

PREPARED FOR: Committee of the Whole
FROM: Ed Robertson, Director Engineering and Public Works
MEETING DATE: May 29, 2023
SUBJECT: Uplands Sewer Separation - Humber Catchment Project

RECOMMENDATION(S)

THAT the report titled “Uplands Sewer Separation – Humber Catchment Project,” authored by Ed Robertson, Director of Engineering & Public Works, dated May 29, 2023 be received.

And that Council consider the following staff recommendation(s):

Recommendation No. 1

THAT Public Sewer Bylaw No. 3891 be amended to permit lateral connections to properties in the Humber and Rutland project areas to be installed as part of the Uplands Sewer Separation project at no cost to property owners.

Recommendation No. 2

THAT a one-time grant be considered for all residential property owners in the Humber and Rutland project areas to help offset the cost of separating their private combined sewer system and conveying it to the storm sewer lateral at the property line. This will be in effect from the start of the Humber Project for those properties in that project zone and from the start of the Rutland Project for those properties in that project zone until two years after completion and acceptance of each project by the District. Applications for this grant may be made upon completion and acceptance by the District Plumbing Inspector of the private property works.

Recommendation No. 3

THAT a one-time grant in the amount of \$4,500 be available only to those residential property owners in the Humber and Rutland project areas who were directed to install a wye inside their property line to join their separated storm sewer service into their sewer service. This is for extending their storm sewer service from the wye that was installed inside the property line to beyond the property line where it will connect to the new storm sewer lateral. Applications for this grant may be made upon completion and acceptance by the District Plumbing Inspector of the private property works.

Recommendation No. 4

THAT a one-time grant in the amount of \$12,000 be available to those residential property owners in the Humber and Rutland project areas whose on-site storm sewer system cannot attain a gravity connection to the storm sewer lateral at property line, as determined by District Engineering staff. This will be in effect from the start of the

Humber Project for those properties in that project zone and from the start of the Rutland Project for those properties in that project zone until two years after completion and acceptance of each project by the District. Applications for this grant may be made upon completion and acceptance by the District Plumbing Inspector of the private property works.

Recommendation No. 5

THAT Sewer User Charge Bylaw No. 4392 and the Public Sewer Bylaw No. 3891 be amended to implement an annual sewer surcharge to be applied to each house in the Humber and Rutland project areas that have not separated their sewer and connected to the storm sewer lateral starting one year from the substantial completion and acceptance of each sub-catchment.

Recommendation No. 6

THAT staff be directed to seek input from Uplands property owners and the Heritage Commission on select streetlight pole and fixture options as presented by staff, and that this feedback be presented to Council for final selection.

Recommendation No. 7

THAT staff be directed to undertake an engagement process with residents in the Uplands neighbourhood that will share information about the project and seek feedback that will be provided to Council.

Alternatively, staff await another direction from Council.

EXECUTIVE SUMMARY OF REPORT

The sanitary and storm sewer system in the Uplands neighbourhood has been combined since it was built in the 1930's. This made economic sense at the time as sewers flowed directly into the surrounding waterways through many outfalls without treatment. However, as times changed and sewage is now treated, the combined sewer system needs to be separated as we are unnecessarily paying to treat storm water being fed into the sanitary sewer treatment system. Starting in the 2010's, planning work commenced for a separate storm sewer system and after much public consultation, a set of design principles was adopted by Council in 2016. Since then, the design has been completed and staff is finalizing project details for Council approval with the aim to go to tender in Q2/Q3 of this year, with the hope of construction starting later in Q3/Q4. The District is under the deadline of December 2025 for completion of the Humber catchment, as set by the BC Ministry of Environment and Climate Change.

As part of the overall Asset Management strategy, Staff considered other infrastructure needs in the area that could be completed as part of this project. The main project consists of installation of the storm sewer main, laterals, new catch basins and incidental curb and asphalt repairs. Staff are also including replacement of some water mains in the project area that are in poor condition and undertaking some sewer repairs so that the mains and laterals can be lined in the future, to reduce inflow and infiltration into the sewer system.

We have also discovered that the streetlighting system is in poor shape due to its age and installation method, and needs to be replaced entirely as it is a liability, and construction crews will likely not be able to make repairs. Taking this broader approach will ensure the entire neighbourhood infrastructure is renewed so that we should not have to go back for repairs for many years. This construction is taking place in a location that is known to have areas of higher archeological significance. Steps have been taken to prepare for this and practices will be put in place to ensure compliance with current regulations.

To realize the full benefit of this project and eliminate the burden stormwater places on the sewer treatment system and the associated costs to treat stormwater unnecessarily, encouraging property owners to separate their combined systems is important. Staff are recommending a number of measures that Council may wish to consider to reduce the cost to individual homeowners with a view to having as many properties separate the storm and sanitary sewers as soon as possible. Staff are also recommending an annual surcharge for those properties who do not connect within a reasonable period of time that will reflect the financial impact to the District of having that storm water continue to enter the sewer system and treatment plant as the District is levied fees from the CRD based on the total volume of inflow into the Treatment Plant.

The Purpose of this report is to inform Council and the public about the Humber Sewer Separation Project and seek direction on specific project elements as follows:

- Amending Public Sewer Bylaw No. 3891 to allow for laterals to be installed at no cost to homeowners
- Providing a grant for property owners that require a stormwater pump
- Providing a grant for property owners that will be required to remove their wye and extend their pipe beyond property line
- Providing a grant to incentivize property owners to separate their combined sewer system and connect to the new storm sewer system in a timely manner
- Amending the Sewer User Charge Bylaw No. 4392 and the Public Sewer Bylaw No. 3891 to allow for an annual sewer surcharge for those properties who do not separate their combined sewer systems and connect to the new storm sewer system in a timely manner
- Attaining input from Uplands property owners and the Heritage Commission on new streetlight and pole options
- Undertaking an engagement process with residents of the Uplands neighbourhood.

BACKGROUND/HISTORIC CONTEXT

The Uplands neighbourhood was originally developed in the 1930's. At that time, one sewer system was built to collect both sanitary sewage (toilets, showers and sinks) and storm water (rainwater leaders, foundation drains and catch basins in the roads) (see attachment 3). This combined system was collected in two catchment areas that discharged into the ocean at the ends of Humber Road and Rutland Road. In the early 1990's, these combined systems were redirected into the newly constructed CRD pump stations at Humber and Rutland and pumped into the CRD East Coast Interceptor trunk sewer main on Beach Drive. However, during large storm events, the flow into the pump stations can at times exceed the capacity of the pumps and the excess effluent discharges through the old outfalls into the ocean. This is called a Combined Sewage Overflow (CSO).

The Province of BC has directed that elimination of CSO's in the Humber catchment area must be completed by 2025. This will be achieved by installing a new storm sewer system and separating the stormwater and sewer flows so that ultimately only sewage goes into the sewer system to be treated at the CRD sewage treatment facility. This will reduce the CRD and District's treatment cost and the impact on the facility capacity. Timelines for separation of the Rutland catchment will be submitted this year as directed by the Minister of Environment and Climate Change as part of the comprehensive update of the Core Area Liquid Waste Management Plan (CALWMP). This is the last significant neighbourhood in greater Victoria with combined sewers.

In 2015, Oak Bay retained a consultant (McElhanney) to prepare options for elimination of the combined sewer system. Among a variety of options, two gravity storm sewer options were favoured – a deep options which required fewer private property pumps but at significantly higher construction costs, and a shallower option that require more private property pumps but at a lower construction cost. The options went through an extensive public consultation process. The selected option was a new shallower gravity storm sewer system, with the existing combined sewer system to become the sanitary sewer system. This option was endorsed by Council in October 2016 as the technical solution for the elimination of CSO's in the Uplands.

Following selection, a preliminary design of the new storm sewer system was developed for the entire Uplands neighbourhood (see attachment 1). This system is primarily a gravity system, however due to the sloping nature of the neighbourhood, some properties will require a pump on their property to pump storm water from their foundation drain and rainwater leaders to their new storm sewer lateral at property line.

In 2017, the District's consultant began preparation of a detailed design of the new storm sewer system for the Humber catchment. This will convey the storm water to two new outfalls located at the ends of Humber Road and Rippon Road.

In June 2022, Council approved initiation of the Uplands Sewer Separation Project. In conjunction with this decision, staff have been seeking grants to offset some of the estimated \$8.84M cost of construction. Since December 2022, staff have been actively working towards finalizing some details in the construction plans and operational issues so that a tender could be issued for construction as soon as practical, while the District awaits a final determination on the grant application that has been submitted.

ANALYSIS

The technical solution for separating the sanitary sewer and storm sewer presents some challenges, particularly for the private properties. Although the significant volume of runoff from the road into catch basins will be redirected to the new storm sewer as construction progresses, storm water from private properties will continue to go into the combined sewer system until homeowners separate their systems on their property. This includes rainwater from roofs, building perimeter drains and surface drains.

In recent years, property owners have been required to separate their systems and install pipe to the property line when undertaking significant renovations of their house. This was done in anticipation of a future separate storm sewer system to connect to (the pipe was joined back into the sewer at the property line temporarily). Some of these properties had a wye installed on the private side of the property line to join the storm sewer pipe back into the combined sewer system. This was the direction from the District at that time. In

more recent years this practice was corrected, and the wye was installed on the District side of the property line.

Private Property Model

The model that was chosen for the sewer separation project included a new storm sewer system, with the existing combined sewer system to become the sanitary sewer system. As part of the project, storm sewer laterals will be installed to each property line with the recommendation listed below that it be at no cost to the property owner. For those properties that have already separated their systems as far as the property line, connections will be made during construction to complete the separation. For those properties that had a wye installed on the private side as directed by the District, staff recommend that a grant be given to for them to have their storm sewer pipe extended past the property line where the project contractor will connect it to the new storm sewer lateral.

The storm sewer main design is for a shallower depth, as the surrounding geology would have required significant blasting to achieve the depth required where all properties could connect by gravity. In 2016, the shallower depth design was estimated to save \$3M for the Humber project alone. The trade-off is that approximately 50 houses on the low side of some streets would have to install storm water pumps to lift their storm water up into the lateral at property line. In order to put all properties on a similar footing, staff recommend a grant for the pump package (sump, pump, electrical connection – based on pricing for average properties) for those who must pump due to grade issues. These properties, along with all of those who will have grade, will have to pay for separating their systems at their house and to install their onsite piping to reach the property line lateral. Some who can connect by gravity may also choose to pump if it cost less, or if there is less landscape damage and restoration from a pump discharge line. The grant will not cover this situation.

The goals for this project are to eliminate combined sewage overflows and the environmental hazard that this poses, and to minimize the volume of storm water and ground water entering the sanitary sewer system, as Oak Bay is charged for the total volume of sewage that enters the CRD system and for treatment. Separating storm water from the sanitary sewer system will also help with future capacity of the downstream pump stations and treatment plant as future expansion will be costly. To meet these objectives, staff recommends the following steps to incentivise property owners to separate private systems and connect to the new storm sewer system. Currently the only circumstance where a property owner must separate is when they demolish their principal residence to construct a new one, or when undertaking a renovation with a construction value of over \$100,000 (bylaw 3891). To encourage separation and connection where these activities are not occurring, Council may wish to consider the following:

Incentives for Consideration

1. Providing lateral connections from the main to the property line for properties in the Uplands Sewer Separation Project area, at no cost. This is a savings of \$2,650 to the property owner compared to a normal service installation when part of a District construction project. This was calculated into the overall construction estimate.

2. A grant to separate and connect to the storm sewer lateral at property line. Based on estimates, the average cost to undertake this work on private properties is \$12,400, subject to individual site conditions. This is only available to residential properties and will also compensate for the cost of plumbing and tree permits. This would be in effect for properties in Humber and Rutland project areas from the start of the project in their respective area until two years after completion and acceptance of each project. As examples:
 - 25% grant = \$3,100. This is estimated to cost \$372,000 for Humber phase and an additional \$576,600 for Rutland phase
 - 50% grant = \$6,200. This is estimated to cost \$744,000 for Humber phase and an additional \$1,153,200 for Rutland phase

Normalizing Situations

1. A grant of \$4,500.00 to have the storm sewer wye removed and the pipe extended past the property line where it will be connected by the project contractor to the storm sewer lateral. This is only available to residential properties where the District had directed that the wye be placed inside the property line. Based on the estimated 15 properties in the Humber project, the total cost would be \$67,500. Based on the estimated 23 properties in the Rutland project, the total cost would be \$104,625.
2. A grant of \$12,000 for the pump package (sump, pump, electrical connection – based on price for an average property) for those properties in the Uplands Sewer Separation Project area that must pump due to grade issues as determined by Engineering. This would put all properties on the same footing. This is only available to residential properties and would be in effect from the start of each project until two years after completion and acceptance of each project. Based on the estimated 50 properties in the Humber project, the total cost would be \$600,000. Based on the estimated 130 properties (based on preliminary design only) in the Rutland project, the total cost could be \$1,560,000.
3. Implementing an annual surcharge on sewer utility bills for those properties in the Uplands Sewer Separation Project area who have not separated and connected to the new storm sewer lateral. This would commence and be applied to the Utility bill starting one year from the substantial completion and acceptance of each sub-catchment. Property owners would be notified when that comes about. It will be removed when a property has completed its sewer separation and connection to the storm sewer lateral at the property line, and final inspection by the District Plumbing inspections staff. This surcharge will be calculated each year by multiplying the roof volume runoff (area x average annual rainfall) by the annual sewer rate in force at the time. This method captures the cost to the District to treat stormwater entering the sewer system.
 - For an average property this would result in an additional \$938 per year (2023).
 - The range is from \$413 to \$2,713 surcharge cost per year (2023).

The purpose of the surcharge is to incentivize full separation and connection to the storm sewer system and ensure a level playing field for all properties where those who do not comply carry the additional financial burden once they have the option to connect.

Property owners will have to apply for a plumbing permit as usual when undertaking this work. If they must remove any trees a tree permit will also be required. Staff will assist with sourcing appropriate trees and facilitate delivery to help ensure strong, healthy replacements.

Complete Approach

The Humber Sewer Separation project will include installing new storm sewer mains, laterals to each property, manholes and two outfalls. Also included will be replacing most catch basins at the curbs with new standard ones that have deeper sumps to settle debris; this includes new laterals to each one and side inlet hoods where beneficial. The curbs and asphalt will be repaired as required.

In keeping with our Asset Management principles, staff reviewed the project with a broad lens to ensure all infrastructure in this catchment was considered as it had been installed over 90 years ago. This approach minimizes long term and repeat disruptions to the area and optimizes use of contractors on site working on the same streets. Following is a list of the additional works that are planned:

- The water main on Exeter Street was already designated for replacement in 2023 and the water main on Norfolk Street is in poor condition (asbestos cement pipe). We are also upsizing the water main on Ripon Street as modeling software found it to be undersized
- The sewer mains will have spot repairs made where damaged to prepare them for lining after the sewer separation project is completed. Part of the project objective from the 2018 Core Area Liquid Waste Management Plan is to reduce inflow and infiltration into the sewer system. As a separate project we plan to line the sanitary sewer system, as the mains have been modeled to ensure the capacity of these is appropriate.
- All streetlights, bases and wiring also must be replaced; there are 142 poles in the Humber project. Upon investigation, it was found that the underground wiring was brittle and subject to breaking when bent. There are many locations where this wire will be exposed and likely broken during construction, as it is direct buried and not in conduit; splicing repairs would be impossible. New conduit, junction boxes and wire will be installed. The concrete bases are small and not to current code (some poles can be moved by hand) so need to be removed and replaced with new precast bases that are to code. The poles and light fixtures are in poor shape with parts rusting and electrical fixtures frequently seated in rainwater that accumulates in the globe base. To summarize, they are unsafe and need to be replaced as they have reached the end of their useful life. Staff are having the project area modeled to confirm streetlight spacing and appropriate fixtures for that area to ensure adequate lighting levels are attained while being attentive to the unique setting of the neighbourhood.

Construction

Construction is anticipated to start in Q3/Q4, subject to Council sign-off, tender issuance and award, availability of materials and availability of a contractor to commence work.

The Humber Project has two distinct sub-catchment areas which are defined as Humber and Ripon. The first phase will commence at the new Humber Road outfall and will include

Beach Drive from Lansdowne Road to Ripon Road, Lansdowne Road to Exeter Road, and all of Exeter Road. The second phase will commence at the new outfall on Ripon Road and will include all of Ripon Road, 2/3 of Norfolk Road (the water main will be replaced for the entire length of Norfolk Road. 1/3 of the storm sewer on Norfolk is in the Rutland catchment and cannot be constructed until that project is designed and approved), Midland Road to the roundabout, and Beach Drive from Ripon Road to Cadboro Bay Road. (see attachment 2)

Properties and catch basins will be connected once a section (manhole to manhole) has been completed and accepted. We anticipate undertaking all construction activities on a block-by-block basis to keep the active construction zone as small as possible. Timely restoration will follow after each block is completed.

The Humber catchment area is known to have [areas of higher archeological significance](#), and these have been mapped and reported on by our consultant. An Archaeological Overview Assessment was conducted during the predesign stage. The objectives were to identify registered archaeological and historical sites to the degree possible using existing records, evaluate the potential for encountering currently undocumented archaeological sites, provide management recommendations to avoid known conflicts, and assess the need for additional archaeological investigations prior to commencement. Following recommendations, the District will be working under a Blanket Heritage Inspection Permit for Humber while Ripon will be under its own permit. Our archaeological consultant will work with First Nations and invite a representative to participate in the field work during construction. Staff will also reach out to establish a relationship regarding the project.

Construction is likely to encounter areas of bedrock that will require blasting. These have been identified by our consultant. Depending on the actual volume encountered during excavation it may impact the cost and construction schedule. Special attention will be given to inform nearby residents when blasting is required.

Communications for a project of this scale and duration will be particularly important. Information about the project should be shared in advance and steps should be taken to get feedback. This is also an opportunity to seek input on the choice of a new streetlight fixture. During construction, clear and ongoing updates need to be provided to residents, BC Transit, and other stakeholders.

OPTIONS

This project has many different components and issues to consider. Options to incentivize separation and normalize outlying property situations are presented below for Council's consideration. In addition, given the detailed nature of this report Council may wish to consider the report as containing all of the required components for Project sign off.

- A. To accept the staff recommendation to waive the cost of providing lateral connections to each property. This will apply to all properties in the Uplands Sewer Separation Project area. Direct staff to prepare amendments to the Public Sewer Bylaw No. 3891 for Council's consideration. Alternately, staff could apply the normal 50% reduction currently in the bylaw.
- B. To accept the staff recommendation to offer a grant to each residential property owner for the separation of their private combined sewer systems and to install

their new storm sewer system from their house to the storm sewer lateral connection provided by the District. This will apply to all residential properties in the Uplands Sewer Separation Project area and would be in effect from the start of each project until two years after completion and acceptance of each project. Applications for this grant may be made upon completion and acceptance by the District Plumbing Inspector of the private property works. Any grant amount could be chosen or no grant.

- C. To accept the staff recommendation to offer a grant of \$4,500.00, for the removal of the storm drain wye and extension of the pipe to the District side of the property line, to those residential properties in the Uplands Sewer Separation Project area who were originally directed by the District to install the wyes on private property. Applications for this grant may be made upon completion and acceptance by the District Plumbing Inspector of the private property works. Alternately, no grant would be offered for this corrective work.
- D. To accept the staff recommendation to offer a grant of \$12,000 for the pump package only to those residential properties in the Uplands Sewer Separation Project area who cannot attain a connection from their separated storm sewer system at their house to the storm sewer lateral at property line as determined by District staff. This will be in effect from the start of each project until two years after completion and acceptance of each project. Applications for this grant may be made upon completion and acceptance by the District Plumbing Inspector of the private property works. Alternately, no grant would be offered for this circumstance.
- E. To accept the staff recommendation to implement a surcharge based on the calculated storm water discharge from individual properties who do not separate and connect to the storm sewer lateral. This will apply to all properties in the Uplands Sewer Separation Project area. Direct staff to prepare amendments to the Public Sewer Bylaw No. 3891 for Council's consideration. Alternately, no surcharge would be applied to those properties who do not separate and connect.
- F. To direct staff to seek input from the Uplands property owners and the Heritage Commission on selected streetlight pole and fixture options presented by staff. Alternately, direct staff to seek other input. Feedback will be presented to Council for final selection.
- G. To direct staff to undertake an engagement process with residents in Uplands that will share information about the project and seek feedback that will be provided to Council prior to staff seeking Council sign-off.

Funding sources for the above options:

- Funding for the Humber Sewer Separation project will come from Capital Reserves and potentially an infrastructure grant. Failure to receive the grant will require staff to bring forward an amendment to the 2023 Financial Plan
- The District is awaiting confirmation of award of the Investing in Canada Infrastructure Program (ICIP) – Environmental Quality (EQ) Program
- Incentives and Property Normalization grants would be funded from Accumulated Sewer Surplus

- Water system construction and repairs will be funded by the Water Utility Capital Budget
- Sewer system repairs will be funded by the Sewer Utility Capital Budget
- Streetlight system construction will be funded in 2023 from Streetlighting Capital Budget and will be brought forward in 2024-25 for budget approval for the balance of the work

Potential liability for the District:

- The District could be subject to fines or other action by the Province of BC if the project is not completed by the December 2025 deadline.

COUNCIL PRIORITY SUPPORTED

Operational/Not Applicable

IAP2 FRAMEWORK ENGAGEMENT

☐ INFORM ☒ CONSULT ☐ INVOLVE ☐ COLLABORATE

Following significant public consultation and the adoption of design principles by Council in 2016, this phase of the project will undertake the inform and consult level of public engagement. The District is committed to providing the community with balanced and objective information to assist them in understanding the project. The District will keep the community informed throughout the project through fact sheets, a dedicated web page and hosting open houses.

Information about the project should be shared in advance and steps should be taken to provide opportunities for feedback where possible.

TIMELINE/PROCESS/NEXT STEPS

Pending Council direction on the options presented, staff will draft appropriate bylaw amendments, develop policy, engage with property owners in the Uplands neighbourhood and Heritage Commission, present feedback, and present these to Council for sign-off at a meeting in July, 2023.

Respectfully submitted,

Ed Robertson, Director Engineering and Public Works

With respect to the Financial Impact described in this report, I concur with the staff recommendation.

Christopher Paine

Christopher Paine, Director of Financial Services

Reviewed and approved by the Director of Corporate Services.

Chris Coates

Chris Coates, Director of Corporate Services

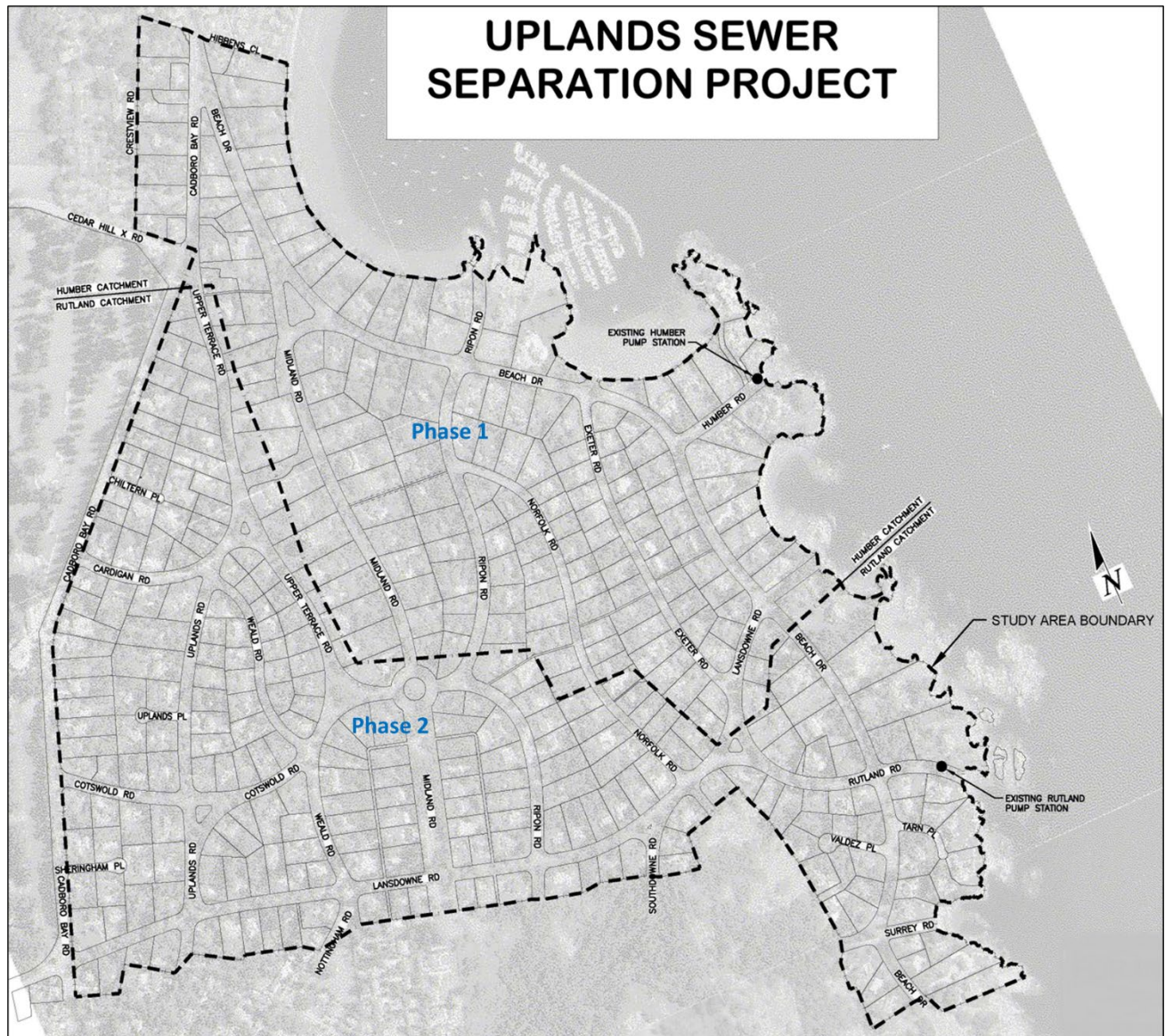
I have read and consider staff's recommendation to be supportable for Council's consideration.

Selina Williams

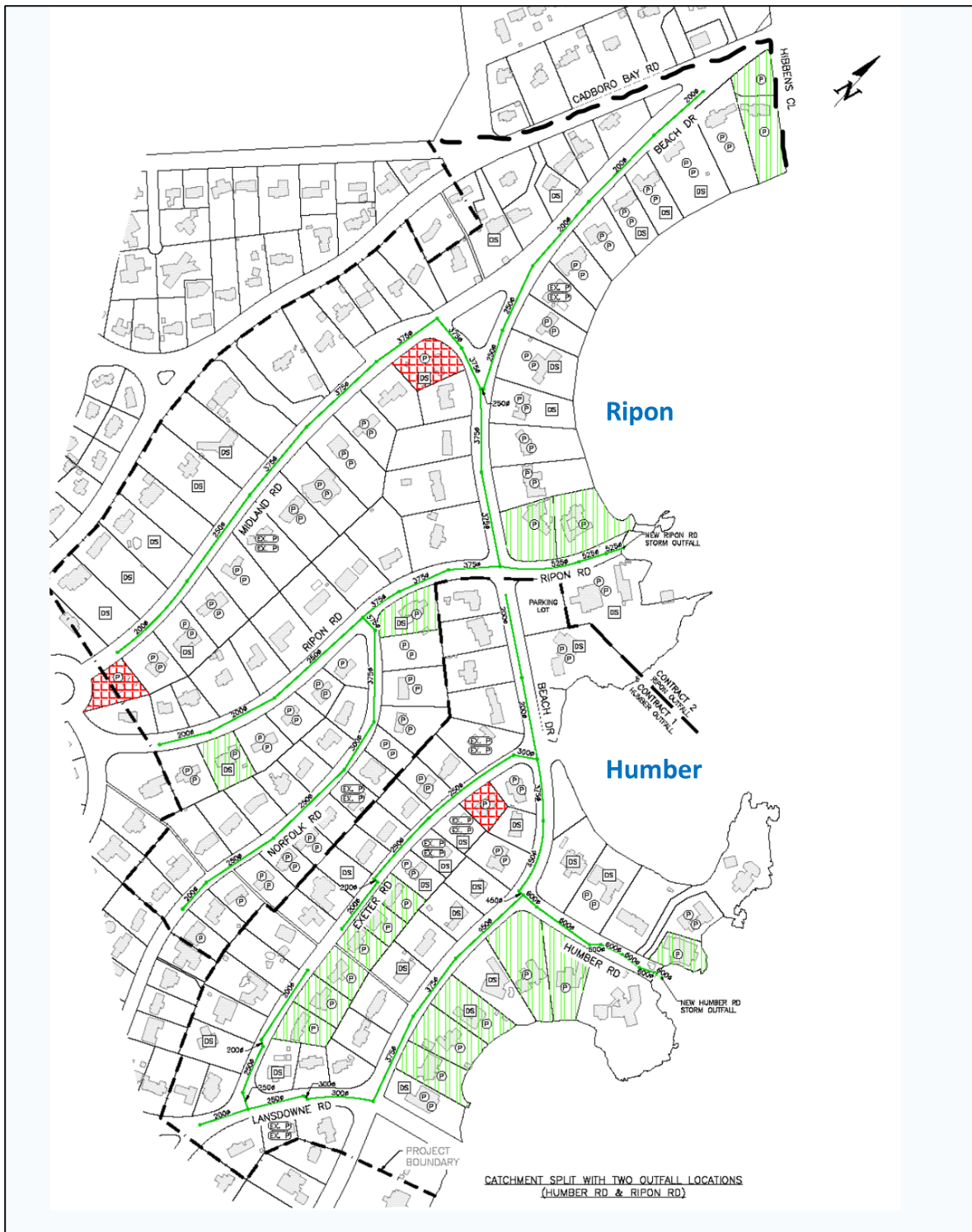
Selina Williams, Chief Administrative Officer

ATTACHMENTS(S):

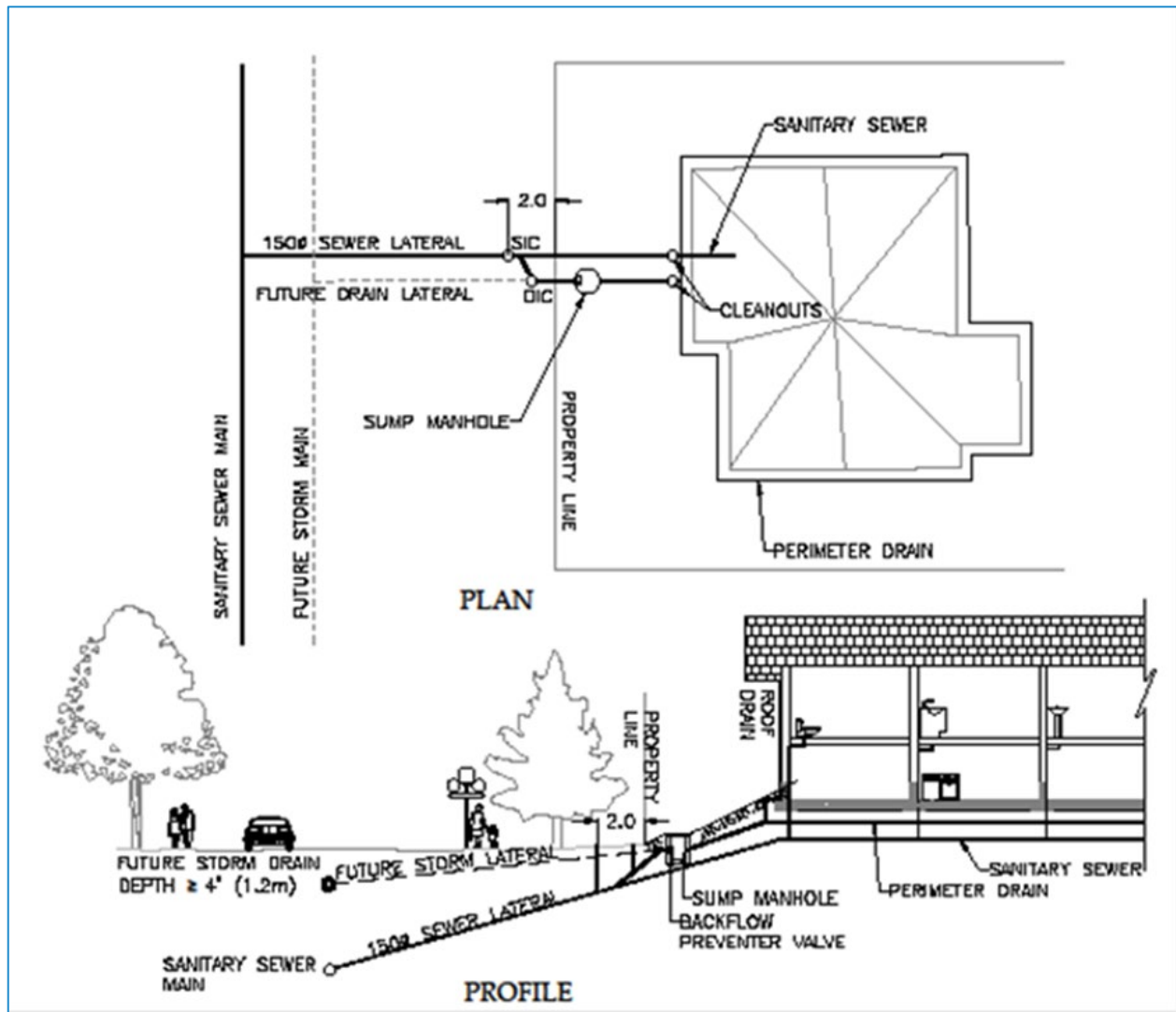
[Report - Humber Sewer Separation - Attachments](#)



Attachment 1 – Map of Humber and Rutland Catchment Areas



Attachment 2 – Map of Humber Catchment Area



Attachment 3 – Typical House Connection