

Staff Report to Council

Engineering & Operations

FILE: 01-0620-03/20

REPORT DATE: November 06, 2020 MEETING DATE: November 24, 2020
TO: Mayor and Council
FROM: Samantha Maki, Director of Engineering & Operations
SUBJECT: 2021 Business Plan - Engineering

CHIEF ADMINISTRATIVE OFFICER REVIEW/APPROVAL:



RECOMMENDATION(S): THAT Council:

- A. Receive for information the Engineering 2021 Draft Business Plan and Staff Report as presented at the November 24, 2020 meeting of Council; OR
- B. Other.

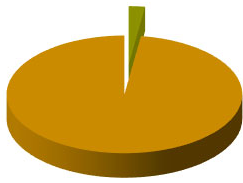
DIVISION OVERVIEW

The Engineering division plans and manages the replacement and/or rehabilitation of essential municipal infrastructure, like roads, bridges, buildings, active transportation network, water mains and sewers. The division also provides municipal services, such as the review and facilitation of soil permits and engineering aspects (storm water management, erosion and sediment control and traffic) of development permit applications.

Operating Budget: \$547,300

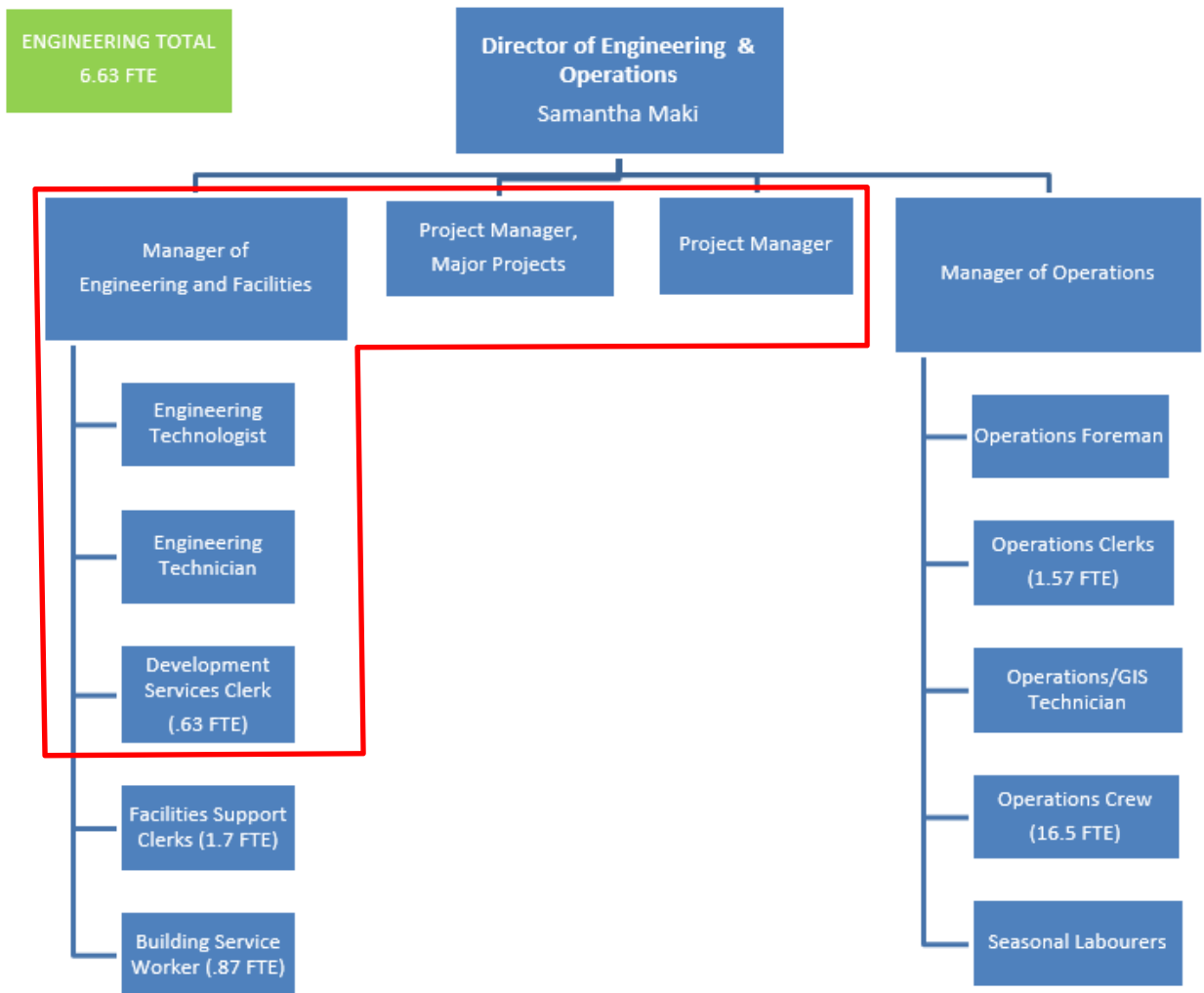
Capital Budget: \$2,851,800

% Share of overall City Budget:



- Engineering 2.2%
- Remaining City Budget 97.8%

Staff Complement



Deferred Projects

As a result of priorities that emerged throughout the year the following 2020 business plan initiatives were deferred:

- **ACTIVE TRANSPORTATION.** Some recommendations from the Active Transportation Advisory Committee deferred to 2021 due to available resources and to assist with COVID-19 financials.
- **TRAFFIC CALMING ENGAGEMENT AND IMPLEMENTATION.** Design complete for various improvements along the west end of the Park Rd corridor, but tender and construction deferred to 2021 due to available resources and to assist with COVID-19 financials/cash flow, except for the 192A Ave/Park Rd curve that will be coordinated with the Harris Rd underpass project to avoid re-work.
- **HARRIS RD REPAVING BETWEEN THE TWO OLD DEWDNEY TRUNKS ROADS.** Deferred due to insufficient TransLink MRN funding and rescheduled for 2022. Targeted repairs were completed at the intersections in the interim.
- **HARRIS RD REPAVING SOUTH OF HAMMOND RD.** DCC project for repaving of the road from Hammond Rd to the base of the hill near the Airport trail. Design complete, but construction deferred to late 2021 or 2022 due to utility work planned by other parties in 2020/2021 (Fortis and Onni development).
- **WILDWOOD CRESCENT REPAVING.** Finish paving the south leg of Wildwood Crescent. Rescheduled for 2022 due to recent water main replacement.
- **CAPITAL WORKS – WATER.** Replacement of existing water mains at various locations with ductile iron pipe. Design complete and construction deferred to 2021 due to COVID-19, except for the cast iron pipe replacement on Bonson Rd and asbestos-cement pipe on Wildwood Crescent that were cancelled after site verification that the pipes were already ductile iron.
- **BONSON RD LIFT STATION.** Lifecycle replacement of the lift station. Design ongoing and construction deferred to 2021 to assist with COVID-19 financials/cash flow.
- **SOIL BYLAW UPDATE.** Deferred due to available resources and included in 2021 key initiatives.

2020 Achievements (Top 3)

- **PITT POLDER PUMP STATION REPLACEMENT.** Complete replacement of the pump station, pumps and associated dike work. Transportation and Infrastructure – Investments and Preparedness.
- **POLICE SERVICES SPATIAL REVIEW (identified mid-year).** Review of the existing Community Police Office and spatial assessment (reno vs. build). Community Spirit and Wellbeing – Health and Safety.

- **FIRE HALL REPLACEMENT.** Completed the design and tender of the new fire hall, coordinated tower agreements and temporary relocation of fire hall department. Transportation and Infrastructure – Infrastructure.

Key Challenges for 2021

- **AGING INFRASTRUCTURE.** Infrastructure is deteriorating faster than the current rate of replacement and necessary repair, maintenance and replacement of City assets continues to create resource and funding challenges.
- **PUBLIC CONCERNS AND INQUIRIES.** Customer service is a priority for the City. Supporting the public is a significant function of our work that is not documented in the work plan, but requires considerable allocation of staff time. Some of the areas of growing community concern include traffic calming and neighborhood development.

Key Initiatives 2021

Strategic Priority	Initiative	Target Completion
Transportation and Infrastructure – Improved Transportation	ROAD AND RAIL IMPROVEMENTS. Ongoing planning, design and community engagement of the Harris Rd Underpass and Kennedy Rd Overpass, including the active transportation components and relocation of the heritage buildings.	Q4
Transportation and Infrastructure – Improved Transportation	TRAFFIC IMPROVEMENTS ALONG LOUGHEED CORRIDOR. Ongoing planning and feasibility of transportation improvements along Lougheed Highway with the Ministry of Transportation and Infrastructure.	Q4
Transportation and Infrastructure – Investment	FIRE HALL REPLACEMENT. Construction of the new Fire Hall building. This multi-year project is expected to be completed by mid-2022.	Q4
Transportation and Infrastructure – Infrastructure	DESIGN OF POLICE SERVICES SPATIAL NEEDS. Subject to the outcome of the spatial review, the design phase would commence for the Community Police Office (reno or new building).	Q4
Transportation and Infrastructure – Infrastructure	AUDITOR GENERAL FOR LOCAL GOVERNMENT (AGLG) ENGINEERING AUDIT REPORTS. Review the AGLG audit reports for engineering audits conducted on other BC municipalities and identify opportunities for improvement, if applicable.	Q4

<p>Transportation and Infrastructure – Active Transportation</p>	<p>ACTIVE TRANSPORTATION. Implementation of recommendations from the Active Transportation Advisory Committee to improve pedestrian and cyclist transportation with the community, such as:</p> <ul style="list-style-type: none"> • Implementation of various cyclist pushbuttons and crossing audible (partial grant); • Implementation of crossing improvements at Silver Bridge on Harris Rd and S. Alouette Bridge on Neaves Rd; • Crossing improvements at Ford Rd/Baynes Rd Intersection; • Crossing and stop control improvements at Baynes Rd/Airport Way intersection; • McMyn Rd line markings and MacLean Park letdowns • HUB Bike to School Education Program. <p>Grants will be researched for various active transportations projects.</p>	<p>Q4</p>
<p>Transportation and Infrastructure – Improved Transportation</p>	<p>TRAFFIC CALMING ENGAGEMENT & IMPLEMENTATION. Implementation of designed traffic calming measures at 124th Ave/Harris Rd, 124th Ave/192A Ave and Park Rd/192A Ave, recommendations from the recent traffic operations safety review along McMyn Rd and Harris Rd/122nd Ave, and continued implementation of the speed-reader board pilot program.</p>	<p>Q4</p>
<p>Corporate Excellence - Responsive</p>	<p>VARIOUS POLICY AND BYLAW REVIEW. Including the following:</p> <ul style="list-style-type: none"> • Soil Removal and Fill Deposit Regulation Bylaw No.2593 to provide more clarity around authority renewals, exemptions and process, review volume thresholds and levies/fees, and require dust mitigation plans; • Drainage System Protection Bylaw No.2266 to establish select criteria where more than one culvert may be considered for one parcel; • Beaver Policy or standard operating procedures; • DCC Bylaw and Program Review, which is a multi-year project that would be completed by the end of 2022. 	<p>Q4</p>

Transportation and Infrastructure – Investments	2021 CAPITAL WORKS – PAVING. Various paving of City’s aging road network, including: <ul style="list-style-type: none"> • McKechnie Rd from Dewdney Trunk Rd to Connecting Rd; • Neaves Rd – six targeted locations between McNeil Rd and S. Alouette bridge; • Ford Rd between Woolridge Rd and Ford Detour; • Design of Fraser Dyke Rd extension (DCC MJT24). 	Q3
Transportation and Infrastructure – Investments	2021 CAPITAL WORKS – WATER. Various replacement of City’s aging asbestos-cement water mains, including: <ul style="list-style-type: none"> • Completion of 2020 water main replacement at Park Rd, 116A Ave, 193A St, 193 St, 192A St, 192B St and 116B Ave; • 322m on 117 Ave between Blakely Rd and 195B St; • Cottonwood Park – upgraded service connection; • Fraser Dyke Rd water main extension (DCC W4). 	Q3
Transportation and Infrastructure – Investments	BONSON RD LIFT STATION. Lifecycle replacement of the lift station.	Q3
Transportation and Infrastructure – Investments	HARRIS PARK – UPGRADES TO SPRAY PARK DRAINAGE. Repairs to existing drainage system at spray park to accommodate current flows.	Q2

1. PROPOSED OPERATING BUDGET

	2020 Adopted Budget	2021 Proposed Budget	Proposed Changes for 2021		2022 Proposed Budget	2023 Proposed Budget	2024 Proposed Budget	2025 Proposed Budget
Revenue	\$ (25,300)	\$ (14,700)	\$ 10,600	41.9%	\$ (15,700)	\$ (17,200)	\$ (18,200)	\$ (18,200)
Expenses								
Engineering	554,300	562,000	7,700	1.4%	566,900	569,200	569,500	570,000
	554,300	562,000	7,700	1.4%	566,900	569,200	569,500	570,000
Net Operating Expenses	\$ 529,000	\$ 547,300	\$ 18,300	3.5%	\$ 551,200	\$ 552,000	\$ 551,300	\$ 551,800
Key Budget Changes for 2021:								
Highway Use, Soil Deposit, Fire Hydrant Permits & Other			10,600					
Salary and Benefits			5,800					
Other			1,900					
Change in Net Operating Expenses			\$ 18,300					

2. PROPOSED CAPITAL BUDGET

GL Category Project	2021	2022	2023	2024	2025	Total
8300 - TRANSPORTATION CAPITAL - ENGINEERING						
040010 - MCKECHNIE RD-DTR TO CONNCTG #15-TR-03	\$ 1,200,000	\$ -	\$ -	\$ -	\$ -	\$ 1,200,000
060005 - NEAVES ROAD #16-TR-116	150,000	470,000	-	520,000	1,490,000	2,630,000
080012 - ACTIVE TRANSPORTATION #09-TR-028	100,000	100,000	100,000	100,000	100,000	500,000
120018 - PAVEMENT MANAGEMENT PLAN #16-TR-115	-	95,000	-	-	-	95,000
120026 - SIDEWALK REPAIR #12-TR-099	20,000	20,000	20,000	20,000	20,000	100,000
160012 - NEAVES RD BIKE LANES #16-TR-117	-	-	-	288,000	672,000	960,000
160013 - WILDWOOD CRES-HAMMOND TO BNSN #15-T	-	415,000	-	-	-	415,000
180007 - TRAFFIC CALM ENGAGE & IMPL #18-TR-001	50,000	50,000	50,000	50,000	50,000	250,000
180008 - SHARPE TO NEAVES RD - OLD DTR #18-TR-003	-	816,000	-	-	-	816,000
180041 - PARK RD REPAVE #15-TR-097	-	-	-	362,900	-	362,900
180042 - HARRIS RD PAVING (URBAN AREA) #16-TR-111	-	-	-	887,000	1,500,000	2,387,000
180044 - HARRIS RD BETWEEN 2 DEWDNEYS #16-TR-114	-	250,000	-	-	-	250,000
190028 - HAMMOND RD PAVING (HAR-BLAKLY)#19-TR-C	-	-	-	-	400,000	400,000
190029 - 5 YR BRIDGE INSPEC #19-TR-002	-	-	-	40,000	-	40,000
190031 - 188 ST S. ADVENT RD #19-TR-007	-	-	220,000	-	-	220,000
190033 - DCC MJT2-HARRS (HAMM-AIRPORT) #19-TR-01	-	1,210,500	-	-	-	1,210,500
190035 - DCC MNT2-19089 ADVENT S/WALK #19-TR-022	21,900	-	-	-	-	21,900
190036 - DCC MNT4/MNT5-FRSEY WY PED/PKG#19-TR-C	-	1,078,500	-	-	-	1,078,500
190038 - DCC MJT23-AIRPRT WAY AT BAYNES#19-TR-03	-	-	140,000	-	-	140,000
190039 - DCC MJT24-FRASER DIKE RD EXT #19-TR-033	60,000	1,512,000	-	-	-	1,572,000
190099 - MCMYN ROAD (191 TO 191B) #19-TR-009	-	-	-	-	121,000	121,000
190105 - DCC MNT6 - HARRIS SIDEWALK FRASER TO All	-	-	-	-	572,000	572,000
200010 - WOOLRIDGE PAVEMENT REHAB #19-TR-004	-	-	-	1,086,400	-	1,086,400
200012 - NEW 193RD MULTI USE PATH #20-TR-003	-	-	1,900,000	-	-	1,900,000
210012 - HAMMOND RD REPAVING - WILDWOOD TO PM	-	520,000	-	-	-	520,000
210013 - FORD RD OVERLAY - WOOLRIDGE TO FORD R	125,000	-	-	-	-	125,000
210032 - DCC BYLAW & PROGRAM REVIEW	10,200	19,800	-	-	-	30,000
210034 - CITY ENTRANCE SIGN NEAR PITT BRIDGE	-	-	40,000	-	-	40,000
8300 - TRANSPORTATION CAPITAL Total	\$ 1,737,100	\$ 6,556,800	\$ 2,470,000	\$ 3,354,300	\$ 4,925,000	\$ 19,043,200
8410 - WATER CAPITAL						
180057 - AC REP 117 AVE #15-WS-047	\$ 380,000	\$ -	\$ -	\$ -	\$ -	\$ 380,000
180058 - AC REP 194A, 194B #15-WS-048	-	450,000	-	-	-	450,000
180059 - AC REP 195A, 195B, 117B AVE #15-WS-049	-	-	-	-	218,400	218,400
180060 - AC REP 195B, 119A, 120B AVE #15-WS-054	-	-	684,000	-	-	684,000
180062 - AC REP 115A AVE, 197A, 197B #15-WS-065	-	-	596,400	-	-	596,400
180065 - AC REP 188A, 188B, 119B AVE #16-WS-079	-	595,000	-	-	-	595,000
190043 - AC REP-196A, 116B AVE #19-WS-006	-	384,000	-	-	-	384,000
190044 - AC REP-116A, 114B AVE, 198 ST #19-WS-007	-	564,000	-	-	-	564,000
190045 - DCC W4 FRASER DYKE RD MAIN EXT#19-WS-0	300,000	-	-	-	-	300,000
190067 - AC REP-120, 120B AVE, 189A ST #16-WS-080	-	-	445,000	-	-	445,000
190069 - CL REP-BONSON RD (SOUTH)& 117A#18-WS-0	-	-	-	658,000	-	658,000
190108 - AC REP. - 188 AVE (ADVENT NORTH) #19-WS-0	-	-	-	-	600,000	600,000
190111 - AC REP. HARRIS ROAD (MCNEIL TO DIKE) #19-WS-0	-	-	-	-	800,000	800,000
200017 - AC REP 189B ST,120B AVE,190 ST#16-WS-081	-	-	-	-	580,000	580,000
210045 - ADVENT AC REPLACEMENT - 188 TO 188A	-	-	128,000	-	-	128,000
8410 - WATER CAPITAL Total	\$ 680,000	\$ 1,993,000	\$ 1,853,400	\$ 658,000	\$ 2,198,400	\$ 7,382,800
8430 - SEWER CAPITAL						
090016 - SEWER PIPE REHAB #09-SS-023	\$ -	\$ 200,000	\$ 100,000	\$ 300,000	\$ -	\$ 600,000
190009 - MCC - BONSON LIFT STN #19-SS-002	50,000	-	-	-	-	50,000
190094 - DCC S4 - ADVENT ROAD MAIN UPSIZE #19-SS-	-	-	-	-	1,128,800	1,128,800
8430 - SEWER CAPITAL Total	\$ 50,000	\$ 200,000	\$ 100,000	\$ 300,000	\$ 1,128,800	\$ 1,778,800
8453 - DRAINAGE AREA #3 CAPITAL						
190047 - DCC ST7 FRASER WAY STORM SYST #18-DS-00	\$ 289,700	\$ -	\$ -	\$ -	\$ -	\$ 289,700
190050 - DCC ST10 BAYNES P/S UPGRADE #19-DS-009	-	-	840,000	-	-	840,000
210035 - HARRIS PARK - UPGRADES TO SPRAY PARK DR	15,000	-	-	-	-	15,000
210037 - LOWER HAMMOND AREA - GROUND WATER	80,000	-	-	-	-	80,000
990073 - DRAINAGE PMP REPL KENNEDY #15-DS-019	-	1,500,000	-	-	-	1,500,000
8453 - DRAINAGE AREA #3 CAPITAL Total	\$ 384,700	\$ 1,500,000	\$ 840,000	\$ -	\$ -	\$ 2,724,700
8454 - DRAINAGE AREA #4 CAPITAL						
010011 - PITT POLDER (A4) #09-DS-024	\$ -	\$ -	\$ -	\$ -	\$ 760,000	\$ 760,000
8454 - DRAINAGE AREA #4 CAPITAL Total	\$ -	\$ -	\$ -	\$ -	\$ 760,000	\$ 760,000

3. **DECISION PACKAGE**

Refer Attachment A for Lower Hammond Area – Groundwater Study Data & Modelling Project. Note that the associated budget has been updated from the value included in the table above.

PUBLIC PARTICIPATION

Inform Consult Involve Collaborate Empower

KATZIE FIRST NATION CONSIDERATIONS

Referral Yes No

SIGN-OFFS

Written by:

Samantha Maki,
Director of Engineering & Operations

Reviewed by:

Mark Roberts,
Chief Administrative Officer

ATTACHMENT:

- A. Decision Package: Lower Hammond Area – Groundwater Study Data & Modelling Project

DECISION PACKAGE: Lower Hammond Area – Groundwater Study Data & Modelling Project

Department/Division	Engineering	
Submitted by	Samantha Maki, Director of Engineering & Operations	
Estimated Capital Cost	One time: \$150,000	Ongoing:

Recommendation

THAT Council:

- A. Review and approve the Lower Hammond Area – Groundwater Study Data & Modelling Project for \$70,000 in 2021 and \$80,000 in 2022 funded by the Drainage Reserve; OR
- B. Other.

Executive Summary

This project is Phase 2 of the Lower Hammond Area – Groundwater Study and includes data collection and modelling of the groundwater conditions in the study area. The study area generally includes the Baynes Rd Catchment Area, bounded by Baynes Rd, the CP railway, the City’s east border and the Fraser River. It does not include implementation of any associated recommendations, which would be better understood once Phase 2 is completed in mid-2022.

Background/Discussion

Groundwater and associated impacts of development has been a growing concern by staff and residents, specifically with the City’s high water table, underground springs and high-water levels observed in the ditch network near the Baynes Rd pump station. Further concerns were mentioned with the proposed development of three sites at the east end of Hammond Rd due to the existing groundwater conditions and observations on nearby parcels.

The City undertook a desktop study of available data and past reports in the study area to better assess the current groundwater conditions and any gaps in the information. This included review of a past study of the Katzie Slough, provided by the Katzie First Nation. The developer of the undeveloped Hammond sites, Censorio, concurrently completed an assessment of the on-site conditions. This information has been received and reviewed by the City.

The desktop study included many assumptions in order to assemble the data into a working groundwater study and further data collection and modelling was recommended in order to provide more accurate and detailed information for the City. The Phase 2 scope of work would include the installation of approximately six monitoring wells for at least one year and the data obtained would be used to create a 3D numerical model. The model would provide a detailed overview of the groundwater conditions in the City, including groundwater levels, flow directions and responses to sea level rise. The model would be a fluid program that could be updated as more information becomes available to assess the changes in conditions. A Decision Support Tool is also included in the 2022 budget, which would be user-friendly tool that would allow the

City to quickly determine the potential risk factor associated with any proposed development in the area. The need for this tool would be re-assessed following the completion of the numerical model in 2022.

Related Considerations

The project outlined above is separate from the on-site assessment the developer completed for the three adjoining sites at the end of Hammond Rd. The projects are related and information collected by the City will be useful in assessing impacts to surrounding areas, but the City’s scope encompasses a much larger area and the timeline for completion is longer.

The on-site report commissioned by Censorio provided a limited but concise overview of current site conditions and recommended further steps to better understand the groundwater conditions and any potential impacts caused by future development. The recommendations include installation of monitoring wells to assist with the pre-load design and ongoing monitoring while the site is pre-loaded. In order to proceed, a soil permit would need to be reviewed and approved by the City.

Financial Implications

Costs	One Time		Ongoing	
	Capital	Operational	Capital	Operational
Additional Data Collection (Consultant) – 2021	\$45,000	\$	\$	\$
Modelling (Consultant) – 2021/22	\$55,000			
Decision Support Tool (Consultant) - 2022	\$40,000			
Contingency - split between 2021/22	\$10,000			
Total Costs:	\$150,000	\$	\$	\$

Alternatives

The project could be postponed or the scope could be reduced; however, groundwater conditions have been an ongoing concern for both staff and residents. Data collection and modelling are the only way to develop an accurate overview of conditions, how they might change over time, ways to manage any associated impacts and will help inform Council decision-making regarding development applications.