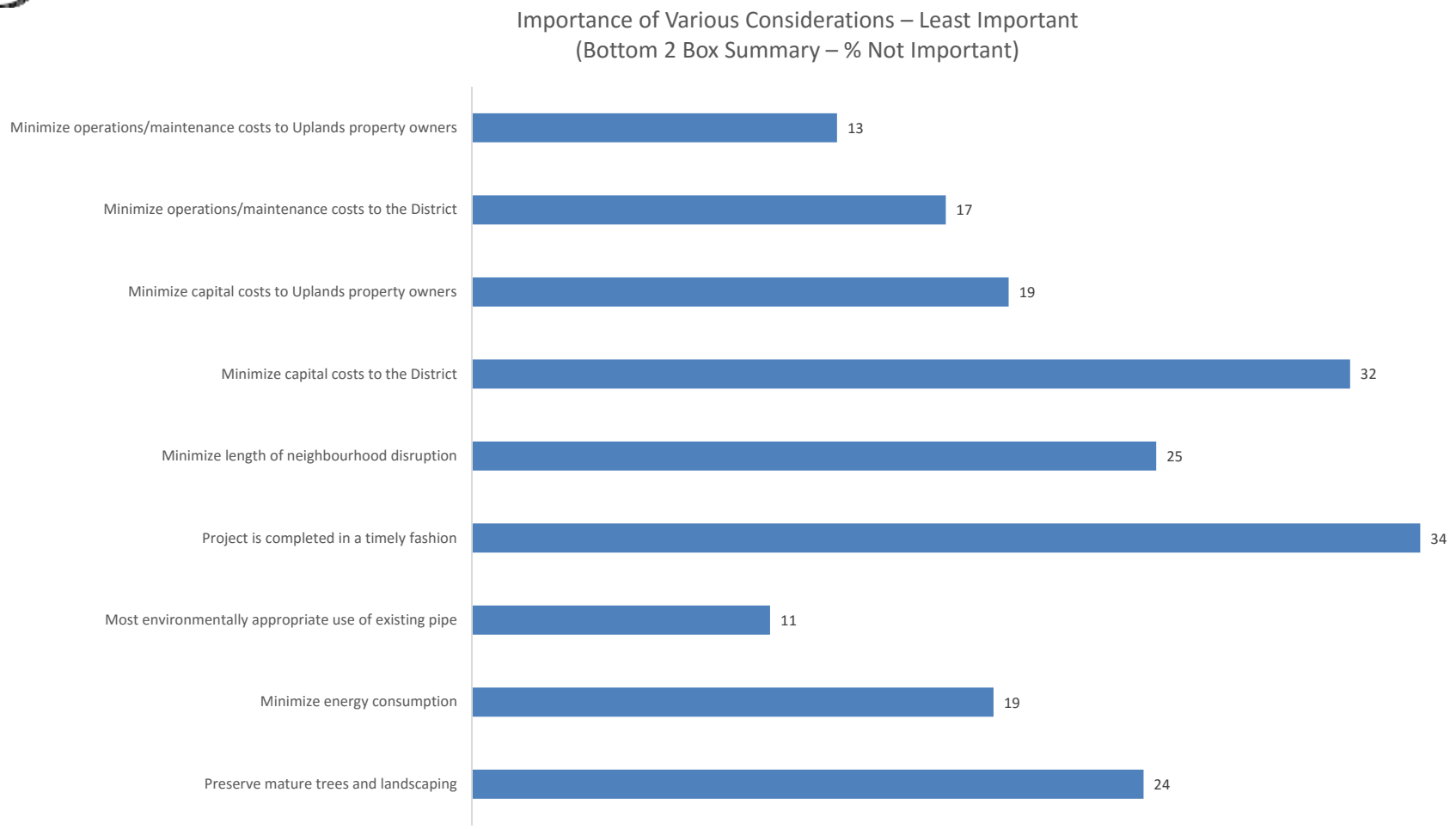
Overall Importance of Various Considerations



Q5 Council will be weighing a number of considerations as it determines how best to comply with the provincial government's mandatory Municipal Wastewater Regulation. Please rate the importance of each of the following considerations.

Respondents indicated that of the various considerations about which they were asked, the most important were: minimize operations/maintenance costs to Uplands property owners (78% rated either very important or somewhat important); most environmentally appropriate use of existing pipe (67%); and minimize capital costs to Uplands property owners (64%).

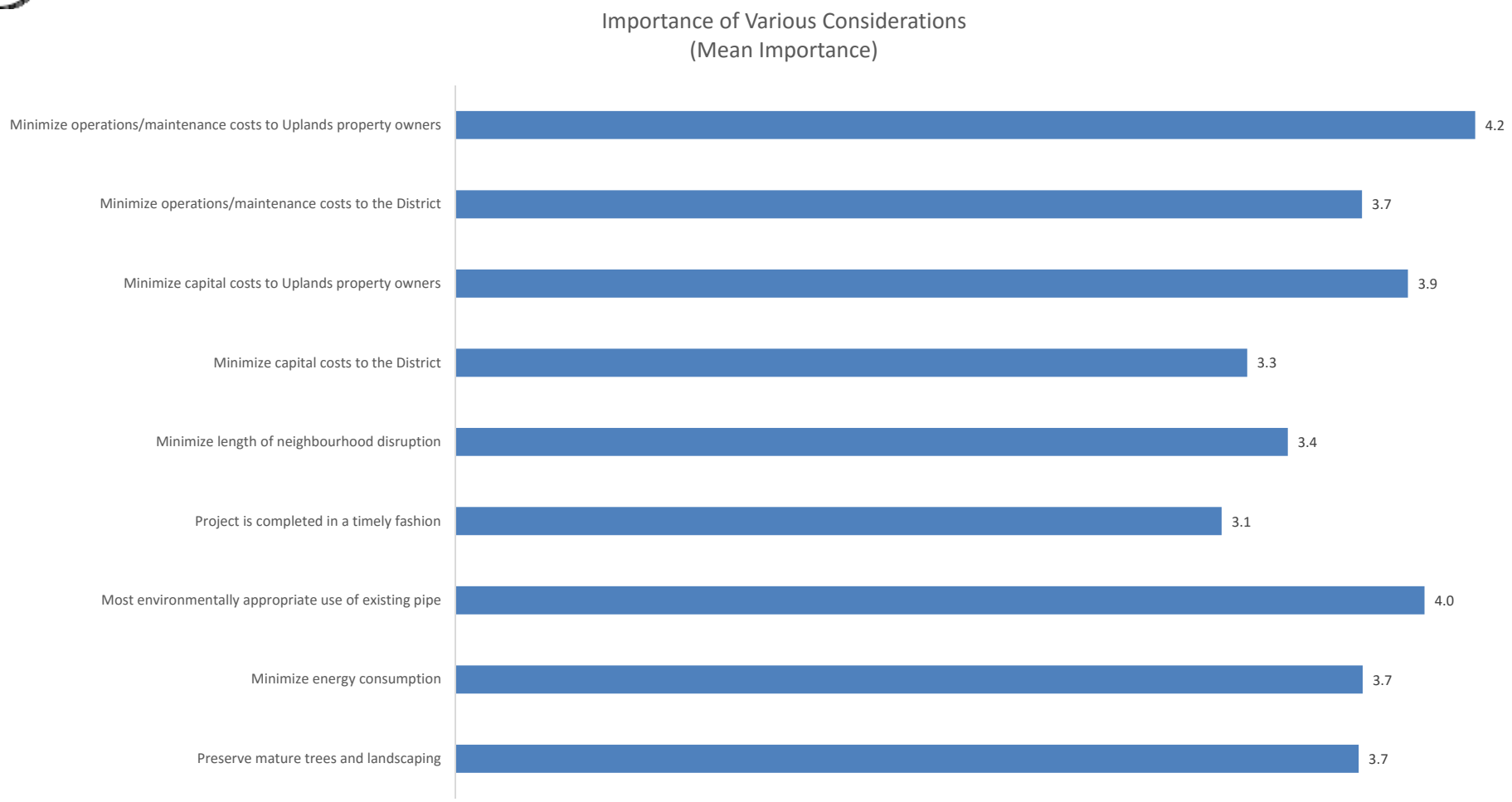
Overall Importance of Various Considerations



Q5 Council will be weighing a number of considerations as it determines how best to comply with the provincial government's mandatory Municipal Wastewater Regulation. Please rate the importance of each of the following considerations.

The least important considerations (based on "bottom 2 box" scores, or the percentage of respondents rating the consideration either very unimportant or somewhat unimportant) were: project is completed in a timely fashion (34%); minimize capital costs to the District (32%); and minimize length of neighbourhood disruption (25%).

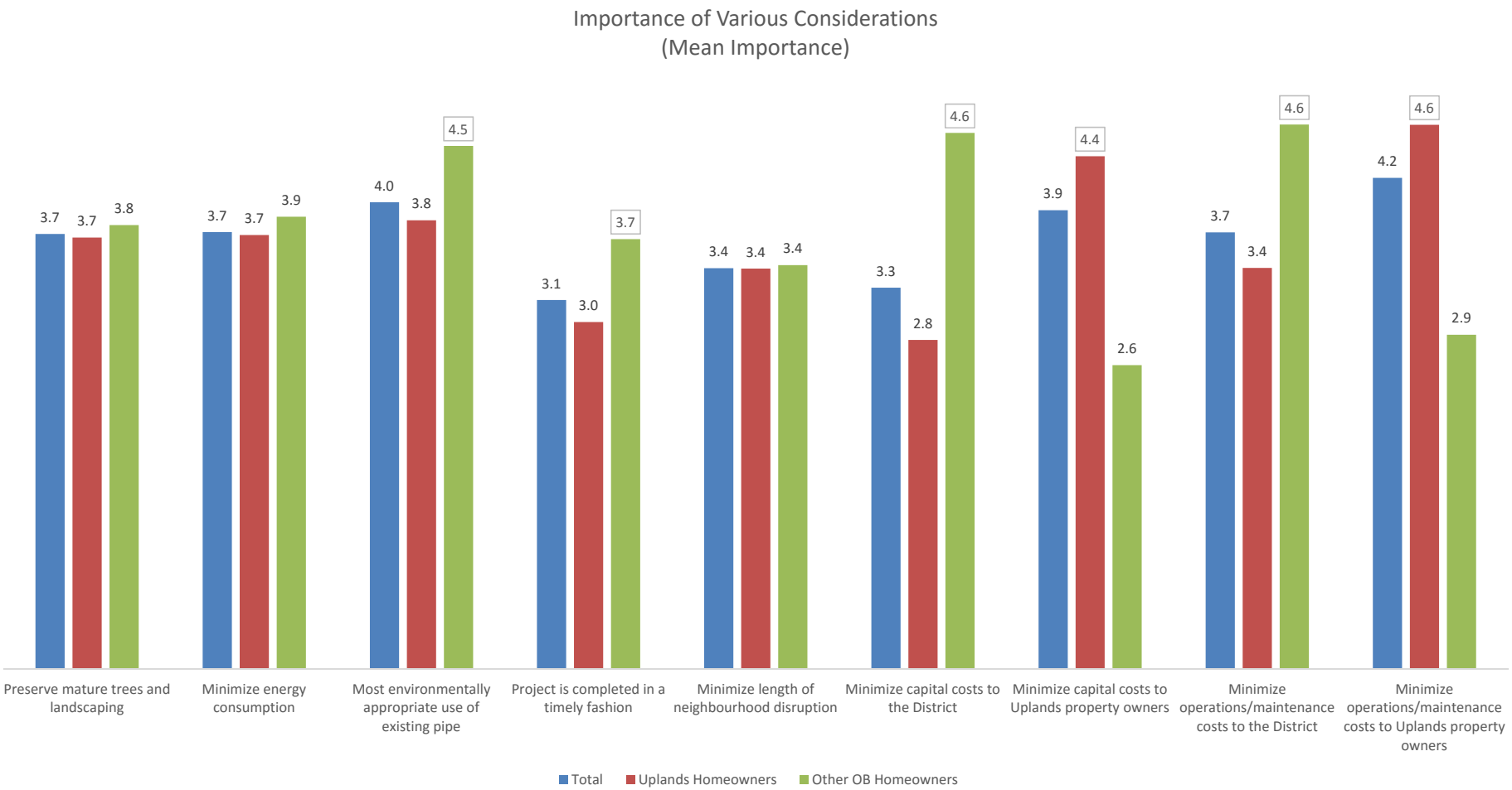
Overall Importance of Various Considerations



Q5 Council will be weighing a number of considerations as it determines how best to comply with the provincial government's mandatory Municipal Wastewater Regulation. Please rate the importance of each of the following considerations.

Based on respondents' average ratings on a scale from 1 to 5, the most important considerations were: minimize operations/maintenance costs to Uplands property owners (4.2); most environmentally appropriate use of existing pipe (4.0); and minimize capital costs to Uplands property owners (3.9). Considerations with the lowest average importance scores were: project is completed in a timely fashion (3.1); minimize capital costs to the District (3.3); and minimize length of neighbourhood disruption (3.4).

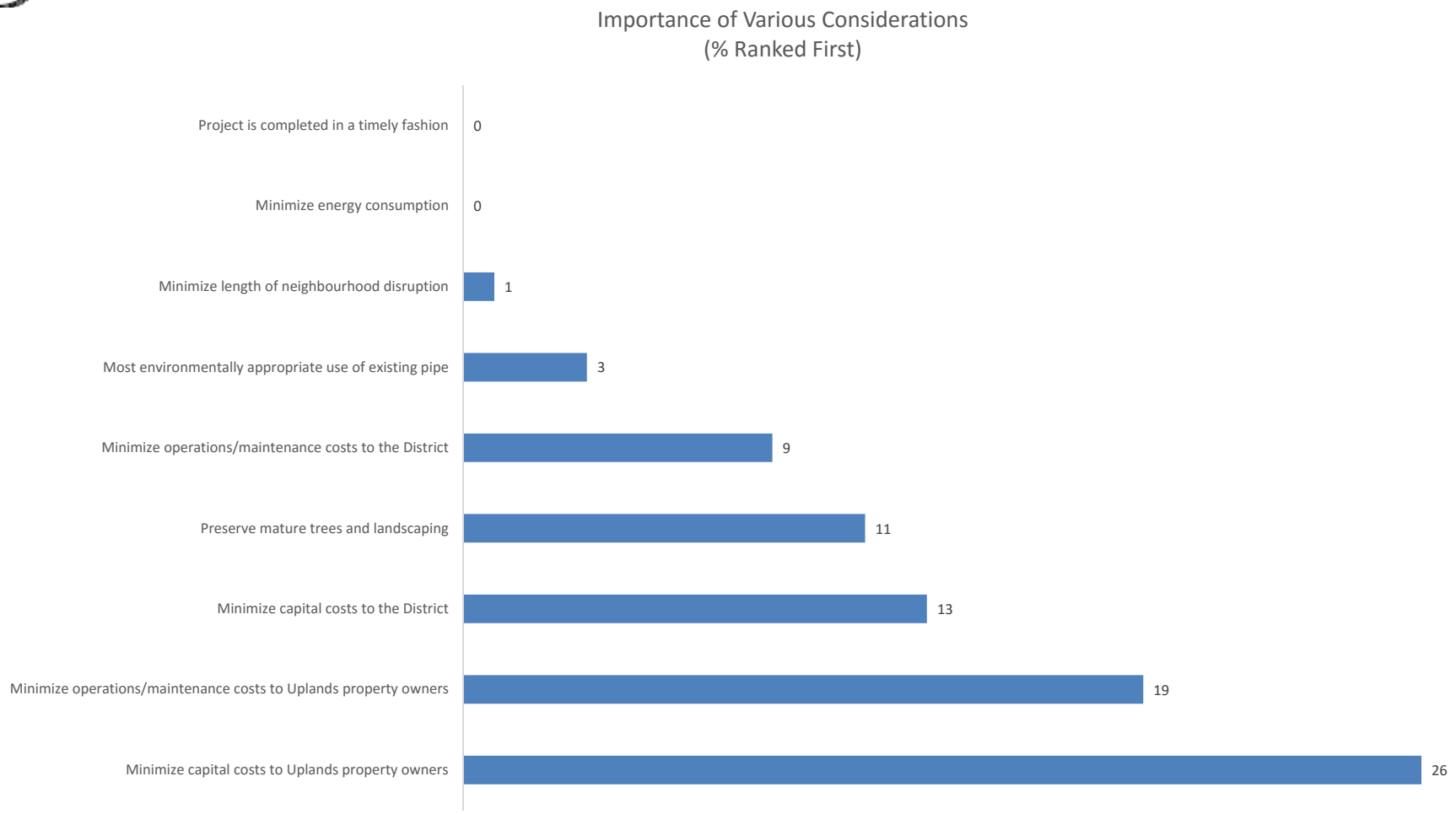
Overall Importance of Various Considerations



Q5 Council will be weighing a number of considerations as it determines how best to comply with the provincial government's mandatory Municipal Wastewater Regulation. Please rate the importance of each of the following considerations.

Oak Bay property owners whose property was not located in the Uplands ("Other OB Homeowners") were significantly more likely than owners of property in the Uplands ("Uplands Homeowners") to rate as important: most environmentally appropriate use of pipe (4.5 vs. 3.8); project is completed in a timely fashion (3.7 vs. 3.0); minimize capital costs to the District (4.6 vs. 2.8); and minimize operations/maintenance costs to the District (4.6 vs. 3.4). Uplands homeowners were significantly more likely to rate as important: minimize capital costs to Uplands property owners (4.4 vs. 2.6); and minimize operations/maintenance costs to Uplands property owners (4.6 vs. 2.9).

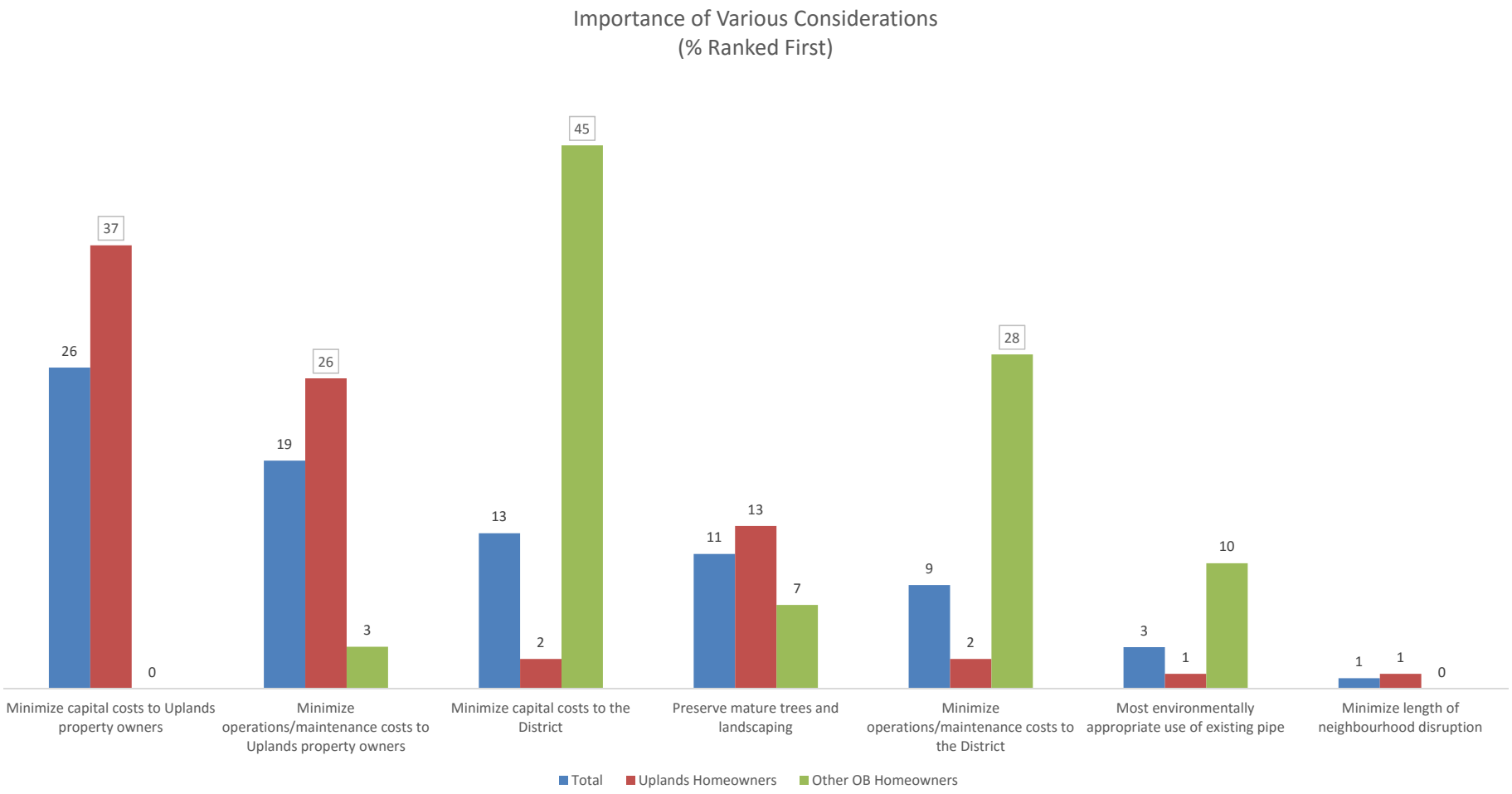
Ranked Importance of Various Considerations



Q6 Please indicate which 3 of the following considerations are the most important to you.

Minimize capital costs to Uplands property owners was rated the most important consideration by the largest percentage of all respondents to the survey (26%), followed by minimize operations/maintenance costs to Uplands property owners (19%); and minimize capital costs to the District (13%).

Ranked Importance of Various Considerations



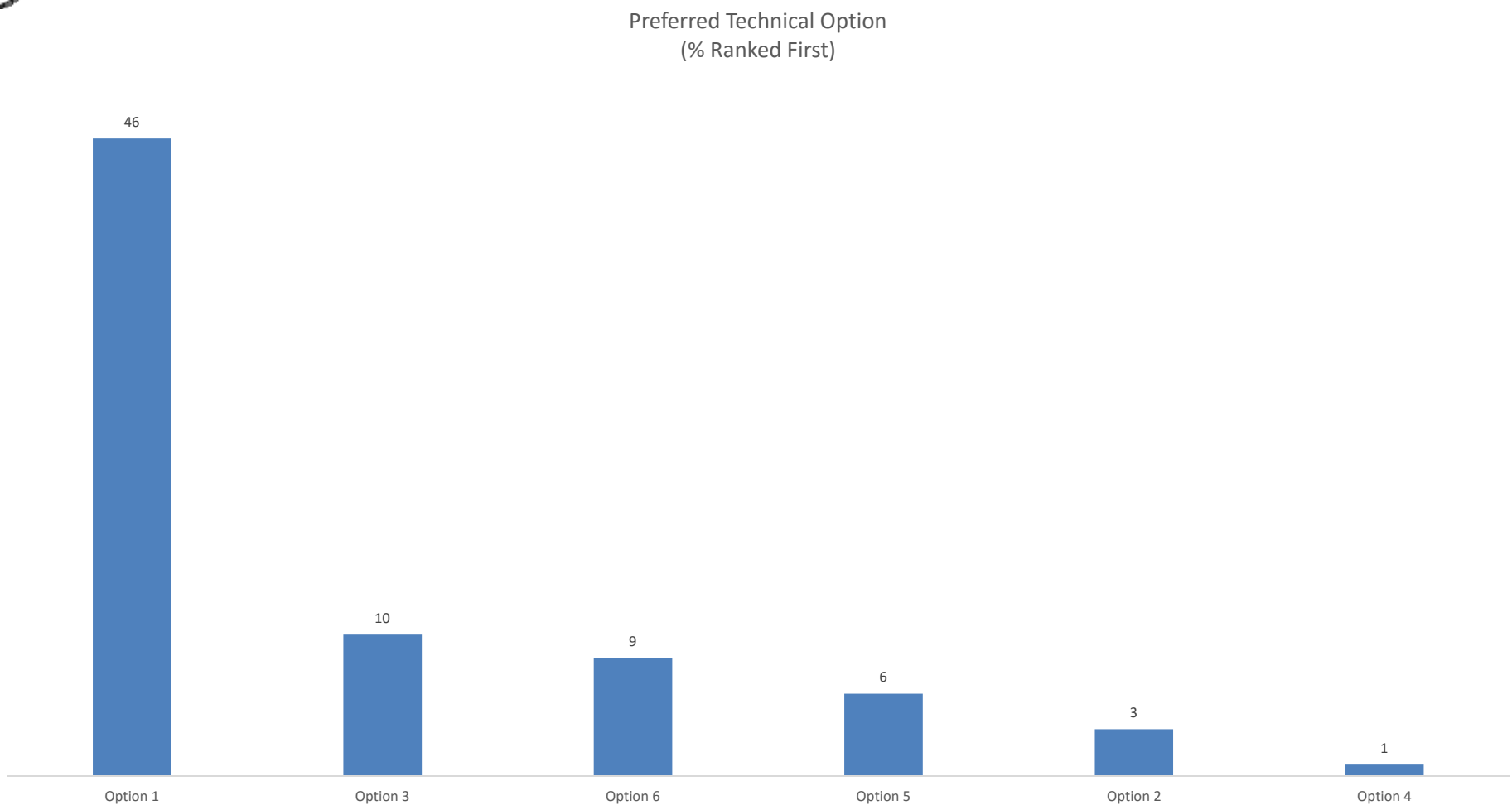
Q6 Please indicate which 3 of the following considerations are the most important to you.

Respondents owning property in the Uplands were significantly more likely than those whose Oak Bay property was located outside the Uplands ("Other OB Homeowners") to rank as the most important consideration: minimize capital costs to Uplands property owners (37% vs. 0%); and minimize operations/maintenance costs to Uplands property owners (26% vs. 3%). Other OB homeowners were significantly more likely than Uplands homeowners to rank as the most important criteria: minimize capital costs to the District (45% vs. 2%); and minimize operations/maintenance costs to the District (28% vs. 2%).

Other Considerations

- Almost half (44.4%) of those completing the survey took advantage of the opportunity of responding to an open-ended question asking them what other considerations they would like to make Council aware of to comment regarding cost issues – either related to the capital costs of the sewer separation project or to long term costs related to operation/maintenance.
- One third (32.5%) of respondents either expressed their strong preference for a gravity-based system, or indicated negative feelings about pumps and generators. They included comments such as: pumps and generators are unfair/ridiculous/an unnecessary expense, too big a burden, unacceptable, etc.; pumps are a concern because of power outages (especially lengthy and severe in the Uplands); Oak Bay is predominantly gravity, therefore Uplands should be too; pumps are unreliable and require frequent/costly maintenance; gravity is the least costly in the long term, requires least maintenance, relies on fewer pumps, etc.; and gravity always works/is most appropriate/is a natural solution (2.6%).
- A number of those responding to the survey (9.4%) said that they felt the solution should be fair for Uplands residents who already pay high taxes, indicating that they want Uplands property owners to be treated the same as any other Oak Bay neighbourhood, that treating the Uplands differently is "discriminatory" and that the eventual decision should reflect the best interests of all taxpayers in Oak Bay.
- A smaller percentage of respondents (8.5%) suggested a number of alternative solutions, such as alternate storm water disposal methods for homeowners, solving property problems on an individual basis, separate street drains, holding tanks, etc.
- Interestingly, some respondents (6.8%) encouraged Council to ensure they focus on the best solution for the long term, and to do it correctly/once/right even if this might mean the least expensive solution was not adopted.

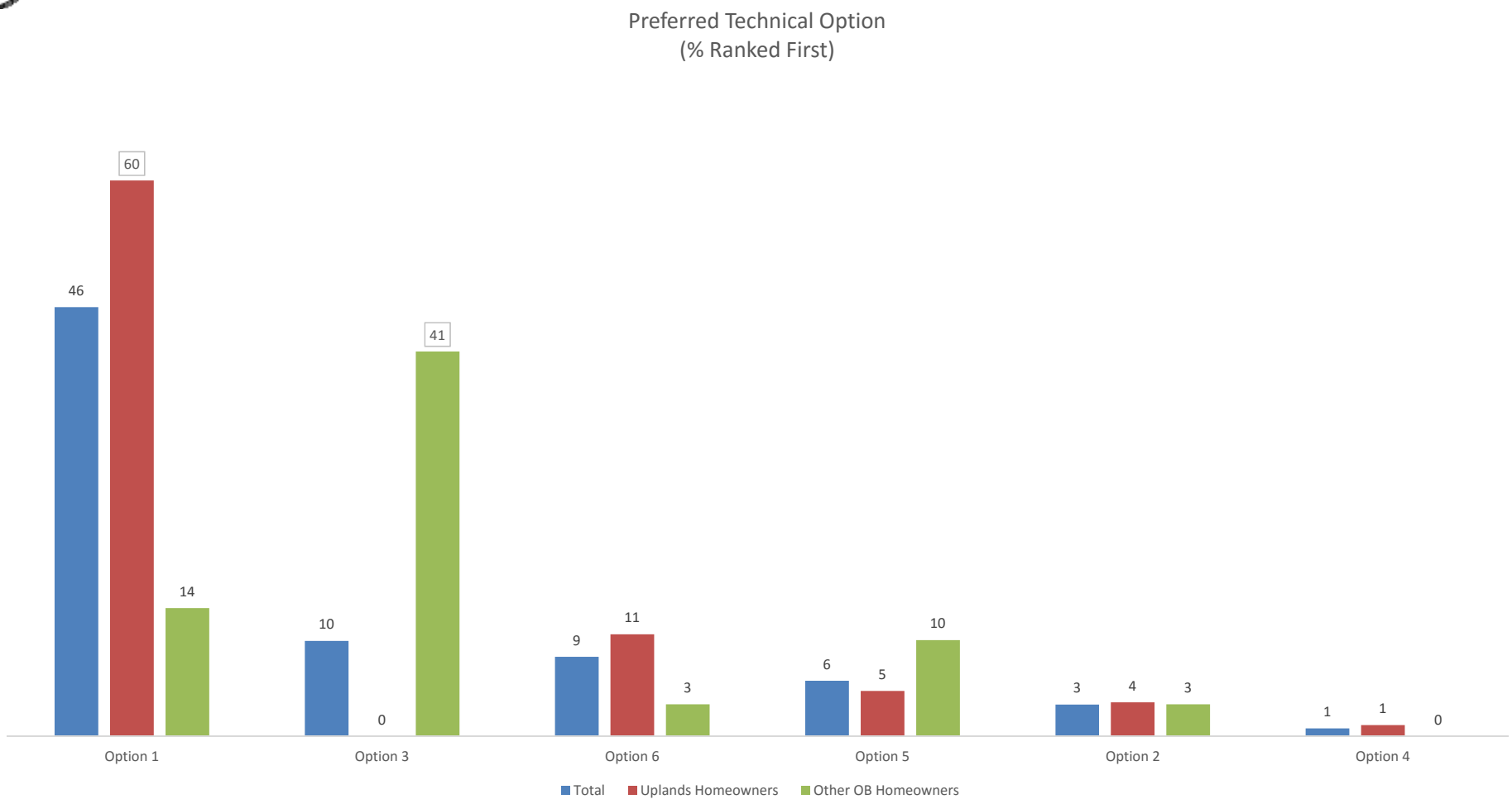
Preferred Technical Option



Q8 Six options have been developed by engineering firm McElhanney Consulting Services Ltd. To separate the combined sewer in the Uplands. Please rank the six technical options in order of your preference.

Option 1 was the technical option preferred by the highest percentage of respondents, with 46% of all those responding to the survey ranking Option 1 first in order of preference, followed by Option 3 (10%) and Option 6 (9%).

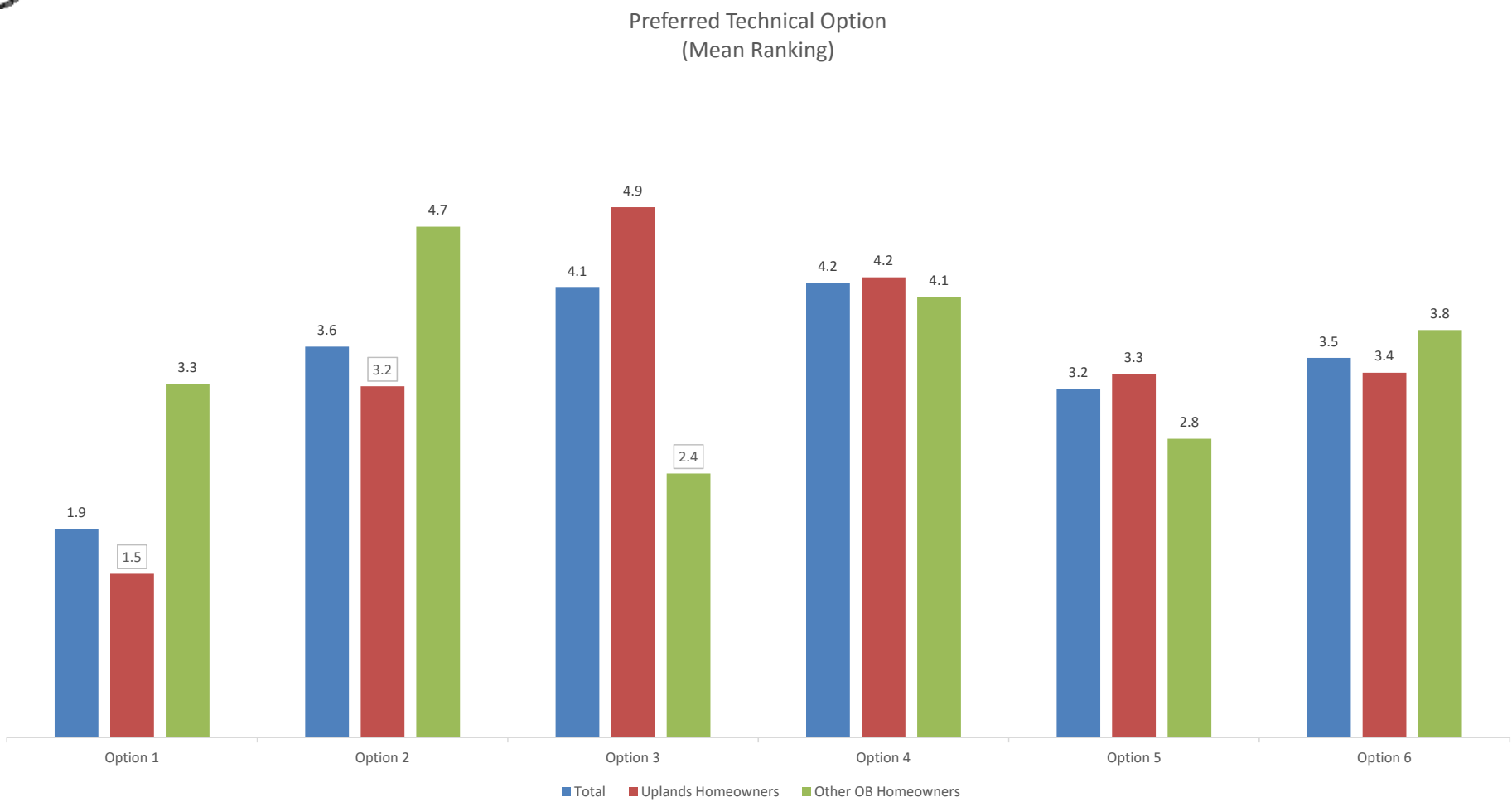
Preferred Technical Option



Q8 Six options have been developed by engineering firm McElhanney Consulting Services Ltd. To separate the combined sewer in the Uplands. Please rank the six technical options in order of your preference.

Uplands homeowners were significantly more likely than other OB homeowners to rank Option 1 as their most preferred of the six technical options (60% vs. 14%). Other OB homeowners were significantly more likely than Uplands homeowners to rank Option 3 as their most preferred option (41% vs. 0%).

Preferred Technical Option



Q8 Six options have been developed by engineering firm McElhanney Consulting Services Ltd. To separate the combined sewer in the Uplands. Please rank the six technical options in order of your preference.

N.B. Lowest mean score indicates highest ranking of preference. Option 1 was the most preferred among all survey-takers, with an average ranking of 1.9. Uplands homeowners were significantly more likely than other OB homeowners to rank Option 1 and Option 2 as their most preferred of the six options (mean ranking 1.5 vs. 3.3 and 3.2 vs 4.7 respectively). Other OB homeowners were significantly more likely than Uplands homeowners to rank Option 3 as their most preferred technical option (mean ranking 2.4 vs 4.9). The differences between Uplands homeowners and other OB homeowners in their average rankings of the remaining technical options were not significant.

Reasons for Preference

- When they were asked to indicate the one or two reasons why they preferred the technical option they had ranked "1", almost half of those responding to the survey (47.9%) said their preference was related to gravity systems being "better", or to negative feelings about pumps. These comments were completely consistent with (and in some cases repeated) the responses made to Q7, the earlier open-ended question.
- More than one third of the responses (35.0%) indicated that the preference for a specific option was related to cost issues, whether the lowest cost to Uplands property owners or to the District. Some of these comments included specific references to long term costs or operating/maintenance costs, but not all comments cited either capital costs or operating/maintenance costs; nor did all of the comments specifically mention which parties would bear the costs to which the comment referred (i.e. Uplands property owners or the District).
- One quarter of respondents (24.8%) related their preference for their first choice option to their concern that the current pipe be used for storm water and the new pipe be used for the sanitary system; several said specifically that if the old pipes were to leak, storm water leakage would be acceptable but leaking sewage would not be acceptable.
- The reasons given by less than one quarter of people (17.1%) for their preferred option were because they perceived the option as being less disruptive.

Conclusions and Indicated Actions

- Respondents to the survey were drawn heavily from Uplands homeowners and, within this group, were almost entirely owners of properties located in the Humber/Rutland catchment area so the survey findings must be interpreted within this context. That said, several conclusions can be drawn from the data:
  - While two of the most important considerations, as rated by respondents, clearly related to the fact that most were the owners of property in the Uplands (minimizing capital costs to Uplands property owners and minimizing operations/maintenance costs to Uplands property owners), making the most environmentally appropriate use of existing pipe was also rated highly in terms of its importance, regardless of whether the respondent was an Uplands homeowner or not.
  - In addition to making the most environmentally appropriate use of the existing pipe, ensuring the project is completed in a timely fashion and minimizing both capital and operations/maintenance costs to the District were important to other OB homeowners.
  - There are clearly a number of Oak Bay residents who will be watching the cost implications of the sewer separation project closely. Comments regarding cost issues – either related to the capital costs for installation or the long term ongoing costs of operating/maintaining the system – were made by almost half of the respondents to the survey. A number expressed concerns about the costs related to a specific technical option, while others were concerned about possible capital cost overruns, or (depending on where one's property was located) about costs being unduly onerous for Uplands residents, or about all Oak Bay taxpayers being required to share a cost burden that Uplands homeowners should be shouldering.
  - Preference for a gravity-based system was strongly expressed by between one third and one half of respondents to the survey; this was either expressed as a positive about gravity systems (they are "better") or as a negative about systems requiring pumps and/or generators. Comments such as "let gravity do the work" or "gravity never fails" were made in response to both of the two open-ended questions in the survey.
  - Option 1 was clearly the most preferred of the six technical options among Uplands homeowners, however, other OB homeowners were significantly more likely to prefer Option 3. The differences between Uplands homeowners and other OB homeowners in their average rankings of the remaining technical options were not significant.