HOWARD STREET DEVELOPMENT WASTEWATER SERVICING ASSESSMENT REPORT

Prepared for Hastings District Council

May 2016

MWH

BUILDING A BETTER WORLD

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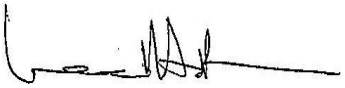
Wayne Hodson		16 / 05 / 2016
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			Prepared by	Checked by	Reviewed by	Approved by
1	3/5/16	Draft for Comment	A Patterson Horner	W Hodson	W Hodson	D Parkinson
2	16/5/16	Draft	A Patterson Horner	W Hodson	W Hodson	D Parkinson

Hastings District Council

Howard Street Development Wastewater Servicing Assessment

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1 Introduction

The Howard Street area is currently designated as Plains zone in the HDC District Plan. The Heretaunga Plains Urban Development Study (HPUDS) has identified Howard Street for residential development however it currently sits outside the 10 year period of the Long Term Plan (LTP).

A review of HDCs strategic timeframes for residential development, coupled with increased developer demand, has brought forward the need to evaluate infrastructure requirements for servicing this development area.

The purpose of this report is to discuss HDCs preferred wastewater servicing options for the area and provide a recommendation for servicing the proposed development in the most effective and efficient manner.

2 Background

A retirement village is proposed on the northern side of the study area and the developer is keen to proceed with development in the near future. Wastewater capacity is significantly constrained in this area and there is no spare capacity to enable the retirement village to proceed without substantial investment in new infrastructure. This development is a catalyst for assessing the full Howard Street servicing needs so that the future anticipated demand can be planned and coordinated with Councils existing and future programme of work.

An assessment of alternative servicing options was carried out by MWH using HDCs wastewater network model. The modelling assessment identified a public pump station and rising main discharging to the Park Road rising main as the preferred option.

Refer to *'Howard Street Development Assessment'* report for further details.

3 Pump Station and Rising Main Servicing Solution

A pump station and rising main has been identified as the only feasible and cost effective solution for servicing the Howard Street development due to the location of existing wastewater infrastructure, topography of the land and other key features including streams. In addition to this it was identified from the assessment that flows from the new development must ultimately discharge into the Park Road trunk rising main as the only alternative catchment (Hood Street) would require significant downstream upgrades to existing pump stations, rising mains and gravity sewer network.

The advantages of servicing the area with a single HDC owned and operated pump station and rising main are:

- A single pump station and rising main will be constructed to service the full potential development area (potentially extending to the Riverslea drain).
- Park Road Rising main and associated pump stations currently require renewal and upgrade to maintain performance and meet level of service requirements. Investigations for this are currently underway including a requirement to accommodate the proposed Howard Street system discharge into the Park Road Rising main project ensuring there are no downstream constraints, i.e. no downstream network upgrades will be required that are not already programmed.
- HDC will own, operate and maintain the proposed pump station and rising main. HDC operations are currently well equipped to manage wastewater assets to ensure asset life is maximised and assets are operated efficiently by effectively managing flows.
- Operation can be managed in conjunction with the wider sewer network which will enable effective management of flows.
- The pump station will be maintained under HDCs existing water services maintenance contract, this will ensure consistency of maintenance across the HDC network and cost efficiency.
- HDC will be able to dictate the quality and specification of infrastructure installed and reinstatement within the public road reserve.
- The pump station can be designed to cater for the full area of potential development in Howard Street.
- The pump station may also be utilised to relieve existing level of service issues within the wider catchment i.e. the Louie Street catchment, and improve network operability and reduce the risk of overflows.
- It is not feasible or practical to allow individual developers to develop standalone solutions and from a planning perspective, Council is required to ensure a servicing solution is in place for the entire development area. A Council solution is therefore considered to be the most appropriate approach.

4 Concept Options

Concept options have been considered to service the Howard Street development with a single pump station and rising main. The options have been promulgated from the modelling report '*Howard Street Development Assessment'.*

4.1 Rising Main Routes

Three rising main routes from the proposed Howard Street development to the Park Road rising main have been identified as shown in the figure below.

Figure 4-1: Proposed Rising Main and Pumpstation Options

4.1.1 Howard Street

The Howard Street alignment includes the proposed rising main located within the berm along the rural section of Howard Street moving into the footpath/parking lane through to Windsor Ave. A short section of rising main will be required within the traffic lane on Windsor Ave between Howard Street and St Aubyn Street before turning into St Aubyn Street within the parking lane and discharging at the Park Road intersection.

A more direct route along Howard Street and then through private property to Park Road was considered. This option however has been dismissed due to the following issues and constraints:

- Existing structures and features within private property,
- Land owner negotiations required with multiple landowners,
- Land purchase and/or easements required,
- Difficulty associated within any access for ongoing operational purposes in the future.

4.1.2 Heretaunga Street

The Heretaunga Street alignment starts on Havelock Road near the Riverslea drain and is located in the live traffic lane through to the Park Road intersection. An alternative for this option is utilising the planned stromwater swale corridor along the Havelock Road frontage. This would enable the location of the rising main from the Riverslea drain to the existing urban edge of Hastings to be located within the greenfield buffer strip.

4.1.3 Greenfield Route

This alignment utilises a greenfield corridor within the zoned development area and the Parkvale School field. A route through either 309 or 311 Windsor Ave is required prior to entering Windosr Ave. A short section of rising main will be required within the traffic lane on Windsor Ave near the St Aubyn Street intersection before turning into St Aubyn Street within the parking lane and discharging at the Park Road intersection.

The route through private property will require further investigation including a site assessment.

This route will require Council to negotiate with existing land owners and purchase land or obtain easements.

4.2 Design Considerations

The following items would require confirmation during detail design of any of the rising main alignments.

1) The Park Road rising main is approximately 1.6km in length with six existing pump stations contributing to the rising main via manifolds. The addition of a seventh pump station will further increase the complexity of the network and operational difficulties associated with operating the pump stations together in an efficient manner. This addition is likely to require an upgrade of the telemetry and control systems to allow advanced real time monitoring and control of each pump station.

2) Discharge point and arrangement into the Park Road rising main. Options include:

   a) Discharge to gravity network directly upstream (approximately 20m) of the existing Park Road North pump station. The capacity of the existing pump station would be reviewed as part of the Park Road rising main investigation and would incorporate the Howard Street development flows.

   b) Discharge directly into the Park Road rising main with a manifold, similar to the other pump stations currently connected to the rising main.

3) Construction method. Two options are available open cut construction or trenchless construction via horizontal directional drilling (HDD). Trenchless construction is preferable as it minimises disruption to the community and road users, minimises the extent of surface reinstatement required and is expected to be the most cost effective construction method. There is however a risk associated with HDD that dips may occur within the rising main. A long-section profile and the potential impacts of dips within the line on operation i.e. air pockets will need to be considered during the detail design phase.

4.3 Pump Station

Preliminary modelling has indicated that a pump station capable of discharging approximately 10l/s in a duty assist arrangement is required for the potential development area. An 1800mm diameter precast manhole would be suitable to operate as a wetwell with submersible pumps. Preliminary assessments indicate 6hrs of average dry weather flow (ADWF) storage should be available within the pump station wetwell chamber and gravity sewer network that will be required within the development area. Offline storage has not currently been allowed for.

Key assumptions associated with the assessment of the proposed pump station include:

- Power is or will be available at the site.
- An emergency standby generator will not be permanently required on site. In an emergency or prolonged power failure situation HDC would utilise one of their portable generators which are currently used for existing pump stations of this scale within the network.
- There is adequate public land within the road reserve to accommodate the required pump station on Howard Street therefore no land purchase would be required. The pump station would need to be constructed within the road or berm area. The berm is preferable however would also need to accommodate the existing roadside drainage channel and existing overhead power (eastern site only).

Four potential pump station locations have been identified. See Figure 4.1 above.

4.3.1 Howard East Pump Station

This pump station would be located on the far eastern edge of the potential development area, adjacent to the Riverslea drain effectively the lowest corner. This location would minimise the depth of contributing gravity sewer and the pump station wetwell itself (approximately 3.5m maximum) however there is likely to be ground water and stability issues that would require mitigation being located so near an existing waterway, the Riverslea drain.

This location would require approximately 1.2km of associated sewer rising main.

4.3.2 Howard West Pump Station

This pump station would be located approximately midway along the potential development area between 1239 and 1245 Howard Street. This location would likely require a deeper pump station, 4-4.5m however would reduce the total length of rising main required. This location does not have any risks associated with proximity to the Riverslea drain, and should still be relatively favourable for the gravity system to discharge. The gravity sewers constructed for part of the development would need to be deeper. This site is located on the urban/rural edge of the opposite side of the road and is well located to also service the existing Howard Street catchment if HDC choose to divert some of the Louie Street catchment.

This location would require approximately 0.9km of associated sewer rising main.

4.3.3 Heretaunga Pump Station

This pump station would be located adjacent to the Riverslea drain on the southern side (Heretaunga Street/Havelock Road) of the proposed development. For a pump station to be located on the south side of the development it is likely land purchase would be required unless the pump station was located beneath the concrete Havelock North cycleway which is not favourable. In addition to the likely requirement of land purchase this areas is low lying and in close proximity to the Riverslea drain which are likely to create both construction and operational/inflow and infiltration issues.

This location would require approximately 1km of associated sewer rising main.

4.3.4 Greenfield Pumpstation

This pump station would be located within the proposed development area. Exact location would be dependent upon a firm structure plan and actual development layout in the future. This would ideally link with internal roading within the development area for ease of access for operational activities.

This location would require approximately 0.9km of associated sewer rising main within both public and private property.

5 Advantages and Disadvantages

5.1 Rising Main Route

The table below compares the advantages and disadvantages of the four feasible rising main routes to the Park Road rising mains from the Howard Street development.

5.1.1 Howard Street

Table 5-1: Howard Street Rising Main Route Summary Table

Advantages	Disadvantages
Approximately a third of the rising main length is located within the rural berm	A short section of rising main within Windsor Ave will have to be located within the traffic lane to avoid other services.
A desktop review of ground conditions indicate this route is favourable for trenchless construction. Trenchless construction is preferable as it is expected to reduce the contract period, level of disruption to the community, traffic management required and reinstatement required. Overall the advantages associated with trenchless construction is expected to reduce the total project cost.	Construction works will impact Parkvale school however this can be minimised through good construction management and communication with affected parties to minimise the extent and duration of disruption.
This route enables HDC the opportunity to divert part or all of the Louie Street catchment if desired.	Long rising main required, approximately 1.2km, however could be reduced to 0.9km if the pump station located more centrally along the potential development extent, with deeper sewers within the development (if development extends further to the south).
Manual traffic control required is likely to be limited to the short Windsor Ave section.	Two changes of direction required.
The development will discharge into the Park Road rising main at the most feasible downstream location potentially reducing the extent of upgrade required to the existing Park Road rising main network.	This alignment does effect the Windsor Ave / St Aubyn Street intersection which was reconstructed in recent years.
Limited service crossings required. Those that are required do not include any major infrastructure.	
The existing gravity sewer on St Aubyn Street is due for renewal due to structural failure. These renewal works could be coordinated with the rising main construction.	

5.1.2 Heretaunga Street

Table 5-2: Heretaunga Street Rising Main Route Summary Table

Advantages	Disadvantages
Shorter length of rising main required, approximately 1km	High traffic volumes along Heretaunga Street and the Havelock Road that would require management.
The pump station and rising main would be located in the lowest lying area of the proposed development. This may minimise the depth of the gravity sewer network required within the development area.	The development will discharge into the Park Road rising main to the upper section of the Park Road rising main, this could potentially increase the extent of upgrade required to the existing Park Road rising main network.
	Service crossings of high pressure gas, fibre optic and high voltage power would be required.
	A significant number of services are located along this route. The only available corridor for the full length of rising main required would be within the live traffic lane, with safety issues for construction and also on-going operation and maintenance.
	Approximately half the total length of the proposed rising main route has recently been resurfaced as part of the Havelock Road cycleway project. This would require reinstatement of new pavement/surfacing, disruption to the community again and loss of face politically for HDC.
	This route does not give HDC the ability to reroute any other catchments with existing level of service issues.

5.1.3 Heretaunga Street Alternative Route

Table 5-3: Heretaunga Street Rising Main Alternative Route Summary Table

Advantages	Disadvantages
Shorter length of rising main required, approximately 1km	High traffic volumes along Heretaunga Street and the Havelock Road that would require management.
The pump station and rising main would be located in the lowest lying area of the proposed development. This may minimise the depth of the gravity sewer network required within the development area.	The development will discharge into the Park Road rising main to the upper section of the Park Road rising main, this could potentially increase the extent of upgrade required to the existing Park Road rising main network.
Approximately 570m of the rising main would be located within the stormwater swale corridor which would enable efficient dual use of the land.	Service crossings of high pressure gas, fibre optic and high voltage power would be required.
	A significant number of services are located along this route. The only available corridor for the full length of rising main required would be within the live traffic lane, with issues for construction and also on-going operation and maintenance.
	This route does not give HDC the ability to reroute any other catchments with existing level of service issues.
	Progressive Enterprises owns the land and would like to develop a supermarket within the proposed stormwater and rising main corridor, approximately 170m.

5.1.4 Greenfield Site

Table 5-4: Greenfield Rising Main Route Summary Table

Advantages	Disadvantages
Approximately 0.9km the rising main is required.	Two changes of direction required.
A desktop review of ground conditions indicate this route is favourable for trenchless construction. Trenchless construction is preferable as it is expected to reduce the contract period, level of disruption to the community, traffic management required and reinstatement required. Overall the advantages associated with trenchless construction is expected to reduce the total project cost.	The rising main will pass through private property which will required easement or land purchase. An 80m section of private property has existing dwellings which restricts width of the construction corridor and access for maintenance. Future development may be restricted over or near the rising main and access is required for operation and maintenance activities.
Approximately 400m of the rising main will be located in greenfields.	A short section of rising main within Windsor Ave will have to be located within the traffic lane to avoid other services.
Manual traffic control required is likely to be limited to the short Windsor Ave section.	This alignment does effect the Windsor Ave and the Windsor Ave / St Aubyn Street intersection which was reconstructed in recent years.
The development will discharge into the Park Road rising main at the most feasible downstream location potentially reducing the extent of upgrade required to the existing Park Road rising main network.	
Limited service crossings required. Those that are required do not include any major infrastructure.	
The existing gravity sewer on St Aubyn Street is due for renewal due to structural failure. This renewal works could be coordinated with the rising main construction.	

5.2 Pump Station Location

Table 5-5: Pump Station Location

Pump station Location	Advantage	Disadvantage
Western Howard St Pump Station	• 0.9 km of rising main required • Favourable location for servicing part of the Louie catchment if required. • Favourable location for servicing the proposed development area. • Construction within the road reserve/berm • Preliminary assessments indicate there will be appropriate storage within the wetwell and anticipated gravity network.	• Existing road side drain likely to make construction within the berm difficult. Diversion or civil works associated with the drain are likely to be required • Deeper pump station required, approximately 4.5 - 5m, and deeper gravity sewers within the development particularly the area that could be potentially developed in the future.
Eastern Howard St Pump Station	• Likely to be most favourable for gravity network required within proposed and potential development area • Depth of pump station required, approximately 3.5 - 4m. • Construction within the road reserve/berm	• Adjacent to stream • 1.2km of rising main required • Existing road side drain • Low slung overhead power lines likely to require undergrounding or construction of pump station in the road or land purchase required • Offline storage more likely to be required
Heretaunga St Pump Station	• Depth of pump station required, approximately 3.5 - 4m.	• Low lying land locked area adjacent to stream. • Likely to require land purchase • 1km of rising main along major arterial road • Difficult to access for maintenance activities due to existing cycleway facilities • Offline storage more likely to be required
Greenfields Pump Station	• 0.9 km of rising main required • Favourable location for servicing the proposed development area. • Preliminary assessments indicate there will be appropriate storage within the wetwell and anticipated gravity network. • Construction within greenfields area.	• Will require land purchase and/or easement. • Deeper pump station required, approximately 4.5 - 5m, and deeper gravity sewers within the development particularly the area that could be potentially developed in the future. • The internal arrangement within the proposed development area would need to accommodate the pump station particularly for operational access.

6 Cost Estimates

Preliminary cost estimates have been developed for each of the pump station and rising main servicing solutions discussed within this report.

The cost estimates include a 25% contingency sum and compare trenchless and open cut construction methods.

Table 6-1: Cost Estimate Summary

Option	Pump station	Rising Main	Total
Howard Street, Eastern Pump station, Open Cut	$ 250,000.00	$ 380,840.00	$ 630,840.00
Howard Street, Eastern Pump station, Trenchless	$ 250,000.00	$ 272,890.00	$ 522,890.00
Howard Street, Western Pump station, Open Cut	$ 275,000.00	$ 350,740.00	$ 625,740.00
Howard Street, Western Pump station, Trenchless	$ 275,000.00	$ 257,840.00	$ 532,840.00
Heretaunga Street, Open Cut	$ 280,000.00	$ 414,200.00	$ 694,200.00
Heretaunga Street, Trenchless	$ 280,000.00	$ 339,200.00	$ 619,200.00
Greenfields Pump station, Open Trench	$ 300,000.00	$ 313,600.00	$ 613,600.00
Greenfields Pump station, Trenchless	$ 300,000.00	$ 215,700.00	$ 515,700.00

Note cost estimates accuracy is +30/-10%.

See Appendix A for a further detail of cost estimates.

A rough order estimate is summarised below for additional items that may be required.

Table 6-2: Rough Order Cost Estimate Summary

Item	ROC ($)
Emergency standby generator (permanently located on site)	$40,000
Power Supply (assuming a transformer upgrade is required).	$50,000
Land Purchase (for Pumpstation site)	$40,000
Easements (required if rising main situated in private property)	$40,000
Offline Storage (20m3)	$40,000
Professional Service Fees	$200,000
Contingency and Management Contingency	$150,000

Note the above cost estimates do not include:

- Associated gravity sewers that will be required to service any development. It is anticipated these gravity sewers will be designed to meet HDC Code of Practice and are compatible with the preferred pump station option. The preferred pump station location is deemed the most efficient and cost effective for the current development area. There is however likely to be additional costs associated with any gravity sewers required in the area marked for potential development in the future, due to depth required to connect to the preferred pump station location. These costs however have not been considered as they may not eventuate and if they do will be borne by a private developer well into the future.

7 Recommendation

Two reasonable servicing options have been identified, the greenfield or the Howard Street west pumpstations and associated rising mains.

For planning and funding purposes it is recommended HDC budget **$1,200,000**. This sum allows for open cut excavation of the rising main until site investigations and a geotechnical assessment with drillers is carried out and drilling is confirmed as a feasible low risk option. It is also includes all other ancillary items as listed in Table 6-2.

It is recommended HDC advance structure planning including any required designations considering these two wastewater servicing options. It is recommended the structure plan allow for a suitable public location for the greenfields pumpstation option i.e. road reserve. Any structure planning would have minimal impact on the Howard Street west option.

It is recommended HDC liaise with developers to confirm the proposed pump station location(s) and depth is compatible with the gravity sewer network required within the development.

Appendix A Cost Estimates

Schedule of Price Options

Option	Pumpstation	Rising Main	Total
Howard St, Eastern PS, Open Cut	$ 250,000.00	$ 380,840.00	$ 630,840.00
Howard St, Eastern PS, Trenchless	$ 250,000.00	$ 272,890.00	$ 522,890.00
Howard St, Western PS, Open Cut	$ 275,000.00	$ 350,740.00	$ 625,740.00
Howard St, Western PS, Trenchless	$ 275,000.00	$ 257,840.00	$ 532,840.00
Heretaunga St, Open Cut	$ 280,000.00	$ 414,200.00	$ 694,200.00
Heretaunga St, Trenchless	$ 280,000.00	$ 339,200.00	$ 619,200.00
Greenfields PS, Open Trench	$ 300,000.00	$ 313,600.00	$ 613,600.00
Greenfields PS, Directional Drill	$ 300,000.00	$ 215,700.00	$ 515,700.00

Contract No: N/A

Contract Name: Howard Street Eastern Pumpstation

Item	Description	Unit	Quantity	Rate $	Price $
100	**PRELIMINARY AND GENERAL**				
101	**Establishment and disestablishment**	LS	1	$ 15,000.00	$ 15,000.00
102	**Traffic management plan**	LS	1	$ 1,000.00	$ 1,000.00
103	**On site traffic management**	LS	1	$ 5,000.00	$ 5,000.00
104	**Safety plan**	LS	1	$ 1,000.00	$ 1,000.00
105	**On site safety management**	LS	1	$ 3,500.00	$ 3,500.00
106	**Survey control and setting out**	LS	1	$ 2,500.00	$ 2,500.00
107	**Consultation and liaison with effected parties**	LS	1	$ 1,000.00	$ 1,000.00
108	**Supply As built information**	LS	1	$ 4,000.00	$ 4,000.00
109	**Contingency sum**	PS	1	$ 50,000.00	$ 50,000.00
	SUBTOTAL				$ 83,000.00
Item	**Description**	**Unit**	**Quantity**	**Rate $**	**Price $**
	SUPPLY AND INSTALL PRE-PACKAGED PUMPSTATION AND VALVE ASSEMBLY				
	1800mm diameter Prefabricated Pump Station Chamber including concrete plug, sump top, concrete lid, heavy duty cover and all penetrations for stub pipes and ducts.	LS	1	$ 75,000.00	$ 75,000.00
	Flygt Pump (5-10l/s) and all associated Pipework and Fittings, including discharge pipework, guide rails, floats, pressure transducer and stilling tube.	each	2	$ 15,000.00	$ 30,000.00
	Supply and Install rectangular valve chamber, concrete lid, and heavy duty cover with non return valve, sluice valve and pipework required to connect chamber to pumpstation.	LS	1	$ 30,000.00	$ 30,000.00
	Commissioning and testing, including providing onsite assitance with telemetry supplies for pump start/stop and testing.	LS	1	$ 2,000.00	$ 2,000.00
	SUPPLY AND INSTALL DUCTING	LS	1	$ 10,000.00	$ 10,000.00
	CONSTRUCT HARDSTAND AREA/LANDSCAPING	LS	1	$ 20,000.00	$ 20,000.00
	SUBTOTAL				$ 167,000.00
	TENDER SUM (Excl GST)				**$ 250,000.00**

Contract No: N/A
Contract Name: Howard Street Western Pumpstation

Item	Description	Unit	Quantity	Rate $	Price $
100	**PRELIMINARY AND GENERAL**				
101	**Establishment and disestablishment**	LS	1	$ 15,000.00	$ 15,000.00
102	**Traffic management plan**	LS	1	$ 1,000.00	$ 1,000.00
103	**On site traffic management**	LS	1	$ 5,000.00	$ 5,000.00
104	**Safety plan**	LS	1	$ 1,000.00	$ 1,000.00
105	**On site safety management**	LS	1	$ 3,500.00	$ 3,500.00
106	**Survey control and setting out**	LS	1	$ 2,500.00	$ 2,500.00
107	**Consultation and liaison with effected parties**	LS	1	$ 1,000.00	$ 1,000.00
108	**Supply As built information**	LS	1	$ 4,000.00	$ 4,000.00
109	**Contingency sum**	PS	1	$ 55,000.00	$ 55,000.00
	SUBTOTAL				$ 88,000.00
Item	**Description**	**Unit**	**Quantity**	**Rate $**	**Price $**
	SUPPLY AND INSTALL PRE-PACKAGED PUMPSTATION AND VALVE ASSEMBLY				
	1800mm diameter Prefabricated Pump Station Chamber including concrete plug, sump top, concrete lid, heavy duty cover and all penetrations for stub pipes and ducts.	LS	1	$ 85,000.00	$ 85,000.00
	Flygt Pump (5-10l/s) and all associated Pipework and Fittings, including discharge pipework, guide rails, floats, pressure transducer and stilling tube.	each	2	$ 20,000.00	$ 40,000.00
	Supply and Install rectangular valve chamber, concrete lid, and heavy duty cover with non return valve, sluice valve and pipework required to connect chamber to pumpstation.	LS	1	$ 30,000.00	$ 30,000.00
	Commissioning and testing, including providing onsite assitance with telemetry supplies for pump start/stop and testing.	LS	1	$ 2,000.00	$ 2,000.00
	SUPPLY AND INSTALL DUCTING	LS	1	$ 10,000.00	$ 10,000.00
	CONSTRUCT HARDSTAND AREA/LANDSCAPING	LS	1	$ 20,000.00	$ 20,000.00
	SUBTOTAL				$ 187,000.00
	TENDER SUM (Excl GST)				**$ 275,000.00**

Schedule of Prices

Contract No: N/A

Contract Name: Howard Street Rising Main with Eastern Pumpstation Location

				Open Cut Construction		Trenchless Construction	
Item	**Description**	**Unit**	**Quantity**	**Rate $**	**Price $**	**Rate $**	**Price $**
100	**PRELIMINARY AND GENERAL**						
101	**Establishment and disestablishment**	LS	1	$ 18,000.00	$ 18,000.00	$ 12,500.00	$ 12,500.00
102	**Traffic management plan**	LS	1	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 1,000.00
103	**On site traffic management**	LS	1	$ 26,500.00	$ 26,500.00	$ 10,000.00	$ 10,000.00
104	**Safety plan**	LS	1	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 1,000.00
105	**On site safety management**	LS	1	$ 6,250.00	$ 6,250.00	$ 5,000.00	$ 5,000.00
106	**Survey control and setting out**	LS	1	$ 2,500.00	$ 2,500.00	$ 2,500.00	$ 2,500.00
107	**Consultation and liaison with effected parties**	LS	1	$ 2,500.00	$ 2,500.00	$ 2,500.00	$ 2,500.00
108	**Supply As built information**	LS	1	$ 6,000.00	$ 6,000.00	$ 6,000.00	$ 6,000.00
109	**Contingency sum**	PS	1	$ 75,000.00	$ 75,000.00	$ 50,000.00	$ 50,000.00
	SUBTOTAL				$ 138,750.00		$ 90,500.00
Item	**Description**	**Unit**	**Quantity**	**Rate $**	**Price $**	**Rate $**	**Price $**
	Sewer Pressure Main Works						
	Supply and lay Sewer Pressure mains						
	Supply and lay 100mm PVC or PE pressure main (in berm)	m	451	$ 100.00	$ 45,100.00	$ 50.00	$ 22,550.00
	Supply and lay 100mm PVC or PE pressure main (in urban footpath and Berm)	m	426	$ 150.00	$ 63,900.00	$ 100.00	$ 42,600.00
	Supply and lay 100mm PVC or PE pressure main in Road	m	317	$ 170.00	$ 53,890.00	$ 120.00	$ 38,040.00
	Supply and Installation of connections						$ -
	Extra over - service clashes	LS	1	$ 15,000.00	$ 15,000	$ 15,000.00	$ 15,000.00
	Connection into existing sewer on Park Rd (Discharge Manhole)	each	1	$ 5,000.00	$ 5,000.00	$ 5,000.00	$ 5,000.00
	Connection into pumping station	each	1	$ 2,000.00	$ 2,000.00	$ 2,000.00	$ 2,000.00
	Miscellaneous Items						
	Supply and installation of air valves (below ground including manh	each	2	$ 8,000.00	$ 16,000.00	$ 8,000.00	$ 16,000.00
	Supply and installation of Scour valves (below ground including m	each	2	$ 9,500.00	$ 19,000.00	$ 9,500.00	$ 19,000.00
	Supply and install flow meter and chamber	each	1	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00
	Support of Power Poles	each	4	$ 1,800.00	$ 7,200.00	$ 1,800.00	$ 7,200.00
	Supply and installation of air vent poles and ducting	each	2	$ 2,500.00	$ 5,000.00	$ 2,500.00	$ 5,000.00
	SUBTOTAL				$ 242,090.00		$ 182,390.00
	TENDER SUM (Excl GST)				**$ 380,840.00**		**$ 272,890.00**

Schedule of Prices

Contract No: N/A

Contract Name: Howard Street Rising Main with Western Pumpstation Location

				Open Cut Construction		Trenchless Construction	
Item	**Description**	**Unit**	**Quantity**	**Rate $**	**Price $**	**Rate $**	**Price $**
100	**PRELIMINARY AND GENERAL**						
101	**Establishment and disestablishment**	LS	1	$ 18,000.00	$ 18,000.00	$ 12,500.00	$ 12,500.00
102	**Traffic management plan**	LS	1	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 1,000.00
103	**On site traffic management**	LS	1	$ 26,500.00	$ 26,500.00	$ 10,000.00	$ 10,000.00
104	**Safety plan**	LS	1	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 1,000.00
105	**On site safety management**	LS	1	$ 6,250.00	$ 6,250.00	$ 5,000.00	$ 5,000.00
106	**Survey control and setting out**	LS	1	$ 2,500.00	$ 2,500.00	$ 2,500.00	$ 2,500.00
107	**Consultation and liaison with effected parties**	LS	1	$ 2,500.00	$ 2,500.00	$ 2,500.00	$ 2,500.00
108	**Supply As built information**	LS	1	$ 6,000.00	$ 6,000.00	$ 6,000.00	$ 6,000.00
109	**Contingency sum**	PS	1	$ 75,000.00	$ 75,000.00	$ 50,000.00	$ 50,000.00
	SUBTOTAL				$ 138,750.00		$ 90,500.00
Item	**Description**	**Unit**	**Quantity**	**Rate $**	**Price $**	**Rate $**	**Price $**
	Sewer Pressure Main Works						
	Supply and lay Sewer Pressure mains						
	Supply and lay 100mm PVC or PE pressure main (in berm)	m	150	$ 100.00	$ 15,000.00	$ 50.00	$ 7,500.00
	Supply and lay 100mm PVC or PE pressure main (in urban footpath and Berm)	m	426	$ 150.00	$ 63,900.00	$ 100.00	$ 42,600.00
	Supply and lay 100mm PVC or PE pressure main in Road	m	317	$ 170.00	$ 53,890.00	$ 120.00	$ 38,040.00
	Supply and Installation of connections						
	Extra over - service clashes	LS	1	$ 15,000.00	$ 15,000	$ 15,000.00	$ 15,000.00
	Connection into existing sewer on Park Rd (Discharge Manhole)	each	1	$ 5,000.00	$ 5,000.00	$ 5,000.00	$ 5,000.00
	Connection into pumping station	each	1	$ 2,000.00	$ 2,000.00	$ 2,000.00	$ 2,000.00
	Miscellaneous Items						
	Supply and installation of air valves (below ground including manholes)	each	2	$ 8,000.00	$ 16,000.00	$ 8,000.00	$ 16,000.00
	Supply and installation of Scour valves (below ground including manholes)	each	2	$ 9,500.00	$ 19,000.00	$ 9,500.00	$ 19,000.00
	Supply and install flow meter and chamber	each	1	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00
	Support of Power Poles	each	4	$ 1,800.00	$ 7,200.00	$ 1,800.00	$ 7,200.00
	Supply and installation of air vent poles and ducting	each	2	$ 2,500.00	$ 5,000.00	$ 2,500.00	$ 5,000.00
	SUBTOTAL				$ 211,990		$ 167,340.00
	TENDER SUM (Excl GST)				**$ 350,740**		**$ 257,840.00**

Schedule of Prices

Contract No: **N/A**

Contract Name: **Heretaunga Street/Havelock Road Rising Main**

				Open Cut Construction		Trenchless Construction	
Item	**Description**	**Unit**	**Quantity**	**Rate $**	**Price $**	**Rate $**	**Price $**
100	**PRELIMINARY AND GENERAL**						
101	**Establishment and disestablishment**	LS	1	$ 18,000.00	$ 18,000.00	$ 18,000.00	$ 18,000.00
102	**Traffic management plan**	LS	1	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 1,000.00
103	**On site traffic management**	LS	1	$ 35,000.00	$ 35,000.00	$ 25,000.00	$ 25,000.00
104	**Safety plan**	LS	1	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 1,000.00
105	**On site safety management**	LS	1	$ 2,500.00	$ 2,500.00	$ 2,500.00	$ 2,500.00
106	**Survey control and setting out**	LS	1	$ 2,500.00	$ 2,500.00	$ 2,500.00	$ 2,500.00
107	**Consultation and liaison with effected parties**	LS	1	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 1,000.00
108	**Supply as built information**	LS	1	$ 4,000.00	$ 4,000.00	$ 4,000.00	$ 4,000.00
109	**Contingency sum**	PS	1	$ 85,000.00	$ 85,000.00	$ 70,000.00	$ 70,000.00
	SUBTOTAL				$ 150,000.00		$ 125,000.00
Item	**Description**	**Unit**	**Quantity**	**Rate $**	**Price $**	**Rate $**	**Price $**
	Sewer Pressure Main Works						
	Supply and lay Sewer Pressure mains						
	Supply and lay 100mm PVC or PE pressure main (in berm)	m	0	$ 100.00			
	Supply and lay 100mm PVC or PE pressure main (in urban footpath and Berm)	m	0	$ 150.00			
	Supply and lay 100mm PVC or PE pressure main in Road	m	1000	$ 170.00	$ 170,000.00	$ 120.00	$ 120,000.00
	Supply and Installation of connections						$ -
	Extra over - service clashes	LS	1	$ 30,000.00	$ 30,000	$ 30,000.00	$ 30,000.00
	Connection into existing sewer on Park Rd (Discharge Manhole)	each	1	$ 5,000.00	$ 5,000.00	$ 5,000.00	$ 5,000.00
	Connection into pumping station	each	1	$ 2,000.00	$ 2,000.00	$ 2,000.00	$ 2,000.00
	Miscellaneous Items						
	Supply and installation of air valves (below ground including manholes)	each	2	$ 8,000.00	$ 16,000.00	$ 8,000.00	$ 16,000.00
	Supply and installation of Scour valves (below ground including manholes)	each	2	$ 9,500.00	$ 19,000.00	$ 9,500.00	$ 19,000.00
	Supply and install fow meter and chamber	each	1	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00
	Support of Power Poles	each	4	$ 1,800.00	$ 7,200.00	$ 1,800.00	$ 7,200.00
	Supply and installation of air vent poles and ducting	each	2	$ 2,500.00	$ 5,000.00	$ 2,500.00	$ 5,000.00
	SUBTOTAL				$ 264,200		$ 214,200.00
	TENDER SUM (Excl GST)				**$ 414,200**		**$ 339,200.00**

Schedule of Prices

Contract No: **N/A**

Contract Name: **Heretaunga Street Pump Station**

Item	Description	Unit	Quantity	Rate $	Price $
100	**PRELIMINARY AND GENERAL**				
101	**Establishment and disestablishment**	LS	1	$ 15,000.00	$ 15,000.00
102	**Traffic management plan**	LS	1	$ 1,000.00	$ 1,000.00
103	**On site traffic management**	LS	1	$ 5,000.00	$ 5,000.00
104	**Safety plan**	LS	1	$ 1,000.00	$ 1,000.00
105	**On site safety management**	LS	1	$ 3,500.00	$ 3,500.00
106	**Survey control and setting out**	LS	1	$ 2,500.00	$ 2,500.00
107	**Consultation and liaison with effected parties**	LS	1	$ 1,000.00	$ 1,000.00
108	**Supply As built information**	LS	1	$ 4,000.00	$ 4,000.00
109	**Contingency sum**	PS	1	$ 50,000.00	$ 50,000.00
	SUBTOTAL				$ 83,000.00
Item	**Description**	**Unit**	**Quantity**	**Rate $**	**Price $**
	SUPPLY AND INSTALL PRE-PACKAGED PUMPSTATION AND VALVE ASSEMBLY				
	1800mm diameter Prefabricated Pump Station Chamber including concrete plug, sump top, concrete lid, heavy duty cover and all penetrations for stub pipes and ducts.	LS	1	$ 75,000.00	$ 75,000.00
	Flygt Pump (5-10l/s) and all associated Pipework and Fittings, including discharge pipework, guide rails, floats, pressure transducer and stilling tube.	each	2	$ 15,000.00	$ 30,000.00
	Supply and Install rectangular valve chamber, concrete lid, and heavy duty cover with non return valve, sluice valve and pipework required to connect chamber to pumpstation.	LS	1	$ 30,000.00	$ 30,000.00
	Commissioning and testing, including providing onsite assitance with telemetry supplies for pump start/stop and testing.	LS	1	$ 2,000.00	$ 2,000.00
	SUPPLY AND INSTALL DUCTING	LS	1	$ 10,000.00	$ 10,000.00
	CONSTRUCT HARDSTAND AREA/LANDSCAPING	LS	1	$ 20,000.00	$ 20,000.00
	LAND PURCHASE	LS	1	$ 30,000.00	$ 30,000.00
	SUBTOTAL				$ 197,000.00
	TENDER SUM (Excl GST)				**$ 280,000.00**

Schedule of Prices

Contract No: **N/A**

Contract Name: **Greenfield Pumpstation**

Item	Description	Unit	Quantity	Rate $	Price $
100	**PRELIMINARY AND GENERAL**				
101	**Establishment and disestablishment**	LS	1	$ 15,000.00	$ 15,000.00
102	**Traffic management plan**	LS	1	$ 1,000.00	$ 1,000.00
103	**On site traffic management**	LS	1	$ 5,000.00	$ 5,000.00
104	**Safety plan**	LS	1	$ 1,000.00	$ 1,000.00
105	**On site safety management**	LS	1	$ 3,500.00	$ 3,500.00
106	**Survey control and setting out**	LS	1	$ 2,500.00	$ 2,500.00
107	**Consultation and liaison with effected parties**	LS	1	$ 1,000.00	$ 1,000.00
108	**Supply As built information**	LS	1	$ 4,000.00	$ 4,000.00
109	**Contingency sum**	PS	1	$ 50,000.00	$ 50,000.00
	SUBTOTAL				$ 83,000.00
Item	**Description**	**Unit**	**Quantity**	**Rate $**	**Price $**
	SUPPLY AND INSTALL **PRE-PACKAGED PUMPSTATION AND VALVE ASSEMBLY**				
	1800mm diameter Prefabricated Pump Station Chamber including concrete plug, sump top, concrete lid, heavy duty cover and all penetrations for stub pipes and ducts.	LS	1	$ 85,000.00	$ 85,000.00
	Flygt Pump (5-10l/s) and all associated Pipework and Fittings, including discharge pipework, guide rails, floats, pressure transducer and stilling tube.	each	2	$ 20,000.00	$ 40,000.00
	Supply and Install rectangular valve chamber, concrete lid, and heavy duty cover with non return valve, sluice valve and pipework required to connect chamber to pumpstation.	LS	1	$ 30,000.00	$ 30,000.00
	Commissioning and testing, including providing onsite assitance with telemetry supplies for pump start/stop and testing.	LS	1	$ 2,000.00	$ 2,000.00
	SUPPLY AND INSTALL DUCTING	LS	1	$ 10,000.00	$ 10,000.00
	CONSTRUCT HARDSTAND AREA/LANDSCAPING	LS	1	$ 20,000.00	$ 20,000.00
	LAND PURCHASE	LS	1	$ 30,000.00	$ 30,000.00
	SUBTOTAL				$ 217,000.00
	TENDER SUM (Excl GST)				**$ 300,000.00**

Schedule of Prices

Contract No: N/A

Contract Name: Greenfield Rising Main and Pumpstation Location

				Open Cut Construction		Trenchless Construction	
Item	**Description**	**Unit**	**Quantity**	**Rate $**	**Price $**	**Rate $**	**Price $**
100	**PRELIMINARY AND GENERAL**						
101	**Establishment and disestablishment**	LS	1	$ 18,000.00	$ 18,000.00	$ 12,500.00	$ 12,500.00
102	**Traffic management plan**	LS	1	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 1,000.00
103	**On site traffic management**	LS	1	$ 12,000.00	$ 12,000.00	$ 6,000.00	$ 6,000.00
104	**Safety plan**	LS	1	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 1,000.00
105	**On site safety management**	LS	1	$ 5,000.00	$ 5,000.00	$ 5,000.00	$ 5,000.00
106	**Survey control and setting out**	LS	1	$ 2,500.00	$ 2,500.00	$ 2,500.00	$ 2,500.00
107	**Consultation and liaison with effected parties**	LS	1	$ 3,500.00	$ 3,500.00	$ 3,500.00	$ 3,500.00
108	**Supply as built information**	LS	1	$ 6,000.00	$ 6,000.00	$ 6,000.00	$ 6,000.00
109	**Contingency sum**	PS	1	$ 60,000.00	$ 60,000.00	$ 40,000.00	$ 40,000.00
	SUBTOTAL				$ 109,000.00		$ 77,500.00
Item	**Description**	**Unit**	**Quantity**	**Rate $**	**Price $**	**Rate $**	**Price $**
	Sewer Pressure Main Works						
	Supply and lay Sewer Pressure mains						
	Supply and lay 100mm PVC or PE pressure main (greenfields)	m	400	$ 80.00	$ 32,000.00	$ 40.00	$ 16,000.00
	Supply and lay 100mm PVC or PE pressure main (in private property)	m	80	$ 200.00	$ 16,000.00	$ 120.00	$ 9,600.00
	Supply and lay 100mm PVC or PE pressure main in Road	m	380	$ 170.00	$ 64,600.00	$ 120.00	$ 45,600.00
	Supply and Installation of connections						
	Extra over - service clashes	LS	1	$ 10,000.00	$ 10,000	$ 10,000.00	$ 10,000.00
	Connection into existing sewer on Park Rd (Discharge Manhole)	each	1	$ 5,000.00	$ 5,000.00	$ 5,000.00	$ 5,000.00
	Connection into pumping station	each	1	$ 2,000.00	$ 2,000.00	$ 2,000.00	$ 2,000.00
	Miscellaneous Items						
	Supply and installation of air valves (below ground including manholes)	each	2	$ 8,000.00	$ 16,000.00	$ 8,000.00	$ 16,000.00
	Supply and installation of Scour valves (below ground including manholes)	each	2	$ 9,500.00	$ 19,000.00	$ 9,500.00	$ 19,000.00
	Supply and install flow meter and chamber	each	1	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00
	Support of Power Poles	each	0	$ 1,800.00	$ -	$ 1,800.00	$ -
	Supply and installation of air vent poles and ducting	each	2	$ 2,500.00	$ 5,000.00	$ 2,500.00	$ 5,000.00
	Easement	LS	1	$ 25,000.00	$ 25,000.00	$ 25,000.00	$ 25,000.00
	SUBTOTAL				$ 204,600		$ 138,200.00
	TENDER SUM (Excl GST)				**$ 313,600**		**$ 215,700.00**

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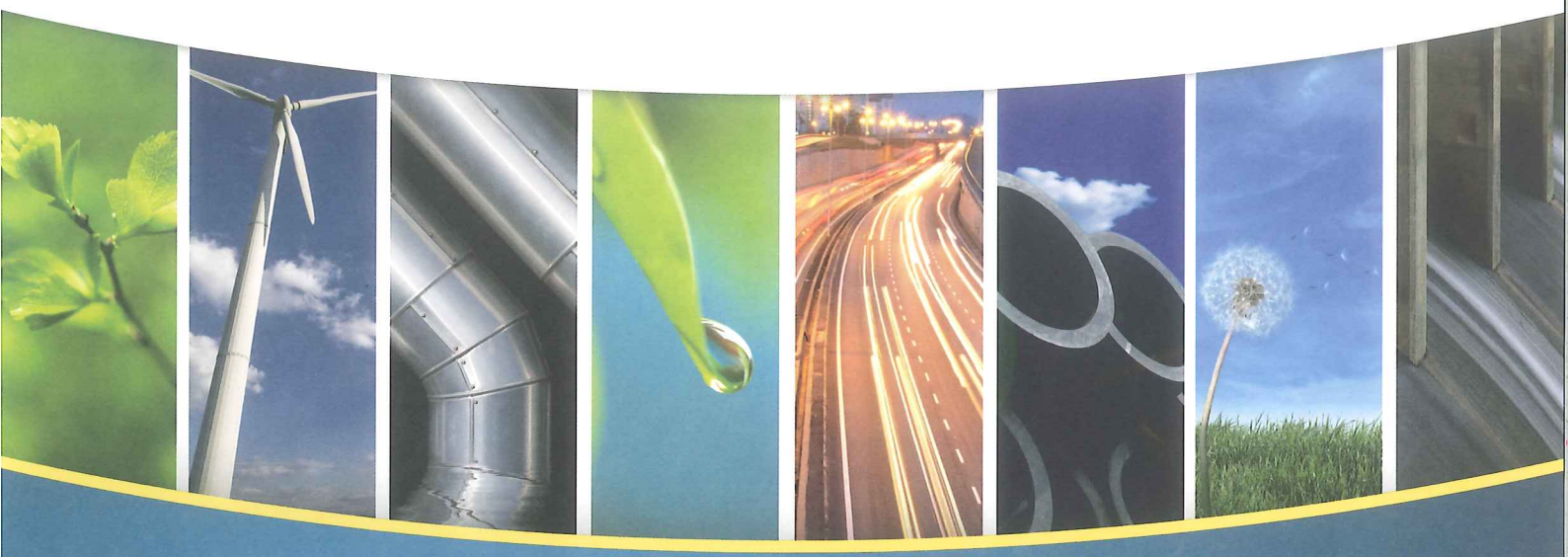

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