Kings Hill Development

Wastewater Servicing Strategy

January 2014

AL

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PREPARATION, REVIEW AND AUTHORISATION

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ABBREVIATIONS

ADWF	Average Dry Weather Flow
ASS	Acid Sulphate Soil
AHD	Australian Height Datum
ET	Equivalent Tenement
HWC	Hunter Water Corporation
kL	Kilolitre
LEP	Local Environmental Plan
ML	Megalitre
PDWF	Peak Dry Weather Flow
PWWF	Peak Wet Weather Flow
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

EXECUTIVE SUMMARY

DEVELOPMENT BACKGROUND

The Kings Hill development was identified in the 2006 Lower Hunter Regional Strategy and covers approximately 810 hectares and incorporates 15 existing allotments in the Port Stephens Local Government Area. The current concept plan (Deike Richards, March 2007) will see Kings Hill ultimately developed into approximately 4,500 residential dwellings.

SMEC has been commissioned by Kings Hill Development (KHD) to prepare this wastewater servicing strategy for the Kings Hill Release Area as the major landowner.

This servicing strategy is intended to address Hunter Water Corporation (HWC) strategic planning requirements and determine infrastructure requirements to connect the total Release Area site to the Hunter Water wastewater network.

RECOMMENDED SERVICING OPTION

The recommended option for wastewater servicing is Option SE2, which is presented on **Exhibit G5**. We note that HWC provided in-principle acknowledgement & support for this option at the recent landowners meeting held 23 April 2013. The infrastructure required for this option is presented in **Table 1** "Proposed Works" below. A staged version of this alignment is recommended, with infrastructure requirements presented below in Proposed Works.

The development of KHD land holdings will commence in the south-eastern area based on proximity and efficiency for lead-in infrastructure, market & commercial drivers and ecological considerations. Hunter Land will commence development on its south-western boundary, based on similar factors for that site.

We note that Hunter Land is progressing development over the Windeyer land holdings (western area) and has advised that early development is expected to sequence in parallel with KHD.

We note that the recommended servicing option provides flexibility for both eastern and western land holders to develop early.

Option Description	Cost Effectiveness Analysis	Pros	Cons	Risks
Option SE2 – Common Rising Main	Total Capital Cost (pre construction + construction) : $15.8M O&M Costs, 30 yr NPV @ 7%: $1.7M Lifecycle cost, 30 yr NPV @ 7%:	Alignment located in undeveloped nature reserve, just north of existing Raymond Terrace. Minimal conflict with services. Ability to stage infrastructure/ utilise capacity available in Raymond Terrace 8.	Odour generation / septicity management will be an issue with regard to development rollout over 20 years, however this is common to all options. We note this issue can be reduced through interim staging of works (i.e. smaller size rising main & pump station) and use of odour control technology (chemical dosing / flushing etc). This is to be further explored at concept	Acid sulphate soils, high groundwater level and poor ground conditions, however Alignment located in undeveloped nature reserve, just north of existing Raymond Terrace. Potential for ecology & heritage issues not identified by database search. These issues are common to all alignments. There is also potential

	$17.7M		design stage.	for land matter issues, but there is an alternative option which minimises the length of infrastructure crossing private .land.

It is noted that all options considered require septicity / odour management due to the long length and large diameter of the rising main, and the rollout of development. There are several technical solutions for the management of septicity / odour, including chemical dosing, flushing and oxygen injection. It is recommended that options for odour / septicity management are considered in more detail at the concept design stage.

PROPOSED WORKS

The table below presents the preferred option, with preliminary staging.

Work is still to be undertaken with regard to more detailed staging investigations, and staging will be further considered as part of the concept design of this infrastructure.

Further design development (to be undertaken at concept design stage) for both eastern and western lands will need to investigate the option of construction of a smaller diameter rising main to access capacity at Raymond Terrace 8 WWPS, for the initial release of lots at Kings Hill. The alignment for the initial rising main is shown as **Exhibit K**.

It is noted that HWC is undertaking optimisation analysis of capacity available at Raymond Terrace 8 WWPS, to ascertain if additional capacity can be made available for early stages of the development. This work will feed in to the staging developed as part of the concept design.

Table 1 – Proposed Works

Year	ET	Recommended Infrastructure	Budget Cost
2014	0-200	Eastern connection	
		Connect to Raymond Terrace 8 WWPS	
		WWPS - 5.5m diameter, depth = 6m 241 L/s @ 32m, total station power of 502kW	$1.9M
		RM - 4,430m of DN450	$4.1M
		TOTAL	**$6.0M**
		Western connection	
		WWPS – 3.8m diameter, depth = 6m 122 L/s @ 42m, total station power of 334kW	$1.7M
		RM - 3,900m of DN300	$2.4M
		TOTAL	**$4.0M**
2015	200-4,500	Further upgrades downstream	
		RM - 2,600m of DN500	$3.5M
		GM - 1,100m of DN600	$2.4M
		TOTAL	**$5.8M**
		GRAND TOTAL	**$15.8M**

1 INTRODUCTION

1.1 Background

SMEC has been commissioned by Kings Hill Development to prepare a wastewater servicing strategy for the Kings Hill development, located north of Raymond Terrace (***Exhibit A***). KHD are the major land owners and lead proponent for development of the Kings Hill Release Area.

The Kings Hill development was identified in the 2006 Lower Hunter Regional Strategy and covers approximately 810 hectares and incorporates 15 existing allotments in the Port Stephens Local Government Area. The current concept plan will see Kings Hill ultimately developed into approximately 4,500 residential dwellings.

This servicing strategy is intended to address Hunter Water Corporation (HWC) strategic planning requirements and determine infrastructure requirements to connect the site to the Hunter Water network.

1.2 Scope of Work

As required by the Hunter Water Servicing Strategy Template, the tasks undertaken in the preparation of this servicing strategy have included the following:-

- **Development Description** – including a brief synopsis of the proposed development, anticipated staging and timing ***(Section 2.1)***
- **Planning Context** – details of land zonings with reference to Council Local Environment Plans (LEPs), Settlement Strategies and associated planning instruments ***(Section 2.2)***
- **Development Assumptions** – an assessment of assumptions associated with the development, including growth rates and an assessment of the potential for development of all land within the natural catchment boundaries adjoining the site ***(Section 2.3)***
- **Study Area –** The agreed extent of the servicing area, including the existing land use of the site, details of constraints to development such as flood plains, wetlands, national parks, topography, flora and fauna ***(Section 2.4)***
- **Projected Development in the Study Area –** an assessment of projected development to be considered in the strategy ***(Section 2.5***)
- **Liaison with Hunter Water–** including written correspondence and summaries of meetings with HWC ***(Section 2.6***)
- **Options Development** ***(Section 3***)
- **Regional Servicing Options** ***(Section*** 4)
- **Local Servicing Options** ***(Section 5***)
- Plan documentation including cadastral, zoning, topographical, development layout and preliminary design ***(Appendix B)***

1.3 A Note on Cost Estimates in the Study

Cost estimates within this study are based on the Hunter Water Cost Estimating Manual. Cost estimates cannot be guaranteed as SMEC has no control over contractor's prices, market forces and competitive bids from tenderers. The cost estimates may exclude items which should be considered in a cost plan. Examples of such items are design fees, project management fees, authority approval fees, contractors risk and project contingencies (e.g. to account for construction and site conditions, weather conditions, ground conditions and unknown services). Cost estimates are not to be relied upon in any way. If reliable cost estimates are required, then an appropriately qualified Quantity Surveyor should be engaged.

2 BACKGROUND

2.1 Development Description

The proposed Kings Hill development is bounded to the east by the Pacific Highway, to the north by Six Mile Road, to the west by Newline Road and the Williams River and to the south by a SEPP 14 wetland, which is located downstream of the spillway from nearby Grahamstown Lake. The site is shown in ***Exhibit B***.

The topography of the site varies from low wetland areas in the south (RL<10m) through cleared undulating pasture to a series of wooded hills to the north. The highest of these hills is Kings Hill, with an elevation of 137m AHD.

Residential development will mainly take place on the flat areas and lower slopes. It is anticipated that developed areas will reach a maximum height of 55m AHD, however some isolated developments may be higher than this.

The proposed development is primarily residential, with some medium density lots located in the town centre areas, adjacent to a small commercial area. The development breakup is summarised below in **Table 2**.

Table 2 – King Hill Development Rollout

	Area (ha)
Village and Town Centre	4.9
Medium Density Residential	72
Residential	328
Community uses, Schools etc	18.2
Mixed Use	8
Parks & Open Space	20.5
TOTAL	**451.6**

2.2 Planning Context

The local planning instrument applicable to the study area is the Port Stephens Local Environmental Plan (LEP) (Kings Hill, North Raymond Terrace) 2010. This plan rezones certain land at Kings Hill, North Raymond Terrace to enable the development of this land to achieve the objectives of the Port Stephens Community Settlement and Infrastructure Strategy (published by the Council in 2007) and the Lower Hunter Regional Strategy (published by the NSW Government in 2006).

Under this LEP, the study area is zoned as follows:

- B2 Local centre
- B4 Mixed use
- E2 Environmental conservation
- E3 Environmental management
- R1 General residential

The proposal is not prohibited under the current zoning. The site zoning plan is shown in ***Exhibit C***.

2.3 Development Assumptions

As is the case for all developments of this magnitude, development rollout is somewhat uncertain, depending on many externalities, such as market demand and constraints on other critical infrastructure. A preliminary lot rollout has been adopted, as summarised below in **Table 3**.

Table 3 – Kings Hill Development Rollout

Year	ET Released	Cumulative ET
2014	200	200
2015	200	400
2016	200	600
2017	200	800
2018	200	1000
2019	200	1200
2020	200	1400
2021	200	1600
2022	200	1800
2023	200	2000
2024	200	2200
2025	200	2400
2026	200	2600
2027	200	2800
2028	200	3000
2029	200	3200
2030	200	3400
2031	200	3600
2032	200	3800
2033	200	4000
2034	200	4200
2035	200	4400
2036	100	4500

2.4 Study Area

2.4.1 Definition of Proposed Study Area

The study area for this servicing strategy was agreed with Hunter Water during preparation of the Preliminary Water and Wastewater Servicing Advice *(SMEC, April 2011)*.

This strategy investigates provision of wastewater services to the Kings Hill development site shown on **Exhibit B**.

2.4.2 Stormwater / Hunter Water Special Area

It is noted that a portion of the proposed development is located within a Hunter Water "Special Area", as it is in the catchment of Grahamstown Dam. Meetings have been held between Kings Hill and the Water Resources staff at Hunter Water. The stormwater management for the site is being considered as part of a study separate from this servicing strategy.

2.4.3 Existing Land Use

The Kings Hill development site has been rezoned to allow a new town centre and thousands of new homes to be built over the next 25 years.

The site is surrounded by low lying agricultural land that drains to the Williams River to the west of the site (this river joins the Hunter River west of Raymond Terrace), SEPP 14 wetland to the south of the site or to the Grahamstown Lake to the east of the site.

The existing Raymond Terrace township with the current local population of approximately 12,600 people is located south of the site and the wetlands.

The topography of the site varies from low wetland areas in the south (RL<10) through cleared undulating pasture to a series of wooded hills to the north. The highest of these hills is Kings Hill, with an elevation of 137m AHD.

The study area is not located within a proclaimed Mine Subsidence District.

It is not anticipated that the past land uses will impact the development of new assets.

2.5 Projected Development in the Study Area

The proposed development subject of this report forms the only development identified within the agreed study area. No additional development in surrounding areas has been identified.

The surrounding lands are zoned 1a - Rural Agriculture and 7c Environmental Protection – Water Catchment.

2.6 Liaison with Hunter Water

Significant / recent liaison to date with Hunter Water is summarised below, correspondence is provided in **Appendix A**.

Table 4 – Liaison with Hunter Water

Date	Correspondence / Meeting	Significant Details
23 July 2010	Letter from HWC to JW Planning	**Wastewater Transportation** • Existing infrastructure does not have capacity to transport wastewater flows from the proposed development • It is anticipated that development within the Kings Hill area will also be serviced independently via pumping stations, rising mains and a carrier main, feeding directly to Raymond Terrace WWTW. • A developer-funded wastewater servicing strategy is required to determine suitable servicing options **Wastewater Treatment** • Raymond Terrace WWTW is currently at biological and hydraulic capacity (24,500 ET). An intermediate upgrade of the plant is programmed to be commissioned in 2010 (35,000 ET). • There are hydraulic constraints at the inlet works. Future upgrades programmed for 2017 will address these restrictions, providing sufficient capacity to cater for the ultimate development potential of the Kings Hill site.
24 Aug 2011	Preliminary Servicing Advice	**Wastewater Transportation** Connection Point 1, Raymond Terrace 8 WWPS, is the nearest point with spare capacity for initial flows of up to 200 lots. There are no available locations in the existing pumping stations within Raymond Terrace to receive these additional flows. Connection of a pump station directly to Raymond Terrace WWTW would be required at this stage. There are restrictions on the biological and hydraulic capacity at the WWTW and Hunter Water does not guarantee capacity prior to completion of upgrade works in 2017. **Wastewater Treatment** Raymond Terrace WWTW had an intermediate upgrade of the plant is which was commissioned in 2010 (35,000ET). Biological capacity for this development may

Date	Correspondence / Meeting	Significant Details
		be available depending upon the staging and timing of the development. However, due to hydraulic capacity restrictions at the plant, the current inlet works are not capable of accepting the ultimate development flows directly from the Kings Hill area via the anticipated independent WWPS and carrier main. Future plant upgrades at Raymond Terrace will address these restrictions and, upon commissioning expected in 2017, will provide sufficient capacity to cater for the ultimate development potential of the Kings Hill site. At this stage, Raymond Terrace WWTW is not capable of catering for the entirety of the proposed rezoning prior to 2017/18. Any available capacity at the WWTW prior to 2017 will be given on a first come first served basis. It should be noted however, that a number of major developments at Williamtown and Tomago are planned for completion in the near future.
8 Sep 2011	Inception Meeting	**Development Background** The proposed Kings Hill development area is located north of the existing Raymond Terrace area and is anticipated to yield in the order of 4,500 lots. The Kings Hill development area rezoning was gazetted by Port Stephens Council in December 2010. The proposed Kings Hill development area is made up of a number of land owners, Morgan Banks / Mondell Property Group to forward land ownership plan to Hunter Water HWC noted that one of the land owners on the western side of the development area had already commenced the preparation of a water and sewer servicing strategy for their portion of the development. CR noted that this decision was made by that particular land owner, not the overall landowner group. CR noted that MB/MPG own land on both the eastern and western portion of the site, as such it is their desired approach to develop a strategy that ensure the lowest life cycle cost for the overall site and that would be the objective of this strategy. MW noted that as the strategy study's progress it may be beneficial for both landholders and Hunter Water to meet in order to discuss the proposed strategies to ensure a consistent outcome for Hunter Water. Staging is still being investigated, broadly a rollout of approximately 200 lots per year anticipated.

Date	Correspondence / Meeting	Significant Details
		Wastewater – Internal SMEC plan to investigate options of a single regional WWPS with single rising main, along with dual regional WWPS (east and west) with the rising main joining in common along the alignment. **Wastewater – External** As outlined in the Preliminary Servicing Advice (PSA) the proposed ultimate wastewater connection point is the Raymond Terrace WWTW. Several rising main alignments will be considered through the existing Raymond terrace area. There are no other wastewater connection points that warrant investigation. As outlined in the PSA there is some initial capacity in the existing Raymond Terrace wastewater catchment within the Raymond Terrace WWPS #8 catchment, along with possible capacity in the Raymond Terrace #4 catchment pending outcomes of a risk assessment. Option of onsite treatment is being explored by the developer. MW indicated that HWC are not opposed to the idea of decentralised treatment, where it presents the lowest lifecycle cost to the community. Hunter Water noted that they are investigating approaches for Hunter Water (or subsidiaries) to be involved in the development of wastewater treatment infrastructure through the WICA approach, if interested it would be worthwhile discussing further with Geoff Stevenson from HWC. As part of the strategy if innovative initial servicing measures appear feasible these can be presented in the servicing strategy with pros, cons, risks, costs for consideration by Hunter Water, these could include flow balancing via detention structures, etc.
21 Sep 2011	Progress Meeting 1	**Wastewater – Internal** SMEC outlined options for the new sewer transportation system. Two bigger pump stations pumping into a common rising main have been proposed. The system would also include a number of internal pump stations pumping into these two regional pump stations. **Wastewater - External** Raymond Terrace WWTW is the nominated discharge point for the new sewer system. HWC to confirm spare

Date	Correspondence / Meeting	Significant Details
		capacity available in this WWTW HWC requested two options for the rising main configuration to be included in the strategy: • Transfer from the western side of the development to the eastern, with one regional pump station • Transfer from the eastern side of the development to the western, with one regional pump station • A common rising main, connecting two regional stations located on the east and west of the ridge that divides the site. **Recycled Water** Inclusion of the recycled water system in the servicing strategy was discussed. It was agreed that due to the distance of the site from the nearest treatment plant (7 km) there is no viable opportunity for water recycling.
23 April 2013	Meeting – ASF Group, Hunter Land, Hunter Water	**Wastewater** • KHD advised they do NOT support the options for wastewater documented in HWC memo ref. 2010-678 3.005 dated 22/4/13. • KHD advised they are moving forward with planning and design to progress development as a priority. • KHD are finalising the preferred wastewater and servicing strategy and will submit to HWC shortly. The preferred servicing strategy will be based on a service corridor (wastewater and water) south to Raymond Terrace traversing the eastern side of the wetland through HWC land holdings. This is the preferred option for KHD considering: ○ Shortest distance to service eastern development area as likely first stage ○ Constraints on corridor alignment. ○ Cost efficient solution considering HWC life cycle costing. • HWC confirmed that the eastern corridor is a feasible and acceptable solution for water and wastewater. • APP (MG) queried the interim capacity for wastewater. HWC (WJ) indicated approx. 200 ET nominally available at Raymond Terrace WWPS No. 8. HWC confirmed that constraining factor at WWPS No. 8 was the pump capacity. Additional interim capacity may be possible if pumps upgraded. Also, potential upgrade of WWPS 4 may provide additional interim capacity. • HWC confirmed that any future upgrade to the inlet

Date	Correspondence / Meeting	Significant Details
		works at the WWTP at Raymond Tce would be the responsibility of HWC and undertaken as required to meet demand. • HWC confirmed no objection to staging of wastewater rising mains and that twin smaller diameter mains feasible in place of single large rising main. • APP queried option of tanker pump-out for early stages of development as cost effective interim solution. HWC acknowledged that this is a feasible option but advised this would ultimately require HWC Board approval. **Water** • APP advised that the option for water documented in HWC memo ref. 20110-678 3.005 dated 22/4/13 is NOT preferred for Kings Hill Development (KHD). • APP are finalising the preferred water servicing option and will submit to HWC shortly. The preferred option for water is likely to be a co-located service corridor / trench with the wastewater (refer point s above) traversing the eastern side of the wetland through HWC land holdings. • HWC confirmed the eastern corridor is a feasible and acceptable solution for water. • APP queried whether the water main sizing considered off-peak 'trickle' top-up of the proposed reservoir from the Raymond Terrace WPS. HWC confirmed they will investigate further and also advised that the Raymond Terrace WPS may be upgraded in the future by HWC.
23 September 2013	Letter from HWC to KHD	**Water/wastewater** • HWC advised the conditional approval was given on the basis that *"Evidence of Hunter Land involvement in selection of the preferred arrangements for both waste water and water servicing strategies is to be provided".* • HWC received correspondence on 19/09/2013 from Hunter Land raising concerns about the strategy including: ○ Hunter Land was not consulted in the development of the strategy. ○ The proposed timing and sequencing of both water and sewer lead in infrastructure is unbalance across the development areas and incorrectly assumes that development requiring the western connection will

Date	Correspondence / Meeting	Significant Details
		commence after 2028. • HWC as a result of the above comments has withdrawn the conditional approval of the servicing strategies pending KHD liaising with Hunter Land to give consideration to growth occurring on two developments fronts concurrently. • Strategy has been updated to address the above issues and provide flexibility for early development of western landholdings 7/11/13

3 OPTIONS DEVELOPMENT

3.1 Points of Connection and Available Capacity

The existing Raymond Terrace sewerage system is a conventional gravity system consisting of gravity pipelines, manholes and pump stations, which transport sewage to the Raymond Terrace Wastewater Treatment Works (WWTW). The WWTW is located to the south of the town, approximately 8 km from the Kings Hill site, and discharges the treated effluent to the Williams River.

A plan including Hunter Water's infrastructure in the area is included in **Exhibit F**.

Other nearby treatment works include Morpeth WWTW (approximately 14km distant from the site), Karuah WWTW (approximately 18km distant) and Tanilba Bay (approximately 22km distant). As these WWTW are significantly more remote from the site, connection to these WWTW has not been further considered.

3.2 Available Capacity at Connection Point

Hunter Water have indicated that there is excess biological capacity at the Raymond Terrace WWTW, but the inlet works are hydraulically constrained. Similarly, HWC has indicated that the sewer network is currently operating at capacity in several areas.

3.3 Existing and Planned Hunter Water Assets

Hunter Water Asset Description	Asset Type	Asset Conditions and Restrictions
Raymond Terrace WWTW	Wastewater Treatment Works	Raymond Terrace WWTW has a total capacity of 35,000ET. Biological capacity for Kings Hill may be available depending upon the staging and timing of the development. There are hydraulic capacity restrictions at the plant and as such the current inlet works are not capable of accepting the ultimate development flows directly from the Kings Hill area via the anticipated independent WWPS and carrier main. Future plant upgrades at Raymond Terrace will address these restrictions and, upon commissioning expected in 2017, will provide sufficient capacity to cater for the ultimate development potential of the Kings Hill site. At this stage, Raymond Terrace WWTW is not capable of catering for the entirety of the proposed rezoning prior to 2017/18.
Raymond Terrace 4 WWPS*	Wastewater Pump Station	Connection of interim lots to Raymond Terrace 4 WWPS will be subject to the outcomes of a risk assessment.
Raymond Terrace 8 WWPS*	Wastewater Pump Station	There is currently spare capacity for approximately 15.5L/s.

*Note: Hunter Water are currently revising the capacity available at Raymond Terrace 4 and 8 WWPS. This investigation is understood to consider the potential for minor mechanical / electrical upgrades to provide additional capacity. The results of this optimisation will be included as part of the upcoming concept design.

3.4 Design Wastewater Loadings

Previous investigations have assumed that the development will yield approximately 4,500 ET. **Table 5** summarises a first-principles calculations based on the latest Master Plan.

Table 5 – Equivalent Tenement Estimation

Description	Development Area (ha)	Development Density (ET/ha)	Ultimate Tenements (ET)
Village and Town Centre	4.9	15	74
Medium Density Residential	72	15	1,080
Residential	328	10	3,280
Community uses, Schools etc	18.2	10	182
Mixed Use	8	10	80
Parks & Open Space	20.5	0	0
TOTAL	**451.6**		**4,696**

Planning for the area is still in early stages and has been undertaken utilising a lot yield of 4,500 ET. Due to the nature of the site it is currently anticipated that per hectare loadings will be slightly lower than the conventional per hectare loading rates.

As such, calculations in this report are based on a lot yield of 4,500 ET.

The adopted loadings for the site are summarised below in **Table 6**.

Table 6 – Wastewater Loads

	ET	ADWF (l/s)	PDWF (l/s)	SA (l/s)	PWWF (l/s)
Village and Town Centre	70	1	3	4	7
Medium Density Residential	1035	11.4	26.0	60.0	86.1
Residential	3143	34.6	68.9	182.3	251.3
Community uses, Schools etc	174	1.9	5.7	10.1	15.8
Mixed Use	77	0.8	2.9	4.4	7.3
TOTAL	**4500.0**	**49.5**	**106.2**	**261.0**	**367.2**

3.5 Option Assumptions

The following parameters have been utilised in assessment of the servicing options.

Table 7 – Option Assessment Parameters

Item	Source
Engineering Requirements	WSA 02-2002-2.3 Sewage Code of Australia Hunter Water Edition
Discount rates	Assessment of 7%, with sensitivity at 4% and 10%
Energy prices and inflation rates	As per "Operating and Maintenance Cost Estimating Guideline", Hunter Water Corporation, September 2010
Greenhouse gas abatement emission factors and certificate prices and inflation rates	As per "Operating and Maintenance Cost Estimating Guideline", Hunter Water Corporation, September 2010
Connection points nominated by Hunter Water	As discussed in **Section 3.1**
Maintenance and operating costs from guidance and information provided by Hunter Water manuals and guidelines	As per "Operating and Maintenance Cost Estimating Guideline", Hunter Water Corporation, September 2010.
Capital costs	As per HWC Cost Estimating Spreadsheet, provided by HWC via email (21/7/11)

4 SERVICING OPTIONS - REGIONAL

4.1 Previous Investigations

The following servicing strategies have been previously prepared for the site:

- North Raymond Terrace Draft Initial Water and Wastewater Servicing Options; Patterson Britton & Partners; August 2003.
- Kings Hill Water and Wastewater Servicing Study; Patterson Britton & Partners; August 2004.
- North Raymond Terrace Water and Wastewater Servicing Study Additional Investigations; Patterson Britton & Partners; December 2004
- Kings Hill North West Village Water and Wastewater Servicing Study; Patterson Britton & Partners; February 2005

The time elapsed from the prior investigations is beyond Hunter Water's 5 year approval horizon. Therefore, the Preliminary Water and Wastewater Servicing Advice *(SMEC, April 2011)* was prepared on the basis of the previous servicing strategies.

The study outlines two main approaches:

- Connection to the Raymond Terrace WWTW.
- Construction of an on-site wastewater treatment plant.

4.2 Constraints

A desktop constraints analysis has been undertaken for the options to be assessed, this covers technical constraints, community / stakeholder constraints and environmental constraints.

4.2.1 Technical Constraints

The proposed Kings Hill Development broadly requires a new wastewater system and thus there are limited technical constraints above the requirements of the Wastewater Supply Code of Australia (WSA 03) – Hunter Water Edition. It is considered that all infrastructure proposed is maintainable utilising standard maintenance practices and materials.

The site will require a long rising main to deliver flows to Hunter Water's nominated connection point (Raymond Terrace WWTW). Given the site will roll out over an estimated 20 years, detention time will be an issue, particularly in the early years. It is noted that dosing / flushing technologies exist to provide solutions for septicity / odours arising from long detention times.

Initial capacity for the development area has been identified at Raymond Terrace 8 WWPS (refer **Section 4.7**). It is considered there is opportunity to make use of this initial capacity by use of a smaller pump station and smaller rising main for an initial release of lots, followed by a parallel rising main(s) for the ultimate development.

4.2.2 Community / Stakeholder Constraints

All options require the construction of infrastructure within an area approved for residential development. The majority of the mains would be constructed in existing road easements.

There will be a minor visual impact and some increased noise during construction of the station, but this can be managed by engaging with relevant stakeholders at construction stage.

Construction of the infrastructure will require consumption of non-renewable resources for all options (concrete, PVC pipe etc), but it is considered that this disadvantage is more than offset by the health benefits realised by the installation of a sanitation system.

Overall, infrastructure proposed under this option is considered to have a relatively low impact on the community and stakeholders.

4.2.3 Environmental Constraints

A review of ecological investigation at the site by PEA Consulting (May, 2013) indicates that comprehensive ecological studies have been undertaken on the Kings Hill site and whilst there are areas of ecological significance within Kings Hill, these will only be slightly impacted by the servicing internal to the site. The extent of environmental impacts to be further defined at concept stage, with the outcome of environmental studies utilised in determining optimum infrastructure location.

The lands outside of the Kings Hill project area that are within the proposed options for servicing include a mixture of remnant vegetation and cleared areas with minimal ecological value. Ecological habitats identified in preliminary ecological constraint mapping identified three communities that have the greatest ecological value, these include:

- Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner bioregions
- Seaham Spotted. Gum - Ironbark Forest (LCHREMMS Map Unit 16)
- Freshwater Wetlands on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions

The habitats that will become the interest for future ecological surveys (including a buffer of 50 metres) are:

- 16 Hectares of She Oak forests and similar non-eucalypt wetland forests, such as Melaleuca forest;
- 20 Hectares of Eucalypt forest including Seaham Spotted gum Ironbark forest;
- 17 Hectares of Wetland that includes manmade dams and drains.

Only a small percentage of these habitats would be impacted, and at the concept design stage, re-alignment can be considered to minimise impacts.

A Search of the NPWS Atlas database for local significant species, populations, and communities identified that the local area supports a range of significant ecological issues that will require further research and possibly management. A comparison of these with

the habitats identified in the constraint mapping shows that a range of species could potentially be present within the proposal area, including:

She Oak forests and similar non-eucalypt wetland forests, such as Melaleuca forest	**Fauna** Grey-crowned Babbler (Eastern Subspecies) All local bats **Flora** Tall Knotweed
Eucalypt forest including Seaham Spotted gum Ironbark forest	**Fauna** All local bats Glossy Black-cockatoo Grey-crowned Babbler (Eastern Subspecies) Spotted-tailed Quoll Varied Sittella Swift Parrot Squirrel Glider Brush-tailed Phascogale Koala **Flora** Dwarf Kerrawang and
Wetland that includes manmade dams and drains	**Fauna** Black-necked Stork All local bats Green And Golden Bell Frog Spotted Harrier (very marginal habitat)

	Flora Tall Knotweed

Whilst records of significant species at a locality provide background information on the habitat of the area it does not prove that there is not habitat for additional species, or that the distribution of species is not different to the historical records. This absence of evidence can only be rectified by detailed ecological survey of the proposed service alignments prior to undertaking concept design.

The potential for harm is considered to be a low to moderate risk, and the opportunity for realignment further reduces this risk. Future surveys may reduce the potential for impacts on significant ecological issues even further. Notwithstanding, the impact is small in nature and largely avoids areas containing important ecological habitats.

It is considered that all alignments considered are equally impacted by the presence of threatened flora & fauna, and that the risk will be mitigated by controls recommended in the REF at concept design stage.

Environmentally sensitive areas potentially categorised as SEPP 14 Wetlands are located adjacent to the proposed alignments.

Part of the development area drains into the Hunter Water Special Area for Grahamstown Dam. This is being considered as part of a separate investigation, refer Section 2.4.2.

Other potential environmental constraints include high groundwater levels and acid sulphate soils.

A search of the Aboriginal Heritage Information Management System (AHIMS) database was undertaken to identify any known artefacts in the area. The results of this search are presented on Exhibit D1. Further consideration will be given by the REF to the treatment for any artefacts uncovered during construction. The REF will be prepared during concept design stage.

4.3 Infrastructure Description

The options investigated in this report are based on the approach including the connection to the Raymond Terrace WWTW.

The new infrastructure would include the regional wastewater pumping station (WWPS) and rising main transporting wastewater to the Raymond WWTW.

The servicing options are summarised below and shown on ***Exhibit G1-G5***.

It is noted that an on-site wastewater treatment was listed in the previous studies. Construction of an on-site wastewater treatment plant would require extended consultation and significant environmental approvals. This option was not considered a preferred option by Hunter Water and therefore was not investigated as part of this report.

4.3.1 Option SE1A

This option consists of a single regional WWPS located on the western side of the Kings Hill development, refer **Exhibit G1**. The wastewater from the eastern catchments is transferred via a single transfer pump station which delivers flows from these catchments to the west. Refer to **Section 5**for detailed discussion of the internal transfer options considered in this report.

This option pumps directly to the Raymond Terrace WWTW, with the rising main alignment following existing roads in the Raymond Terrace area. The majority of the alignment is rising main, with a short section of gravity main required for the final section which runs downhill. It is considered that the alignment is already disturbed from the natural state, which minimises the risk of encountering heritage items and threatened flora.

This alignment has one trenchless crossing, being under Adelaide St, Raymond Terrace.

The entire rising main alignment is identified on acid sulphate soil risk mapping as having a high probability of ASS. It is also assumed that due to the proximity of the river that dewatering will be required for the length of the alignment.

Given the site will roll out over an estimated 20 years, detention time will be an issue, particularly in the early years. It is noted that dosing / flushing technologies exist to provide solutions for septicity / odours arising from long detention times. For the DN500 rising main detention times range from 230 hr in the first year to 11.5 hr at ultimate development. However, the rising main would need to be reduced to DN300 to have a detention time less than 4 hours, and the dynamic head for this option would be 376m, which is more than can be handled by a single centrifugal wastewater pump and would also significantly increase the ongoing energy costs for the station. It would be possible to have more than one station staged in series, but this would significantly increase the capital cost, when compared to the cost of chemical dosing.

The ultimate infrastructure required for the recommended rising main size for this option would be:-

Trunk Infrastructure

- Wastewater pump station – 363 L/s @ 39m, total station power of 465kW (2 pumps – duty / standby arrangement)
- Wet well DN 7.0m, internal depth = 6m
- Rising main – 8060m of DN500

Main Internal Transfer – Low-head option

- Wastewater pump station – 241 L/s @ 18m, total station power of 288kW (2 pumps – duty / standby arrangement)
- Wet well DN 5.5m, internal depth = 6m
- Rising main – 4,000m of DN450

Table 8 – Option SE1A – Rising Main Size Comparison

	Length (m)	Static Head (m)	Design Flow (L/s)	Velocity (m/s)	Total Head (m)	Pump Power (kW/pump)
DN450	8060	7	363.1	2.0	56.2	333.3
DN500				1.6	39.2	232.5
DN600				1.1	21.5	127.7

Table 9 – Option SE1A – Cost Estimates

	Rising Main Cost	Pump Station Cost	Gravity Main Cost	Internal Transfer	Total Developer Capital PV	Total HWC Capital PV	Energy Cost PV	GHG Cost PV	Chemical Dosing PV	Maintenance PV	O&M Cost (30 years @ 7%)	NPV (30 years @ 7%)
DN450	**Dynamic head too high**											
DN500	$9,700,000	$2,350,000	$0	$4,350,000	**$16,400,000**	$100,000	$1,000,000	$150,000	$650,000	$350,000	**$2,150,000**	**$18,650,000**
DN600	$11,600,000	$2,200,000	$0	$4,350,000	**$18,150,000**	$100,000	$650,000	$100,000	$700,000	$350,000	**$1,850,000**	**$20,100,000**

Details of the cost estimates can be found in **Appendix D**.

4.3.2 Option SE1B

This option consists of a single regional WWPS located on the western side of the Kings Hill development, refer **Exhibit G2**. The wastewater from the eastern catchments is transferred via a single transfer pump station which delivers flows from these catchments to the west. Refer to **Section 5**for detailed discussion of the internal transfer options considered in this report.

This option pumps directly to the Raymond Terrace WWTW, with the rising main alignment following existing roads in the Raymond Terrace area. This alignment follows a more direct path to Raymond Terrace WWTW, but traverses a more urban area of Raymond Terrace. The alignment has the advantage of passing through Boomerang Park, which is relatively undeveloped.

The majority of the alignment is rising main, with a short section of gravity sewer required for the final section which runs downhill. This alignment follows Tod St and the existing treatment plant access road. It is considered that the alignment is already disturbed from the natural state, which minimises the risk of encountering heritage items and threatened flora.

It is noted that the details of the Raymond Terrace inlet works are unknown, but is likely elevated. It is noted that the section of gravity sewer at the end of the main may act as a variable grade sewer. Options for eliminating this could be deepening the section of rising main under the local hill at Boomerang Park. It is considered the cost of deepening this sewer would be approximately offset by the saving in the gravity main. This could be considered at concept design stage, when more details are known regarding the location of other services.

This alignment has one trenchless crossing, being under Adelaide St, Raymond Terrace.

Approximately 5300m of the rising main alignment is identified on acid sulphate soil risk mapping as having a high probability of ASS. It is also assumed that due to the proximity of the river that dewatering will be required for the length of the alignment.

Given the site will roll out over an estimated 20 years, detention time will be an issue, particularly in the early years. It is noted that dosing / flushing technologies exist to provide solutions for septicity / odours arising from long detention times. For the DN450 rising main detention times range from 137 hr in the first year to 6.8 hr at ultimate development. However, the rising main would need to be reduced to DN300 to have a detention time less than 4 hours, and the dynamic head for this option would be 274m, which is more than can be handled by a single centrifugal wastewater pump and would also significantly increase the ongoing energy costs for the station. It would be possible to have more than one station staged in series, but this would significantly increase the capital cost, when compared to the cost of chemical dosing.

The ultimate infrastructure required for the recommended rising main size for this option would be:-

Trunk Infrastructure

- Wastewater pump station – 363 L/s @ 42.7m, total station power of 506kW (2 pumps – duty / standby arrangement)
- Wet well DN 7.0m, internal depth = 6m

- Rising main – 5,800m of DN450
- Gravity main – 1,100m of DN600

Main Internal Transfer – Low-head option

- Wastewater pump station – 241 L/s @ 18m, total station power of 288kW (2 pumps – duty / standby arrangement)
- Wet well DN 5.5m, internal depth = 6m
- Rising main – 4,000m of DN450

Table 10 – Option SE1B – Rising Main Size Comparison

	Length (m)	Static Head (m)	Design Flow (L/s)	Velocity (m/s)	Total Head (m)	Pump Power (kW/pump)
DN375	5800	7	363.1	2.9	95.0	563.3
DN450				2.0	42.7	253.2
DN500				1.6	30.4	180.1

Table 11 – Option SE1B – Cost Estimates

	Rising Main Cost	Pump Station Cost	Gravity Main Cost	Internal Transfer	Total Developer Capital PV	Total HWC Capital PV	Energy Cost PV	GHG Cost PV	Chemical Dosing PV	Maintenance PV	O&M Cost (30 years @ 7%)	NPV (30 years @ 7%)
DN375	**Dynamic head too high**											
DN450	$6,750,000	$2,350,000	$2,350,000	$4,350,000	**$15,800,000**	$100,000	$1,050,000	$150,000	$600,000	$350,000	**$2,150,000**	**$18,050,000**
DN500	$7,650,000	$2,200,000	$2,350,000	$4,350,000	**$16,550,000**	$100,000	$850,000	$100,000	$600,000	$350,000	**$1,900,000**	**$18,550,000**

Details of the cost estimates can be found in **Appendix D**.

4.3.3 Option SE1C

This option consists of a single regional WWPS located on the eastern side of the Kings Hill development, refer **Exhibit G3**. The wastewater from the western catchments is transferred via a single transfer pump station which delivers flows from these catchments to the east. Refer to **Section 5**for discussion of the internal transfer options considered in this report.

This option pumps directly to the Raymond Terrace WWTW, with the rising main alignment following existing roads in the Raymond Terrace area. The rising main alignment is located on the western side of the Pacific Highway and uses a trenchless crossing under the Irrawang Spillway. It then follows Rees James Rd, and uses a trenchless crossing under Adelaide St, and transfers flows to a gravity main at the high point, just after this crossing. The gravity main follows existing roads through Raymond Terrace, then follows a drainage easement and follows the edge of the golf course, before delivering flows to the WWTW. It is noted that this gravity main is through a developed urban area, and has significant length of main at depths greater than 3m.

The undulations along the alignment and intermediate high point at Adelaide St (approx. RL 30m AHD) means that the alignment cannot all be undertaken utilising a conventional rising main (i.e. intermediate high point higher than discharge point). This would required the introduction f both air release and air inlet valves along the line which would be critical to operation of the rising main, these valves introduce operation issues and risks into the system.

Due to the high static head, compared to other options this option requires an increased rising main diameter, to minimise dynamic head losses to keep the total head under 60m.

It is considered that the alignment is already disturbed from the natural state, which minimises the risk of encountering heritage items and threatened flora.

Approximately 500m of the rising main alignment is identified on acid sulphate soil risk mapping as having a high probability of ASS. It is also assumed that due to the proximity of the river that dewatering will be required for the length of the alignment.

Given the site will roll out over an estimated 20 years, detention time will be an issue, particularly in the early years. It is noted that dosing / flushing technologies exist to provide solutions for septicity / odours arising from long detention times. For the DN600 rising main detention times range from 144 hr in the first year to 7.2 hr at ultimate development. However, the rising main would need to be reduced to DN375 to have a detention time less than 4 hours, and the dynamic head for this option would be 90m, which is more than can be handled by a single centrifugal wastewater pump and would also significantly increase the ongoing energy costs for the station. It would be possible to have more than one station staged in series, but this would significantly increase the capital cost, when compared to the cost of chemical dosing.

The infrastructure required for the recommended rising main size for this option would be:-

Trunk Infrastructure

- Wastewater pump station – 363 L/s @ 41.5m, total station power of 492kW (2 pumps – duty / standby arrangement)
- Wet well DN 7.0m, internal depth = 6m
- Rising main – 3,500m of DN600
- Gravity main – 3,600m of DN600

Main Internal Transfer – Low-head option

- Wastewater pump station – 122 L/s @ 31m, total station power of 244kW (2 pumps – duty / standby arrangement)
- Wet well DN 3.8m, internal depth = 6m
- Rising main – 4,000m of DN300

Table 12 – Option SE1C – Rising Main Size Comparison

	Length (m)	Static Head (m)	Design Flow (L/s)	Velocity (m/s)	Total Head (m)	Pump Power (kW/pump)
DN500	3500	35	363.1	1.6	49.4	292.8
DN600				1.1	41.5	246.1
DN750				0.7	37.2	220.8

Table 13 – Option SE1C – Cost Estimates

	Rising Main Cost	Pump Station Cost	Gravity Main Cost	Internal Transfer	Total Developer Capital PV	Total HWC Capital PV	Energy Cost PV	GHG Cost PV	Chemical Dosing PV	Maintenance PV	O&M Cost (30 years @ 7%)	NPV (30 years @ 7%)
DN500	**Total station power too high**											
DN600	$5,750,000	$2,350,000	$7,400,000	$3,300,000	**$18,800,000**	$100,000	$1,000,000	$150,000	$600,000	$400,000	**$2,100,000**	**$21,000,000**
DN750	$7,500,000	$2,200,000	$7,400,000	$3,300,000	**$20,400,000**	$100,000	$900,000	$150,000	$600,000	$400,000	**$2,050,000**	**$22,550,000**

Details of the cost estimates can be found in **Appendix D**.

4.3.4 Option SE1D

This option consists of a single regional WWPS located on the eastern side of the Kings Hill development, refer **Exhibit G4**. The wastewater from the western catchments is transferred via a single transfer pump station which delivers flows from these catchments to the east. Refer to **Section 5**for detailed discussion of the internal transfer options considered in this report.

This option pumps directly to the Raymond Terrace WWTW, with the rising main alignment following existing roads in the Raymond Terrace area, and following the northern extent of the existing Raymond Terrace area. The section of the alignment located to the north of the existing Raymond Terrace area has had preliminary route selection investigations undertaken for this study. The proposed alignment has been selected to be located within Hunter Water-owned lands. From here, it follows Newline Rd, then through the centre of Raymond Terrace, and then through Boomerang Park, which is relatively undeveloped. At the high point in Boomerang Park, the rising main delivers flows to a gravity sewer, which conveys sewage to the WWTW. This alignment follows Tod St and the existing treatment plant access road.

It is noted that the details of the Raymond Terrace inlet works are unknown, but is likely elevated. It is noted that the section of gravity sewer at the end of the main may act as a variable grade sewer. Options for eliminating this could be deepening the section of rising main under the local hill at Boomerang Park. It is considered the cost of deepening this sewer would be approximately offset by the saving in the gravity main. This could be considered at concept design stage, when more details are known regarding the location of other services.

It is considered that much of the alignment is already disturbed from the natural state, which minimises the risk of encountering heritage items and threatened flora. The section which is within the Irrawang Nature Reserve is not significantly disturbed, but searches of the NPWS Atlas and AHIMS database in this area only noted the presence of koalas, with the sitings more than 100m from the proposed alignment. It is considered this risk can be appropriately mitigated by measures which would be determined in the REF, at Concept Design stage.

Approximately 5,400m of the rising main alignment is identified on acid sulphate soil risk mapping as having a high probability of ASS. It is also assumed that due to the proximity of the river that dewatering will be required for the length of the alignment.

Given the site will roll out over an estimated 20 years, detention time will be an issue, particularly in the early years. It is noted that dosing / flushing technologies exist to provide solutions for septicity / odours arising from long detention times. For the DN450 rising main detention times range from 150 hr in the first year to 7.5 hr at ultimate development. However, the rising main would need to be reduced to DN300 to have a detention time less than 4 hours, and the dynamic head for this option would be 299m, which is more than can be handled by a single centrifugal wastewater pump and would also significantly increase the ongoing energy costs for the station. It would be possible to have more than one station staged in series, but this would significantly increase the capital cost, when compared to the cost of chemical dosing.

The ultimate infrastructure required for the recommended rising main size for this option would be:-

Trunk Infrastructure

- Wastewater pump station – 363 L/s @ 46m, total station power of 585kW (2 pumps – duty / standby arrangement)
- Wet well DN 7.0m, internal depth = 6m
- Rising main – 6,350m of DN450
- Gravity main – 1,100m of DN600

Main Internal Transfer – Low-head option

- Wastewater pump station – 122 L/s @ 31m, total station power of 244kW (2 pumps – duty / standby arrangement)
- Wet well DN 3.8m, internal depth = 6m
- Rising main – 4,000m of DN300

Table 14 – Option SE1D – Rising Main Size Comparison

	Length (m)	Static Head (m)	Design Flow (L/s)	Velocity (m/s)	Total Head (m)	Pump Power (kW/pump)
DN375	6350	7	363.1	2.9	103.1	611.6
DN450				2.0	46.0	272.6
DN500				1.6	32.5	192.8

Table 15 – Option SE1D – Cost Estimates

	Rising Main Cost	Pump Station Cost	Gravity Main Cost	Internal Transfer	Total Developer Capital PV	Total HWC Capital PV	Energy Cost PV	GHG Cost PV	Chemical Dosing PV	Maintenance PV	O&M Cost (30 years @ 7%)	NPV (30 years @ 7%)
DN375	**Dynamic head too high**											
DN450	$7,400,000	$2,350,000	$2,350,000	$3,300,000	**$15,400,000**	$100,000	$1,100,000	$150,000	$600,000	$350,000	**$2,200,000**	**$17,700,000**
DN500	$8,250,000	$2,200,000	$2,350,000	$3,300,000	**$16,100,000**	$100,000	$800,000	$100,000	$650,000	$350,000	**$1,900,000**	**$18,100,000**

Details of the cost estimates can be found in **Appendix D**.

4.3.5 Option SE2

This option consists of a WWPS in both eastern and western catchments, joined by a common rising main which delivers flows to Raymond Terrace WWTW (refer **Exhibit G5**). This option removes the need for long internal transfers, reduces the size of external trunk infrastructure, and increases the flexibility with regard to staging. This option provides flexibility for early development of eastern and western land holdings in parallel.

SMEC has been advised that Hunter Land is progressing development over the Windeyer land holdings (western area) and that early development of this site is expected to sequence in parallel with KHD.

The alignment is a combination of Options SE1B and SE1D. Trenchless crossings are required at the Irrawang Spillway (eastern alignment) and Adelaide St. It is considered that the alignment is already disturbed from the natural state, which minimises the risk of encountering heritage items and threatened flora. The alignment option located to the north of the existing Raymond Terrace area has had preliminary route selection investigations undertaken for this study. The proposed eastern alignment has been selected to be located within Hunter Water-owned lands. The proposed western alignment will be located within the Newline Road corridor. These alignments are shown in more detail on **Exhibit K**.

It is noted that the proposed eastern alignment shown on **Exhibit G5** traverses HWC-owned land, at the rear of the properties in Holwell Circuit / Dalyell Way and along the Pacific Highway. It is understood this private land is owned by Hunter Water Corporation. The section adjacent to the Pacific Highway can be located in either private lands, or the allocation for Pacific Highway, with the preferred location to be confirmed at concept design stage. For the section along the rear of the properties in the rear of Holwell Circuit / Dalyell Way, an alternate route which has similar overall length and uses road allocations is sketched on **Exhibit G5.** This alignment would have higher reinstatement costs, due to the alignment traversing a more developed area. The proposed western alignment will traverse the Newline Road corridor from the western boundary of the site back to Raymond Terrace 8 WWPS. There is a small section between Raymond Terrace 8 WWPS and Newline Rd is understood to be owned by HWC. The proposed alignment also crosses two parks, which are understood to be owned by Port Stephens Council. It would be possible to deviate around these parks at concept design stage, if required. It is recommended that the preferred alignment is further refined at the concept design stage, when more information is available on all constraints including geotechnical conditions, land ownership, flora / fauna, heritage etc.

Approximately 9,800m of the rising main alignment is identified on acid sulphate soil risk mapping as having a high probability of ASS. It is also assumed that due to the proximity of the river that dewatering will be required for the length of the alignment.

Given the site will roll out over an estimated 20 years, detention time will be an issue, particularly in the early years. It is noted that dosing / flushing technologies exist to provide solutions for septicity / odours arising from long detention times. For the proposed system detention times range from 92 hr in the first year to 8 hr at ultimate development. However, the rising main would need to be reduced to DN300 to have a detention time less than 4 hours, which would significantly increase the capital and ongoing energy costs for the station. It would be possible to have more than one station staged in series, but this would significantly increase the capital cost, when compared to the cost of chemical dosing.

The ultimate infrastructure required for the recommended rising main size for this option would be:-

Western

- Wastewater pump station – 122 L/s @ 42m, total station power of 167kW (2 pumps – duty / standby arrangement)
- Rising main – 3,900m of DN300
- Wet well DN 3.8m, internal depth = 6m

Eastern

- Wastewater pump station – 241 L/s @ 32m, total station power of 251kW (2 pumps – duty / standby arrangement)
- Wet well DN 5.5m, internal depth = 6m
- Rising main – 4,430m of DN450

Common

- Rising main – 2,600m of DN500
- Gravity main - 1,100m of DN600

Table 16 – Option SE2 – Cost Estimates

Rising Main Cost	Pump Station Cost	Gravity Main Cost	Internal Transfer	Total Developer Capital PV	Total HWC Capital PV	Energy Cost PV	GHG Cost PV	Chemical Dosing PV	Maintenance PV	O&M Cost (30 years @ 7%)	NPV (30 years @ 7%)
$9,950,000	$3,550,000	$2,350,000	$0	**$15,850,000**	$100,000	$700,000	$100,000	$700,000	$250,000	**$1,700,000**	**$17,650,000**

Details of the cost estimates can be found in **Appendix D**.

4.3.6 Option SE3

This option uses a variable grade sewer from the Kings Hill Development to the Raymond Terrace WWTW. The inlet of the pressure main is at approximately RL 60m, and the invert is at Raymond Terrace WWTW. The main grades broadly down from Kings Hill to an intermediate high point at Boomerang Park, then grade down under the drainage channel to the north of the WWTP, and up to the inlet of Raymond Terrace WWTW.

The approach is based on allowing the main to generate adequate head utilising the increased elevation at Kings Hill to overcome the undulating section of main from Boomerang Park to Raymond Terrace WWTW. The local pump stations would deliver flows to the collection point, which would be located on one of the high points on the site.

It is noted this option is not a conventional approach for trunk infrastructure, but is presented as an innovative approach that utilises site specific conditions.

The main will remain water-charged for the sections below the Raymond Terrace WWTW discharge point, approximately RL10m AHD. The main is sized to convey the ultimate PWWF, but is also required to achieve adequate flushing velocities at PDWF. This has the advantage of not requiring energy consumption over its lifecycle, as it required by the options with a WWPS (although the internal pump stations would be required to deliver to a higher head than if the pump is located at the bottom of the catchment). There is also a capital cost saving realised by not having a main transfer station. It is noted that variable grade sewers introduce a number of operational issues such as odour and corrosion potential.

Analysis was undertaken to determine the suitability of the vertical alignment at Kings Hill for a VGS system.

For ultimate flows, a pipe size with DN375 is required to achieve a velocity of 0.84m/s at PDWF. This is less than the minimum desirable velocity, but greater than minimum solids transport velocity. However, at PWWF the headloss is approximately 90-135m, which is significantly greater than the available headloss of approximately 50m.

The required maximum headloss would see the inlet of the VGS located at approximately RL100-145, noting the highest land at Kings Hill is RL 137m AHD. This would require all internal pump stations to deliver a much higher head, significantly increasing the lifecycle costs for these pump stations.

Alternately, to meet the maximum allowable headloss, a minimum internal diameter of approximately DN450 is required. However at the ultimate stage, the velocity at PDWF would be 0.59m/s which is less than the minimum solids transport velocity (0.66m/s). At velocities below minimum solids transport, the VGS has significant risk of operational issues due to solids deposition leading to odour generation and potential corrosion.

As such, the available physical configuration available at Kings Hill is not capable of transferring the required PWWF in a single pipeline, whilst meeting minimum flow requirements. There would also be issues in the early years, given the ultimate design flow is not anticipated for approximately 20 years. To flush this main and meet solids transport velocities would require 100-150L/s, which would be a significant flow to draw from the potable water network.

As such, the VGS has not been further considered.

4.4 Assessment of Non-Cost Criteria

The preliminary non-price assessment of each option is summarised below in **Table 17**.

Table 17 – Non-Cost Criteria

Option	Loading Assessment	Technical Constraints	Performance	Flexibility and Adaptability	Reliability & Maintainability	Potential odour / septicity generation	Community / Stakeholder Constraints	Environmental Constraints	OH&S Issues	Option recommendation
SE1A	Capacity for all development within the study area	The longest rising main alignment Route takes advantage of parks close to river, only small section would be constructed within the built-up area.	Standard infrastructure type within HWC's Area of Operations. Infrastructure will be designed to comply with relevant HWC design manuals / guidelines, to ensure that performance is within HWC's Operating License.	Capacity for additional lots available with a mechanical / electrical upgrade at the WWPS	Standard infrastructure type within HWC's Area of Operations. Infrastructure will be designed to comply with relevant HWC design manuals / guidelines, to ensure that performance is within HWC's Operating License.	Detention time exceeds 4 hours at ultimate development rollout. Development rollout increases detention time in early years.	Construction near HWC Special Area for Grahamstown dam – HWC approval in conjunction with Council required.	Construction the near environmentally sensitive areas. Approximately 8km of the alignment is identified as having high probability of ASS. Anticipated high groundwater levels.	Infrastructure type is standard within HWC area of operations. Standard OH&S issues associated with wastewater infrastructure anticipated i.e. confined spaces, working with electricity, safe manual handling practices	Proceed with detailed analysis
SE1B		One of the longest alignments. This route has the advantage of passing through a mostly green corridor of parks through Raymond Terrace.					Construction near HWC Special Area for Grahamstown dam – HWC approval in conjunction with Council required.	Construction the near environmentally sensitive areas. Approximately 5.3km of the alignment is identified as having high probability of ASS. Anticipated high groundwater levels.		Proceed with detailed analysis
SE1C		Majority of the alignment would be located within the existing road easements. Long rising mains with large vertical elevation changes could create a number of operation issues with existing variable grade sewers (and similar), including corrosion and odour.					Construction near HWC Special Area for Grahamstown dam – HWC approval in conjunction with Council required. Crossing of Irrawang Spillway required.	Construction the near environmentally sensitive areas. Approximately 0.5km of the alignment is identified as having high probability of ASS. Anticipated high groundwater levels.		Proceed with detailed analysis
SE1D							Construction near HWC Special Area for Grahamstown dam – HWC approval in conjunction with Council required. Crossing of Irrawang Spillway required.	Construction near environmentally sensitive areas. Approximately 5.4km of the alignment is identified as having high probability of ASS. Anticipated high groundwater levels.		Proceed with detailed analysis
SE2		Parallel operation of common rising main		Same as other options, but it is noted that an upgrade would require upgrade of pumps at both stations			Construction near HWC Special Area for Grahamstown dam – HWC appro val in conjunction with Council required. Crossing of Irrawang Spillway required.	Construction near environmentally sensitive areas. Approximately 9.8km of the alignment is identified as having high probability of ASS. Anticipated high groundwater levels.		Proceed with detailed analysis

4.5 Option Discussion

The recommended size and key costs for each option is summarised below in **Table 18**.

Cost estimates have only allowed for trenchless technologies at crossing of significant structures.

Table 18 – Option Comparison

	Adopted Rising Main Diameter	Total Developer Capital PV	Total HWC Capital PV	O&M Cost (30 years @ 7%)	NPV (30 years @ 7%)
Option SE1A	DN500	$16,400,000	$100,000	$2,150,000	$18,650,000
Option SE1B	DN450	$15,800,000	$100,000	$2,150,000	$18,050,000
Option SE1C	DN600	$18,800,000	$100,000	$2,100,000	$21,000,000
Option SE1D	DN450	$15,400,000	$100,000	$2,200,000	$17,700,000
Option SE2	Refer figure	$15,850,000	$100,000	$1,700,000	$17,650,000

Generally, the options with the transfer pump station located on the west (Options SE1A and 1B) have higher upfront and ongoing costs, as the eastern catchments are larger and hence the west to east system requires larger infrastructure.

Option SE1C is significantly more expensive, due to the length of gravity main required through a developed area, which is required due to the vertical alignment (refer **Section 4.3.3**for further discussion). As such, this option has not been considered further.

Option SE1D and SE2 have essentially the same lifecycle costs, with Option SE2 having slightly higher capital costs, but reduced lifecycle costs. Option SE2 also presents staging benefits, as only one side of the transfer network needs to be constructed at a time, allowing for potential deferral of significant capital costs.

Therefore, Option SE2 is the recommended as the preferred option.

It is noted that the cost estimates do not include an allowance for land acquisition. Preliminary route selection undertaken for Option SE2 as part of this investigation has sited the main in HWC-owned land, and it is understood no acquisition costs will apply for this alignment. If land acquisition costs prove unfavourable for the proposed alignment, or the timing is incompatible with the development rollout, there is potential to locate this rising main in the road reserve of the existing developed area.

It is noted that ultimately for all options a long, large diameter rising main is required to transfer flows to the Raymond Terrace WWTW. In all cases, there is an ultimate requirement for odour / septicity control. Decreasing the diameter of the proposed rising main to eliminate the ultimate need for odour / septicity management results in dynamic headlosses in the order of 200-300m, which is beyond the capability of a centrifugal wastewater pump. Additionally, the septicity issue is also impacted by the rollout of development (i.e. detention times will be long in the initial years, in the order of 200

hours). There are several technical solutions for the management of septicity / odour, including chemical dosing, flushing and oxygen injection. Reduction of the septicity issue will also be made with regard to staging of initial infrastructure (smaller diameter rising main and pump station), refer **Section 4.7**. It is recommended that options for odour / septicity management are considered in more detail at the concept design stage.

Additionally, at strategy stage, detailed consideration has not been given to the potential for energy savings provided by variable speed drive pumping. As the recommended option involves large dynamic headlosses and relatively high velocities, it is considered that there is significant potential for energy saving to result from installation of a VSD. As such, it is recommended that VSD pumping is considered on the preferred option at concept design stage.

4.6 Staging

The preferred option (SE2) lends itself to staging as separate arms of the common rising main can be constructed as development rolls out across the site. KHD as the major landowner in the release area are progressing their first stages of their development in the south-east corner of the release area.

We note that Hunter Land are progressing development over the Windeyer land holdings (western area) and have advised early development sequencing in parallel with KHD. The recommended option provides flexibility for early development of eastern and western land holdings.

It is noted that further staging opportunities exist, with regard to the initial capacity identified at Raymond Terrace 8 WWPS. To access this initial capacity in a cost-effective manner, it is considered that a suitable initial stage may be to construct a small WWPS and an initial rising main in (say) DN150 from the eastern or western portion of the Kings Hill Release Area, to Raymond Terrace 8 WWPS, as shown on **Exhibit K**.

Further investigation will be undertaken with regard to this as part of the concept design of the trunk infrastructure. Hunter Water is currently revising the capacity available at Raymond Terrace 4 and 8 WWPS. This investigation is understood to consider the potential for minor mechanical / electrical upgrades to provide additional capacity. The results of this optimisation will be included as part of the concept design of infrastructure.

It is noted that there would be technical constraints with regard to accessing this capacity, given that the flows would be pumped to Raymond Terrace 8. The minimum pump rate which meets HWC's minimum slime control requirements (velocity of 0.67m/s) for the proposed rising main (DN450) is approximately 120L/s. However, given the Kings Hill WWPS will be constructed for ultimate design flows (4,500 ET), there would be sufficient storage to hold flows during a wet weather event for approximately 200 ET. As such, operational controls of the Kings Hill pump station in the initial years of development could ensure that the Kings Hill WWPS does not pump during wet weather events at Raymond Terrace 8.

If it is likely that the development will utilise this interim connection, this option should be further discussed with Hunter Water at the concept design stage.

4.7 Servicing Initial Lots

Connection of the initial lots to the existing sewer infrastructure within Raymond Terrace is proposed, to defer significant upfront capital expenditure in transferring flow.

Hunter Water have indicated that there are 200ET of available capacity within the existing Raymond Terrace reticulation network, at Raymond Terrace 8 WWPS (refer **Exhibit F** for locations of this infrastructure). This WWPS is located adjacent to the alignment for the preferred option of SE2. This allows for easy staging, with rising mains constructed from either the east or the west, to Raymond Terrace 8 as a first stage, and then following the remaining SE2 alignment once more than 200ET are exceeded.

Hunter Water have indicated that additional interim capacity is possible at Raymond Terrace 8 WWPS if the pumps are upgraded, which would also necessitate a pump upgrade at Raymond Terrace 4 WWPS. Hunter Water has plans to upgrade Raymond Terrace 4 WWPS in 2025/26, however this may change depending on future demand and prioritisation. There is sufficient capacity within the gravity network downstream of RT8 to handle some increased flows. The available capacity from upgrade will require confirmation from Hunter Water as part of the concept design.

Depending on the capacity available at Raymond Terrace 4, after the 200ET is utilised at RT8, the alignment could be constructed between RT 4 and Mount Hall Rd. A temporary RM would be required along Mount Hall Rd, to deliver flows to RT4.

5 SERVICING OPTIONS - LOCAL

The Kings Hill site falls into two main catchments, divided by the ridge that runs through the site. For the wastewater transfer options with only one trunk pump station, allowance needs to be made for the internal transfer of wastewater from one side of the ridge to the other, to allow for comparison of equivalent options. The catchment is split broadly into one third of ETs on the west and two thirds of ETs on the east.

Two options considered for transfer for both sides, a low-level and high-level transfer. These are shown on Exhibit H1 and H2. The low-level transfer options run around the base of the dividing ridge line and have a longer rising main alignment, but a lower static head.

The high-level transfer options have a shorter alignment traversing more directly over the diving ridge, but a higher static head. Due to the high static head, the rising main diameter is increased to minimise dynamic losses and keep the total pump head below that allowable for a centrifugal pump.

The eastern transfer option is for transfer of flows from the eastern side of the site (**Exhibit H1**), and the western transfer is for transfer of flows to from the west (**Exhibit H2**).

The cost associated with the transfer options have been summarised below in **Table 19**. Full details can be found in **Appendix D**.

Table 19 – Option Comparison

Option	Estimated Capital Cost
Low-head Eastern	$3,300,000
High-head Eastern	$4,500,000
Low-head Western	$4,400,000
High-head Western	$6,000,000

As can be seen, the low-level transfer options are more cost-effective than the high-level transfer options. As such, these have been adopted as the preferred transfer options. The costs have been added to the appropriate options in **Section 4**.

Preliminary locations for internal pump stations are shown on **Exhibit J**. It is noted that some of these may be able to be eliminated by use of deep sewers. It is recommended this is further investigated at concept design stage, when the lot layout is developed, and more information is held on geotechnical conditions, such as groundwater levels and presence of rock.

6 RECOMMENDED OPTION

The recommended option for external wastewater servicing is Option SE2, which is presented on Exhibit G5. We note that HWC provided in-principle acknowledgement & support for this option at the recent landowners meeting held 23 April 2013. It is proposed to stage these works, to minimise upfront capital costs.

It is noted that the proposed alignment to service KHD traverses HWC-owned land, at the rear of the properties in Holwell Circuit / Dalyell Way. It is recommended that the preferred alignment is further investigated at concept design stage. If land matters prove complicated, an alternate route which has similar overall length and uses road allocations is possible.

Based on the investigations detailed in this report a staged approach is recommended for delivery of the wastewater infrastructure to the Kings Hill development site.

The development of KHD land holdings will commence in the south-eastern area based on proximity and efficiency for lead-in infrastructure, market & commercial drivers and ecological considerations.

We note that Hunter Land is progressing development over the Windeyer land holdings (western area) and has advised that early development is expected to sequence in parallel with KHD.

The recommended servicing option provides flexibility for both eastern and western land holders (Hunter Land) to develop early.

The construction would include the following stages:

- Stage 1: Initial connection servicing 200 lots consisting of interim parallel rising mains transporting flows to Raymond Terrace 8 WWPS. In relation to KHD land, the rising main would traverse the eastern side of the wetland to open up an eastern development front in the release area. In relation to the Hunter Land holding, this route would follow the Newline Road alignment onto Beaton Avenue, then to Raymond Terrace 8 WWPS.

- Stage 2: Further downstream upgrades constructed post 200 lots.

There is also potential to stage the WWPS construction, constructing smaller, interim pump stations (say 1.5m diameter), and then utilising these as part of the emergency storage requirements for the ultimate pump station.

The staged infrastructure required for this option is summarised below in **Table 20**. Work is still to be undertaken with regard to more detailed staging investigations, and this will be undertaken as part of the concept design. Investigations to be undertaken as part of the concept design will investigate the option of construction of a smaller pump station and smaller diameter rising main to access capacity at Raymond Terrace 8 WWPS, for the initial release of lots at Kings Hill. The proposed alignments for the initial rising main options are shown on **Exhibit K**.

It is noted that Hunter Water are currently revising the capacity available at Raymond Terrace 4 and 8 WWPS. This investigation is understood to consider the potential for minor mechanical / electrical upgrades to provide additional capacity. The results of this optimisation will be included as part of the concept design.

Preliminary advice has been received from Hunter Water that additional interim capacity is possible at Raymond Terrace 8 WWPS if the pumps are upgraded. This would also necessitate a pump upgrade at Raymond Terrace 4 WWPS. Hunter Water has plans to

upgrade Raymond Terrace 4 WWPS in 2025/26, however this may change depending on future demand and prioritisation. There is sufficient capacity within the gravity network downstream of RT8 to handle some increased flows. Hunter Water will need to confirm the additional capacity available and timing as part of the concept design of this infrastructure.

Table 20 – Infrastructure Requirements

Year	ET	Recommended Infrastructure	Budget Cost
2014	0-200	Eastern connection	
		Connect to Raymond Terrace 8 WWPS	
		WWPS - 5.5m diameter, depth = 6m 241 L/s @ 32m, total station power of 502kW	$1.9M
		RM - 4,430m of DN450	$4.1M
		TOTAL	**$6.0M**
		Western connection	
		WWPS – 3.8m diameter, depth = 6m 122 L/s @ 42m, total station power of 334kW	$1.7M
		RM - 3,900m of DN300	$2.4M
		TOTAL	**$4.0M**
2015	200-4,500	Further upgrades downstream	
		RM - 2,600m of DN500	$3.5M
		GM - 1,100m of DN600	$2.4M
		TOTAL	**$5.8M**
		GRAND TOTAL	**$15.8M**

It is noted that all options considered require septicity / odour management due to the long length and large diameter of the rising main, and the rollout of development. There are several technical solutions for the management of septicity / odour, including chemical dosing, flushing and oxygen injection. Reduction of the septicity issue will also be made with regard to staging of initial infrastructure (smaller diameter rising main and pump station), refer **Section 4.7**. It is recommended that options for odour / septicity management are considered in more detail at the concept design stage.

7 REFERENCES

- Kings Hill Development Preliminary Water and Wastewater Servicing Advice; SMEC; April 2011.
- Kings Hill North West Village Water and Wastewater Servicing Study; Patterson Britton & Partners; February 2005.
- North Raymond Terrace Water and Wastewater Servicing Study Additional Investigations; Patterson Britton & Partners; December 2004.
- Kings Hill Water and Wastewater Servicing Study; Patterson Britton & Partners; August 2004.
- North Raymond Terrace Draft Initial Water and Wastewater Servicing Options; Patterson Britton & Partners; August 2003.
- Operating and Maintenance Cost Estimating Guideline, Hunter Water Corporation, September 2010
- Wastewater Supply Code of Australia (WSA02) – Hunter Water Edition, Version 1
- Water Supply Code of Australia (WSA03) – Hunter Water Edition, Version 1

APPENDIX A – CORRESPONDENCE WITH HWC

Non-printing figures list

Figure	Description / layers
Exhibit A – Regional Plan	
Exhibit B – Local Plan	
Exhibit C – Zoning Plan	
Exhibit D1 –Aboriginal Heritage	
Exhibit D3 – Acid Sulphate Soils	
Exhibit E – Staging Plan	Land use plan?
Exhibit F – Wastewater Infrastructure – Regional Servicing Options	Existing HWC Infrastructure?
Exhibit G1 – Option SE1A	
Exhibit G2 – Option SE1B	
Exhibit G3 – Option SE1C	
Exhibit G4 – Option SE1D	
Exhibit G5 – Option SE2	
Exhibit H1 – Eastern Transfer Options	
Exhibit H2 – Western Transfer Options	
Exhibit K – Preliminary Servicing	

APPENDIX A – CORRESPONDENCE WITH HWC

Hunter Water Corporation
ABN 46 228 513 446
Customer Enquiries 1300 657 657
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PO Box 5171
HRMC NSW 2310
36 Honeysuckle Drive
NEWCASTLE NSW 2300

23 September 2013

Ref: 2010-678/7/8.012

Kings Hill Development
C/- APP Corporation Pty Limited
PO Box 1573
North Sydney 2060

Attention: Kith Clark

Dear Kith

RE: AMMENDMENT OF CONDITIONAL APPROVAL STATUS OF KINGS HILL WATER AND WASTEWATER SERVICING STRATEGIES – REVISION D

I refer to Hunter Water's previous letter dated 29 August 2013 providing conditional approval of the Kings Hill Water and Wastewater Servicing Strategies Revision D – June 2013. The essential and primary item of the conditional approval was that;

1. *Evidence of Hunter Land involvement in selection of the preferred arrangements for both waste water and water servicing strategies is to be provided.*

This requirement was included in order to ensure that the water and wastewater servicing strategies are based on a balanced view of growth within the Kings Hill Release Area and provides an efficient arrangement of infrastructure to service growth on a number of development fronts.

On Wednesday 19 September 2013, Hunter Water received correspondence from Hunter Land raising concerns about the strategy including:

- Hunter Land was not consulted in the development of the strategy
- The proposed timing and sequencing of both water and sewer lead in infrastructure is unbalanced across the development areas and incorrectly assumes that development requiring the western connection will commence after 2028.

Upon assessing Hunter Land's concerns, Hunter Water has withdrawn the conditional approval of the servicing strategies and requires that both parties give consideration to growth occurring on two development fronts concurrently and encourages further discussion between both parties with a view to achieving a more equitable outcome.

Hunter Water remains available should you wish to meet to discuss this further. There would be benefit in including Hunter Land in any such meeting to confirm mutually agreeable outcomes and the pathway forward for finalising the water and wastewater servicing strategies for the Kings Hill Release Area.

Please do not hesitate to contact us to arrange a meeting or to raise any questions you may have. I will be on leave between 01 October, 2013 and 02 December, 2013. In my absence, please contact Senior Developer Services Engineer Malcolm Withers on 4979 9545.

Yours faithfully

Paul McKoy
Developer Services Engineer

Copy to: 1. Hunter Land Pty. Ltd

2. SMEC

Beard, Kate

From: Clark, Kith <kith.clark@app.com.au>
Sent: Tuesday, 9 July 2013 10:37 AM
To: Beard, Kate
Subject: Fwd: Kings Hill Development Area - Servicing Strategy Development - Hunter Water Responses

As discussed

Sent from my iPhone

Begin forwarded message:

> **From:** "Davis, Amanda" <amanda.davis@app.com.au>
> **Date:** 9 July 2013 10:36:30 AM AEST
> **To:** "Clark, Kith" <kith.clark@app.com.au>
> **Subject: FW: Kings Hill Development Area - Servicing Strategy Development - Hunter Water Responses**
>
> ---
>
> **From:** Paul McKoy [mailto:paul.mckoy@hunterwater.com.au]
> **Sent:** Thursday, 27 June 2013 12:02 PM
> **To:** Clark, Kith
> **Subject:** Kings Hill Development Area - Servicing Strategy Development - Hunter Water Responses
>
> Hi Kith,
>
> Please see Hunter Waters comments regarding questions raised at our meeting Held on 23 April 2013;
>
> Wastewater
> Additional interim capacity is possible at Raymond Terrace 8 WWPS if the pumps are upgraded. This would also necessitate a pump upgrade at Raymond Terrace 4 WWPS. Hunter Water has plans to upgrade Raymond Terrace 4 WWPS in 2025/26, however this may change depending on future demand and prioritisation. There is sufficient capacity within the gravity network downstream of RT8 to handle some increased flows.
>
> Water
> Water main sizing is to be confirmed as part of the Servicing Strategy. Raymond Terrace WPS currently has sufficient capacity for a maximum of 15L/s for an off-peak (12am-5am) “trickle” feed. Upgrades of the WPS are currently planned for 2019/20, however this may change depending on future demand and prioritisation. The capacity of the upgraded WPS has not yet been determined.
>
> Please let me know if you need any additional information.
>
> Regards,
>
> HUNTER WATER

Paul McKoy | Developer Services Engineer | Hunter Water Corporation
36 Honeysuckle Drive Newcastle West NSW 2300 | PO Box 5171 HRMC 2310
T 02 4979 9476 | **F** 02 4979 9711 | **M** 0448 083 426 | paul.mckoy@hunterwater.com.au

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24 August 2011 Ref:2010-678

SMEC
PO Box 1346
NEWCASTLE NSW 2300

Att: Kate Beard

Dear Kate

RE: PRELIMINARY SERVICING ADVICE FOR PROPOSED DEVELOPMENT at KINGS HILL

Thank you for your request for Hunter Water's preliminary advice for the provision of water and sewer services to your proposed development at Kings Hill (as described on your application).

General information on water and sewer issues relevant to the proposal is included in this correspondence. This information is based on Hunter Water's knowledge of its system performance and other potential development in the area at the present time.

As you will appreciate, there may be significant changes that occur by the time the development proceeds to the lodging of a development application, therefore this preliminary advice is not a commitment by Hunter Water and may be subject to significant change prior to the development proceeding.

When you proceed with a development application you will need to lodge a further application with Hunter Water to then determine the formal requirements that shall apply. Hunter Water will then issue a **Notice of Formal Requirements**. You will need to comply with each of the requirements in this Notice for the issue of a Section 50 Compliance Certificate for the specific development.

Hunter Water has assumed that the proposed development will place an additional loading of 5000ET on the water system and 5000ET on the wastewater system. As a result the following information is offered.

Water
The proposed development is located in the Raymond Terrace Water Supply System and is expected to result in an additional water demand of 5000ET.

Currently, the development site is remote from the existing infrastructure. As previously advised, the ultimate connection point for this development will be Tomago WPS, however interim arrangements may be made for early stages. It should be noted that Hunter Water currently considers all upgrades required for this development to be developer funded, therefore timing of the upgrade works will be determined entirely by this development.

Regarding the nominated initial connection point, Hunter Water does not support connecting into the Raymond Terrace High Level system. It is considered preferable that the connection point is into the low level system (i.e. supplied directly from Tomago WPS).

In response to the specific questions asked in your letter dated 6 July 2011, the following advice is offered:

1. Based on a staged approach, can HWC indicate estimated timeframe of when the reservoir would be required?

   It will be the objective of the developer funded strategy to determine the timeframe for the reservoir. The strategy will need to ensure sufficient security such that no more than 100 properties are left without security of supply, even in the initial stages. This may be achieved in the form of dual mains or a reservoir. In practice, Hunter Water may allow a relatively small number of properties to exceed the 100 lot security of supply requirement subject to the assessment of potential risk, however, the strategy should assume that this requirement must be met at all times.

2. Capacity of the water main in the Pacific Highway at Connection Point 1 to service initial lots, prior to construction of the reservoir?

   As stated above, the preference is for the initial stages to not be connected to the existing high level system, therefore the nominated connection point 1 is considered unacceptable. The suggested interim connection point is to the DN200 in Richardson Rd (see attachment 1). It may be possible to allow an initial 20 ET from this connection point, however this is not considered preferable as further lots will not be able to connect into this high level system, therefore, any lead-in main from this connection point will only be able to serve 20 ET.

3&4. Location and capacity of nearest trunk main for initial stage release of 200 lots.

   It can be confirmed that the nominated connection point above has capacity for 200 ET. The minimum HGL at the connection point with the 200 ET on a peak day will be approximately 55 m.

5. Location and capacity of nearest trunk main for stage release of 500 lots.

   500 ET has been modelled at the same connection point above and shown that there is still capacity. The modelling also shows that even in the event of a break in the DN200 in Richardson Rd, there will still be sufficient capacity with the HGL dropping to 38m. However, it is considered that a second connection should be made. The suggestion is that the DN150 in Newline Rd should be able to provide additional security.

Wastewater Transportation

The Kings Hill site is located within the Raymond Terrace WWTW catchment and is expected to yield an additional loading of 5000ET which will ultimately be delivered directly to the treatment works.

Due to the size of the North Raymond Terrace Development Area, existing infrastructure will not be able to cater for flows from development in the area without significant upgrade. However, there is some spare capacity in the existing system which can be utilized in the initial stages of the development. As such, the above proposal will not significantly impact on existing wastewater collection and transfer systems.

In response to the specific questions asked in your letter dated 6 July 2011, the following advice is offered:

1. Capacity of the wastewater network at the nominated Connection Points 1-4.
    - Raymond Terrace 8 WWPS – this pump station currently has spare capacity for approximately 15.5L/s until upgrade works at an upstream WWPS. These are not scheduled to take place until after the next price path (ending 2016/17) and could be a temporary connection point during initial stages of the development.
    - MH F105 – this is the receiving manhole of Raymond Terrace 8 WWPS which is part of the Raymond Terrace 4 catchment. Connection at this point will be subject to the outcomes of the risk assessment of RT4 WWPS.
    - MH C2133 – this section is in the Raymond Terrace 3 catchment which has no spare capacity. Connection at this point is not an option.
    - Raymond Terrace 4 WWPS – connection directly to RT4 will be subject to the outcomes of the risk assessment.

2. Location and capacity of nearest point for initial stage release of 200 lots.

    Connection Point 1, Raymond Terrace 8 WWPS, is the nearest point with spare capacity for initial flows.

3. Location and capacity of nearest point for stage release of 500 lots.

    There are no available locations in the existing pumping stations within Raymond Terrace to receive these additional flows. Connection of a pump station directly to Raymond Terrace WWTW would be required at this stage. There are restrictions on the biological and hydraulic capacity at the WWTW and Hunter Water does not guarantee capacity prior to completion of upgrade works in 2017. More detail can be found below.

Wastewater Treatment
Raymond Terrace WWTW had an intermediate upgrade of the plant is which was commissioned in 2010 (35,000ET). Biological capacity for this development may be available depending upon the staging and timing of the development. However, due to hydraulic capacity restrictions at the plant, the current inlet works are not capable of accepting the ultimate development flows directly from the Kings Hill area via the anticipated independent WWPS and carrier main. Future plant upgrades at Raymond Terrace will address these restrictions and, upon commissioning expected in 2017, will provide sufficient capacity to cater for the ultimate development potential of the Kings Hill site.
At this stage, Raymond Terrace WWTW is not capable of catering for the entirety of the proposed rezoning prior to 2017/18. Any available capacity at the WWTW prior to 2017 will be given on a first come first served basis. It should be noted however, that a number of

major developments at Williamtown and Tomago are planned for completion in the near future. Hunter Water does not guarantee capacity at Raymond Terrace WWTW prior to the completion of upgrade works in 2017. The developer should liaise with Hunter Water, as necessary, to determine interim servicing options for the Kings Hill site.

A developer funded servicing strategy will be required to identify the optimal method of providing water and sewerage services the proposed development. These strategies, although being prepared for the eastern portion of the Kings Hill site, should consider opportunities for a common solution to servicing the overall site (including the western catchment). It will be a necessary part of development of these strategies for consultation to take place with the consultant preparing servicing strategies for the western portion of this site. Hunter Water will be happy to facilitate this consultation.

It should be noted that the expected dates of upgrade completion are indicative only and may be subject to change at any time.

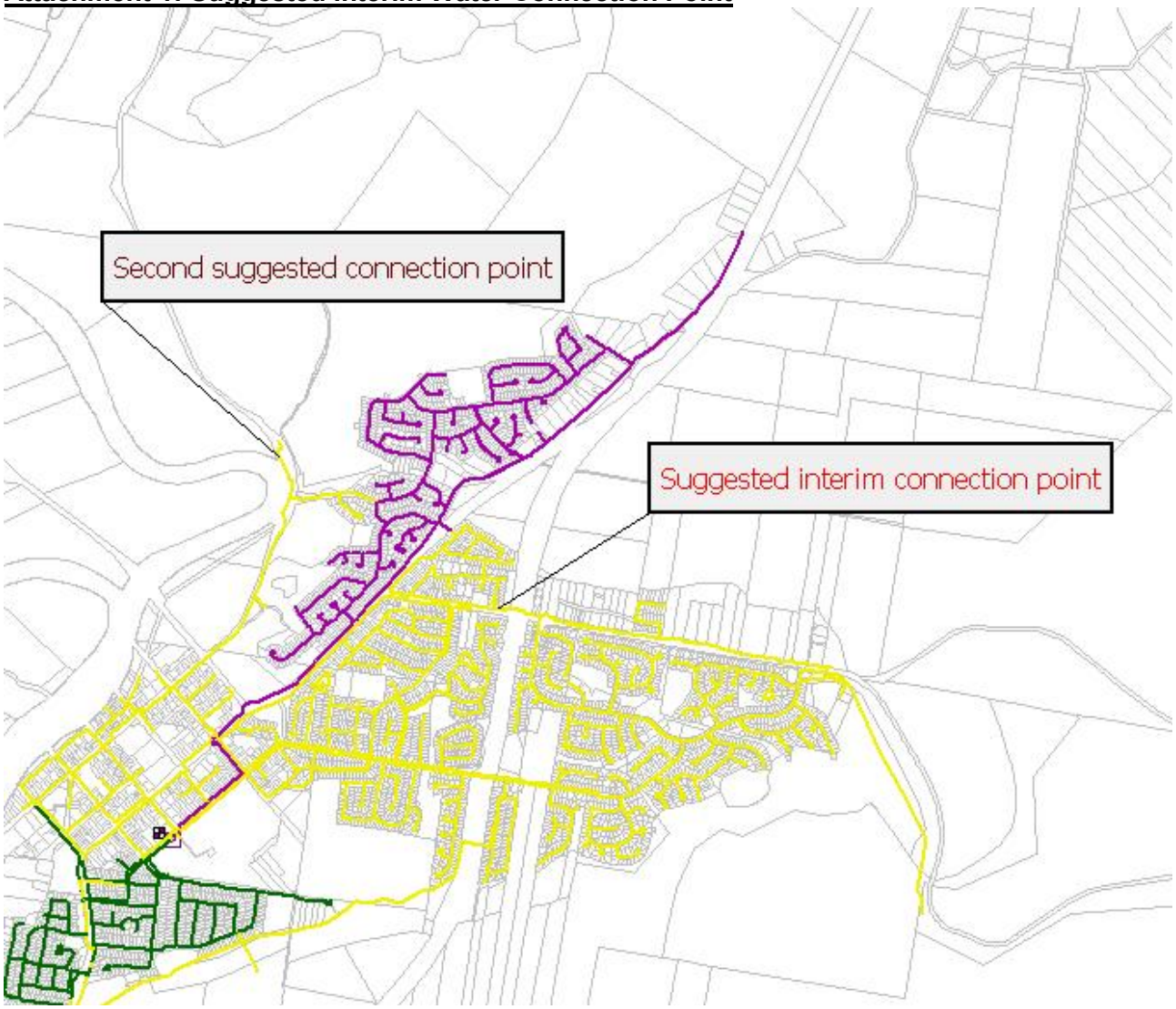
Should you require further clarification or assistance please do not hesitate to contact me on 4979 9545.

Yours Sincerely

MALCOLM WITHERS
Senior Account Executive Major Development

Att: Suggested Interim Water Connection Point

Attachment 1: Suggested Interim Water Connection Point



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NEWCASTLE NSW 2300

2 November 2011 Ref:2010-678

SMEC
PO Box 1346
NEWCASTLE NSW 2300

Att: Kate Beard

Dear Kate

RE: Raymond Terrace (Kings Hill) System Strategy Analysis

The purpose of this letter is to update you with Hunter Water's investigations that have been undertaken with respect to the Kings Hill development. A draft strategy has been determined to allow capacity in the Raymond Terrace trunk network for the Kings Hill development. It is expected that you will consider these upgrades; however, this does not restrict you from determining an alternate strategy.

The draft strategy has been developed to gain an understanding of Hunter Water's costs to service this growth area in the future. It is expected that the strategy will be refined and amended as necessary in consultation with the developer-funded strategy. Internal servicing options have not been considered in the draft strategy. The impacts of the internal servicing options on the regional strategy will need to be considered further.

Analysis of the system augmentation and staging is summarised in the table on the following page. Please also see attached schematics for details.

Should you require further clarification or assistance please do not hesitate to contact me on 4979 9545.

Yours Sincerely

MALCOLM WITHERS
Senior Account Executive Major Development

Att: Table – System Augmentation Summary
Figure 1: Concept Design of Raymond Terrace Augmentation
Figure 2: Schematic of Raymond Terrace Augmentation

Period	Capital Works Description	Size	Material	Length (m)	Additional ET from 2011		
					D/stream Tomago	HL system	Kings Hill
2011	No Augmentation Required				184	**15**	-
2013	No Augmentation Required				363	76	-
2017	Connect the DN150 and DN250 from the delivering end of Raymond Terrace WPS to the suction main of the pumping station.	300mm	PVC	75	733	259	400
	Connect a DN300 from the suction side of Raymond Terrace WPS along the existing DN200/DN250/DN300 to the Conner of Adelaide St and Bellevue St	300mm	PVC	2,850			
	Continue the DN300 main from the Conner of Adelaide St and Bellevue St along Ress James Rd to Kings Hill Development	300mm	PVC	4,900			
	Cross-connect the existing main to the new main with a DN 250 at every 1 kilometre	250mm	PVC	195			
??	Construct a new Reservoir at the location of Kings Hill development	3.5Ml					
	Construct a PS at Kings Hill development to service the high elevated areas						
2025	Construct a DN375 main from the existing DN500 (close to Elizabeth St) to the suction main of Raymond Terrace WPS	375mm	DICL-PN20	1,210	1,298	476	1,500
	Construct a new pump unit at Raymond Terrace WPS	2 duty one standby pump. Delivery set point 54m HGL.					
2035	Connect a new DN375 from the existing DN1350 to the DN500 close to Elizabeth St.	375mm	DICL-PN20	7,050	1,653	476	4,000
2040	Ultimate Development assessed in strategy				1,853	476	4,500

Figure 1: Concept Design of Raymond Terrace Augmentation

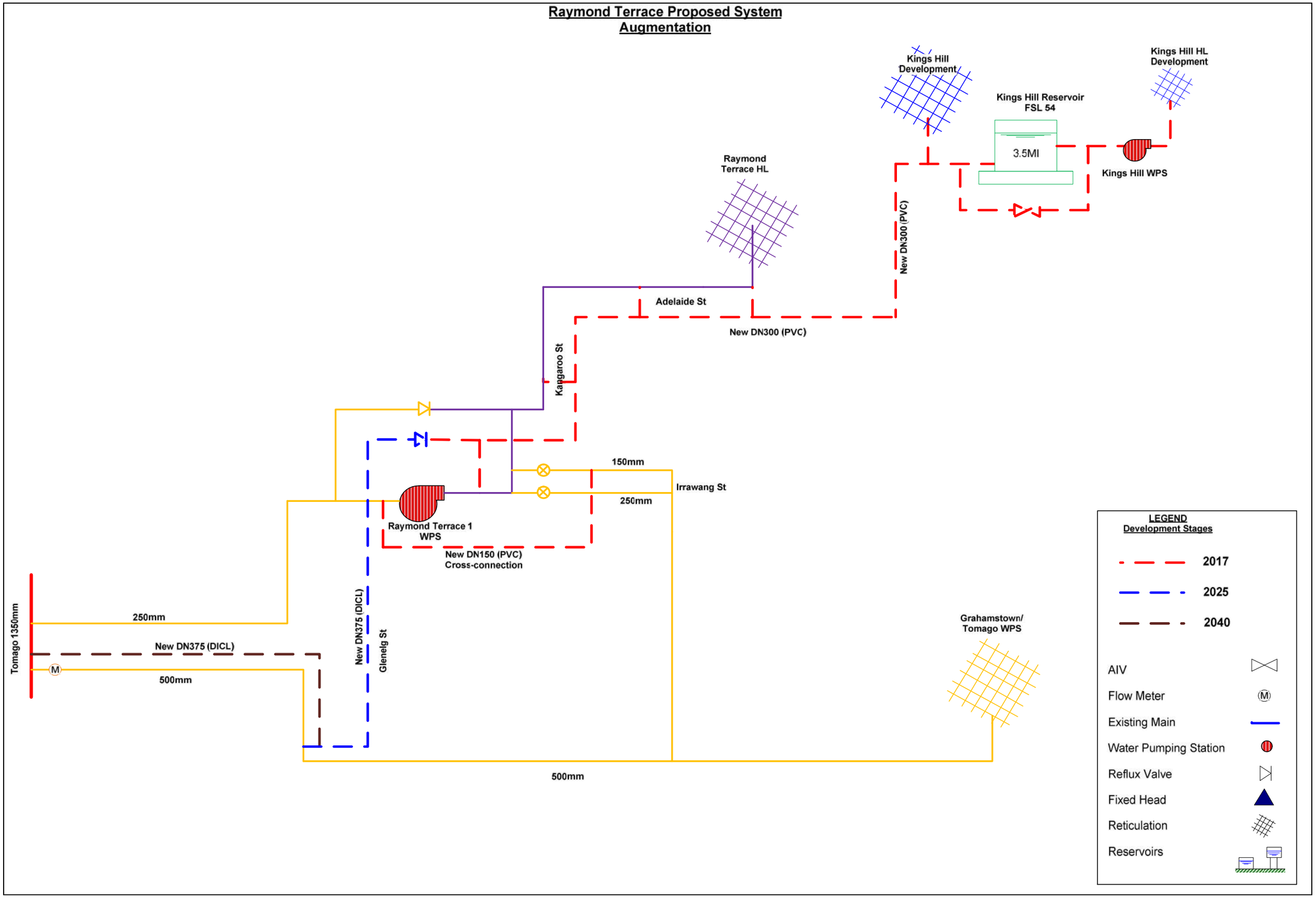
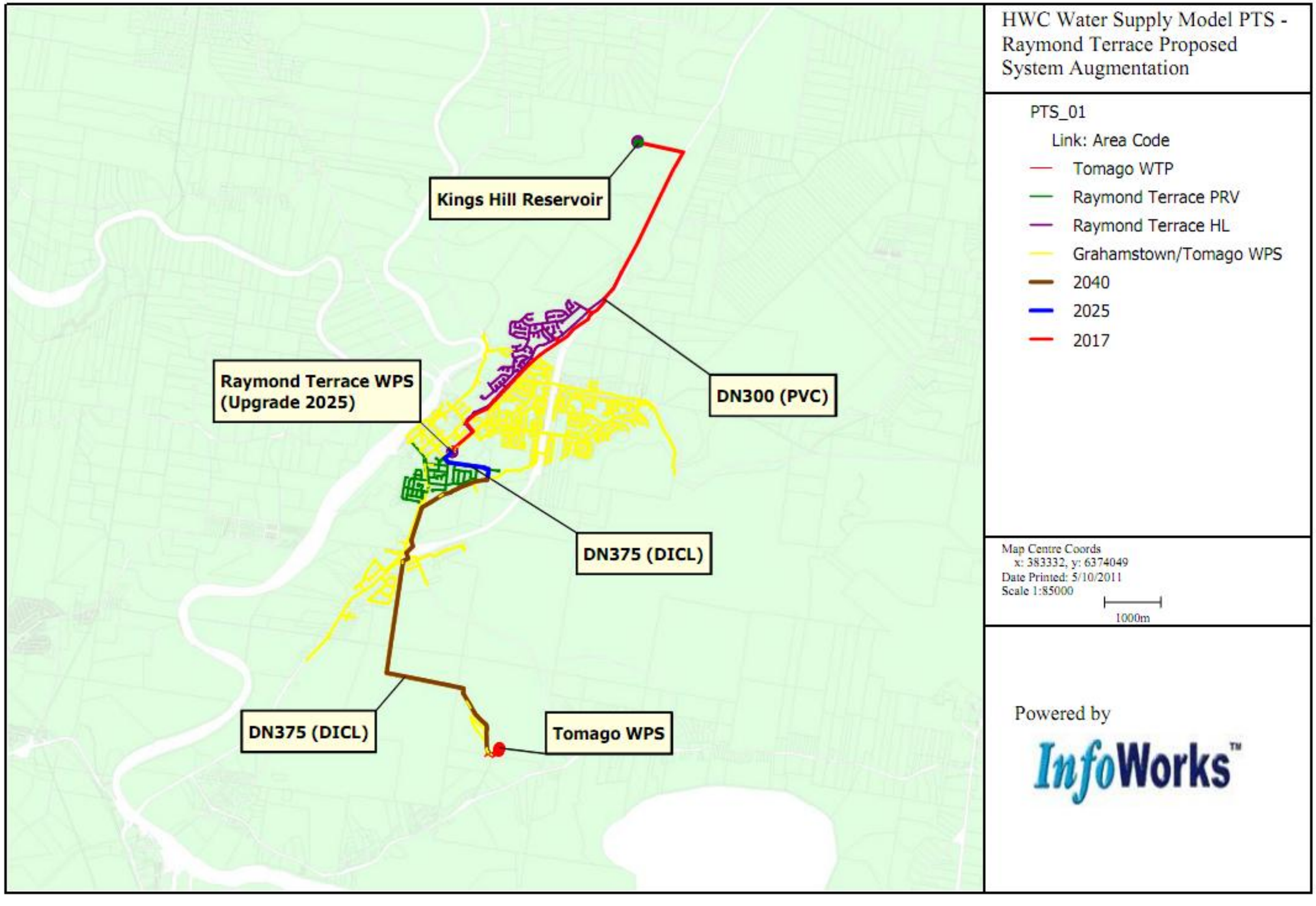


Figure 2: Schematic of Raymond Terrace Augmentation



Meeting:			
Meeting Title:	Kings Hill Development Area Water and Wastewater Servicing Strategy	**Date:**	21 September 2011
Subject:	Progress Meeting 1	**Time:**	2.00pm
Location:	Hunter Water Head Office		
Copies:	File HWC Mondell Property Group		
Project No:	30011097		
HWC TRIM No:	2010-678		
Attendees:	Malcolm Withers (HWC) Anthony Gentle (HWC) Peter Smith (HWC) Wesley Jones (HWC) Michael Breedon (HWC) Kate Beard (SMEC) Marketa McCarthy (SMEC)		
Apologies:	Nil		

Agenda/Minutes:		
Item	**Item Details**	**Actions (by who & date)**
1.	***Welcome, Introduction of Attendees, Apologies & Meeting Agenda***	
2.	***Background to development***	
	Calculations have been undertaken to determine the anticipated lot yield along with corresponding water and wastewater demands/loads.	For information
	The total lot yield of the Kings Hill Urban Development Area is anticipated to be 4500 lots. Flow and demand calculations are attached to these minutes for review by HWC to ensure that the factors include HWC's latest requirements.	HWC; 14 Oct, 2011
	Staging is still to be as previously advised, with a rollout of approximately 200 lots per year anticipated, with development commencing in 2013.	For information
	Two individual servicing strategies are being prepared by two consultants – SMEC and HSO for two sites adjacent to each other.	For information
	HWC will organise a meeting between HWC and both consultants before the second progress meeting.	For information

	Potential development of land south of the proposal was discussed (Rees James Rd development, identified by the HWC water servicing strategy). HWC is to provide loadings from this land for inclusion in the strategy.	HWC; 14 Oct, 2011
3.	***Wastewater***	
	Internal Servicing	
	SMEC outlined options for the new sewer transportation system. Two bigger pump stations pumping into a common rising main have been proposed. The system would also include a number of internal pump stations pumping into these two regional pump stations.	**For information**
	External Servicing	
	Raymond Terrace WWTW is the nominated discharge point for the new sewer system. HWC to confirm spare capacity available in this WWTW.	HWC; 14 Oct, 2011
	HWC requested two options for the rising main configuration to be included in the strategy: • Transfer from the western side of the development to the eastern, with one regional pump station • Transfer from the eastern side of the development to the western, with one regional pump station • A common rising main, connecting two regional stations located on the east and west of the ridge that divides the site.	**For information**
	HWC is to confirm if there is a spare capacity in Raymond Terrace No. 4 WWPS, for an interim connection.	HWC; 14 Oct, 2011
	HWC noted that there will be a barometric loop required on the new sewer transportation system	For information
4.	***Water***	
	There are two broad options being considered for water servicing – connection to the Tomago system, or the Chichester Trunk Gravity Main. It is likely that both options would require a reservoir for pressure and security of supply requirements.	For information
	HWC to check the overall impact of the proposed developments on the existing system and provide flow rates in the existing water main.	HWC; 14 Oct, 2011
	SMEC to work collaboratively with HWC to undertake water modelling for the site, to determine required upgrades for development scenarios.	For information
5.	***Recycled Water***	
	Inclusion of the recycled water system in the servicing strategy was discussed. It was agreed that due to the distance of the site from the nearest treatment plant (7 km) there is no real opportunity for water recycling.	

6.	***Water Resources***	
	HWC questioned draining of the site – specifically if the stormwater system proposed for the site will have any impact on the nearby Grahamstown Dam. SMEC noted that part of the site is within the Grahamstown Special Area. SMEC is to provide a plan of the proposed development to HWC. HWC's Water Resources Department will look at this issue.	SMEC, 22 Sept 2011
	Pending discussions with the Water Resources team, a decision will be made if the stormwater component will be included in the water and wastewater servicing strategy, or if the matter will be considered separately.	For information
7.	***General***	
	HWC has recently built a bound to protect a new road south of the proposed development against flooding. HWC offered SMEC the survey plans issued for these works.	HWC; 14 Oct, 2011
8.	***Next meeting date and location***	
	TBA	
9.	***Close Meeting***	

Meeting:			
Meeting Title:	Kings Hill Development Area Water and Wastewater Servicing Strategy	**Date:**	8 September 2011
Subject:	Inception Meeting	**Time:**	10:00am
Location:	Hunter Water Head Office		
Copies:	File HWC Morgan Banks / Mondell Property Group		
Project No:	30011097		
HWC TRIM No:	2010-678		
Attendees:	Malcolm Withers (HWC) Anthony Gentle (HWC) Wesley Jones (HWC) Chris Russell (Mondell Property Group) Emily Scivetti (Morgan Banks) Graham Brand (Morgan Banks) Ross Blancato (Property Advisory Pty Ltd) Matthew Rose (SMEC) Kate Beard (SMEC)		
Apologies:	Peter Smith (HWC)		

Agenda/Minutes:		
Item	**Item Details**	**Actions (by who & date)**
1.	***Welcome, Introduction of Attendees, Apologies & Meeting Agenda***	
2.	***Background to development***	
	The proposed Kings Hill development area is located north of the existing Raymond Terrace area and is anticipated to yield in the order of 5,000 lots.	For information
	The Kings Hill development area rezoning was gazetted by Port Stephens Council in December 2010.	For information
	The proposed Kings Hill development area is made up of a number of land owners, Morgan Banks / Mondell Property Group to forward land ownership plan to Hunter Water	Attached

	MW noted that one of the land owners on the western side of the development area had already commenced the preparation of a water and sewer servicing strategy for their portion of the development. CR noted that this decision was made by that particular land owner, not the overall landowner group. CR noted that MB/MPG own land on both the eastern and western portion of the site, as such it is their desired approach to develop a strategy that ensure the lowest life cycle cost for the overall site and that would be the objective of this strategy.	For information
	MW noted that as the strategy study's progress it may be beneficial for both landholders and Hunter Water to meet in order to discuss the proposed strategies to ensure a consistent outcome for Hunter Water.	For information
	Staging is still being investigated, broadly a rollout of approximately 200 lots per year anticipated.	For information
3.	***Wastewater***	
	Internal Servicing	
	SMEC plan to investigate options of a single regional WWPS with single rising main, along with dual regional WWPS (east and west) with the rising main joining in common along the alignment.	For information
	External Servicing	
	As outlined in the Preliminary Servicing Advice (PSA) the proposed ultimate wastewater connection point is the Raymond Terrace WWTW.	For information
	Several rising main alignments will be considered through the existing Raymond terrace area.	For information
	There are no other wastewater connection points that warrant investigation.	For information
	As outlined in the PSA there is some initial capacity in the existing Raymond Terrace wastewater catchment within the Raymond Terrace WWPS #8 catchment, along with possible capacity in the Raymond Terrace #4 catchment pending outcomes of a risk assessment.	For information
	Option of onsite treatment is being explored by the developer. MW indicated that HWC are not opposed to the idea of decentralised treatment, where it presents the lowest lifecycle cost to the community. Hunter Water noted that they are investigating approaches for Hunter Water (or subsidiaries) to be involved in the development of wastewater treatment infrastructure through the WICA approach, if interested it would be worthwhile discussing further with Geoff Stevenson from HWC.	For information
	As part of the strategy if innovative initial servicing measures appear feasible these can be presented in the servicing strategy with pros, cons, risks, costs for consideration by Hunter Water, these could include flow balancing via detention structures, etc.	For information
4.	***Water***	
	As outlined in the PSA the proposed ultimate water connection point is the Tomago Water Pumping Station (WPS).	For information

	Several rising main alignments will be considered through the existing Raymond terrace area.	For information
	As outlined in the PSA there is some initial capacity in the existing Raymond Terrace water system.	For information
5.	***Servicing Strategy Inputs***	
	Lands covered in the servicing strategy will be the rezoned areas of the Kings Hill development area.	For information.
	Hunter Water provided a hard copy of the regional water servicing strategy for information. This will be reviewed and returned by SMEC.	KB, 14/9/11.
	Discount rate for life-cycle analysis - agreed at 7%, with sensitivities at 4 and 10% to be performed	For information.
	Energy price series over the life of the project – agreed to be as per HWC Operating and Maintenance Cost Estimating Guideline (Sept 2010). Costs require escalating via CPI to 2011 dollars.	For information.
	GHG conversion factors over the life of the project – agreed to be as per HWC Operating and Maintenance Cost Estimating Guideline (Sept 2010).	For information.
	Cost effectiveness analysis period conversion factors over the life of the project. – Agreed to be 30 years.	For information.
	Cost estimating manual Agreed that HWC would provide most recent cost manual	HWC, 23/9/11
	O & M costs (e.g. chemical dosing, pump station & pipeline maintenance Agreed to be as per HWC Operating and Maintenance Cost Estimating Guideline (Sept 2010).	For information.
6.	***Next meeting date and location***	
	TBA	
7.	***Close Meeting***	

Attachment E

Hunter Water Corporation
ABN 46 228 513 446
Customer Enquiries 1300 657 657
enquiries@hunterwater.com.au

PO Box 5171
HRMC NSW 2310
36 Honeysuckle Drive
NEWCASTLE NSW 2300

23 July 2010 Ref:2010-678

Various Ownerships
C/- J W Planning Pty Ltd
P O Box 3252
Valentine NSW 2280

Dear Sir/Madam

RE INDICATIVE REQUIREMENTS FOR PROPOSED DEVELOPMENT subdivision of 16 lots into 5000 lots at Lot 41 DP 1037411, Lot 51 DP 839722, Lot 4821 DP 852073 etc, Pacific Highway , Ferodale

Hunter Water has considered your request for our requirements for the provision of water and sewer services to your proposed development.

As the development is subject to rezoning and approval by Local Council, any information at this point is indicative only and maybe subject to significant change prior to your development proceeding.

These indicative requirements are not commitments by Hunter Water. Once rezoning has been approved and the decision is made to proceed with the development application you will need to lodge an Application under Section 49 with Hunter Water.

On receipt of the Section 49 Application Hunter Water will forward a **Notice of Formal Requirements**. You will need to comply with each of the requirements for the issue of a Section 50 compliance certificate.

Hunter Water's Indicative Requirements provide general information on water and sewer issues relevant to the proposed development. The information provided is based on Hunter Water's knowledge of its system performance and other potential development in the area at the present time. As you will appreciate there could be significant change by the time the development proceeds to the lodging of a Development Application and therefore these indicative requirements maybe different to the Notice of Formal Requirements provided in the future.

Hunter Water's Indicative Requirements for the provision of water and sewerage facilities to the preliminary enquiry are as follows:

WATER DELIVERY

The proposed development is located in the Raymond Terrace Water Supply System and is expected to result in an additional water demand of 5000ET.

Currently there is no infrastructure capable of servicing the Kings Hill site. However, options for staged augmentation works necessary to service the North Raymond Terrace Development area are proposed in the existing Raymond Terrace Water Supply Servicing Strategy.

It is expected that the North Raymond Terrace Development Area will be serviced via proposed lead in mains located to the south-east of the site. Augmentation works detailed in

the current Servicing Strategy include the upsizing of an existing DN150mm watermain, located in the Pacific Highway, to DN250mm and extension of the main along the Pacific Highway to the boundary of the site. The Strategy also proposes that security of supply will ultimately be provided via the construction of a DN450 delivery pipeline from Tomago WPS to two 3.5ML reservoirs at North Raymond Terrace.

It is anticipated that development within the Kings Hill area will be serviced from these lead in trunk mains. However, due to the size of the proposed rezoning a developer funded Water Supply Servicing Strategy will be required to determine suitable servicing options.

The developer will be required to submit a Servicing Strategy addressing, but not limited to, the following: Lot layout; Staging of development; Investigation of alternative options ; Identification of least community cost option; Security of supply; Minimum pressure requirement; Fire – fighting flow requirement.

WASTEWATER TRANSPORTATION

The Kings Hill site is located within the Raymond Terrace WWTW catchment and is expected to yield an additional loading of 5000ET which will be delivered directly to the treatment works.

Due to the size of the North Raymond Terrace Development Area, existing infrastructure will not be able to cater for flows from development in the area without significant works. The Strategy identifies no advantage in augmenting the existing infrastructure within Raymond Terrace and proposes that development within the North Raymond Terrace area be serviced by infrastructure independent of the existing Raymond Terrace wastewater transportation system. As such, the above proposal will not impact on existing wastewater collection and transfer systems.

The proposed rezoning will ultimately yield an additional residential loading of 5000 ET. It is anticipated that development within the Kings Hill area will also be serviced independently via pumping stations, rising main and a carrier main, feeding directly to Raymond Terrace WWTW. A developer funded Wastewater Servicing Strategy will be required to determine the infrastructure necessary to service development in the area.

The developer will be required to submit a detailed Wastewater Servicing Strategy addressing, but not limited to, the following: Lot layout; Staging of development; Accurate loading information; Proposed Pump Station and infrastructure detail and connection options; Timing of connection; Emergency storage; Surrounding potential future developments.

WASTEWATER TREATMENT

Raymond Terrace WWTW is currently at biological and hydraulic capacity (24,500ET). An intermediate upgrade of the plant is programmed to be commissioned in 2010 (35,000ET). Therefore, biological capacity for this development is expected to be available after 2011. However, due to hydraulic capacity restrictions at the plant, the current inlet works are not capable of accepting the ultimate development flows directly from the Kings Hill area via the anticipated independent WWPS and carrier main. Future plant upgrades at Raymond Terrace will address these restrictions and, upon commissioning expected in 2017, will provide sufficient capacity to cater for the ultimate development potential of the Kings Hill site.

At this stage, Raymond Terrace WWTW is not capable of catering for the entirety of the proposed rezoning prior to 2017/18. Any available capacity at the WWTW prior to 2017 will be given on a first come first served basis. It should be noted however, that a number of major developments at Williamtown and Tomago are planned for completion in the near future. Hunter Water does not guarantee capacity at Raymond Terrace WWTW prior to the completion of upgrade works in 2017. The developer should liaise with Hunter Water, as necessary, to determine interim servicing options for the Kings Hill site.

It should be noted that the expected dates of upgrade completion are indicative only and may be subject to change at any time.

General

It is a requirement of Hunter Water that application for a Section 50 "Notice of Requirements" be made for specific development proposals. Hunter Water would then formally assess the development, determine system capacity and nominate actual connection points to water and sewer. The Notice of Requirements would also nominate a number of actions to be completed by the developer. Completion of all actions in the Notice of Requirements triggers release of the Section 50 Compliance Certificate for the development.

The completion of Hunter Water's requirements (usually works and payment of fees) is best achieved prior to issue of Subdivision Certificate by Council or private certifier for other associated construction works. To this end Hunter Water requests that Council continue to include appropriate wording in its development consent conditions to reflect our needs.

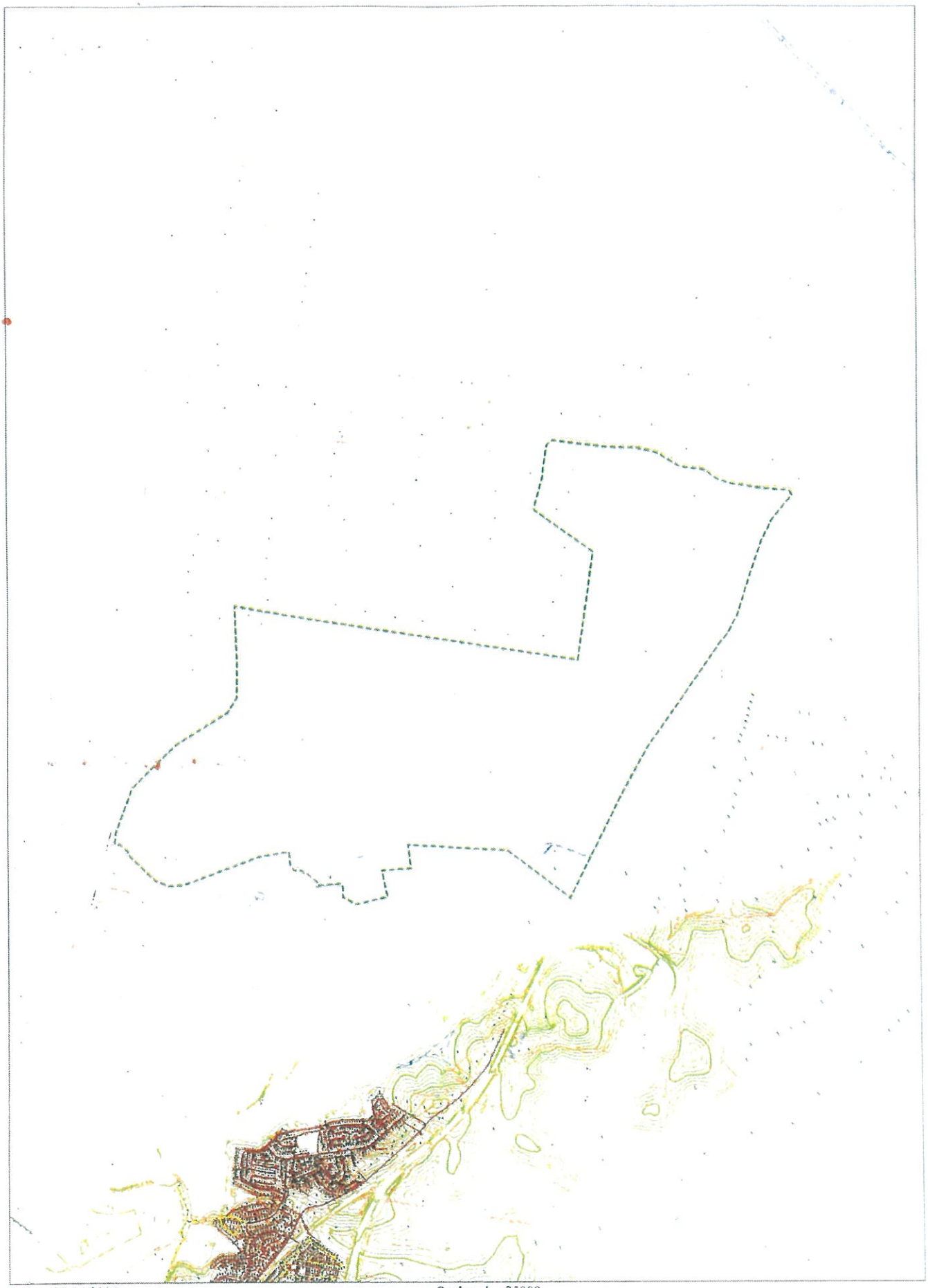
Our Sales and Business Development team is available at short notice to discuss with the Department or the development community their water and sewer servicing needs and I would encourage open communication between all stakeholders.

Should you require further clarification or assistance please contact the enquiries officer listed below. These indicative requirements are not commitments by Hunter Water and maybe subject to significant change prior to this development proceeding.

Yours faithfully

Belinda Jones
Manager Business Operations

Enquiries: Robert Daniels
Tel: 1300 657 657
Fax: (02) 4979-9711



Date: 25/06/2010 **Scale:** 1 : 25000

Notes: PACIFIC HIGHWAY, FERODALE

HUNTER WATER DOES NOT GUARANTEE THE ACCURACY OF THIS PLAN

APPENDIX B – EXHIBITS

SMEC AUSTRALIA PTY LTD
ABN 47 065 475 149

EXHIBIT A
PROJECT NO. 30011056

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DATE 07-02-2012 SOURCES DEPT LANDS 2011
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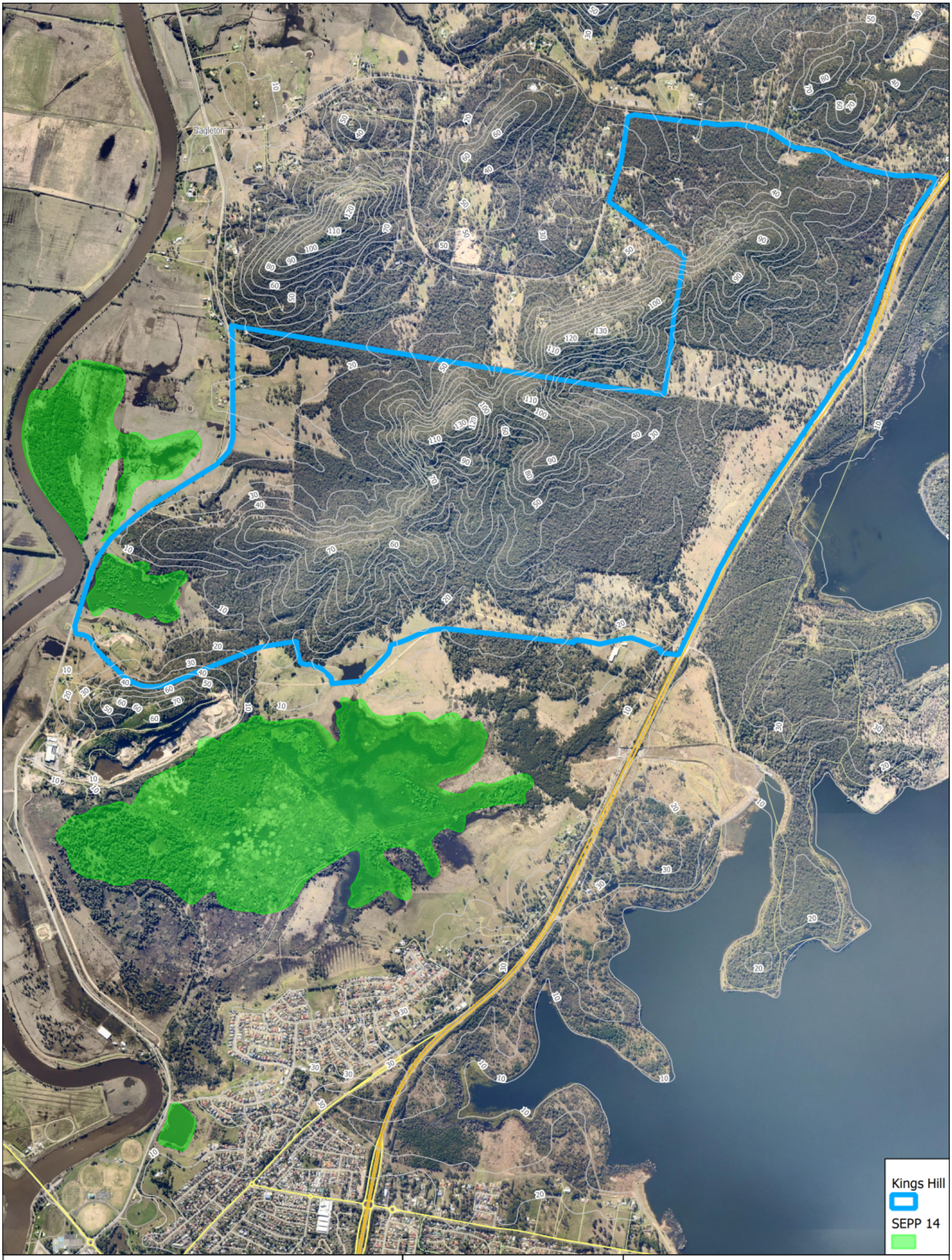
FIGURE TITLE SITE LOCALITY
PROJECT TITLE KINGS HILL SERVICING STRATEGY



SMEC

SMEC AUSTRALIA PTY LTD
ABN 47 065 475 149

EXHIBIT NO. B
PROJECT NO. 30011097

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DATE 07-02-2012 SOURCES DEPT LANDS 2011
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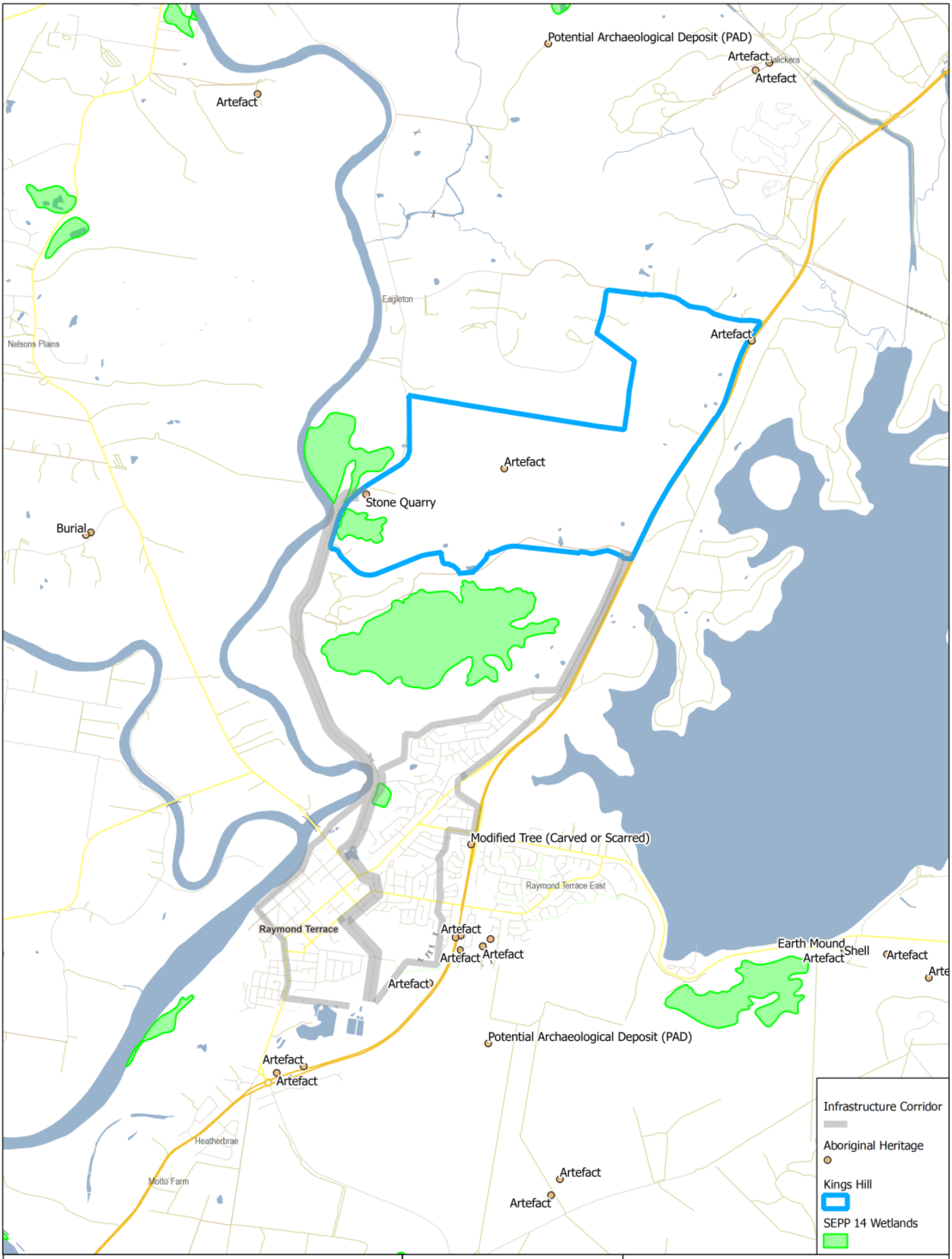
FIGURE TITLE LOCAL PLAN

PROJECT TITLE KINGS HILL WASTEWATER SERVICING STRATEGY



SMEC

SMEC AUSTRALIA PTY LTD
ABN 47 065 475 149

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DATE 07-02-2012 SOURCES DEPT LANDS 2011
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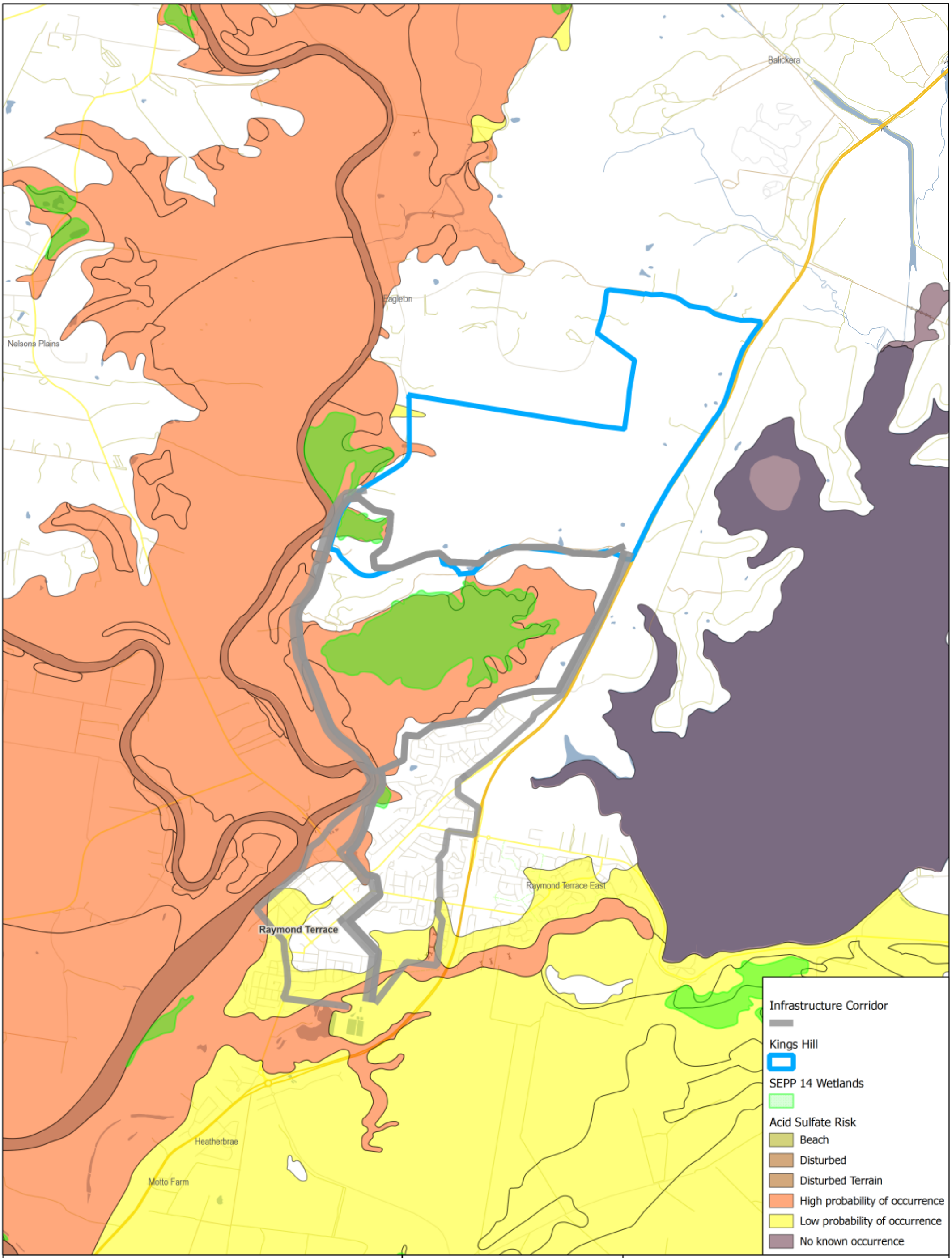
FIGURE TITLE ENVIRONMENTAL PLAN - ABORIGINAL HERITAGE AREAS
PROJECT TITLE KINGS HILL WASTEWATER SERVICING STRATEGY



SMEC AUSTRALIA PTY LTD
ABN 47 065 475 149

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DATE 07-02-2012 SOURCES DEPT LANDS 2011
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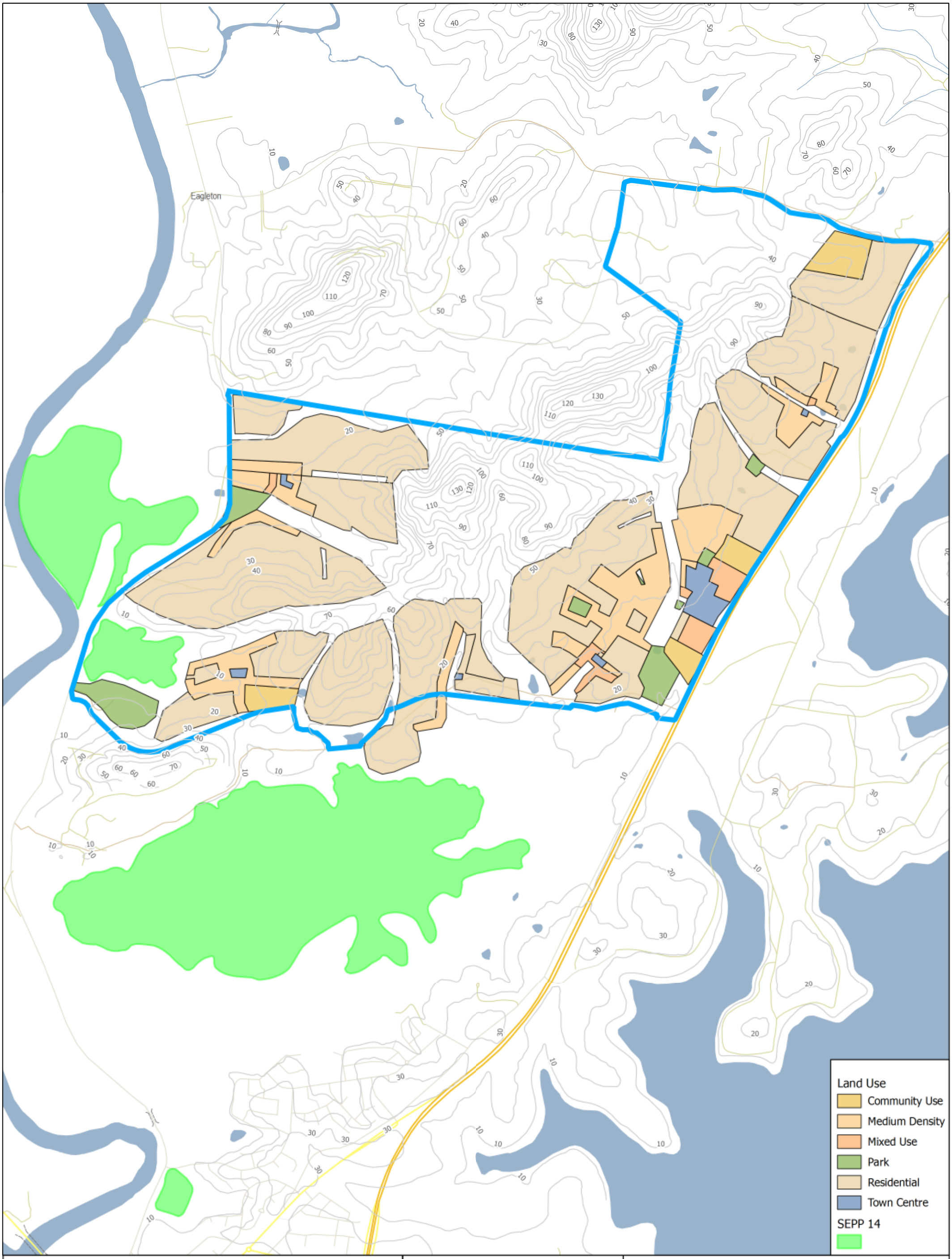
FIGURE TITLE ENVIRONMENTAL PLAN - ACID SULPHATE SOIL RISK
PROJECT TITLE KINGS HILL WASTEWATER SERVICING STRATEGY



SMEC AUSTRALIA PTY LTD
ABN 47 065 475 149

EXHIBIT NO. E
PROJECT NO. 30011097

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DATE 07-02-2012 SOURCES DEPT LANDS 2011
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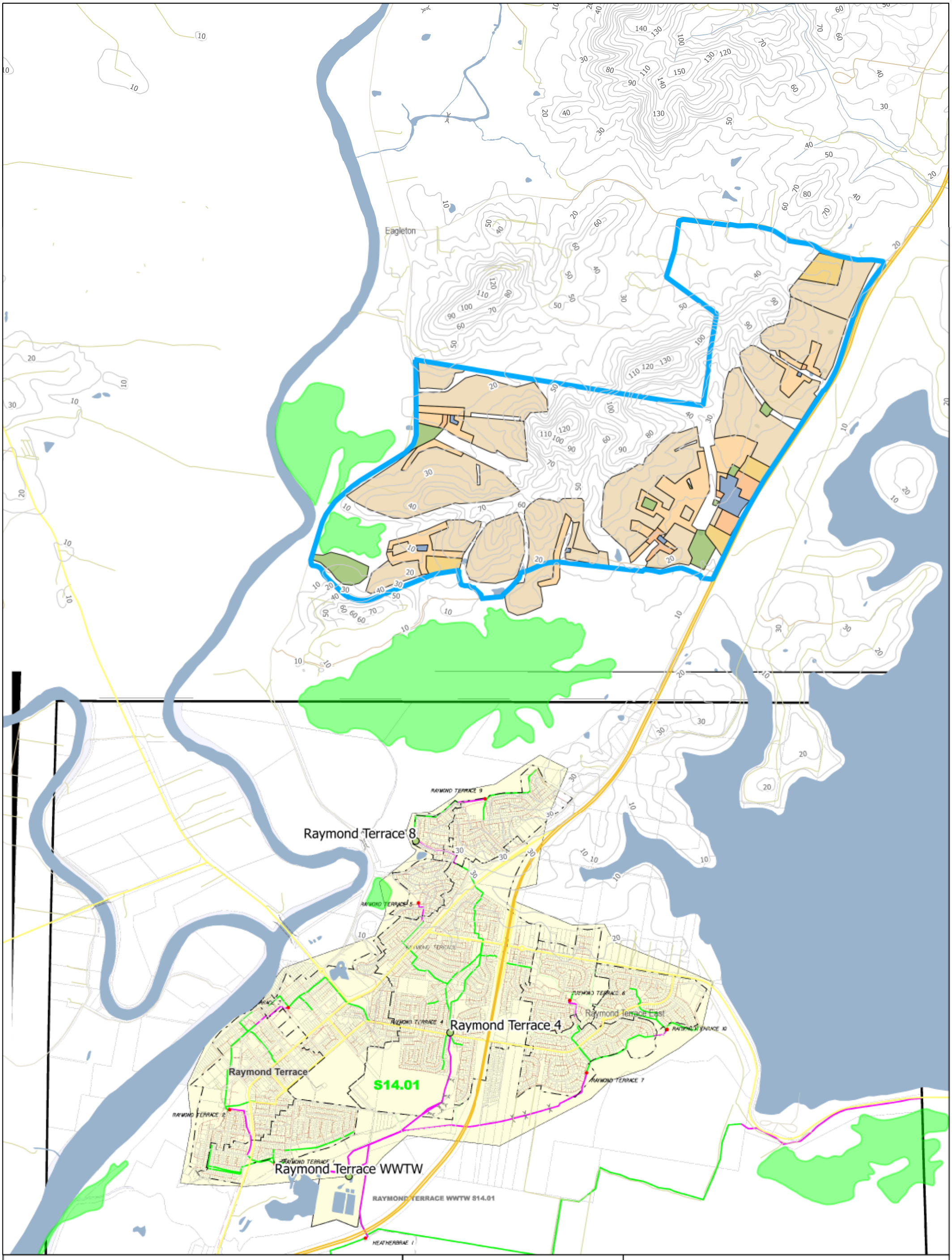
FIGURE TITLE LAND USE PLAN

PROJECT TITLE KINGS HILL WASTEWATER SERVICING STRATEGY



SMEC AUSTRALIA PTY LTD
ABN 47 065 475 149

EXHIBIT NO. F
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DATE 07-02-2012 SOURCES DEPT LANDS 2011
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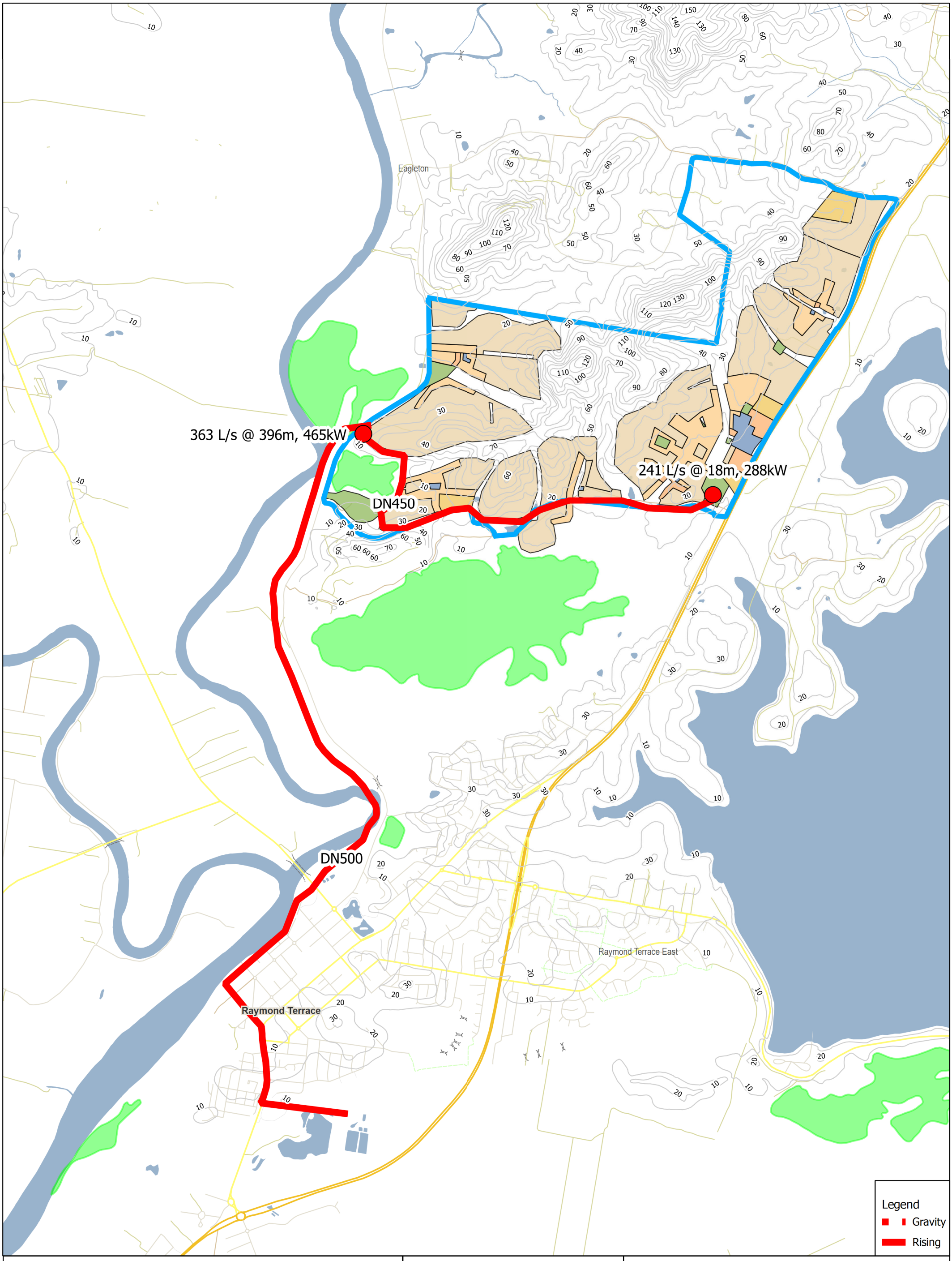
FIGURE TITLE EXISTING HWC INFRASTRUCTURE

PROJECT TITLE KINGS HILL WASTEWATER SERVICING STRATEGY



SMEC AUSTRALIA PTY LTD
ABN 47 065 475 149

EXHIBIT G1
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DATE 29-05-2013 SOURCES DEPT LANDS 2011
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EXHIBIT TITLE OPTION SE1A

PROJECT TITLE KINGS HILL WASTEWATER SERVICING STRATEGY

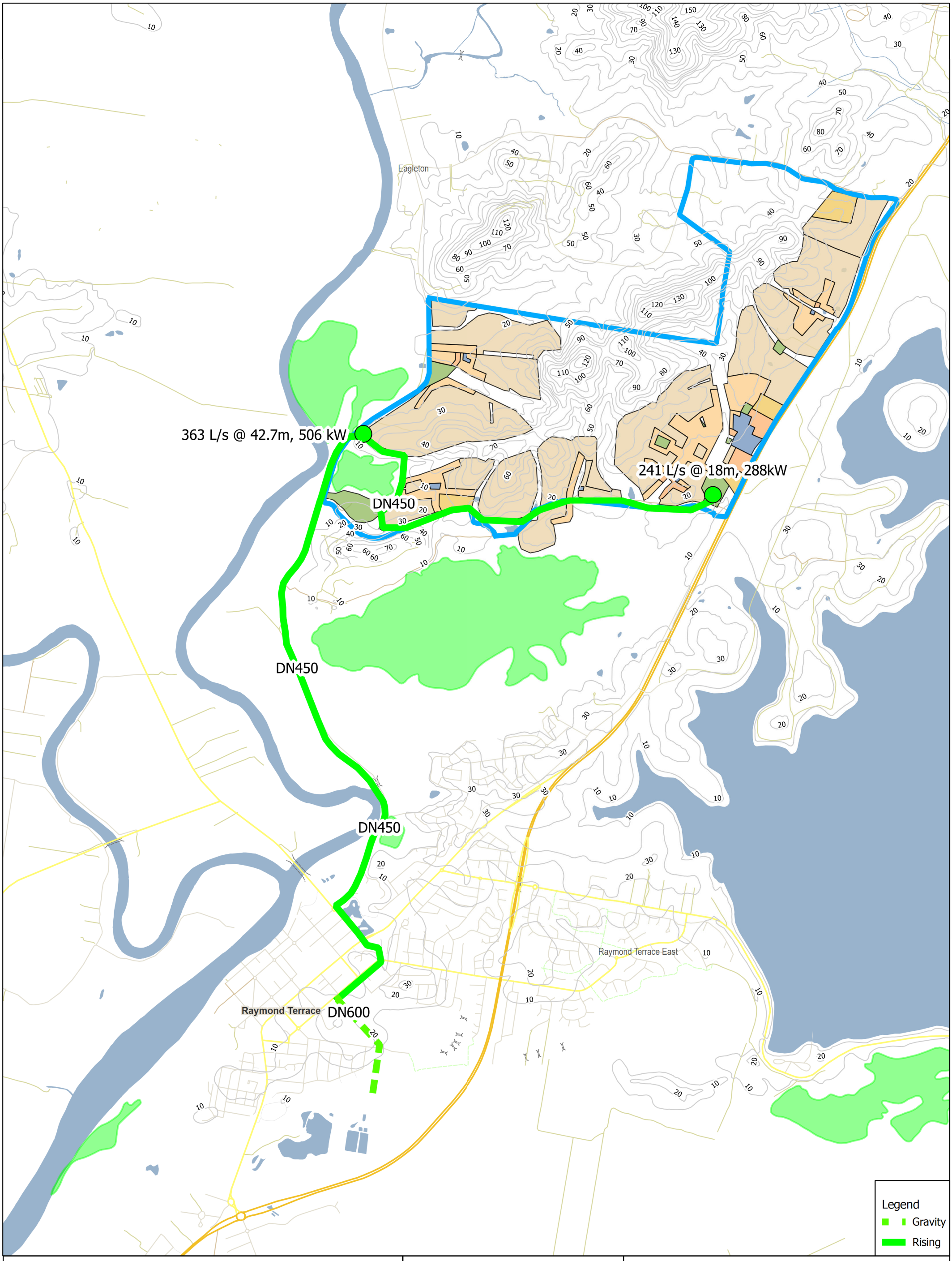

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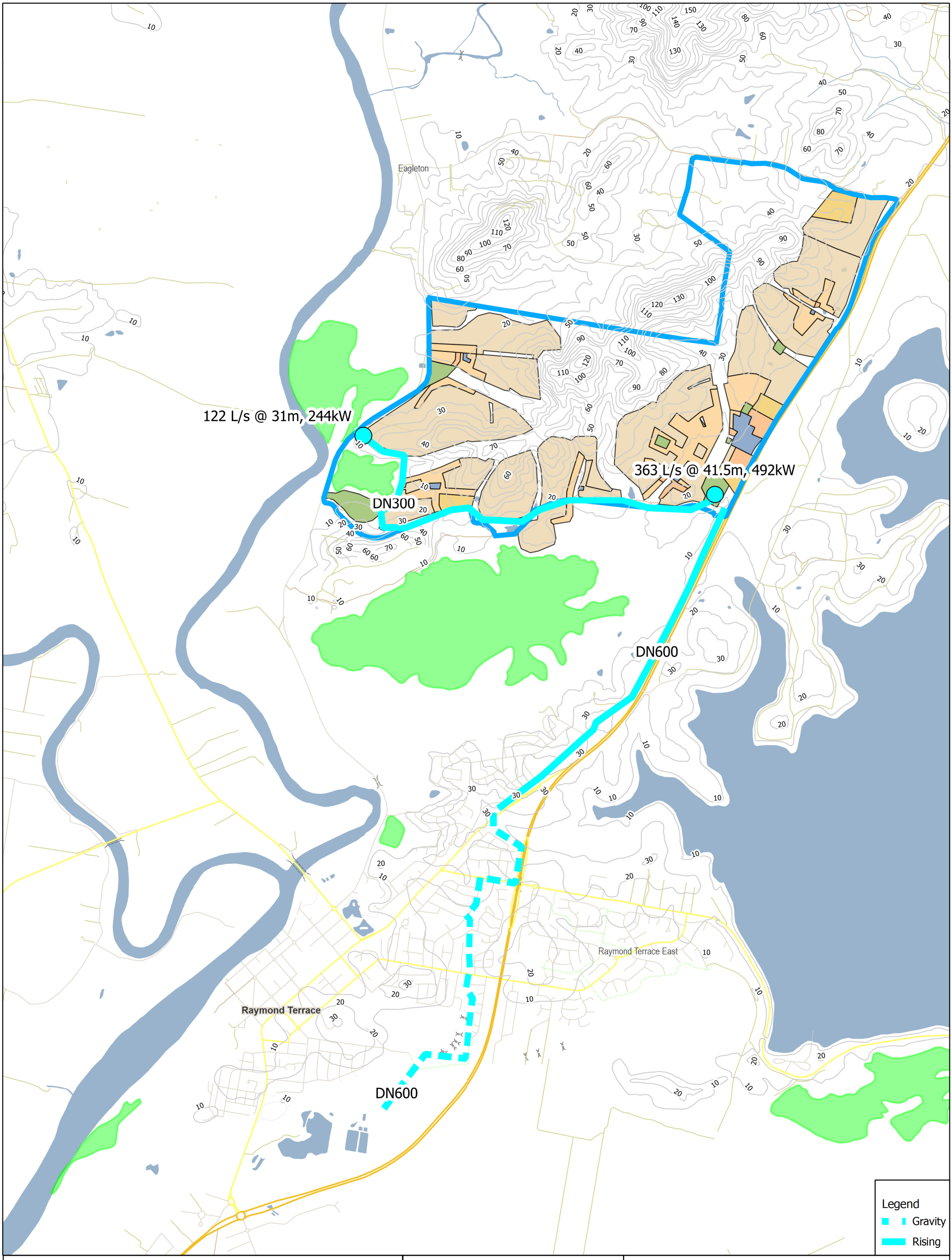
EXHIBIT TITLE OPTION SE1B

PROJECT TITLE KINGS HILL WASTEWATER SERVICING STRATEGY



SMEC AUSTRALIA PTY LTD
ABN 47 065 475 149

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DATE 29-05-2013 SOURCES DEPT LANDS 2011
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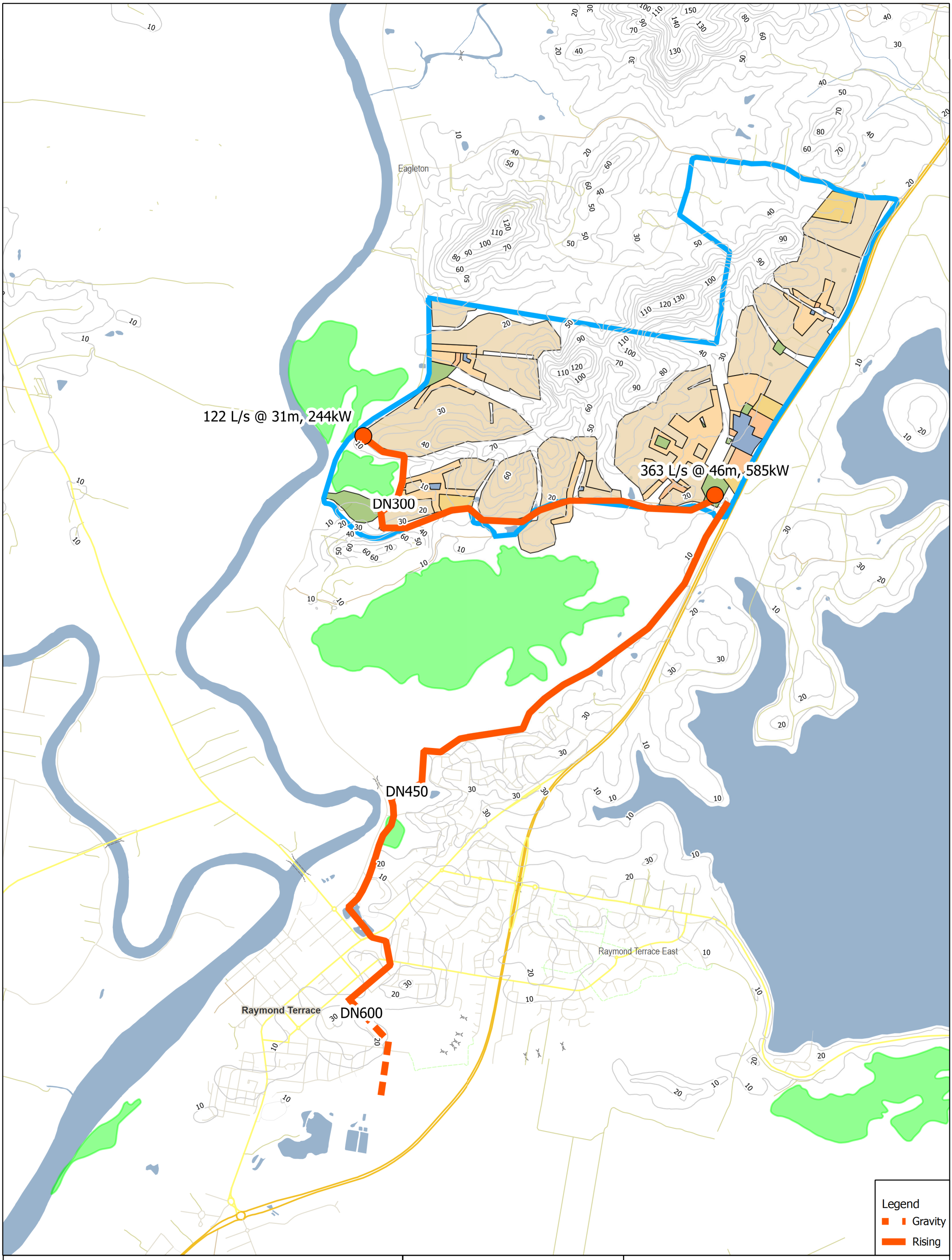
EXHIBIT TITLE OPTION SE1C

PROJECT TITLE KINGS HILL WASTEWATER SERVICING STRATEGY



SMEC AUSTRALIA PTY LTD
ABN 47 065 475 149

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DATE 29-05-2013 SOURCES DEPT LANDS 2011
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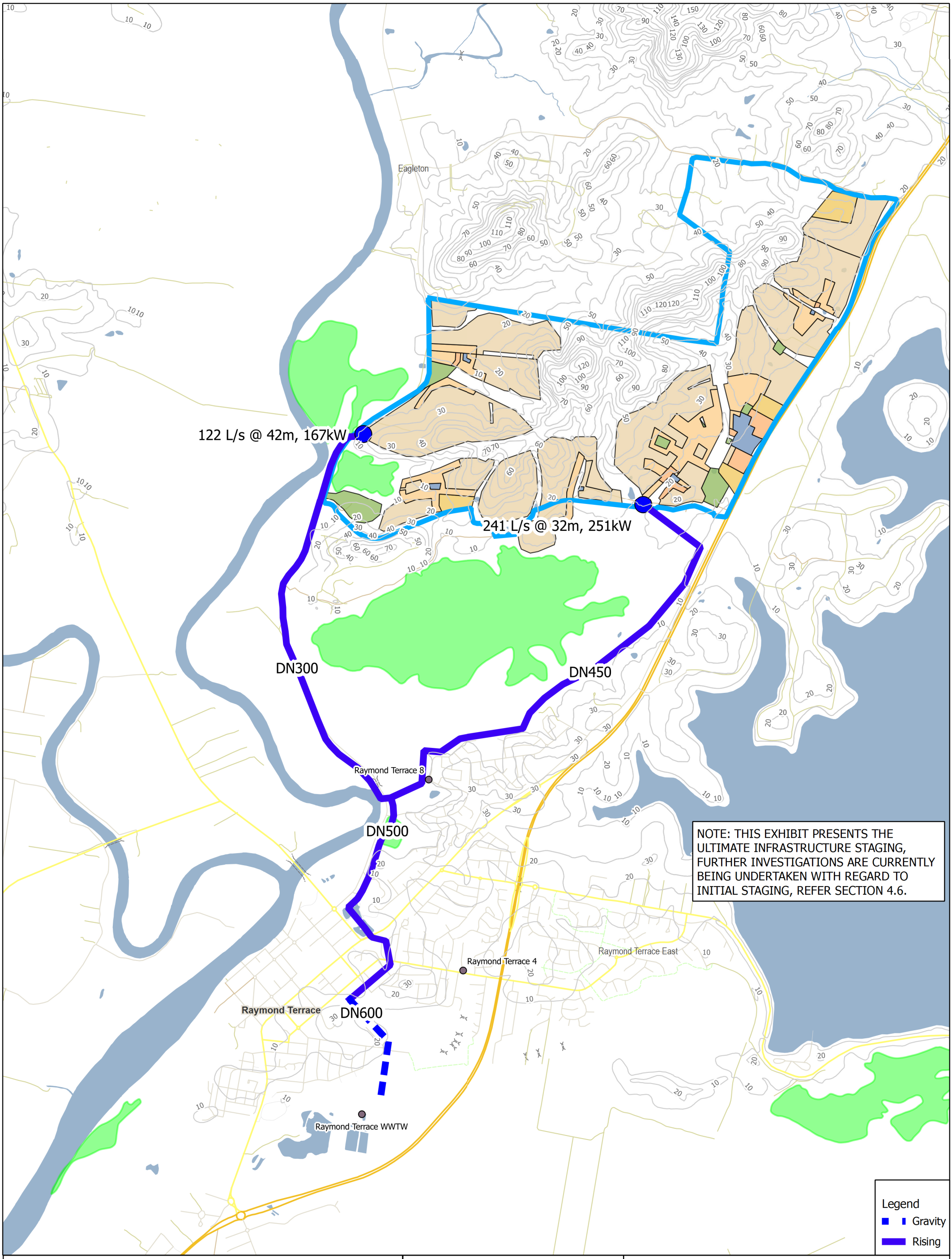
EXHIBIT TITLE OPTION SE1D

PROJECT TITLE KINGS HILL WASTEWATER SERVICING STRATEGY



SMEC AUSTRALIA PTY LTD
ABN 47 065 475 149

EXHIBIT G5
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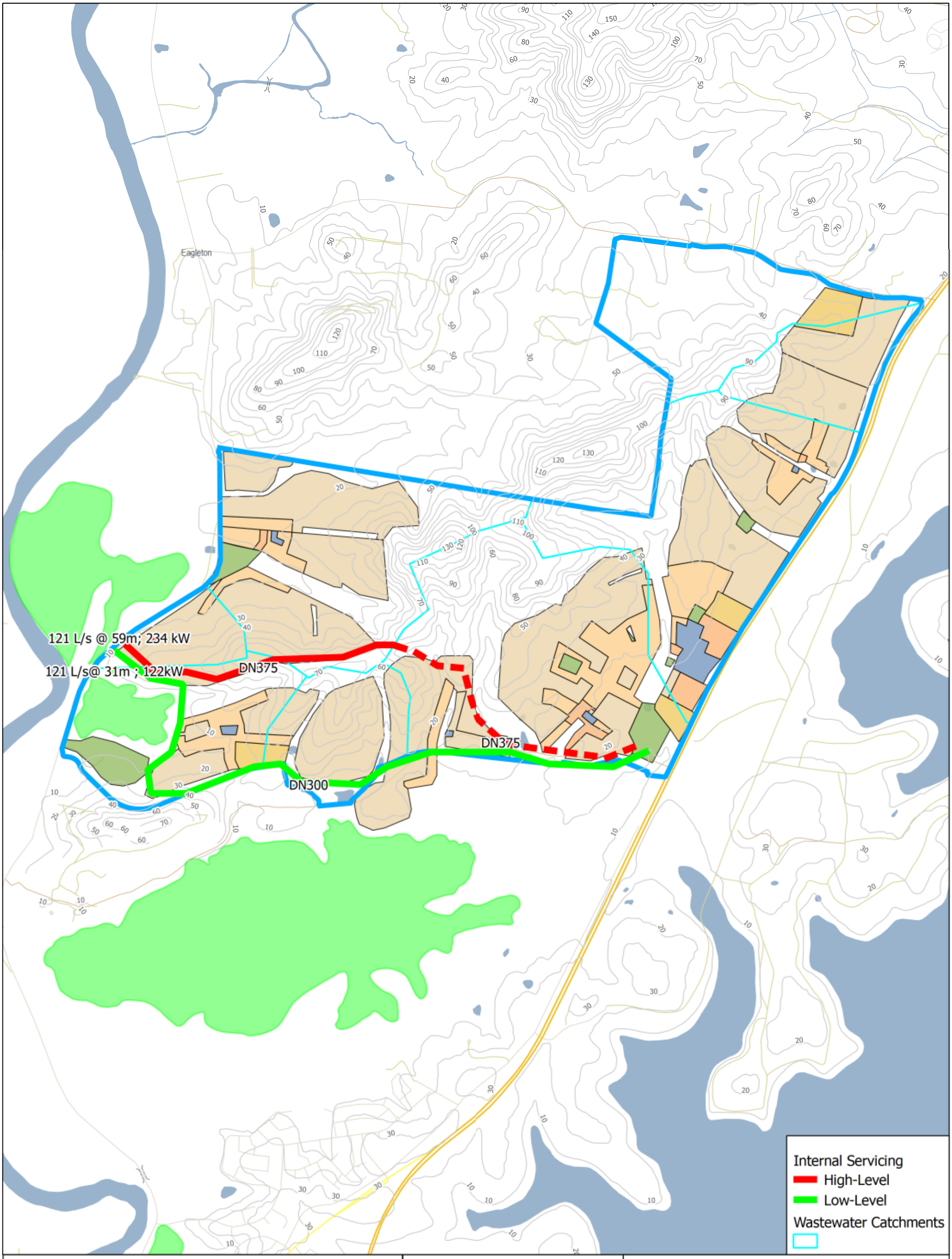
EXHIBIT TITLE OPTION SE2

PROJECT TITLE KINGS HILL WASTEWATER SERVICING STRATEGY



SMEC AUSTRALIA PTY LTD
ABN 47 065 475 149

EXHIBIT H1
PROJECT NO. 30011097

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DATE 07-02-2012 SOURCES DEPT LANDS 2011
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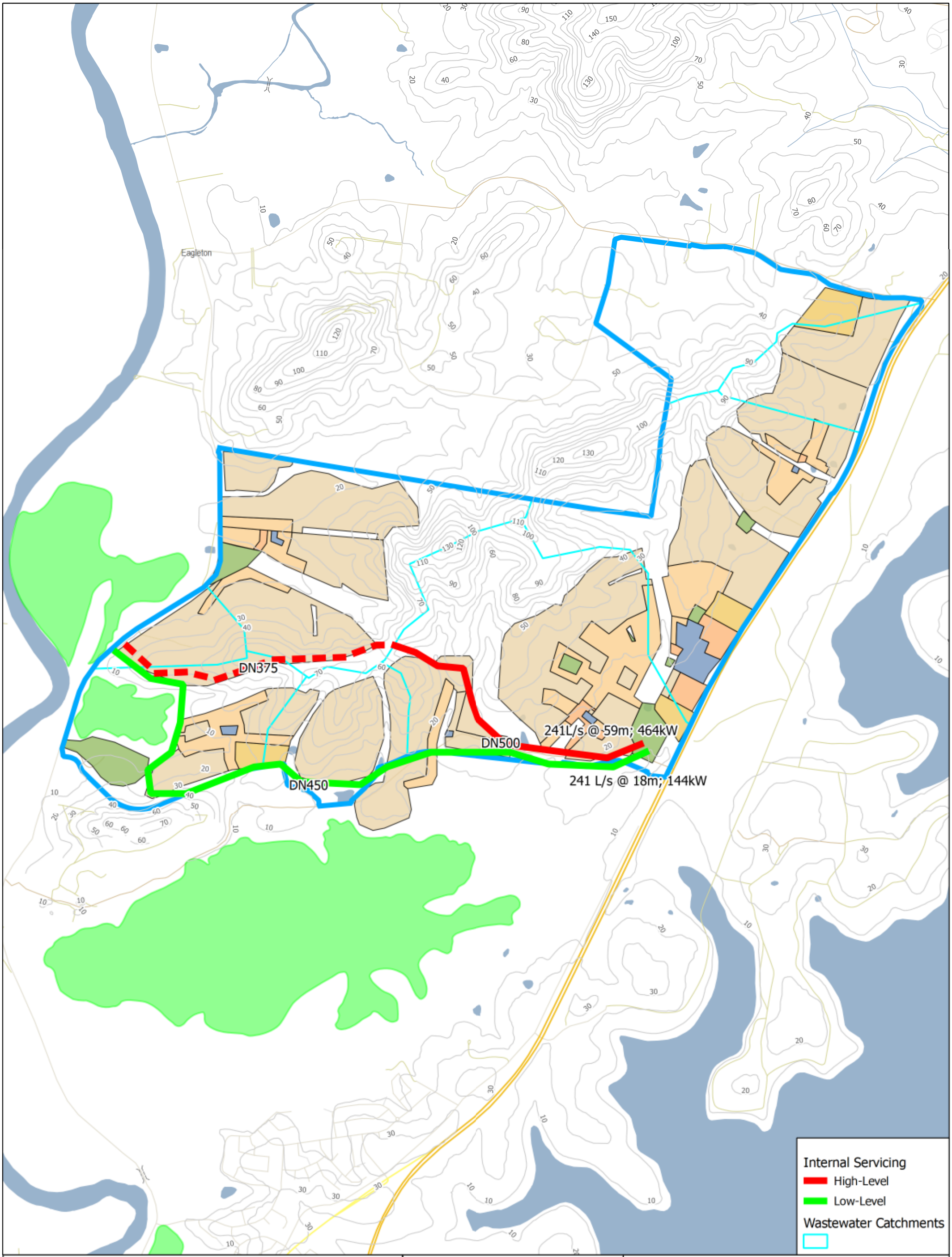
FIGURE TITLE EASTERN TRANSFER OPTIONS

PROJECT TITLE KINGS HILL WASTEWATER SERVICING STRATEGY



SMEC AUSTRALIA PTY LTD
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EXHIBIT H2
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DATE 07-02-2012 SOURCES DEPT LANDS 2011
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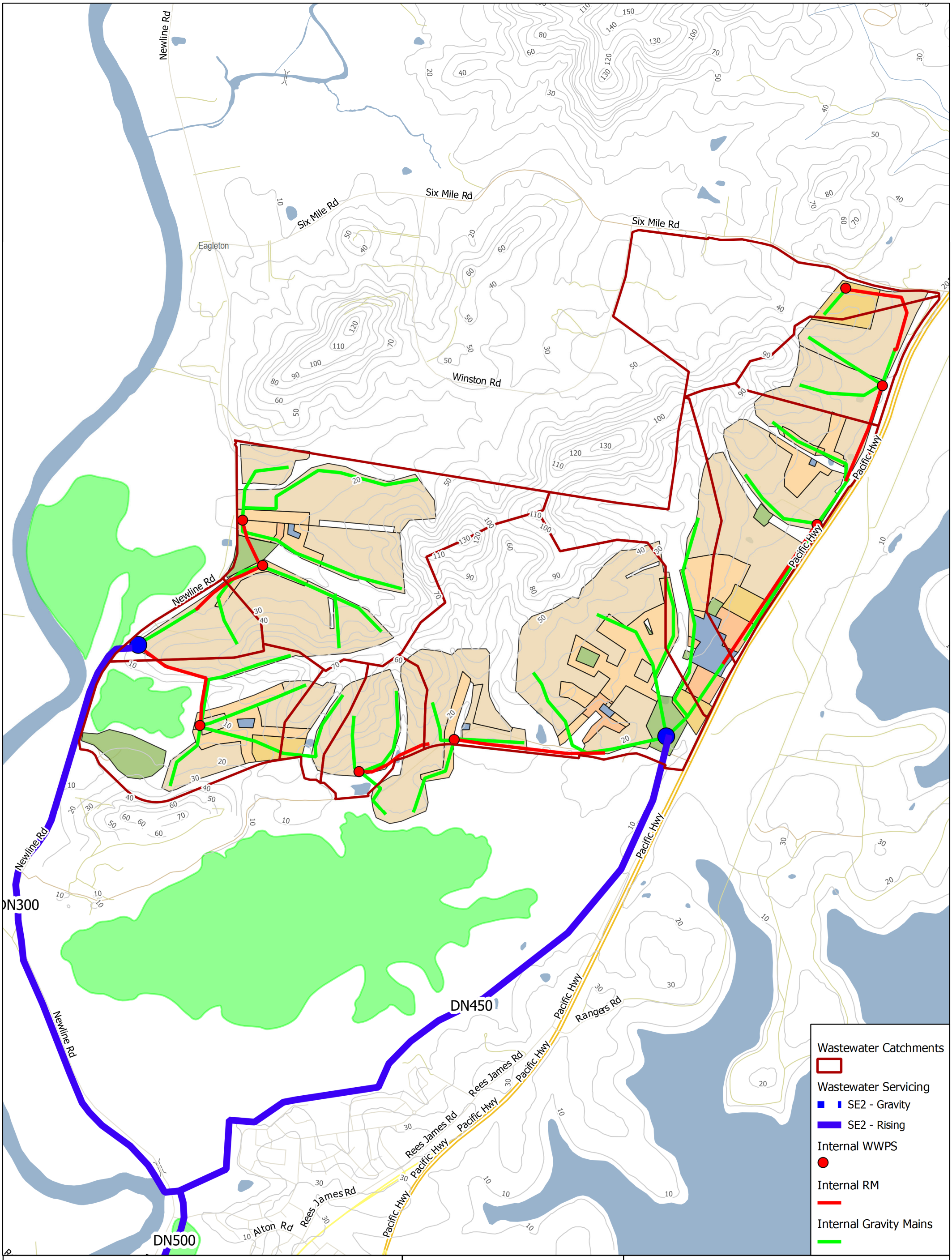
FIGURE TITLE WESTERN TRANSFER OPTIONS

PROJECT TITLE KINGS HILL WASTEWATER SERVICING STRATEGY



SMEC AUSTRALIA PTY LTD
ABN 47 065 475 149

EXHIBIT J
PROJECT NO. 30011097

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1:20000

DATE 29-05-2013 SOURCES DEPT LANDS 2011
PAGE SIZE A3

EXHIBIT TITLE PRELIMINARY INTERNAL SERVICING
PROJECT TITLE KINGS HILL WASTEWATER SERVICING STRATEGY

DN1500 WWPS

DN1500 WWPS

DN150

DN150

Raymond Terrace 8 WWPS

Raymond Terrace East

Legend

Rising Main

SMEC AUSTRALIA PTY LTD
ABN 47 065 475 149

EXHIBIT K

PROJECT NO. 30011097

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DATE 29-01-2014 SOURCES DEPT LANDS 2011

PAGE SIZE A3

EXHIBIT TITLE PRELIMINARY SERVICING

PROJECT TITLE KINGS HILL WASTEWATER SERVICING STRATEGY

APPENDIX C – OPTIONS REVIEW

Included as Section 4.4

APPENDIX D – COST ESTIMATES

ESTIMATING SHEET

PROJECT DESCRIPTION: Option 1A Pump Station DN500

Item No.	Item Description	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0001	All work not included elsewhere in this schedule	Item	Lump Sum	$ 22,165.00	$ 22,165.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0002	Site Establishment <Insert Max $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0003	Site Disestablishment <Insert Min $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0004	Preparation and implementation of the Construction EMP	Item	Lump Sum	$ 3,000.00	$ 3,000.00	**Payment: Maximum of 30% on submission of complying Construction EMP, then 10% per month up to maximum of 80%. Remainder at Practical Completion.** **Submit: Construction EMP**
HW0005	Preparation and implementation of the Safety Management Plan.	Item	Lump Sum	$ 5,000.00	$ 5,000.00	**Payment: Maximum of 30% on submission of complying plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.** **Submit: Safety Management Plan**
HW0006	Preparation and implementation of the Traffic Control Plan.	Item	Lump Sum	$ 4,200.00	$ 4,200.00	**Payment: Maximum of 30% on submission of complying Traffic Control Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0007	Preparation and Implementation of Quality Management Plan	Item	Lump Sum	$ 11,882.60	$ 11,882.60	**Payment: Maximum of 30% on submission of complying Quality Management Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0008	Community Consultation	Item	Lump Sum	$ -	$ -	**Payment: 10% per month up to maximum of 70%. Remainder at Practical Completion.**

Sewer Pumping Station 450kW

Item	*Pump Station - Name*	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0101	**Sewer Pumping Station 450kW 7m dia 2 Pump(s)**					
	Clear, excavate & backfill in OTR conditions, supply and construct pipework, pump station, includes sliding aluminium hatch covers, screens & ancillary metal work & fittings. Supply & place formwork, reinforcement, concrete, roof slab, thrust blocks.	Item	Lump Sum	$ 369,000.00	$ 369,000.00	**Payment: <Insert appropriate percentages to reflect the value of work at key milestones eg excavation, pump well, metalwork etc>.** **Submit: Relevant Quality Records.**
HW0102	**Pumps for Pumping Stations - Supply and install pumps and associated fittings, connection to pipework, testing and commissioning.**	2	Lump Sum	$ 109,162.50	$ 218,325.00	**Payment: <Insert appropriate percentages for key milestones eg installation, precommissioning, commissioning>.** **Submit: Relevant Quality Records including those for pump test.**
HW0103	**Pumping Station Electricals**					
HW0103.01	Pit and Conduit System	Item	Lump Sum	$ 15,500.00	$ 15,500.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.02	LV Station Power Supply	Item	Lump Sum	$ 32,000.00	$ 32,000.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.03	Station By-Pass arrangements	Item	Lump Sum		$ -	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.04	Electrical Demolition works	Item	Lump Sum		$ -	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.05	Switchboard	Item	Lump Sum	$ 299,000.00	$ 299,000.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.06	PLC / Telemetry Hardware	Item	Lump Sum	$ 14,437.50	$ 14,437.50	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.07	PLC / Telemetry / Scada Engineering and Software Development	Item	Lump Sum	$ 28,450.00	$ 28,450.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.08	Stainless Steel Generator Box Cable Tray & Metering Box	Item	Lump Sum	$ 26,462.50	$ 26,462.50	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.09	Building Services (Electrical)	Item	Lump Sum	$ 20,625.00	$ 20,625.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.10	Pressure Transmitter/Gauge Board	Item	Lump Sum	$ -	$ -	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.11	Installation/Cabling (Electrical)	Item	Lump Sum	$ 31,000.00	$ 31,000.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0104	Empty					
HW0105	Empty					
HW0106	**Service Location**	Item	Lump Sum	$ 2,940.00	$ 2,940.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0107	Excavation below design depth including disposal of excavated material (Contingent Item)	0	m3	$ 70.00	$	**Measurement: Cubic metres excavated based on thickness of excavation by design cross section of the structure for which excavation has been undertaken.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>**
HW0108	Extra over Civil Works for excavation in rock:	0	m3	$ 120.00	$	**Measurement: Actual cubic metres of rock excavated within the design dimensions of the structure.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>**
HW0109	Cut and fill earthworks including compaction:	0	m3	$ 25.00	$	**Measurement: Actual cubic metres of earthworks completed in accordance with the design.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>**

HW0110	Supply & place ballast (Contingent Item)	0	tonne	$ 90.00	$ -	**Measurement: Actual tonnes placed as directed.** **Submit: Relevant Quality Records including certified weighbridge dockets.** **Limits of Accuracy: <To be inserted>.**
HW0111	Import and place select fill including compaction <may be Contingent Item>	0	m3	$ 65.00	$ -	**Measurement: Actual cubic metres placed as directed by the Superintendent or placed in accordance with the design.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>.**
HW0112	Construct access road and hardstand					
HW0112.01	Prepare subgrade		m2	$ 4.20		**Measurement: Actual square metres in accordance with the design.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>.**
HW0112.02	Supply, place and compact 150mm thick basecourse		m2	$ 37.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.03	Supply, place and compact 200mm thick basecourse		m2	$ 47.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.04	Supply, place and compact 250mm thick basecourse		m2	$ 51.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.05	Supply, place and compact two coat bitumen seal		m2	$ 26.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.06	Supply, place and compact 30mm thick asphalt bitumen seal		m2	$ 37.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.07	Concrete kerb & gutter	0	m	$ 110.00	$ -	Measurement: Actual metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.08	Concrete driveway	0	m2	$ 178.00	$ -	Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0113	Supply all plant, material and labour to undertake the following Piling works:					
HW0113.01	Treated timber mini piles		m			Measurement: Actual metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0113.02	Reinforced concrete bored piles	Item	Lump Sum		$ -	Payment: Percentage of work completed. <Consider % payments at milestones> Submit: Relevant Quality Records.
HW0114	Supply all plant, material and labour to undertake the following Retaining Wall works:					Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records.
HW0114.01	Timber(Koppers Log) up to 1.5m high		m2	$ 300.00		**Limits of Accuracy: <To be inserted>.**
HW0114.02	Concrete Keystone up to 1m high		m2	$ 380.00		**Limits of Accuracy: <To be inserted>.**
HW0114.03	Concrete Keystone between 1m and 3m high		m2	$ 560.00		**Limits of Accuracy: <To be inserted>.**
HW0114.04	Concrete Keystone greater than 3m high		m2	$ 560.00		**Limits of Accuracy: <To be inserted>.**
HW0114.05	Concrete Crib Block up to 2m high		m2	$ 630.00		**Limits of Accuracy: <To be inserted>.**
HW0114.06	Concrete Crib Block between 2m and 3m high		m2	$ 704.00		**Limits of Accuracy: <To be inserted>.**
HW0115	Acid sulphate soil					
HW0115.01	Initial testing for acid sulphate soils and prepare and submit report	5	per test	$ 110.00	$ 550.00	Submit: Result for each test. Limits of Accuracy: <To be inserted>
HW0115.02	Establish treatment facility	Item	Lump Sum		$ -	**Payment: 100% after completion of treatment facility.**
HW0115.03	Handling, treatment and testing of acid sulphate soils		m3	$ 60.00		Measurement: Cubic metres within the design cross section of the structure for which excavation has been undertaken. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>
HW0115.04	Disposal off site of acid sulphate soil		tonne	$ 122.00		Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>
HW0116	Series Pump Pit Structure	Item	Lump Sum		$ -	Payment: <Insert appropriate percentages to reflect the value of work at key milestones eg excavation, reinforced concrete, metalwork etc>. Submit: Relevant Quality Records.
HW0117	Supply and Install valve pit concrete formwork, reinforced concrete complete with aluminium tread plate covers and including excavation and backfill	Item	Lump Sum	$ -	$ -	**Payment: <Insert appropriate percentages to reflect the value of work at key milestones eg excavation, reinforced concrete, metalwork etc>.** **Submit: Relevant Quality Records.**
HW0118	Supply and install pipework items inside valve pit	Item	Lump Sum	$ 19,270.00	$ 19,270.00	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0119	Supply and Install additional pipe items outside station	Item	Lump Sum	$ -	$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0120	Supply and install pipework items inside station	Item	Lump Sum	$ -	$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0121	Supply and install Type 2 or 4 flow relief structures in accordance with Drgs SCP-502 and SCP-505	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0122	Supply and install emergency storage structures		L/m			**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**

HW0123	Supply and install fan forced ventilation	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0124	Supply and install Soil Bed Filter	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0125	Supply and Install Strainers	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0126	Supply and Install Series Bypass	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed up to 80%. Remainder at Practical Completion.** **Submit: Relevant Quality Records.**
HW0127	Landscaping	Item	Lump Sum	$ -	$ -	Payment: 100% at completion. Submit: Relevant Quality Records.
HW0128	**Miscellaneous**					
HW0129	Preparation and submission of Operation and Maintenance Information	Item	Lump Sum		$ -	Payment: 100% at Practical Completion. Submit: Complying Work As Constructed Information.
HW0130	Pre commissioning and commissioning	Item	Lump Sum	$ 8,000.00	$ 8,000.00	**Payment: 50% at completion of satisfactory precommissioning. Remainder at Practical Completion.** **Submit: Relevant Quality Records.**
HW0131	Preparation and submission of Work as Constructed Information	Item	Lump Sum	$ 6,000.00	$ 6,000.00	Payment: 100% at Practical Completion. Submit: Complying Work As Constructed Information.
HW1SP	***Sub Total***				$1,091,560	

Item No.	Item Description	Qty	Unit		Amount $	Application of Schedule of Rates
HW0009	Restoration - Pipelines:					**Payment: 100% after completion.**
HW0009.01	Concrete kerb & gutter		m			**Measurement: Lineal metres restored within Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0009.02	Concrete driveway		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.03	Exposed aggregate & stamped driveway		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.04	Concrete footpath		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.05	Bitumen footpath		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.06	Gravel pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.07	Bitumen pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.08	AC pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.09	Pavers		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.10	Turf		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.11	Grass seeding		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.12	Hydromulch		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0010	Extra over item for Excavation in rock and disposal of excess excavated material		m3			**Measurement: Cubic metres excavated based on thickness of rock by actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0011	Acid sulphate soil					
HW0011.01	Initial testing for acid sulphate soils and prepare and submit report		per test			**Submit: Result for each test. Limits of Accuracy: <To be inserted>.**
HW0011.02	Establish treatment facility		Item			**Payment: 100% after completion of treatment facility.**
HW0011.03	Handling, treatment and testing of acid sulphate soils		m3			**Measurement: Cubic metres excavated based on thickness of ASS by actual length by Minimum Trench Width. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>**
HW0011.04	Disposal off site of acid sulphate soil		tonne			**Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>**
HW0012	Preconstruction record					
HW0012.01	Photographic	Item	Lump Sum		$ -	**Payment: 70% on submission of the Photographic record. Remainder at Practical Completion.**
HW0012.02	Video	Item	Lump Sum		$ -	**Payment: 70% on submission of the Video record. Remainder at Practical Completion.**
HW0012.03	CCTV	Item	Lump Sum		$ -	**Payment: 70% on submission of the CCTV record. Remainder at Practical Completion.**
HW0013	Work as Constructed Information <Insert Min $>	Item	Lump Sum		$ -	**Payment: 100% at Practical Completion.**

A.	**TOTAL ESTIMATED CONTRACT AWARD SUM**	$	1,197,807.60

B.	**PRE-CONSTRUCTION COST (Table 10)**		
HW0016	Design	$	143,736.91
HW0017	Project Management of Design	$	38,747.38
HW0018	Land Matters	$	-
HW0024	Community Consultation		
	Sub Total(B1)	$	182,484.29
	Pre construction contingency (30% of B1)	$	54,745.29
	TOTAL PRE-CONSTRUCTION COST (B)	$	237,229.58

C.	**CONSTRUCTION COST**			
	Total Estimated Contract Award Sum (A)		$	1,197,807.60
HW0019	Principal Supplied Pipe (as applicable)		$	-
HW0020	Principal Supplied Valves and Flowmeters (as applicable)		$	-
HW0021	Principal Supplied Fittings (as applicable)		$	-
HW0022	Pump Station HV Power Supply		$	187,500.00
HW0023	Construction Management (Table 11)		$	119,780.76
	Sub Total (C1)		$	1,505,088.36
	Construction contingency (Table 12) (30% of C1)	Preliminary Estimate	$	451,526.51
	TOTAL CONSTRUCTION COST (C)		$	1,956,614.87

	TOTAL PRELIMINARY PROJECT ESTIMATE (B+C) (Preliminary Estimate)	$	2,193,844.45

ESTIMATING SHEET

PROJECT DESCRIPTION: Option 1A Pump Station DN600

Item No.	Item Description	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0001	All work not included elsewhere in this schedule	Item	Lump Sum	$ 17,555.00	$ 17,555.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0002	Site Establishment <Insert Max $>	Item	Lump Sum	$ 15,000.00	$ 15,000.00	**Payment: 100% after completion.**
HW0003	Site Disestablishment <Insert Min $>	Item	Lump Sum	$ 15,000.00	$ 15,000.00	**Payment: 100% after completion.**
HW0004	Preparation and implementation of the Construction EMP	Item	Lump Sum	$ 3,000.00	$ 3,000.00	**Payment: Maximum of 30% on submission of complying Construction EMP, then 10% per month up to maximum of 80%. Remainder at Practical Completion.** **Submit: Construction EMP**
HW0005	Preparation and implementation of the Safety Management Plan.	Item	Lump Sum	$ 5,000.00	$ 5,000.00	**Payment: Maximum of 30% on submission of complying plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.** **Submit: Safety Management Plan**
HW0006	Preparation and implementation of the Traffic Control Plan.	Item	Lump Sum	$ 4,200.00	$ 4,200.00	**Payment: Maximum of 30% on submission of complying Traffic Control Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0007	Preparation and Implementation of Quality Management Plan	Item	Lump Sum	$ 9,577.48	$ 9,577.48	**Payment: Maximum of 30% on submission of complying Quality Management Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0008	Community Consultation	Item	Lump Sum	$ -	$ -	**Payment: 10% per month up to maximum of 70%. Remainder at Practical Completion.**

Sewer Pumping Station 250kW

Item	*Pump Station - Name*	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0101	**Sewer Pumping Station 250kW 7m dia 2 Pump(s)**					
	Clear, excavate & backfill in OTR conditions, supply and construct pipework, pump station, includes sliding aluminium hatch covers, screens & ancillary metal work & fittings. Supply & place formwork, reinforcement, concrete, roof slab, thrust blocks.	Item	Lump Sum	$ 369,000.00	$ 369,000.00	**Payment: <Insert appropriate percentages to reflect the value of work at key milestones eg excavation, pump well, metalwork etc>.** **Submit: Relevant Quality Records.**
HW0102	**Pumps for Pumping Stations - Supply and install pumps and associated fittings, connection to pipework, testing and commissioning.**	2	Lump Sum	$ 65,437.50	$ 130,875.00	**Payment: <Insert appropriate percentages for key milestones eg installation, precommissioning, commissioning>.** **Submit: Relevant Quality Records including those for pump test.**
HW0103	**Pumping Station Electricals**					
HW0103.01	Pit and Conduit System	Item	Lump Sum	$ 10,975.00	$ 10,975.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.02	LV Station Power Supply	Item	Lump Sum	$ 23,437.50	$ 23,437.50	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.03	Station By-Pass arrangements	Item	Lump Sum		$ -	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.04	Electrical Demolition works	Item	Lump Sum		$ -	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.05	Switchboard	Item	Lump Sum	$ 183,000.00	$ 183,000.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.06	PLC / Telemetry Hardware	Item	Lump Sum	$ 14,437.50	$ 14,437.50	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.07	PLC / Telemetry / Scada Engineering and Software Development	Item	Lump Sum	$ 28,450.00	$ 28,450.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.08	Stainless Steel Generator Box Cable Tray & Metering Box	Item	Lump Sum	$ 22,362.50	$ 22,362.50	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.09	Building Services (Electrical)	Item	Lump Sum	$ 13,125.00	$ 13,125.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.10	Pressure Transmitter/Gauge Board	Item	Lump Sum	$ -	$ -	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.11	Installation/Cabling (Electrical)	Item	Lump Sum	$ 28,625.00	$ 28,625.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0104	Empty					
HW0105	Empty					
HW0106	**Service Location**	Item	Lump Sum	$ 2,940.00	$ 2,940.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0107	Excavation below design depth including disposal of excavated material (Contingent Item)	0	m3	$ 70.00	$ -	**Measurement: Cubic metres excavated based on thickness of excavation by design cross section of the structure for which excavation has been undertaken.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>**
HW0108	Extra over Civil Works for excavation in rock:	0	m3	$ 120.00	$ -	**Measurement: Actual cubic metres of rock excavated within the design dimensions of the structure.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>**
HW0109	Cut and fill earthworks including compaction:	0	m3	$ 25.00	$ -	**Measurement: Actual cubic metres of earthworks completed in accordance with the design.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>**

HW0110	Supply & place ballast (Contingent Item)	0	tonne	$ 90.00	$ -	**Measurement: Actual tonnes placed as directed.** **Submit: Relevant Quality Records including certified weighbridge dockets.** **Limits of Accuracy: <To be inserted>.**
HW0111	Import and place select fill including compaction <may be Contingent Item>	0	m3	$ 65.00	$ -	**Measurement: Actual cubic metres placed as directed by the Superintendent or placed in accordance with the design.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>.**
HW0112	Construct access road and hardstand					
HW0112.01	Prepare subgrade		m2	$ 4.20		**Measurement: Actual square metres in accordance with the design.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>.**
HW0112.02	Supply, place and compact 150mm thick basecourse		m2	$ 37.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.03	Supply, place and compact 200mm thick basecourse		m2	$ 47.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.04	Supply, place and compact 250mm thick basecourse		m2	$ 51.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.05	Supply, place and compact two coat bitumen seal		m2	$ 26.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.06	Supply, place and compact 30mm thick asphalt bitumen seal		m2	$ 37.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.07	Concrete kerb & gutter	0	m	$ 110.00	$ -	Measurement: Actual metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.08	Concrete driveway	0	m2	$ 178.00	$ -	Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0113	Supply all plant, material and labour to undertake the following Piling works:					
HW0113.01	Treated timber mini piles		m			Measurement: Actual metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0113.02	Reinforced concrete bored piles	Item	Lump Sum		$ -	Payment: Percentage of work completed. <Consider % payments at milestones> Submit: Relevant Quality Records.
HW0114	Supply all plant, material and labour to undertake the following Retaining Wall works:					Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records.
HW0114.01	Timber(Koppers Log) up to 1.5m high		m2	$ 300.00		**Limits of Accuracy: <To be inserted>.**
HW0114.02	Concrete Keystone up to 1m high		m2	$ 380.00		**Limits of Accuracy: <To be inserted>.**
HW0114.03	Concrete Keystone between 1m and 3m high		m2	$ 560.00		**Limits of Accuracy: <To be inserted>.**
HW0114.04	Concrete Keystone greater than 3m high		m2	$ 560.00		**Limits of Accuracy: <To be inserted>.**
HW0114.05	Concrete Crib Block up to 2m high		m2	$ 630.00		**Limits of Accuracy: <To be inserted>.**
HW0114.06	Concrete Crib Block between 2m and 3m high		m2	$ 704.00		**Limits of Accuracy: <To be inserted>.**
HW0115	Acid sulphate soil					
HW0115.01	Initial testing for acid sulphate soils and prepare and submit report	5	per test	$ 110.00	$ 550.00	Submit: Result for each test. Limits of Accuracy: <To be inserted>
HW0115.02	Establish treatment facility	Item	Lump Sum		$ -	**Payment: 100% after completion of treatment facility.**
HW0115.03	Handling, treatment and testing of acid sulphate soils		m3	$ 60.00		Measurement: Cubic metres within the design cross section of the structure for which excavation has been undertaken. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>
HW0115.04	Disposal off site of acid sulphate soil		tonne	$ 122.00		Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>
HW0116	Series Pump Pit Structure	Item	Lump Sum		$ -	Payment: <Insert appropriate percentages to reflect the value of work at key milestones eg excavation, reinforced concrete, metalwork etc>. Submit: Relevant Quality Records.
HW0117	Supply and Install valve pit concrete formwork, reinforced concrete complete with aluminium tread plate covers and including excavation and backfill	Item	Lump Sum	$ -	$ -	**Payment: <Insert appropriate percentages to reflect the value of work at key milestones eg excavation, reinforced concrete, metalwork etc>.** **Submit: Relevant Quality Records.**
HW0118	Supply and install pipework items inside valve pit	Item	Lump Sum	$ 19,270.00	$ 19,270.00	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0119	Supply and Install additional pipe items outside station	Item	Lump Sum	$ -	$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0120	Supply and install pipework items inside station	Item	Lump Sum	$ -	$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0121	Supply and install Type 2 or 4 flow relief structures in accordance with Drgs SCP-502 and SCP-505	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0122	Supply and install emergency storage structures		L/m			**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**

HW0123	Supply and install fan forced ventilation	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0124	Supply and install Soil Bed Filter	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0125	Supply and Install Strainers	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0126	Supply and Install Series Bypass	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed up to 80%. Remainder at Practical Completion.** **Submit: Relevant Quality Records.**
HW0127	Landscaping	Item	Lump Sum	$ -	$ -	Payment: 100% at completion. Submit: Relevant Quality Records.
HW0128	**Miscellaneous**					
HW0129	Preparation and submission of Operation and Maintenance Information	Item	Lump Sum		$ -	Payment: 100% at Practical Completion. Submit: Complying Work As Constructed Information.
HW0130	Pre commissioning and commissioning	Item	Lump Sum	$ 8,000.00	$ 8,000.00	**Payment: 50% at completion of satisfactory precommissioning. Remainder at Practical Completion.** **Submit: Relevant Quality Records.**
HW0131	Preparation and submission of Work as Constructed Information	Item	Lump Sum	$ 6,000.00	$ 6,000.00	Payment: 100% at Practical Completion. Submit: Complying Work As Constructed Information.
HW1SP	***Sub Total***				$861,048	

Item No.	Item Description	Qty	Unit		Amount $	Application of Schedule of Rates
HW0009	Restoration - Pipelines:					**Payment: 100% after completion.**
HW0009.01	Concrete kerb & gutter		m			**Measurement: Lineal metres restored within Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0009.02	Concrete driveway		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.03	Exposed aggregate & stamped driveway		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.04	Concrete footpath		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.05	Bitumen footpath		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.06	Gravel pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.07	Bitumen pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.08	AC pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.09	Pavers		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.10	Turf		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.11	Grass seeding		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.12	Hydromulch		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0010	Extra over item for Excavation in rock and disposal of excess excavated material		m3			**Measurement: Cubic metres excavated based on thickness of rock by actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>.**
HW0011	Acid sulphate soil					
HW0011.01	Initial testing for acid sulphate soils and prepare and submit report		per test			**Submit: Result for each test.** **Limits of Accuracy: <To be inserted>.**
HW0011.02	Establish treatment facility		Item			**Payment: 100% after completion of treatment facility.**
HW0011.03	Handling, treatment and testing of acid sulphate soils		m3			**Measurement: Cubic metres excavated based on thickness of ASS by actual length by Minimum Trench Width.** **Submit: Test results confirming satisfactory treatment.** **Limits of Accuracy: <To be inserted>**
HW0011.04	Disposal off site of acid sulphate soil		tonne			**Measurement: Tonnes transported from the site.** **Submit: Weighbridge dockets.** **Limits of Accuracy: <To be inserted>**
HW0012	Preconstruction record					
HW0012.01	Photographic		Item	Lump Sum	$ -	**Payment: 70% on submission of the Photographic record. Remainder at Practical Completion.**
HW0012.02	Video		Item	Lump Sum	$ -	**Payment: 70% on submission of the Video record. Remainder at Practical Completion.**
HW0012.03	CCTV		Item	Lump Sum	$ -	**Payment: 70% on submission of the CCTV record. Remainder at Practical Completion.**
HW0013	Work as Constructed Information <Insert Min $>		Item	Lump Sum	$ -	**Payment: 100% at Practical Completion.**

A.	**TOTAL ESTIMATED CONTRACT AWARD SUM**	$	930,379.98

B.	**PRE-CONSTRUCTION COST (Table 10)**		
HW0016	Design	$	139,557.00
HW0017	Project Management of Design	$	37,911.40
HW0018	Land Matters	$	-
HW0024	Community Consultation		
	Sub Total(B1)	$	177,468.40
	Pre construction contingency (30% of B1)	$	53,240.52
	TOTAL PRE-CONSTRUCTION COST (B)	$	230,708.92

C.	**CONSTRUCTION COST**			
	Total Estimated Contract Award Sum (A)		$	930,379.98
HW0019	Principal Supplied Pipe (as applicable)		$	-
HW0020	Principal Supplied Valves and Flowmeters (as applicable)		$	-
HW0021	Principal Supplied Fittings (as applicable)		$	-
HW0022	Pump Station HV Power Supply		$	187,500.00
HW0023	Construction Management (Table 11)		$	93,038.00
	Sub Total (C1)		$	1,210,917.98
	Construction contingency (Table 12) (30% of C1)	Preliminary Estimate	$	363,275.39
	TOTAL CONSTRUCTION COST (C)		$	1,574,193.37

	TOTAL PRELIMINARY PROJECT ESTIMATE (B+C) (Preliminary Estimate)	$	1,804,902.29

ESTIMATING SHEET

PROJECT DESCRIPTION: Option 1B Pump Station DN600

Item No.	Item Description	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0001	All work not included elsewhere in this schedule	Item	Lump Sum	$ 16,537.00	$ 16,537.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0002	Site Establishment <Insert Max $>	Item	Lump Sum	$ 15,000.00	$ 15,000.00	**Payment: 100% after completion.**
HW0003	Site Disestablishment <Insert Min $>	Item	Lump Sum	$ 15,000.00	$ 15,000.00	**Payment: 100% after completion.**
HW0004	Preparation and implementation of the Construction EMP	Item	Lump Sum	$ 3,000.00	$ 3,000.00	**Payment: Maximum of 30% on submission of complying Construction EMP, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Construction EMP**
HW0005	Preparation and implementation of the Safety Management Plan.	Item	Lump Sum	$ 5,000.00	$ 5,000.00	**Payment: Maximum of 30% on submission of complying plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Safety Management Plan**
HW0006	Preparation and implementation of the Traffic Control Plan.	Item	Lump Sum	$ 4,200.00	$ 4,200.00	**Payment: Maximum of 30% on submission of complying Traffic Control Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0007	Preparation and Implementation of Quality Management Plan	Item	Lump Sum	$ 9,068.48	$ 9,068.48	**Payment: Maximum of 30% on submission of complying Quality Management Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0008	Community Consultation	Item	Lump Sum	$ -	$ -	**Payment: 10% per month up to maximum of 70%. Remainder at Practical Completion.**

Sewer Pumping Station 200kW

Item	*Pump Station - Name*	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0101	**Sewer Pumping Station 200kW 7m dia 2 Pump(s)**					
	Clear, excavate & backfill in OTR conditions, supply and construct pipework, pump station, includes sliding aluminium hatch covers, screens & ancillary metal work & fittings. Supply & place formwork, reinforcement, concrete, roof slab, thrust blocks.	Item	Lump Sum	$ 369,000.00	$ 369,000.00	**Payment: <Insert appropriate percentages to reflect the value of work at key milestones eg excavation, pump well, metalwork etc>. Submit: Relevant Quality Records.**
HW0102	**Pumps for Pumping Stations - Supply and install pumps and associated fittings, connection to pipework, testing and commissioning.**	2	Lump Sum	$ 54,000.00	$ 108,000.00	**Payment: <Insert appropriate percentages for key milestones eg installation, precommissioning, commissioning>. Submit: Relevant Quality Records including those for pump test.**
HW0103	**Pumping Station Electricals**					
HW0103.01	Pit and Conduit System	Item	Lump Sum	$ 10,975.00	$ 10,975.00	**Payment: Percentage of work completed. Submit: Relevant Quality Records.**
HW0103.02	LV Station Power Supply	Item	Lump Sum	$ 14,375.00	$ 14,375.00	**Payment: Percentage of work completed. Submit: Relevant Quality Records.**
HW0103.03	Station By-Pass arrangements	Item	Lump Sum		$ -	**Payment: Percentage of work completed. Submit: Relevant Quality Records.**
HW0103.04	Electrical Demolition works	Item	Lump Sum		$ -	**Payment: Percentage of work completed. Submit: Relevant Quality Records.**
HW0103.05	Switchboard	Item	Lump Sum	$ 166,037.50	$ 166,037.50	**Payment: Percentage of work completed. Submit: Relevant Quality Records.**
HW0103.06	PLC / Telemetry Hardware	Item	Lump Sum	$ 14,437.50	$ 14,437.50	**Payment: Percentage of work completed. Submit: Relevant Quality Records.**
HW0103.07	PLC / Telemetry / Scada Engineering and Software Development	Item	Lump Sum	$ 28,450.00	$ 28,450.00	**Payment: Percentage of work completed. Submit: Relevant Quality Records.**
HW0103.08	Stainless Steel Generator Box Cable Tray & Metering Box	Item	Lump Sum	$ 22,362.50	$ 22,362.50	**Payment: Percentage of work completed. Submit: Relevant Quality Records.**
HW0103.09	Building Services (Electrical)	Item	Lump Sum	$ 13,125.00	$ 13,125.00	**Payment: Percentage of work completed. Submit: Relevant Quality Records.**
HW0103.10	Pressure Transmitter/Gauge Board	Item	Lump Sum	$ -	$ -	**Payment: Percentage of work completed. Submit: Relevant Quality Records.**
HW0103.11	Installation/Cabling (Electrical)	Item	Lump Sum	$ 26,625.00	$ 26,625.00	**Payment: Percentage of work completed. Submit: Relevant Quality Records.**
HW0104	Empty					
HW0105	Empty					
HW0106	**Service Location**	Item	Lump Sum	$ 2,940.00	$ 2,940.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0107	Excavation below design depth including disposal of excavated material (Contingent Item)	0	m3	$ 70.00	$ -	**Measurement: Cubic metres excavated based on thickness of excavation by design cross section of the structure for which excavation has been undertaken. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>**
HW0108	Extra over Civil Works for excavation in rock:	0	m3	$ 120.00	$ -	**Measurement: Actual cubic metres of rock excavated within the design dimensions of the structure. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>**
HW0109	Cut and fill earthworks including compaction:	0	m3	$ 25.00	$ -	**Measurement: Actual cubic metres of earthworks completed in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>**

HW0110	Supply & place ballast (Contingent Item)	0	tonne	$ 90.00	$ -	**Measurement: Actual tonnes placed as directed.** **Submit: Relevant Quality Records including certified weighbridge dockets.** **Limits of Accuracy: <To be inserted>.**
HW0111	Import and place select fill including compaction <may be Contingent Item>	0	m3	$ 65.00	$ -	**Measurement: Actual cubic metres placed as directed by the Superintendent or placed in accordance with the design.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>.**
HW0112	Construct access road and hardstand					
HW0112.01	Prepare subgrade		m2	$ 4.20		**Measurement: Actual square metres in accordance with the design.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>.**
HW0112.02	Supply, place and compact 150mm thick basecourse		m2	$ 37.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.03	Supply, place and compact 200mm thick basecourse		m2	$ 47.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.04	Supply, place and compact 250mm thick basecourse		m2	$ 51.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.05	Supply, place and compact two coat bitumen seal		m2	$ 26.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.06	Supply, place and compact 30mm thick asphalt bitumen seal		m2	$ 37.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.07	Concrete kerb & gutter	0	m	$ 110.00	$ -	Measurement: Actual metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.08	Concrete driveway	0	m2	$ 178.00	$ -	Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0113	Supply all plant, material and labour to undertake the following Piling works:					
HW0113.01	Treated timber mini piles		m			Measurement: Actual metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0113.02	Reinforced concrete bored piles	Item	Lump Sum		$ -	Payment: Percentage of work completed. <Consider % payments at milestones> Submit: Relevant Quality Records.
HW0114	Supply all plant, material and labour to undertake the following Retaining Wall works:					Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records.
HW0114.01	Timber(Koppers Log) up to 1.5m high		m2	$ 300.00		**Limits of Accuracy: <To be inserted>.**
HW0114.02	Concrete Keystone up to 1m high		m2	$ 380.00		**Limits of Accuracy: <To be inserted>.**
HW0114.03	Concrete Keystone between 1m and 3m high		m2	$ 560.00		**Limits of Accuracy: <To be inserted>.**
HW0114.04	Concrete Keystone greater than 3m high		m2	$ 560.00		**Limits of Accuracy: <To be inserted>.**
HW0114.05	Concrete Crib Block up to 2m high		m2	$ 630.00		**Limits of Accuracy: <To be inserted>.**
HW0114.06	Concrete Crib Block between 2m and 3m high		m2	$ 704.00		**Limits of Accuracy: <To be inserted>.**
HW0115	Acid sulphate soil					
HW0115.01	Initial testing for acid sulphate soils and prepare and submit report	5	per test	$ 110.00	$ 550.00	Submit: Result for each test. Limits of Accuracy: <To be inserted>
HW0115.02	Establish treatment facility	Item	Lump Sum		$ -	**Payment: 100% after completion of treatment facility.**
HW0115.03	Handling, treatment and testing of acid sulphate soils		m3	$ 60.00		Measurement: Cubic metres within the design cross section of the structure for which excavation has been undertaken. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>
HW0115.04	Disposal off site of acid sulphate soil		tonne	$ 122.00		Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>
HW0116	Series Pump Pit Structure	Item	Lump Sum		$ -	Payment: <Insert appropriate percentages to reflect the value of work at key milestones eg excavation, reinforced concrete, metalwork etc>. Submit: Relevant Quality Records.
HW0117	Supply and Install valve pit concrete formwork, reinforced concrete complete with aluminium tread plate covers and including excavation and backfill	Item	Lump Sum	$ -	$ -	**Payment: <Insert appropriate percentages to reflect the value of work at key milestones eg excavation, reinforced concrete, metalwork etc>.** **Submit: Relevant Quality Records.**
HW0118	Supply and install pipework items inside valve pit	Item	Lump Sum	$ 19,270.00	$ 19,270.00	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0119	Supply and Install additional pipe items outside station	Item	Lump Sum	$ -	$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0120	Supply and install pipework items inside station	Item	Lump Sum	$ -	$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0121	Supply and install Type 2 or 4 flow relief structures in accordance with Drgs SCP-502 and SCP-505	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0122	Supply and install emergency storage structures		L/m			**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**

HW0123	Supply and install fan forced ventilation	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0124	Supply and install Soil Bed Filter	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0125	Supply and Install Strainers	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0126	Supply and Install Series Bypass	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed up to 80%. Remainder at Practical Completion.** **Submit: Relevant Quality Records.**
HW0127	Landscaping	Item	Lump Sum	$ -	$ -	Payment: 100% at completion. Submit: Relevant Quality Records.
HW0128	**Miscellaneous**					
HW0129	Preparation and submission of Operation and Maintenance Information	Item	Lump Sum		$ -	Payment: 100% at Practical Completion. Submit: Complying Work As Constructed Information.
HW0130	Pre commissioning and commissioning	Item	Lump Sum	$ 8,000.00	$ 8,000.00	**Payment: 50% at completion of satisfactory precommissioning. Remainder at Practical Completion.** **Submit: Relevant Quality Records.**
HW0131	Preparation and submission of Work as Constructed Information	Item	Lump Sum	$ 6,000.00	$ 6,000.00	Payment: 100% at Practical Completion. Submit: Complying Work As Constructed Information.
HW1SP	***Sub Total***				$810,148	

Item No.	Item Description	Qty	Unit		Amount $	Application of Schedule of Rates
HW0009	Restoration - Pipelines:					**Payment: 100% after completion.**
HW0009.01	Concrete kerb & gutter		m			**Measurement: Lineal metres restored within Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0009.02	Concrete driveway		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.03	Exposed aggregate & stamped driveway		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.04	Concrete footpath		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.05	Bitumen footpath		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.06	Gravel pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.07	Bitumen pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.08	AC pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.09	Pavers		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.10	Turf		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.11	Grass seeding		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.12	Hydromulch		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0010	Extra over item for Excavation in rock and disposal of excess excavated material		m3			**Measurement: Cubic metres excavated based on thickness of rock by actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0011	Acid sulphate soil					
HW0011.01	Initial testing for acid sulphate soils and prepare and submit report		per test			**Submit: Result for each test. Limits of Accuracy: <To be inserted>.**
HW0011.02	Establish treatment facility		Item			**Payment: 100% after completion of treatment facility.**
HW0011.03	Handling, treatment and testing of acid sulphate soils		m3			**Measurement: Cubic metres excavated based on thickness of ASS by actual length by Minimum Trench Width. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>**
HW0011.04	Disposal off site of acid sulphate soil		tonne			**Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>**
HW0012	Preconstruction record					
HW0012.01	Photographic		Item	Lump Sum	$ -	**Payment: 70% on submission of the Photographic record. Remainder at Practical Completion.**
HW0012.02	Video		Item	Lump Sum	$ -	**Payment: 70% on submission of the Video record. Remainder at Practical Completion.**
HW0012.03	CCTV		Item	Lump Sum	$ -	**Payment: 70% on submission of the CCTV record. Remainder at Practical Completion.**
HW0013	Work as Constructed Information <Insert Min $>		Item	Lump Sum	$ -	**Payment: 100% at Practical Completion.**

A.	**TOTAL ESTIMATED CONTRACT AWARD SUM**	$	877,952.98

B.	**PRE-CONSTRUCTION COST (Table 10)**		
HW0016	Design	$	131,692.95
HW0017	Project Management of Design	$	36,338.59
HW0018	Land Matters	$	-
HW0024	Community Consultation		
	Sub Total(B1)	$	168,031.54
	Pre construction contingency (30% of B1)	$	50,409.46
	TOTAL PRE-CONSTRUCTION COST (B)	$	218,441.00

C.	**CONSTRUCTION COST**			
	Total Estimated Contract Award Sum (A)		$	877,952.98
HW0019	Principal Supplied Pipe (as applicable)		$	-
HW0020	Principal Supplied Valves and Flowmeters (as applicable)		$	-
HW0021	Principal Supplied Fittings (as applicable)		$	-
HW0022	Pump Station HV Power Supply		$	187,500.00
HW0023	Construction Management (Table 11)		$	87,795.30
	Sub Total (C1)		$	1,153,248.28
	Construction contingency (Table 12) (30% of C1)	Preliminary Estimate	$	345,974.48
	TOTAL CONSTRUCTION COST (C)		$	1,499,222.76

	TOTAL PRELIMINARY PROJECT ESTIMATE (B+C) (Preliminary Estimate)	$	1,717,663.76

ESTIMATING SHEET

PROJECT DESCRIPTION: Option 1c Pump Station DN750

Item No.	Item Description	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0001	All work not included elsewhere in this schedule	Item	Lump Sum	$ 22,165.00	$ 22,165.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0002	Site Establishment <Insert Max $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0003	Site Disestablishment <Insert Min $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0004	Preparation and implementation of the Construction EMP	Item	Lump Sum	$ 3,000.00	$ 3,000.00	**Payment: Maximum of 30% on submission of complying Construction EMP, then 10% per month up to maximum of 80%. Remainder at Practical Completion.** **Submit: Construction EMP**
HW0005	Preparation and implementation of the Safety Management Plan.	Item	Lump Sum	$ 5,000.00	$ 5,000.00	**Payment: Maximum of 30% on submission of complying plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.** **Submit: Safety Management Plan**
HW0006	Preparation and implementation of the Traffic Control Plan.	Item	Lump Sum	$ 4,200.00	$ 4,200.00	**Payment: Maximum of 30% on submission of complying Traffic Control Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0007	Preparation and Implementation of Quality Management Plan	Item	Lump Sum	$ 11,882.60	$ 11,882.60	**Payment: Maximum of 30% on submission of complying Quality Management Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0008	Community Consultation	Item	Lump Sum	$ -	$ -	**Payment: 10% per month up to maximum of 70%. Remainder at Practical Completion.**

Sewer Pumping Station 450kW

Item	*Pump Station - Name*	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0101	**Sewer Pumping Station 450kW 7m dia 2 Pump(s)**					
	Clear, excavate & backfill in OTR conditions, supply and construct pipework, pump station, includes sliding aluminium hatch covers, screens & ancillary metal work & fittings. Supply & place formwork, reinforcement, concrete, roof slab, thrust blocks.	Item	Lump Sum	$ 369,000.00	$ 369,000.00	**Payment: <Insert appropriate percentages to reflect the value of work at key milestones eg excavation, pump well, metalwork etc>.** **Submit: Relevant Quality Records.**
HW0102	**Pumps for Pumping Stations - Supply and install pumps and associated fittings, connection to pipework, testing and commissioning.**	2	Lump Sum	$ 109,162.50	$ 218,325.00	**Payment: <Insert appropriate percentages for key milestones eg installation, precommissioning, commissioning>.** **Submit: Relevant Quality Records including those for pump test.**
HW0103	**Pumping Station Electricals**					
HW0103.01	Pit and Conduit System	Item	Lump Sum	$ 15,500.00	$ 15,500.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.02	LV Station Power Supply	Item	Lump Sum	$ 32,000.00	$ 32,000.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.03	Station By-Pass arrangements	Item	Lump Sum		$ -	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.04	Electrical Demolition works	Item	Lump Sum		$ -	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.05	Switchboard	Item	Lump Sum	$ 299,000.00	$ 299,000.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.06	PLC / Telemetry Hardware	Item	Lump Sum	$ 14,437.50	$ 14,437.50	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.07	PLC / Telemetry / Scada Engineering and Software Development	Item	Lump Sum	$ 28,450.00	$ 28,450.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.08	Stainless Steel Generator Box Cable Tray & Metering Box	Item	Lump Sum	$ 26,462.50	$ 26,462.50	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.09	Building Services (Electrical)	Item	Lump Sum	$ 20,625.00	$ 20,625.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.10	Pressure Transmitter/Gauge Board	Item	Lump Sum	$ -	$ -	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.11	Installation/Cabling (Electrical)	Item	Lump Sum	$ 31,000.00	$ 31,000.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0104	Empty					
HW0105	Empty					
HW0106	**Service Location**	Item	Lump Sum	$ 2,940.00	$ 2,940.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0107	Excavation below design depth including disposal of excavated material (Contingent Item)	0	m3	$ 70.00	$ -	**Measurement: Cubic metres excavated based on thickness of excavation by design cross section of the structure for which excavation has been undertaken.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>**
HW0108	Extra over Civil Works for excavation in rock:	0	m3	$ 120.00	$ -	**Measurement: Actual cubic metres of rock excavated within the design dimensions of the structure.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>**
HW0109	Cut and fill earthworks including compaction:	0	m3	$ 25.00	$ -	**Measurement: Actual cubic metres of earthworks completed in accordance with the design.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>**

HW0110	Supply & place ballast (Contingent Item)	0	tonne	$ 90.00	$ -	**Measurement: Actual tonnes placed as directed.** **Submit: Relevant Quality Records including certified weighbridge dockets.** **Limits of Accuracy: <To be inserted>.**
HW0111	Import and place select fill including compaction <may be Contingent Item>	0	m3	$ 65.00	$ -	**Measurement: Actual cubic metres placed as directed by the Superintendent or placed in accordance with the design.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>.**
HW0112	Construct access road and hardstand					
HW0112.01	Prepare subgrade		m2	$ 4.20		**Measurement: Actual square metres in accordance with the design.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>.**
HW0112.02	Supply, place and compact 150mm thick basecourse		m2	$ 37.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.03	Supply, place and compact 200mm thick basecourse		m2	$ 47.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.04	Supply, place and compact 250mm thick basecourse		m2	$ 51.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.05	Supply, place and compact two coat bitumen seal		m2	$ 26.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.06	Supply, place and compact 30mm thick asphalt bitumen seal		m2	$ 37.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.07	Concrete kerb & gutter	0	m	$ 110.00	$ -	Measurement: Actual metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.08	Concrete driveway	0	m2	$ 178.00	$ -	Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0113	Supply all plant, material and labour to undertake the following Piling works:					
HW0113.01	Treated timber mini piles		m			Measurement: Actual metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0113.02	Reinforced concrete bored piles	Item	Lump Sum		$ -	Payment: Percentage of work completed. <Consider % payments at milestones> Submit: Relevant Quality Records.
HW0114	Supply all plant, material and labour to undertake the following Retaining Wall works:					Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records.
HW0114.01	Timber(Koppers Log) up to 1.5m high		m2	$ 300.00		**Limits of Accuracy: <To be inserted>.**
HW0114.02	Concrete Keystone up to 1m high		m2	$ 380.00		**Limits of Accuracy: <To be inserted>.**
HW0114.03	Concrete Keystone between 1m and 3m high		m2	$ 560.00		**Limits of Accuracy: <To be inserted>.**
HW0114.04	Concrete Keystone greater than 3m high		m2	$ 560.00		**Limits of Accuracy: <To be inserted>.**
HW0114.05	Concrete Crib Block up to 2m high		m2	$ 630.00		**Limits of Accuracy: <To be inserted>.**
HW0114.06	Concrete Crib Block between 2m and 3m high		m2	$ 704.00		**Limits of Accuracy: <To be inserted>.**
HW0115	Acid sulphate soil					
HW0115.01	Initial testing for acid sulphate soils and prepare and submit report	5	per test	$ 110.00	$ 550.00	Submit: Result for each test. Limits of Accuracy: <To be inserted>
HW0115.02	Establish treatment facility	Item	Lump Sum		$ -	**Payment: 100% after completion of treatment facility.**
HW0115.03	Handling, treatment and testing of acid sulphate soils		m3	$ 60.00		Measurement: Cubic metres within the design cross section of the structure for which excavation has been undertaken. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>
HW0115.04	Disposal off site of acid sulphate soil		tonne	$ 122.00		Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>
HW0116	Series Pump Pit Structure	Item	Lump Sum		$ -	Payment: <Insert appropriate percentages to reflect the value of work at key milestones eg excavation, reinforced concrete, metalwork etc>. Submit: Relevant Quality Records.
HW0117	Supply and Install valve pit concrete formwork, reinforced concrete complete with aluminium tread plate covers and including excavation and backfill	Item	Lump Sum	$ -	$ -	**Payment: <Insert appropriate percentages to reflect the value of work at key milestones eg excavation, reinforced concrete, metalwork etc>.** **Submit: Relevant Quality Records.**
HW0118	Supply and install pipework items inside valve pit	Item	Lump Sum	$ 19,270.00	$ 19,270.00	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0119	Supply and Install additional pipe items outside station	Item	Lump Sum	$ -	$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0120	Supply and install pipework items inside station	Item	Lump Sum	$ -	$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0121	Supply and install Type 2 or 4 flow relief structures in accordance with Drgs SCP-502 and SCP-505	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0122	Supply and install emergency storage structures		L/m			**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**

HW0123	Supply and install fan forced ventilation	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0124	Supply and install Soil Bed Filter	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0125	Supply and Install Strainers	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0126	Supply and Install Series Bypass	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed up to 80%. Remainder at Practical Completion.** **Submit: Relevant Quality Records.**
HW0127	Landscaping	Item	Lump Sum	$ -	$ -	Payment: 100% at completion. Submit: Relevant Quality Records.
HW0128	**Miscellaneous**					
HW0129	Preparation and submission of Operation and Maintenance Information	Item	Lump Sum		$ -	Payment: 100% at Practical Completion. Submit: Complying Work As Constructed Information.
HW0130	Pre commissioning and commissioning	Item	Lump Sum	$ 8,000.00	$ 8,000.00	**Payment: 50% at completion of satisfactory precommissioning. Remainder at Practical Completion.** **Submit: Relevant Quality Records.**
HW0131	Preparation and submission of Work as Constructed Information	Item	Lump Sum	$ 6,000.00	$ 6,000.00	Payment: 100% at Practical Completion. Submit: Complying Work As Constructed Information.
HW1SP	***Sub Total***				$1,091,560	

Item No.	Item Description	Qty	Unit		Amount $	Application of Schedule of Rates
HW0009	Restoration - Pipelines:					**Payment: 100% after completion.**
HW0009.01	Concrete kerb & gutter		m			**Measurement: Lineal metres restored within Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0009.02	Concrete driveway		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.03	Exposed aggregate & stamped driveway		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.04	Concrete footpath		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.05	Bitumen footpath		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.06	Gravel pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.07	Bitumen pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.08	AC pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.09	Pavers		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.10	Turf		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.11	Grass seeding		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.12	Hydromulch		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0010	Extra over item for Excavation in rock and disposal of excess excavated material		m3			**Measurement: Cubic metres excavated based on thickness of rock by actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0011	Acid sulphate soil					
HW0011.01	Initial testing for acid sulphate soils and prepare and submit report		per test			**Submit: Result for each test. Limits of Accuracy: <To be inserted>.**
HW0011.02	Establish treatment facility		Item			**Payment: 100% after completion of treatment facility.**
HW0011.03	Handling, treatment and testing of acid sulphate soils		m3			**Measurement: Cubic metres excavated based on thickness of ASS by actual length by Minimum Trench Width. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>**
HW0011.04	Disposal off site of acid sulphate soil		tonne			**Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>**
HW0012	Preconstruction record					
HW0012.01	Photographic	Item	Lump Sum		$ -	**Payment: 70% on submission of the Photographic record. Remainder at Practical Completion.**
HW0012.02	Video	Item	Lump Sum		$ -	**Payment: 70% on submission of the Video record. Remainder at Practical Completion.**
HW0012.03	CCTV	Item	Lump Sum		$ -	**Payment: 70% on submission of the CCTV record. Remainder at Practical Completion.**
HW0013	Work as Constructed Information <Insert Min $>	Item	Lump Sum		$ -	**Payment: 100% at Practical Completion.**

A.	**TOTAL ESTIMATED CONTRACT AWARD SUM**	$	1,197,807.60

B.	**PRE-CONSTRUCTION COST (Table 10)**		
HW0016	Design	$	143,736.91
HW0017	Project Management of Design	$	38,747.38
HW0018	Land Matters	$	-
HW0024	Community Consultation		
	Sub Total(B1)	$	182,484.29
	Pre construction contingency (30% of B1)	$	54,745.29
	TOTAL PRE-CONSTRUCTION COST (B)	$	237,229.58

C.	**CONSTRUCTION COST**			
	Total Estimated Contract Award Sum (A)		$	1,197,807.60
HW0019	Principal Supplied Pipe (as applicable)		$	-
HW0020	Principal Supplied Valves and Flowmeters (as applicable)		$	-
HW0021	Principal Supplied Fittings (as applicable)		$	-
HW0022	Pump Station HV Power Supply		$	187,500.00
HW0023	Construction Management (Table 11)		$	119,780.76
	Sub Total (C1)		$	1,505,088.36
	Construction contingency (Table 12) (30% of C1)	Preliminary Estimate	$	451,526.51
	TOTAL CONSTRUCTION COST (C)		$	1,956,614.87

	TOTAL PRELIMINARY PROJECT ESTIMATE (B+C) (Preliminary Estimate)	$	2,193,844.45

ESTIMATING SHEET

PROJECT DESCRIPTION: Option 1D Pump Station DN450

Item No.	Item Description	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0001	All work not included elsewhere in this schedule	Item	Lump Sum	$ 8,449.00	$ 8,449.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0002	Site Establishment <Insert Max $>	Item	Lump Sum	$ 15,000.00	$ 15,000.00	**Payment: 100% after completion.**
HW0003	Site Disestablishment <Insert Min $>	Item	Lump Sum	$ 15,000.00	$ 15,000.00	**Payment: 100% after completion.**
HW0004	Preparation and implementation of the Construction EMP	Item	Lump Sum	$ 3,000.00	$ 3,000.00	**Payment: Maximum of 30% on submission of complying Construction EMP, then 10% per month up to maximum of 80%. Remainder at Practical Completion.** **Submit: Construction EMP**
HW0005	Preparation and implementation of the Safety Management Plan.	Item	Lump Sum	$ 5,000.00	$ 5,000.00	**Payment: Maximum of 30% on submission of complying plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.** **Submit: Safety Management Plan**
HW0006	Preparation and implementation of the Traffic Control Plan.	Item	Lump Sum	$ 4,200.00	$ 4,200.00	**Payment: Maximum of 30% on submission of complying Traffic Control Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0007	Preparation and Implementation of Quality Management Plan	Item	Lump Sum	$ 5,024.60	$ 5,024.60	**Payment: Maximum of 30% on submission of complying Quality Management Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0008	Community Consultation	Item	Lump Sum	$ -	$ -	**Payment: 10% per month up to maximum of 70%. Remainder at Practical Completion.**

Sewer Pumping Station 500kW

Item	*Pump Station - Name*	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0101	**Sewer Pumping Station 500kW 7m dia Pump(s)**					
	Clear, excavate & backfill in OTR conditions, supply and construct pipework, pump station, includes sliding aluminium hatch covers, screens & ancillary metal work & fittings. Supply & place formwork, reinforcement, concrete, roof slab, thrust blocks.	Item	Lump Sum	$ 369,000.00	$ 369,000.00	**Payment: <Insert appropriate percentages to reflect the value of work at key milestones eg excavation, pump well, metalwork etc>.** **Submit: Relevant Quality Records.**
HW0102	**Pumps for Pumping Stations - Supply and install pumps and associated fittings, connection to pipework, testing and commissioning.**	Item	Lump Sum		$ -	**Payment: <Insert appropriate percentages for key milestones eg installation, precommissioning, commissioning>.** **Submit: Relevant Quality Records including those for pump test.**
HW0103	**Pumping Station Electricals**					
HW0103.01	Pit and Conduit System	Item	Lump Sum		$ -	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.02	LV Station Power Supply	Item	Lump Sum		$ -	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.03	Station By-Pass arrangements	Item	Lump Sum		$ -	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.04	Electrical Demolition works	Item	Lump Sum		$ -	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.05	Switchboard	Item	Lump Sum		$ -	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.06	PLC / Telemetry Hardware	Item	Lump Sum		$ -	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.07	PLC / Telemetry / Scada Engineering and Software Development	Item	Lump Sum		$ -	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.08	Stainless Steel Generator Box Cable Tray & Metering Box	Item	Lump Sum		$ -	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.09	Building Services (Electrical)	Item	Lump Sum		$ -	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.10	Pressure Transmitter/Gauge Board	Item	Lump Sum		$ -	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.11	Installation/Cabling (Electrical)	Item	Lump Sum		$ -	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0104	Empty					
HW0105	Empty					
HW0106	**Service Location**	Item	Lump Sum	$ 2,940.00	$ 2,940.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0107	Excavation below design depth including disposal of excavated material (Contingent Item)	0	m3	$ 70.00	$ -	**Measurement: Cubic metres excavated based on thickness of excavation by design cross section of the structure for which excavation has been undertaken.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>**
HW0108	Extra over Civil Works for excavation in rock:	0	m3	$ 120.00	$ -	**Measurement: Actual cubic metres of rock excavated within the design dimensions of the structure.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>**
HW0109	Cut and fill earthworks including compaction:	0	m3	$ 25.00	$ -	**Measurement: Actual cubic metres of earthworks completed in accordance with the design.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>**

HW0110	Supply & place ballast (Contingent Item)	0	tonne	$ 90.00	$ -	**Measurement: Actual tonnes placed as directed.** **Submit: Relevant Quality Records including certified weighbridge dockets.** **Limits of Accuracy: <To be inserted>.**
HW0111	Import and place select fill including compaction <may be Contingent Item>	0	m3	$ 65.00	$ -	**Measurement: Actual cubic metres placed as directed by the Superintendent or placed in accordance with the design.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>.**
HW0112	Construct access road and hardstand					
HW0112.01	Prepare subgrade		m2	$ 4.20		**Measurement: Actual square metres in accordance with the design.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>.**
HW0112.02	Supply, place and compact 150mm thick basecourse		m2	$ 37.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.03	Supply, place and compact 200mm thick basecourse		m2	$ 47.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.04	Supply, place and compact 250mm thick basecourse		m2	$ 51.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.05	Supply, place and compact two coat bitumen seal		m2	$ 26.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.06	Supply, place and compact 30mm thick asphalt bitumen seal		m2	$ 37.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.07	Concrete kerb & gutter	0	m	$ 110.00	$ -	Measurement: Actual metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.08	Concrete driveway	0	m2	$ 178.00	$ -	Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0113	Supply all plant, material and labour to undertake the following Piling works:					
HW0113.01	Treated timber mini piles		m			Measurement: Actual metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0113.02	Reinforced concrete bored piles	Item	Lump Sum		$ -	Payment: Percentage of work completed. <Consider % payments at milestones> Submit: Relevant Quality Records.
HW0114	Supply all plant, material and labour to undertake the following Retaining Wall works:					Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records.
HW0114.01	Timber(Koppers Log) up to 1.5m high		m2	$ 300.00		**Limits of Accuracy: <To be inserted>.**
HW0114.02	Concrete Keystone up to 1m high		m2	$ 380.00		**Limits of Accuracy: <To be inserted>.**
HW0114.03	Concrete Keystone between 1m and 3m high		m2	$ 560.00		**Limits of Accuracy: <To be inserted>.**
HW0114.04	Concrete Keystone greater than 3m high		m2	$ 560.00		**Limits of Accuracy: <To be inserted>.**
HW0114.05	Concrete Crib Block up to 2m high		m2	$ 630.00		**Limits of Accuracy: <To be inserted>.**
HW0114.06	Concrete Crib Block between 2m and 3m high		m2	$ 704.00		**Limits of Accuracy: <To be inserted>.**
HW0115	Acid sulphate soil					
HW0115.01	Initial testing for acid sulphate soils and prepare and submit report	5	per test	$ 110.00	$ 550.00	Submit: Result for each test. Limits of Accuracy: <To be inserted>
HW0115.02	Establish treatment facility	Item	Lump Sum		$ -	**Payment: 100% after completion of treatment facility.**
HW0115.03	Handling, treatment and testing of acid sulphate soils		m3	$ 60.00		Measurement: Cubic metres within the design cross section of the structure for which excavation has been undertaken. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>
HW0115.04	Disposal off site of acid sulphate soil		tonne	$ 122.00		Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>
HW0116	Series Pump Pit Structure	Item	Lump Sum		$ -	Payment: <Insert appropriate percentages to reflect the value of work at key milestones eg excavation, reinforced concrete, metalwork etc>. Submit: Relevant Quality Records.
HW0117	Supply and Install valve pit concrete formwork, reinforced concrete complete with aluminium tread plate covers and including excavation and backfill	Item	Lump Sum	$ -	$ -	**Payment: <Insert appropriate percentages to reflect the value of work at key milestones eg excavation, reinforced concrete, metalwork etc>.** **Submit: Relevant Quality Records.**
HW0118	Supply and install pipework items inside valve pit	Item	Lump Sum	$ 19,270.00	$ 19,270.00	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0119	Supply and Install additional pipe items outside station	Item	Lump Sum	$ -	$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0120	Supply and install pipework items inside station	Item	Lump Sum	$ -	$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0121	Supply and install Type 2 or 4 flow relief structures in accordance with Drgs SCP-502 and SCP-505	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0122	Supply and install emergency storage structures		L/m			**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**

HW0123	Supply and install fan forced ventilation	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0124	Supply and install Soil Bed Filter	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0125	Supply and Install Strainers	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0126	Supply and Install Series Bypass	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed up to 80%. Remainder at Practical Completion.** **Submit: Relevant Quality Records.**
HW0127	Landscaping	Item	Lump Sum	$ -	$ -	Payment: 100% at completion. Submit: Relevant Quality Records.
HW0128	**Miscellaneous**					
HW0129	Preparation and submission of Operation and Maintenance Information	Item	Lump Sum		$ -	Payment: 100% at Practical Completion. Submit: Complying Work As Constructed Information.
HW0130	Pre commissioning and commissioning	Item	Lump Sum	$ 8,000.00	$ 8,000.00	**Payment: 50% at completion of satisfactory precommissioning. Remainder at Practical Completion.** **Submit: Relevant Quality Records.**
HW0131	Preparation and submission of Work as Constructed Information	Item	Lump Sum	$ 6,000.00	$ 6,000.00	Payment: 100% at Practical Completion. Submit: Complying Work As Constructed Information.
HW1SP	***Sub Total***				$405,760	

Item No.	Item Description	Qty	Unit		Amount $	Application of Schedule of Rates
HW0009	Restoration - Pipelines:					**Payment: 100% after completion.**
HW0009.01	Concrete kerb & gutter		m			**Measurement: Lineal metres restored within Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0009.02	Concrete driveway		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.03	Exposed aggregate & stamped driveway		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.04	Concrete footpath		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.05	Bitumen footpath		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.06	Gravel pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.07	Bitumen pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.08	AC pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.09	Pavers		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.10	Turf		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.11	Grass seeding		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.12	Hydromulch		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0010	Extra over item for Excavation in rock and disposal of excess excavated material		m3			**Measurement: Cubic metres excavated based on thickness of rock by actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0011	Acid sulphate soil					
HW0011.01	Initial testing for acid sulphate soils and prepare and submit report		per test			**Submit: Result for each test. Limits of Accuracy: <To be inserted>.**
HW0011.02	Establish treatment facility		Item			**Payment: 100% after completion of treatment facility.**
HW0011.03	Handling, treatment and testing of acid sulphate soils		m3			**Measurement: Cubic metres excavated based on thickness of ASS by actual length by Minimum Trench Width. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>**
HW0011.04	Disposal off site of acid sulphate soil		tonne			**Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>**
HW0012	Preconstruction record					
HW0012.01	Photographic		Item	Lump Sum	$ -	**Payment: 70% on submission of the Photographic record. Remainder at Practical Completion.**
HW0012.02	Video		Item	Lump Sum	$ -	**Payment: 70% on submission of the Video record. Remainder at Practical Completion.**
HW0012.03	CCTV		Item	Lump Sum	$ -	**Payment: 70% on submission of the CCTV record. Remainder at Practical Completion.**
HW0013	Work as Constructed Information <Insert Min $>		Item	Lump Sum	$ -	**Payment: 100% at Practical Completion.**

A.	**TOTAL ESTIMATED CONTRACT AWARD SUM**	$	461,433.60

B.	**PRE-CONSTRUCTION COST (Table 10)**		
HW0016	Design	$	92,286.72
HW0017	Project Management of Design	$	28,457.34
HW0018	Land Matters	$	-
HW0024	Community Consultation		
	Sub Total(B1)	$	120,744.06
	Pre construction contingency (30% of B1)	$	36,223.22
	TOTAL PRE-CONSTRUCTION COST (B)	$	156,967.28

C.	**CONSTRUCTION COST**		
	Total Estimated Contract Award Sum (A)	$	461,433.60
HW0019	Principal Supplied Pipe (as applicable)	$	-
HW0020	Principal Supplied Valves and Flowmeters (as applicable)	$	-
HW0021	Principal Supplied Fittings (as applicable)	$	-
HW0022	Pump Station HV Power Supply	$	-
HW0023	Construction Management (Table 11)	$	46,143.36
	Sub Total (C1)	$	507,576.96
	Construction contingency (Table 12) (30% of C1) Preliminary Estimate	$	152,273.09
	TOTAL CONSTRUCTION COST (C)	$	659,850.05

	TOTAL PRELIMINARY PROJECT ESTIMATE (B+C) (Preliminary Estimate)	$	816,817.33

ESTIMATING SHEET

PROJECT DESCRIPTION: Option 1A DN500 Rising Main

Item No.	Item Description	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0001	All work not included elsewhere in this schedule	Item	Lump Sum	$ 101,992.00	$ 101,992.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0002	Site Establishment <Insert Max $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0003	Site Disestablishment <Insert Min $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0004	Preparation and implementation of the Construction EMP	Item	Lump Sum	$ 4,000.00	$ 4,000.00	**Payment: Maximum of 30% on submission of complying Construction EMP, then 10% per month up to maximum of 80%. Remainder at Practical Completion.** **Submit: Construction EMP**
HW0005	Preparation and implementation of the Safety Management Plan.	Item	Lump Sum	$ 9,000.00	$ 9,000.00	**Payment: Maximum of 30% on submission of complying plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.** **Submit: Safety Management Plan**
HW0006	Preparation and implementation of the Traffic Control Plan.	Item	Lump Sum	$ 2,000.00	$ 2,000.00	**Payment: Maximum of 30% on submission of complying Traffic Control Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0007	Preparation and Implementation of Quality Management Plan	Item	Lump Sum	$ 51,795.95	$ 51,795.95	**Payment: Maximum of 30% on submission of complying Quality Management Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0008	Community Consultation	Item	Lump Sum	$ -	$ -	**Payment: 10% per month up to maximum of 70%. Remainder at Practical Completion.**

Sewer Pipeline - Rising - section will be present if one or more rising mains are specified

Item	Construction of Sewer Rising Mains	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HWR001	Service Location	Item	Lump Sum	$ 7,254.00	$ 7,254.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HWR002	Supply all valves	Item	Lump Sum		$ -	Payment: Percentage of valves and flowmeters supplied. Submit: Relevant Quality Records including Compliance Certificates.
HWR003	Supply all fittings	Item	Lump Sum		$ -	Payment: Percentage of fittings supplied. Submit: Relevant Quality Records including Compliance Certificates.
HWR004	Supply all pipe materials including detector tape, pipe protection wrapping, rubber rings and lubricant for following pipe sizes:					Measurement: Actual metres (effective length) of pipe delivered to site. Submit: Relevant Quality Records including Compliance Certificates. Note: Limits of Accuracy to be inserted for each pipe size.
132DSS	Nominal DN500 DICL pipe	8060	m	$ 394.00	$ 3,175,640.00	
HWR005	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Up to 1.5 m depth to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation up to and including 1.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.
132D03	Nominal DN500 DICL (Trench type 3)	8060	m	$ 130.10	$ 1,048,606.00	
HWR006	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >1.5m to 3.0m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 1.5m to and including 3.0m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.
HWR007	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >3.0m to 4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 3.0m to and including 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.
HWR008	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.
HWR009	EMPTY					
HWR010	Extra over rate for installation for Additional compaction		m3	$ 22.95		Measurement: Cubic metres of additional compaction based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR011	Excavate below specified design depth where directed including disposal of excess excavated material		m3	$ 94.50		Measurement: Cubic metres of excavation directed based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR012	Extra over rate for installation to Supply & place & compact non cohesive material.		m3			Measurement: Cubic metres of non cohesive material based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.

HWR013	Extra over rate for installation for supply, place and compact stabilised sand cement (14:1) backfill		m3	$ 405.00			Measurement: Cubic metres of stabilised sand cement based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR014	Extra over rate for installation for Supply, place and compact aggregate		m3				Measurement: Cubic metres of aggregate based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR015	Supply & place ballast		tonnes	$ 90.00			Measurement: Actual tonnes placed as directed. Submit: Relevant Quality Records including certified weighbridge dockets. Limits of Accuracy: <To be inserted>.
HWR016	External Dewatering of trench including establishment & disestablishment	8060	m		$ 806,000.00		**Measurement: Length of pipeline for which external dewatering is agreed with the Superintendent and provided, measured along the axis of the pipeline between the first and last spear point.** **Submit: Relevant Quality Records.**
HWR017	Supply and place treated timber piling for pipe support		m				Measurement: Actual metres from pipe invert to toe of pile. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>
HWR018	Road / creek crossings						Measurement: Length in metres of casing installed. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR018.01	Adelaide St	80	m	$ 1,449.06	$ 115,925.00		
HWR019	Extra over rate for installation of trenchless technique under existing rail line		m				Measurement: Length in metres of casing installed. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>
HWR020	Supply and installation of pipe aerial creek crossing including supply of MSCL pipe with protection coating, internal and external welding, testing of welds. For the following MSCL pipe sizes:						Measurement: Length in metres of crossing installed in accordance with design. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR021	Supply and installation of pipe river crossing including supply of MSCL pipe, internal and external welding, testing of welds and 150 thick concrete encasement. Also includes mobilisation and demobilisation of dredge(if required) excavation & disposal of excavated material, backfilling, lay, bed and test for the following MSCL pipe sizes:						Measurement: Length in metres of casing installed. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR022	Bulkheads and Trenchstops in accordance with WSAA drawing SEW-1206	Item	Lump Sum		$ -		Payment: Number of bulkheads & trenchstops constructed. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR023	Supply and Install valve pits (excluding valves and fittings)	0	Each	$ -	$ -		Payment: Number of valve pits constructed. Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR024	Flow Relief Structures		Each				Payment: Number of flow relief structures constructed. Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR025	EMPTY						
HWR026	Supply and construct vent stacks		each				Payment: Number of vent stacks constructed. Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR027	Preparation of line sheets	8060	m	$ 1.00	$ 8,060.00		Measurement: Length of pipelines constructed as per design. Limits of Accuracy: <To be inserted>.
HWR028	Acceptance testing - rising main		m				Measurement: Length of pipelines constructed as per design. Submit: Satisfactory test records Limits of Accuracy: <To be inserted>.
HWR029	**Miscellaneous**						
HWR000	***Sub Total***				$5,161,485		

Item No.	Item Description	Qty	Unit		Amount $	Application of Schedule of Rates
HW0009	Restoration - Pipelines:					**Payment: 100% after completion.**
HW0009.01	Concrete kerb & gutter	0	m	$ 110.00	$ -	**Measurement: Lineal metres restored within Minimum Trench Width.** **Limits of Accuracy: <To be inserted>.**
HW0009.02	Concrete driveway	0	m2	$ 178.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.03	Exposed aggregate & stamped driveway	0	m2	$ 220.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.04	Concrete footpath	0	m2	$ 155.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.05	Bitumen footpath	0	m2	$ 117.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**

HW0009.06	Gravel pavement	0	m2	$ 69.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.07	Bitumen pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.08	AC pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.09	Pavers		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.10	Turf		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.11	Grass seeding	14472	m2	$ 7.00	$ 101,304.00	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.12	Hydromulch		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0010	Extra over item for Excavation in rock and disposal of excess excavated material		m3			**Measurement: Cubic metres excavated based on thickness of rock by actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0011	Acid sulphate soil					
HW0011.01	Initial testing for acid sulphate soils and prepare and submit report	107	per test	$ 110.00	$ 11,770.00	**Submit: Result for each test. Limits of Accuracy: <To be inserted>.**
HW0011.02	Establish treatment facility		Item			**Payment: 100% after completion of treatment facility.**
HW0011.03	Handling, treatment and testing of acid sulphate soils	10881	m3	$ 60.00	$ 652,860.00	**Measurement: Cubic metres excavated based on thickness of ASS by actual length by Minimum Trench Width. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>**
HW0011.04	Disposal off site of acid sulphate soil	0	tonne	$ 122.00	$ -	**Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>**
HW0012	Preconstruction record					
HW0012.01	Photographic	Item	Lump Sum		$ -	**Payment: 70% on submission of the Photographic record. Remainder at Practical Completion.**
HW0012.02	Video	Item	Lump Sum		$ -	**Payment: 70% on submission of the Video record. Remainder at Practical Completion.**
HW0012.03	CCTV	Item	Lump Sum		$ -	**Payment: 70% on submission of the CCTV record. Remainder at Practical Completion.**
HW0013	Work as Constructed Information <Insert Min $>	Item	Lump Sum	$ 64,480.00	$ 64,480.00	**Payment: 100% at Practical Completion.**

A.	**TOTAL ESTIMATED CONTRACT AWARD SUM**	$ 6,220,686.95

B.	**PRE-CONSTRUCTION COST (Table 10)**	
HW0016	Design	$ 622,068.70
HW0017	Project Management of Design	$ 116,267.66
HW0018	Land Matters	$ -
HW0024	Community Consultation	
	Sub Total(B1)	$ 738,336.35
	Pre construction contingency (30% of B1)	$ 221,500.91
	TOTAL PRE-CONSTRUCTION COST (B)	$ 959,837.26

C.	**CONSTRUCTION COST**		
	Total Estimated Contract Award Sum (A)		$ 6,220,686.95
HW0019	Principal Supplied Pipe (as applicable)		$ -
HW0020	Principal Supplied Valves and Flowmeters (as applicable)		$ -
HW0021	Principal Supplied Fittings (as applicable)		$ -
HW0022	Pump Station HV Power Supply		$ -
HW0023	Construction Management (Table 11)		$ 497,654.96
	Sub Total (C1)		$ 6,718,341.91
	Construction contingency (Table 12) (30% of C1)	Preliminary Estimate	$ 2,015,502.57
	TOTAL CONSTRUCTION COST (C)		$ 8,733,844.48

TOTAL PRELIMINARY PROJECT ESTIMATE (B+C) (Preliminary Estimate)	$ 9,693,681.74

ESTIMATING SHEET

PROJECT DESCRIPTION: Option 1A DN600 Rising Main

Item No.	Item Description	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0001	All work not included elsewhere in this schedule	Item	Lump Sum	$ 125,540.00	$ 125,540.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0002	Site Establishment <Insert Max $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0003	Site Disestablishment <Insert Min $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0004	Preparation and implementation of the Construction EMP	Item	Lump Sum	$ 4,000.00	$ 4,000.00	**Payment: Maximum of 30% on submission of complying Construction EMP, then 10% per month up to maximum of 80%. Remainder at Practical Completion.** **Submit: Construction EMP**
HW0005	Preparation and implementation of the Safety Management Plan.	Item	Lump Sum	$ 9,000.00	$ 9,000.00	**Payment: Maximum of 30% on submission of complying plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.** **Submit: Safety Management Plan**
HW0006	Preparation and implementation of the Traffic Control Plan.	Item	Lump Sum	$ 2,000.00	$ 2,000.00	**Payment: Maximum of 30% on submission of complying Traffic Control Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0007	Preparation and Implementation of Quality Management Plan	Item	Lump Sum	$ 63,570.05	$ 63,570.05	**Payment: Maximum of 30% on submission of complying Quality Management Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0008	Community Consultation	Item	Lump Sum	$ -	$ -	**Payment: 10% per month up to maximum of 70%. Remainder at Practical Completion.**

Sewer Pipeline - Rising - section will be present if one or more rising mains are specified

Item	Construction of Sewer Rising Mains	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HWR001	Service Location	Item	Lump Sum	$ 8,463.00	$ 8,463.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HWR002	Supply all valves	Item	Lump Sum		$ -	Payment: Percentage of valves and flowmeters supplied. Submit: Relevant Quality Records including Compliance Certificates.
HWR003	Supply all fittings	Item	Lump Sum		$ -	Payment: Percentage of fittings supplied. Submit: Relevant Quality Records including Compliance Certificates.
HWR004	Supply all pipe materials including detector tape, pipe protection wrapping, rubber rings and lubricant for following pipe sizes:					Measurement: Actual metres (effective length) of pipe delivered to site. Submit: Relevant Quality Records including Compliance Certificates. Note: Limits of Accuracy to be inserted for each pipe size.
13CDSS	Nominal DN600 DICL pipe	8060	m	$ 514.00	$ 4,142,840.00	
HWR005	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Up to 1.5 m depth to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation up to and including 1.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.
13CD03	Nominal DN600 DICL (Trench type 3)	8060	m	$ 139.95	$ 1,127,997.00	
HWR006	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >1.5m to 3.0m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 1.5m to and including 3.0m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.
HWR007	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >3.0m to 4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 3.0m to and including 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.
HWR008	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.
HWR009	EMPTY					
HWR010	Extra over rate for installation for Additional compaction		m3	$ 26.78		Measurement: Cubic metres of additional compaction based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR011	Excavate below specified design depth where directed including disposal of excess excavated material		m3	$ 110.25		Measurement: Cubic metres of excavation directed based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR012	Extra over rate for installation to Supply & place & compact non cohesive material.		m3			Measurement: Cubic metres of non cohesive material based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.

HWR013	Extra over rate for installation for supply, place and compact stabilised sand cement (14:1) backfill		m3	$ 472.50			Measurement: Cubic metres of stabilised sand cement based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR014	Extra over rate for installation for Supply, place and compact aggregate		m3				Measurement: Cubic metres of aggregate based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR015	Supply & place ballast		tonnes	$ 90.00			Measurement: Actual tonnes placed as directed. Submit: Relevant Quality Records including certified weighbridge dockets. Limits of Accuracy: <To be inserted>.
HWR016	External Dewatering of trench including establishment & disestablishment	8060	m		$ 806,000.00		**Measurement: Length of pipeline for which external dewatering is agreed with the Superintendent and provided, measured along the axis of the pipeline between the first and last spear point.** **Submit: Relevant Quality Records.**
HWR017	Supply and place treated timber piling for pipe support		m				Measurement: Actual metres from pipe invert to toe of pile. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>
HWR018	Road / creek crossings						Measurement: Length in metres of casing installed. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR018.01	Adelaide St	80	m	$ 1,709.06	$ 136,725.00		
HWR019	Extra over rate for installation of trenchless technique under existing rail line		m				Measurement: Length in metres of casing installed. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>
HWR020	Supply and installation of pipe aerial creek crossing including supply of MSCL pipe with protection coating, internal and external welding, testing of welds. For the following MSCL pipe sizes:						Measurement: Length in metres of crossing installed in accordance with design. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR021	Supply and installation of pipe river crossing including supply of MSCL pipe, internal and external welding, testing of welds and 150 thick concrete encasement. Also includes mobilisation and demobilisation of dredge(if required) excavation & disposal of excavated material, backfilling, lay, bed and test for the following MSCL pipe sizes:						Measurement: Length in metres of casing installed. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR022	Bulkheads and Trenchstops in accordance with WSAA drawing SEW-1206	Item	Lump Sum		$ -		Payment: Number of bulkheads & trenchstops constructed. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR023	Supply and Install valve pits (excluding valves and fittings)	0	Each	$ -	$ -		Payment: Number of valve pits constructed. Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR024	Flow Relief Structures		Each				Payment: Number of flow relief structures constructed. Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR025	EMPTY						
HWR026	Supply and construct vent stacks		each				Payment: Number of vent stacks constructed. Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR027	Preparation of line sheets	8060	m	$ 1.00	$ 8,060.00		Measurement: Length of pipelines constructed as per design. Limits of Accuracy: <To be inserted>.
HWR028	Acceptance testing - rising main		m				Measurement: Length of pipelines constructed as per design. Submit: Satisfactory test records Limits of Accuracy: <To be inserted>.
HWR029	**Miscellaneous**						
HWR000	***Sub Total***				$6,230,085		

Item No.	Item Description	Qty	Unit		Amount $	Application of Schedule of Rates
HW0009	Restoration - Pipelines:					**Payment: 100% after completion.**
HW0009.01	Concrete kerb & gutter	0	m	$ 110.00	$ -	**Measurement: Lineal metres restored within Minimum Trench Width.** **Limits of Accuracy: <To be inserted>.**
HW0009.02	Concrete driveway	0	m2	$ 178.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.03	Exposed aggregate & stamped driveway	0	m2	$ 220.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.04	Concrete footpath	0	m2	$ 155.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.05	Bitumen footpath	0	m2	$ 117.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**

HW0009.06	Gravel pavement	0	m2	$ 69.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.07	Bitumen pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.08	AC pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.09	Pavers		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.10	Turf		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.11	Grass seeding	14508	m2	$ 7.00	$ 101,556.00	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.12	Hydromulch		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0010	Extra over item for Excavation in rock and disposal of excess excavated material		m3			**Measurement: Cubic metres excavated based on thickness of rock by actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0011	Acid sulphate soil					
HW0011.01	Initial testing for acid sulphate soils and prepare and submit report	107	per test	$ 110.00	$ 11,770.00	**Submit: Result for each test. Limits of Accuracy: <To be inserted>.**
HW0011.02	Establish treatment facility		Item			**Payment: 100% after completion of treatment facility.**
HW0011.03	Handling, treatment and testing of acid sulphate soils	12694.5	m3	$ 60.00	$ 761,670.00	**Measurement: Cubic metres excavated based on thickness of ASS by actual length by Minimum Trench Width. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>**
HW0011.04	Disposal off site of acid sulphate soil	0	tonne	$ 122.00	$ -	**Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>**
HW0012	Preconstruction record					
HW0012.01	Photographic	Item	Lump Sum		$ -	**Payment: 70% on submission of the Photographic record. Remainder at Practical Completion.**
HW0012.02	Video	Item	Lump Sum		$ -	**Payment: 70% on submission of the Video record. Remainder at Practical Completion.**
HW0012.03	CCTV	Item	Lump Sum		$ -	**Payment: 70% on submission of the CCTV record. Remainder at Practical Completion.**
HW0013	Work as Constructed Information <Insert Min $>	Item	Lump Sum	$ 64,480.00	$ 64,480.00	**Payment: 100% at Practical Completion.**

A.	**TOTAL ESTIMATED CONTRACT AWARD SUM**	$ 7,433,671.05

B.	**PRE-CONSTRUCTION COST (Table 10)**	
HW0016	Design	$ 743,367.11
HW0017	Project Management of Design	$ 140,522.30
HW0018	Land Matters	$ -
HW0024	Community Consultation	
	Sub Total(B1)	$ 883,889.41
	Pre construction contingency (30% of B1)	$ 265,166.82
	TOTAL PRE-CONSTRUCTION COST (B)	$ 1,149,056.23

C.	**CONSTRUCTION COST**		
	Total Estimated Contract Award Sum (A)		$ 7,433,671.05
HW0019	Principal Supplied Pipe (as applicable)		$ -
HW0020	Principal Supplied Valves and Flowmeters (as applicable)		$ -
HW0021	Principal Supplied Fittings (as applicable)		$ -
HW0022	Pump Station HV Power Supply		$ -
HW0023	Construction Management (Table 11)		$ 594,693.68
	Sub Total (C1)		$ 8,028,364.73
	Construction contingency (Table 12) (30% of C1)	Preliminary Estimate	$ 2,408,509.42
	TOTAL CONSTRUCTION COST (C)		$ 10,436,874.15

	TOTAL PRELIMINARY PROJECT ESTIMATE (B+C) (Preliminary Estimate)	$ 11,585,930.38

ESTIMATING SHEET

PROJECT DESCRIPTION: Option 1B DN450 Rising Main

Item No.	Item Description	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0001	All work not included elsewhere in this schedule	Item	Lump Sum	$ 67,940.00	$ 67,940.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0002	Site Establishment <Insert Max $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0003	Site Disestablishment <Insert Min $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0004	Preparation and implementation of the Construction EMP	Item	Lump Sum	$ 8,000.00	$ 8,000.00	**Payment: Maximum of 30% on submission of complying Construction EMP, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Construction EMP**
HW0005	Preparation and implementation of the Safety Management Plan.	Item	Lump Sum	$ 18,000.00	$ 18,000.00	**Payment: Maximum of 30% on submission of complying plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Safety Management Plan.**
HW0006	Preparation and implementation of the Traffic Control Plan.	Item	Lump Sum	$ 4,000.00	$ 4,000.00	**Payment: Maximum of 30% on submission of complying Traffic Control Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0007	Preparation and Implementation of Quality Management Plan	Item	Lump Sum	$ 34,769.75	$ 34,769.75	**Payment: Maximum of 30% on submission of complying Quality Management Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0008	Community Consultation	Item	Lump Sum	$ -	$ -	**Payment: 10% per month up to maximum of 70%. Remainder at Practical Completion.**

Sewer Pipeline - Rising - section will be present if one or more rising mains are specified

Item	Construction of Sewer Rising Mains	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates	
HWR001	Service Location	Item	Lump Sum	$ 14,040.00	$ 14,040.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**	
HWR002	Supply all valves	Item	Lump Sum		$ -	Payment: Percentage of Valves and flowmeters supplied Submit: Relevant Quality Records including Compliance Certificates.	
HWR003	Supply all fittings	Item	Lump Sum		$ -	Payment: Percentage of fittings supplied Submit: Relevant Quality Records including Compliance Certificates.	
HWR004	Supply all pipe materials including detector tape, pipe protection wrapping, rubber rings and lubricant for following pipe sizes:					Measurement: Actual metres (effective length) of pipe delivered to site. Submit: Relevant Quality Records including Compliance Certificates. Note: Limits of Accuracy to be inserted for each pipe size.	
12DDSS	Nominal DN450 DICL pipe	6000	m	$ 304.00	$ 1,824,000.00		
HWR005	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Up to 1.5 m depth to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation up to and including 1.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
12DD03	Nominal DN450 DICL (Trench type 3)	6000	m	$ 155.25	$ 931,500.00		Pipeline 2 - area allowance
HWR006	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >1.5m to 3.0m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 1.5m to and including 3.0m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR007	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >3.0m to 4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 3.0m to and including 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR008	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR009	EMPTY						
HWR010	Extra over rate for installation for Additional compaction		m3	$ 22.95		Measurement: Cubic metres of additional compaction based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR011	Excavate below specified design depth when directed including disposal of excess excavated material		m3	$ 94.50		Measurement: Cubic metres of excavation directed based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR012	Extra over rate for installation to Supply & place & compact non cohesive material.		m3			Measurement: Cubic metres of non cohesive material based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR013	Extra over rate for installation for supply, place and compact stabilised sand cement (14:1) backfill		m3	$ 405.00		Measurement: Cubic metres of stabilised sand cement based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR014	Extra over rate for installation for Supply, place and compact aggregate		m3			Measurement: Cubic metres of aggregate based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	

HWR015	Supply & place ballast		tonnes	$ 90.00		Measurement: Actual tonnes placed as directed. Submit: Relevant Quality Records including certified weighbridge dockets. Limits of Accuracy: <To be inserted>.
HWR016	External Dewatering of trench including establishment & disestablishment	6000	m		$ 600,000.00	**Measurement: Length of pipeline for which external dewatering is agreed with the Superintendent and provided, measured along the axis of the pipeline between the first and last spear point.** **Submit: Relevant Quality Records.**
HWR017	Supply and place treated timber piling for pipe support		m			Measurement: Actual metres from pipe invert to toe of pile Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR018	Road / creek crossings					Measurement: Length in metres of casing installed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR018.01	Adelaide St	80	m	$ 1,329.06	$ 106,325.00	
HWR019	Extra over rate for installation of trenchless technique under existing rail line		m			Measurement: Length in metres of casing installed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR020	Supply and installation of pipe aerial creek crossing including supply of MSCL pipe with protection coating, internal and external welding, testing of welds. For the following MSCL pipe sizes:					Measurement: Length in metres of casing installed in accordance with design. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR021	Supply and installation of pipe river crossing including supply of MSCL pipe, internal and external welding, testing of welds and 150 thick concrete encasement. Also includes mobilisation and demobilisation of dredge(if required) excavation & disposal of excavated material, backfilling, lay, bed and test for the following MSCL pipe sizes:					Measurement: Length in metres of casing installed. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR022	Bulkheads and Trenchstops in accordance with WSAA drawing SEW-1206	Item	Lump Sum		$ -	Payment: Number of bulkheads & trenchstops constructed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR023	Supply and Install valve pits (excluding valves and fittings)	0	Each	$ -	$ -	Payment: Number of valve pits constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR024	Flow Relief Structures		Each			Payment: Number of flow relief structures constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR025	EMPTY					
HWR026	Supply and construct vent stacks		each			Payment: Number of vent stacks constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR027	Preparation of line sheets	6000	m	$ 1.00	$ 6,000.00	Measurement: Length of pipelines constructed as per design Limits of Accuracy: <To be inserted>.
HWR028	Acceptance testing - rising main		m			Measurement: Length of pipelines constructed as per design Submit: Satisfactory test records Limits of Accuracy: <To be inserted>.
HWR029	**Miscellaneous**					
HWR000	***Sub Total***				$3,481,865	

Item No.	Item Description	Qty	Unit		Amount $	Application of Schedule of Rates
HW0009	Restoration - Pipelines:					**Payment: 100% after completion.**
HW0009.01	Concrete kerb & gutter	0	m	$ 110.00	$ -	**Measurement: Lineal metres restored within Minimum Trench Width.** **Limits of Accuracy: <To be inserted>.**
HW0009.02	Concrete driveway	0	m2	$ 178.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.03	Exposed aggregate & stamped driveway	0	m2	$ 220.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.04	Concrete footpath	0	m2	$ 155.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.05	Bitumen footpath	0	m2	$ 117.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.06	Gravel pavement	0	m2	$ 69.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.07	Bitumen pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.08	AC pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.09	Pavers		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.10	Turf		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.11	Grass seeding	10800	m2	$ 7.00	$ 75,600.00	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**

HW0009.12	Hydromulch		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0010	Extra over item for Excavation in rock and disposal of excess excavated material		m3			**Measurement: Cubic metres excavated based on thickness of rock by actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0011	Acid sulphate soil					
HW0011.01	Initial testing for acid sulphate soils and prepare and submit report	71	per test	$ 110.00	$ 7,810.00	**Submit: Result for each test. Limits of Accuracy: <To be inserted>.**
HW0011.02	Establish treatment facility		Item			**Payment: 100% after completion of treatment facility.**
HW0011.03	Handling, treatment and testing of acid sulphate soils	7155	m3	$ 60.00	$ 429,300.00	**Measurement: Cubic metres excavated based on thickness of ASS by actual length by Minimum Trench Width. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>**
HW0011.04	Disposal off site of acid sulphate soil	0	tonne	$ 122.00	$ -	**Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>**
HW0012	Preconstruction record					
HW0012.01	Photographic	Item	Lump Sum		$ -	**Payment: 70% on submission of the Photographic record. Remainder at Practical Completion.**
HW0012.02	Video	Item	Lump Sum		$ -	**Payment: 70% on submission of the Video record. Remainder at Practical Completion.**
HW0012.03	CCTV	Item	Lump Sum		$ -	**Payment: 70% on submission of the CCTV record. Remainder at Practical Completion.**
HW0013	Work as Constructed Information <Insert Min 6>	Item	Lump Sum	$ 48,000.00	$ 48,000.00	**Payment: 100% at Practical Completion.**

A.	**TOTAL ESTIMATED CONTRACT AWARD SUM**	$ 4,235,284.75

B.	**PRE-CONSTRUCTION COST (Table 10)**	
HW0016	Design	$ 508,234.17
HW0017	Project Management of Design	$ 95,432.43
HW0018	Land Matters	$ -
HW0024	Community Consultation	
	Sub Total(B1)	$ 603,666.60
	Pre construction contingency (30% of B1)	$ 181,099.98
	TOTAL PRE-CONSTRUCTION COST (B)	$ 784,766.59

C.	**CONSTRUCTION COST**		
	Total Estimated Contract Award Sum (A)		$ 4,235,284.75
HW0019	Principal Supplied Pipe (as applicable)		$ -
HW0020	Principal Supplied Valves and Flowmeters (as applicable)		$ -
HW0021	Principal Supplied Fittings (as applicable)		$ -
HW0022	Pump Station HV Power Supply		$ -
HW0023	Construction Management (Table 11)		$ 338,822.78
	Sub Total (C1)		$ 4,574,107.53
	Construction contingency (Table 12) (30% of C1)	Preliminary Estimate	$ 1,372,232.26
	TOTAL CONSTRUCTION COST (C)		$ 5,946,339.79

	TOTAL PRELIMINARY PROJECT ESTIMATE (B+C) (Preliminary Estimate)	$ 6,731,106.37

ESTIMATING SHEET

PROJECT DESCRIPTION: Option 1B DN500 Rising Main

Item No.	Item Description	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0001	All work not included elsewhere in this schedule	Item	Lump Sum	$ 79,533.00	$ 79,533.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0002	Site Establishment <Insert Max $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0003	Site Disestablishment <Insert Min $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0004	Preparation and implementation of the Construction EMP	Item	Lump Sum	$ 8,000.00	$ 8,000.00	**Payment: Maximum of 30% on submission of complying Construction EMP, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Construction EMP**
HW0005	Preparation and implementation of the Safety Management Plan.	Item	Lump Sum	$ 18,000.00	$ 18,000.00	**Payment: Maximum of 30% on submission of complying plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Safety Management Plan.**
HW0006	Preparation and implementation of the Traffic Control Plan.	Item	Lump Sum	$ 4,000.00	$ 4,000.00	**Payment: Maximum of 30% on submission of complying Traffic Control Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0007	Preparation and Implementation of Quality Management Plan	Item	Lump Sum	$ 40,566.35	$ 40,566.35	**Payment: Maximum of 30% on submission of complying Quality Management Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0008	Community Consultation	Item	Lump Sum	$ -	$ -	**Payment: 10% per month up to maximum of 70%. Remainder at Practical Completion.**

Sewer Pipeline - Rising - section will be present if one or more rising mains are specified

Item	Construction of Sewer Rising Mains	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates	
HWR001	Service Location	Item	Lump Sum	$ 14,040.00	$ 14,040.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**	
HWR002	Supply all valves	Item	Lump Sum		$ -	Payment: Percentage of valves and flowmeters supplied Submit: Relevant Quality Records including Compliance Certificates.	
HWR003	Supply all fittings	Item	Lump Sum		$ -	Payment: Percentage of fittings supplied Submit: Relevant Quality Records including Compliance Certificates.	
HWR004	Supply all pipe materials including detector tape, pipe protection wrapping, rubber rings and lubricant for following pipe sizes:					Measurement: Actual metres (effective length) of pipe delivered to site. Submit: Relevant Quality Records including Compliance Certificates. Note: Limits of Accuracy to be inserted for each pipe size.	
1320SS	Nominal DN500 DICL pipe	6000	m	$ 394.00	$ 2,364,000.00		
HWR005	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Up to 1.5 m depth to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation up to and including 1.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
1320D3	Nominal DN500 DICL (Trench type 3)	6000	m	$ 160.26	$ 961,560.00		Pipeline 2 - area allowance
HWR006	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >1.5m to 3.0m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 1.5m to and including 3.0m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR007	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >3.0m to 4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 3.0m to and including 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR008	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR009	EMPTY						
HWR010	Extra over rate for installation for Additional compaction		m3	$ 22.95		Measurement: Cubic metres of additional compaction based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR011	Excavate below specified design depth when directed including disposal of excess excavated material		m3	$ 94.50		Measurement: Cubic metres of excavation directed based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR012	Extra over rate for installation to Supply & place & compact non cohesive material.		m3			Measurement: Cubic metres of non cohesive material based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR013	Extra over rate for installation for supply, place and compact stabilised sand cement (14:1) backfill		m3	$ 405.00		Measurement: Cubic metres of stabilised sand cement based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR014	Extra over rate for installation for Supply, place and compact aggregate		m3			Measurement: Cubic metres of aggregate based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	

HWR015	Supply & place ballast		tonnes	$ 90.00		Measurement: Actual tonnes placed as directed. Submit: Relevant Quality Records including certified weighbridge dockets. Limits of Accuracy: <To be inserted>.
HWR016	External Dewatering of trench including establishment & disestablishment	6000	m		$ 600,000.00	**Measurement: Length of pipeline for which external dewatering is agreed with the Superintendent and provided, measured along the axis of the pipeline between the first and last spear point.** **Submit: Relevant Quality Records.**
HWR017	Supply and place treated timber piling for pipe support		m			Measurement: Actual metres from pipe invert to toe of pile Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR018	Road / creek crossings					Measurement: Length in metres of casing installed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR018.01	Adelaide St	80	m	$ 1,449.06	$ 115,925.00	
HWR019	Extra over rate for installation of trenchless technique under existing rail line		m			Measurement: Length in metres of casing installed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR020	Supply and installation of pipe aerial creek crossing including supply of MSCL pipe with protection coating, internal and external welding, testing of welds. For the following MSCL pipe sizes:					Measurement: Length in metres of casing installed in accordance with design. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR021	Supply and installation of pipe river crossing including supply of MSCL pipe, internal and external welding, testing of welds and 150 thick concrete encasement. Also includes mobilisation and demobilisation of dredge(if required) excavation & disposal of excavated material, backfilling, lay, bed and test for the following MSCL pipe sizes:					Measurement: Length in metres of casing installed. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR022	Bulkheads and Trenchstops in accordance with WSAA drawing SEW-1206	Item	Lump Sum		$ -	Payment: Number of bulkheads & trenchstops constructed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR023	Supply and Install valve pits (excluding valves and fittings)	0	Each	$ -	$ -	Payment: Number of valve pits constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR024	Flow Relief Structures		Each			Payment: Number of flow relief structures constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR025	EMPTY					
HWR026	Supply and construct vent stacks		each			Payment: Number of vent stacks constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR027	Preparation of line sheets	6000	m	$ 1.00	$ 6,000.00	Measurement: Length of pipelines constructed as per design Limits of Accuracy: <To be inserted>.
HWR028	Acceptance testing - rising main		m			Measurement: Length of pipelines constructed as per design Submit: Satisfactory test records Limits of Accuracy: <To be inserted>.
HWR029	**Miscellaneous**					
HWR000	***Sub Total***				$4,061,525	

Item No.	Item Description	Qty	Unit		Amount $	Application of Schedule of Rates
HW0009	Restoration - Pipelines:					**Payment: 100% after completion.**
HW0009.01	Concrete kerb & gutter	0	m	$ 110.00	$ -	**Measurement: Lineal metres restored within Minimum Trench Width.** **Limits of Accuracy: <To be inserted>.**
HW0009.02	Concrete driveway	0	m2	$ 178.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.03	Exposed aggregate & stamped driveway	0	m2	$ 220.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.04	Concrete footpath	0	m2	$ 155.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.05	Bitumen footpath	0	m2	$ 117.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.06	Gravel pavement	0	m2	$ 69.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.07	Bitumen pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.08	AC pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.09	Pavers		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.10	Turf		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.11	Grass seeding	10200	m2	$ 7.00	$ 71,400.00	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**

HW0009.12	Hydromulch		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0010	Extra over item for Excavation in rock and disposal of excess excavated material		m3			**Measurement: Cubic metres excavated based on thickness of rock by actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0011	Acid sulphate soil					
HW0011.01	Initial testing for acid sulphate soils and prepare and submit report	71	per test	$ 110.00	$ 7,810.00	**Submit: Result for each test. Limits of Accuracy: <To be inserted>.**
HW0011.02	Establish treatment facility		Item			**Payment: 100% after completion of treatment facility.**
HW0011.03	Handling, treatment and testing of acid sulphate soils	7155	m3	$ 60.00	$ 429,300.00	**Measurement: Cubic metres excavated based on thickness of ASS by actual length by Minimum Trench Width. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>**
HW0011.04	Disposal off site of acid sulphate soil	0	tonne	$ 122.00	$ -	**Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>**
HW0012	Preconstruction record					
HW0012.01	Photographic	Item	Lump Sum		$ -	**Payment: 70% on submission of the Photographic record. Remainder at Practical Completion.**
HW0012.02	Video	Item	Lump Sum		$ -	**Payment: 70% on submission of the Video record. Remainder at Practical Completion.**
HW0012.03	CCTV	Item	Lump Sum		$ -	**Payment: 70% on submission of the CCTV record. Remainder at Practical Completion.**
HW0013	Work as Constructed Information <Insert Min 6>	Item	Lump Sum	$ 48,000.00	$ 48,000.00	**Payment: 100% at Practical Completion.**

A.	**TOTAL ESTIMATED CONTRACT AWARD SUM**	$ 4,828,134.35

B.	**PRE-CONSTRUCTION COST (Table 10)**	
HW0016	Design	$ 579,376.12
HW0017	Project Management of Design	$ 109,761.62
HW0018	Land Matters	$ -
HW0024	Community Consultation	
	Sub Total(B1)	$ 689,137.75
	Pre construction contingency (30% of B1)	$ 206,741.32
	TOTAL PRE-CONSTRUCTION COST (B)	$ 895,879.07

C.	**CONSTRUCTION COST**		
	Total Estimated Contract Award Sum (A)		$ 4,828,134.35
HW0019	Principal Supplied Pipe (as applicable)		$ -
HW0020	Principal Supplied Valves and Flowmeters (as applicable)		$ -
HW0021	Principal Supplied Fittings (as applicable)		$ -
HW0022	Pump Station HV Power Supply		$ -
HW0023	Construction Management (Table 11)		$ 386,250.75
	Sub Total (C1)		$ 5,214,385.10
	Construction contingency (Table 12) (30% of C1)	Preliminary Estimate	$ 1,564,315.53
	TOTAL CONSTRUCTION COST (C)		$ 6,778,700.63

	TOTAL PRELIMINARY PROJECT ESTIMATE (B+C) (Preliminary Estimate)	$ 7,674,579.70

ESTIMATING SHEET

PROJECT DESCRIPTION: Option 1B DN600 Rising Main

Item No.	Item Description	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0001	All work not included elsewhere in this schedule	Item	Lump Sum	$ 96,980.00	$ 96,980.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0002	Site Establishment <Insert Max $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0003	Site Disestablishment <Insert Min $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0004	Preparation and implementation of the Construction EMP	Item	Lump Sum	$ 8,000.00	$ 8,000.00	**Payment: Maximum of 30% on submission of complying Construction EMP, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Construction EMP**
HW0005	Preparation and implementation of the Safety Management Plan.	Item	Lump Sum	$ 18,000.00	$ 18,000.00	**Payment: Maximum of 30% on submission of complying plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Safety Management Plan.**
HW0006	Preparation and implementation of the Traffic Control Plan.	Item	Lump Sum	$ 4,000.00	$ 4,000.00	**Payment: Maximum of 30% on submission of complying Traffic Control Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0007	Preparation and Implementation of Quality Management Plan	Item	Lump Sum	$ 49,289.85	$ 49,289.85	**Payment: Maximum of 30% on submission of complying Quality Management Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0008	Community Consultation	Item	Lump Sum	$ -	$ -	**Payment: 10% per month up to maximum of 70%. Remainder at Practical Completion.**

Sewer Pipeline - Rising - section will be present if one or more rising mains are specified

Item	Construction of Sewer Rising Mains	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates	
HWR001	Service Location	Item	Lump Sum	$ 16,380.00	$ 16,380.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**	
HWR002	Supply all valves	Item	Lump Sum		$ -	Payment: Percentage of valves and flowmeters supplied Submit: Relevant Quality Records including Compliance Certificates.	
HWR003	Supply all fittings	Item	Lump Sum		$ -	Payment: Percentage of fittings supplied Submit: Relevant Quality Records including Compliance Certificates.	
HWR004	Supply all pipe materials including detector tape, pipe protection wrapping, rubber rings and lubricant for following pipe sizes:					Measurement: Actual metres (effective length) of pipe delivered to site. Submit: Relevant Quality Records including Compliance Certificates. Note: Limits of Accuracy to be inserted for each pipe size.	
13CDSS	Nominal DN600 DICL pipe	6000	m	$ 514.00	$ 3,084,000.00		
HWR005	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Up to 1.5 m depth to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation up to and including 1.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
13CD03	Nominal DN600 DICL (Trench type 3)	6000	m	$ 169.87	$ 1,019,220.00		Pipeline 2 - area allowance
HWR006	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >1.5m to 3.0m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 1.5m to and including 3.0m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR007	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >3.0m to 4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 3.0m to and including 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR008	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR009	EMPTY						
HWR010	Extra over rate for installation for Additional compaction		m3	$ 26.78		Measurement: Cubic metres of additional compaction based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR011	Excavate below specified design depth when directed including disposal of excess excavated material		m3	$ 110.25		Measurement: Cubic metres of excavation directed based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR012	Extra over rate for installation to Supply & place & compact non cohesive material.		m3			Measurement: Cubic metres of non cohesive material based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR013	Extra over rate for installation for supply, place and compact stabilised sand cement (14:1) backfill		m3	$ 472.50		Measurement: Cubic metres of stabilised sand cement based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR014	Extra over rate for installation for Supply, place and compact aggregate		m3			Measurement: Cubic metres of aggregate based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	

HWR015	Supply & place ballast		tonnes	$ 90.00		Measurement: Actual tonnes placed as directed. Submit: Relevant Quality Records including certified weighbridge dockets. Limits of Accuracy: <To be inserted>.
HWR016	External Dewatering of trench including establishment & disestablishment	6000	m		$ 600,000.00	**Measurement: Length of pipeline for which external dewatering is agreed with the Superintendent and provided, measured along the axis of the pipeline between the first and last spear point. Submit: Relevant Quality Records.**
HWR017	Supply and place treated timber piling for pipe support		m			Measurement: Actual metres from pipe invert to toe of pile Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR018	Road / creek crossings					Measurement: Length in metres of casing installed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR018.01	Adelaide St	80	m	$ 1,709.06	$ 136,725.00	
HWR019	Extra over rate for installation of trenchless technique under existing rail line		m			Measurement: Length in metres of casing installed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR020	Supply and installation of pipe aerial creek crossing including supply of MSCL pipe with protection coating, internal and external welding, testing of welds. For the following MSCL pipe sizes:					Measurement: Length in metres of crossing installed in accordance with design. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR021	Supply and installation of pipe river crossing including supply of MSCL pipe, internal and external welding, testing of welds and 150 thick concrete encasement. Also includes mobilisation and demobilisation of dredge(if required) excavation & disposal of excavated material, backfilling, lay, bed and test for the following MSCL pipe sizes:					Measurement: Length in metres of casing installed. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR022	Bulkheads and Trenchstops in accordance with WSAA drawing SEW-1206	Item	Lump Sum		$ -	Payment: Number of bulkheads & trenchstops constructed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR023	Supply and Install valve pits (excluding valves and fittings)	0	Each	$ -	$ -	Payment: Number of valve pits constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR024	Flow Relief Structures		Each			Payment: Number of flow relief structures constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR025	EMPTY					
HWR026	Supply and construct vent stacks		each			Payment: Number of vent stacks constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR027	Preparation of line sheets	6000	m	$ 1.00	$ 6,000.00	Measurement: Length of pipelines constructed as per design Limits of Accuracy: <To be inserted>.
HWR028	Acceptance testing - rising main		m			Measurement: Length of pipelines constructed as per design Submit: Satisfactory test records Limits of Accuracy: <To be inserted>.
HWR029	**Miscellaneous**					
HWR000	***Sub Total***				$4,862,325	

Item No.	Item Description	Qty	Unit		Amount $	Application of Schedule of Rates
HW0009	Restoration - Pipelines:					**Payment: 100% after completion.**
HW0009.01	Concrete kerb & gutter	0	m	$ 110.00	$ -	**Measurement: Lineal metres restored within Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0009.02	Concrete driveway	0	m2	$ 178.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.03	Exposed aggregate & stamped driveway	0	m2	$ 220.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.04	Concrete footpath	0	m2	$ 155.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.05	Bitumen footpath	0	m2	$ 117.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.06	Gravel pavement	0	m2	$ 69.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.07	Bitumen pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.08	AC pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.09	Pavers		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.10	Turf		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.11	Grass seeding	11100	m2	$ 7.00	$ 77,700.00	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**

HW0009.12	Hydromulch		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0010	Extra over item for Excavation in rock and disposal of excess excavated material		m3			**Measurement: Cubic metres excavated based on thickness of rock by actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0011	Acid sulphate soil					
HW0011.01	Initial testing for acid sulphate soils and prepare and submit report	71	per test	$ 110.00	$ 7,810.00	**Submit: Result for each test. Limits of Accuracy: <To be inserted>.**
HW0011.02	Establish treatment facility		Item			**Payment: 100% after completion of treatment facility.**
HW0011.03	Handling, treatment and testing of acid sulphate soils	8347.5	m3	$ 60.00	$ 500,850.00	**Measurement: Cubic metres excavated based on thickness of ASS by actual length by Minimum Trench Width. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>**
HW0011.04	Disposal off site of acid sulphate soil	0	tonne	$ 122.00	$ -	**Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>**
HW0012	Preconstruction record					
HW0012.01	Photographic	Item	Lump Sum		$ -	**Payment: 70% on submission of the Photographic record. Remainder at Practical Completion.**
HW0012.02	Video	Item	Lump Sum		$ -	**Payment: 70% on submission of the Video record. Remainder at Practical Completion.**
HW0012.03	CCTV	Item	Lump Sum		$ -	**Payment: 70% on submission of the CCTV record. Remainder at Practical Completion.**
HW0013	Work as Constructed Information <Insert Min 6>	Item	Lump Sum	$ 48,000.00	$ 48,000.00	**Payment: 100% at Practical Completion.**

A.	**TOTAL ESTIMATED CONTRACT AWARD SUM**	$ 5,732,954.85

B.	**PRE-CONSTRUCTION COST (Table 10)**	
HW0016	Design	$ 573,295.49
HW0017	Project Management of Design	$ 111,105.10
HW0018	Land Matters	$ -
HW0024	Community Consultation	
	Sub Total(B1)	$ 684,400.58
	Pre construction contingency (30% of B1)	$ 205,320.17
	TOTAL PRE-CONSTRUCTION COST (B)	$ 889,720.76

C.	**CONSTRUCTION COST**		
	Total Estimated Contract Award Sum (A)		$ 5,732,954.85
HW0019	Principal Supplied Pipe (as applicable)		$ -
HW0020	Principal Supplied Valves and Flowmeters (as applicable)		$ -
HW0021	Principal Supplied Fittings (as applicable)		$ -
HW0022	Pump Station HV Power Supply		$ -
HW0023	Construction Management (Table 11)		$ 458,636.39
	Sub Total (C1)		$ 6,191,591.24
	Construction contingency (Table 12) (30% of C1)	Preliminary Estimate	$ 1,857,477.37
	TOTAL CONSTRUCTION COST (C)		$ 8,049,068.61

	TOTAL PRELIMINARY PROJECT ESTIMATE (B+C) (Preliminary Estimate)	$ 8,938,789.37

ESTIMATING SHEET

PROJECT DESCRIPTION: Option 1C DN450 Rising Main

Item No.	Item Description	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0001	All work not included elsewhere in this schedule	Item	Lump Sum	$ 43,919.00	$ 43,919.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0002	Site Establishment <Insert Max $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0003	Site Disestablishment <Insert Min $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0004	Preparation and implementation of the Construction EMP	Item	Lump Sum	$ 4,000.00	$ 4,000.00	**Payment: Maximum of 30% on submission of complying Construction EMP, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Construction EMP**
HW0005	Preparation and implementation of the Safety Management Plan.	Item	Lump Sum	$ 9,000.00	$ 9,000.00	**Payment: Maximum of 30% on submission of complying plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Safety Management Plan.**
HW0006	Preparation and implementation of the Traffic Control Plan.	Item	Lump Sum	$ 2,000.00	$ 2,000.00	**Payment: Maximum of 30% on submission of complying Traffic Control Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0007	Preparation and Implementation of Quality Management Plan	Item	Lump Sum	$ 22,759.55	$ 22,759.55	**Payment: Maximum of 30% on submission of complying Quality Management Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0008	Community Consultation	Item	Lump Sum	$ -	$ -	**Payment: 10% per month up to maximum of 70%. Remainder at Practical Completion.**

Sewer Pipeline - Rising - section will be present if one or more rising mains are specified

Item	Construction of Sewer Rising Mains	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates	
HWR001	Service Location	Item	Lump Sum	$ 4,410.00	$ 4,410.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**	
HWR002	Supply all valves	Item	Lump Sum		$ -	Payment: Percentage of Valves and flowmeters supplied Submit: Relevant Quality Records including Compliance Certificates.	
HWR003	Supply all fittings	Item	Lump Sum		$ -	Payment: Percentage of fittings supplied Submit: Relevant Quality Records including Compliance Certificates.	
HWR004	Supply all pipe materials including detector tape, pipe protection wrapping, rubber rings and lubricant for following pipe sizes:					Measurement: Actual metres (effective length) of pipe delivered to site. Submit: Relevant Quality Records including Compliance Certificates. Note: Limits of Accuracy to be inserted for each pipe size.	
12DDSS	Nominal DN450 DICL pipe	3500	m	$ 304.00	$ 1,064,000.00		
HWR005	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Up to 1.5 m depth to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation up to and including 1.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
12DD03	Nominal DN450 DICL (Trench type 3)	3500	m	$ 161.99	$ 566,825.00		Pipeline 1 - area allowance
HWR006	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >1.5m to 3.0m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 1.5m to and including 3.0m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR007	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >3.0m to 4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 3.0m to and including 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR008	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR009	EMPTY						
HWR010	Extra over rate for installation for Additional compaction		m3	$ 22.95		Measurement: Cubic metres of additional compaction based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR011	Excavate below specified design depth when directed including disposal of excess excavated material		m3	$ 94.50		Measurement: Cubic metres of excavation of bed based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR012	Extra over rate for installation to Supply & place & compact non cohesive material.		m3			Measurement: Cubic metres of non cohesive material based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR013	Extra over rate for installation for supply, place and compact stabilised sand cement (14:1) backfill		m3	$ 405.00		Measurement: Cubic metres of stabilised sand cement based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR014	Extra over rate for installation for Supply, place and compact aggregate		m3			Measurement: Cubic metres of aggregate based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	

HWR015	Supply & place ballast		tonnes	$ 90.00		Measurement: Actual tonnes placed as directed. Submit: Relevant Quality Records including certified weighbridge dockets. Limits of Accuracy: <To be inserted>.
HWR016	External Dewatering of trench including establishment & disestablishment		m			**Measurement: Length of pipeline for which external dewatering is agreed with the Superintendent and provided, measured along the axis of the pipeline between the first and last spear point.** **Submit: Relevant Quality Records.**
HWR017	Supply and place treated timber piling for pipe support		m			Measurement: Actual metres from pipe invert to toe of pile Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR018	Road / creek crossings					Measurement: Length in metres of casing installed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR018.01	Adelaide St	80	m	$ 1,329.06	$ 106,325.00	
HWR018.02	Irrawang	90	m	$ 1,324.72	$ 119,225.00	
HWR019	Extra over rate for installation of trenchless technique under existing rail line		m			Measurement: Length in metres of casing installed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR020	Supply and installation of pipe aerial creek crossing including supply of MSCL pipe with protection coating, internal and external welding, testing of welds. For the following MSCL pipe sizes:					Measurement: Length in metres of casing installed in accordance with design. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR021	Supply and installation of pipe river crossing including supply of MSCL pipe, internal and external welding, testing of welds and 150 thick concrete encasement. Also includes mobilisation and demobilisation of dredge(if required) excavation & disposal of excavated material, backfilling, lay, bed and test for the following MSCL pipe sizes:					Measurement: Length in metres of casing installed. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR022	Bulkheads and Trenchstops in accordance with WSAA drawing SEW-1206	Item	Lump Sum		$ -	Payment: Number of bulkheads & trenchstops constructed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR023	Supply and Install valve pits (excluding valves and fittings)	0	Each	$ -	$ -	Payment: Number of valve pits constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR024	Flow Relief Structures		Each			Payment: Number of flow relief structures constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR025	EMPTY					
HWR026	Supply and construct vent stacks		each			Payment: Number of vent stacks constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>
HWR027	Preparation of line sheets	3500	m	$ 1.00	$ 3,500.00	Measurement: Length of pipelines constructed as per design Limits of Accuracy: <To be inserted>.
HWR028	Acceptance testing - rising main		m			Measurement: Length of pipelines constructed as per design Submit: Satisfactory test records Limits of Accuracy: <To be inserted>.
HWR029	**Miscellaneous**					
HWR000	***Sub Total***				$1,864,285	

Item No.	Item Description	Qty	Unit		Amount $	Application of Schedule of Rates
HW0009	Restoration - Pipelines:					**Payment: 100% after completion.**
HW0009.01	Concrete kerb & gutter	0	m	$ 110.00	$ -	**Measurement: Lineal metres restored within Minimum Trench Width.** **Limits of Accuracy: <To be inserted>.**
HW0009.02	Concrete driveway	0	m2	$ 178.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.03	Exposed aggregate & stamped driveway	0	m2	$ 220.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.04	Concrete footpath	0	m2	$ 155.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.05	Bitumen footpath	0	m2	$ 117.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.06	Gravel pavement	0	m2	$ 69.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.07	Bitumen pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.08	AC pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.09	Pavers		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.10	Turf		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**

HW0009.11	Grass seeding		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.12	Hydromulch		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0010	Extra over item for Excavation in rock and disposal of excess excavated material		m3			**Measurement: Cubic metres excavated based on thickness of rock by actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0011	Acid sulphate soil					
HW0011.01	Initial testing for acid sulphate soils and prepare and submit report	47	per test	$ 110.00	$ 5,170.00	**Submit: Result for each test. Limits of Accuracy: <To be inserted>.**
HW0011.02	Establish treatment facility		Item			**Payment: 100% after completion of treatment facility.**
HW0011.03	Handling, treatment and testing of acid sulphate soils	4725	m3	$ 60.00	$ 283,500.00	**Measurement: Cubic metres excavated based on thickness of ASS by actual length by Minimum Trench Width. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>**
HW0011.04	Disposal off site of acid sulphate soil	0	tonne	$ 122.00	$ -	**Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>**
HW0012	Preconstruction record					
HW0012.01	Photographic	Item	Lump Sum		$ -	**Payment: 70% on submission of the Photographic record. Remainder at Practical Completion.**
HW0012.02	Video	Item	Lump Sum		$ -	**Payment: 70% on submission of the Video record. Remainder at Practical Completion.**
HW0012.03	CCTV	Item	Lump Sum		$ -	**Payment: 70% on submission of the CCTV record. Remainder at Practical Completion.**
HW0013	Work as Constructed Information <Insert Min $>	Item	Lump Sum	$ 28,000.00	$ 28,000.00	**Payment: 100% at Practical Completion.**

A.	**TOTAL ESTIMATED CONTRACT AWARD SUM**	$ 2,322,633.55

B.	**PRE-CONSTRUCTION COST (Table 10)**	
HW0016	Design	$ 278,716.03
HW0017	Project Management of Design	$ 65,743.21
HW0018	Land Matters	$ -
HW0024	Community Consultation	
	Sub Total(B1)	$ 344,459.23
	Pre construction contingency (30% of B1)	$ 103,337.77
	TOTAL PRE-CONSTRUCTION COST (B)	$ 447,797.00

C.	**CONSTRUCTION COST**		
	Total Estimated Contract Award Sum (A)		$ 2,322,633.55
HW0019	Principal Supplied Pipe (as applicable)		$ -
HW0020	Principal Supplied Valves and Flowmeters (as applicable)		$ -
HW0021	Principal Supplied Fittings (as applicable)		$ -
HW0022	Pump Station HV Power Supply		$ -
HW0023	Construction Management (Table 11)		$ 185,810.68
	Sub Total (C1)		$ 2,508,444.23
	Construction contingency (Table 12) (30% of C1)	Preliminary Estimate	$ 752,533.27
	TOTAL CONSTRUCTION COST (C)		$ 3,260,977.50

	TOTAL PRELIMINARY PROJECT ESTIMATE (B+C) (Preliminary Estimate)	$ 3,708,774.50

ESTIMATING SHEET

PROJECT DESCRIPTION: Option 1C DN500 Rising Main

Item No.	Item Description	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0001	All work not included elsewhere in this schedule	Item	Lump Sum	$ 48,432.00	$ 48,432.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0002	Site Establishment <Insert Max $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0003	Site Disestablishment <Insert Min $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0004	Preparation and implementation of the Construction EMP	Item	Lump Sum	$ 4,000.00	$ 4,000.00	**Payment: Maximum of 30% on submission of complying Construction EMP, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Construction EMP**
HW0005	Preparation and implementation of the Safety Management Plan.	Item	Lump Sum	$ 9,000.00	$ 9,000.00	**Payment: Maximum of 30% on submission of complying plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Safety Management Plan.**
HW0006	Preparation and implementation of the Traffic Control Plan.	Item	Lump Sum	$ 2,000.00	$ 2,000.00	**Payment: Maximum of 30% on submission of complying Traffic Control Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0007	Preparation and Implementation of Quality Management Plan	Item	Lump Sum	$ 25,015.95	$ 25,015.95	**Payment: Maximum of 30% on submission of complying Quality Management Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0008	Community Consultation	Item	Lump Sum	$ -	$ -	**Payment: 10% per month up to maximum of 70%. Remainder at Practical Completion.**

Sewer Pipeline - Rising - section will be present if one or more rising mains are specified

Item	Construction of Sewer Rising Mains	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates	
HWR001	Service Location	Item	Lump Sum	$ 4,410.00	$ 4,410.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**	
HWR002	Supply all valves	Item	Lump Sum		$ -	Payment: Percentage of valves and flowmeters supplied Submit: Relevant Quality Records including Compliance Certificates.	
HWR003	Supply all fittings	Item	Lump Sum		$ -	Payment: Percentage of fittings supplied Submit: Relevant Quality Records including Compliance Certificates.	
HWR004	Supply all pipe materials including detector tape, pipe protection wrapping, rubber rings and lubricant for following pipe sizes:					Measurement: Actual metres (effective length) of pipe delivered to site. Submit: Relevant Quality Records including Compliance Certificates. Note: Limits of Accuracy to be inserted for each pipe size.	
1320SS	Nominal DN500 DICL pipe	3500	m	$ 394.00	$ 1,379,000.00		
HWR005	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Up to 1.5 m depth to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation up to and including 1.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
1320D3	Nominal DN500 DICL (Trench type 3)	3500	m	$ 167.74	$ 587,090.00		Pipeline 1 - area allowance
HWR006	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >1.5m to 3.0m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 1.5m to and including 3.0m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR007	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >3.0m to 4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 3.0m to and including 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR008	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR009	EMPTY						
HWR010	Extra over rate for installation for Additional compaction		m3	$ 22.95		Measurement: Cubic metres of additional compaction based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR011	Excavate below specified design depth when directed including disposal of excess excavated material		m3	$ 94.50		Measurement: Cubic metres of excavation directed based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR012	Extra over rate for installation to Supply & place & compact non cohesive material.		m3			Measurement: Cubic metres of non cohesive material based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR013	Extra over rate for installation for supply, place and compact stabilised sand cement (14:1) backfill		m3	$ 405.00		Measurement: Cubic metres of stabilised sand cement based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR014	Extra over rate for installation for Supply, place and compact aggregate		m3			Measurement: Cubic metres of aggregate based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	

HWR015	Supply & place ballast		tonnes	$ 90.00		Measurement: Actual tonnes placed as directed. Submit: Relevant Quality Records including certified weighbridge dockets. Limits of Accuracy: <To be inserted>.
HWR016	External Dewatering of trench including establishment & disestablishment	3500	m		$ 350,000.00	**Measurement: Length of pipeline for which external dewatering is agreed with the Superintendent and provided, measured along the axis of the pipeline between the first and last spear point.** **Submit: Relevant Quality Records.**
HWR017	Supply and place treated timber piling for pipe support		m			Measurement: Actual metres from pipe invert to toe of pile Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR018	Road / creek crossings					Measurement: Length in metres of casing installed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR018.01	Adelaide St	80	m	$ 1,449.06	$ 115,925.00	
HWR019	Extra over rate for installation of trenchless technique under existing rail line		m			Measurement: Length in metres of casing installed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR020	Supply and installation of pipe aerial creek crossing including supply of MSCL pipe with protection coating, internal and external welding, testing of welds. For the following MSCL pipe sizes:					Measurement: Length in metres of casing installed in accordance with design. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR021	Supply and installation of pipe river crossing including supply of MSCL pipe, internal and external welding, testing of welds and 150 thick concrete encasement. Also includes mobilisation and demobilisation of dredge(if required) excavation & disposal of excavated material, backfilling, lay, bed and test for the following MSCL pipe sizes:					Measurement: Length in metres of casing installed. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR022	Bulkheads and Trenchstops in accordance with WSAA drawing SEW-1206	Item	Lump Sum		$ -	Payment: Number of bulkheads & trenchstops constructed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR023	Supply and Install valve pits (excluding valves and fittings)	0	Each	$ -	$ -	Payment: Number of valve pits constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR024	Flow Relief Structures		Each			Payment: Number of flow relief structures constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR025	EMPTY					
HWR026	Supply and construct vent stacks		each			Payment: Number of vent stacks constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR027	Preparation of line sheets	3500	m	$ 1.00	$ 3,500.00	Measurement: Length of pipelines constructed as per design Limits of Accuracy: <To be inserted>.
HWR028	Acceptance testing - rising main		m			Measurement: Length of pipelines constructed as per design Submit: Satisfactory test records Limits of Accuracy: <To be inserted>.
HWR029	**Miscellaneous**					
HWR000	***Sub Total***				$2,439,925	

Item No.	Item Description	Qty	Unit		Amount $	Application of Schedule of Rates
HW0009	Restoration - Pipelines:					**Payment: 100% after completion.**
HW0009.01	Concrete kerb & gutter	0	m	$ 110.00	$ -	**Measurement: Lineal metres restored within Minimum Trench Width.** **Limits of Accuracy: <To be inserted>.**
HW0009.02	Concrete driveway	0	m2	$ 178.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.03	Exposed aggregate & stamped driveway	0	m2	$ 220.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.04	Concrete footpath	0	m2	$ 155.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.05	Bitumen footpath	0	m2	$ 117.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.06	Gravel pavement	0	m2	$ 69.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.07	Bitumen pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.08	AC pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.09	Pavers		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.10	Turf		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.11	Grass seeding	6475	m2	$ 7.00	$ 45,325.00	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**

HW0009.12	Hydromulch		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0010	Extra over item for Excavation in rock and disposal of excess excavated material		m3			**Measurement: Cubic metres excavated based on thickness of rock by actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0011	Acid sulphate soil					
HW0011.01	Initial testing for acid sulphate soils and prepare and submit report	47	per test	$ 110.00	$ 5,170.00	**Submit: Result for each test. Limits of Accuracy: <To be inserted>.**
HW0011.02	Establish treatment facility		Item			**Payment: 100% after completion of treatment facility.**
HW0011.03	Handling, treatment and testing of acid sulphate soils	4725	m3	$ 60.00	$ 283,500.00	**Measurement: Cubic metres excavated based on thickness of ASS by actual length by Minimum Trench Width. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>**
HW0011.04	Disposal off site of acid sulphate soil	0	tonne	$ 122.00	$ -	**Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>**
HW0012	Preconstruction record					
HW0012.01	Photographic	Item	Lump Sum		$ -	**Payment: 70% on submission of the Photographic record. Remainder at Practical Completion.**
HW0012.02	Video	Item	Lump Sum		$ -	**Payment: 70% on submission of the Video record. Remainder at Practical Completion.**
HW0012.03	CCTV	Item	Lump Sum		$ -	**Payment: 70% on submission of the CCTV record. Remainder at Practical Completion.**
HW0013	Work as Constructed Information <Insert Min 6>	Item	Lump Sum	$ 28,000.00	$ 28,000.00	**Payment: 100% at Practical Completion.**

A.	**TOTAL ESTIMATED CONTRACT AWARD SUM**	$ 2,950,367.95

B.	**PRE-CONSTRUCTION COST (Table 10)**	
HW0016	Design	$ 354,044.15
HW0017	Project Management of Design	$ 71,321.03
HW0018	Land Matters	$ -
HW0024	Community Consultation	
	Sub Total(B1)	$ 425,365.18
	Pre construction contingency (30% of B1)	$ 127,609.56
	TOTAL PRE-CONSTRUCTION COST (B)	$ 552,974.74

C.	**CONSTRUCTION COST**		
	Total Estimated Contract Award Sum (A)		$ 2,950,367.95
HW0019	Principal Supplied Pipe (as applicable)		$ -
HW0020	Principal Supplied Valves and Flowmeters (as applicable)		$ -
HW0021	Principal Supplied Fittings (as applicable)		$ -
HW0022	Pump Station HV Power Supply		$ -
HW0023	Construction Management (Table 11)		$ 236,029.44
	Sub Total (C1)		$ 3,186,397.39
	Construction contingency (Table 12) (30% of C1)	Preliminary Estimate	$ 955,919.22
	TOTAL CONSTRUCTION COST (C)		$ 4,142,316.60

	TOTAL PRELIMINARY PROJECT ESTIMATE (B+C) (Preliminary Estimate)	$ 4,695,291.34

ESTIMATING SHEET

PROJECT DESCRIPTION: Option 1C DN600 Rising Main

Item No.	Item Description	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0001	All work not included elsewhere in this schedule	Item	Lump Sum	$ 61,891.00	$ 61,891.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0002	Site Establishment <Insert Max $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0003	Site Disestablishment <Insert Min $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0004	Preparation and implementation of the Construction EMP	Item	Lump Sum	$ 4,000.00	$ 4,000.00	**Payment: Maximum of 30% on submission of complying Construction EMP, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Construction EMP**
HW0005	Preparation and implementation of the Safety Management Plan.	Item	Lump Sum	$ 9,000.00	$ 9,000.00	**Payment: Maximum of 30% on submission of complying plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Safety Management Plan.**
HW0006	Preparation and implementation of the Traffic Control Plan.	Item	Lump Sum	$ 2,000.00	$ 2,000.00	**Payment: Maximum of 30% on submission of complying Traffic Control Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0007	Preparation and implementation of Quality Management Plan	Item	Lump Sum	$ 31,745.70	$ 31,745.70	**Payment: Maximum of 30% on submission of complying Quality Management Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0008	Community Consultation	Item	Lump Sum	$ -	$ -	**Payment: 10% per month up to maximum of 70%. Remainder at Practical Completion.**

Sewer Pipeline - Rising - section will be present if one or more rising mains are specified

Item	Construction of Sewer Rising Mains	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates	
HWR001	Service Location	Item	Lump Sum	$ 5,145.00	$ 5,145.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**	
HWR002	Supply all valves	Item	Lump Sum		$ -	Payment: Percentage of valves and flowmeters supplied Submit: Relevant Quality Records including Compliance Certificates.	
HWR003	Supply all fittings	Item	Lump Sum		$ -	Payment: Percentage of fittings supplied Submit: Relevant Quality Records including Compliance Certificates.	
HWR004	Supply all pipe materials including detector tape, pipe protection wrapping, rubber rings and lubricant for following pipe sizes:					Measurement: Actual metres (effective length) of pipe delivered to site. Submit: Relevant Quality Records including Compliance Certificates. Note: Limits of Accuracy to be inserted for each pipe size.	
13CDSS	Nominal DN600 DICL pipe	3500	m	$ 514.00	$ 1,799,000.00		
HWR005	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Up to 1.5 m depth to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation up to and including 1.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
13CD03	Nominal DN600 DICL (Trench type 3)	3500	m	$ 176.53	$ 617,855.00		Pipeline 1 - area allowance
HWR006	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >1.5m to 3.0m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 1.5m to and including 3.0m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR007	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >3.0m to 4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 3.0m to and including 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR008	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR009	EMPTY						
HWR010	Extra over rate for installation for Additional compaction		m3	$ 26.78		Measurement: Cubic metres of additional compaction based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR011	Excavate below specified design depth when directed including disposal of excess excavated material		m3	$ 110.25		Measurement: Cubic metres of excavation of bed based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR012	Extra over rate for installation to Supply & place & compact non cohesive material.		m3			Measurement: Cubic metres of non cohesive material based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR013	Extra over rate for installation for supply, place and compact stabilised sand cement (14:1) backfill		m3	$ 472.50		Measurement: Cubic metres of stabilised sand cement based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR014	Extra over rate for installation for Supply, place and compact aggregate		m3			Measurement: Cubic metres of aggregate based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	

HWR015	Supply & place ballast		tonnes	$ 90.00		Measurement: Actual tonnes placed as directed. Submit: Relevant Quality Records including certified weighbridge dockets. Limits of Accuracy: <To be inserted>.
HWR016	External Dewatering of trench including establishment & disestablishment	3500	m		$ 350,000.00	**Measurement: Length of pipeline for which external dewatering is agreed with the Superintendent and provided, measured along the axis of the pipeline between the first and last spear point.** **Submit: Relevant Quality Records.**
HWR017	Supply and place treated timber piling for pipe support		m			Measurement: Actual metres from pipe invert to toe of pile Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR018	Road / creek crossings					Measurement: Length in metres of casing installed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR018.01	Adelaide St	80	m	$ 1,709.06	$ 136,725.00	
HWR018.02	Irrawang	90	m	$ 1,704.72	$ 153,425.00	
HWR019	Extra over rate for installation of trenchless technique under existing rail line		m			Measurement: Length in metres of casing installed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR020	Supply and installation of pipe aerial creek crossing including supply of MSCL pipe with protection coating, internal and external welding, testing of welds. For the following MSCL pipe sizes:					Measurement: Length in metres of crossing installed in accordance with design. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR021	Supply and installation of pipe river crossing including supply of MSCL pipe, internal and external welding, testing of welds and 150 thick concrete encasement. Also includes mobilisation and demobilisation of dredge(if required) excavation & disposal of excavated material, backfilling, lay, bed and test for the following MSCL pipe sizes:					Measurement: Length in metres of casing installed. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR022	Bulkheads and Trenchstops in accordance with WSAA drawing SEW-1206	Item	Lump Sum		$ -	Payment: Number of bulkheads & trenchstops constructed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR023	Supply and Install valve pits (excluding valves and fittings)	0	Each	$ -	$ -	Payment: Number of valve pits constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR024	Flow Relief Structures		Each			Payment: Number of flow relief structures constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR025	EMPTY					
HWR026	Supply and construct vent stacks		each			Payment: Number of vent stacks constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR027	Preparation of line sheets	3500	m	$ 1.00	$ 3,500.00	Measurement: Length of pipelines constructed as per design Limits of Accuracy: <To be inserted>.
HWR028	Acceptance testing - rising main		m			Measurement: Length of pipelines constructed as per design Submit: Satisfactory test records Limits of Accuracy: <To be inserted>.
HWR029	**Miscellaneous**					
HWR000	***Sub Total***				$3,065,650	

Item No.	Item Description	Qty	Unit		Amount $	Application of Schedule of Rates
HW0009	Restoration - Pipelines:					**Payment: 100% after completion.**
HW0009.01	Concrete kerb & gutter	0	m	$ 110.00	$ -	**Measurement: Lineal metres restored within Minimum Trench Width.** **Limits of Accuracy: <To be inserted>.**
HW0009.02	Concrete driveway	0	m2	$ 178.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.03	Exposed aggregate & stamped driveway	0	m2	$ 220.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.04	Concrete footpath	0	m2	$ 155.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.05	Bitumen footpath	0	m2	$ 117.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.06	Gravel pavement	0	m2	$ 69.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.07	Bitumen pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.08	AC pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.09	Pavers		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.10	Turf		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**

HW0009.11	Grass seeding	6300	m2	$ 7.00		**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.12	Hydromulch		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0010	Extra over item for Excavation in rock and disposal of excess excavated material		m3			**Measurement: Cubic metres excavated based on thickness of rock by actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0011	Acid sulphate soil					
HW0011.01	Initial testing for acid sulphate soils and prepare and submit report	47	per test	$ 110.00	$ 5,170.00	**Submit: Result for each test. Limits of Accuracy: <To be inserted>.**
HW0011.02	Establish treatment facility		Item			**Payment: 100% after completion of treatment facility.**
HW0011.03	Handling, treatment and testing of acid sulphate soils	5512.5	m3	$ 60.00	$ 330,750.00	**Measurement: Cubic metres excavated based on thickness of ASS by actual length by Minimum Trench Width. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>**
HW0011.04	Disposal off site of acid sulphate soil	0	tonne	$ 122.00	$ -	**Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>**
HW0012	Preconstruction record					
HW0012.01	Photographic	Item	Lump Sum		$ -	**Payment: 70% on submission of the Photographic record. Remainder at Practical Completion.**
HW0012.02	Video	Item	Lump Sum		$ -	**Payment: 70% on submission of the Video record. Remainder at Practical Completion.**
HW0012.03	CCTV	Item	Lump Sum		$ -	**Payment: 70% on submission of the CCTV record. Remainder at Practical Completion.**
HW0013	Work as Constructed Information <Insert Min $>	Item	Lump Sum	$ 28,000.00	$ 28,000.00	**Payment: 100% at Practical Completion.**

A.	**TOTAL ESTIMATED CONTRACT AWARD SUM**	$ 3,598,206.70

B.	**PRE-CONSTRUCTION COST (Table 10)**	
HW0016	Design	$ 431,784.80
HW0017	Project Management of Design	$ 87,956.96
HW0018	Land Matters	$ -
HW0024	Community Consultation	
	Sub Total(B1)	$ 519,741.76
	Pre construction contingency (30% of B1)	$ 155,922.53
	TOTAL PRE-CONSTRUCTION COST (B)	$ 675,664.29

C.	**CONSTRUCTION COST**		
	Total Estimated Contract Award Sum (A)		$ 3,598,206.70
HW0019	Principal Supplied Pipe (as applicable)		$ -
HW0020	Principal Supplied Valves and Flowmeters (as applicable)		$ -
HW0021	Principal Supplied Fittings (as applicable)		$ -
HW0022	Pump Station HV Power Supply		$ -
HW0023	Construction Management (Table 11)		$ 287,856.54
	Sub Total (C1)		$ 3,886,063.24
	Construction contingency (Table 12) (30% of C1)	Preliminary Estimate	$ 1,165,818.97
	TOTAL CONSTRUCTION COST (C)		$ 5,051,882.21

TOTAL PRELIMINARY PROJECT ESTIMATE (B+C) (Preliminary Estimate)	$ 5,727,546.50

ESTIMATING SHEET

PROJECT DESCRIPTION: Option 1C DN750 Rising Main

Item No.	Item Description	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0001	All work not included elsewhere in this schedule	Item	Lump Sum	$ 82,732.00	$ 82,732.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0002	Site Establishment <Insert Max $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0003	Site Disestablishment <Insert Min $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0004	Preparation and implementation of the Construction EMP	Item	Lump Sum	$ 4,000.00	$ 4,000.00	**Payment: Maximum of 30% on submission of complying Construction EMP, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Construction EMP**
HW0005	Preparation and implementation of the Safety Management Plan.	Item	Lump Sum	$ 9,000.00	$ 9,000.00	**Payment: Maximum of 30% on submission of complying plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Safety Management Plan.**
HW0006	Preparation and implementation of the Traffic Control Plan.	Item	Lump Sum	$ 2,000.00	$ 2,000.00	**Payment: Maximum of 30% on submission of complying Traffic Control Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0007	Preparation and Implementation of Quality Management Plan	Item	Lump Sum	$ 42,166.20	$ 42,166.20	**Payment: Maximum of 30% on submission of complying Quality Management Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0008	Community Consultation	Item	Lump Sum	$ -	$ -	**Payment: 10% per month up to maximum of 70%. Remainder at Practical Completion.**

Sewer Pipeline - Rising - section will be present if one or more rising mains are specified

Item	Construction of Sewer Rising Mains	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates	
HWR001	Service Location	Item	Lump Sum	$ 5,880.00	$ 5,880.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**	
HWR002	Supply all valves	Item	Lump Sum		$ -	Payment: Percentage of valves and flowmeters supplied Submit: Relevant Quality Records including Compliance Certificates.	
HWR003	Supply all fittings	Item	Lump Sum		$ -	Payment: Percentage of fittings supplied Submit: Relevant Quality Records including Compliance Certificates.	
HWR004	Supply all pipe materials including detector tape, pipe protection wrapping, rubber rings and lubricant for following pipe sizes:					Measurement: Actual metres (effective length) of pipe delivered to site. Submit: Relevant Quality Records including Compliance Certificates. Note: Limits of Accuracy to be inserted for each pipe size.	
148DSS	Nominal DN750 DICL pipe	3500	m	$ 729.00	$ 2,551,500.00		
HWR005	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Up to 1.5 m depth to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation up to and including 1.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
148D03	Nominal DN750 DICL (Trench type 3)	3500	m	$ 218.32	$ 764,120.00		Pipeline 1 - area allowance
HWR006	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >1.5m to 3.0m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 1.5m to and including 3.0m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR007	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >3.0m to 4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 3.0m to and including 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR008	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR009	EMPTY						
HWR010	Extra over rate for installation for Additional compaction		m3	$ 30.60		Measurement: Cubic metres of additional compaction based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR011	Excavate below specified design depth when directed including disposal of excess excavated material		m3	$ 126.00		Measurement: Cubic metres of excavation directed based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR012	Extra over rate for installation to Supply & place & compact non cohesive material.		m3			Measurement: Cubic metres of non cohesive material based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR013	Extra over rate for installation for supply, place and compact stabilised sand cement (14:1) backfill		m3	$ 540.00		Measurement: Cubic metres of stabilised sand cement based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR014	Extra over rate for installation for Supply, place and compact aggregate		m3			Measurement: Cubic metres of aggregate based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	

HWR015	Supply & place ballast		tonnes	$ 90.00		Measurement: Actual tonnes placed as directed. Submit: Relevant Quality Records including certified weighbridge dockets. Limits of Accuracy: <To be inserted>.
HWR016	External Dewatering of trench including establishment & disestablishment	3500	m		$ 350,000.00	**Measurement: Length of pipeline for which external dewatering is agreed with the Superintendent and provided, measured along the axis of the pipeline between the first and last spear point. Submit: Relevant Quality Records.**
HWR017	Supply and place treated timber piling for pipe support		m			Measurement: Actual metres from pipe invert to toe of pile Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR018	Road / creek crossings					Measurement: Length in metres of casing installed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR018.01	Adelaide St	80	m	$ 2,409.06	$ 192,725.00	
HWR018.02	Irrawang	80	m	$ 2,409.06	$ 192,725.00	
HWR019	Extra over rate for installation of trenchless technique under existing rail line		m			Measurement: Length in metres of casing installed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR020	Supply and installation of pipe aerial creek crossing including supply of MSCL pipe with protection coating, internal and external welding, testing of welds. For the following MSCL pipe sizes:					Measurement: Length in metres of crossing installed in accordance with design. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR021	Supply and installation of pipe river crossing including supply of MSCL pipe, internal and external welding, testing of welds and 150 thick concrete encasement. Also includes mobilisation and demobilisation of dredge(if required) excavation & disposal of excavated material, backfilling, lay, bed and test for the following MSCL pipe sizes:					Measurement: Length in metres of casing installed. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR022	Bulkheads and Trenchstops in accordance with WSAA drawing SEW-1206	Item	Lump Sum		$ -	Payment: Number of bulkheads & trenchstops constructed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR023	Supply and Install valve pits (excluding valves and fittings)	0	Each	$ -	$ -	Payment: Number of valve pits constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR024	Flow Relief Structures		Each			Payment: Number of flow relief structures constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR025	EMPTY					
HWR026	Supply and construct vent stacks		each			Payment: Number of vent stacks constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR027	Preparation of line sheets	3500	m	$ 1.00	$ 3,500.00	Measurement: Length of pipelines constructed as per design Limits of Accuracy: <To be inserted>.
HWR028	Acceptance testing - rising main		m			Measurement: Length of pipelines constructed as per design Submit: Satisfactory test records Limits of Accuracy: <To be inserted>.
HWR029	**Miscellaneous**					
HWR000	***Sub Total***				$4,060,450	

Item No.	Item Description	Qty	Unit		Amount $	Application of Schedule of Rates
HW0009	Restoration - Pipelines:					**Payment: 100% after completion.**
HW0009.01	Concrete kerb & gutter	0	m	$ 110.00	$ -	**Measurement: Lineal metres restored within Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0009.02	Concrete driveway	0	m2	$ 178.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.03	Exposed aggregate & stamped driveway	0	m2	$ 220.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.04	Concrete footpath	0	m2	$ 155.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.05	Bitumen footpath	0	m2	$ 117.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.06	Gravel pavement	0	m2	$ 69.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.07	Bitumen pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.08	AC pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.09	Pavers		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.10	Turf		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**

HW0009.11	Grass seeding	6300	m2	$ 7.00	$ 44,100.00	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.12	Hydromulch		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0010	Extra over item for Excavation in rock and disposal of excess excavated material		m3			**Measurement: Cubic metres excavated based on thickness of rock by actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0011	Acid sulphate soil					
HW0011.01	Initial testing for acid sulphate soils and prepare and submit report	47	per test	$ 110.00	$ 5,170.00	**Submit: Result for each test. Limits of Accuracy: <To be inserted>.**
HW0011.02	Establish treatment facility		Item			**Payment: 100% after completion of treatment facility.**
HW0011.03	Handling, treatment and testing of acid sulphate soils	6300	m3	$ 60.00	$ 378,000.00	**Measurement: Cubic metres excavated based on thickness of ASS by actual length by Minimum Trench Width. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>**
HW0011.04	Disposal off site of acid sulphate soil	0	tonne	$ 122.00	$ -	**Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>**
HW0012	Preconstruction record					
HW0012.01	Photographic	Item	Lump Sum		$ -	**Payment: 70% on submission of the Photographic record. Remainder at Practical Completion.**
HW0012.02	Video	Item	Lump Sum		$ -	**Payment: 70% on submission of the Video record. Remainder at Practical Completion.**
HW0012.03	CCTV	Item	Lump Sum		$ -	**Payment: 70% on submission of the CCTV record. Remainder at Practical Completion.**
HW0013	Work as Constructed Information <Insert Min $>	Item	Lump Sum	$ 28,000.00	$ 28,000.00	**Payment: 100% at Practical Completion.**

A.	**TOTAL ESTIMATED CONTRACT AWARD SUM**	$ 4,715,618.20

B.	**PRE-CONSTRUCTION COST (Table 10)**	
HW0016	Design	$ 565,874.18
HW0017	Project Management of Design	$ 113,716.44
HW0018	Land Matters	$ -
HW0024	Community Consultation	
	Sub Total(B1)	$ 679,590.62
	Pre construction contingency (30% of B1)	$ 203,877.19
	TOTAL PRE-CONSTRUCTION COST (B)	$ 883,467.81

C.	**CONSTRUCTION COST**		
	Total Estimated Contract Award Sum (A)		$ 4,715,618.20
HW0019	Principal Supplied Pipe (as applicable)		$ -
HW0020	Principal Supplied Valves and Flowmeters (as applicable)		$ -
HW0021	Principal Supplied Fittings (as applicable)		$ -
HW0022	Pump Station HV Power Supply		$ -
HW0023	Construction Management (Table 11)		$ 377,249.46
	Sub Total (C1)		$ 5,092,867.66
	Construction contingency (Table 12) (30% of C1)	Preliminary Estimate	$ 1,527,860.30
	TOTAL CONSTRUCTION COST (C)		$ 6,620,727.95

TOTAL PRELIMINARY PROJECT ESTIMATE (B+C) (Preliminary Estimate)	$ 7,504,195.76

ESTIMATING SHEET

PROJECT DESCRIPTION: Option 1D DN450 Rising Main

Item No.	Item Description	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0001	All work not included elsewhere in this schedule	Item	Lump Sum	$ 75,196.00	$ 75,196.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0002	Site Establishment <Insert Max $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0003	Site Disestablishment <Insert Min $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0004	Preparation and implementation of the Construction EMP	Item	Lump Sum	$ 12,000.00	$ 12,000.00	**Payment: Maximum of 30% on submission of complying Construction EMP, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Construction EMP.**
HW0005	Preparation and implementation of the Safety Management Plan.	Item	Lump Sum	$ 27,000.00	$ 27,000.00	**Payment: Maximum of 30% on submission of complying plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Safety Management Plan.**
HW0006	Preparation and implementation of the Traffic Control Plan.	Item	Lump Sum	$ 6,000.00	$ 6,000.00	**Payment: Maximum of 30% on submission of complying Traffic Control Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0007	Preparation and Implementation of Quality Management Plan	Item	Lump Sum	$ 38,398.21	$ 38,398.21	**Payment: Maximum of 30% on submission of complying Quality Management Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0008	Community Consultation	Item	Lump Sum	$ -	$ -	**Payment: 10% per month up to maximum of 70%. Remainder at Practical Completion.**

Sewer Pipeline - Rising - section will be present if one or more rising mains are specified

Item	Construction of Sewer Rising Mains	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HWR001	Service Location	Item	Lump Sum	$ 15,003.00	$ 15,003.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HWR002	Supply all valves	Item	Lump Sum		$ -	Payment: Percentage of valves and flowmeters supplied Submit: Relevant Quality Records including Compliance Certificates.
HWR003	Supply all fittings	Item	Lump Sum		$ -	Payment: Percentage of fittings supplied. Submit: Relevant Quality Records including Compliance Certificates.
HWR004	Supply all pipe materials including detector tape, pipe protection wrapping, rubber rings and lubricant for following pipe sizes:					Measurement: Actual metres (effective length) of pipe delivered to site. Submit: Relevant Quality Records including Compliance Certificates. Note: Limits of Accuracy to be inserted for each pipe size.
12DDSS	Nominal DN450 DICL pipe	6350	m	$ 304.00	$ 1,930,400.00	Measurement: Actual metres of pipe installed with design depth of
HWR005	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Up to 1.5 m depth to invert in OTR.					excavation up to and including 1.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.
12DD03	Nominal DN450 DICL (Trench type 3)	6350	m	$ 164.00	$ 1,041,397.50	Pipeline 2 - area allowance, Pipeline 3 - area allowance,
HWR006	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >1.5m to 3.0m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 1.5m to and including 3.0m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.
HWR007	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >3.0m to 4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 3.0m to and including 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.
HWR008	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.
HWR009	EMPTY					
HWR010	Extra over rate for installation for Additional compaction		m3	$ 22.95		Measurement: Cubic metres of additional compaction based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR011	Excavate below specified design depth where directed including disposal of excess excavated material		m3	$ 94.50		Measurement: Cubic metres of excavation directed based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR012	Extra over rate for installation to Supply & place & compact non cohesive material.		m3			Measurement: Cubic metres of non cohesive material based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.

HWR013	Extra over rate for installation for supply, place and compact stabilised sand cement (14:1) backfill		m3	$ 405.00		Measurement: Cubic metres of stabilised sand cement based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR014	Extra over rate for installation for Supply, place and compact aggregate		m3			Measurement: Cubic metres of aggregate based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR015	Supply & place ballast		tonnes	$ 90.00		Measurement: Actual tonnes placed as directed. Submit: Relevant Quality Records including certified weighbridge dockets. Limits of Accuracy: <To be inserted>.
HWR016	External Dewatering of trench including establishment & disestablishment	6350	m		$ 635,000.00	**Measurement: Length of pipeline for which external dewatering is agreed with the Superintendent and provided, measured along the axis of the pipeline between the first and last spear point. Submit: Relevant Quality Records.**
HWR017	Supply and place treated timber piling for pipe support		m			Measurement: Actual metres from pile invert to toe of pile. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR018	Road / creek crossings					Measurement: Length in metres of casing installed. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR018.01	Adelaide St	80	m	$ 1,329.06	$ 106,325.00	
HWR018.02	Irrawang	90	m	$ 1,324.72	$ 119,225.00	
HWR019	Extra over rate for installation of trenchless technique under existing rail line		m			Measurement: Length in metres of casing installed. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR020	Supply and installation of pipe aerial creek crossing including supply of MSCL pipe with protection coating, internal and external welding, testing of welds. For the following MSCL pipe sizes:					Measurement: Length in metres of crossing installed in accordance with design. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR021	Supply and installation of pipe river crossing including supply of MSCL pipe, internal and external welding, testing of welds and 150 thick concrete encasement. Also includes mobilisation and demobilisation of dredge(if required) excavation & disposal of excavated material, backfilling, lay, bed and test for the following MSCL pipe sizes:					Measurement: Length in metres of casing installed. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR022	Bulkheads and Trenchstops in accordance with WSAA drawing SEW-1206	Item	Lump Sum		$ -	Payment: Number of bulkheads & trenchstops constructed. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>
HWR023	Supply and Install valve pits (excluding valves and fittings)	0	Each	$ -	$ -	Payment: Number of valve pits constructed. Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR024	Flow Relief Structures		Each			Payment: Number of flow relief structures constructed. Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR025	EMPTY					
HWR026	Supply and construct vent stacks		each			Payment: Number of vent stacks constructed. Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR027	Preparation of line sheets	6350	m	$ 1.00	$ 6,350.00	Measurement: Length of pipelines constructed as per design. Limits of Accuracy: <To be inserted>.
HWR028	Acceptance testing - rising main		m			Measurement: Length of pipelines constructed as per design. Submit: Satisfactory test records Limits of Accuracy: <To be inserted>.
HWR029	**Miscellaneous**					
HWR000	***Sub Total***				$3,853,701	

Item No.	Item Description	Qty	Unit		Amount $	Application of Schedule of Rates
HW0009	Restoration - Pipelines:					**Payment: 100% after completion.**
HW0009.01	Concrete kerb & gutter	0	m	$ 110.00	$ -	**Measurement: Lineal metres restored within Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.02	Concrete driveway	0	m2	$ 178.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.03	Exposed aggregate & stamped driveway	0	m2	$ 220.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.04	Concrete footpath	0	m2	$ 155.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.05	Bitumen footpath	0	m2	$ 117.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.06	Gravel pavement	0	m2	$ 69.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**

HW0009.07	Bitumen pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.08	AC pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.09	Pavers		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.10	Turf		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.11	Grass seeding	10795	m2	$ 7.00	$ 75,565.00	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.12	Hydromulch		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0010	Extra over item for Excavation in rock and disposal of excess excavated material		m3			**Measurement: Cubic metres excavated based on thickness of rock by actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0011	Acid sulphate soil					
HW0011.01	Initial testing for acid sulphate soils and prepare and submit report	72	per test	$ 110.00	$ 7,920.00	**Submit: Result for each test. Limits of Accuracy: <To be inserted>.**
HW0011.02	Establish treatment facility		Item			**Payment: 100% after completion of treatment facility.**
HW0011.03	Handling, treatment and testing of acid sulphate soils	7290	m3	$ 60.00	$ 437,400.00	**Measurement: Cubic metres excavated based on thickness of ASS by actual length by Minimum Trench Width. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>**
HW0011.04	Disposal off site of acid sulphate soil	0	tonne	$ 122.00	$ -	**Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>**
HW0012	Preconstruction record					
HW0012.01	Photographic	Item	Lump Sum		$ -	**Payment: 70% on submission of the Photographic record. Remainder at Practical Completion.**
HW0012.02	Video	Item	Lump Sum		$ -	**Payment: 70% on submission of the Video record. Remainder at Practical Completion.**
HW0012.03	CCTV	Item	Lump Sum		$ -	**Payment: 70% on submission of the CCTV record. Remainder at Practical Completion.**
HW0013	Work as Constructed Information <Insert Min $>	Item	Lump Sum	$ 50,800.00	$ 50,800.00	**Payment: 100% at Practical Completion.**

A.	**TOTAL ESTIMATED CONTRACT AWARD SUM**	$ 4,643,979.71

B.	**PRE-CONSTRUCTION COST (Table 10)**	
HW0016	Design	$ 557,277.57
HW0017	Project Management of Design	$ 104,401.95
HW0018	Land Matters	$ -
HW0024	Community Consultation	
	Sub Total(B1)	$ 661,679.52
	Pre construction contingency (30% of B1)	$ 198,503.86
	TOTAL PRE-CONSTRUCTION COST (B)	$ 860,183.37

C.	**CONSTRUCTION COST**		
	Total Estimated Contract Award Sum (A)		$ 4,643,979.71
HW0019	Principal Supplied Pipe (as applicable)		$ -
HW0020	Principal Supplied Valves and Flowmeters (as applicable)		$ -
HW0021	Principal Supplied Fittings (as applicable)		$ -
HW0022	Pump Station HV Power Supply		$ -
HW0023	Construction Management (Table 11)		$ 371,518.38
	Sub Total (C1)		$ 5,015,498.09
	Construction contingency (Table 12) (30% of C1)	Preliminary Estimate	$ 1,504,649.43
	TOTAL CONSTRUCTION COST (C)		$ 6,520,147.51

	TOTAL PRELIMINARY PROJECT ESTIMATE (B+C) (Preliminary Estimate)	$ 7,380,330.89

ESTIMATING SHEET

PROJECT DESCRIPTION: Option 1D DN500 Rising Main

Item No.	Item Description	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0001	All work not included elsewhere in this schedule	Item	Lump Sum	$ 87,421.00	$ 87,421.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0002	Site Establishment <Insert Max $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0003	Site Disestablishment <Insert Min $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0004	Preparation and implementation of the Construction EMP	Item	Lump Sum	$ 12,000.00	$ 12,000.00	**Payment: Maximum of 30% on submission of complying Construction EMP, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Construction EMP.**
HW0005	Preparation and implementation of the Safety Management Plan.	Item	Lump Sum	$ 27,000.00	$ 27,000.00	**Payment: Maximum of 30% on submission of complying plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Safety Management Plan.**
HW0006	Preparation and implementation of the Traffic Control Plan.	Item	Lump Sum	$ 6,000.00	$ 6,000.00	**Payment: Maximum of 30% on submission of complying Traffic Control Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0007	Preparation and Implementation of Quality Management Plan	Item	Lump Sum	$ 44,510.70	$ 44,510.70	**Payment: Maximum of 30% on submission of complying Quality Management Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0008	Community Consultation	Item	Lump Sum	$ -	$ -	**Payment: 10% per month up to maximum of 70%. Remainder at Practical Completion.**

Sewer Pipeline - Rising - section will be present if one or more rising mains are specified

Item	Construction of Sewer Rising Mains	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HWR001	Service Location	Item	Lump Sum	$ 15,003.00	$ 15,003.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HWR002	Supply all valves	Item	Lump Sum		$ -	Payment: Percentage of valves and flowmeters supplied Submit: Relevant Quality Records including Compliance Certificates.
HWR003	Supply all fittings	Item	Lump Sum		$ -	Payment: Percentage of fittings supplied. Submit: Relevant Quality Records including Compliance Certificates.
HWR004	Supply all pipe materials including detector tape, pipe protection wrapping, rubber rings and lubricant for following pipe sizes:					Measurement: Actual metres (effective length) of pipe delivered to site. Submit: Relevant Quality Records including Compliance Certificates. Note: Limits of Accuracy to be inserted for each pipe size.
132DSS	Nominal DN500 DICL pipe	6350	m	$ 394.00	$ 2,501,900.00	
HWR005	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Up to 1.5 m depth to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation up to and including 1.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.
132D03	Nominal DN500 DICL (Trench type 3)	6350	m	$ 169.27	$ 1,074,847.00	Pipeline 2 - area allowance, Pipeline 3 - area allowance,
HWR006	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >1.5m to 3.0m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 1.5m to and including 3.0m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.
HWR007	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >3.0m to 4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 3.0m to and including 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.
HWR008	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.
HWR009	EMPTY					
HWR010	Extra over rate for installation for Additional compaction		m3	$ 22.95		Measurement: Cubic metres of additional compaction based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR011	Excavate below specified design depth where directed including disposal of excess excavated material		m3	$ 94.50		Measurement: Cubic metres of excavation directed based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR012	Extra over rate for installation to Supply & place & compact non cohesive material.		m3			Measurement: Cubic metres of non cohesive material based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.

HWR013	Extra over rate for installation for supply, place and compact stabilised sand cement (14:1) backfill		m3	$ 405.00		Measurement: Cubic metres of stabilised sand cement based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR014	Extra over rate for installation for Supply, place and compact aggregate		m3			Measurement: Cubic metres of aggregate based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR015	Supply & place ballast		tonnes	$ 90.00		Measurement: Actual tonnes placed as directed. Submit: Relevant Quality Records including certified weighbridge dockets. Limits of Accuracy: <To be inserted>.
HWR016	External Dewatering of trench including establishment & disestablishment	6350	m		$ 635,000.00	**Measurement: Length of pipeline for which external dewatering is agreed with the Superintendent and provided, measured along the axis of the pipeline between the first and last spear point. Submit: Relevant Quality Records.**
HWR017	Supply and place treated timber piling for pipe support		m			Measurement: Actual metres from pipe invert to toe of pile. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR018	Road / creek crossings					Measurement: Length in metres of casing installed. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR018.01	Adelaide St	80	m	$ 1,449.06	$ 115,925.00	
HWR018.02	Irrawang	80	m	$ 1,449.06	$ 115,925.00	
HWR019	Extra over rate for installation of trenchless technique under existing rail line		m			Measurement: Length in metres of casing installed. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR020	Supply and installation of pipe aerial creek crossing including supply of MSCL pipe with protection coating, internal and external welding, testing of welds. For the following MSCL pipe sizes:					Measurement: Length in metres of crossing installed in accordance with design. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR021	Supply and installation of pipe river crossing including supply of MSCL pipe, internal and external welding, testing of welds and 150 thick concrete encasement. Also includes mobilisation and demobilisation of dredge(if required) excavation & disposal of excavated material, backfilling, lay, bed and test for the following MSCL pipe sizes:					Measurement: Length in metres of casing installed. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR022	Bulkheads and Trenchstops in accordance with WSAA drawing SEW-1206	Item	Lump Sum		$ -	Payment: Number of bulkheads & trenchstops constructed. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>
HWR023	Supply and Install valve pits (excluding valves and fittings)	0	Each	$ -	$ -	Payment: Number of valve pits constructed. Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR024	Flow Relief Structures		Each			Payment: Number of flow relief structures constructed. Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR025	EMPTY					
HWR026	Supply and construct vent stacks		each			Payment: Number of vent stacks constructed. Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR027	Preparation of line sheets	6350	m	$ 1.00	$ 6,350.00	Measurement: Length of pipelines constructed as per design. Limits of Accuracy: <To be inserted>.
HWR028	Acceptance testing - rising main		m			Measurement: Length of pipelines constructed as per design. Submit: Satisfactory test records Limits of Accuracy: <To be inserted>.
HWR029	**Miscellaneous**					
HWR000	***Sub Total***				$4,464,950	

Item No.	Item Description	Qty	Unit		Amount $	Application of Schedule of Rates
HW0009	Restoration - Pipelines:					**Payment: 100% after completion.**
HW0009.01	Concrete kerb & gutter	0	m	$ 110.00	$ -	**Measurement: Lineal metres restored within Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.02	Concrete driveway	0	m2	$ 178.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.03	Exposed aggregate & stamped driveway	0	m2	$ 220.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.04	Concrete footpath	0	m2	$ 155.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.05	Bitumen footpath	0	m2	$ 117.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.06	Gravel pavement	0	m2	$ 69.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**

HW0009.07	Bitumen pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.08	AC pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.09	Pavers		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.10	Turf		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.11	Grass seeding	11430	m2	$ 7.00	$ 80,010.00	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.12	Hydromulch		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0010	Extra over item for Excavation in rock and disposal of excess excavated material		m3			**Measurement: Cubic metres excavated based on thickness of rock by actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0011	Acid sulphate soil					
HW0011.01	Initial testing for acid sulphate soils and prepare and submit report	72	per test	$ 110.00	$ 7,920.00	**Submit: Result for each test. Limits of Accuracy: <To be inserted>.**
HW0011.02	Establish treatment facility		Item			**Payment: 100% after completion of treatment facility.**
HW0011.03	Handling, treatment and testing of acid sulphate soils	7290	m3	$ 60.00	$ 437,400.00	**Measurement: Cubic metres excavated based on thickness of ASS by actual length by Minimum Trench Width. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>**
HW0011.04	Disposal off site of acid sulphate soil	0	tonne	$ 122.00	$ -	**Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>**
HW0012	Preconstruction record					
HW0012.01	Photographic	Item	Lump Sum		$ -	**Payment: 70% on submission of the Photographic record. Remainder at Practical Completion.**
HW0012.02	Video	Item	Lump Sum		$ -	**Payment: 70% on submission of the Video record. Remainder at Practical Completion.**
HW0012.03	CCTV	Item	Lump Sum		$ -	**Payment: 70% on submission of the CCTV record. Remainder at Practical Completion.**
HW0013	Work as Constructed Information <Insert Min $>	Item	Lump Sum	$ 50,800.00	$ 50,800.00	**Payment: 100% at Practical Completion.**

A.	**TOTAL ESTIMATED CONTRACT AWARD SUM**	$ 5,278,011.70

B.	**PRE-CONSTRUCTION COST (Table 10)**	
HW0016	Design	$ 527,801.17
HW0017	Project Management of Design	$ 119,512.04
HW0018	Land Matters	$ -
HW0024	Community Consultation	
	Sub Total(B1)	$ 647,313.21
	Pre construction contingency (30% of B1)	$ 194,193.96
	TOTAL PRE-CONSTRUCTION COST (B)	$ 841,507.17

C.	**CONSTRUCTION COST**		
	Total Estimated Contract Award Sum (A)		$ 5,278,011.70
HW0019	Principal Supplied Pipe (as applicable)		$ -
HW0020	Principal Supplied Valves and Flowmeters (as applicable)		$ -
HW0021	Principal Supplied Fittings (as applicable)		$ -
HW0022	Pump Station HV Power Supply		$ -
HW0023	Construction Management (Table 11)		$ 422,240.94
	Sub Total (C1)		$ 5,700,252.64
	Construction contingency (Table 12) (30% of C1)	Preliminary Estimate	$ 1,710,075.79
	TOTAL CONSTRUCTION COST (C)		$ 7,410,328.43

	TOTAL PRELIMINARY PROJECT ESTIMATE (B+C) (Preliminary Estimate)	$ 8,251,835.60

ESTIMATING SHEET

PROJECT DESCRIPTION: Option 1A - Gravity Main

Item No.	Item Description	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0001	All work not included elsewhere in this schedule	Item	Lump Sum	$ 32,159.00	$ 32,159.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0002	Site Establishment <Insert Max $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0003	Site Disestablishment <Insert Min $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0004	Preparation and implementation of the Construction EMP	Item	Lump Sum	$ 4,000.00	$ 4,000.00	**Payment: Maximum of 30% on submission of complying Construction EMP, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Construction EMP**
HW0005	Preparation and implementation of the Safety Management Plan.	Item	Lump Sum	$ 9,000.00	$ 9,000.00	**Payment: Maximum of 30% on submission of complying plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Safety Management Plan.**
HW0006	Preparation and implementation of the Traffic Control Plan.	Item	Lump Sum	$ 2,000.00	$ 2,000.00	**Payment: Maximum of 30% on submission of complying Traffic Control Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0007	Preparation and implementation of Quality Management Plan	Item	Lump Sum	$ 16,879.70	$ 16,879.70	**Payment: Maximum of 30% on submission of complying Quality Management Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0008	Community Consultation	Item	Lump Sum	$ -	$ -	**Payment: 10% per month up to maximum of 70%. Remainder at Practical Completion.**

Sewer Pipeline - Gravity - section will be present if one or more gravity mains are specified

Item	Construction of Sewer Gravity Mains	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates	
HW2001	Service Location	Item	Lump Sum	$ 3,640.00	$ 3,640.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**	
HW2002	Supply all valves	Item	Lump Sum		$ -	**Payment: Percentage of valves and flowmeters supplied. Submit: Relevant Quality Records including Compliance Certificates.**	
HW2003	Supply all fittings	Item	Lump Sum		$ -	**Payment: Percentage of fittings supplied. Submit: Relevant Quality Records including Compliance Certificates.**	
HW2004	Supply all pipe materials including detector tape, pipe protection wrapping, rubber rings and lubricant for following pipe sizes:					Measurement: Actual metres (effective length) of pipe delivered to site. Submit: Relevant Quality Records including Compliance Certificates. Note: Limits of Accuracy to be inserted for each pipe size.	
03CSS	Nominal DN600 RC pipe	2000	m	$ 235.00	$ 470,000.00		
HW2005	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Up to 1.5 m depth to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation up to and including 1.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
03C03	Nominal DN600 RC (Trench type 3)	900	m	$ 298.53	$ 268,677.00		Pipeline 1 - area allowance
HW2006	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >1.5m to 3.0m depth to invert in OTR					Measurement: Actual metres of pipe installed with design depth of excavation > 1.5m to and including 3.0m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
03C03	Nominal DN600 RC (Trench type 3)	1100	m	$ 424.53	$ 466,983.00		Pipeline 1 - area allowance
HW2007	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >3.0m to 4.5m depth to invert in OTR					Measurement: Actual metres of pipe installed with design depth of excavation > 3.0m to and including 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HW2008	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >4.5m depth to invert in OTR					Measurement: Actual metres of pipe installed with design depth of excavation > 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HW2009	Excavate, backfill, supply and install access chambers including base, chamber, cover & surround and access ladder for the following nominal diameter access chambers:					Measurement: Actual metres of access chamber installed measured from surface level to invert of outlet pipe. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HW2010	Extra over rate for installation for Additional compaction		m3	$ 51.38		Measurement: Cubic metres of additional compaction based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HW2011	Excavate below specified design depth when directed including disposal of excess excavated material		m3	$ 136.50		Measurement: Cubic metres of excavation directed based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HW2012	Extra over rate for installation to supply, place & compact non cohesive material.		m3			Measurement: Cubic metres of non cohesive material based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	

HWG013	Extra over rate for installation for supply, place and compact stabilised sand cement (14:1) backfill		m3	$	585.00		Measurement: Cubic metres of stabilised sand cement based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG014	Extra over rate for installation for Supply, place and compact aggregate		m3				Measurement: Cubic metres of aggregate based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG015	Supply & place ballast		tonnes	$	90.00		Measurement: Actual tonnes placed as directed. Submit: Relevant Quality Records including certified weighbridge dockets. Limits of Accuracy: <To be inserted>.
HWG016	External Dewatering of trench including establishment & disestablishment	2000	m3			$ 200,000.00	**Measurement: Measurement: Length of pipeline for which external dewatering is agreed with the Superintendent and provided, measured along the axis of the pipeline between the first and last spear point.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>.**
HWG017	Supply and place treated timber piling for pipe support		m				Measurement: Actual metres from pipe invert to toe of pile Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG018	Road / creek crossings						Measurement: Length in metres of casing installed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG019	Extra over rate for installation of trenchless technique under existing rail line		m				Measurement: Length in metres of casing installed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG020	Supply & installation of river crossing includes supply of MSCL pipe, welding, testing of welds, 150mm concrete encasement, mobilisation & demobilisation of dredge, excavation & disposal of excavated material, backfilling, lay, bed & test:						Measurement: Length in metres of casing installed. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG021	Supply and installation of pipe aerial creek crossing including supply of MSCL pipe with protection coating, internal and external welding, testing of welds. For the following MSCL pipe sizes:						Measurement: Length in metres of casing installed in accordance with design. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG022	Bulkheads and Trenchstops in accordance with WSAA drawing SEW-1206		Each				Payment: Number of bulkheads & trenchstops constructed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG023	Supply and Install valve pits (excluding valves and fittings)	0	Each	$	-	$ -	Payment: Number of valve pits constructed. Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG024	Flow Relief Structures		Each				Payment: Number of flow relief structures constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG025	EMPTY						
HWG026	Supply and construct vent stacks		each				Payment: Number of vent stacks constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG027	Preparation of line sheets	2000	each	$	1.00	$ 2,000.00	Measurement: Length of pipelines constructed as per design Limits of Accuracy: <To be inserted>.
HWG028	Acceptance testing - gravity main		m				Measurement: Length of pipelines constructed as per design Submit: Staisfactory test records Limits of Accuracy: <To be inserted>.
HWG029	**Miscellaneous**						
HWG000	***Sub Total***					$1,411,300	

Item No.	Item Description	Qty	Unit		Amount $	Application of Schedule of Rates
HW0009	Restoration - Pipelines:					**Payment: 100% after completion.**
HW0009.01	Concrete kerb & gutter	0	m	$ 110.00	$ -	**Measurement: Lineal metres restored within Minimum Trench Width.** **Limits of Accuracy: <To be inserted>.**
HW0009.02	Concrete driveway	0	m2	$ 178.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.03	Exposed aggregate & stamped driveway	0	m2	$ 220.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.04	Concrete footpath	0	m2	$ 155.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.05	Bitumen footpath	0	m2	$ 117.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.06	Gravel pavement	0	m2	$ 69.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.07	Bitumen pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.08	AC pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.09	Pavers		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**

HW0009.10	Turf		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.11	Grass seeding	2000	m2	$ 7.00	$ 14,000.00	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.12	Hydromulch		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0010	Extra over item for Excavation in rock and disposal of excess excavated material		m3			**Measurement: Cubic metres excavated based on thickness of rock by actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0011	Acid sulphate soil					
HW0011.01	Initial testing for acid sulphate soils and prepare and submit report	27	per test	$ 110.00	$ 2,970.00	**Submit: Result for each test. Limits of Accuracy: <To be inserted>.**
HW0011.02	Establish treatment facility		Item			**Payment: 100% after completion of treatment facility.**
HW0011.03	Handling, treatment and testing of acid sulphate soils	6045	m3	$ 60.00	$ 362,700.00	**Measurement: Cubic metres excavated based on thickness of ASS by actual length by Minimum Trench Width. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>**
HW0011.04	Disposal off site of acid sulphate soil	0	tonne	$ 122.00	$ -	**Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>**
HW0012	Preconstruction record					
HW0012.01	Photographic	Item	Lump Sum		$ -	**Payment: 70% on submission of the Photographic record. Remainder at Practical Completion.**
HW0012.02	Video	Item	Lump Sum		$ -	**Payment: 70% on submission of the Video record. Remainder at Practical Completion.**
HW0012.03	CCTV	Item	Lump Sum		$ -	**Payment: 70% on submission of the CCTV record. Remainder at Practical Completion.**
HW0013	Work as Constructed Information <insert Mir	Item	Lump Sum	$ 16,000.00	$ 16,000.00	**Payment: 100% at Practical Completion.**

A.	**TOTAL ESTIMATED CONTRACT AWARD SUM**	$ 1,931,008.70

B.	**PRE-CONSTRUCTION COST (Table 10)**	
HW0016	Design	$ 231,721.04
HW0017	Project Management of Design	$ 51,208.21
HW0018	Land Matters	$ -
HW0024	Community Consultation	
	Sub Total(B1)	$ 282,929.25
	Pre construction contingency (30% of B1)	$ 84,878.78
	TOTAL PRE-CONSTRUCTION COST (B)	$ 367,808.03

C.	**CONSTRUCTION COST**		
	Total Estimated Contract Award Sum (A)		$ 1,931,008.70
HW0019	Principal Supplied Pipe (as applicable)		$ -
HW0020	Principal Supplied Valves and Flowmeters (as applicable)		$ -
HW0021	Principal Supplied Fittings (as applicable)		$ -
HW0022	Pump Station HV Power Supply		$ 187,500.00
HW0023	Construction Management (Table 11)		$ 193,100.87
	Sub Total (C1)		$ 2,311,609.57
	Construction contingency (Table 12) (30% of C1)	Preliminary Estimate	$ 693,482.87
	TOTAL CONSTRUCTION COST (C)		$ 3,005,092.44

	TOTAL PRELIMINARY PROJECT ESTIMATE (B+C) (Preliminary Estimate)	$ 3,372,900.47

ESTIMATING SHEET

PROJECT DESCRIPTION: Option 1B - Gravity Main

Item No.	Item Description	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0001	All work not included elsewhere in this schedule	Item	Lump Sum	$ 21,705.00	$ 21,705.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0002	Site Establishment <Insert Max $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0003	Site Disestablishment <Insert Min $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0004	Preparation and implementation of the Construction EMP	Item	Lump Sum	$ 4,000.00	$ 4,000.00	**Payment: Maximum of 30% on submission of complying Construction EMP, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Construction EMP**
HW0005	Preparation and implementation of the Safety Management Plan.	Item	Lump Sum	$ 9,000.00	$ 9,000.00	**Payment: Maximum of 30% on submission of complying plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Safety Management Plan.**
HW0006	Preparation and implementation of the Traffic Control Plan.	Item	Lump Sum	$ 2,000.00	$ 2,000.00	**Payment: Maximum of 30% on submission of complying Traffic Control Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0007	Preparation and implementation of Quality Management Plan	Item	Lump Sum	$ 11,652.73	$ 11,652.73	**Payment: Maximum of 30% on submission of complying Quality Management Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0008	Community Consultation	Item	Lump Sum	$ -	$ -	**Payment: 10% per month up to maximum of 70%. Remainder at Practical Completion.**

Sewer Pipeline - Gravity - section will be present if one or more gravity mains are specified

Item	Construction of Sewer Gravity Mains	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates	
HW2001	Service Location	Item	Lump Sum	$ 18,590.00	$ 18,590.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**	
HW2002	Supply all valves	Item	Lump Sum		$ -	**Payment: Percentage of valves and flowmeters supplied. Submit: Relevant Quality Records including Compliance Certificates.**	
HW2003	Supply all fittings	Item	Lump Sum		$ -	**Payment: Percentage of fittings supplied. Submit: Relevant Quality Records including Compliance Certificates.**	
HW2004	Supply all pipe materials including detector tape, pipe protection wrapping, rubber rings and lubricant for following pipe sizes:					Measurement: Actual metres (effective length) of pipe delivered to site. Submit: Relevant Quality Records including Compliance Certificates. Note: Limits of Accuracy to be inserted for each pipe size.	
03CSS	Nominal DN600 RC pipe	1100	m	$ 235.00	$ 258,500.00		
HW2005	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Up to 1.5 m depth to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation up to and including 1.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
03C03	Nominal DN600 RC (Trench type 3)	500	m	$ 536.35	$ 268,175.00		Pipeline 1 - area allowance
HW2006	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >1.5m to 3.0m depth to invert in OTR					Measurement: Actual metres of pipe installed with design depth of excavation > 1.5m to and including 3.0m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
03C03	Nominal DN600 RC (Trench type 3)	600	m	$ 762.85	$ 457,710.00		Pipeline 1 - area allowance
HW2007	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >3.0m to 4.5m depth to invert in OTR					Measurement: Actual metres of pipe installed with design depth of excavation > 3.0m to and including 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HW2008	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >4.5m depth to invert in OTR					Measurement: Actual metres of pipe installed with design depth of excavation > 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HW2009	Excavate, backfill, supply and install access chambers including base, chamber, cover & surround and access ladder for the following nominal diameter access chambers:					Measurement: Actual metres of access chamber installed measured from surface level to invert of outlet pipe. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HW2010	Extra over rate for installation for Additional compaction		m3	$ 51.23		Measurement: Cubic metres of additional compaction based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HW2011	Excavate below specified design depth when directed including disposal of excess excavated material		m3	$ 136.50		Measurement: Cubic metres of excavation directed based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HW2012	Extra over rate for installation to supply, place & compact non cohesive material.		m3			Measurement: Cubic metres of non cohesive material based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	

HWG013	Extra over rate for installation for supply, place and compact stabilised sand cement (14:1) backfill		m3	$ 585.00		Measurement: Cubic metres of stabilised sand cement based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG014	Extra over rate for installation for Supply, place and compact aggregate		m3			Measurement: Cubic metres of aggregate based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG015	Supply & place ballast		tonnes	$ 90.00		Measurement: Actual tonnes placed as directed. Submit: Relevant Quality Records including certified weighbridge dockets. Limits of Accuracy: <To be inserted>.
HWG016	External Dewatering of trench including establishment & disestablishment	1100	m3		$ 110,000.00	**Measurement: Measurement: Length of pipeline for which external dewatering is agreed with the Superintendent and provided, measured along the axis of the pipeline between the first and last spear point.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>.**
HWG017	Supply and place treated timber piling for pipe support		m			Measurement: Actual metres from pipe invert to toe of pile Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG018	Road / creek crossings					Measurement: Length in metres of casing installed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG019	Extra over rate for installation of trenchless technique under existing rail line		m			Measurement: Length in metres of casing installed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG020	Supply & installation of river crossing includes supply of MSCL pipe, welding, testing of welds, 150mm concrete encasement, mobilisation & demobilisation of dredge, excavation & disposal of excavated material, backfilling, lay, bed & test:					Measurement: Length in metres of casing installed. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG021	Supply and installation of pipe aerial creek crossing including supply of MSCL pipe with protection coating, internal and external welding, testing of welds. For the following MSCL pipe sizes:					Measurement: Actual length in metres of casing installed in accordance with design. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG022	Bulkheads and Trenchstops in accordance with WSAA drawing SEW-1206		Each			Payment: Number of bulkheads & trenchstops constructed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG023	Supply and Install valve pits (excluding valves and fittings)	0	Each	$ -	$ -	Payment: Number of valve pits constructed. Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG024	Flow Relief Structures		Each			Payment: Number of flow relief structures constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG025	EMPTY					
HWG026	Supply and construct vent stacks		each			Payment: Number of vent stacks constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG027	Preparation of line sheets	1100	each	$ 1.00	$ 1,100.00	Measurement: Length of pipelines constructed as per design Limits of Accuracy: <To be inserted>.
HWG028	Acceptance testing - gravity main		m			Measurement: Length of pipelines constructed as per design Submit: Staisfactory test records Limits of Accuracy: <To be inserted>.
HWG029	**Miscellaneous**					
HWG000	***Sub Total***				$1,114,075	

Item No.	Item Description	Qty	Unit		Amount $	Application of Schedule of Rates
HWG009	Restoration - Pipelines:					**Payment: 100% after completion.**
HWG009.01	Concrete kerb & gutter	0	m	$ 110.00	$ -	**Measurement: Lineal metres restored within Minimum Trench Width.** **Limits of Accuracy: <To be inserted>.**
HWG009.02	Concrete driveway	0	m2	$ 178.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HWG009.03	Exposed aggregate & stamped driveway	0	m2	$ 220.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HWG009.04	Concrete footpath	0	m2	$ 155.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HWG009.05	Bitumen footpath	0	m2	$ 117.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HWG009.06	Gravel pavement	0	m2	$ 69.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HWG009.07	Bitumen pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HWG009.08	AC pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HWG009.09	Pavers		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**

HW0009.10	Turf		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.11	Grass seeding	1980	m2	$ 7.00	$ 13,860.00	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.12	Hydromulch		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0010	Extra over item for Excavation in rock and disposal of excess excavated material		m3			**Measurement: Cubic metres excavated based on thickness of rock by actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0011	Acid sulphate soil					
HW0011.01	Initial testing for acid sulphate soils and prepare and submit report	4	per test	$ 110.00	$ 440.00	**Submit: Result for each test. Limits of Accuracy: <To be inserted>.**
HW0011.02	Establish treatment facility		Item			**Payment: 100% after completion of treatment facility.**
HW0011.03	Handling, treatment and testing of acid sulphate soils	949.29545	m3	$ 60.00	$ 56,957.73	**Measurement: Cubic metres excavated based on thickness of ASS by actual length by Minimum Trench Width. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>**
HW0011.04	Disposal off site of acid sulphate soil	0	tonne	$ 122.00	$ -	**Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>**
HW0012	Preconstruction record					
HW0012.01	Photographic	Item	Lump Sum		$ -	**Payment: 70% on submission of the Photographic record. Remainder at Practical Completion.**
HW0012.02	Video	Item	Lump Sum		$ -	**Payment: 70% on submission of the Video record. Remainder at Practical Completion.**
HW0012.03	CCTV	Item	Lump Sum		$ -	**Payment: 70% on submission of the CCTV record. Remainder at Practical Completion.**
HW0013	Work as Constructed Information <insert Min	Item	Lump Sum	$ 8,800.00	$ 8,800.00	**Payment: 100% at Practical Completion.**

A.	**TOTAL ESTIMATED CONTRACT AWARD SUM**	$ 1,302,490.46

B.	**PRE-CONSTRUCTION COST (Table 10)**	
HW0016	Design	$ 156,298.85
HW0017	Project Management of Design	$ 38,287.13
HW0018	Land Matters	$ -
HW0024	Community Consultation	
	Sub Total(B1)	$ 194,585.99
	Pre construction contingency (30% of B1)	$ 58,375.80
	TOTAL PRE-CONSTRUCTION COST (B)	$ 252,961.79

C.	**CONSTRUCTION COST**		
	Total Estimated Contract Award Sum (A)		$ 1,302,490.46
HW0019	Principal Supplied Pipe (as applicable)		$ -
HW0020	Principal Supplied Valves and Flowmeters (as applicable)		$ -
HW0021	Principal Supplied Fittings (as applicable)		$ -
HW0022	Pump Station HV Power Supply		$ 187,500.00
HW0023	Construction Management (Table 11)		$ 130,249.05
	Sub Total (C1)		$ 1,620,239.50
	Construction contingency (Table 12) (30% of C1)	Preliminary Estimate	$ 486,071.85
	TOTAL CONSTRUCTION COST (C)		$ 2,106,311.35

	TOTAL PRELIMINARY PROJECT ESTIMATE (B+C) (Preliminary Estimate)	$ 2,359,273.14

ESTIMATING SHEET

PROJECT DESCRIPTION: Option 1D - Gravity Main

Item No.	Item Description	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0001	All work not included elsewhere in this schedule	Item	Lump Sum	$ 78,644.00	$ 78,644.00	**Payment**: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.
HW0002	Site Establishment<Insert Max $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment**: 100% after completion.
HW0003	Site Disestablishment <Insert Min $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment**: 100% after completion.
HW0004	Preparation and implementation of the Construction EMP	Item	Lump Sum	$ 4,000.00	$ 4,000.00	**Payment**: Maximum of 30% on submission of complying Construction EMP, then 10% per month up to maximum of 80%. Remainder at Practical Completion. **Submit:** Construction EMP.
HW0005	Preparation and implementation of the Safety Management Plan.	Item	Lump Sum	$ 9,000.00	$ 9,000.00	**Payment**: Maximum of 30% on submission of complying plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion. **Submit:** Safety Management Plan.
HW0006	Preparation and implementation of the Traffic Control Plan.	Item	Lump Sum	$ 2,000.00	$ 2,000.00	**Payment**: Maximum of 30% on submission of complying Traffic Control Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.
HW0007	Preparation and Implementation of Quality Management Plan	Item	Lump Sum	$ 40,121.83	$ 40,121.83	**Payment**: Maximum of 30% on submission of complying Quality Management Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.
HW0008	Community Consultation	Item	Lump Sum	$ -	$ -	**Payment**: 10% per month up to maximum of 70%. Remainder at Practical Completion.

Sewer Pipeline - Gravity - section will be present if one or more gravity mains are specified

Item	Construction of Sewer Gravity Mains	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW2001	Service Location	Item	Lump Sum	$ 9,100.00	$ 9,100.00	**Payment**: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.
HW2002	Supply all valves	Item	Lump Sum		$ -	**Payment**: Percentage of valves and flowmeters supplied. **Submit:** Relevant Quality Records including Compliance Certificates.
HW2003	Supply all fittings	Item	Lump Sum		$ -	**Payment**: Percentage of fittings supplied. **Submit:** Relevant Quality Records including Compliance Certificates.
HW2004	Supply all pipe materials including detector tape, pipe protection wrapping, rubber rings and lubricant for following pipe sizes:					**Measurement:** Actual metres (effective length) of pipe delivered to site. **Submit:** Relevant Quality Records including Compliance Certificates. *Note: Limits of Accuracy to be inserted for each pipe size.*
03CSS	Nominal DN600 RC pipe	3500	m	$ 235.00	$ 822,500.00	
HW2005	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Up to **1.5 m** depth to invert in OTR.					excavation up to and including 1.5m. **Retention:** 10% <or other appropriate percentage> until satisfactory testing. **Submit:** Relevant Quality Records including as constructed lengths, levels and coordinates. **Limits of Accuracy:** <To be inserted>.
03C03	Nominal DN600 RC (Trench type 3)	800	m	$ 347.90	$ 278,320.00	Pipeline 1 - area allowance
HW2006	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth**>1.5m** to **3.0m** depth to invert in OTR					excavation > 1.5m to and including 3.0m. **Retention:** 10% <or other appropriate percentage> until satisfactory testing. **Submit:** Relevant Quality Records including as constructed lengths, levels and coordinates. **Limits of Accuracy:** <To be inserted>.
03C03	Nominal DN600 RC (Trench type 3)	900	m	$ 476.90	$ 429,210.60	Pipeline 1 - area allowance
HW2007	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth**>3.0m** to **4.5m** depth to invert in OTR					excavation > 3.0m to and including 4.5m. **Retention:** 10% <or other appropriate percentage> until satisfactory testing. **Submit:** Relevant Quality Records including as constructed lengths, levels and coordinates. **Limits of Accuracy:** <To be inserted>.
03C03	Nominal DN600 RC (Trench type 3)	900	m	$ 782.90	$ 704,610.60	Pipeline 1 - area allowance
HW2008	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth**>4.5m** depth to invert in OTR					excavation > 4.5m. **Retention:** 10% <or other appropriate percentage> until satisfactory testing. **Submit:** Relevant Quality Records including as constructed lengths, levels and coordinates. **Limits of Accuracy:** <To be inserted>.
03C03	Nominal DN600 RC (Trench type 3)	900	m	$ 1,292.90	$ 1,163,610.60	Pipeline 1 - area allowance
HW3009	Excavate, backfill, supply and install access chambers including base, chamber, cover & surround and access ladder for the following nominal diameter access chambers:					surface level to invert of outlet pipe. **Retention:** 10% <or other appropriate percentage> until satisfactory testing. **Submit:** Relevant Quality Records including as constructed lengths, levels and coordinates. **Limits of Accuracy:** <To be inserted>.
HW3010	Extra over rate for installation for Additional compaction		m3	$ 84.30		**Measurement:** Cubic metres of additional compaction based on thickness by length by Minimum Trench Width. **Submit:** Relevant Quality Records. **Limits of Accuracy:** <To be inserted>.
HW3011	Excavate below specified design depth when directed including disposal of excess excavated material		m3	$ 136.50		**Measurement:** Cubic metres of excavation directed based on thickness by length by Minimum Trench Width. **Submit:** Relevant Quality Records. **Limits of Accuracy:** <To be inserted>
HW3012	Extra over rate for installation to supply, place & compact non cohesive material.		m3			**Measurement:** Cubic metres of non cohesive material based on thickness by length by Minimum Trench Width. **Submit:** Relevant Quality Records. **Limits of Accuracy:** <To be inserted>.

HWG013	Extra over rate for installation for supply, place and compact stabilised sand cement (14:1) backfill		m3	$ 585.00		**Measurement:** Cubic metres of stabilised sand cement based on thickness by length by Minimum Trench Width. **Submit:** Relevant Quality Records. **Limits of Accuracy:** <To be inserted>.
HWG014	Extra over rate for installation for Supply, place and compact aggregate		m3			**Measurement:** Cubic metres of aggregate based on thickness by length by Minimum Trench Width. **Submit:** Relevant Quality Records. **Limits of Accuracy:** <To be inserted>.
HWG015	Supply & place ballast		tonnes	$ 90.00		**Measurement:** Actual tonnes placed as directed. **Submit:** Relevant Quality Records including certified weighbridge dockets. **Limits of Accuracy:** <To be inserted>.
HWG016	External Dewatering of trench including establishment & disestablishment	3500	m3		$ 350,000.00	**Measurement**: **Measurement**: Length of pipeline for which external dewatering is agreed with the Superintendent and provided, measured along the axis of the pipeline between the first and last spear point. **Submit:** Relevant Quality Records. **Limits of Accuracy:** <To be inserted>.
HWG017	Supply and place treated timber piling for pipe support		m			**Measurement:** Actual metres from pipe invert to toe of pile **Submit:** Relevant Quality Records. **Limits of Accuracy:** <To be inserted>.
HWG018	Road / creek crossings					**Measurement:** Length in metres of casing installed. **Submit:** Relevant Quality Records. **Limits of Accuracy:** <To be inserted>.
HWG019	Extra over rate for installation of trenchless technique under existing rail line		m			**Measurement:** Length in metres of casing installed. **Submit:** Relevant Quality Records. **Limits of Accuracy:** <To be inserted>.
HWG020	Supply & installation of river crossing includes supply of MSCL pipe, welding, testing of welds, 150mm concrete encasement, mobilisation & demobilisation o dredge, excavation & disposal of excavated material, backfilling, lay, bed & test:					**Measurement:** Length in metres of casing installed. **Retention:** 10% <or other appropriate percentage> until satisfactory testing. *Note: Consider other milestone retentions.* **Submit:** Relevant Quality Records. **Limits of Accuracy:** <To be inserted>.
HWG021	Supply and installation of pipe aerial creek crossing including supply of MSCL pipe with protection coating, internal and external welding, testing of welds. For the following MSCL pipe sizes:					**Measurement:** Length in metres of crossing installed in accordance with design. **Retention:** 10% <or other appropriate percentage> until satisfactory testing. *Note: Consider other milestone retentions.* **Submit:** Relevant Quality Records. **Limits of Accuracy:** <To be inserted>.
HWG022	Bulkheads and Trenchstops in accordance with WSAA drawing SEW-1206		Each			**Payment:** Number of bulkheads & trenchstops constructed. **Submit:** Relevant Quality Records. **Limits of Accuracy:** <To be inserted>.
HWG023	Supply and Install valve pits (excluding valves and fittings)	0	Each	$ -	$ -	**Payment:** Number of valve pits constructed. **Retention:** <To be determined>. **Submit:** Relevant Quality Records. **Limits of Accuracy:** <To be inserted>.
HWG024	Flow Relief Structures		Each			**Payment:** Number of flow relief structures constructed. **Retention:** <To be determined>. **Submit:** Relevant Quality Records. **Limits of Accuracy:** <To be inserted>.
HWG025	EMPTY					
HWG026	Supply and construct vent stacks		each			**Payment:** Number of vent stacks constructed. **Retention:** <To be determined>. **Submit:** Relevant Quality Records. **Limits of Accuracy:** <To be inserted>.
HWG027	Preparation of line sheets	3500	each	$ 1.00	$ 3,500.00	**Measurement:** Length of pipelines constructed as per design. **Limits of Accuracy:** <To be inserted>.
HWG028	Acceptance testing - gravity main		m			**Measurement:** Length of pipelines constructed as per design. **Submit:** Staisfactory test records **Limits of Accuracy:** <To be inserted>.
HWG029	**Miscellaneous**					
HWG000	***Sub Total***				$3,760,850	

Item No.	Item Description	Qty	Unit		Amount $	Application of Schedule of Rates
HW0009	Restoration - Pipelines:					**Payment**: 100% after completion.
HW0009.01	Concrete kerb & gutter	0	m	$ 110.00	$ -	**Measurement**: Lineal metres restored within Minimum Trench Width. **Limits of Accuracy:** <To be inserted>.
HW0009.02	Concrete driveway	0	m2	$ 178.00	$ -	**Measurement**: Square metres restored based on actual length by Minimum Trench Width. **Limits of Accuracy:** <To be inserted>
HW0009.03	Exposed aggregate & stamped driveway	0	m2	$ 220.00	$ -	**Measurement**: Square metres restored based on actual length by Minimum Trench Width. **Limits of Accuracy:** <To be inserted>
HW0009.04	Concrete footpath	0	m2	$ 155.00	$ -	**Measurement**: Square metres restored based on actual length by Minimum Trench Width. **Limits of Accuracy:** <To be inserted>
HW0009.05	Bitumen footpath	0	m2	$ 117.00	$ -	**Measurement**: Square metres restored based on actual length by Minimum Trench Width. **Limits of Accuracy:** <To be inserted>
HW0009.06	Gravel pavement	0	m2	$ 69.00	$ -	**Measurement**: Square metres restored based on actual length by Minimum Trench Width. **Limits of Accuracy:** <To be inserted>
HW0009.07	Bitumen pavement		m2			**Measurement**: Square metres restored based on actual length by Minimum Trench Width. **Limits of Accuracy:** <To be inserted>
HW0009.08	AC pavement		m2			**Measurement**: Square metres restored based on actual length by Minimum Trench Width. **Limits of Accuracy:** <To be inserted>
HW0009.09	Pavers		m2			**Measurement**: Square metres restored based on actual length by Minimum Trench Width. **Limits of Accuracy:** <To be inserted>
HW0009.10	Turf		m2			**Measurement**: Square metres restored based on actual length by Minimum Trench Width. **Limits of Accuracy:** <To be inserted>

HW0009.11	Grass seeding	6300	m2	$ 7.00	$ 44,100.00	**Measurement**: Square metres restored based on actual length by Minimum Trench Width. **Limits of Accuracy:** <To be inserted>
HW0009.12	Hydromulch		m2			**Measurement**: Square metres restored based on actual length by Minimum Trench Width. **Limits of Accuracy:** <To be inserted>
HW0010	Extra over item for Excavation in rock and disposal of excess excavated material		m3			**Measurement**: Cubic metres excavated based on thickness of rock by actual length by Minimum Trench Width. **Limits of Accuracy:** <To be inserted>
HW0011	Acid sulphate soil					
HW0011.01	Initial testing for acid sulphate soils and prepare and submit report	21	per test	$ 110.00	$ 2,310.00	**Submit**: Result for each test. **Limits of Accuracy:** <To be inserted>
HW0011.02	Establish treatment facility		Item			**Payment**:. 100% after completion of treatment facility.
HW0011.03	Handling, treatment and testing of acid sulphate soils	7933.7143	m3	$ 60.00	$ 476,022.86	**Measurement**: Cubic metres excavated based on thickness of ASS by actual length by Minimum Trench Width. **Submit:** Test results confirming satisfactory treatment. **Limits of Accuracy:** <To be inserted>
HW0011.04	Disposal off site of acid sulphate soil	0	tonne	$ 122.00	$ -	**Measurement**: Tonnes transported from the site. **Submit:** Weighbridge dockets. **Limits of Accuracy:** <To be inserted>
HW0012	Preconstruction record					
HW0012.01	Photographic	Item	Lump Sum		$ -	**Payment**: 70% on submission of the Photographic record. Remainder at Practical Completion.
HW0012.02	Video	Item	Lump Sum		$ -	**Payment**: 70% on submission of the Video record. Remainder at Practical Completion.
HW0012.03	CCTV	Item	Lump Sum		$ -	**Payment**: 70% on submission of the CCTV record. Remainder at Practical Completion.
HW0013	Work as Constructed Information <Insert Mm S>	Item	Lump Sum	$ 28,000.00	$ 28,000.00	**Payment**: 100% at Practical Completion.

A.	**TOTAL ESTIMATED CONTRACT AWARD SUM**	$ 4,505,048.69

B.	**PRE-CONSTRUCTION COST (Table 10)**	
HW0016	Design	$ 540,605.84
HW0017	Project Management of Design	$ 108,662.77
HW0018	Land Matters	$ -
HW0024	Community Consultation	
	Sub Total(B1)	$ 649,268.61
	Pre construction contingency (30% of B1)	$ 194,780.58
	TOTAL PRE-CONSTRUCTION COST (B)	$ 844,049.19

C.	**CONSTRUCTION COST**		
	Total Estimated Contract Award Sum (A)		$ 4,505,048.69
HW0019	Principal Supplied Pipe (as applicable)		$ -
HW0020	Principal Supplied Valves and Flowmeters (as applicable)		$ -
HW0021	Principal Supplied Fittings (as applicable)		$ -
HW0022	Pump Station HV Power Supply		$ 187,500.00
HW0023	Construction Management (Table 11)		$ 360,403.89
	Sub Total (C1)		$ 5,052,952.58
	Construction contingency (Table 12) (30% of C1)	Preliminary Estimate	$ 1,515,885.77
	TOTAL CONSTRUCTION COST (C)		$ 6,568,838.36

	TOTAL PRELIMINARY PROJECT ESTIMATE (B+C) (Preliminary Estimate)	$ 7,412,887.55

ESTIMATING SHEET

PROJECT DESCRIPTION: Pump Station & Rising Main - Low Head Eastern Transfer

Item No.	Item Description	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0001	All work not included elsewhere in this schedule	Item	Lump Sum	$ 35,692.00	$ 35,692.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0002	Site Establishment <Insert Max $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0003	Site Disestablishment <Insert Min $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0004	Preparation and implementation of the Construction EMP	Item	Lump Sum	$ 7,000.00	$ 7,000.00	**Payment: Maximum of 30% on submission of complying Construction EMP, then 10% per month up to maximum of 80%. Remainder at Practical Completion.** **Submit: Construction EMP**
HW0005	Preparation and implementation of the Safety Management Plan.	Item	Lump Sum	$ 14,000.00	$ 14,000.00	**Payment: Maximum of 30% on submission of complying plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.** **Submit: Safety Management Plan**
HW0006	Preparation and implementation of the Traffic Control Plan.	Item	Lump Sum	$ 6,200.00	$ 6,200.00	**Payment: Maximum of 30% on submission of complying Traffic Control Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0007	Preparation and Implementation of Quality Management Plan	Item	Lump Sum	$ 18,645.84	$ 18,645.84	**Payment: Maximum of 30% on submission of complying Quality Management Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0008	Community Consultation	Item	Lump Sum	$ -	$ -	**Payment: 10% per month up to maximum of 70%. Remainder at Practical Completion.**

Sewer Pipeline - Rising - section will be present if one or more rising mains are specified

Item	Construction of Sewer Rising Mains	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HWR001	Service Location	Item	Lump Sum	$ 3,000.00	$ 3,000.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HWR002	Supply all valves	Item	Lump Sum		$ -	Payment: Percentage of valves and flowmeters supplied. Submit: Relevant Quality Records including Compliance Certificates.
HWR003	Supply all fittings	Item	Lump Sum		$ -	Payment: Percentage of fittings supplied. Submit: Relevant Quality Records including Compliance Certificates.
HWR004	Supply all pipe materials including detector tape, pipe protection wrapping, rubber rings and lubricant for following pipe sizes:					Measurement: Actual metres (effective length) of pipe delivered to site. Submit: Relevant Quality Records including Compliance Certificates. Note: Limits of Accuracy to be inserted for each pipe size.
11EDSS	Nominal DN300 DICL pipe	4000	m	$ 178.00	$ 712,000.00	
HWR005	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Up to 1.5 m depth to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation up to and including 1.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.
11ED03	Nominal DN300 DICL (Trench type 3)	4000	m	$ 89.25	$ 357,000.00	
HWR006	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >1.5m to 3.0m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 1.5m to and including 3.0m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.
HWR007	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >3.0m to 4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 3.0m to and including 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.
HWR008	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.
HWR009	EMPTY					
HWR010	Extra over rate for installation for Additional compaction		m3	$ 19.13		Measurement: Cubic metres of additional compaction based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR011	Excavate below specified design depth where directed including disposal of excess excavated material		m3	$ 78.75		Measurement: Cubic metres of excavation directed based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR012	Extra over rate for installation to Supply & place & compact non cohesive material.		m3			Measurement: Cubic metres of non cohesive material based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.

HWR013	Extra over rate for installation for supply, place and compact stabilised sand cement (14:1) backfill		m3	$ 337.50		Measurement: Cubic metres of stabilised sand cement based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR014	Extra over rate for installation for Supply, place and compact aggregate		m3			Measurement: Cubic metres of aggregate based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR015	Supply & place ballast		tonnes	$ 90.00		Measurement: Actual tonnes placed as directed. Submit: Relevant Quality Records including certified weighbridge dockets. Limits of Accuracy: <To be inserted>.
HWR016	External Dewatering of trench including establishment & disestablishment		m			**Measurement: Length of pipeline for which external dewatering is agreed with the Superintendent and provided, measured along the axis of the pipeline between the first and last spear point.** **Submit: Relevant Quality Records.**
HWR017	Supply and place treated timber piling for pipe support		m			Measurement: Actual metres from pipe invert to toe of pile. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>
HWR018	Road / creek crossings					Measurement: Length in metres of casing installed. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR019	Extra over rate for installation of trenchless technique under existing rail line		m			Measurement: Length in metres of casing installed. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR020	Supply and installation of pipe aerial creek crossing including supply of MSCL pipe with protection coating, internal and external welding, testing of welds. For the following MSCL pipe sizes:					Measurement: Length in metres of crossing installed in accordance with design. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR021	Supply and installation of pipe river crossing including supply of MSCL pipe, internal and external welding, testing of welds and 150 thick concrete encasement. Also includes mobilisation and demobilisation of dredge(if required) excavation & disposal of excavated material, backfilling, lay, bed and test for the following MSCL pipe sizes:					Measurement: Length in metres of casing installed. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR022	Bulkheads and Trenchstops in accordance with WSAA drawing SEW-1206	Item	Lump Sum		$ -	Payment: Number of bulkheads & trenchstops constructed. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR023	Supply and Install valve pits (excluding valves and fittings)	0	Each	$ -	$ -	Payment: Number of valve pits constructed. Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR024	Flow Relief Structures		Each			Payment: Number of flow relief structures constructed. Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR025	EMPTY					
HWR026	Supply and construct vent stacks		each			Payment: Number of vent stacks constructed. Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR027	Preparation of line sheets	4000	m	$ 1.00	$ 4,000.00	Measurement: Length of pipelines constructed as per design. Limits of Accuracy: <To be inserted>.
HWR028	Acceptance testing - rising main		m			Measurement: Length of pipelines constructed as per design. Submit: Satisfactory test records Limits of Accuracy: <To be inserted>.
HWR029	**Miscellaneous**					
HWR000	***Sub Total***				$1,076,000	

Sewer Pumping Station 120kW

Item	*Pump Station - Name*	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0201	**Sewer Pumping Station 120kW 3.8m dia 2 Pump(s)**					
	Clear, excavate & backfill in OTR conditions, supply and construct pipework, pump station, includes sliding aluminium hatch covers, screens & ancillary metal work & fittings. Supply & place formwork, reinforcement, concrete, roof slab, thrust blocks.	Item	Lump Sum	$ 369,000.00	$ 369,000.00	**Payment: <Insert appropriate percentages to reflect the value of work at key milestones eg excavation, pump well, metalwork etc>.** **Submit: Relevant Quality Records.**
HW0202	**Pumps for Pumping Stations - Supply and install pumps and associated fittings, connection to pipework, testing and commissioning.**	2	Lump Sum	$ 35,700.00	$ 71,400.00	**Payment: <Insert appropriate percentages for key milestones eg installation, precommissioning, commissioning>.** **Submit: Relevant Quality Records including those for pump test.**
HW0203	**Pumping Station Electricals**					
HW0203.01	Pit and Conduit System	Item	Lump Sum	$ 10,812.50	$ 10,812.50	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0203.02	LV Station Power Supply	Item	Lump Sum	$ 14,375.00	$ 14,375.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**

HW0203.03	Station By-Pass arrangements	Item	Lump Sum		$ -	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0203.04	Electrical Demolition works	Item	Lump Sum		$ -	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0203.05	Switchboard	Item	Lump Sum	$ 90,125.00	$ 90,125.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0203.06	PLC / Telemetry Hardware	Item	Lump Sum	$ 14,437.50	$ 14,437.50	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0203.07	PLC / Telemetry / Scada Engineering and Software Development	Item	Lump Sum	$ 28,450.00	$ 28,450.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0203.08	Stainless Steel Generator Box Cable Tray & Metering Box	Item	Lump Sum	$ -	$ -	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0203.09	Building Services (Electrical)	Item	Lump Sum	$ -	$ -	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0203.10	Pressure Transmitter/Gauge Board	Item	Lump Sum	$ -	$ -	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0203.11	Installation/Cabling (Electrical)	Item	Lump Sum	$ 24,437.50	$ 24,437.50	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0204	Empty					
HW0205	Empty					
HW0206	**Service Location**	Item	Lump Sum	$ 866.40	$ 866.40	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0207	Excavation below design depth including disposal of excavated material (Contingent Item)	0	m3	$ 70.00	$ -	**Measurement: Cubic metres excavated based on thickness of excavation by design cross section of the structure for which excavation has been undertaken.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>.**
HW0208	Extra over Civil Works for excavation in rock:	0	m3	$ 120.00	$ -	**Measurement: Actual cubic metres of rock excavated within the design dimensions of the structure.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>.**
HW0209	Cut and fill earthworks including compaction:	0	m3	$ 25.00	$ -	**Measurement: Actual cubic metres of earthworks completed in accordance with the design.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>.**
HW0210	Supply & place ballast (Contingent Item)	0	tonne	$ 90.00	$ -	**Measurement: Actual tonnes placed as directed.** **Submit: Relevant Quality Records including certified weighbridge dockets.** **Limits of Accuracy: <To be inserted>.**
HW0211	Import and place select fill including compaction <may be Contingent Item>	0	m3	$ 65.00	$ -	**Measurement: Actual cubic metres placed as directed by the Superintendent or placed in accordance with the design.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>.**
HW0212	Construct access road and hardstand					
HW0212.01	Prepare subgrade		m2	$ 4.20		**Measurement: Actual square metres in accordance with the design.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>.**
HW0212.02	Supply, place and compact 150mm thick basecourse		m2	$ 37.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0212.03	Supply, place and compact 200mm thick basecourse		m2	$ 47.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0212.04	Supply, place and compact 250mm thick basecourse		m2	$ 51.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0212.05	Supply, place and compact two coat bitumen seal		m2	$ 26.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0212.06	Supply, place and compact 30mm thick asphalt bitumen seal		m2	$ 37.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0212.07	Concrete kerb & gutter	0	m	$ 110.00	$ -	Measurement: Actual metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0212.08	Concrete driveway	0	m2	$ 178.00	$ -	Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0213	Supply all plant, material and labour to undertake the following Piling works:					
HW0213.01	Treated timber mini piles		m			Measurement: Actual metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0213.02	Reinforced concrete bored piles	Item	Lump Sum		$	Payment: Percentage of work completed. <Consider % payments at milestones> Submit: Relevant Quality Records.
HW0214	Supply all plant, material and labour to undertake the following Retaining Wall works:					Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records.
HW0214.01	Timber(Koppers Log) up to 1.5m high		m2	$ 300.00		**Limits of Accuracy: <To be inserted>.**
HW0214.02	Concrete Keystone up to 1m high		m2	$ 380.00		**Limits of Accuracy: <To be inserted>.**
HW0214.03	Concrete Keystone between 1m and 3m high		m2	$ 560.00		**Limits of Accuracy: <To be inserted>.**
HW0214.04	Concrete Keystone greater than 3m high		m2	$ 560.00		**Limits of Accuracy: <To be inserted>.**
HW0214.05	Concrete Crib Block up to 2m high		m2	$ 630.00		**Limits of Accuracy: <To be inserted>.**

HW0214.05	Concrete Crib Block between 2m and 3m high		m2	$ 704.00		**Limits of Accuracy: <To be inserted>.**
HW0215	Acid sulphate soil					
HW0215.01	Initial testing for acid sulphate soils and prepare and submit report	5	per test	$ 110.00	$ 550.00	Submit: Result for each test. Limits of Accuracy: <To be inserted>
HW0215.02	Establish treatment facility	Item	Lump Sum		$ -	**Payment: 100% after completion of treatment facility.**
HW0215.03	Handling, treatment and testing of acid sulphate soils		m3	$ 60.00		Measurement: Cubic metres within the design cross section of the structure for which excavation has been undertaken. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>
HW0215.04	Disposal off site of acid sulphate soil		tonne	$ 122.00		Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>
HW0216	Series Pump Pit Structure	Item	Lump Sum		$ -	Payment: <Insert appropriate percentages to reflect the value of work at key milestones eg excavation, reinforced concrete, metalwork etc>. Submit: Relevant Quality Records.
HW0217	Supply and Install valve pit concrete formwork, reinforced concrete complete with aluminium tread plate covers and including excavation and backfill	Item	Lump Sum	$ -	$ -	**Payment: <Insert appropriate percentages to reflect the value of work at key milestones eg excavation, reinforced concrete, metalwork etc>. Submit: Relevant Quality Records.**
HW0218	Supply and install pipework items inside valve pit	Item	Lump Sum	$ 6,430.00	$ 6,430.00	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**
HW0219	Supply and Install additional pipe Items outside station	Item	Lump Sum	$ -	$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**
HW0220	Supply and install pipework items inside station	Item	Lump Sum	$ -	$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**
HW0221	Supply and install Type 2 or 4 flow relief structures in accordance with Drgs SCP-502 and SCP-505	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**
HW0222	Supply and install emergency storage structures		L/m			**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**
HW0223	Supply and install fan forced ventilation	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**
HW0224	Supply and install Soil Bed Filter	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**
HW0225	Supply and Install Strainers	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**
HW0226	Supply and Install Series Bypass	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed up to 80%. Remainder at Practical Completion. Submit: Relevant Quality Records.**
HW0227	Landscaping	Item	Lump Sum	$ -	$ -	Payment: 100% at completion. Submit: Relevant Quality Records.
HW0228	**Miscellaneous**					
HW0229	Preparation and submission of Operation and Maintenance Information	Item	Lump Sum		$ -	Payment: 100% at Practical Completion. Submit: Complying Work As Constructed Information.
HW0230	Pre commissioning and commissioning	Item	Lump Sum	$ 8,000.00	$ 8,000.00	**Payment: 50% at completion of satisfactory precommissioning. Remainder at Practical Completion. Submit: Relevant Quality Records.**
HW0231	Preparation and submission of Work as Constructed Information	Item	Lump Sum	$ 6,000.00	$ 6,000.00	Payment: 100% at Practical Completion. Submit: Complying Work As Constructed Information.
HW2SP	***Sub Total***				$644,884	

Item No.	Item Description	Qty	Unit		Amount $	Application of Schedule of Rates
HW0009	Restoration - Pipelines:					**Payment: 100% after completion.**
HW0009.01	Concrete kerb & gutter	0	m	$ 110.00	$ -	**Measurement: Lineal metres restored within Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0009.02	Concrete driveway	0	m2	$ 178.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.03	Exposed aggregate & stamped driveway	0	m2	$ 220.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.04	Concrete footpath	0	m2	$ 155.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.05	Bitumen footpath	0	m2	$ 117.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.06	Gravel pavement	0	m2	$ 69.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.07	Bitumen pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.08	AC pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**

HW0009.09	Pavers		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.10	Turf		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.11	Grass seeding		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.12	Hydromulch		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0010	Extra over item for Excavation in rock and disposal of excess excavated material		m3			**Measurement: Cubic metres excavated based on thickness of rock by actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0011	Acid sulphate soil					
HW0011.01	Initial testing for acid sulphate soils and prepare and submit report		per test			**Submit: Result for each test. Limits of Accuracy: <To be inserted>.**
HW0011.02	Establish treatment facility		Item			**Payment: 100% after completion of treatment facility.**
HW0011.03	Handling, treatment and testing of acid sulphate soils		m3			**Measurement: Cubic metres excavated based on thickness of ASS by actual length by Minimum Trench Width. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>.**
HW0011.04	Disposal off site of acid sulphate soil		tonne			**Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>**
HW0012	Preconstruction record					
HW0012.01	Photographic	Item	Lump Sum		$ -	**Payment: 70% on submission of the Photographic record. Remainder at Practical Completion.**
HW0012.02	Video	Item	Lump Sum		$ -	**Payment: 70% on submission of the Video record. Remainder at Practical Completion.**
HW0012.03	CCTV	Item	Lump Sum		$ -	**Payment: 70% on submission of the CCTV record. Remainder at Practical Completion.**
HW0013	Work as Constructed Information <Insert Min $>	Item	Lump Sum	$ 32,000.00	$ 32,000.00	**Payment: 100% at Practical Completion.**

A.	**TOTAL ESTIMATED CONTRACT AWARD SUM**	$ 1,894,421.74

B.	**PRE-CONSTRUCTION COST (Table 10)**	
HW0016	Design	$ 227,330.61
HW0017	Project Management of Design	$ 55,466.12
HW0018	Land Matters	$ -
HW0024	Community Consultation	
	Sub Total(B1)	$ 282,796.73
	Pre construction contingency (30% of B1)	$ 84,839.02
	TOTAL PRE-CONSTRUCTION COST (B)	$ 367,635.75

C.	**CONSTRUCTION COST**		
	Total Estimated Contract Award Sum (A)		$ 1,894,421.74
HW0019	Principal Supplied Pipe (as applicable)		$ -
HW0020	Principal Supplied Valves and Flowmeters (as applicable)		$ -
HW0021	Principal Supplied Fittings (as applicable)		$ -
HW0022	Pump Station HV Power Supply		$ 187,500.00
HW0023	Construction Management (Table 11)		$ 189,442.17
	Sub Total (C1)		$ 2,271,363.91
	Construction contingency (Table 12) (30% of C1)	Preliminary Estimate	$ 681,409.17
	TOTAL CONSTRUCTION COST (C)		$ 2,952,773.09

	TOTAL PRELIMINARY PROJECT ESTIMATE (B+C) (Preliminary Estimate)	$ 3,320,408.84

ESTIMATING SHEET

PROJECT DESCRIPTION: Pump Station & Rising Main - High Head Eastern Transfer

Item No.	Item Description	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0001	All work not included elsewhere in this schedule	Item	Lump Sum	$ 51,107.00	$ 51,107.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0002	Site Establishment <Insert Max $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0003	Site Disestablishment <Insert Min $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0004	Preparation and implementation of the Construction EMP	Item	Lump Sum	$ 11,000.00	$ 11,000.00	**Payment: Maximum of 30% on submission of complying Construction EMP, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Construction EMP**
HW0005	Preparation and implementation of the Safety Management Plan.	Item	Lump Sum	$ 23,000.00	$ 23,000.00	**Payment: Maximum of 30% on submission of complying plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Safety Management Plan.**
HW0006	Preparation and implementation of the Traffic Control Plan.	Item	Lump Sum	$ 8,200.00	$ 8,200.00	**Payment: Maximum of 30% on submission of complying Traffic Control Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0007	Preparation and implementation of Quality Management Plan	Item	Lump Sum	$ 26,353.74	$ 26,353.74	**Payment: Maximum of 30% on submission of complying Quality Management Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0008	Community Consultation	Item	Lump Sum	$ -	$ -	**Payment: 10% per month up to maximum of 70%. Remainder at Practical Completion.**

Sewer Pipeline - Rising - section will be present if one or more rising mains are specified

Item	Construction of Sewer Rising Mains	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates	
HWR001	Service Location	Item	Lump Sum	$ 1,200.00	$ 1,200.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**	
HWR002	Supply all valves	Item	Lump Sum		$ -	Payment: Percentage of valves and flowmeters supplied Submit: Relevant Quality Records including Compliance Certificates.	
HWR003	Supply all fittings	Item	Lump Sum		$ -	Payment: Percentage of fittings supplied Submit: Relevant Quality Records including Compliance Certificates.	
HWR004	Supply all pipe materials including detector tape, pipe protection wrapping, rubber rings and lubricant for following pipe sizes:					Measurement: Actual metres (effective length) of pipe delivered to site. Submit: Relevant Quality Records including Compliance Certificates. Note: Limits of Accuracy to be inserted for each pipe size.	
126DSS	Nominal DN375 DICL pipe	1600	m	$ 252.00	$ 403,200.00		
HWR005	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Up to 1.5 m depth to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation up to and including 1.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
126D03	Nominal DN375 DICL (Trench type 3)	1600	m	$ 171.25	$ 274,000.00		Pipeline 1 - terrain allowan
HWR006	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >1.5m to 3.0m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 1.5m to and including 3.0m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR007	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >3.0m to 4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 3.0m to and including 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR008	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR009	EMPTY						
HWR010	Extra over rate for installation for Additional compaction		m3	$ 19.13		Measurement: Cubic metres of additional compaction based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR011	Excavate below specified design depth when directed including disposal of excess excavated material		m3	78.75		Measurement: Cubic metres of excavation directed based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR012	Extra over rate for installation to Supply & place & compact non cohesive material.		m3			Measurement: Cubic metres of non cohesive material based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR013	Extra over rate for installation for supply, place and compact stabilised sand cement (14:1) backfill		m3	$ 337.50		Measurement: Cubic metres of stabilised sand cement based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR014	Extra over rate for installation for Supply, place and compact aggregate		m3			Measurement: Cubic metres of aggregate based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	

HWR015	Supply & place ballast		tonnes	$ 90.00		Measurement: Actual tonnes placed as directed. Submit: Relevant Quality Records including certified weighbridge dockets. Limits of Accuracy: <To be inserted>.
HWR016	External Dewatering of trench including establishment & disestablishment		m			**Measurement: Length of pipeline for which external dewatering is agreed with the Superintendent and provided, measured along the axis of the pipeline between the first and last spear point.** **Submit: Relevant Quality Records.**
HWR017	Supply and place treated timber piling for pipe support		m			Measurement: Actual metres from pipe invert to toe of pile Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR018	Road / creek crossings					Measurement: Length in metres of casing installed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR019	Extra over rate for installation of trenchless technique under existing rail line		m			Measurement: Length in metres of casing installed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR020	Supply and installation of pipe aerial creek crossing including supply of MSCL pipe with protection coating, internal and external welding, testing of welds. For the following MSCL pipe sizes:					Measurement: Length in metres of casing installed in accordance with design. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR021	Supply and installation of pipe river crossing including supply of MSCL pipe, internal and external welding, testing of welds and 150 thick concrete encasement. Also includes mobilisation and demobilisation of dredge(if required) excavation & disposal of excavated material, backfilling, lay, bed and test for the following MSCL pipe sizes.					Measurement: Length in metres of casing installed. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR022	Bulkheads and Trenchstops in accordance with WSAA drawing SEW-1206	Item	Lump Sum		$ -	Payment: Number of bulkheads & trenchstops constructed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR023	Supply and Install valve pits (excluding valve and fittings)	0	Each	$ -	$ -	Payment: Number of valve pits constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR024	Flow Relief Structures		Each			Payment: Number of flow relief structures constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR025	EMPTY					
HWR026	Supply and construct vent stacks		each			Payment: Number of vent stacks constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR027	Preparation of line sheets	1600	m	$ 1.00	$ 1,600.00	Measurement: Length of pipelines constructed as per design Limits of Accuracy: <To be inserted>.
HWR028	Acceptance testing - rising main		m			Measurement: Length of pipelines constructed as per design Submit: Satisfactory test records Limits of Accuracy: <To be inserted>.
HWR029	**Miscellaneous**					
HWR000	***Sub Total***				$680,000	

Sewer Pumping Station 250kW

Item	*Pump Station - Name*	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0201	**Sewer Pumping Station 250kW 3.8m dia 2 Pump(s)**					
	Clear, excavate & backfill in OTR conditions, supply and construct pipework, pump station, includes sliding aluminium hatch covers, screens & ancillary metal work & fittings. Supply & place formwork, reinforcement, concrete, roof slab, thrust blocks.	Item	Lump Sum	$ 369,000.00	$ 369,000.00	**Payment: <Insert appropriate percentages to reflect the value of work at key milestones eg excavation, pump well, metalwork etc>.** **Submit: Relevant Quality Records.**
HW0202	**Pumps for Pumping Stations - Supply and install pumps and associated fittings, connection to pipework, testing and commissioning.**	2	Lump Sum	$ 65,437.50	$ 130,875.00	**Payment: <Insert appropriate percentages for key milestones eg installation, precommissioning, commissioning>.** **Submit: Relevant Quality Records including those for pump test.**
HW0203	**Pumping Station Electricals**					
HW0203.01	Pit and Conduit System	Item	Lump Sum	$ 10,975.00	$ 10,975.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0203.02	LV Station Power Supply	Item	Lump Sum	$ 23,437.50	$ 23,437.50	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0203.03	Station By-Pass arrangements	Item	Lump Sum		$ -	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0203.04	Electrical Demolition works	Item	Lump Sum		$ -	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0203.05	Switchboard	Item	Lump Sum	$ 183,000.00	$ 183,000.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0203.06	PLC / Telemetry Hardware	Item	Lump Sum	$ 14,437.50	$ 14,437.50	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0203.07	PLC / Telemetry / Scada Engineering and Software Development	Item	Lump Sum	$ 28,450.00	$ 28,450.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0203.08	Stainless Steel Generator Box Cable Tray & Metering Box	Item	Lump Sum	$ 22,362.50	$ 22,362.50	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0203.09	Building Services (Electrical)	Item	Lump Sum	$ 13,125.00	$ 13,125.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0203.10	Pressure Transmitter/Gauge Board	Item	Lump Sum	$	$ -	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0203.11	Installation/Cabling (Electrical)	Item	Lump Sum	$ 28,625.00	$ 28,625.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**

HW0204	Empty					
HW0205	Empty					
HW0206	**Service Location**	Item	Lump Sum	$ 866.40	$ 866.40	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0207	Excavation below design depth including disposal of excavated material (Contingent Item)	0	m3	$ 70.00	$	**Measurement: Cubic metres excavated based on thickness of excavation by design cross section of the structure for which excavation has been undertaken. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.**
HW0208	Extra over Civil Works for excavation in rock	0	m3	$ 120.00	$	**Measurement: Actual cubic metres of rock excavated within the design dimensions of the structure. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.**
HW0209	Cut and fill earthworks including compaction	0	m3	$ 25.00	$	**Measurement: Actual cubic metres of earthworks completed in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.**
HW0210	Supply & place ballast (Contingent Item)	0	tonne	$ 90.00	$	**Measurement: Actual tonnes placed as directed. Submit: Relevant Quality Records including certified weighbridge dockets. Limits of Accuracy: <To be inserted>.**
HW0211	Import and place select fill including compaction <may be Contingent Item>	0	m3	$ 65.00	$	**Measurement: Actual cubic metres placed as directed by the Superintendent or placed in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.**
HW0212	Construct access road and hardstand					
HW0212.01	Prepare subgrade		m2	$ 4.20		**Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.**
HW0212.02	Supply, place and compact 150mm thick basecourse		m2	$ 37.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>
HW0212.03	Supply, place and compact 200mm thick basecourse		m2	$ 47.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>
HW0212.04	Supply, place and compact 250mm thick basecourse		m2	$ 51.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>
HW0212.05	Supply, place and compact two coat bitumen seal		m2	$ 26.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>
HW0212.06	Supply, place and compact 30mm thick asphalt bitumen seal		m2	$ 37.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>
HW0212.07	Concrete kerb & gutter	0	m	$ 110.00	$	Measurement: Actual metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>
HW0212.08	Concrete driveway	0	m2	$ 178.00	$	Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>
HW0213	Supply all plant, material and labour to undertake the following Piling works:					
HW0213.01	Treated timber mini piles		m			Measurement: Actual metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>
HW0213.02	Reinforced concrete bored piles	Item	Lump Sum		$	Payment: Percentage of work completed. <Consider % payments at milestones> Submit: Relevant Quality Records.
HW0214	Supply all plant, material and labour to undertake the following Retaining Wall works					Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records.
HW0214.01	Timber(Koppers Log) up to 1.5m high		m2	$ 300.00		**Limits of Accuracy: <To be inserted>.**
HW0214.02	Concrete Keystone up to 1m high		m2	$ 380.00		**Limits of Accuracy: <To be inserted>.**
HW0214.03	Concrete Keystone between 1m and 3m high		m2	$ 560.00		**Limits of Accuracy: <To be inserted>.**
HW0214.04	Concrete Keystone greater than 3m high		m2	$ 560.00		**Limits of Accuracy: <To be inserted>.**
HW0214.05	Concrete Crib Block up to 2m high		m2	$ 630.00		**Limits of Accuracy: <To be inserted>.**
HW0214.06	Concrete Crib Block between 2m and 3m high		m2	$ 704.00		**Limits of Accuracy: <To be inserted>.**
HW0215	Acid sulphate soil					
HW0215.01	Initial testing for acid sulphate soils and prepare and submit report	5	per test	$ 110.00	$ 550.00	Submit: Result for each test. Limits of Accuracy: <To be inserted>
HW0215.02	Establish treatment facility	Item	Lump Sum		$ -	**Payment: 100% after completion of treatment facility.**
HW0215.03	Handling, treatment and testing of acid sulphate soils		m3	$ 60.00		Measurement: Cubic metres within the design cross section of the structure for which excavation has been undertaken. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>
HW0215.04	Disposal off site of acid sulphate soil		tonne	$ 122.00		Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>
HW0216	Series Pump Pit Structure	Item	Lump Sum		$	Payment: <Insert appropriate percentages to reflect the value of work at key milestones eg excavation, reinforced concrete, metalwork etc>. Submit: Relevant Quality Records.
HW0217	Supply and Install valve pit concrete formwork, reinforced concrete complete with aluminium tread plate covers and including excavation and backfill	Item	Lump Sum	$	$	**Payment: <Insert appropriate percentages to reflect the value of work at key milestones eg excavation, reinforced concrete, metalwork etc>. Submit: Relevant Quality Records.**
HW0218	Supply and install pipework items inside valve pit	Item	Lump Sum	$ 6,430.00	$ 6,430.00	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**
HW0219	Supply and Install additional pipe items outside station	Item	Lump Sum	$	$	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**

HW0220	Supply and install pipework items inside station	Item	Lump Sum	$	$	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**
HW0221	Supply and install Type 2 or 4 flow relief structures in accordance with Drgs SCP-502 and SCP-505	Item	Lump Sum		$	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**
HW0222	Supply and install emergency storage structures		L/m			**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**
HW0223	Supply and install fan forced ventilation	Item	Lump Sum		$	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**
HW0224	Supply and install Soil Bed Filter	Item	Lump Sum		$	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**
HW0225	Supply and Install Strainers	Item	Lump Sum		$	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**
HW0226	Supply and Install Series Bypass	Item	Lump Sum		$	**Payment: Valued at percentage of work completed up to 80%. Remainder at Practical Completion. Submit: Relevant Quality Records.**
HW0227	Landscaping	Item	Lump Sum	$	$	Payment: 100% at completion. Submit: Relevant Quality Records.
HW0228	**Miscellaneous**					
HW0229	Preparation and submission of Operation and Maintenance Information	Item	Lump Sum		$	Payment: 100% at Practical Completion. Submit: Complying Work As Constructed Information.
HW0230	Pre commissioning and commissioning	Item	Lump Sum	$ 8,000.00	$ 8,000.00	**Payment: 50% at completion of satisfactory precommissioning. Remainder at Practical Completion. Submit: Relevant Quality Records.**
HW0231	Preparation and submission of Work as Constructed Information	Item	Lump Sum	$ 6,000.00	$ 6,000.00	Payment: 100% at Practical Completion. Submit: Complying Work As Constructed Information.
HW29P		***Sub Total***			$846,134	

Sewer Pipeline - Gravity - section will be present if one or more gravity mains are specified

Item	Construction of Sewer Gravity Mains	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates	
HWG001	Service Location	Item	Lump Sum	$ 1,275.00	$ 1,275.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**	
HWG002	Supply all valves	Item	Lump Sum		$ -	**Payment: Percentage of valves and flowmeters supplied. Submit: Relevant Quality Records including Compliance Certificates.**	
HWG003	Supply all fittings	Item	Lump Sum		$ -	**Payment: Percentage of fittings supplied. Submit: Relevant Quality Records including Compliance Certificates.**	
HWG004	Supply all pipe materials including detector tape, pipe protection wrapping, rubber rings and lubricant for following pipe sizes:					Measurement: Actual metres (effective length) of pipe delivered to site. Submit: Relevant Quality Records including Compliance Certificates. Note: Limits of Accuracy to be inserted for each pipe size.	
026GSS	Nominal DN375 GRP pipe	1700	m	$ 290.00	$ 493,000.00		
HWG005	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Up to 1.5 m depth to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation up to and including 1.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
026G03	Nominal DN375 GRP (Trench type 3)	580	m	$ 139.25	$ 80,765.00		
HWG006	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >1.5m to 3.0m depth to invert in OTR					Measurement: Actual metres of pipe installed with design depth of excavation > 1.5m to and including 3.0m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
026G03	Nominal DN375 GRP (Trench type 3)	560	m	$ 220.25	$ 123,340.00		Pipeline 3 - depth allowanc
HWG007	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >3.0m to 4.5m depth to invert in OTR					Measurement: Actual metres of pipe installed with design depth of excavation > 3.0m to and including 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
026G03	Nominal DN375 GRP (Trench type 3)	560	m	$ 457.25	$ 256,060.00		Pipeline 3 - depth allowanc
HWG008	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >4.5m depth to invert in OTR					Measurement: Actual metres of pipe installed with design depth of excavation > 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWG009	Excavate, backfill, supply and install access chambers including base, chamber, cover & surround and access ladder for the following nominal diameter access chambers:					Measurement: Actual metres of access chamber installed measured from surface level to invert of outlet pipe. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWG010	Extra over rate for installation for Additional compaction		m3	$ 38.03		Measurement: Cubic metres of additional compaction based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWG011	Excavate below specified design depth when directed including disposal of excess excavated material		m3	$ 78.75		Measurement: Cubic metres of excavation at depth based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	

HW0012	Extra over rate for installation to supply, place & compact non cohesive material.		m3			Measurement: Cubic metres of non cohesive material based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0013	Extra over rate for installation for supply, place and compact stabilised sand cement (14:1) backfill		m3	$ 337.50		Measurement: Cubic metres of stabilised sand cement based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0014	Extra over rate for installation for Supply, place and compact aggregate		m3			Measurement: Cubic metres of aggregate based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0015	Supply & place ballast		tonnes	$ 90.00		Measurement: Actual tonnes placed as directed. Submit: Relevant Quality Records including certified weighbridge dockets. Limits of Accuracy: <To be inserted>.
HW0016	External Dewatering of trench including establishment & disestablishment		m3			**Measurement: Measurement: Length of pipeline for which external dewatering is agreed with the Superintendent and provided, measured along the axis of the pipeline between the first and last spear point.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>**
HW0017	Supply and place treated timber piling for pipe support		m			Measurement: Actual metres from pipe invert to toe of pile Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0018	Road / creek crossings					Measurement: Length in metres of casing installed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0019	Extra over rate for installation of trenchless technique under existing rail line		m			Measurement: Length in metres of casing installed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0020	Supply & installation of river crossing includes supply of MSCL pipe, welding, testing of welds, 150mm concrete encasement, mobilisation & demobilisation of dredge, excavation & disposal of excavated material, backfilling, lay, bed & test:					Measurement: Length in metres of casing installed. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0021	Supply and installation of pipe aerial creek crossing including supply of MSCL pipe with protection coating, internal and external welding, testing of welds. For the following MSCL pipe sizes:					Measurement: Length in metres of casing installed in accordance with design. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0022	Bulkheads and Trenchstops in accordance with WSAA drawing SEW-1206		Each			Payment: Number of bulkheads & trenchstops constructed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0023	Supply and Install valve pits (excluding valves and fittings)	0	Each	$ -	$ -	Payment: Number of valve pits constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0024	Flow Relief Structures		Each			Payment: Number of flow relief structures constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0025	EMPTY					
HW0026	Supply and construct vent stacks		each			Payment: Number of vent stacks constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0027	Preparation of line sheets	1700	each	$ 1.00	$ 1,700.00	Measurement: Length of pipelines constructed as per design Limits of Accuracy: <To be inserted>.
HW0028	Acceptance testing - gravity main		m			Measurement: Length of pipelines constructed as per design Submit: Staisfactory test records Limits of Accuracy: <To be inserted>.
HW0029	**Miscellaneous**					
HW000	***Sub Total***				$956,140	

Item No.	Item Description	Qty	Unit		Amount $	Application of Schedule of Rates
HW0009	Restoration - Pipelines:					**Payment: 100% after completion.**
HW0009.01	Concrete kerb & gutter	0	m	$ 110.00	$ -	**Measurement: Lineal metres restored within Minimum Trench Width.** **Limits of Accuracy: <To be inserted>.**
HW0009.02	Concrete driveway	0	m2	$ 178.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.03	Exposed aggregate & stamped driveway	0	m2	$ 220.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.04	Concrete footpath	0	m2	$ 155.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.05	Bitumen footpath	0	m2	$ 117.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.06	Gravel pavement	0	m2	$ 69.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.07	Bitumen pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.08	AC pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**

HW0009.09	Pavers		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.10	Turf		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.11	Grass seeding		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.12	Hydromulch		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0010	Extra over item for Excavation in rock and disposal of excess excavated material		m3			**Measurement: Cubic metres excavated based on thickness of rock by actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0011	Acid sulphate soil					
HW0011.01	Initial testing for acid sulphate soils and prepare and submit report		per test			**Submit: Result for each test. Limits of Accuracy: <To be inserted>.**
HW0011.02	Establish treatment facility		Item			**Payment: 100% after completion of treatment facility.**
HW0011.03	Handling, treatment and testing of acid sulphate soils		m3			**Measurement: Cubic metres excavated based on thickness of ASS by actual length by Minimum Trench Width. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>**
HW0011.04	Disposal off site of acid sulphate soil		tonne			**Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>**
HW0012	Preconstruction record					
HW0012.01	Photographic	Item	Lump Sum		$ -	**Payment: 70% on submission of the Photographic record. Remainder at Practical Completion.**
HW0012.02	Video	Item	Lump Sum		$ -	**Payment: 70% on submission of the Video record. Remainder at Practical Completion.**
HW0012.03	CCTV	Item	Lump Sum		$ -	**Payment: 70% on submission of the CCTV record. Remainder at Practical Completion.**
HW0013	Work as Constructed Information <Insert Min $>	Item	Lump Sum	$ 26,400.00	$ 26,400.00	**Payment: 100% at Practical Completion.**

A.	**TOTAL ESTIMATED CONTRACT AWARD SUM**	$ 2,688,334.64

B.	**PRE-CONSTRUCTION COST (Table 10)**	
HW0016	Design	$ 322,600.16
HW0017	Project Management of Design	$ 74,520.03
HW0018	Land Matters	$ -
HW0024	Community Consultation	
	Sub Total(B1)	$ 397,120.19
	Pre construction contingency (30% of B1)	$ 119,136.06
	TOTAL PRE-CONSTRUCTION COST (B)	$ 516,256.24

C.	**CONSTRUCTION COST**		
	Total Estimated Contract Award Sum (A)		$ 2,688,334.64
HW0019	Principal Supplied Pipe (as applicable)		$ -
HW0020	Principal Supplied Valves and Flowmeters (as applicable)		$ -
HW0021	Principal Supplied Fittings (as applicable)		$ -
HW0022	Pump Station HV Power Supply		$ 187,500.00
HW0023	Construction Management (Table 11)		$ 215,066.77
	Sub Total (C1)		$ 3,090,901.41
	Construction contingency (Table 12) (30% of C1)	Preliminary Estimate	$ 927,270.42
	TOTAL CONSTRUCTION COST (C)		$ 4,018,171.83

TOTAL PRELIMINARY PROJECT ESTIMATE (B+C) (Preliminary Estimate)	$ 4,534,428.08

ESTIMATING SHEET

PROJECT DESCRIPTION: Pump Station & Rising Main - High Head Western Transfer

Item No.	Item Description	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0001	All work not included elsewhere in this schedule	Item	Lump Sum	$ 67,379.00	$ 67,379.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0002	Site Establishment <Insert Max $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0003	Site Disestablishment <Insert Min $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0004	Preparation and implementation of the Construction EMP	Item	Lump Sum	$ 11,000.00	$ 11,000.00	**Payment: Maximum of 30% on submission of complying Construction EMP, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Construction EMP**
HW0005	Preparation and implementation of the Safety Management Plan.	Item	Lump Sum	$ 23,000.00	$ 23,000.00	**Payment: Maximum of 30% on submission of complying plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Safety Management Plan.**
HW0006	Preparation and implementation of the Traffic Control Plan.	Item	Lump Sum	$ 8,200.00	$ 8,200.00	**Payment: Maximum of 30% on submission of complying Traffic Control Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0007	Preparation and Implementation of Quality Management Plan	Item	Lump Sum	$ 34,489.27	$ 34,489.27	**Payment: Maximum of 30% on submission of complying Quality Management Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0008	Community Consultation	Item	Lump Sum	$ -	$ -	**Payment: 10% per month up to maximum of 70%. Remainder at Practical Completion.**

Sewer Pipeline - Rising - section will be present if one or more rising mains are specified

Item	Construction of Sewer Rising Mains	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates	
HWR001	Service Location	Item	Lump Sum	$ 1,620.00	$ 1,620.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**	
HWR002	Supply all valves	Item	Lump Sum		$ -	Payment: Percentage of valves and flowmeters supplied Submit: Relevant Quality Records including Compliance Certificates.	
HWR003	Supply all fittings	Item	Lump Sum		$ -	Payment: Percentage of fittings supplied Submit: Relevant Quality Records including Compliance Certificates.	
HWR004	Supply all pipe materials including detector tape, pipe protection wrapping, rubber rings and lubricant for following pipe sizes:					Measurement: Actual metres (effective length) of pipe delivered to site. Submit: Relevant Quality Records including Compliance Certificates. Note: Limits of Accuracy to be inserted for each pipe size.	
132DSS	Nominal DN500 DICL pipe	1800	m	$ 394.00	$ 709,200.00		
HWR005	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Up to 1.5 m depth to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation up to and including 1.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
132D03	Nominal DN500 DICL (Trench type 3)	1800	m	$ 212.10	$ 381,780.00		Pipeline 1 - terrain allowan
HWR006	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >1.5m to 3.0m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 1.5m to and including 3.0m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR007	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >3.0m to 4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 3.0m to and including 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR008	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR009	EMPTY						
HWR010	Extra over rate for installation for Additional compaction		m3	$ 22.95		Measurement: Cubic metres of additional compaction based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR011	Excavate below specified design depth when directed including disposal of excess excavated material		m3	$ 94.50		Measurement: Cubic metres of excavation directed based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR012	Extra over rate for installation to Supply & place & compact non cohesive material.		m3			Measurement: Cubic metres of non cohesive material based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR013	Extra over rate for installation for supply, place and compact stabilised sand cement (14:1) backfill		m3	$ 405.00		Measurement: Cubic metres of stabilised sand cement based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR014	Extra over rate for installation for Supply, place and compact aggregate		m3			Measurement: Cubic metres of aggregate based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	

HWR015	Supply & place ballast		tonnes	$ 90.00		Measurement: Actual tonnes placed as directed. Submit: Relevant Quality Records including certified weighbridge dockets. Limits of Accuracy: <To be inserted>.
HWR016	External Dewatering of trench including establishment & disestablishment		m			**Measurement: Length of pipeline for which external dewatering is agreed with the Superintendent and provided, measured along the axis of the pipeline between the first and last spear point.** **Submit: Relevant Quality Records.**
HWR017	Supply and place treated timber piling for pipe support		m			Measurement: Actual metres from pipe invert to toe of pile Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR018	Road / creek crossings					Measurement: Length in metres of casing installed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR019	Extra over rate for installation of trenchless technique under existing rail line		m			Measurement: Length in metres of casing installed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR020	Supply and installation of pipe aerial creek crossing including supply of MSCL pipe with protection coating, internal and external welding, testing of welds. For the following MSCL pipe sizes:					Measurement: Length in metres of casing installed in accordance with design. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR021	Supply and installation of pipe river crossing including supply of MSCL pipe, internal and external welding, testing of welds and 150 thick concrete encasement. Also includes mobilisation and demobilisation of dredge(if required) excavation & disposal of excavated material, backfilling, lay, bed and test for the following MSCL pipe sizes.					Measurement: Length in metres of casing installed. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR022	Bulkheads and Trenchstops in accordance with WSAA drawing SEW-1206	Item	Lump Sum		$ -	Payment: Number of bulkheads & trenchstops constructed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR023	Supply and Install valve pits (excluding valve and fittings)	0	Each	$ -	$ -	Payment: Number of valve pits constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR024	Flow Relief Structures		Each			Payment: Number of flow relief structures constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR025	EMPTY					
HWR026	Supply and construct vent stacks		each			Payment: Number of vent stacks constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR027	Preparation of line sheets	1800	m	$ 1.00	$ 1,800.00	Measurement: Length of pipelines constructed as per design Limits of Accuracy: <To be inserted>.
HWR028	Acceptance testing - rising main		m			Measurement: Length of pipelines constructed as per design Submit: Satisfactory test records Limits of Accuracy: <To be inserted>.
HWR029	**Miscellaneous**					
HWR000	***Sub Total***				$1,094,400	

Sewer Pumping Station 500kW

Item	*Pump Station - Name*	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HWD201	**Sewer Pumping Station 500kW 5.5m dia 2 Pump(s)**					
	Clear, excavate & backfill in OTR conditions, supply and construct pipework, pump station, includes sliding aluminium hatch covers, screens & ancillary metal work & fittings. Supply & place formwork, reinforcement, concrete, roof slab, thrust blocks.	Item	Lump Sum	$ 369,000.00	$ 369,000.00	**Payment: <Insert appropriate percentages to reflect the value of work at key milestones eg excavation, pump well, metalwork etc>.** **Submit: Relevant Quality Records.**
HWD202	**Pumps for Pumping Stations - Supply and install pumps and associated fittings, connection to pipework, testing and commissioning.**	2	Lump Sum	$ 119,475.00	$ 238,950.00	**Payment: <Insert appropriate percentages for key milestones eg installation, precommissioning, commissioning>.** **Submit: Relevant Quality Records including those for pump test.**
HWD203	**Pumping Station Electricals**					
HWD203.01	Pit and Conduit System	Item	Lump Sum	$ 15,500.00	$ 15,500.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HWD203.02	LV Station Power Supply	Item	Lump Sum	$ 38,125.00	$ 38,125.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HWD203.03	Station By-Pass arrangements	Item	Lump Sum		$	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HWD203.04	Electrical Demolition works	Item	Lump Sum		$	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HWD203.05	Switchboard	Item	Lump Sum	$ 299,000.00	$ 299,000.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HWD203.06	PLC / Telemetry Hardware	Item	Lump Sum	$ 14,437.50	$ 14,437.50	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HWD203.07	PLC / Telemetry / Scada Engineering and Software Development	Item	Lump Sum	$ 28,450.00	$ 28,450.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HWD203.08	Stainless Steel Generator Box Cable Tray & Metering Box	Item	Lump Sum	$ 39,437.50	$ 39,437.50	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HWD203.09	Building Services (Electrical)	Item	Lump Sum	$ 20,625.00	$ 20,625.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HWD203.10	Pressure Transmitter/Gauge Board	Item	Lump Sum	$	$	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HWD203.11	Installation/Cabling (Electrical)	Item	Lump Sum	$ 31,000.00	$ 31,000.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**

HW0204	Empty					
HW0205	Empty					
HW0206	**Service Location**	Item	Lump Sum	$ 1,815.00	$ 1,815.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0207	Excavation below design depth including disposal of excavated material (Contingent Item)	0	m3	$ 70.00	$	**Measurement: Cubic metres excavated based on thickness of excavation by design cross section of the structure for which excavation has been undertaken. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.**
HW0208	Extra over Civil Works for excavation in rock	0	m3	$ 120.00	$	**Measurement: Actual cubic metres of rock excavated within the design dimensions of the structure. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.**
HW0209	Cut and fill earthworks including compaction	0	m3	$ 25.00	$	**Measurement: Actual cubic metres of earthworks completed in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.**
HW0210	Supply & place ballast (Contingent Item)	0	tonne	$ 90.00	$	**Measurement: Actual tonnes placed as directed. Submit: Relevant Quality Records including certified weighbridge dockets. Limits of Accuracy: <To be inserted>.**
HW0211	Import and place select fill including compaction <may be Contingent Item>	0	m3	$ 65.00	$	**Measurement: Actual cubic metres placed as directed by the Superintendent or placed in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.**
HW0212	Construct access road and hardstand					
HW0212.01	Prepare subgrade		m2	$ 4.20		**Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.**
HW0212.02	Supply, place and compact 150mm thick basecourse		m2	$ 37.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>
HW0212.03	Supply, place and compact 200mm thick basecourse		m2	$ 47.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>
HW0212.04	Supply, place and compact 250mm thick basecourse		m2	$ 51.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>
HW0212.05	Supply, place and compact two coat bitumen seal		m2	$ 26.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>
HW0212.06	Supply, place and compact 30mm thick asphalt bitumen seal		m2	$ 37.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>
HW0212.07	Concrete kerb & gutter	0	m	$ 110.00	$	Measurement: Actual metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>
HW0212.08	Concrete driveway	0	m2	$ 178.00	$	Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>
HW0213	Supply all plant, material and labour to undertake the following Piling works:					
HW0213.01	Treated timber mini piles		m			Measurement: Actual metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>
HW0213.02	Reinforced concrete bored piles	Item	Lump Sum		$	Payment: Percentage of work completed. <Consider % payments at milestones> Submit: Relevant Quality Records.
HW0214	Supply all plant, material and labour to undertake the following Retaining Wall works					Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records.
HW0214.01	Timber(Koppers Log) up to 1.5m high		m2	$ 300.00		**Limits of Accuracy: <To be inserted>.**
HW0214.02	Concrete Keystone up to 1m high		m2	$ 380.00		**Limits of Accuracy: <To be inserted>.**
HW0214.03	Concrete Keystone between 1m and 3m high		m2	$ 560.00		**Limits of Accuracy: <To be inserted>.**
HW0214.04	Concrete Keystone greater than 3m high		m2	$ 560.00		**Limits of Accuracy: <To be inserted>.**
HW0214.05	Concrete Crib Block up to 2m high		m2	$ 630.00		**Limits of Accuracy: <To be inserted>.**
HW0214.06	Concrete Crib Block between 2m and 3m high		m2	$ 704.00		**Limits of Accuracy: <To be inserted>.**
HW0215	Acid sulphate soil					
HW0215.01	Initial testing for acid sulphate soils and prepare and submit report	5	per test	$ 110.00	$ 550.00	Submit: Result for each test. Limits of Accuracy: <To be inserted>
HW0215.02	Establish treatment facility	Item	Lump Sum		$ -	**Payment: 100% after completion of treatment facility.**
HW0215.03	Handling, treatment and testing of acid sulphate soils		m3	$ 60.00		Measurement: Cubic metres within the design cross section of the structure for which excavation has been undertaken. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>
HW0215.04	Disposal off site of acid sulphate soil		tonne	$ 122.00		Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>
HW0216	Series Pump Pit Structure	Item	Lump Sum		$	Payment: <Insert appropriate percentages to reflect the value of work at key milestones eg excavation, reinforced concrete, metalwork etc>. Submit: Relevant Quality Records.
HW0217	Supply and Install valve pit concrete formwork, reinforced concrete complete with aluminium tread plate covers and including excavation and backfill	Item	Lump Sum	$	$	**Payment: <Insert appropriate percentages to reflect the value of work at key milestones eg excavation, reinforced concrete, metalwork etc>. Submit: Relevant Quality Records.**
HW0218	Supply and install pipework items inside valve pit	Item	Lump Sum	$ 6,430.00	$ 6,430.00	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**
HW0219	Supply and Install additional pipe items outside station	Item	Lump Sum	$ 55,207.00	$ 55,207.00	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**

HW0220	Supply and install pipework items inside station	Item	Lump Sum	$ 5,400.00	$ 5,400.00	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**
HW0221	Supply and install Type 2 or 4 flow relief structures in accordance with Drgs SCP-502 and SCP-505	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**
HW0222	Supply and install emergency storage structures		L/m			**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**
HW0223	Supply and install fan forced ventilation	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**
HW0224	Supply and install Soil Bed Filter	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**
HW0225	Supply and Install Strainers	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**
HW0226	Supply and Install Series Bypass	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed up to 80%. Remainder at Practical Completion. Submit: Relevant Quality Records.**
HW0227	Landscaping	Item	Lump Sum	$ -	$ -	Payment: 100% at completion. Submit: Relevant Quality Records.
HW0228	**Miscellaneous**					
HW0229	Preparation and submission of Operation and Maintenance Information	Item	Lump Sum		$ -	Payment: 100% at Practical Completion. Submit: Complying Work As Constructed Information.
HW0230	Pre commissioning and commissioning	Item	Lump Sum	$ 8,000.00	$ 8,000.00	**Payment: 50% at completion of satisfactory precommissioning. Remainder at Practical Completion. Submit: Relevant Quality Records.**
HW0231	Preparation and submission of Work as Constructed Information	Item	Lump Sum	$ 6,000.00	$ 6,000.00	Payment: 100% at Practical Completion. Submit: Complying Work As Constructed Information.
HW29P		***Sub Total***			$1,177,927	

Sewer Pipeline - Gravity - section will be present if one or more gravity mains are specified

Item	Construction of Sewer Gravity Mains	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates	
HWG001	Service Location	Item	Lump Sum	$ 1,125.00	$ 1,125.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**	
HWG002	Supply all valves	Item	Lump Sum		$ -	**Payment: Percentage of valves and flowmeters supplied. Submit: Relevant Quality Records including Compliance Certificates.**	
HWG003	Supply all fittings	Item	Lump Sum		$ -	**Payment: Percentage of fittings supplied. Submit: Relevant Quality Records including Compliance Certificates.**	
HWG004	Supply all pipe materials including detector tape, pipe protection wrapping, rubber rings and lubricant for following pipe sizes:					Measurement: Actual metres (effective length) of pipe delivered to site. Submit: Relevant Quality Records including Compliance Certificates. Note: Limits of Accuracy to be inserted for each pipe size.	
026GSS	Nominal DN375 GRP pipe	1500	m	$ 290.00	$ 435,000.00		
HWG005	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Up to 1.5 m depth to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation up to and including 1.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
026G03	Nominal DN375 GRP (Trench type 3)	500	m	$ 233.25	$ 116,625.00		Pipeline 3 - terrain allowan
HWG006	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >1.5m to 3.0m depth to invert in OTR					Measurement: Actual metres of pipe installed with design depth of excavation > 1.5m to and including 3.0m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
026G03	Nominal DN375 GRP (Trench type 3)	500	m	$ 329.25	$ 164,625.00		Pipeline 3 - terrain allowan
HWG007	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >3.0m to 4.5m depth to invert in OTR					Measurement: Actual metres of pipe installed with design depth of excavation > 3.0m to and including 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
026G03	Nominal DN375 GRP (Trench type 3)	500	m	$ 609.25	$ 304,625.00		Pipeline 3 - terrain allowan
HWG008	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >4.5m depth to invert in OTR					Measurement: Actual metres of pipe installed with design depth of excavation > 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWG009	Excavate, backfill, supply and install access chambers including base, chamber, cover & surround and access ladder for the following nominal diameter access chambers:					Measurement: Actual metres of access chamber installed measured from surface level to invert of outlet pipe. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWG010	Extra over rate for installation for Additional compaction		m3	$ 38.25		Measurement: Cubic metres of additional compaction based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWG011	Excavate below specified design depth where directed including disposal of excess excavated material		m3	$ 78.75		Measurement: Cubic metres of excavation or extra based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	

HWG012	Extra over rate for installation to supply, place & compact non cohesive material.		m3			Measurement: Cubic metres of non cohesive material based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG013	Extra over rate for installation for supply, place and compact stabilised sand cement (14:1) backfill		m3	$ 337.50		Measurement: Cubic metres of stabilised sand cement based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG014	Extra over rate for installation for Supply, place and compact aggregate		m3			Measurement: Cubic metres of aggregate based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG015	Supply & place ballast		tonnes	$ 90.00		Measurement: Actual tonnes placed as directed. Submit: Relevant Quality Records including certified weighbridge dockets. Limits of Accuracy: <To be inserted>.
HWG016	External Dewatering of trench including establishment & disestablishment		m3			**Measurement: Measurement: Length of pipeline for which external dewatering is agreed with the Superintendent and provided, measured along the axis of the pipeline between the first and last spear point.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>**
HWG017	Supply and place treated timber piling for pipe support		m			Measurement: Actual metres from pipe invert to toe of pile Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG018	Road / creek crossings					Measurement: Length in metres of casing installed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG019	Extra over rate for installation of trenchless technique under existing rail line		m			Measurement: Length in metres of casing installed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG020	Supply & installation of river crossing includes supply of MSCL pipe, welding, testing of welds, 150mm concrete encasement, mobilisation & demobilisation of dredge, excavation & disposal of excavated material, backfilling, lay, bed & test:					Measurement: Length in metres of casing installed. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG021	Supply and installation of pipe aerial creek crossing including supply of MSCL pipe with protection coating, internal and external welding, testing of welds. For the following MSCL pipe sizes:					Measurement: Length in metres of crossing installed in accordance with design. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG022	Bulkheads and Trenchstops in accordance with WSAA drawing SEW-1206		Each			Payment: Number of bulkheads & trenchstops constructed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG023	Supply and Install valve pits (excluding valves and fittings)	0	Each	$ -	$ -	Payment: Number of valve pits constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG024	Flow Relief Structures		Each			Payment: Number of flow relief structures constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG025	EMPTY					
HWG026	Supply and construct vent stacks		each			Payment: Number of vent stacks constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWG027	Preparation of line sheets	1500	each	$ 1.00	$ 1,500.00	Measurement: Length of pipelines constructed as per design Limits of Accuracy: <To be inserted>.
HWG028	Acceptance testing - gravity main		m			Measurement: Length of pipelines constructed as per design Submit: Staisfactory test records Limits of Accuracy: <To be inserted>.
HWG029	**Miscellaneous**					
HWG000	***Sub Total***				$1,023,500	

Item No.	Item Description	Qty	Unit		Amount $	Application of Schedule of Rates
HW0009	Restoration - Pipelines:					**Payment: 100% after completion.**
HW0009.01	Concrete kerb & gutter	0	m	$ 110.00	$ -	**Measurement: Lineal metres restored within Minimum Trench Width.** **Limits of Accuracy: <To be inserted>.**
HW0009.02	Concrete driveway	0	m2	$ 178.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.03	Exposed aggregate & stamped driveway	0	m2	$ 220.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.04	Concrete footpath	0	m2	$ 155.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.05	Bitumen footpath	0	m2	$ 117.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.06	Gravel pavement	0	m2	$ 69.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.07	Bitumen pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.08	AC pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**

HW0009.09	Pavers		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.10	Turf		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.11	Grass seeding		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.12	Hydromulch		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0010	Extra over item for Excavation in rock and disposal of excess excavated material		m3			**Measurement: Cubic metres excavated based on thickness of rock by actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0011	Acid sulphate soil					
HW0011.01	Initial testing for acid sulphate soils and prepare and submit report		per test			**Submit: Result for each test. Limits of Accuracy: <To be inserted>.**
HW0011.02	Establish treatment facility		Item			**Payment: 100% after completion of treatment facility.**
HW0011.03	Handling, treatment and testing of acid sulphate soils		m3			**Measurement: Cubic metres excavated based on thickness of ASS by actual length by Minimum Trench Width. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>**
HW0011.04	Disposal off site of acid sulphate soil		tonne			**Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>**
HW0012	Preconstruction record					
HW0012.01	Photographic	Item	Lump Sum		$ -	**Payment: 70% on submission of the Photographic record. Remainder at Practical Completion.**
HW0012.02	Video	Item	Lump Sum		$ -	**Payment: 70% on submission of the Video record. Remainder at Practical Completion.**
HW0012.03	CCTV	Item	Lump Sum		$ -	**Payment: 70% on submission of the CCTV record. Remainder at Practical Completion.**
HW0013	Work as Constructed Information <Insert Min $>	Item	Lump Sum	$ 26,400.00	$ 26,400.00	**Payment: 100% at Practical Completion.**

A.	**TOTAL ESTIMATED CONTRACT AWARD SUM**	$ 3,526,295.27

B.	**PRE-CONSTRUCTION COST (Table 10)**	
HW0016	Design	$ 423,155.43
HW0017	Project Management of Design	$ 94,631.09
HW0018	Land Matters	$ -
HW0024	Community Consultation	
	Sub Total(B1)	$ 517,786.52
	Pre construction contingency (30% of B1)	$ 155,335.96
	TOTAL PRE-CONSTRUCTION COST (B)	$ 673,122.47

C.	**CONSTRUCTION COST**		
	Total Estimated Contract Award Sum (A)		$ 3,526,295.27
HW0019	Principal Supplied Pipe (as applicable)		$ -
HW0020	Principal Supplied Valves and Flowmeters (as applicable)		$ -
HW0021	Principal Supplied Fittings (as applicable)		$ -
HW0022	Pump Station HV Power Supply		$ 275,000.00
HW0023	Construction Management (Table 11)		$ 282,103.62
	Sub Total (C1)		$ 4,083,398.89
	Construction contingency (Table 12) (30% of C1)	Preliminary Estimate	$ 1,225,019.67
	TOTAL CONSTRUCTION COST (C)		$ 5,308,418.56

TOTAL PRELIMINARY PROJECT ESTIMATE (B+C) (Preliminary Estimate)	$ 5,981,541.03

ESTIMATING SHEET

PROJECT DESCRIPTION: Pump Station & Rising Main - High Head Western Transfer

Item No.	Item Description	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0001	All work not included elsewhere in this schedule	Item	Lump Sum	$ 48,883.00	$ 48,883.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0002	Site Establishment <Insert Max $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0003	Site Disestablishment <Insert Min $>	Item	Lump Sum	$ 30,000.00	$ 30,000.00	**Payment: 100% after completion.**
HW0004	Preparation and implementation of the Construction EMP	Item	Lump Sum	$ 7,000.00	$ 7,000.00	**Payment: Maximum of 30% on submission of complying Construction EMP, then 10% per month up to maximum of 80%. Remainder at Practical Completion.** **Submit: Construction EMP**
HW0005	Preparation and implementation of the Safety Management Plan.	Item	Lump Sum	$ 14,000.00	$ 14,000.00	**Payment: Maximum of 30% on submission of complying plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.** **Submit: Safety Management Plan**
HW0006	Preparation and implementation of the Traffic Control Plan.	Item	Lump Sum	$ 6,200.00	$ 6,200.00	**Payment: Maximum of 30% on submission of complying Traffic Control Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0007	Preparation and Implementation of Quality Management Plan	Item	Lump Sum	$ 25,241.73	$ 25,241.73	**Payment: Maximum of 30% on submission of complying Quality Management Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0008	Community Consultation	Item	Lump Sum	$ -	$ -	**Payment: 10% per month up to maximum of 70%. Remainder at Practical Completion.**

Sewer Pipeline - Rising - section will be present if one or more rising mains are specified

Item	Construction of Sewer Rising Mains	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HWR001	Service Location	Item	Lump Sum	$ 3,600.00	$ 3,600.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HWR002	Supply all valves	Item	Lump Sum		$ -	Payment: Percentage of valves and flowmeters supplied. Submit: Relevant Quality Records including Compliance Certificates.
HWR003	Supply all fittings	Item	Lump Sum		$ -	Payment: Percentage of fittings supplied. Submit: Relevant Quality Records including Compliance Certificates.
HWR004	Supply all pipe materials including detector tape, pipe protection wrapping, rubber rings and lubricant for following pipe sizes:					Measurement: Actual metres (effective length) of pipe delivered to site. Submit: Relevant Quality Records including Compliance Certificates. Note: Limits of Accuracy to be inserted for each pipe size.
12DDS5	Nominal DN450 DICL pipe	4000	m	$ 304.00	$ 1,216,000.00	
HWR005	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Up to 1.5 m depth to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation up to and including 1.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.
12DD03	Nominal DN450 DICL (Trench type 3)	4000	m	$ 125.25	$ 501,000.00	
HWR006	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >1.5m to 3.0m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 1.5m to and including 3.0m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.
HWR007	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >3.0m to 4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 3.0m to and including 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.
HWR008	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.
HWR009	EMPTY					
HWR010	Extra over rate for installation for Additional compaction		m3	$ 22.95		Measurement: Cubic metres of additional compaction based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR011	Excavate below specified design depth where directed including disposal of excess excavated material		m3	$ 94.50		Measurement: Cubic metres of excavation directed based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR012	Extra over rate for installation to Supply & place & compact non cohesive material.		m3			Measurement: Cubic metres of non cohesive material based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.

HWR013	Extra over rate for installation for supply, place and compact stabilised sand cement (14:1) backfill		m3	$ 405.00		Measurement: Cubic metres of stabilised sand cement based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR014	Extra over rate for installation for Supply, place and compact aggregate		m3			Measurement: Cubic metres of aggregate based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR015	Supply & place ballast		tonnes	$ 90.00		Measurement: Actual tonnes placed as directed. Submit: Relevant Quality Records including certified weighbridge dockets. Limits of Accuracy: <To be inserted>.
HWR016	External Dewatering of trench including establishment & disestablishment		m			**Measurement: Length of pipeline for which external dewatering is agreed with the Superintendent and provided, measured along the axis of the pipeline between the first and last spear point.** **Submit: Relevant Quality Records.**
HWR017	Supply and place treated timber piling for pipe support		m			Measurement: Actual metres from pipe invert to toe of pile. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>
HWR018	Road / creek crossings					Measurement: Length in metres of casing installed. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR019	Extra over rate for installation of trenchless technique under existing rail line		m			Measurement: Length in metres of casing installed. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR020	Supply and installation of pipe aerial creek crossing including supply of MSCL pipe with protection coating, internal and external welding, testing of welds. For the following MSCL pipe sizes:					Measurement: Length in metres of crossing installed in accordance with design. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR021	Supply and installation of pipe river crossing including supply of MSCL pipe, internal and external welding, testing of welds and 150 thick concrete encasement. Also includes mobilisation and demobilisation of dredge(if required) excavation & disposal of excavated material, backfilling, lay, bed and test for the following MSCL pipe sizes:					Measurement: Length in metres of casing installed. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR022	Bulkheads and Trenchstops in accordance with WSAA drawing SEW-1206	Item	Lump Sum		$ -	Payment: Number of bulkheads & trenchstops constructed. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR023	Supply and Install valve pits (excluding valves and fittings)	0	Each	$ -	$ -	Payment: Number of valve pits constructed. Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR024	Flow Relief Structures		Each			Payment: Number of flow relief structures constructed. Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR025	EMPTY					
HWR026	Supply and construct vent stacks		each			Payment: Number of vent stacks constructed. Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR027	Preparation of line sheets	4000	m	$ 1.00	$ 4,000.00	Measurement: Length of pipelines constructed as per design. Limits of Accuracy: <To be inserted>.
HWR028	Acceptance testing - rising main		m			Measurement: Length of pipelines constructed as per design. Submit: Satisfactory test records Limits of Accuracy: <To be inserted>.
HWR029	**Miscellaneous**					
HWR000	***Sub Total***				$1,724,600	

Sewer Pumping Station 150kW

Item	*Pump Station - Name*	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0201	**Sewer Pumping Station 150kW 5.5m dia Pump(s)**					
	Clear, excavate & backfill in OTR conditions, supply and construct pipework, pump station, includes sliding aluminium hatch covers, screens & ancillary metal work & fittings. Supply & place formwork, reinforcement, concrete, roof slab, thrust blocks.	Item	Lump Sum	$ 369,000.00	$ 369,000.00	**Payment: <Insert appropriate percentages to reflect the value of work at key milestones eg excavation, pump well, metalwork etc>.** **Submit: Relevant Quality Records.**
HW0202	**Pumps for Pumping Stations - Supply and install pumps and associated fittings, connection to pipework, testing and commissioning.**	Item	Lump Sum		$	**Payment: <Insert appropriate percentages for key milestones eg installation, precommissioning, commissioning>.** **Submit: Relevant Quality Records including those for pump test.**
HW0203	**Pumping Station Electricals**					
HW0203.01	Pit and Conduit System	Item	Lump Sum	$ 10,812.50	$ 10,812.50	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0203.02	LV Station Power Supply	Item	Lump Sum	$ 14,375.00	$ 14,375.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**

HW0203.03	Station By-Pass arrangements	Item	Lump Sum		$ -	**Payment: Percentage of work completed. Submit: Relevant Quality Records.**
HW0203.04	Electrical Demolition works	Item	Lump Sum		$ -	**Payment: Percentage of work completed. Submit: Relevant Quality Records.**
HW0203.05	Switchboard	Item	Lump Sum	$ 137,187.50	$ 137,187.50	**Payment: Percentage of work completed. Submit: Relevant Quality Records.**
HW0203.06	PLC / Telemetry Hardware	Item	Lump Sum	$ 14,437.50	$ 14,437.50	**Payment: Percentage of work completed. Submit: Relevant Quality Records.**
HW0203.07	PLC / Telemetry / Scada Engineering and Software Development	Item	Lump Sum	$ 28,450.00	$ 28,450.00	**Payment: Percentage of work completed. Submit: Relevant Quality Records.**
HW0203.08	Stainless Steel Generator Box Cable Tray & Metering Box	Item	Lump Sum	$ 12,437.50	$ 12,437.50	**Payment: Percentage of work completed. Submit: Relevant Quality Records.**
HW0203.09	Building Services (Electrical)	Item	Lump Sum	$ 11,062.50	$ 11,062.50	**Payment: Percentage of work completed. Submit: Relevant Quality Records.**
HW0203.10	Pressure Transmitter/Gauge Board	Item	Lump Sum	$ -	$ -	**Payment: Percentage of work completed. Submit: Relevant Quality Records.**
HW0203.11	Installation/Cabling (Electrical)	Item	Lump Sum	$ 26,625.00	$ 26,625.00	**Payment: Percentage of work completed. Submit: Relevant Quality Records.**
HW0204	Empty					
HW0205	Empty					
HW0206	**Service Location**	Item	Lump Sum	$ 1,815.00	$ 1,815.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0207	Excavation below design depth including disposal of excavated material (Contingent Item)	0	m3	$ 70.00	$ -	**Measurement: Cubic metres excavated based on thickness of excavation by design cross section of the structure for which excavation has been undertaken. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.**
HW0208	Extra over Civil Works for excavation in rock:	0	m3	$ 120.00	$ -	**Measurement: Actual cubic metres of rock excavated within the design dimensions of the structure. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.**
HW0209	Cut and fill earthworks including compaction:	0	m3	$ 25.00	$ -	**Measurement: Actual cubic metres of earthworks completed in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.**
HW0210	Supply & place ballast (Contingent Item)	0	tonne	$ 90.00	$ -	**Measurement: Actual tonnes placed as directed. Submit: Relevant Quality Records including certified weighbridge dockets. Limits of Accuracy: <To be inserted>.**
HW0211	Import and place select fill including compaction <may be Contingent Item>	0	m3	$ 65.00	$ -	**Measurement: Actual cubic metres placed as directed by the Superintendent or placed in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.**
HW0212	Construct access road and hardstand					
HW0212.01	Prepare subgrade		m2	$ 4.20		**Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.**
HW0212.02	Supply, place and compact 150mm thick basecourse		m2	$ 37.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0212.03	Supply, place and compact 200mm thick basecourse		m2	$ 47.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0212.04	Supply, place and compact 250mm thick basecourse		m2	$ 51.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0212.05	Supply, place and compact two coat bitumen seal		m2	$ 26.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0212.06	Supply, place and compact 30mm thick asphalt bitumen seal		m2	$ 37.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0212.07	Concrete kerb & gutter	0	m	$ 110.00	$ -	Measurement: Actual metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0212.08	Concrete driveway	0	m2	$ 178.00	$ -	Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0213	Supply all plant, material and labour to undertake the following Piling works:					
HW0213.01	Treated timber mini piles		m			Measurement: Actual metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0213.02	Reinforced concrete bored piles	Item	Lump Sum		$	Payment: Percentage of work completed. <Consider % payments at milestones> Submit: Relevant Quality Records.
HW0214	Supply all plant, material and labour to undertake the following Retaining Wall works:					Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records.
HW0214.01	Timber(Koppers Log) up to 1.5m high		m2	$ 300.00		**Limits of Accuracy: <To be inserted>.**
HW0214.02	Concrete Keystone up to 1m high		m2	$ 380.00		**Limits of Accuracy: <To be inserted>.**
HW0214.03	Concrete Keystone between 1m and 3m high		m2	$ 560.00		**Limits of Accuracy: <To be inserted>.**
HW0214.04	Concrete Keystone greater than 3m high		m2	$ 560.00		**Limits of Accuracy: <To be inserted>.**
HW0214.05	Concrete Crib Block up to 2m high		m2	$ 630.00		**Limits of Accuracy: <To be inserted>.**

HW0214.05	Concrete Crib Block between 2m and 3m high		m2	$ 704.00		**Limits of Accuracy: <To be inserted>.**
HW0215	Acid sulphate soil					
HW0215.01	Initial testing for acid sulphate soils and prepare and submit report	5	per test	$ 110.00	$ 550.00	Submit: Result for each test. Limits of Accuracy: <To be inserted>
HW0215.02	Establish treatment facility	Item	Lump Sum		$ -	**Payment: 100% after completion of treatment facility.**
HW0215.03	Handling, treatment and testing of acid sulphate soils		m3	$ 60.00		Measurement: Cubic metres within the design cross section of the structure for which excavation has been undertaken. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>
HW0215.04	Disposal off site of acid sulphate soil		tonne	$ 122.00		Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>
HW0216	Series Pump Pit Structure	Item	Lump Sum		$ -	Payment: <Insert appropriate percentages to reflect the value of work at key milestones eg excavation, reinforced concrete, metalwork etc>. Submit: Relevant Quality Records.
HW0217	Supply and Install valve pit concrete formwork, reinforced concrete complete with aluminium tread plate covers and including excavation and backfill	Item	Lump Sum	$ -	$ -	**Payment: <Insert appropriate percentages to reflect the value of work at key milestones eg excavation, reinforced concrete, metalwork etc>. Submit: Relevant Quality Records.**
HW0218	Supply and install pipework items inside valve pit	Item	Lump Sum	$ 15,120.00	$ 15,120.00	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**
HW0219	Supply and Install additional pipe Items outside station	Item	Lump Sum	$ -	$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**
HW0220	Supply and install pipework items inside station	Item	Lump Sum	$ -	$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**
HW0221	Supply and install Type 2 or 4 flow relief structures in accordance with Drgs SCP-502 and SCP-505	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**
HW0222	Supply and install emergency storage structures		L/m			**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**
HW0223	Supply and install fan forced ventilation	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**
HW0224	Supply and install Soil Bed Filter	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**
HW0225	Supply and Install Strainers	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing. Submit: Relevant Quality Records.**
HW0226	Supply and Install Series Bypass	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed up to 80%. Remainder at Practical Completion. Submit: Relevant Quality Records.**
HW0227	Landscaping	Item	Lump Sum	$ -	$ -	Payment: 100% at completion. Submit: Relevant Quality Records.
HW0228	**Miscellaneous**					
HW0229	Preparation and submission of Operation and Maintenance Information	Item	Lump Sum		$ -	Payment: 100% at Practical Completion. Submit: Complying Work As Constructed Information.
HW0230	Pre commissioning and commissioning	Item	Lump Sum	$ 8,000.00	$ 8,000.00	**Payment: 50% at completion of satisfactory precommissioning. Remainder at Practical Completion. Submit: Relevant Quality Records.**
HW0231	Preparation and submission of Work as Constructed Information	Item	Lump Sum	$ 6,000.00	$ 6,000.00	Payment: 100% at Practical Completion. Submit: Complying Work As Constructed Information.
HW2SP	***Sub Total***				$655,873	

Item No.	Item Description	Qty	Unit		Amount $	Application of Schedule of Rates
HW0009	Restoration - Pipelines:					**Payment: 100% after completion.**
HW0009.01	Concrete kerb & gutter	0	m	$ 110.00	$ -	**Measurement: Lineal metres restored within Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0009.02	Concrete driveway	0	m2	$ 178.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.03	Exposed aggregate & stamped driveway	0	m2	$ 220.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.04	Concrete footpath	0	m2	$ 155.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.05	Bitumen footpath	0	m2	$ 117.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.06	Gravel pavement	0	m2	$ 69.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.07	Bitumen pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.08	AC pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**

HW0009.09	Pavers		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.10	Turf		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.11	Grass seeding		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.12	Hydromulch		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0010	Extra over item for Excavation in rock and disposal of excess excavated material		m3			**Measurement: Cubic metres excavated based on thickness of rock by actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0011	Acid sulphate soil					
HW0011.01	Initial testing for acid sulphate soils and prepare and submit report		per test			**Submit: Result for each test. Limits of Accuracy: <To be inserted>.**
HW0011.02	Establish treatment facility		Item			**Payment: 100% after completion of treatment facility.**
HW0011.03	Handling, treatment and testing of acid sulphate soils		m3			**Measurement: Cubic metres excavated based on thickness of ASS by actual length by Minimum Trench Width. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>.**
HW0011.04	Disposal off site of acid sulphate soil		tonne			**Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>**
HW0012	Preconstruction record					
HW0012.01	Photographic	Item	Lump Sum		$ -	**Payment: 70% on submission of the Photographic record. Remainder at Practical Completion.**
HW0012.02	Video	Item	Lump Sum		$ -	**Payment: 70% on submission of the Video record. Remainder at Practical Completion.**
HW0012.03	CCTV	Item	Lump Sum		$ -	**Payment: 70% on submission of the CCTV record. Remainder at Practical Completion.**
HW0013	Work as Constructed Information <Insert Min $>	Item	Lump Sum	$ 32,000.00	$ 32,000.00	**Payment: 100% at Practical Completion.**

A.	**TOTAL ESTIMATED CONTRACT AWARD SUM**	$ 2,573,797.23

B.	**PRE-CONSTRUCTION COST (Table 10)**	
HW0016	Design	$ 308,855.67
HW0017	Project Management of Design	$ 71,771.13
HW0018	Land Matters	$ -
HW0024	Community Consultation	
	Sub Total(B1)	$ 380,626.80
	Pre construction contingency (30% of B1)	$ 114,188.04
	TOTAL PRE-CONSTRUCTION COST (B)	$ 494,814.84

C.	**CONSTRUCTION COST**		
	Total Estimated Contract Award Sum (A)		$ 2,573,797.23
HW0019	Principal Supplied Pipe (as applicable)		$ -
HW0020	Principal Supplied Valves and Flowmeters (as applicable)		$ -
HW0021	Principal Supplied Fittings (as applicable)		$ -
HW0022	Pump Station HV Power Supply		$ 187,500.00
HW0023	Construction Management (Table 11)		$ 205,903.78
	Sub Total (C1)		$ 2,967,201.01
	Construction contingency (Table 12) (30% of C1)	Preliminary Estimate	$ 890,160.30
	TOTAL CONSTRUCTION COST (C)		$ 3,857,361.31

	TOTAL PRELIMINARY PROJECT ESTIMATE (B+C) (Preliminary Estimate)	$ 4,352,176.15

ESTIMATING SHEET

PROJECT DESCRIPTION: Option 2 (Common Rising Main) - Western WWPS

Item No.	Item Description	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0001	All work not included elsewhere in this schedule	Item	Lump Sum	$ 16,110.00	$ 16,110.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0002	Site Establishment <Insert Max $>	Item	Lump Sum	$ 15,000.00	$ 15,000.00	**Payment: 100% after completion.**
HW0003	Site Disestablishment <Insert Min $>	Item	Lump Sum	$ 15,000.00	$ 15,000.00	**Payment: 100% after completion.**
HW0004	Preparation and implementation of the Construction EMP	Item	Lump Sum	$ 3,000.00	$ 3,000.00	**Payment: Maximum of 30% on submission of complying Construction EMP, then 10% per month up to maximum of 80%. Remainder at Practical Completion.** **Submit: Construction EMP**
HW0005	Preparation and implementation of the Safety Management Plan.	Item	Lump Sum	$ 5,000.00	$ 5,000.00	**Payment: Maximum of 30% on submission of complying plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.** **Submit: Safety Management Plan**
HW0006	Preparation and implementation of the Traffic Control Plan.	Item	Lump Sum	$ 4,200.00	$ 4,200.00	**Payment: Maximum of 30% on submission of complying Traffic Control Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0007	Preparation and Implementation of Quality Management Plan	Item	Lump Sum	$ 8,855.04	$ 8,855.04	**Payment: Maximum of 30% on submission of complying Quality Management Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**

Common RM - East WWPS

Item	*Pump Station - Name*	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0101	**Common RM - East WWPS 3.8m dia 2 Pump(s)**					
	Clear, excavate & backfill in OTR conditions, supply and construct pipework, pump station, includes sliding aluminium hatch covers, screens & ancillary metal work & fittings. Supply & place formwork, reinforcement, concrete, roof slab, thrust blocks.	Item	Lump Sum	$ 369,000.00	$ 369,000.00	**Payment: <Insert appropriate percentages to reflect the value of work at key milestones eg excavation, pump well, metalwork etc>.** **Submit: Relevant Quality Records.**
HW0102	**Pumps for Pumping Stations - Supply and install pumps and associated fittings, connection to pipework, testing and commissioning.**	2	Lump Sum	$ 54,000.00	$ 108,000.00	**Payment: <Insert appropriate percentages for key milestones eg installation, precommissioning, commissioning>.** **Submit: Relevant Quality Records including those for pump test.**
HW0103.01	Pit and Conduit System	Item	Lump Sum	$ 10,975.00	$ 10,975.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.02	LV Station Power Supply	Item	Lump Sum	$ 14,375.00	$ 14,375.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.05	Switchboard	Item	Lump Sum	$ 166,037.50	$ 166,037.50	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.06	PLC / Telemetry Hardware	Item	Lump Sum	$ 14,437.50	$ 14,437.50	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.07	PLC / Telemetry / Scada Engineering and Software Development	Item	Lump Sum	$ 28,450.00	$ 28,450.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.08	Stainless Steel Generator Box Cable Tray & Metering Box	Item	Lump Sum	$ 22,362.50	$ 22,362.50	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.09	Building Services (Electrical)	Item	Lump Sum	$ 13,125.00	$ 13,125.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.11	Installation/Cabling (Electrical)	Item	Lump Sum	$ 26,625.00	$ 26,625.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0104	Empty					
HW0105	Empty					
HW0106	**Service Location**	Item	Lump Sum	$ 866.40	$ 866.40	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0115.01	Initial testing for acid sulphate soils and prepare and submit report	5	per test	$ 110.00	$ 550.00	Submit: Result for each test. Limits of Accuracy: <To be inserted>
HW0128	**Miscellaneous**					
HW0130	Pre commissioning and commissioning	Item	Lump Sum	$ 8,000.00	$ 8,000.00	**Payment: 50% at completion of satisfactory precommissioning. Remainder at Practical Completion.** **Submit: Relevant Quality Records.**
HW0131	Preparation and submission of Work as Constructed Information	Item	Lump Sum	$ 6,000.00	$ 6,000.00	Payment: 100% at Practical Completion. Submit: Complying Work As Constructed Information.
HW1SP	***Sub Total***				$788,804	

Item No.	Item Description	Qty	Unit		Amount $	Application of Schedule of Rates

A.	**TOTAL ESTIMATED CONTRACT AWARD SUM**	$ 855,968.94

B.	**PRE-CONSTRUCTION COST (Table 10)**	
HW0016	Design	$ 128,395.34
HW0017	Project Management of Design	$ 35,679.07
HW0018	Land Matters	$ -
HW0024	Community Consultation	
	Sub Total(B1)	$ 164,074.41
	Pre construction contingency (30% of B1)	$ 49,222.32

	TOTAL PRE-CONSTRUCTION COST (B)		$ 213,296.73
C.	**CONSTRUCTION COST**		
	Total Estimated Contract Award Sum (A)		$ 855,968.94
HW0022	Pump Station HV Power Supply		$ 187,500.00
HW0023	Construction Management (Table 11)		$ 85,596.89
	Sub Total (C1)		$ 1,129,065.83
	Construction contingency (Table 12) (30% of C1)	Preliminary Estimate	$ 338,719.75
	TOTAL CONSTRUCTION COST (C)		$ 1,467,785.58
	TOTAL PRELIMINARY PROJECT ESTIMATE (B+C) (Preliminary Estimate)		$ 1,681,082.32

ESTIMATING SHEET

PROJECT DESCRIPTION: Option 2 (Common Rising Main) - Eastern WWPS

Item No.	Item Description	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0001	All work not included elsewhere in this schedule	Item	Lump Sum	$ 18,100.00	$ 18,100.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0002	Site Establishment <Insert Max $>	Item	Lump Sum	$ 15,000.00	$ 15,000.00	**Payment: 100% after completion.**
HW0003	Site Disestablishment <Insert Min $>	Item	Lump Sum	$ 15,000.00	$ 15,000.00	**Payment: 100% after completion.**
HW0004	Preparation and implementation of the Construction EMP	Item	Lump Sum	$ 3,000.00	$ 3,000.00	**Payment: Maximum of 30% on submission of complying Construction EMP, then 10% per month up to maximum of 80%. Remainder at Practical Completion.** **Submit: Construction EMP**
HW0005	Preparation and implementation of the Safety Management Plan.	Item	Lump Sum	$ 5,000.00	$ 5,000.00	**Payment: Maximum of 30% on submission of complying plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.** **Submit: Safety Management Plan**
HW0006	Preparation and implementation of the Traffic Control Plan.	Item	Lump Sum	$ 4,200.00	$ 4,200.00	**Payment: Maximum of 30% on submission of complying Traffic Control Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0007	Preparation and Implementation of Quality Management Plan	Item	Lump Sum	$ 9,850.13	$ 9,850.13	**Payment: Maximum of 30% on submission of complying Quality Management Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0008	Community Consultation	Item	Lump Sum	$ -	$ -	**Payment: 10% per month up to maximum of 70%. Remainder at Practical Completion.**

Common RM - East WWPS

Item	*Pump Station - Name*	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0101	**Common RM - East WWPS 5.5m dia 2 Pump(s)**					
	Clear, excavate & backfill in OTR conditions, supply and construct pipework, pump station, includes sliding aluminium hatch covers, screens & ancillary metal work & fittings. Supply & place formwork, reinforcement, concrete, roof slab, thrust blocks.	Item	Lump Sum	$ 369,000.00	$ 369,000.00	**Payment: <Insert appropriate percentages to reflect the value of work at key milestones eg excavation, pump well, metalwork etc>.** **Submit: Relevant Quality Records.**
HW0102	**Pumps for Pumping Stations - Supply and install pumps and associated fittings, connection to pipework, testing and commissioning.**	2	Lump Sum	$ 65,437.50	$ 130,875.00	**Payment: <Insert appropriate percentages for key milestones eg installation, precommissioning, commissioning>.** **Submit: Relevant Quality Records including those for pump test.**
HW0103	**Pumping Station Electricals**					
HW0103.01	Pit and Conduit System	Item	Lump Sum	$ 10,975.00	$ 10,975.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.02	LV Station Power Supply	Item	Lump Sum	$ 23,437.50	$ 23,437.50	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.03	Station By-Pass arrangements	Item	Lump Sum		$ -	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.04	Electrical Demolition works	Item	Lump Sum		$ -	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.05	Switchboard	Item	Lump Sum	$ 183,000.00	$ 183,000.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.06	PLC / Telemetry Hardware	Item	Lump Sum	$ 14,437.50	$ 14,437.50	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.07	PLC / Telemetry / Scada Engineering and Software Development	Item	Lump Sum	$ 28,450.00	$ 28,450.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.08	Stainless Steel Generator Box Cable Tray & Metering Box	Item	Lump Sum	$ 22,362.50	$ 22,362.50	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.09	Building Services (Electrical)	Item	Lump Sum	$ 13,125.00	$ 13,125.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.10	Pressure Transmitter/Gauge Board	Item	Lump Sum	$ -	$ -	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0103.11	Installation/Cabling (Electrical)	Item	Lump Sum	$ 28,625.00	$ 28,625.00	**Payment: Percentage of work completed.** **Submit: Relevant Quality Records.**
HW0104	Empty					
HW0105	Empty					
HW0106	**Service Location**	Item	Lump Sum	$ 1,815.00	$ 1,815.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0107	Excavation below design depth including disposal of excavated material (Contingent Item)	0	m3	$ 70.00	$ -	**Measurement: Cubic metres excavated based on thickness of excavation by design cross section of the structure for which excavation has been undertaken.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>**
HW0108	Extra over Civil Works for excavation in rock:	0	m3	$ 120.00	$ -	**Measurement: Actual cubic metres of rock excavated within the design dimensions of the structure.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>**
HW0109	Cut and fill earthworks including compaction:	0	m3	$ 25.00	$ -	**Measurement: Actual cubic metres of earthworks completed in accordance with the design.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>**

HW0110	Supply & place ballast (Contingent Item)	0	tonne	$ 90.00	$	**Measurement: Actual tonnes placed as directed.** **Submit: Relevant Quality Records including certified weighbridge dockets.** **Limits of Accuracy: <To be inserted>.**
HW0111	Import and place select fill including compaction <may be Contingent Item>	0	m3	$ 65.00	$	**Measurement: Actual cubic metres placed as directed by the Superintendent or placed in accordance with the design.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>.**
HW0112	Construct access road and hardstand					
HW0112.01	Prepare subgrade		m2	$ 4.20		**Measurement: Actual square metres in accordance with the design.** **Submit: Relevant Quality Records.** **Limits of Accuracy: <To be inserted>.**
HW0112.02	Supply, place and compact 150mm thick basecourse		m2	$ 37.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.03	Supply, place and compact 200mm thick basecourse		m2	$ 47.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.04	Supply, place and compact 250mm thick basecourse		m2	$ 51.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.05	Supply, place and compact two coat bitumen seal		m2	$ 26.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.06	Supply, place and compact 30mm thick asphalt bitumen seal		m2	$ 37.00		Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.07	Concrete kerb & gutter	0	m	$ 110.00	$	Measurement: Actual metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0112.08	Concrete driveway	0	m2	$ 178.00	$	Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0113	Supply all plant, material and labour to undertake the following Piling works:					
HW0113.01	Treated timber mini piles		m			Measurement: Actual metres in accordance with the design. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HW0113.02	Reinforced concrete bored piles	Item	Lump Sum		$ -	Payment: Percentage of work completed. <Consider % payments at milestones> Submit: Relevant Quality Records.
HW0114	Supply all plant, material and labour to undertake the following Retaining Wall works:					Measurement: Actual square metres in accordance with the design. Submit: Relevant Quality Records.
HW0114.01	Timber(Koppers Log) up to 1.5m high		m2	$ 300.00		**Limits of Accuracy: <To be inserted>.**
HW0114.02	Concrete Keystone up to 1m high		m2	$ 380.00		**Limits of Accuracy: <To be inserted>.**
HW0114.03	Concrete Keystone between 1m and 3m high		m2	$ 560.00		**Limits of Accuracy: <To be inserted>.**
HW0114.04	Concrete Keystone greater than 3m high		m2	$ 560.00		**Limits of Accuracy: <To be inserted>.**
HW0114.05	Concrete Crib Block up to 2m high		m2	$ 630.00		**Limits of Accuracy: <To be inserted>.**
HW0114.06	Concrete Crib Block between 2m and 3m high		m2	$ 704.00		**Limits of Accuracy: <To be inserted>.**
HW0115	Acid sulphate soil					
HW0115.01	Initial testing for acid sulphate soils and prepare and submit report	5	per test	$ 110.00	$ 550.00	Submit: Result for each test. Limits of Accuracy: <To be inserted>
HW0115.02	Establish treatment facility	Item	Lump Sum		$ -	**Payment: 100% after completion of treatment facility.**
HW0115.03	Handling, treatment and testing of acid sulphate soils		m3	$ 60.00		Measurement: Cubic metres within the design cross section of the structure for which excavation has been undertaken. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>
HW0115.04	Disposal off site of acid sulphate soil		tonne	$ 122.00		Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>
HW0116	Series Pump Pit Structure	Item	Lump Sum		$ -	Payment: <Insert appropriate percentages to reflect the value of work at key milestones eg excavation, reinforced concrete, metalwork etc>. Submit: Relevant Quality Records.
HW0117	Supply and Install valve pit concrete formwork, reinforced concrete complete with aluminium tread plate covers and including excavation and backfill	Item	Lump Sum	$ -	$ -	**Payment: <Insert appropriate percentages to reflect the value of work at key milestones eg excavation, reinforced concrete, metalwork etc>.** **Submit: Relevant Quality Records.**
HW0118	Supply and install pipework items inside valve pit	Item	Lump Sum	$ -	$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0119	Supply and Install additional pipe items outside station	Item	Lump Sum	$ 47,660.00	$ 47,660.00	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0120	Supply and install pipework items inside station	Item	Lump Sum	$ -	$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0121	Supply and install Type 2 or 4 flow relief structures in accordance with Drgs SCP-502 and SCP-505	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0122	Supply and install emergency storage structures		L/m			**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**

HW0123	Supply and install fan forced ventilation	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0124	Supply and install Soil Bed Filter	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0125	Supply and Install Strainers	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed. Retention of 20% <or other percentage> until satisfactory testing.** **Submit: Relevant Quality Records.**
HW0126	Supply and Install Series Bypass	Item	Lump Sum		$ -	**Payment: Valued at percentage of work completed up to 80%. Remainder at Practical Completion.** **Submit: Relevant Quality Records.**
HW0127	Landscaping	Item	Lump Sum	$ -	$ -	Payment: 100% at completion. Submit: Relevant Quality Records.
HW0128	**Miscellaneous**					
HW0129	Preparation and submission of Operation and Maintenance Information	Item	Lump Sum		$ -	Payment: 100% at Practical Completion. Submit: Complying Work As Constructed Information.
HW0130	Pre commissioning and commissioning	Item	Lump Sum	$ 8,000.00	$ 8,000.00	**Payment: 50% at completion of satisfactory precommissioning. Remainder at Practical Completion.** **Submit: Relevant Quality Records.**
HW0131	Preparation and submission of Work as Constructed Information	Item	Lump Sum	$ 6,000.00	$ 6,000.00	Payment: 100% at Practical Completion. Submit: Complying Work As Constructed Information.
HW1SP	***Sub Total***				$888,313	

Item No.	Item Description	Qty	Unit		Amount $	Application of Schedule of Rates
HW0009	Restoration - Pipelines:					**Payment: 100% after completion.**
HW0009.01	Concrete kerb & gutter		m			**Measurement: Lineal metres restored within Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0009.02	Concrete driveway		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.03	Exposed aggregate & stamped driveway		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.04	Concrete footpath		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.05	Bitumen footpath		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.06	Gravel pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.07	Bitumen pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.08	AC pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.09	Pavers		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.10	Turf		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.11	Grass seeding		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.12	Hydromulch		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0010	Extra over item for Excavation in rock and disposal of excess excavated material		m3			**Measurement: Cubic metres excavated based on thickness of rock by actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0011	Acid sulphate soil					
HW0011.01	Initial testing for acid sulphate soils and prepare and submit report		per test			**Submit: Result for each test. Limits of Accuracy: <To be inserted>.**
HW0011.02	Establish treatment facility		Item			**Payment: 100% after completion of treatment facility.**
HW0011.03	Handling, treatment and testing of acid sulphate soils		m3			**Measurement: Cubic metres excavated based on thickness of ASS by actual length by Minimum Trench Width. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>**
HW0011.04	Disposal off site of acid sulphate soil		tonne			**Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>**
HW0012	Preconstruction record					
HW0012.01	Photographic		Item	Lump Sum	$ -	**Payment: 70% on submission of the Photographic record. Remainder at Practical Completion.**
HW0012.02	Video		Item	Lump Sum	$ -	**Payment: 70% on submission of the Video record. Remainder at Practical Completion.**
HW0012.03	CCTV		Item	Lump Sum	$ -	**Payment: 70% on submission of the CCTV record. Remainder at Practical Completion.**
HW0013	Work as Constructed Information <Insert Min $>		Item	Lump Sum	$ -	**Payment: 100% at Practical Completion.**

A.	**TOTAL ESTIMATED CONTRACT AWARD SUM**	$	958,462.63

B.	**PRE-CONSTRUCTION COST (Table 10)**		
HW0016	Design	$	143,769.39
HW0017	Project Management of Design	$	38,753.88
HW0018	Land Matters	$	-
HW0024	Community Consultation		
	Sub Total(B1)	$	182,523.27
	Pre construction contingency (30% of B1)	$	54,756.98
	TOTAL PRE-CONSTRUCTION COST (B)	$	237,280.26

C.	**CONSTRUCTION COST**			
	Total Estimated Contract Award Sum (A)		$	958,462.63
HW0019	Principal Supplied Pipe (as applicable)		$	-
HW0020	Principal Supplied Valves and Flowmeters (as applicable)		$	-
HW0021	Principal Supplied Fittings (as applicable)		$	-
HW0022	Pump Station HV Power Supply		$	187,500.00
HW0023	Construction Management (Table 11)		$	95,846.26
	Sub Total (C1)		$	1,241,808.89
	Construction contingency (Table 12) (30% of C1)	Preliminary Estimate	$	372,542.67
	TOTAL CONSTRUCTION COST (C)		$	1,614,351.56

	TOTAL PRELIMINARY PROJECT ESTIMATE (B+C) (Preliminary Estimate)	$	1,851,631.82

ESTIMATING SHEET

PROJECT DESCRIPTION: Option 2 (Common Rising Main) - Western RM

Item No.	Item Description	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0001	All work not included elsewhere in this schedule	Item	Lump Sum	$ 13,401.00	$ 13,401.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0002	Site Establishment <Insert Max $>	Item	Lump Sum	$ 15,000.00	$ 15,000.00	**Payment: 100% after completion.**
HW0003	Site Disestablishment <Insert Min $>	Item	Lump Sum	$ 15,000.00	$ 15,000.00	**Payment: 100% after completion.**
HW0004	Preparation and implementation of the Construction EMP	Item	Lump Sum	$ 4,000.00	$ 4,000.00	**Payment: Maximum of 30% on submission of complying Construction EMP, then 10% per month up to maximum of 80%. Remainder at Practical Completion.** **Submit: Construction EMP**
HW0005	Preparation and implementation of the Safety Management Plan.	Item	Lump Sum	$ 9,000.00	$ 9,000.00	**Payment: Maximum of 30% on submission of complying plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.** **Submit: Safety Management Plan**
HW0006	Preparation and implementation of the Traffic Control Plan.	Item	Lump Sum	$ 2,000.00	$ 2,000.00	**Payment: Maximum of 30% on submission of complying Traffic Control Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0007	Preparation and Implementation of Quality Management Plan	Item	Lump Sum	$ 7,500.70	$ 7,500.70	**Payment: Maximum of 30% on submission of complying Quality Management Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0008	Community Consultation	Item	Lump Sum	$ -	$ -	**Payment: 10% per month up to maximum of 70%. Remainder at Practical Completion.**

Sewer Pipeline - Rising - section will be present if one or more rising mains are specified

Item	Construction of Sewer Rising Mains	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HWR001	Service Location	Item	Lump Sum	$ 2,925.00	$ 2,925.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HWR002	Supply all valves	Item	Lump Sum		$ -	Payment: Percentage of valves and flowmeters supplied. Submit: Relevant Quality Records including Compliance Certificates.
HWR003	Supply all fittings	Item	Lump Sum		$ -	Payment: Percentage of fittings supplied. Submit: Relevant Quality Records including Compliance Certificates.
HWR004	Supply all pipe materials including detector tape, pipe protection wrapping, rubber rings and lubricant for following pipe sizes:					Measurement: Actual metres (effective length) of pipe delivered to site. Submit: Relevant Quality Records including Compliance Certificates. Note: Limits of Accuracy to be inserted for each pipe size.
HWR005	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Up to 1.5 m depth to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation up to and including 1.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.
11ED03	Nominal DN300 DICL (Trench type 3)	3900	m	$ 89.25	$ 348,075.00	
HWR006	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >1.5m to 3.0m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 1.5m to and including 3.0m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.
HWR007	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >3.0m to 4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 3.0m to and including 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.
HWR008	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.
HWR009	EMPTY					
HWR010	Extra over rate for installation for Additional compaction		m3	$ 19.13		Measurement: Cubic metres of additional compaction based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR011	Excavate below specified design depth where directed including disposal of excess excavated material		m3	$ 78.75		Measurement: Cubic metres of excavation directed based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR012	Extra over rate for installation to Supply & place & compact non cohesive material.		m3			Measurement: Cubic metres of non cohesive material based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.

HWR013	Extra over rate for installation for supply, place and compact stabilised sand cement (14:1) backfill		m3	$ 337.50		Measurement: Cubic metres of stabilised sand cement based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR014	Extra over rate for installation for Supply, place and compact aggregate		m3			Measurement: Cubic metres of aggregate based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR015	Supply & place ballast		tonnes	$ 90.00		Measurement: Actual tonnes placed as directed. Submit: Relevant Quality Records including certified weighbridge dockets. Limits of Accuracy: <To be inserted>.
HWR016	External Dewatering of trench including establishment & disestablishment		m			**Measurement: Length of pipeline for which external dewatering is agreed with the Superintendent and provided, measured along the axis of the pipeline between the first and last spear point.** **Submit: Relevant Quality Records.**
HWR017	Supply and place treated timber piling for pipe support		m			Measurement: Actual metres from pipe invert to toe of pile. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>
HWR018	Road / creek crossings					Measurement: Length in metres of casing installed. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR019	Extra over rate for installation of trenchless technique under existing rail line		m			Measurement: Length in metres of casing installed. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR020	Supply and installation of pipe aerial creek crossing including supply of MSCL pipe with protection coating, internal and external welding, testing of welds. For the following MSCL pipe sizes:					Measurement: Length in metres of crossing installed in accordance with design. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR021	Supply and installation of pipe river crossing including supply of MSCL pipe, internal and external welding, testing of welds and 150 thick concrete encasement. Also includes mobilisation and demobilisation of dredge(if required) excavation & disposal of excavated material, backfilling, lay, bed and test for the following MSCL pipe sizes:					Measurement: Length in metres of casing installed. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR022	Bulkheads and Trenchstops in accordance with WSAA drawing SEW-1206	Item	Lump Sum		$ -	Payment: Number of bulkheads & trenchstops constructed. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR023	Supply and Install valve pits (excluding valves and fittings)	0	Each	$ -	$ -	Payment: Number of valve pits constructed. Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR024	Flow Relief Structures		Each			Payment: Number of flow relief structures constructed. Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR025	EMPTY					
HWR026	Supply and construct vent stacks		each			Payment: Number of vent stacks constructed. Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR027	Preparation of line sheets	3900	m	$ 1.00	$ 3,900.00	Measurement: Length of pipelines constructed as per design. Limits of Accuracy: <To be inserted>.
HWR028	Acceptance testing - rising main		m			Measurement: Length of pipelines constructed as per design. Submit: Satisfactory test records Limits of Accuracy: <To be inserted>.
HWR029	**Miscellaneous**					
HWR000	***Sub Total***				$354,900	

Item No.	Item Description	Qty	Unit		Amount $	Application of Schedule of Rates
HW0009	Restoration - Pipelines:					**Payment: 100% after completion.**
HW0009.01	Concrete kerb & gutter	0	m	$ 110.00	$ -	**Measurement: Lineal metres restored within Minimum Trench Width.** **Limits of Accuracy: <To be inserted>.**
HW0009.02	Concrete driveway	0	m2	$ 178.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.03	Exposed aggregate & stamped driveway	0	m2	$ 220.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.04	Concrete footpath	0	m2	$ 155.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0009.05	Bitumen footpath	0	m2	$ 117.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**

HW0009.06	Gravel pavement	0	m2	$ 69.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.07	Bitumen pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.08	AC pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.09	Pavers		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.10	Turf		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.11	Grass seeding		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.12	Hydromulch		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0010	Extra over item for Excavation in rock and disposal of excess excavated material		m3			**Measurement: Cubic metres excavated based on thickness of rock by actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0011	Acid sulphate soil					
HW0011.01	Initial testing for acid sulphate soils and prepare and submit report	52	per test	$ 110.00	$ 5,720.00	**Submit: Result for each test. Limits of Accuracy: <To be inserted>.**
HW0011.02	Establish treatment facility		Item			**Payment: 100% after completion of treatment facility.**
HW0011.03	Handling, treatment and testing of acid sulphate soils	4387.5	m3	$ 60.00	$ 263,250.00	**Measurement: Cubic metres excavated based on thickness of ASS by actual length by Minimum Trench Width. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>**
HW0011.04	Disposal off site of acid sulphate soil	0	tonne	$ 122.00	$ -	**Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>**
HW0012	Preconstruction record					
HW0012.01	Photographic	Item	Lump Sum		$ -	**Payment: 70% on submission of the Photographic record. Remainder at Practical Completion.**
HW0012.02	Video	Item	Lump Sum		$ -	**Payment: 70% on submission of the Video record. Remainder at Practical Completion.**
HW0012.03	CCTV	Item	Lump Sum		$ -	**Payment: 70% on submission of the CCTV record. Remainder at Practical Completion.**
HW0013	Work as Constructed Information <Insert Min $>	Item	Lump Sum	$ 31,200.00	$ 31,200.00	**Payment: 100% at Practical Completion.**

A.	**TOTAL ESTIMATED CONTRACT AWARD SUM**	$ 720,971.70

B.	**PRE-CONSTRUCTION COST (Table 10)**	
HW0016	Design	$ 108,145.76
HW0017	Project Management of Design	$ 31,629.15
HW0018	Land Matters	$ -
HW0024	Community Consultation	
	Sub Total(B1)	$ 139,774.91
	Pre construction contingency (30% of B1)	$ 41,932.47
	TOTAL PRE-CONSTRUCTION COST (B)	$ 181,707.38

C.	**CONSTRUCTION COST**		
	Total Estimated Contract Award Sum (A)		$ 720,971.70
HW0019	Principal Supplied Pipe (as applicable)		$ -
11EDSS	Nominal DN300 DICL pipe		$ 694,200.00
HW0020	Principal Supplied Valves and Flowmeters (as applicable)		$ -
HW0021	Principal Supplied Fittings (as applicable)		$ -
HW0022	Pump Station HV Power Supply		$ 187,500.00
HW0023	Construction Management (Table 11)		$ 72,097.17
	Sub Total (C1)		$ 1,674,768.87
	Construction contingency (Table 12) (30% of C1)	Preliminary Estimate	$ 502,430.66
	TOTAL CONSTRUCTION COST (C)		$ 2,177,199.53

	TOTAL PRELIMINARY PROJECT ESTIMATE (B+C) (Preliminary Estimate)	$ 2,358,906.91

ESTIMATING SHEET

PROJECT DESCRIPTION: Option 2 (Common Rising Main) - Eastern RM

Item No.	Item Description	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0001	All work not included elsewhere in this schedule	Item	Lump Sum	$ 18,107.00	$ 18,107.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0002	Site Establishment <Insert Max $>	Item	Lump Sum	$ 15,000.00	$ 15,000.00	**Payment: 100% after completion.**
HW0003	Site Disestablishment <Insert Min $>	Item	Lump Sum	$ 15,000.00	$ 15,000.00	**Payment: 100% after completion.**
HW0004	Preparation and implementation of the Construction EMP	Item	Lump Sum	$ 4,000.00	$ 4,000.00	**Payment: Maximum of 30% on submission of complying Construction EMP, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Construction EMP**
HW0005	Preparation and implementation of the Safety Management Plan.	Item	Lump Sum	$ 9,000.00	$ 9,000.00	**Payment: Maximum of 30% on submission of complying plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Safety Management Plan.**
HW0006	Preparation and implementation of the Traffic Control Plan.	Item	Lump Sum	$ 2,000.00	$ 2,000.00	**Payment: Maximum of 30% on submission of complying Traffic Control Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0007	Preparation and implementation of Quality Management Plan	Item	Lump Sum	$ 9,853.25	$ 9,853.25	**Payment: Maximum of 30% on submission of complying Quality Management Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0008	Community Consultation	Item	Lump Sum	$ -	$ -	**Payment: 10% per month up to maximum of 70%. Remainder at Practical Completion.**

Sewer Pipeline - Rising - section will be present if one or more rising mains are specified

Item	Construction of Sewer Rising Mains	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates	
HWR001	Service Location	Item	Lump Sum	$ 5,581.80	$ 5,581.80	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**	
HWR002	Supply all valves	Item	Lump Sum		$ -	Payment: Percentage of valves and flowmeters supplied Submit: Relevant Quality Records including Compliance Certificates.	
HWR003	Supply all fittings	Item	Lump Sum		$ -	Payment: Percentage of fittings supplied Submit: Relevant Quality Records including Compliance Certificates.	
HWR004	Supply all pipe materials including detector tape, pipe protection wrapping, rubber rings and lubricant for following pipe sizes:					Measurement: Actual metres (effective length) of pipe delivered to site. Submit: Relevant Quality Records including Compliance Certificates. Note: Limits of Accuracy to be inserted for each pipe size.	
HWR005	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Up to 1.5 m depth to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation up to and including 1.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
12D003	Nominal DN450 DICL (Trench type 3)	4430	m	$ 161.95	$ 717,438.50		Pipeline 1 - area allowance
HWR006	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >1.5m to 3.0m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 1.5m to and including 3.0m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR007	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >3.0m to 4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 3.0m to and including 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR008	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR009	EMPTY						
HWR010	Extra over rate for installation for Additional compaction		m3	$ 22.95		Measurement: Cubic metres of additional compaction based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR011	Excavate below specified design depth when directed including disposal of excess excavated material		m3	$ 94.50		Measurement: Cubic metres of excavation directed based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR012	Extra over rate for installation to Supply & place & compact non cohesive material.		m3			Measurement: Cubic metres of non cohesive material based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR013	Extra over rate for installation for supply, place and compact stabilised sand cement (14:1) backfill		m3	$ 405.00		Measurement: Cubic metres of stabilised sand cement based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR014	Extra over rate for installation for Supply, place and compact aggregate		m3			Measurement: Cubic metres of aggregate based on thickness by length by Minimum Trench Width. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR015	Supply & place ballast		tonnes	$ 90.00		Measurement: Actual tonnes placed as directed. Submit: Relevant Quality Records including certified weighbridge dockets. Limits of Accuracy: <To be inserted>.	

HWR016	External Dewatering of trench including establishment & disestablishment	4430	m		$ 443,000.00	**Measurement: Length of pipeline for which external dewatering is agreed with the Superintendent and provided, measured along the axis of the pipeline between the first and last spear point. Submit: Relevant Quality Records.**
HWR017	Supply and place treated timber piling for pipe support		m			Measurement: Actual metres from pipe invert to toe of pile Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR018	Road / creek crossings					Measurement: Length in metres of casing installed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR018.01	Irrawang	90	m	$ 1,324.72	$ 119,225.00	
HWR019	Extra over rate for installation of trenchless technique under existing rail line		m			Measurement: Length in metres of casing installed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR020	Supply and installation of pipe aerial creek crossing including supply of MSCL pipe with protection coating, internal and external welding, testing of welds. For the following MSCL pipe sizes:					Measurement: Length in metres of crossing installed in accordance with design. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR021	Supply and installation of pipe river crossing including supply of MSCL pipe, internal and external welding, testing of welds and 150 thick concrete encasement. Also includes mobilisation and demobilisation of dredge(if required) excavation & disposal of excavated material, backfilling, lay, bed and test for the following MSCL pipe sizes:					Measurement: Length in metres of casing installed. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR022	Bulkheads and Trenchstops in accordance with WSAA drawing SEW-1206	Item	Lump Sum		$ -	Payment: Number of bulkheads & trenchstops constructed Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR023	Supply and Install valve pits (excluding valves and fittings)	0	Each	$ -	$ -	Payment: Number of valve pits constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR024	Flow Relief Structures		Each			Payment: Number of flow relief structures constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR025	EMPTY					
HWR026	Supply and construct vent stacks		each			Payment: Number of vent stacks constructed Retention: <To be determined>. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.
HWR027	Preparation of line sheets	4430	m	$ 1.00	$ 4,430.00	Measurement: Length of pipelines constructed as per design Limits of Accuracy: <To be inserted>.
HWR028	Acceptance testing - rising main		m			Measurement: Length of pipelines constructed as per design Submit: Satisfactory test records Limits of Accuracy: <To be inserted>.
HWR029	**Miscellaneous**					
HWR000	***Sub Total***				$1,289,675	

Item No.	Item Description	Qty	Unit		Amount $	Application of Schedule of Rates
HW0009	Restoration - Pipelines:					**Payment: 100% after completion.**
HW0009.01	Concrete kerb & gutter	0	m	$ 110.00	$ -	**Measurement: Lineal metres restored within Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0009.02	Concrete driveway	0	m2	$ 178.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.03	Exposed aggregate & stamped driveway	0	m2	$ 220.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.04	Concrete footpath	0	m2	$ 155.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.05	Bitumen footpath	0	m2	$ 117.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.06	Gravel pavement	0	m2	$ 69.00	$ -	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.07	Bitumen pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.08	AC pavement		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.09	Pavers		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.10	Turf		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.11	Grass seeding	7974	m2	$ 7.00	$ 55,818.00	**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**
HW0009.12	Hydromulch		m2			**Measurement: Square metres restored based on actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>**

HW0010	Extra over item for Excavation in rock and disposal of excess excavated material		m3			**Measurement: Cubic metres excavated based on thickness of rock by actual length by Minimum Trench Width. Limits of Accuracy: <To be inserted>.**
HW0011	Acid sulphate soil					
HW0011.01	Initial testing for acid sulphate soils and prepare and submit report	1	per test	$ 110.00	$ 110.00	**Submit: Result for each test. Limits of Accuracy: <To be inserted>.**
HW0011.02	Establish treatment facility		Item			**Payment: 100% after completion of treatment facility.**
HW0011.03	Handling, treatment and testing of acid sulphate soils	135	m3	$ 60.00	$ 8,100.00	**Measurement: Cubic metres excavated based on thickness of ASS by actual length by Minimum Trench Width. Submit: Test results confirming satisfactory treatment. Limits of Accuracy: <To be inserted>**
HW0011.04	Disposal off site of acid sulphate soil	0	tonne	$ 122.00	$	**Measurement: Tonnes transported from the site. Submit: Weighbridge dockets. Limits of Accuracy: <To be inserted>**
HW0012	Preconstruction record					
HW0012.01	Photographic	Item	Lump Sum		$	**Payment: 70% on submission of the Photographic record. Remainder at Practical Completion.**
HW0012.02	Video	Item	Lump Sum		$	**Payment: 70% on submission of the Video record. Remainder at Practical Completion.**
HW0012.03	CCTV	Item	Lump Sum		$	**Payment: 70% on submission of the CCTV record. Remainder at Practical Completion.**
HW0013	Work as Constructed Information <insert Min 6>	Item	Lump Sum	$ 35,440.00	$ 35,440.00	**Payment: 100% at Practical Completion.**

A.	**TOTAL ESTIMATED CONTRACT AWARD SUM**	$ 1,462,103.55

B.	**PRE-CONSTRUCTION COST (Table 10)**	
HW0016	Design	$ 175,452.43
HW0017	Project Management of Design	$ 38,898.57
HW0018	Land Matters	$ -
HW0024	Community Consultation	
	Sub Total(B1)	$ 214,350.99
	Pre construction contingency (30% of B1)	$ 64,305.30
	TOTAL PRE-CONSTRUCTION COST (B)	$ 278,656.29

C.	**CONSTRUCTION COST**		
	Total Estimated Contract Award Sum (A)		$ 1,462,103.55
HW0019	Principal Supplied Pipe (as applicable)		$ -
12DDSS	Nominal DN450 DICL pipe		$ 1,346,720.00
HW0020	Principal Supplied Valves and Flowmeters (as applicable)		$ -
HW0021	Principal Supplied Fittings (as applicable)		$ -
HW0022	Pump Station HV Power Supply		$ -
HW0023	Construction Management (Table 11)		$ 146,210.36
	Sub Total (C1)		$ 2,955,033.91
	Construction contingency (Table 12) (30% of C1)	Preliminary Estimate	$ 886,510.17
	TOTAL CONSTRUCTION COST (C)		$ 3,841,544.08

TOTAL PRELIMINARY PROJECT ESTIMATE (B+C) (Preliminary Estimate)	$ 4,120,200.37

ESTIMATING SHEET

PROJECT DESCRIPTION: Option 2 (Common Rising Main) - Common Section

Item No.	Item Description	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates
HW0001	All work not included elsewhere in this schedule	Item	Lump Sum	$ 16,464.00	$ 16,464.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**
HW0002	Site Establishment <Insert Max $>	Item	Lump Sum	$ 15,000.00	$ 15,000.00	**Payment: 100% after completion.**
HW0003	Site Disestablishment <Insert Min $>	Item	Lump Sum	$ 15,000.00	$ 15,000.00	**Payment: 100% after completion.**
HW0004	Preparation and implementation of the Construction EMP	Item	Lump Sum	$ 8,000.00	$ 8,000.00	**Payment: Maximum of 30% on submission of complying Construction EMP, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Construction EMP**
HW0005	Preparation and implementation of the Safety Management Plan.	Item	Lump Sum	$ 18,000.00	$ 18,000.00	**Payment: Maximum of 30% on submission of complying plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion. Submit: Safety Management Plan.**
HW0006	Preparation and implementation of the Traffic Control Plan.	Item	Lump Sum	$ 4,000.00	$ 4,000.00	**Payment: Maximum of 30% on submission of complying Traffic Control Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**
HW0007	Preparation and Implementation of Quality Management Plan	Item	Lump Sum	$ 9,032.25	$ 9,032.25	**Payment: Maximum of 30% on submission of complying Quality Management Plan, then 10% per month up to maximum of 80%. Remainder at Practical Completion.**

Sewer Pipeline - Rising - section will be present if one or more rising mains are specified

Item	Construction of Sewer Rising Mains	Qty	Unit	Rate $/Unit	Amount $	Application of Schedule of Rates	
HWR001	Service Location	Item	Lump Sum	$ 10,980.00	$ 10,980.00	**Payment: Maximum of 10% shall be due each month until 70% of the amount has been paid. Remainder at Practical Completion.**	
HWR004	Supply all pipe materials including detector tape, pipe protection wrapping, rubber rings and lubricant for following pipe sizes:					Measurement: Actual metres (effective length) of pipe delivered to site. Submit: Relevant Quality Records including Compliance Certificates. Note: Limits of Accuracy to be inserted for each pipe size.	
HWR005	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Up to 1.5 m depth to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation up to and including 1.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
132003	Nominal DN500 DICL (Trench type 3)	2600	m	$ 199.70	$ 519,220.00		Pipeline 2 - area allowance
HWR006	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >1.5m to 3.0m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 1.5m to and including 3.0m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR007	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >3.0m to 4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 3.0m to and including 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR008	Clear, excavate, lay, join, bed, backfill & test pipelines (installation). Nominal depth >4.5m to invert in OTR.					Measurement: Actual metres of pipe installed with design depth of excavation > 4.5m. Retention: 10% <or other appropriate percentage> until satisfactory testing. Submit: Relevant Quality Records including as constructed lengths, levels and coordinates. Limits of Accuracy: <To be inserted>.	
HWR009	EMPTY						
HWR016	External Dewatering of trench including establishment & disestablishment	2600	m		$ 260,000.00	**Measurement: Length of pipeline for which external dewatering is agreed with the Superintendent and provided, measured along the axis of the pipeline between the first and last spear point. Submit: Relevant Quality Records.**	
HWR016.01	Adelaide St	80	m	$ 1,449.06	$ 115,925.00		
HWR020	Supply and installation of pipe aerial creek crossing including supply of MSCL pipe with protection coating, internal and external welding, testing of welds. For the following MSCL pipe sizes:					Measurement: Length in metres of casing installed as per design. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR021	Supply and installation of pipe river crossing including supply of MSCL pipe, internal and external welding, testing of welds and 150 thick concrete encasement. Also includes mobilisation and demobilisation of dredge(if required) excavation & disposal of excavated material, backfilling, lay, bed and test for the following MSCL pipe sizes:					Measurement: Length in metres of casing installed. Retention: 10% <or other appropriate percentage> until satisfactory testing. Note: Consider other milestone retentions. Submit: Relevant Quality Records. Limits of Accuracy: <To be inserted>.	
HWR025	EMPTY						
HWR027	Preparation of line sheets	2600	m	$ 1.00	$ 2,600.00	Measurement: Length of pipelines constructed as per design Limits of Accuracy: <To be inserted>.	
HWR029	**Miscellaneous**						
HWR000	***Sub Total***				$908,725		

Item No.	Item Description	Qty	Unit		Amount $	Application of Schedule of Rates

HW0009.11	Grass seeding	2600	m2	$ 7.00	$ 18,200.00	**Measurement: Square metres restored based on actual length by Minimum Trench Width.** **Limits of Accuracy: <To be inserted>**
HW0011.01	Initial testing for acid sulphate soils and prepare and submit report	20	per test	$ 110.00	$ 2,200.00	**Submit: Result for each test.** **Limits of Accuracy: <To be inserted>.**
HW0011.03	Handling, treatment and testing of acid sulphate soils	2025	m3	$ 60.00	$ 121,500.00	**Measurement: Cubic metres excavated based on thickness of ASS by actual length by Minimum Trench Width.** **Submit: Test results confirming satisfactory treatment.** **Limits of Accuracy: <To be inserted>**
HW0013	Work as Constructed Information <Insert Min E>	Item	Lump Sum	$ 20,800.00	$ 20,800.00	**Payment: 100% at Practical Completion.**

A.	**TOTAL ESTIMATED CONTRACT AWARD SUM**	$ 1,156,921.25

B.	**PRE-CONSTRUCTION COST (Table 10)**	
HW0016	Design	$ 138,830.55
HW0017	Project Management of Design	$ 36,361.64
HW0018	Land Matters	$ -
HW0024	Community Consultation	
	Sub Total(B1)	$ 175,192.19
	Pre construction contingency (30% of B1)	$ 52,557.66
	TOTAL PRE-CONSTRUCTION COST (B)	$ 227,749.84

C.	**CONSTRUCTION COST**		
	Total Estimated Contract Award Sum (A)		$ 1,156,921.25
132DSS	Nominal DN500 DICL pipe		$ 1,024,400.00
HW0022	Pump Station HV Power Supply		$ 187,500.00
HW0023	Construction Management (Table 11)		$ 115,692.13
	Sub Total (C1)		$ 2,484,513.38
	Construction contingency (Table 12) (30% of C1)	Preliminary Estimate	$ 745,354.01
	TOTAL CONSTRUCTION COST (C)		$ 3,229,867.39

	TOTAL PRELIMINARY PROJECT ESTIMATE (B+C) (Preliminary Estimate)	$ 3,457,617.23

APPENDIX E – COST EFFECTIVENESS ANALYSIS

Option Reference			Option SE1A
Real Discount Rate			7.0%
Length RM (m)			6,400
Diam RM (mm)			500
Pump Duty (L/s)			356
Length GM (m)			2,000

Costs

2010/2011 Energy Cost	0.157	/ kWh
Annual Real Energy Increase	2.18%	
2010/2011 GHG Cost	25.00	/ tonnes CO_2-e
Real GHG Increase	3.52%	

FY Ending		Units	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
Discount Factor			1.00	0.93	0.86	0.80	0.75	0.70	0.65	0.60	0.56	0.52	0.48	0.45	0.42	0.39	0.36	0.34	0.31	0.29	0.27	0.25	0.23	0.22	0.20	0.19	0.18	0.16	0.15	0.14	0.13	0.12
Developer Capital Costs ($ 2010/2011)																																
Water Supply																																
Mains		$																														
Pump Station		$																														
Reservoir		$																														
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Water Supply Cost		*$*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Internal Transfer			4,352,176																													
Gravity Mains		$	-																													
Rising Mains		$	9,693,682																													
Sewer Pump Station		$	2,373,766																													
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Sewer Cost		*$*	*16,419,624*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Developer Capital Costs		**$**	**16,419,624**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Developer PV	**16,419,624**	**$**	**16,419,624**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HWC Capital Costs ($ 2010/2011)																																
Water Supply																																
Mains		$																														
Pump Station		$																														
Reservoir		$																														
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Water Supply Cost		*$*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Mains		$																														
Pump Station		$																238,950														238,950
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Sewer Cost		*$*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*238,950*	-	-	-	-	-	-	-	-	-	-	-	-	-	*238,950*
Total HWC Capital Costs		**$**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**238,950**	-	-	-	-	-	-	-	-	-	-	-	-	-	**238,950**
Total HWC Capital PV	**109,583**	**$**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**80,455**	-	-	-	-	-	-	-	-	-	-	-	-	-	**29,128**
HWC Operating Costs ($ 2010/2011)																																
Water Supply																																
Mains	#DIV/0!	$																														
Pump Station	#DIV/0!	$																														
Reservoir	#DIV/0!	$																														
Chemical Dosing	#DIV/0!	$																														
Total Water Supply Cost		*$*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Mains	#DIV/0!	$																														
Pump Station	#DIV/0!	$																														
ET			200	400	600	800	1,000	1,200	1,400	1,600	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200	3,400	3,600	3,800	4,000	4,200	4,400	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500
ADWF (L/s)			2.2	4.4	6.6	8.8	11.0	13.2	15.4	17.6	19.8	22.0	24.2	26.4	28.6	30.8	33.0	35.2	37.4	39.6	41.8	44.0	46.2	48.4	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5
ADWF (ML/y)			69.4	138.8	208.1	277.5	346.9	416.3	485.7	555.0	624.4	693.8	763.2	832.6	901.9	971.3	1040.7	1110.1	1179.4	1248.8	1318.2	1387.6	1457.0	1526.3	1561.0	1561.0	1561.0	1561.0	1561.0	1561.0	1561.0	1561.0
Detention Time (hr)			162.6	81.3	54.2	40.6	32.5	27.1	23.2	20.3	18.1	16.3	14.8	13.5	12.5	11.6	10.8	10.2	9.6	9.0	8.6	8.1	7.7	7.4	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
Dose Cost Rate ($/ML)			99.0	99.0	99.0	99.0	87.0	87.0	87.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	49.0	49.0	49.0	49.0	49.0	49.0	49.0	49.0
Chemical Dosing	9.47%	$	6,869	13,737	20,606	27,474	30,180	36,216	42,252	41,628	46,831	52,034	57,238	62,441	67,645	72,848	64,523	68,824	73,126	77,427	81,729	86,030	90,332	94,633	76,491	76,491	76,491	76,491	76,491	76,491	76,491	76,491
Total Sewer Cost		*$*	*7,402*	*14,461*	*21,574*	*28,700*	*31,657*	*37,960*	*44,263*	*43,895*	*49,368*	*54,841*	*60,315*	*65,789*	*71,263*	*76,737*	*68,669*	*73,242*	*77,814*	*82,387*	*86,959*	*91,532*	*96,105*	*100,677*	*82,657*	*82,657*	*82,657*	*82,657*	*82,657*	*82,657*	*82,657*	*82,657*
Chemical Dosing PV	**636,693**		**7,402**	**13,448**	**18,659**	**23,085**	**23,681**	**26,408**	**28,638**	**26,412**	**27,626**	**28,540**	**29,191**	**29,612**	**29,830**	**29,873**	**24,861**	**24,661**	**24,366**	**23,992**	**23,551**	**23,054**	**22,511**	**21,932**	**16,746**	**15,574**	**14,483**	**13,470**	**12,527**	**11,650**	**10,834**	**10,076**
Energy																																
kWh/year		kWh/year	364,616	364,616	364,616	364,616	364,616	364,616	364,616	364,616	364,616	364,616	364,616	364,616	364,616	364,616	364,616	364,616	364,616	364,616	364,616	364,616	364,616	364,616	364,616	364,616	364,616	364,616	364,616	364,616	364,616	364,616
$/kWh	2.18%	$/kWh	0.156	0.162	0.169	0.176	0.183	0.191	0.199	0.207	0.215	0.230	0.233	0.246	0.252	0.254	0.250	0.254	0.256	0.261	0.262	0.265	0.265	0.269	0.271	0.282	0.281	0.282	0.281	0.291	0.280	0.287
Total Energy Cost		*$*	*56,760*	*59,108*	*61,552*	*64,098*	*66,750*	*69,511*	*72,386*	*75,380*	*78,498*	*83,829*	*85,053*	*89,620*	*91,922*	*92,569*	*91,123*	*92,531*	*93,319*	*95,240*	*95,534*	*96,452*	*96,446*	*97,993*	*98,772*	*102,858*	*102,523*	*102,961*	*102,483*	*106,213*	*102,044*	*104,796*
Energy Cost PV	**996,563**		**56,760**	**54,970**	**53,237**	**51,558**	**49,932**	**48,358**	**46,833**	**45,356**	**43,926**	**43,626**	**41,164**	**40,338**	**38,478**	**36,037**	**32,991**	**31,155**	**29,221**	**27,735**	**25,873**	**24,293**	**22,591**	**21,347**	**20,011**	**19,380**	**17,964**	**16,778**	**15,531**	**14,970**	**13,376**	**12,775**
GHG Costs																																
kg CO_2-e/kWh		kg CO_2-e/kWh	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Tonnes CO_2-e		Tonnes CO_2-e	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325
$ / tonne CO_2-e	3.52%	$	25.00	25.88	26.79	27.73	28.71	29.72	30.77	31.85	32.97	34.13	35.33	36.58	37.86	39.20	40.58	42.01	43.48	45.01	46.60	48.24	49.94	51.70	53.51	55.40	57.35	59.37	61.46	63.62	65.86	68.18
GHG Cost		*$*	*8,113*	*8,398*	*8,694*	*9,000*	*9,317*	*9,645*	*9,984*	*10,336*	*10,699*	*11,076*	*11,466*	*11,869*	*12,287*	*12,720*	*13,168*	*13,631*	*14,111*	*14,608*	*15,122*	*15,654*	*16,205*	*16,775*	*17,366*	*17,977*	*18,610*	*19,265*	*19,943*	*20,645*	*21,372*	*22,124*
GHG PV	**148,031**		**8,113**	**7,810**	**7,519**	**7,239**	**6,969**	**6,710**	**6,460**	**6,219**	**5,987**	**5,764**	**5,549**	**5,342**	**5,143**	**4,952**	**4,767**	**4,590**	**4,419**	**4,254**	**4,095**	**3,943**	**3,796**	**3,654**	**3,518**	**3,387**	**3,261**	**3,139**	**3,022**	**2,910**	**2,801**	**2,697**
Total Operating Costs		**$**	**72,274**	**81,966**	**91,820**	**101,798**	**107,724**	**117,115**	**126,633**	**129,611**	**138,565**	**149,747**	**156,834**	**167,278**	**175,472**	**182,026**	**172,960**	**179,403**	**185,244**	**192,235**	**197,615**	**203,638**	**208,755**	**215,446**	**198,796**	**203,492**	**203,790**	**204,884**	**205,083**	**209,516**	**206,074**	**209,578**
Total Operating PV	**1,781,288**	**$**	**72,274**	**76,229**	**79,415**	**81,882**	**80,583**	**81,475**	**81,930**	**77,987**	**77,539**	**77,930**	**75,905**	**75,293**	**73,452**	**70,862**	**62,619**	**60,405**	**58,006**	**55,981**	**53,520**	**51,290**	**48,899**	**46,933**	**40,275**	**38,340**	**35,709**	**33,387**	**31,080**	**29,530**	**27,011**	**25,548**
HWC Maintenance Costs ($ 2010/2011)																																
Water Supply																																
Mains	#DIV/0!	$																														
Pump Station	#DIV/0!	$																														
Reservoir	#DIV/0!	$																														
Chemical Dosing	#DIV/0!	$																														
Total Water Supply Cost		*$*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Rising Mains	0.00%	$	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485
Gravity Mains	0.00%	$	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561
Pump Station	0.00%	$	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000
Chemical Dosing	#DIV/0!	$																														
Total Sewer Cost		*$*	*29,046*	*29,046*	*29,046*	*29,046*	*29,046*	*29,046*	*29,046*	*29,046*	*29,046*	*29,046*	*29,046*	*29,046*	*29,046*	*29,046*	*29,046*	*29,046*	*29,046*	*29,046*	*29,046*	*29,046*	*29,046*	*29,046*	*29,046*	*29,046*	*29,046*	*29,046*	*29,046*	*29,046*	*29,046*	*29,046*
Total Maintenance Costs		**$**	**29,046**	**29,046**	**29,046**	**29,046**	**29,046**	**29,046**	**29,046**	**29,046**	**29,046**	**29,046**	**29,046**	**29,046**	**29,046**	**29,046**	**29,046**	**29,046**	**29,046**	**29,046**	**29,046**	**29,046**	**29,046**	**29,046**	**29,046**	**29,046**	**29,046**	**29,046**	**29,046**	**29,046**	**29,046**	**29,046**
Total Maintenance PV	**367,899**	**$**	**29,046**	**27,013**	**25,122**	**23,363**	**21,728**	**20,207**	**18,792**	**17,477**	**16,254**	**15,116**	**14,058**	**13,074**	**12,158**	**11,307**	**10,516**	**9,780**	**9,095**	**8,459**	**7,866**	**7,316**	**6,804**	**6,327**	**5,884**	**5,473**	**5,089**	**4,733**	**4,402**	**4,094**	**3,807**	**3,541**
Total O & M Costs		**$**	**101,320**	**111,012**	**120,866**	**130,844**	**136,769**	**146,161**	**155,679**	**158,657**	**167,611**	**178,792**	**185,880**	**196,324**	**204,518**	**211,072**	**202,006**	**208,449**	**214,290**	**221,280**	**226,661**	**232,684**	**237,801**	**244,491**	**227,842**	**232,538**	**232,836**	**233,929**	**234,129**	**238,562**	**235,119**	**238,624**
Total O & M PV	**2,149,187**	**$**	**101,320**	**103,241**	**104,537**	**105,245**	**102,311**	**101,682**	**100,723**	**95,464**	**93,792**	**93,046**	**89,962**	**88,366**	**85,610**	**82,169**	**73,135**	**70,185**	**67,101**	**64,440**	**61,386**	**58,606**	**55,702**	**53,261**	**46,159**	**43,813**	**40,798**	**38,120**	**35,482**	**33,623**	**30,818**	**29,088**
Lifecycle Costs		**$**	**16,520,944**	**111,012**	**120,866**	**130,844**	**136,769**	**146,161**	**155,679**	**158,657**	**167,611**	**178,792**	**185,880**	**196,324**	**204,518**	**211,072**	**202,006**	**447,399**	**214,290**	**221,280**	**226,661**	**232,684**	**237,801**	**244,491**	**227,842**	**232,538**	**232,836**	**233,929**	**234,129**	**238,562**	**235,119**	**477,574**
Total PV (Inc GHG)	**18,678,394**	**$**	**16,520,944**	**103,241**	**104,537**	**105,245**	**102,311**	**101,682**	**100,723**	**95,464**	**93,792**	**93,046**	**89,962**	**88,366**	**85,610**	**82,169**	**73,135**	**150,640**	**67,101**	**64,440**	**61,386**	**58,606**	**55,702**	**53,261**	**46,159**	**43,813**	**40,798**	**38,120**	**35,482**	**33,623**	**30,818**	**58,216**
Total PV (Ex GHG)	**18,530,362**	**$**	**16,512,831**	**95,431**	**97,017**	**98,006**	**95,341**	**94,973**	**94,263**	**89,245**	**87,805**	**87,281**	**84,413**	**83,024**	**80,467**	**77,217**	**68,368**	**146,050**	**62,682**	**60,186**	**57,291**	**54,663**	**51,906**	**49,606**	**42,641**	**40,426**	**37,537**	**34,981**	**32,460**	**30,714**	**28,017**	**55,520**

Option Reference	Option SE1A
Real Discount Rate	7.0%
Length RM (m)	6,400
Diam RM (mm)	600
Pump Duty (L/s)	356
Length GM (m)	2,000

Costs

2010/2011 Energy Cost	0.157	/ kWh
Annual Real Energy Increase	2.18%	
2010/2011 GHG Cost	25.00	/ tonnes CO_2-e
Real GHG Increase	3.52%	

FY Ending		Units	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
Discount Factor			1.00	0.93	0.86	0.80	0.75	0.70	0.65	0.60	0.56	0.52	0.48	0.45	0.42	0.39	0.36	0.34	0.31	0.29	0.27	0.25	0.23	0.22	0.20	0.19	0.18	0.16	0.15	0.14	0.13	0.12
Developer Capital Costs ($ 2010/2011)																																
Water Supply																																
Mains		$																														
Pump Station		$																														
Reservoir		$																														
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Water Supply Cost		$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Internal Transfer			4,352,176																													
Gravity Mains		$	-																													
Rising Mains		$	11,585,930																													
Sewer Pump Station		$	2,193,844																													
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Sewer Cost		$	*18,131,951*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Developer Capital Costs		$	**18,131,951**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Developer PV	**18,131,951**	$	**18,131,951**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HWC Capital Costs ($ 2010/2011)																																
Water Supply																																
Mains		$																														
Pump Station		$																														
Reservoir		$																														
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Water Supply Cost		$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Mains		$																														
Pump Station		$																218,325														218,325
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Sewer Cost		$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*218,325*	-	-	-	-	-	-	-	-	-	-	-	-	-	*218,325*
Total HWC Capital Costs		$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**218,325**	-	-	-	-	-	-	-	-	-	-	-	-	-	**218,325**
Total HWC Capital PV	**100,124**	$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**73,510**	-	-	-	-	-	-	-	-	-	-	-	-	-	**26,614**
HWC Operating Costs ($ 2010/2011)																																
Water Supply																																
Mains	#DIV/0!	$																														
Pump Station	#DIV/0!	$																														
Reservoir	#DIV/0!	$																														
Chemical Dosing	#DIV/0!	$																														
Total Water Supply Cost		$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Mains	#DIV/0!	$																														
Pump Station	#DIV/0!	$																														
ET			200	400	600	800	1,000	1,200	1,400	1,600	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200	3,400	3,600	3,800	4,000	4,200	4,400	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500
ADWF (L/s)			2.2	4.4	6.6	8.8	11.0	13.2	15.4	17.6	19.8	22.0	24.2	26.4	28.6	30.8	33.0	35.2	37.4	39.6	41.8	44.0	46.2	48.4	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5
ADWF (ML/y)			69.4	138.8	208.1	277.5	346.9	416.3	485.7	555.0	624.4	693.8	763.2	832.6	901.9	971.3	1040.7	1110.1	1179.4	1248.8	1318.2	1387.6	1457.0	1526.3	1561.0	1561.0	1561.0	1561.0	1561.0	1561.0	1561.0	1561.0
Detention Time (hr)			232.3	116.2	77.4	58.1	46.5	38.7	33.2	29.0	25.8	23.2	21.1	19.4	17.9	16.6	15.5	14.5	13.7	12.9	12.2	11.6	11.1	10.6	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3
Dose Cost Rate ($/ML)			99.0	99.0	99.0	99.0	99.0	99.0	87.0	87.0	87.0	87.0	87.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0
Chemical Dosing	9.83%	$	6,869	13,737	20,606	27,474	34,343	41,211	42,252	48,288	54,324	60,360	66,396	62,441	67,645	72,848	78,052	83,255	88,458	93,662	98,865	104,069	90,332	94,633	96,784	96,784	96,784	96,784	96,784	96,784	96,784	96,784
Total Sewer Cost		$	*7,471*	*14,495*	*21,597*	*28,718*	*35,846*	*42,978*	*44,273*	*50,577*	*56,881*	*63,186*	*69,491*	*65,795*	*71,268*	*76,742*	*82,216*	*87,690*	*93,164*	*98,638*	*104,113*	*109,587*	*96,108*	*100,681*	*102,967*	*102,967*	*102,967*	*102,967*	*102,967*	*102,967*	*102,967*	*102,967*
Chemical Dosing PV	**714,866**		**7,471**	**13,481**	**18,679**	**23,099**	**26,815**	**29,900**	**28,644**	**30,432**	**31,830**	**32,883**	**33,633**	**29,614**	**29,833**	**29,875**	**29,766**	**29,525**	**29,173**	**28,725**	**28,197**	**27,602**	**22,512**	**21,932**	**20,860**	**19,400**	**18,042**	**16,779**	**15,605**	**14,512**	**13,496**	**12,552**
Energy																																
kWh/year		kWh/year	239,407	239,407	239,407	239,407	239,407	239,407	239,407	239,407	239,407	239,407	239,407	239,407	239,407	239,407	239,407	239,407	239,407	239,407	239,407	239,407	239,407	239,407	239,407	239,407	239,407	239,407	239,407	239,407	239,407	239,407
$/kWh	2.18%	$/kWh	0.156	0.162	0.169	0.176	0.183	0.191	0.199	0.207	0.215	0.230	0.233	0.246	0.252	0.254	0.250	0.254	0.256	0.261	0.262	0.265	0.265	0.269	0.271	0.282	0.281	0.282	0.281	0.291	0.280	0.287
Total Energy Cost		$	*37,269*	*38,810*	*40,415*	*42,087*	*43,828*	*45,641*	*47,529*	*49,494*	*51,542*	*55,042*	*55,846*	*58,845*	*60,356*	*60,781*	*59,832*	*60,756*	*61,273*	*62,535*	*62,728*	*63,330*	*63,326*	*64,342*	*64,854*	*67,537*	*67,317*	*67,604*	*67,290*	*69,740*	*67,002*	*68,809*
Energy Cost PV	**654,345**		**37,269**	**36,093**	**34,955**	**33,853**	**32,786**	**31,752**	**30,781**	**29,781**	**28,842**	**28,645**	**27,028**	**26,486**	**25,265**	**23,662**	**21,662**	**20,456**	**19,187**	**18,211**	**16,988**	**15,951**	**14,833**	**14,016**	**13,139**	**12,725**	**11,795**	**11,017**	**10,198**	**9,829**	**8,782**	**8,388**
GHG Costs																																
kg CO_2-e/kWh		kg CO_2-e/kWh	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Tonnes CO_2-e		Tonnes CO_2-e	213	213	213	213	213	213	213	213	213	213	213	213	213	213	213	213	213	213	213	213	213	213	213	213	213	213	213	213	213	213
$ / tonne CO_2-e	3.52%	$	25.00	25.88	26.79	27.73	28.71	29.72	30.77	31.85	32.97	34.13	35.33	36.58	37.86	39.20	40.58	42.01	43.48	45.01	46.60	48.24	49.94	51.70	53.51	55.40	57.35	59.37	61.46	63.62	65.86	68.18
GHG Cost		$	*5,327*	*5,514*	*5,708*	*5,909*	*6,117*	*6,333*	*6,556*	*6,786*	*7,025*	*7,273*	*7,529*	*7,794*	*8,068*	*8,352*	*8,646*	*8,950*	*9,265*	*9,591*	*9,929*	*10,278*	*10,640*	*11,015*	*11,403*	*11,804*	*12,219*	*12,650*	*13,095*	*13,556*	*14,033*	*14,527*
GHG PV	**97,198**		**5,327**	**5,128**	**4,937**	**4,753**	**4,576**	**4,406**	**4,241**	**4,083**	**3,931**	**3,785**	**3,644**	**3,508**	**3,377**	**3,251**	**3,130**	**3,014**	**2,901**	**2,793**	**2,689**	**2,589**	**2,492**	**2,399**	**2,310**	**2,224**	**2,141**	**2,061**	**1,985**	**1,911**	**1,839**	**1,771**
Total Operating Costs		$	**50,067**	**58,820**	**67,721**	**76,714**	**85,791**	**94,952**	**98,357**	**106,857**	**115,448**	**125,501**	**132,866**	**132,433**	**139,692**	**145,875**	**150,693**	**157,396**	**163,703**	**170,765**	**176,769**	**183,196**	**170,075**	**176,038**	**179,223**	**182,307**	**182,503**	**183,221**	**183,352**	**186,262**	**184,002**	**186,303**
Total Operating PV	**1,466,409**	$	**50,067**	**54,702**	**58,572**	**61,705**	**64,176**	**66,057**	**63,636**	**64,296**	**64,603**	**65,312**	**64,305**	**59,608**	**58,475**	**56,788**	**54,558**	**52,995**	**51,260**	**49,729**	**47,874**	**46,142**	**39,838**	**38,348**	**36,309**	**34,349**	**31,979**	**29,857**	**27,787**	**26,252**	**24,118**	**22,710**
HWC Maintenance Costs ($ 2010/2011)																																
Water Supply																																
Mains	#DIV/0!	$																														
Pump Station	#DIV/0!	$																														
Reservoir	#DIV/0!	$																														
Chemical Dosing	#DIV/0!	$																														
Total Water Supply Cost		$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Rising Mains	0.00%	$	8,837	8,837	8,837	8,837	8,837	8,837	8,837	8,837	8,837	8,837	8,837	8,837	8,837	8,837	8,837	8,837	8,837	8,837	8,837	8,837	8,837	8,837	8,837	8,837	8,837	8,837	8,837	8,837	8,837	8,837
Gravity Mains	0.00%	$	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561
Pump Station	0.00%	$	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000
Chemical Dosing	#DIV/0!	$																														
Total Sewer Cost		$	*29,398*	*29,398*	*29,398*	*29,398*	*29,398*	*29,398*	*29,398*	*29,398*	*29,398*	*29,398*	*29,398*	*29,398*	*29,398*	*29,398*	*29,398*	*29,398*	*29,398*	*29,398*	*29,398*	*29,398*	*29,398*	*29,398*	*29,398*	*29,398*	*29,398*	*29,398*	*29,398*	*29,398*	*29,398*	*29,398*
Total Maintenance Costs		$	**29,398**	**29,398**	**29,398**	**29,398**	**29,398**	**29,398**	**29,398**	**29,398**	**29,398**	**29,398**	**29,398**	**29,398**	**29,398**	**29,398**	**29,398**	**29,398**	**29,398**	**29,398**	**29,398**	**29,398**	**29,398**	**29,398**	**29,398**	**29,398**	**29,398**	**29,398**	**29,398**	**29,398**	**29,398**	**29,398**
Total Maintenance PV	**372,358**	$	**29,398**	**27,340**	**25,426**	**23,646**	**21,991**	**20,452**	**19,020**	**17,689**	**16,450**	**15,299**	**14,228**	**13,232**	**12,306**	**11,444**	**10,643**	**9,898**	**9,205**	**8,561**	**7,962**	**7,404**	**6,886**	**6,404**	**5,956**	**5,539**	**5,151**	**4,791**	**4,455**	**4,143**	**3,853**	**3,584**
Total O & M Costs		$	**79,465**	**88,218**	**97,118**	**106,112**	**115,189**	**124,350**	**127,755**	**136,255**	**144,846**	**154,899**	**162,264**	**161,830**	**169,090**	**175,273**	**180,091**	**186,793**	**193,100**	**200,162**	**206,167**	**212,594**	**199,472**	**205,435**	**208,621**	**211,705**	**211,901**	**212,619**	**212,750**	**215,660**	**213,400**	**215,701**
Total O & M PV	**1,838,767**	$	**79,465**	**82,042**	**83,998**	**85,352**	**86,167**	**86,509**	**82,656**	**81,985**	**81,053**	**80,611**	**78,533**	**72,840**	**70,780**	**68,233**	**65,201**	**62,894**	**60,466**	**58,290**	**55,836**	**53,546**	**46,724**	**44,752**	**42,265**	**39,888**	**37,130**	**34,648**	**32,242**	**30,396**	**27,972**	**26,294**
Lifecycle Costs		$	**18,211,416**	**88,218**	**97,118**	**106,112**	**115,189**	**124,350**	**127,755**	**136,255**	**144,846**	**154,899**	**162,264**	**161,830**	**169,090**	**175,273**	**180,091**	**405,118**	**193,100**	**200,162**	**206,167**	**212,594**	**199,472**	**205,435**	**208,621**	**211,705**	**211,901**	**212,619**	**212,750**	**215,660**	**213,400**	**434,026**
Total PV (Inc GHG)	**20,070,842**	$	**18,211,416**	**82,042**	**83,998**	**85,352**	**86,167**	**86,509**	**82,656**	**81,985**	**81,053**	**80,611**	**78,533**	**72,840**	**70,780**	**68,233**	**65,201**	**136,404**	**60,466**	**58,290**	**55,836**	**53,546**	**46,724**	**44,752**	**42,265**	**39,888**	**37,130**	**34,648**	**32,242**	**30,396**	**27,972**	**52,908**
Total PV (Ex GHG)	**19,973,644**	$	**18,206,089**	**76,914**	**79,061**	**80,599**	**81,591**	**82,103**	**78,415**	**77,902**	**77,122**	**76,826**	**74,889**	**69,333**	**67,403**	**64,981**	**62,071**	**133,390**	**57,565**	**55,497**	**53,147**	**50,957**	**44,232**	**42,353**	**39,955**	**37,664**	**34,989**	**32,586**	**30,258**	**28,485**	**26,132**	**51,137**

Option Reference			Option SE1B
Real Discount Rate			7.0%
Length RM (m)			6,000
Diam RM (mm)			450
Pump Duty (L/s)			356
Length GM (m)			1,100

Costs

2010/2011 Energy Cost	0.157	/ kWh
Annual Real Energy Increase	2.18%	
2010/2011 GHG Cost	25.00	/ tonnes CO_2-e
Real GHG Increase	3.52%	

FY Ending		Units	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
Discount Factor			1.00	0.93	0.86	0.80	0.75	0.70	0.65	0.60	0.56	0.52	0.48	0.45	0.42	0.39	0.36	0.34	0.31	0.29	0.27	0.25	0.23	0.22	0.20	0.19	0.18	0.16	0.15	0.14	0.13	0.12
Developer Capital Costs ($ 2010/2011)																																
Water Supply																																
Mains		$																														
Pump Station		$																														
Reservoir		$																														
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Water Supply Cost		$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Internal Transfer			4,352,176																													
Gravity Mains		$	2,359,273																													
Rising Mains		$	6,731,106																													
Sewer Pump Station		$	2,373,766																													
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Sewer Cost		*$*	*15,816,321*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Developer Capital Costs		**$**	**15,816,321**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Developer PV	**15,816,321**	**$**	**15,816,321**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HWC Capital Costs ($ 2010/2011)																																
Water Supply																																
Mains		$																														
Pump Station		$																														
Reservoir		$																														
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Water Supply Cost		$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Mains		$																														
Pump Station		$																238,950														238,950
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Sewer Cost		$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*238,950*	-	-	-	-	-	-	-	-	-	-	-	-	-	*238,950*
Total HWC Capital Costs		**$**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**238,950**	-	-	-	-	-	-	-	-	-	-	-	-	-	**238,950**
Total HWC Capital PV	**109,583**	**$**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**80,455**	-	-	-	-	-	-	-	-	-	-	-	-	-	**29,128**
HWC Operating Costs ($ 2010/2011)																																
Water Supply																																
Mains	#DIV/0!	$																														
Pump Station	#DIV/0!	$																														
Reservoir	#DIV/0!	$																														
Chemical Dosing	#DIV/0!	$																														
Total Water Supply Cost		*$*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Mains	#DIV/0!	$																														
Pump Station	#DIV/0!	$																														
ET			200	400	600	800	1,000	1,200	1,400	1,600	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200	3,400	3,600	3,800	4,000	4,200	4,400	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500
ADWF (L/s)			2.2	4.4	6.6	8.8	11.0	13.2	15.4	17.6	19.8	22.0	24.2	26.4	28.6	30.8	33.0	35.2	37.4	39.6	41.8	44.0	46.2	48.4	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5
ADWF (ML/y)			69.4	138.8	208.1	277.5	346.9	416.3	485.7	555.0	624.4	693.8	763.2	832.6	901.9	971.3	1040.7	1110.1	1179.4	1248.8	1318.2	1387.6	1457.0	1526.3	1561.0	1561.0	1561.0	1561.0	1561.0	1561.0	1561.0	1561.0
Detention Time (hr)			124.4	62.2	41.5	31.1	24.9	20.7	17.8	15.6	13.8	12.4	11.3	10.4	9.6	8.9	8.3	7.8	7.3	6.9	6.5	6.2	5.9	5.7	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Dose Cost Rate ($/ML)			99.0	99.0	99.0	87.0	87.0	87.0	75.0	75.0	75.0	75.0	75.0	62.0	62.0	62.0	62.0	62.0	62.0	49.0	49.0	49.0	49.0	49.0	49.0	49.0	49.0	49.0	49.0	49.0	49.0	49.0
Chemical Dosing	8.67%	$	6,869	13,737	20,606	24,144	30,180	36,216	36,424	41,628	46,831	52,034	57,238	51,618	55,920	60,221	64,523	68,824	73,126	61,192	64,592	67,992	71,391	74,791	76,491	76,491	76,491	76,491	76,491	76,491	76,491	76,491
Total Sewer Cost		*$*	*7,364*	*14,441*	*21,561*	*25,348*	*31,650*	*37,953*	*38,418*	*43,891*	*49,364*	*54,838*	*60,312*	*54,949*	*59,522*	*64,094*	*68,667*	*73,239*	*77,812*	*66,137*	*69,808*	*73,478*	*77,149*	*80,820*	*82,656*	*82,656*	*82,656*	*82,656*	*82,656*	*82,656*	*82,656*	*82,656*
Chemical Dosing PV	**592,719**		**7,364**	**13,431**	**18,648**	**20,389**	**23,676**	**26,404**	**24,856**	**26,409**	**27,623**	**28,538**	**29,190**	**24,733**	**24,916**	**24,952**	**24,860**	**24,660**	**24,365**	**19,260**	**18,906**	**18,507**	**18,071**	**17,606**	**16,745**	**15,573**	**14,483**	**13,469**	**12,526**	**11,650**	**10,834**	**10,076**
Energy																																
kWh/year		kWh/year	389,245	389,245	389,245	389,245	389,245	389,245	389,245	389,245	389,245	389,245	389,245	389,245	389,245	389,245	389,245	389,245	389,245	389,245	389,245	389,245	389,245	389,245	389,245	389,245	389,245	389,245	389,245	389,245	389,245	389,245
$/kWh	2.18%	$/kWh	0.156	0.162	0.169	0.176	0.183	0.191	0.199	0.207	0.215	0.230	0.233	0.246	0.252	0.254	0.250	0.254	0.256	0.261	0.262	0.265	0.265	0.269	0.271	0.282	0.281	0.282	0.281	0.291	0.280	0.287
Total Energy Cost		*$*	*60,594*	*63,100*	*65,710*	*68,428*	*71,259*	*74,206*	*77,275*	*80,472*	*83,800*	*89,492*	*90,798*	*95,674*	*98,131*	*98,822*	*97,279*	*98,781*	*99,623*	*101,674*	*101,987*	*102,967*	*102,961*	*104,612*	*105,444*	*109,806*	*109,449*	*109,916*	*109,405*	*113,388*	*108,937*	*111,875*
Energy Cost PV	**1,063,881**		**60,594**	**58,683**	**56,833**	**55,041**	**53,305**	**51,624**	**49,996**	**48,420**	**46,893**	**46,573**	**43,945**	**43,063**	**41,077**	**38,471**	**35,219**	**33,260**	**31,195**	**29,609**	**27,621**	**25,934**	**24,117**	**22,789**	**21,362**	**20,689**	**19,178**	**17,912**	**16,580**	**15,981**	**14,279**	**13,638**
GHG Costs																																
kg CO_2-e/kWh		kg CO_2-e/kWh	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Tonnes CO_2-e		Tonnes CO_2-e	346	346	346	346	346	346	346	346	346	346	346	346	346	346	346	346	346	346	346	346	346	346	346	346	346	346	346	346	346	346
$ / tonne CO_2-e	3.52%	$	25.00	25.88	26.79	27.73	28.71	29.72	30.77	31.85	32.97	34.13	35.33	36.58	37.86	39.20	40.58	42.01	43.48	45.01	46.60	48.24	49.94	51.70	53.51	55.40	57.35	59.37	61.46	63.62	65.86	68.18
GHG Cost		*$*	*8,661*	*8,966*	*9,281*	*9,608*	*9,946*	*10,296*	*10,659*	*11,034*	*11,422*	*11,824*	*12,240*	*12,671*	*13,117*	*13,579*	*14,057*	*14,552*	*15,064*	*15,594*	*16,143*	*16,711*	*17,300*	*17,909*	*18,539*	*19,192*	*19,867*	*20,566*	*21,290*	*22,040*	*22,816*	*23,619*
GHG PV	**158,031**		**8,661**	**8,338**	**8,027**	**7,728**	**7,440**	**7,163**	**6,896**	**6,639**	**6,392**	**6,153**	**5,924**	**5,703**	**5,491**	**5,286**	**5,089**	**4,900**	**4,717**	**4,541**	**4,372**	**4,209**	**4,052**	**3,901**	**3,756**	**3,616**	**3,481**	**3,351**	**3,227**	**3,106**	**2,991**	**2,879**
Total Operating Costs		**$**	**76,618**	**86,507**	**96,552**	**103,384**	**112,854**	**122,455**	**126,352**	**135,396**	**144,586**	**156,154**	**163,350**	**163,294**	**170,771**	**176,495**	**180,002**	**186,572**	**192,499**	**183,405**	**187,938**	**193,157**	**197,410**	**203,341**	**206,639**	**211,653**	**211,971**	**213,138**	**213,351**	**218,084**	**214,409**	**218,150**
Total Operating PV	**1,814,631**	**$**	**76,618**	**80,452**	**83,508**	**83,158**	**84,421**	**85,191**	**81,748**	**81,468**	**80,908**	**81,264**	**79,059**	**73,499**	**71,484**	**68,709**	**65,169**	**62,819**	**60,277**	**53,410**	**50,899**	**48,650**	**46,241**	**44,296**	**41,864**	**39,878**	**37,142**	**34,732**	**32,333**	**30,737**	**28,104**	**26,593**
HWC Maintenance Costs ($ 2010/2011)																																
Water Supply																																
Mains	#DIV/0!	$																														
Pump Station	#DIV/0!	$																														
Reservoir	#DIV/0!	$																														
Chemical Dosing	#DIV/0!	$																														
Total Water Supply Cost		*$*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Rising Mains	0.00%	$	8,013	8,013	8,013	8,013	8,013	8,013	8,013	8,013	8,013	8,013	8,013	8,013	8,013	8,013	8,013	8,013	8,013	8,013	8,013	8,013	8,013	8,013	8,013	8,013	8,013	8,013	8,013	8,013	8,013	8,013
Gravity Mains	0.00%	$	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508
Pump Station	0.00%	$	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000
Chemical Dosing	#DIV/0!	$																														
Total Sewer Cost		*$*	*26,521*	*26,521*	*26,521*	*26,521*	*26,521*	*26,521*	*26,521*	*26,521*	*26,521*	*26,521*	*26,521*	*26,521*	*26,521*	*26,521*	*26,521*	*26,521*	*26,521*	*26,521*	*26,521*	*26,521*	*26,521*	*26,521*	*26,521*	*26,521*	*26,521*	*26,521*	*26,521*	*26,521*	*26,521*	*26,521*
Total Maintenance Costs		**$**	**26,521**	**26,521**	**26,521**	**26,521**	**26,521**	**26,521**	**26,521**	**26,521**	**26,521**	**26,521**	**26,521**	**26,521**	**26,521**	**26,521**	**26,521**	**26,521**	**26,521**	**26,521**	**26,521**	**26,521**	**26,521**	**26,521**	**26,521**	**26,521**	**26,521**	**26,521**	**26,521**	**26,521**	**26,521**	**26,521**
Total Maintenance PV	**335,919**	**$**	**26,521**	**24,664**	**22,938**	**21,332**	**19,839**	**18,450**	**17,159**	**15,958**	**14,841**	**13,802**	**12,836**	**11,937**	**11,102**	**10,324**	**9,602**	**8,930**	**8,305**	**7,723**	**7,183**	**6,680**	**6,212**	**5,777**	**5,373**	**4,997**	**4,647**	**4,322**	**4,019**	**3,738**	**3,476**	**3,233**
Total O & M Costs		**$**	**103,139**	**113,028**	**123,073**	**129,905**	**139,375**	**148,976**	**152,873**	**161,917**	**171,107**	**182,675**	**189,871**	**189,815**	**197,291**	**203,016**	**206,523**	**213,093**	**219,019**	**209,926**	**214,459**	**219,678**	**223,930**	**229,862**	**233,160**	**238,174**	**238,492**	**239,659**	**239,872**	**244,604**	**240,930**	**244,671**
Total O & M PV	**2,150,550**	**$**	**103,139**	**105,116**	**106,446**	**104,490**	**104,260**	**103,641**	**98,907**	**97,426**	**95,748**	**95,066**	**91,894**	**85,437**	**82,585**	**79,033**	**74,771**	**71,749**	**68,582**	**61,133**	**58,081**	**55,330**	**52,453**	**50,074**	**47,237**	**44,875**	**41,789**	**39,054**	**36,353**	**34,475**	**31,580**	**29,825**
Lifecycle Costs		**$**	**15,919,461**	**113,028**	**123,073**	**129,905**	**139,375**	**148,976**	**152,873**	**161,917**	**171,107**	**182,675**	**189,871**	**189,815**	**197,291**	**203,016**	**206,523**	**452,043**	**219,019**	**209,926**	**214,459**	**219,678**	**223,930**	**229,862**	**233,160**	**238,174**	**238,492**	**239,659**	**239,872**	**244,604**	**240,930**	**483,621**
Total PV (Inc GHG)	**18,076,455**	**$**	**15,919,461**	**105,116**	**106,446**	**104,490**	**104,260**	**103,641**	**98,907**	**97,426**	**95,748**	**95,066**	**91,894**	**85,437**	**82,585**	**79,033**	**74,771**	**152,203**	**68,582**	**61,133**	**58,081**	**55,330**	**52,453**	**50,074**	**47,237**	**44,875**	**41,789**	**39,054**	**36,353**	**34,475**	**31,580**	**58,954**
Total PV (Ex GHG)	**17,918,424**	**$**	**15,910,800**	**96,778**	**98,419**	**96,762**	**96,820**	**96,478**	**92,011**	**90,787**	**89,357**	**88,912**	**85,970**	**79,733**	**77,095**	**73,747**	**69,681**	**147,304**	**63,865**	**56,592**	**53,709**	**51,121**	**48,401**	**46,172**	**43,481**	**41,259**	**38,308**	**35,703**	**33,126**	**31,369**	**28,589**	**56,074**

Option Reference			Option SE1B
Real Discount Rate			7.0%
Length RM (m)			6,000
Diam RM (mm)			500
Pump Duty (L/s)			356
Length GM (m)			1,100

Costs

2010/2011 Energy Cost	0.157	/ kWh
Annual Real Energy Increase	2.18%	
2010/2011 GHG Cost	25.00	/ tonnes CO_2-e
Real GHG Increase	3.52%	

FY Ending		Units	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
Discount Factor			1.00	0.93	0.86	0.80	0.75	0.70	0.65	0.60	0.56	0.52	0.48	0.45	0.42	0.39	0.36	0.34	0.31	0.29	0.27	0.25	0.23	0.22	0.20	0.19	0.18	0.16	0.15	0.14	0.13	0.12
Developer Capital Costs ($ 2010/2011)																																
Water Supply																																
Mains		$																														
Pump Station		$																														
Reservoir		$																														
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Water Supply Cost		$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Internal Transfer			4,352,176																													
Gravity Mains		$	2,359,273																													
Rising Mains		$	7,674,580																													
Sewer Pump Station		$	2,193,844																													
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Sewer Cost		*$*	*16,579,873*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Developer Capital Costs		**$**	**16,579,873**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Developer PV	**16,579,873**	**$**	**16,579,873**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HWC Capital Costs ($ 2010/2011)																																
Water Supply																																
Mains		$																														
Pump Station		$																														
Reservoir		$																														
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Water Supply Cost		$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Mains		$																														
Pump Station		$																218,325														218,325
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Sewer Cost		$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*218,325*	-	-	-	-	-	-	-	-	-	-	-	-	-	*218,325*
Total HWC Capital Costs		**$**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**218,325**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**218,325**
Total HWC Capital PV	**100,124**	**$**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**73,510**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**26,614**
HWC Operating Costs ($ 2010/2011)																																
Water Supply																																
Mains	#DIV/0!	$																														
Pump Station	#DIV/0!	$																														
Reservoir	#DIV/0!	$																														
Chemical Dosing	#DIV/0!	$																														
Total Water Supply Cost		*$*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Mains	#DIV/0!	$																														
Pump Station	#DIV/0!	$																														
ET			200	400	600	800	1,000	1,200	1,400	1,600	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200	3,400	3,600	3,800	4,000	4,200	4,400	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500
ADWF (L/s)			2.2	4.4	6.6	8.8	11.0	13.2	15.4	17.6	19.8	22.0	24.2	26.4	28.6	30.8	33.0	35.2	37.4	39.6	41.8	44.0	46.2	48.4	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5
ADWF (ML/y)			69.4	138.8	208.1	277.5	346.9	416.3	485.7	555.0	624.4	693.8	763.2	832.6	901.9	971.3	1040.7	1110.1	1179.4	1248.8	1318.2	1387.6	1457.0	1526.3	1561.0	1561.0	1561.0	1561.0	1561.0	1561.0	1561.0	1561.0
Detention Time (hr)			152.7	76.3	50.9	38.2	30.5	25.4	21.8	19.1	17.0	15.3	13.9	12.7	11.7	10.9	10.2	9.5	9.0	8.5	8.0	7.6	7.3	6.9	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8
Dose Cost Rate ($/ML)			99.0	99.0	99.0	99.0	87.0	87.0	87.0	75.0	75.0	75.0	75.0	75.0	75.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	49.0	49.0	49.0	49.0	49.0	49.0	49.0	49.0	49.0	49.0
Chemical Dosing	9.11%	$	6,869	13,737	20,606	27,474	30,180	36,216	42,252	41,628	46,831	52,034	57,238	62,441	67,645	60,221	64,523	68,824	73,126	77,427	81,729	86,030	71,391	74,791	76,491	76,491	76,491	76,491	76,491	76,491	76,491	76,491
Total Sewer Cost		*$*	*7,392*	*14,456*	*21,570*	*28,698*	*31,655*	*37,958*	*44,262*	*43,894*	*49,367*	*54,840*	*60,314*	*65,788*	*71,262*	*64,096*	*68,669*	*73,241*	*77,814*	*82,386*	*86,959*	*91,531*	*77,151*	*80,821*	*82,657*	*82,657*	*82,657*	*82,657*	*82,657*	*82,657*	*82,657*	*82,657*
Chemical Dosing PV	**622,980**		**7,392**	**13,444**	**18,656**	**23,083**	**23,680**	**26,407**	**28,637**	**26,411**	**27,625**	**28,540**	**29,191**	**29,611**	**29,830**	**24,952**	**24,861**	**24,660**	**24,366**	**23,992**	**23,551**	**23,054**	**18,072**	**17,606**	**16,746**	**15,574**	**14,483**	**13,470**	**12,527**	**11,650**	**10,834**	**10,076**
Energy																																
kWh/year		kWh/year	301,976	301,976	301,976	301,976	301,976	301,976	301,976	301,976	301,976	301,976	301,976	301,976	301,976	301,976	301,976	301,976	301,976	301,976	301,976	301,976	301,976	301,976	301,976	301,976	301,976	301,976	301,976	301,976	301,976	301,976
$/kWh	2.18%	$/kWh	0.156	0.162	0.169	0.176	0.183	0.191	0.199	0.207	0.215	0.230	0.233	0.246	0.252	0.254	0.250	0.254	0.256	0.261	0.262	0.265	0.265	0.269	0.271	0.282	0.281	0.282	0.281	0.291	0.280	0.287
Total Energy Cost		*$*	*47,009*	*48,953*	*50,978*	*53,087*	*55,282*	*57,569*	*59,950*	*62,430*	*65,012*	*69,428*	*70,441*	*74,224*	*76,130*	*76,666*	*75,469*	*76,634*	*77,287*	*78,879*	*79,122*	*79,882*	*79,877*	*81,158*	*81,804*	*85,187*	*84,910*	*85,273*	*84,877*	*87,966*	*84,514*	*86,793*
Energy Cost PV	**825,359**		**47,009**	**45,526**	**44,091**	**42,701**	**41,354**	**40,050**	**38,787**	**37,564**	**36,380**	**36,131**	**34,092**	**33,408**	**31,868**	**29,846**	**27,323**	**25,803**	**24,201**	**22,970**	**21,428**	**20,120**	**18,710**	**17,680**	**16,573**	**16,050**	**14,878**	**13,896**	**12,863**	**12,398**	**11,078**	**10,580**
GHG Costs																																
kg CO_2-e/kWh		kg CO_2-e/kWh	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Tonnes CO_2-e		Tonnes CO_2-e	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269
$ / tonne CO_2-e	3.52%	$	25.00	25.88	26.79	27.73	28.71	29.72	30.77	31.85	32.97	34.13	35.33	36.58	37.86	39.20	40.58	42.01	43.48	45.01	46.60	48.24	49.94	51.70	53.51	55.40	57.35	59.37	61.46	63.62	65.86	68.18
GHG Cost		*$*	*6,719*	*6,955*	*7,200*	*7,454*	*7,716*	*7,988*	*8,269*	*8,560*	*8,861*	*9,173*	*9,496*	*9,830*	*10,176*	*10,535*	*10,905*	*11,289*	*11,687*	*12,098*	*12,524*	*12,965*	*13,421*	*13,894*	*14,383*	*14,889*	*15,413*	*15,955*	*16,517*	*17,099*	*17,700*	*18,323*
GHG PV	**122,600**		**6,719**	**6,469**	**6,228**	**5,995**	**5,772**	**5,557**	**5,350**	**5,151**	**4,959**	**4,774**	**4,596**	**4,425**	**4,260**	**4,101**	**3,948**	**3,801**	**3,659**	**3,523**	**3,392**	**3,265**	**3,144**	**3,027**	**2,914**	**2,805**	**2,701**	**2,600**	**2,503**	**2,410**	**2,320**	**2,234**
Total Operating Costs		**$**	**61,120**	**70,364**	**79,749**	**89,238**	**94,654**	**103,515**	**112,481**	**114,884**	**123,241**	**133,441**	**140,252**	**149,842**	**157,569**	**151,297**	**155,043**	**161,165**	**166,787**	**173,363**	**178,604**	**184,378**	**170,448**	**175,873**	**178,843**	**182,733**	**182,980**	**183,885**	**184,051**	**187,722**	**184,871**	**187,773**
Total Operating PV	**1,570,939**	**$**	**61,120**	**65,439**	**68,975**	**71,779**	**70,806**	**72,014**	**72,774**	**69,126**	**68,963**	**69,444**	**67,879**	**67,444**	**65,958**	**58,899**	**56,132**	**54,264**	**52,226**	**50,485**	**48,371**	**46,439**	**39,926**	**38,313**	**36,232**	**34,429**	**32,062**	**29,965**	**27,893**	**26,458**	**24,232**	**22,890**
HWC Maintenance Costs ($ 2010/2011)																																
Water Supply																																
Mains	#DIV/0!	$																														
Pump Station	#DIV/0!	$																														
Reservoir	#DIV/0!	$																														
Chemical Dosing	#DIV/0!	$																														
Total Water Supply Cost		*$*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Rising Mains	0.00%	$	8,155	8,155	8,155	8,155	8,155	8,155	8,155	8,155	8,155	8,155	8,155	8,155	8,155	8,155	8,155	8,155	8,155	8,155	8,155	8,155	8,155	8,155	8,155	8,155	8,155	8,155	8,155	8,155	8,155	8,155
Gravity Mains	0.00%	$	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508
Pump Station	0.00%	$	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000
Chemical Dosing	#DIV/0!	$																														
Total Sewer Cost		*$*	*26,663*	*26,663*	*26,663*	*26,663*	*26,663*	*26,663*	*26,663*	*26,663*	*26,663*	*26,663*	*26,663*	*26,663*	*26,663*	*26,663*	*26,663*	*26,663*	*26,663*	*26,663*	*26,663*	*26,663*	*26,663*	*26,663*	*26,663*	*26,663*	*26,663*	*26,663*	*26,663*	*26,663*	*26,663*	*26,663*
Total Maintenance Costs		**$**	**26,663**	**26,663**	**26,663**	**26,663**	**26,663**	**26,663**	**26,663**	**26,663**	**26,663**	**26,663**	**26,663**	**26,663**	**26,663**	**26,663**	**26,663**	**26,663**	**26,663**	**26,663**	**26,663**	**26,663**	**26,663**	**26,663**	**26,663**	**26,663**	**26,663**	**26,663**	**26,663**	**26,663**	**26,663**	**26,663**
Total Maintenance PV	**337,724**	**$**	**26,663**	**24,797**	**23,061**	**21,447**	**19,946**	**18,549**	**17,251**	**16,043**	**14,920**	**13,876**	**12,905**	**12,001**	**11,161**	**10,380**	**9,653**	**8,978**	**8,349**	**7,765**	**7,221**	**6,716**	**6,246**	**5,808**	**5,402**	**5,024**	**4,672**	**4,345**	**4,041**	**3,758**	**3,495**	**3,250**
Total O & M Costs		**$**	**87,783**	**97,028**	**106,412**	**115,901**	**121,317**	**130,178**	**139,144**	**141,548**	**149,904**	**160,105**	**166,915**	**176,505**	**184,232**	**177,961**	**181,706**	**187,828**	**193,451**	**200,026**	**205,268**	**211,042**	**197,112**	**202,537**	**205,507**	**209,397**	**209,643**	**210,549**	**210,714**	**214,385**	**211,534**	**214,437**
Total O & M PV	**1,908,662**	**$**	**87,783**	**90,236**	**92,036**	**93,226**	**90,752**	**90,563**	**90,025**	**85,169**	**83,884**	**83,320**	**80,784**	**79,446**	**77,119**	**69,279**	**65,786**	**63,242**	**60,576**	**58,250**	**55,592**	**53,155**	**46,171**	**44,121**	**41,634**	**39,453**	**36,734**	**34,310**	**31,934**	**30,216**	**27,727**	**26,140**
Lifecycle Costs		**$**	**16,667,656**	**97,028**	**106,412**	**115,901**	**121,317**	**130,178**	**139,144**	**141,548**	**149,904**	**160,105**	**166,915**	**176,505**	**184,232**	**177,961**	**181,706**	**406,153**	**193,451**	**200,026**	**205,268**	**211,042**	**197,112**	**202,537**	**205,507**	**209,397**	**209,643**	**210,549**	**210,714**	**214,385**	**211,534**	**432,762**
Total PV (Inc GHG)	**18,588,660**	**$**	**16,667,656**	**90,236**	**92,036**	**93,226**	**90,752**	**90,563**	**90,025**	**85,169**	**83,884**	**83,320**	**80,784**	**79,446**	**77,119**	**69,279**	**65,786**	**136,752**	**60,576**	**58,250**	**55,592**	**53,155**	**46,171**	**44,121**	**41,634**	**39,453**	**36,734**	**34,310**	**31,934**	**30,216**	**27,727**	**52,754**
Total PV (Ex GHG)	**18,466,060**	**$**	**16,660,937**	**83,767**	**85,808**	**87,231**	**84,980**	**85,006**	**84,675**	**80,019**	**78,925**	**78,546**	**76,188**	**75,021**	**72,859**	**65,178**	**61,837**	**132,951**	**56,916**	**54,727**	**52,200**	**49,890**	**43,028**	**41,094**	**38,720**	**36,648**	**34,034**	**31,710**	**29,431**	**27,806**	**25,407**	**50,520**

Option Reference			Option SE1B
Real Discount Rate			7.0%
Length RM (m)			6,000
Diam RM (mm)			600
Pump Duty (L/s)			356
Length GM (m)			1,100

Costs

2010/2011 Energy Cost	0.157	/ kWh
Annual Real Energy Increase	2.18%	
2010/2011 GHG Cost	25.00	/ tonnes CO_2-e
Real GHG Increase	3.52%	

FY Ending		Units	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
Discount Factor			1.00	0.93	0.86	0.80	0.75	0.70	0.65	0.60	0.56	0.52	0.48	0.45	0.42	0.39	0.36	0.34	0.31	0.29	0.27	0.25	0.23	0.22	0.20	0.19	0.18	0.16	0.15	0.14	0.13	0.12
Developer Capital Costs ($ 2010/2011)																																
Water Supply																																
Mains		$																														
Pump Station		$																														
Reservoir		$																														
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Water Supply Cost		$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Internal Transfer			4,352,176																													
Gravity Mains		$	2,359,273																													
Rising Mains		$	8,938,789																													
Sewer Pump Station		$	1,717,664																													
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Sewer Cost		*$*	*17,367,902*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Developer Capital Costs		**$**	**17,367,902**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Developer PV	**17,367,902**	**$**	**17,367,902**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HWC Capital Costs ($ 2010/2011)																																
Water Supply																																
Mains		$																														
Pump Station		$																														
Reservoir		$																														
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Water Supply Cost		$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Mains		$																														
Pump Station		$																108,000														108,000
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Sewer Cost		$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*108,000*	-	-	-	-	-	-	-	-	-	-	-	-	-	*108,000*
Total HWC Capital Costs		**$**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**108,000**	-	-	-	-	-	-	-	-	-	-	-	-	-	**108,000**
Total HWC Capital PV	**49,529**	**$**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**36,364**	-	-	-	-	-	-	-	-	-	-	-	-	-	**13,165**
HWC Operating Costs ($ 2010/2011)																																
Water Supply																																
Mains	#DIV/0!	$																														
Pump Station	#DIV/0!	$																														
Reservoir	#DIV/0!	$																														
Chemical Dosing	#DIV/0!	$																														
Total Water Supply Cost		*$*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Mains	#DIV/0!	$																														
Pump Station	#DIV/0!	$																														
ET			200	400	600	800	1,000	1,200	1,400	1,600	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200	3,400	3,600	3,800	4,000	4,200	4,400	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500
ADWF (L/s)			2.2	4.4	6.6	8.8	11.0	13.2	15.4	17.6	19.8	22.0	24.2	26.4	28.6	30.8	33.0	35.2	37.4	39.6	41.8	44.0	46.2	48.4	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5
ADWF (ML/y)			69.4	138.8	208.1	277.5	346.9	416.3	485.7	555.0	624.4	693.8	763.2	832.6	901.9	971.3	1040.7	1110.1	1179.4	1248.8	1318.2	1387.6	1457.0	1526.3	1561.0	1561.0	1561.0	1561.0	1561.0	1561.0	1561.0	1561.0
Detention Time (hr)			218.1	109.0	72.7	54.5	43.6	36.3	31.2	27.3	24.2	21.8	19.8	18.2	16.8	15.6	14.5	13.6	12.8	12.1	11.5	10.9	10.4	9.9	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
Dose Cost Rate ($/ML)			99.0	99.0	99.0	99.0	99.0	99.0	87.0	87.0	87.0	87.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0
Chemical Dosing	9.63%	$	6,869	13,737	20,606	27,474	34,343	41,211	42,252	48,288	54,324	60,360	57,238	62,441	67,645	72,848	78,052	83,255	88,458	93,662	98,865	86,030	90,332	94,633	96,784	96,784	96,784	96,784	96,784	96,784	96,784	96,784
Total Sewer Cost		*$*	*7,457*	*14,488*	*21,592*	*28,714*	*35,843*	*42,976*	*44,271*	*50,575*	*56,879*	*63,185*	*60,320*	*65,793*	*71,267*	*76,741*	*82,215*	*87,689*	*93,163*	*98,637*	*104,112*	*91,535*	*96,107*	*100,680*	*102,966*	*102,966*	*102,966*	*102,966*	*102,966*	*102,966*	*102,966*	*102,966*
Chemical Dosing PV	**705,841**		**7,457**	**13,474**	**18,675**	**23,096**	**26,813**	**29,898**	**28,643**	**30,431**	**31,829**	**32,882**	**29,194**	**29,614**	**29,832**	**29,875**	**29,765**	**29,525**	**29,172**	**28,724**	**28,196**	**23,055**	**22,512**	**21,932**	**20,860**	**19,400**	**18,042**	**16,779**	**15,605**	**14,512**	**13,496**	**12,552**
Energy																																
kWh/year		kWh/year	211,198	211,198	211,198	211,198	211,198	211,198	211,198	211,198	211,198	211,198	211,198	211,198	211,198	211,198	211,198	211,198	211,198	211,198	211,198	211,198	211,198	211,198	211,198	211,198	211,198	211,198	211,198	211,198	211,198	211,198
$/kWh	2.18%	$/kWh	0.156	0.162	0.169	0.176	0.183	0.191	0.199	0.207	0.215	0.230	0.233	0.246	0.252	0.254	0.250	0.254	0.256	0.261	0.262	0.265	0.265	0.269	0.271	0.282	0.281	0.282	0.281	0.291	0.280	0.287
Total Energy Cost		*$*	*32,877*	*34,237*	*35,653*	*37,128*	*38,664*	*40,263*	*41,928*	*43,663*	*45,469*	*48,557*	*49,266*	*51,911*	*53,244*	*53,619*	*52,782*	*53,597*	*54,054*	*55,166*	*55,337*	*55,868*	*55,865*	*56,761*	*57,212*	*59,579*	*59,385*	*59,639*	*59,361*	*61,522*	*59,108*	*60,702*
Energy Cost PV	**577,244**		**32,877**	**31,841**	**30,837**	**29,864**	**28,922**	**28,010**	**27,127**	**26,272**	**25,443**	**25,269**	**23,844**	**23,365**	**22,288**	**20,874**	**19,109**	**18,046**	**16,926**	**16,065**	**14,987**	**14,072**	**13,086**	**12,365**	**11,591**	**11,225**	**10,406**	**9,719**	**8,996**	**8,671**	**7,748**	**7,400**
GHG Costs																																
kg CO_2-e/kWh		kg CO_2-e/kWh	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Tonnes CO_2-e		Tonnes CO_2-e	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188	188
$ / tonne CO_2-e	3.52%	$	25.00	25.88	26.79	27.73	28.71	29.72	30.77	31.85	32.97	34.13	35.33	36.58	37.86	39.20	40.58	42.01	43.48	45.01	46.60	48.24	49.94	51.70	53.51	55.40	57.35	59.37	61.46	63.62	65.86	68.18
GHG Cost		*$*	*4,699*	*4,865*	*5,036*	*5,213*	*5,397*	*5,587*	*5,783*	*5,987*	*6,197*	*6,416*	*6,641*	*6,875*	*7,117*	*7,368*	*7,627*	*7,896*	*8,173*	*8,461*	*8,759*	*9,067*	*9,387*	*9,717*	*10,059*	*10,413*	*10,780*	*11,159*	*11,552*	*11,958*	*12,379*	*12,815*
GHG PV	**85,745**		**4,699**	**4,524**	**4,355**	**4,193**	**4,037**	**3,886**	**3,742**	**3,602**	**3,468**	**3,339**	**3,214**	**3,095**	**2,979**	**2,868**	**2,761**	**2,658**	**2,559**	**2,464**	**2,372**	**2,284**	**2,199**	**2,117**	**2,038**	**1,962**	**1,889**	**1,818**	**1,751**	**1,685**	**1,623**	**1,562**
Total Operating Costs		**$**	**45,034**	**53,590**	**62,281**	**71,055**	**79,903**	**88,825**	**91,983**	**100,224**	**108,545**	**118,157**	**116,227**	**124,580**	**131,629**	**137,728**	**142,624**	**149,181**	**155,390**	**162,265**	**168,207**	**156,470**	**161,358**	**167,158**	**170,238**	**172,958**	**173,131**	**173,764**	**173,879**	**176,447**	**174,453**	**176,483**
Total Operating PV	**1,368,830**	**$**	**45,034**	**49,839**	**53,867**	**57,154**	**59,772**	**61,795**	**59,512**	**60,305**	**60,740**	**61,490**	**56,252**	**56,074**	**55,099**	**53,617**	**51,636**	**50,229**	**48,658**	**47,254**	**45,555**	**39,410**	**37,796**	**36,414**	**34,489**	**32,587**	**30,336**	**28,316**	**26,351**	**24,869**	**22,867**	**21,513**
HWC Maintenance Costs ($ 2010/2011)																																
Water Supply																																
Mains	#DIV/0!	$																														
Pump Station	#DIV/0!	$																														
Reservoir	#DIV/0!	$																														
Chemical Dosing	#DIV/0!	$																														
Total Water Supply Cost		*$*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Rising Mains	0.00%	$	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485	8,485
Gravity Mains	0.00%	$	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508
Pump Station	0.00%	$	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000
Chemical Dosing	#DIV/0!	$																														
Total Sewer Cost		*$*	*26,993*	*26,993*	*26,993*	*26,993*	*26,993*	*26,993*	*26,993*	*26,993*	*26,993*	*26,993*	*26,993*	*26,993*	*26,993*	*26,993*	*26,993*	*26,993*	*26,993*	*26,993*	*26,993*	*26,993*	*26,993*	*26,993*	*26,993*	*26,993*	*26,993*	*26,993*	*26,993*	*26,993*	*26,993*	*26,993*
Total Maintenance Costs		**$**	**26,993**	**26,993**	**26,993**	**26,993**	**26,993**	**26,993**	**26,993**	**26,993**	**26,993**	**26,993**	**26,993**	**26,993**	**26,993**	**26,993**	**26,993**	**26,993**	**26,993**	**26,993**	**26,993**	**26,993**	**26,993**	**26,993**	**26,993**	**26,993**	**26,993**	**26,993**	**26,993**	**26,993**	**26,993**	**26,993**
Total Maintenance PV	**341,904**	**$**	**26,993**	**25,104**	**23,347**	**21,712**	**20,192**	**18,779**	**17,464**	**16,242**	**15,105**	**14,048**	**13,064**	**12,150**	**11,299**	**10,508**	**9,773**	**9,089**	**8,453**	**7,861**	**7,311**	**6,799**	**6,323**	**5,880**	**5,469**	**5,086**	**4,730**	**4,399**	**4,091**	**3,805**	**3,538**	**3,291**
Total O & M Costs		**$**	**72,027**	**80,583**	**89,275**	**98,048**	**106,897**	**115,819**	**118,976**	**127,218**	**135,539**	**145,150**	**143,221**	**151,573**	**158,622**	**164,721**	**169,617**	**176,175**	**182,384**	**189,259**	**195,201**	**183,464**	**188,352**	**194,151**	**197,231**	**199,951**	**200,124**	**200,757**	**200,873**	**203,440**	**201,447**	**203,476**
Total O & M PV	**1,710,733**	**$**	**72,027**	**74,943**	**77,214**	**78,866**	**79,964**	**80,574**	**76,976**	**76,547**	**75,845**	**75,538**	**69,316**	**68,224**	**66,399**	**64,125**	**61,409**	**59,318**	**57,110**	**55,114**	**52,866**	**46,209**	**44,119**	**42,294**	**39,958**	**37,673**	**35,066**	**32,715**	**30,442**	**28,673**	**26,405**	**24,804**
Lifecycle Costs		**$**	**17,439,929**	**80,583**	**89,275**	**98,048**	**106,897**	**115,819**	**118,976**	**127,218**	**135,539**	**145,150**	**143,221**	**151,573**	**158,622**	**164,721**	**169,617**	**284,175**	**182,384**	**189,259**	**195,201**	**183,464**	**188,352**	**194,151**	**197,231**	**199,951**	**200,124**	**200,757**	**200,873**	**203,440**	**201,447**	**311,476**
Total PV (Inc GHG)	**19,128,165**	**$**	**17,439,929**	**74,943**	**77,214**	**78,866**	**79,964**	**80,574**	**76,976**	**76,547**	**75,845**	**75,538**	**69,316**	**68,224**	**66,399**	**64,125**	**61,409**	**95,682**	**57,110**	**55,114**	**52,866**	**46,209**	**44,119**	**42,294**	**39,958**	**37,673**	**35,066**	**32,715**	**30,442**	**28,673**	**26,405**	**37,969**
Total PV (Ex GHG)	**19,042,420**	**$**	**17,435,230**	**70,419**	**72,858**	**74,673**	**75,928**	**76,687**	**73,235**	**72,945**	**72,377**	**72,199**	**66,102**	**65,129**	**63,419**	**61,257**	**58,648**	**93,023**	**54,551**	**52,650**	**50,494**	**43,925**	**41,921**	**40,178**	**37,920**	**35,711**	**33,177**	**30,896**	**28,692**	**26,988**	**24,782**	**36,407**

Option Reference			Option SE1B
Real Discount Rate			7.0%
Length RM (m)			3,500
Diam RM (mm)			600
Pump Duty (L/s)			356
Length GM (m)			3,600

Costs

2010/2011 Energy Cost	0.157	/ kWh
Annual Real Energy Increase	2.18%	
2010/2011 GHG Cost	25.00	/ tonnes CO_2-e
Real GHG Increase	3.52%	

FY Ending		Units	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
Discount Factor			1.00	0.93	0.86	0.80	0.75	0.70	0.65	0.60	0.56	0.52	0.48	0.45	0.42	0.39	0.36	0.34	0.31	0.29	0.27	0.25	0.23	0.22	0.20	0.19	0.18	0.16	0.15	0.14	0.13	0.12
Developer Capital Costs ($ 2010/2011)																																
Water Supply																																
Mains		$																														
Pump Station		$																														
Reservoir		$																														
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Water Supply Cost		$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Internal Transfer			3,320,409																													
Gravity Mains		$	7,412,888																													
Rising Mains		$	5,727,547																													
Sewer Pump Station		$	2,373,766																													
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Sewer Cost		*$*	*18,834,609*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Developer Capital Costs		**$**	**18,834,609**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Developer PV	**18,834,609**	**$**	**18,834,609**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HWC Capital Costs ($ 2010/2011)																																
Water Supply																																
Mains		$																														
Pump Station		$																														
Reservoir		$																														
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Water Supply Cost		$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Mains		$																														
Pump Station		$																238,950														238,950
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Sewer Cost		$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*238,950*	-	-	-	-	-	-	-	-	-	-	-	-	-	*238,950*
Total HWC Capital Costs		**$**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**238,950**	-	-	-	-	-	-	-	-	-	-	-	-	-	**238,950**
Total HWC Capital PV	**109,583**	**$**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**80,455**	-	-	-	-	-	-	-	-	-	-	-	-	-	**29,128**
HWC Operating Costs ($ 2010/2011)																																
Water Supply																																
Mains	#DIV/0!	$																														
Pump Station	#DIV/0!	$																														
Reservoir	#DIV/0!	$																														
Chemical Dosing	#DIV/0!	$																														
Total Water Supply Cost		*$*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Mains	#DIV/0!	$																														
Pump Station	#DIV/0!	$																														
ET			200	400	600	800	1,000	1,200	1,400	1,600	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200	3,400	3,600	3,800	4,000	4,200	4,400	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500
ADWF (L/s)			2.2	4.4	6.6	8.8	11.0	13.2	15.4	17.6	19.8	22.0	24.2	26.4	28.6	30.8	33.0	35.2	37.4	39.6	41.8	44.0	46.2	48.4	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5
ADWF (ML/y)			69.4	138.8	208.1	277.5	346.9	416.3	485.7	555.0	624.4	693.8	763.2	832.6	901.9	971.3	1040.7	1110.1	1179.4	1248.8	1318.2	1387.6	1457.0	1526.3	1561.0	1561.0	1561.0	1561.0	1561.0	1561.0	1561.0	1561.0
Detention Time (hr)			128.9	64.4	43.0	32.2	25.8	21.5	18.4	16.1	14.3	12.9	11.7	10.7	9.9	9.2	8.6	8.1	7.6	7.2	6.8	6.4	6.1	5.9	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
Dose Cost Rate ($/ML)			99.0	99.0	99.0	87.0	87.0	87.0	75.0	75.0	75.0	75.0	75.0	62.0	62.0	62.0	62.0	62.0	62.0	49.0	49.0	49.0	49.0	49.0	49.0	49.0	49.0	49.0	49.0	49.0	49.0	49.0
Chemical Dosing	8.67%	$	6,869	13,737	20,606	24,144	30,180	36,216	36,424	41,628	46,831	52,034	57,238	51,618	55,920	60,221	64,523	68,824	73,126	61,192	64,592	67,992	71,391	74,791	76,491	76,491	76,491	76,491	76,491	76,491	76,491	76,491
Total Sewer Cost		*$*	*7,368*	*14,444*	*21,562*	*25,350*	*31,651*	*37,954*	*38,419*	*43,891*	*49,364*	*54,838*	*60,312*	*54,950*	*59,522*	*64,094*	*68,667*	*73,239*	*77,812*	*66,137*	*69,808*	*73,479*	*77,149*	*80,820*	*82,656*	*82,656*	*82,656*	*82,656*	*82,656*	*82,656*	*82,656*	*82,656*
Chemical Dosing PV	**592,732**		**7,368**	**13,433**	**18,649**	**20,390**	**23,676**	**26,404**	**24,856**	**26,409**	**27,623**	**28,538**	**29,190**	**24,733**	**24,916**	**24,952**	**24,860**	**24,660**	**24,365**	**19,260**	**18,906**	**18,507**	**18,071**	**17,606**	**16,746**	**15,573**	**14,483**	**13,469**	**12,527**	**11,650**	**10,834**	**10,076**
Energy																																
kWh/year		kWh/year	365,342	365,342	365,342	365,342	365,342	365,342	365,342	365,342	365,342	365,342	365,342	365,342	365,342	365,342	365,342	365,342	365,342	365,342	365,342	365,342	365,342	365,342	365,342	365,342	365,342	365,342	365,342	365,342	365,342	365,342
$/kWh	2.18%	$/kWh	0.156	0.162	0.169	0.176	0.183	0.191	0.199	0.207	0.215	0.230	0.233	0.246	0.252	0.254	0.250	0.254	0.256	0.261	0.262	0.265	0.265	0.269	0.271	0.282	0.281	0.282	0.281	0.291	0.280	0.287
Total Energy Cost		*$*	*56,873*	*59,225*	*61,675*	*64,226*	*66,883*	*69,649*	*72,530*	*75,530*	*78,654*	*83,996*	*85,222*	*89,798*	*92,105*	*92,754*	*91,305*	*92,715*	*93,505*	*95,430*	*95,724*	*96,644*	*96,638*	*98,188*	*98,969*	*103,063*	*102,727*	*103,166*	*102,687*	*106,425*	*102,248*	*105,005*
Energy Cost PV	**998,548**		**56,873**	**55,079**	**53,343**	**51,661**	**50,032**	**48,454**	**46,926**	**45,446**	**44,013**	**43,712**	**41,246**	**40,419**	**38,555**	**36,108**	**33,056**	**31,217**	**29,279**	**27,790**	**25,925**	**24,342**	**22,636**	**21,389**	**20,050**	**19,418**	**18,000**	**16,812**	**15,562**	**15,000**	**13,402**	**12,800**
GHG Costs																																
kg CO_2-e/kWh		kg CO_2-e/kWh	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Tonnes CO_2-e		Tonnes CO_2-e	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325	325
$ / tonne CO_2-e	3.52%	$	25.00	25.88	26.79	27.73	28.71	29.72	30.77	31.85	32.97	34.13	35.33	36.58	37.86	39.20	40.58	42.01	43.48	45.01	46.60	48.24	49.94	51.70	53.51	55.40	57.35	59.37	61.46	63.62	65.86	68.18
GHG Cost		*$*	*8,129*	*8,415*	*8,711*	*9,018*	*9,335*	*9,664*	*10,004*	*10,356*	*10,721*	*11,098*	*11,489*	*11,893*	*12,312*	*12,745*	*13,194*	*13,658*	*14,139*	*14,637*	*15,152*	*15,685*	*16,237*	*16,809*	*17,401*	*18,013*	*18,647*	*19,303*	*19,983*	*20,686*	*21,415*	*22,168*
GHG PV	**148,326**		**8,129**	**7,826**	**7,534**	**7,254**	**6,983**	**6,723**	**6,473**	**6,231**	**5,999**	**5,776**	**5,560**	**5,353**	**5,154**	**4,962**	**4,777**	**4,599**	**4,427**	**4,262**	**4,104**	**3,951**	**3,803**	**3,662**	**3,525**	**3,394**	**3,267**	**3,146**	**3,028**	**2,916**	**2,807**	**2,702**
Total Operating Costs		**$**	**72,370**	**82,084**	**91,948**	**98,593**	**107,868**	**117,267**	**120,952**	**129,777**	**138,739**	**149,932**	**157,023**	**156,641**	**163,939**	**169,593**	**173,166**	**179,612**	**185,456**	**176,204**	**180,684**	**185,808**	**190,024**	**195,817**	**199,025**	**203,731**	**204,030**	**205,125**	**205,325**	**209,767**	**206,318**	**209,829**
Total Operating PV	**1,739,606**	**$**	**72,370**	**76,338**	**79,526**	**79,304**	**80,691**	**81,581**	**78,255**	**78,087**	**77,636**	**78,026**	**75,996**	**70,505**	**68,624**	**66,022**	**62,694**	**60,476**	**58,072**	**51,313**	**48,934**	**46,799**	**44,511**	**42,657**	**40,321**	**38,385**	**35,751**	**33,427**	**31,117**	**29,565**	**27,043**	**25,578**
HWC Maintenance Costs ($ 2010/2011)																																
Water Supply																																
Mains	#DIV/0!	$																														
Pump Station	#DIV/0!	$																														
Reservoir	#DIV/0!	$																														
Chemical Dosing	#DIV/0!	$																														
Total Water Supply Cost		*$*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Rising Mains	0.00%	$	6,060	6,060	6,060	6,060	6,060	6,060	6,060	6,060	6,060	6,060	6,060	6,060	6,060	6,060	6,060	6,060	6,060	6,060	6,060	6,060	6,060	6,060	6,060	6,060	6,060	6,060	6,060	6,060	6,060	6,060
Gravity Mains	0.00%	$	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209
Pump Station	0.00%	$	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000
Chemical Dosing	#DIV/0!	$																														
Total Sewer Cost		*$*	*30,269*	*30,269*	*30,269*	*30,269*	*30,269*	*30,269*	*30,269*	*30,269*	*30,269*	*30,269*	*30,269*	*30,269*	*30,269*	*30,269*	*30,269*	*30,269*	*30,269*	*30,269*	*30,269*	*30,269*	*30,269*	*30,269*	*30,269*	*30,269*	*30,269*	*30,269*	*30,269*	*30,269*	*30,269*	*30,269*
Total Maintenance Costs		**$**	**30,269**	**30,269**	**30,269**	**30,269**	**30,269**	**30,269**	**30,269**	**30,269**	**30,269**	**30,269**	**30,269**	**30,269**	**30,269**	**30,269**	**30,269**	**30,269**	**30,269**	**30,269**	**30,269**	**30,269**	**30,269**	**30,269**	**30,269**	**30,269**	**30,269**	**30,269**	**30,269**	**30,269**	**30,269**	**30,269**
Total Maintenance PV	**383,398**	**$**	**30,269**	**28,151**	**26,180**	**24,347**	**22,643**	**21,058**	**19,584**	**18,213**	**16,938**	**15,753**	**14,650**	**13,624**	**12,671**	**11,784**	**10,959**	**10,192**	**9,478**	**8,815**	**8,198**	**7,624**	**7,090**	**6,594**	**6,132**	**5,703**	**5,304**	**4,933**	**4,587**	**4,266**	**3,968**	**3,690**
Total O & M Costs		**$**	**102,639**	**112,353**	**122,218**	**128,863**	**138,138**	**147,536**	**151,222**	**160,047**	**169,009**	**180,202**	**187,292**	**186,911**	**194,208**	**199,863**	**203,435**	**209,882**	**215,725**	**206,473**	**210,953**	**216,077**	**220,294**	**226,087**	**229,295**	**234,001**	**234,300**	**235,395**	**235,595**	**240,036**	**236,587**	**240,098**
Total O & M PV	**2,123,004**	**$**	**102,639**	**104,489**	**105,706**	**103,652**	**103,334**	**102,639**	**97,839**	**96,300**	**94,574**	**93,779**	**90,646**	**84,129**	**81,295**	**77,805**	**73,652**	**70,667**	**67,550**	**60,128**	**57,132**	**54,423**	**51,601**	**49,251**	**46,454**	**44,089**	**41,055**	**38,359**	**35,704**	**33,831**	**31,011**	**29,268**
Lifecycle Costs		**$**	**18,937,248**	**112,353**	**122,218**	**128,863**	**138,138**	**147,536**	**151,222**	**160,047**	**169,009**	**180,202**	**187,292**	**186,911**	**194,208**	**199,863**	**203,435**	**448,832**	**215,725**	**206,473**	**210,953**	**216,077**	**220,294**	**226,087**	**229,295**	**234,001**	**234,300**	**235,395**	**235,595**	**240,036**	**236,587**	**479,048**
Total PV (Inc GHG)	**21,067,195**	**$**	**18,937,248**	**104,489**	**105,706**	**103,652**	**103,334**	**102,639**	**97,839**	**96,300**	**94,574**	**93,779**	**90,646**	**84,129**	**81,295**	**77,805**	**73,652**	**151,122**	**67,550**	**60,128**	**57,132**	**54,423**	**51,601**	**49,251**	**46,454**	**44,089**	**41,055**	**38,359**	**35,704**	**33,831**	**31,011**	**58,396**
Total PV (Ex GHG)	**20,918,869**	**$**	**18,929,119**	**96,663**	**98,172**	**96,398**	**96,351**	**95,916**	**91,367**	**90,069**	**88,575**	**88,003**	**85,086**	**78,776**	**76,141**	**72,844**	**68,876**	**146,523**	**63,123**	**55,865**	**53,028**	**50,473**	**47,798**	**45,589**	**42,928**	**40,695**	**37,787**	**35,214**	**32,676**	**30,916**	**28,204**	**55,694**

Option Reference			Option SE1B
Real Discount Rate			7.0%
Length RM (m)			3,500
Diam RM (mm)			750
Pump Duty (L/s)			356
Length GM (m)			3,600

Costs

2010/2011 Energy Cost	0.157	/ kWh
Annual Real Energy Increase	2.18%	
2010/2011 GHG Cost	25.00	/ tonnes CO_2-e
Real GHG Increase	3.52%	

FY Ending		Units	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
Discount Factor			1.00	0.93	0.86	0.80	0.75	0.70	0.65	0.60	0.56	0.52	0.48	0.45	0.42	0.39	0.36	0.34	0.31	0.29	0.27	0.25	0.23	0.22	0.20	0.19	0.18	0.16	0.15	0.14	0.13	0.12
Developer Capital Costs ($ 2010/2011)																																
Water Supply																																
Mains		$																														
Pump Station		$																														
Reservoir		$																														
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Water Supply Cost		$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Internal Transfer			3,320,409																													
Gravity Mains		$	7,412,888																													
Rising Mains		$	7,504,196																													
Sewer Pump Station		$	2,193,844																													
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Sewer Cost		*$*	*20,431,337*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Developer Capital Costs		**$**	**20,431,337**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Developer PV	**20,431,337**	**$**	**20,431,337**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HWC Capital Costs ($ 2010/2011)																																
Water Supply																																
Mains		$																														
Pump Station		$																														
Reservoir		$																														
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Water Supply Cost		$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Mains		$																														
Pump Station		$																218,325														218,325
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Sewer Cost		$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*218,325*	-	-	-	-	-	-	-	-	-	-	-	-	-	*218,325*
Total HWC Capital Costs		**$**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**218,325**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**218,325**
Total HWC Capital PV	**100,124**	**$**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**73,510**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**26,614**
HWC Operating Costs ($ 2010/2011)																																
Water Supply																																
Mains	#DIV/0!	$																														
Pump Station	#DIV/0!	$																														
Reservoir	#DIV/0!	$																														
Chemical Dosing	#DIV/0!	$																														
Total Water Supply Cost		*$*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Mains	#DIV/0!	$																														
Pump Station	#DIV/0!	$																														
ET			200	400	600	800	1,000	1,200	1,400	1,600	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200	3,400	3,600	3,800	4,000	4,200	4,400	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500
ADWF (L/s)			2.2	4.4	6.6	8.8	11.0	13.2	15.4	17.6	19.8	22.0	24.2	26.4	28.6	30.8	33.0	35.2	37.4	39.6	41.8	44.0	46.2	48.4	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5
ADWF (ML/y)			69.4	138.8	208.1	277.5	346.9	416.3	485.7	555.0	624.4	693.8	763.2	832.6	901.9	971.3	1040.7	1110.1	1179.4	1248.8	1318.2	1387.6	1457.0	1526.3	1561.0	1561.0	1561.0	1561.0	1561.0	1561.0	1561.0	1561.0
Detention Time (hr)			199.1	99.6	66.4	49.8	39.8	33.2	28.4	24.9	22.1	19.9	18.1	16.6	15.3	14.2	13.3	12.4	11.7	11.1	10.5	10.0	9.5	9.1	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9
Dose Cost Rate ($/ML)			99.0	99.0	99.0	99.0	99.0	87.0	87.0	87.0	87.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0
Chemical Dosing	9.55%	$	6,869	13,737	20,606	27,474	34,343	36,216	42,252	48,288	54,324	52,034	57,238	62,441	67,645	72,848	78,052	83,255	88,458	77,427	81,729	86,030	90,332	94,633	96,784	96,784	96,784	96,784	96,784	96,784	96,784	96,784
Total Sewer Cost		*$*	*7,438*	*14,479*	*21,586*	*28,709*	*35,839*	*37,966*	*44,268*	*50,572*	*56,877*	*54,845*	*60,318*	*65,792*	*71,266*	*76,739*	*82,214*	*87,688*	*93,162*	*82,389*	*86,961*	*91,534*	*96,106*	*100,679*	*102,965*	*102,965*	*102,965*	*102,965*	*102,965*	*102,965*	*102,965*	*102,965*
Chemical Dosing PV	**688,589**		**7,438**	**13,465**	**18,670**	**23,092**	**26,810**	**26,412**	**28,641**	**30,429**	**31,827**	**28,542**	**29,193**	**29,613**	**29,832**	**29,874**	**29,765**	**29,525**	**29,172**	**23,993**	**23,551**	**23,055**	**22,512**	**21,932**	**20,860**	**19,400**	**18,042**	**16,779**	**15,604**	**14,512**	**13,496**	**12,552**
Energy																																
kWh/year		kWh/year	335,091	335,091	335,091	335,091	335,091	335,091	335,091	335,091	335,091	335,091	335,091	335,091	335,091	335,091	335,091	335,091	335,091	335,091	335,091	335,091	335,091	335,091	335,091	335,091	335,091	335,091	335,091	335,091	335,091	335,091
$/kWh	2.18%	$/kWh	0.156	0.162	0.169	0.176	0.183	0.191	0.199	0.207	0.215	0.230	0.233	0.246	0.252	0.254	0.250	0.254	0.256	0.261	0.262	0.265	0.265	0.269	0.271	0.282	0.281	0.282	0.281	0.291	0.280	0.287
Total Energy Cost		*$*	*52,164*	*54,321*	*56,568*	*58,908*	*61,345*	*63,882*	*66,524*	*69,276*	*72,141*	*77,041*	*78,166*	*82,363*	*84,479*	*85,073*	*83,745*	*85,038*	*85,762*	*87,528*	*87,798*	*88,642*	*88,636*	*90,058*	*90,774*	*94,529*	*94,221*	*94,624*	*94,184*	*97,613*	*93,781*	*96,310*
Energy Cost PV	**915,867**		**52,164**	**50,519**	**48,926**	**47,383**	**45,889**	**44,442**	**43,041**	**41,683**	**40,369**	**40,093**	**37,831**	**37,072**	**35,363**	**33,119**	**30,319**	**28,632**	**26,855**	**25,489**	**23,778**	**22,326**	**20,762**	**19,618**	**18,390**	**17,810**	**16,510**	**15,420**	**14,274**	**13,758**	**12,292**	**11,740**
GHG Costs																																
kg CO_2-e/kWh		kg CO_2-e/kWh	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Tonnes CO_2-e		Tonnes CO_2-e	298	298	298	298	298	298	298	298	298	298	298	298	298	298	298	298	298	298	298	298	298	298	298	298	298	298	298	298	298	298
$ / tonne CO_2-e	3.52%	$	25.00	25.88	26.79	27.73	28.71	29.72	30.77	31.85	32.97	34.13	35.33	36.58	37.86	39.20	40.58	42.01	43.48	45.01	46.60	48.24	49.94	51.70	53.51	55.40	57.35	59.37	61.46	63.62	65.86	68.18
GHG Cost		*$*	*7,456*	*7,718*	*7,990*	*8,271*	*8,562*	*8,864*	*9,176*	*9,499*	*9,833*	*10,179*	*10,537*	*10,908*	*11,292*	*11,690*	*12,101*	*12,527*	*12,968*	*13,425*	*13,897*	*14,386*	*14,893*	*15,417*	*15,960*	*16,522*	*17,103*	*17,705*	*18,328*	*18,974*	*19,641*	*20,333*
GHG PV	**136,044**		**7,456**	**7,178**	**6,910**	**6,653**	**6,405**	**6,166**	**5,937**	**5,715**	**5,502**	**5,297**	**5,100**	**4,910**	**4,727**	**4,551**	**4,381**	**4,218**	**4,061**	**3,909**	**3,764**	**3,624**	**3,488**	**3,358**	**3,233**	**3,113**	**2,997**	**2,885**	**2,778**	**2,674**	**2,575**	**2,479**
Total Operating Costs		**$**	**67,058**	**76,518**	**86,144**	**95,888**	**105,746**	**110,711**	**119,968**	**129,347**	**138,852**	**142,065**	**149,022**	**159,063**	**167,037**	**173,503**	**178,060**	**185,253**	**191,893**	**183,342**	**188,657**	**194,562**	**199,635**	**206,154**	**209,699**	**214,016**	**214,290**	**215,294**	**215,478**	**219,552**	**216,388**	**219,609**
Total Operating PV	**1,740,500**	**$**	**67,058**	**71,162**	**74,506**	**77,129**	**79,104**	**77,021**	**77,618**	**77,828**	**77,699**	**73,932**	**72,124**	**71,595**	**69,921**	**67,544**	**64,465**	**62,375**	**60,088**	**53,391**	**51,093**	**49,004**	**46,762**	**44,909**	**42,484**	**40,323**	**37,548**	**35,084**	**32,656**	**30,944**	**28,363**	**26,770**
HWC Maintenance Costs ($ 2010/2011)																																
Water Supply																																
Mains	#DIV/0!	$																														
Pump Station	#DIV/0!	$																														
Reservoir	#DIV/0!	$																														
Chemical Dosing	#DIV/0!	$																														
Total Water Supply Cost		*$*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Rising Mains	0.00%	$	6,414	6,414	6,414	6,414	6,414	6,414	6,414	6,414	6,414	6,414	6,414	6,414	6,414	6,414	6,414	6,414	6,414	6,414	6,414	6,414	6,414	6,414	6,414	6,414	6,414	6,414	6,414	6,414	6,414	6,414
Gravity Mains	0.00%	$	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209	8,209
Pump Station	0.00%	$	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000
Chemical Dosing	#DIV/0!	$																														
Total Sewer Cost		*$*	*30,624*	*30,624*	*30,624*	*30,624*	*30,624*	*30,624*	*30,624*	*30,624*	*30,624*	*30,624*	*30,624*	*30,624*	*30,624*	*30,624*	*30,624*	*30,624*	*30,624*	*30,624*	*30,624*	*30,624*	*30,624*	*30,624*	*30,624*	*30,624*	*30,624*	*30,624*	*30,624*	*30,624*	*30,624*	*30,624*
Total Maintenance Costs		**$**	**30,624**	**30,624**	**30,624**	**30,624**	**30,624**	**30,624**	**30,624**	**30,624**	**30,624**	**30,624**	**30,624**	**30,624**	**30,624**	**30,624**	**30,624**	**30,624**	**30,624**	**30,624**	**30,624**	**30,624**	**30,624**	**30,624**	**30,624**	**30,624**	**30,624**	**30,624**	**30,624**	**30,624**	**30,624**	**30,624**
Total Maintenance PV	**387,887**	**$**	**30,624**	**28,480**	**26,487**	**24,632**	**22,908**	**21,305**	**19,813**	**18,426**	**17,137**	**15,937**	**14,821**	**13,784**	**12,819**	**11,922**	**11,087**	**10,311**	**9,589**	**8,918**	**8,294**	**7,713**	**7,173**	**6,671**	**6,204**	**5,770**	**5,366**	**4,990**	**4,641**	**4,316**	**4,014**	**3,733**
Total O & M Costs		**$**	**97,682**	**107,142**	**116,768**	**126,512**	**136,370**	**141,335**	**150,592**	**159,971**	**169,475**	**172,689**	**179,645**	**189,687**	**197,661**	**204,127**	**208,683**	**215,877**	**222,517**	**213,966**	**219,280**	**225,186**	**230,259**	**236,778**	**240,323**	**244,640**	**244,914**	**245,918**	**246,102**	**250,175**	**247,012**	**250,232**
Total O & M PV	**2,128,387**	**$**	**97,682**	**99,642**	**100,992**	**101,761**	**102,012**	**98,325**	**97,432**	**96,255**	**94,835**	**89,869**	**86,945**	**85,379**	**82,740**	**79,465**	**75,553**	**72,686**	**69,677**	**62,309**	**59,387**	**56,717**	**53,936**	**51,580**	**48,688**	**46,093**	**42,914**	**40,074**	**37,297**	**35,260**	**32,377**	**30,503**
Lifecycle Costs		**$**	**20,529,018**	**107,142**	**116,768**	**126,512**	**136,370**	**141,335**	**150,592**	**159,971**	**169,475**	**172,689**	**179,645**	**189,687**	**197,661**	**204,127**	**208,683**	**434,202**	**222,517**	**213,966**	**219,280**	**225,186**	**230,259**	**236,778**	**240,323**	**244,640**	**244,914**	**245,918**	**246,102**	**250,175**	**247,012**	**468,557**
Total PV (Inc GHG)	**22,659,848**	**$**	**20,529,018**	**99,642**	**100,992**	**101,761**	**102,012**	**98,325**	**97,432**	**96,255**	**94,835**	**89,869**	**86,945**	**85,379**	**82,740**	**79,465**	**75,553**	**146,196**	**69,677**	**62,309**	**59,387**	**56,717**	**53,936**	**51,580**	**48,688**	**46,093**	**42,914**	**40,074**	**37,297**	**35,260**	**32,377**	**57,117**
Total PV (Ex GHG)	**22,523,803**	**$**	**20,521,562**	**92,464**	**94,082**	**95,108**	**95,607**	**92,159**	**91,495**	**90,539**	**89,333**	**84,572**	**81,845**	**80,469**	**78,013**	**74,915**	**71,171**	**141,978**	**65,616**	**58,400**	**55,623**	**53,094**	**50,447**	**48,222**	**45,455**	**42,980**	**39,918**	**37,189**	**34,519**	**32,586**	**29,803**	**54,639**

Option Reference			Option SE1B
Real Discount Rate			7.0%
Length RM (m)			6,350
Diam RM (mm)			450
Pump Duty (L/s)			356
Length GM (m)			1,100

Costs

2010/2011 Energy Cost	0.157	/ kWh
Annual Real Energy Increase	2.18%	
2010/2011 GHG Cost	25.00	/ tonnes CO_2-e
Real GHG Increase	3.52%	

FY Ending		Units	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
Discount Factor			1.00	0.93	0.86	0.80	0.75	0.70	0.65	0.60	0.56	0.52	0.48	0.45	0.42	0.39	0.36	0.34	0.31	0.29	0.27	0.25	0.23	0.22	0.20	0.19	0.18	0.16	0.15	0.14	0.13	0.12
Developer Capital Costs ($ 2010/2011)																																
Water Supply																																
Mains		$																														
Pump Station		$																														
Reservoir		$																														
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Water Supply Cost		$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Internal Transfer			3,320,409																													
Gravity Mains		$	2,359,273																													
Rising Mains		$	7,380,331																													
Sewer Pump Station		$	2,373,766																													
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Sewer Cost		*$*	*15,433,779*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Developer Capital Costs		**$**	**15,433,779**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Developer PV	**15,433,779**	**$**	**15,433,779**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HWC Capital Costs ($ 2010/2011)																																
Water Supply																																
Mains		$																														
Pump Station		$																														
Reservoir		$																														
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Water Supply Cost		$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Mains		$																														
Pump Station		$																238,950														238,950
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Sewer Cost		$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*238,950*	-	-	-	-	-	-	-	-	-	-	-	-	-	*238,950*
Total HWC Capital Costs		**$**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**238,950**	-	-	-	-	-	-	-	-	-	-	-	-	-	**238,950**
Total HWC Capital PV	**109,583**	**$**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**80,455**	-	-	-	-	-	-	-	-	-	-	-	-	-	**29,128**
HWC Operating Costs ($ 2010/2011)																																
Water Supply																																
Mains	#DIV/0!	$																														
Pump Station	#DIV/0!	$																														
Reservoir	#DIV/0!	$																														
Chemical Dosing	#DIV/0!	$																														
Total Water Supply Cost		*$*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Mains	#DIV/0!	$																														
Pump Station	#DIV/0!	$																														
ET			200	400	600	800	1,000	1,200	1,400	1,600	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200	3,400	3,600	3,800	4,000	4,200	4,400	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500
ADWF (L/s)			2.2	4.4	6.6	8.8	11.0	13.2	15.4	17.6	19.8	22.0	24.2	26.4	28.6	30.8	33.0	35.2	37.4	39.6	41.8	44.0	46.2	48.4	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5
ADWF (ML/y)			69.4	138.8	208.1	277.5	346.9	416.3	485.7	555.0	624.4	693.8	763.2	832.6	901.9	971.3	1040.7	1110.1	1179.4	1248.8	1318.2	1387.6	1457.0	1526.3	1561.0	1561.0	1561.0	1561.0	1561.0	1561.0	1561.0	1561.0
Detention Time (hr)			131.5	65.7	43.8	32.9	26.3	21.9	18.8	16.4	14.6	13.1	12.0	11.0	10.1	9.4	8.8	8.2	7.7	7.3	6.9	6.6	6.3	6.0	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
Dose Cost Rate ($/ML)			99.0	99.0	99.0	87.0	87.0	87.0	75.0	75.0	75.0	75.0	75.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	49.0	49.0	49.0	49.0	49.0	49.0	49.0	49.0	49.0	49.0	49.0	49.0
Chemical Dosing	8.71%	$	6,869	13,737	20,606	24,144	30,180	36,216	36,424	41,628	46,831	52,034	57,238	51,618	55,920	60,221	64,523	68,824	73,126	77,427	64,592	67,992	71,391	74,791	76,491	76,491	76,491	76,491	76,491	76,491	76,491	76,491
Total Sewer Cost		*$*	*7,371*	*14,445*	*21,563*	*25,350*	*31,651*	*37,954*	*38,419*	*43,892*	*49,365*	*54,838*	*60,312*	*54,950*	*59,522*	*64,095*	*68,667*	*73,240*	*77,812*	*82,385*	*69,808*	*73,479*	*77,150*	*80,820*	*82,656*	*82,656*	*82,656*	*82,656*	*82,656*	*82,656*	*82,656*	*82,656*
Chemical Dosing PV	**597,471**		**7,371**	**13,434**	**18,650**	**20,391**	**23,677**	**26,404**	**24,857**	**26,410**	**27,624**	**28,538**	**29,190**	**24,733**	**24,916**	**24,952**	**24,861**	**24,660**	**24,365**	**23,992**	**18,906**	**18,507**	**18,071**	**17,606**	**16,746**	**15,573**	**14,483**	**13,469**	**12,527**	**11,650**	**10,834**	**10,076**
Energy																																
kWh/year		kWh/year	397,033	397,033	397,033	397,033	397,033	397,033	397,033	397,033	397,033	397,033	397,033	397,033	397,033	397,033	397,033	397,033	397,033	397,033	397,033	397,033	397,033	397,033	397,033	397,033	397,033	397,033	397,033	397,033	397,033	397,033
$/kWh	2.18%	$/kWh	0.156	0.162	0.169	0.176	0.183	0.191	0.199	0.207	0.215	0.230	0.233	0.246	0.252	0.254	0.250	0.254	0.256	0.261	0.262	0.265	0.265	0.269	0.271	0.282	0.281	0.282	0.281	0.291	0.280	0.287
Total Energy Cost		*$*	*61,806*	*64,363*	*67,025*	*69,797*	*72,684*	*75,691*	*78,821*	*82,082*	*85,477*	*91,282*	*92,615*	*97,588*	*100,095*	*100,799*	*99,225*	*100,757*	*101,616*	*103,708*	*104,028*	*105,027*	*105,020*	*106,705*	*107,554*	*112,003*	*111,638*	*112,115*	*111,594*	*115,657*	*111,117*	*114,113*
Energy Cost PV	**1,085,165**		**61,806**	**59,857**	**57,970**	**56,142**	**54,372**	**52,657**	**50,997**	**49,389**	**47,831**	**47,504**	**44,824**	**43,925**	**41,899**	**39,241**	**35,924**	**33,925**	**31,819**	**30,201**	**28,174**	**26,453**	**24,600**	**23,245**	**21,790**	**21,103**	**19,562**	**18,270**	**16,912**	**16,301**	**14,565**	**13,910**
GHG Costs																																
kg CO_2-e/kWh		kg CO_2-e/kWh	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Tonnes CO_2-e		Tonnes CO_2-e	353	353	353	353	353	353	353	353	353	353	353	353	353	353	353	353	353	353	353	353	353	353	353	353	353	353	353	353	353	353
$ / tonne CO_2-e	3.52%	$	25.00	25.88	26.79	27.73	28.71	29.72	30.77	31.85	32.97	34.13	35.33	36.58	37.86	39.20	40.58	42.01	43.48	45.01	46.60	48.24	49.94	51.70	53.51	55.40	57.35	59.37	61.46	63.62	65.86	68.18
GHG Cost		*$*	*8,834*	*9,145*	*9,467*	*9,800*	*10,145*	*10,502*	*10,872*	*11,254*	*11,651*	*12,061*	*12,485*	*12,925*	*13,380*	*13,851*	*14,338*	*14,843*	*15,365*	*15,906*	*16,466*	*17,046*	*17,646*	*18,267*	*18,910*	*19,576*	*20,265*	*20,978*	*21,716*	*22,481*	*23,272*	*24,091*
GHG PV	**161,192**		**8,834**	**8,505**	**8,188**	**7,883**	**7,589**	**7,306**	**7,034**	**6,772**	**6,519**	**6,277**	**6,043**	**5,817**	**5,601**	**5,392**	**5,191**	**4,998**	**4,811**	**4,632**	**4,459**	**4,293**	**4,133**	**3,979**	**3,831**	**3,688**	**3,551**	**3,419**	**3,291**	**3,168**	**3,050**	**2,937**
Total Operating Costs		**$**	**78,011**	**87,953**	**98,055**	**104,947**	**114,480**	**124,147**	**128,112**	**137,228**	**146,492**	**158,181**	**165,412**	**165,463**	**172,997**	**178,745**	**182,230**	**188,840**	**194,793**	**201,999**	**190,302**	**195,552**	**199,816**	**205,792**	**209,120**	**214,234**	**214,559**	**215,749**	**215,966**	**220,793**	**217,045**	**220,861**
Total Operating PV	**1,843,829**	**$**	**78,011**	**81,796**	**84,808**	**84,415**	**85,637**	**86,368**	**82,887**	**82,570**	**81,974**	**82,319**	**80,057**	**74,475**	**72,416**	**69,584**	**65,975**	**63,583**	**60,996**	**58,825**	**51,539**	**49,254**	**46,805**	**44,830**	**42,366**	**40,364**	**37,596**	**35,158**	**32,730**	**31,119**	**28,449**	**26,923**
HWC Maintenance Costs ($ 2010/2011)																																
Water Supply																																
Mains	#DIV/0!	$																														
Pump Station	#DIV/0!	$																														
Reservoir	#DIV/0!	$																														
Chemical Dosing	#DIV/0!	$																														
Total Water Supply Cost		*$*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Rising Mains	0.00%	$	8,068	8,068	8,068	8,068	8,068	8,068	8,068	8,068	8,068	8,068	8,068	8,068	8,068	8,068	8,068	8,068	8,068	8,068	8,068	8,068	8,068	8,068	8,068	8,068	8,068	8,068	8,068	8,068	8,068	8,068
Gravity Mains	0.00%	$	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508
Pump Station	0.00%	$	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000
Chemical Dosing	#DIV/0!	$																														
Total Sewer Cost		*$*	*26,576*	*26,576*	*26,576*	*26,576*	*26,576*	*26,576*	*26,576*	*26,576*	*26,576*	*26,576*	*26,576*	*26,576*	*26,576*	*26,576*	*26,576*	*26,576*	*26,576*	*26,576*	*26,576*	*26,576*	*26,576*	*26,576*	*26,576*	*26,576*	*26,576*	*26,576*	*26,576*	*26,576*	*26,576*	*26,576*
Total Maintenance Costs		**$**	**26,576**	**26,576**	**26,576**	**26,576**	**26,576**	**26,576**	**26,576**	**26,576**	**26,576**	**26,576**	**26,576**	**26,576**	**26,576**	**26,576**	**26,576**	**26,576**	**26,576**	**26,576**	**26,576**	**26,576**	**26,576**	**26,576**	**26,576**	**26,576**	**26,576**	**26,576**	**26,576**	**26,576**	**26,576**	**26,576**
Total Maintenance PV	**336,621**	**$**	**26,576**	**24,716**	**22,986**	**21,377**	**19,881**	**18,489**	**17,195**	**15,991**	**14,872**	**13,831**	**12,862**	**11,962**	**11,125**	**10,346**	**9,622**	**8,948**	**8,322**	**7,739**	**7,198**	**6,694**	**6,225**	**5,789**	**5,384**	**5,007**	**4,657**	**4,331**	**4,028**	**3,746**	**3,484**	**3,240**
Total O & M Costs		**$**	**104,587**	**114,529**	**124,631**	**131,524**	**141,057**	**150,723**	**154,688**	**163,804**	**173,068**	**184,758**	**191,989**	**192,039**	**199,573**	**205,321**	**208,807**	**215,416**	**221,370**	**228,576**	**216,878**	**222,128**	**226,392**	**232,369**	**235,696**	**240,811**	**241,135**	**242,325**	**242,543**	**247,370**	**243,621**	**247,437**
Total O & M PV	**2,180,450**	**$**	**104,587**	**106,512**	**107,794**	**105,792**	**105,518**	**104,857**	**100,082**	**98,561**	**96,846**	**96,150**	**92,919**	**86,437**	**83,541**	**79,930**	**75,597**	**72,531**	**69,318**	**66,564**	**58,737**	**55,947**	**53,030**	**50,620**	**47,750**	**45,372**	**42,252**	**39,489**	**36,757**	**34,865**	**31,933**	**30,163**
Lifecycle Costs		**$**	**15,538,366**	**114,529**	**124,631**	**131,524**	**141,057**	**150,723**	**154,688**	**163,804**	**173,068**	**184,758**	**191,989**	**192,039**	**199,573**	**205,321**	**208,807**	**454,366**	**221,370**	**228,576**	**216,878**	**222,128**	**226,392**	**232,369**	**235,696**	**240,811**	**241,135**	**242,325**	**242,543**	**247,370**	**243,621**	**486,387**
Total PV (Inc GHG)	**17,723,811**	**$**	**15,538,366**	**106,512**	**107,794**	**105,792**	**105,518**	**104,857**	**100,082**	**98,561**	**96,846**	**96,150**	**92,919**	**86,437**	**83,541**	**79,930**	**75,597**	**152,985**	**69,318**	**66,564**	**58,737**	**55,947**	**53,030**	**50,620**	**47,750**	**45,372**	**42,252**	**39,489**	**36,757**	**34,865**	**31,933**	**59,291**
Total PV (Ex GHG)	**17,562,619**	**$**	**15,529,532**	**98,007**	**99,606**	**97,909**	**97,929**	**97,550**	**93,048**	**91,789**	**90,326**	**89,873**	**86,876**	**80,620**	**77,940**	**74,538**	**70,406**	**147,988**	**64,507**	**61,932**	**54,277**	**51,654**	**48,897**	**46,640**	**43,919**	**41,683**	**38,702**	**36,070**	**33,466**	**31,696**	**28,882**	**56,354**

Option Reference		Option SE1B	
Real Discount Rate		7.0%	
Length RM (m)		6,350	
Diam RM (mm)		500	
Pump Duty (L/s)		356	
Length GM (m)		1,100	

Costs

2010/2011 Energy Cost	0.157	/ kWh
Annual Real Energy Increase	2.18%	
2010/2011 GHG Cost	25.00	/ tonnes CO_2-e
Real GHG Increase	3.52%	

FY Ending		Units	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
Discount Factor			1.00	0.93	0.86	0.80	0.75	0.70	0.65	0.60	0.56	0.52	0.48	0.45	0.42	0.39	0.36	0.34	0.31	0.29	0.27	0.25	0.23	0.22	0.20	0.19	0.18	0.16	0.15	0.14	0.13	0.12
Developer Capital Costs ($ 2010/2011)																																
Water Supply																																
Mains		$																														
Pump Station		$																														
Reservoir		$																														
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Water Supply Cost		$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Internal Transfer			$ 3,320,408.84																													
Gravity Mains		$	2,359,273																													
Rising Mains		$	8,251,836																													
Sewer Pump Station		$	2,193,844																													
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Sewer Cost		*$*	*16,125,362*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Developer Capital Costs		**$**	**16,125,362**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Developer PV	**16,125,362**	**$**	**16,125,362**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HWC Capital Costs ($ 2010/2011)																																
Water Supply																																
Mains		$																														
Pump Station		$																														
Reservoir		$																														
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Water Supply Cost		$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Mains		$																														
Pump Station		$																218,325														218,325
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Sewer Cost		$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*218,325*	-	-	-	-	-	-	-	-	-	-	-	-	-	*218,325*
Total HWC Capital Costs		**$**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**218,325**	-	-	-	-	-	-	-	-	-	-	-	-	-	**218,325**
Total HWC Capital PV	**100,124**	**$**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**73,510**	-	-	-	-	-	-	-	-	-	-	-	-	-	**26,614**
HWC Operating Costs ($ 2010/2011)																																
Water Supply																																
Mains	#DIV/0!	$																														
Pump Station	#DIV/0!	$																														
Reservoir	#DIV/0!	$																														
Chemical Dosing	#DIV/0!	$																														
Total Water Supply Cost		*$*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Mains	#DIV/0!	$																														
Pump Station	#DIV/0!	$																														
ET			200	400	600	800	1,000	1,200	1,400	1,600	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200	3,400	3,600	3,800	4,000	4,200	4,400	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500
ADWF (L/s)			2.2	4.4	6.6	8.8	11.0	13.2	15.4	17.6	19.8	22.0	24.2	26.4	28.6	30.8	33.0	35.2	37.4	39.6	41.8	44.0	46.2	48.4	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5
ADWF (ML/y)			69.4	138.8	208.1	277.5	346.9	416.3	485.7	555.0	624.4	693.8	763.2	832.6	901.9	971.3	1040.7	1110.1	1179.4	1248.8	1318.2	1387.6	1457.0	1526.3	1561.0	1561.0	1561.0	1561.0	1561.0	1561.0	1561.0	1561.0
Detention Time (hr)			161.4	80.7	53.8	40.3	32.3	26.9	23.1	20.2	17.9	16.1	14.7	13.4	12.4	11.5	10.8	10.1	9.5	9.0	8.5	8.1	7.7	7.3	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
Dose Cost Rate ($/ML)			99.0	99.0	99.0	99.0	87.0	87.0	87.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	49.0	49.0	49.0	49.0	49.0	49.0	49.0	49.0
Chemical Dosing	9.47%	$	6,869	13,737	20,606	27,474	30,180	36,216	42,252	41,628	46,831	52,034	57,238	62,441	67,645	72,848	64,523	68,824	73,126	77,427	81,729	86,030	90,332	94,633	76,491	76,491	76,491	76,491	76,491	76,491	76,491	76,491
Total Sewer Cost		*$*	*7,400*	*14,460*	*21,573*	*28,700*	*31,657*	*37,959*	*44,263*	*43,895*	*49,368*	*54,841*	*60,315*	*65,789*	*71,263*	*76,737*	*68,669*	*73,242*	*77,814*	*82,387*	*86,959*	*91,532*	*96,105*	*100,677*	*82,657*	*82,657*	*82,657*	*82,657*	*82,657*	*82,657*	*82,657*	*82,657*
Chemical Dosing PV	**636,690**		**7,400**	**13,448**	**18,659**	**23,085**	**23,681**	**26,408**	**28,638**	**26,412**	**27,625**	**28,540**	**29,191**	**29,612**	**29,830**	**29,873**	**24,861**	**24,660**	**24,366**	**23,992**	**23,551**	**23,054**	**22,511**	**21,932**	**16,746**	**15,574**	**14,483**	**13,470**	**12,527**	**11,650**	**10,834**	**10,076**
Energy																																
kWh/year		kWh/year	301,721	301,721	301,721	301,721	301,721	301,721	301,721	301,721	301,721	301,721	301,721	301,721	301,721	301,721	301,721	301,721	301,721	301,721	301,721	301,721	301,721	301,721	301,721	301,721	301,721	301,721	301,721	301,721	301,721	301,721
$/kWh	2.18%	$/kWh	0.156	0.162	0.169	0.176	0.183	0.191	0.199	0.207	0.215	0.230	0.233	0.246	0.252	0.254	0.250	0.254	0.256	0.261	0.262	0.265	0.265	0.269	0.271	0.282	0.281	0.282	0.281	0.291	0.280	0.287
Total Energy Cost		*$*	*46,969*	*48,912*	*50,935*	*53,042*	*55,236*	*57,520*	*59,899*	*62,377*	*64,957*	*69,369*	*70,382*	*74,161*	*76,066*	*76,601*	*75,405*	*76,569*	*77,222*	*78,812*	*79,055*	*79,814*	*79,809*	*81,089*	*81,735*	*85,115*	*84,838*	*85,201*	*84,805*	*87,892*	*84,442*	*86,719*
Energy Cost PV	**824,660**		**46,969**	**45,488**	**44,054**	**42,664**	**41,319**	**40,016**	**38,754**	**37,532**	**36,349**	**36,100**	**34,063**	**33,380**	**31,841**	**29,821**	**27,300**	**25,781**	**24,181**	**22,951**	**21,410**	**20,103**	**18,694**	**17,665**	**16,559**	**16,037**	**14,866**	**13,884**	**12,852**	**12,388**	**11,068**	**10,571**
GHG Costs																																
kg CO_2-e/kWh		kg CO_2-e/kWh	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Tonnes CO_2-e		Tonnes CO_2-e	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269	269
$ / tonne CO_2-e	3.52%	$	25.00	25.88	26.79	27.73	28.71	29.72	30.77	31.85	32.97	34.13	35.33	36.58	37.86	39.20	40.58	42.01	43.48	45.01	46.60	48.24	49.94	51.70	53.51	55.40	57.35	59.37	61.46	63.62	65.86	68.18
GHG Cost		*$*	*6,713*	*6,950*	*7,194*	*7,447*	*7,710*	*7,981*	*8,262*	*8,553*	*8,854*	*9,165*	*9,488*	*9,822*	*10,168*	*10,526*	*10,896*	*11,280*	*11,677*	*12,088*	*12,513*	*12,954*	*13,410*	*13,882*	*14,370*	*14,876*	*15,400*	*15,942*	*16,503*	*17,084*	*17,685*	*18,308*
GHG PV	**122,496**		**6,713**	**6,463**	**6,222**	**5,990**	**5,767**	**5,552**	**5,345**	**5,146**	**4,954**	**4,770**	**4,592**	**4,421**	**4,256**	**4,098**	**3,945**	**3,798**	**3,656**	**3,520**	**3,389**	**3,263**	**3,141**	**3,024**	**2,911**	**2,803**	**2,698**	**2,598**	**2,501**	**2,408**	**2,318**	**2,232**
Total Operating Costs		**$**	**61,083**	**70,321**	**79,702**	**89,189**	**94,602**	**103,461**	**112,424**	**114,825**	**123,179**	**133,376**	**140,185**	**149,772**	**157,496**	**163,864**	**154,970**	**161,091**	**166,713**	**173,286**	**178,527**	**184,300**	**189,323**	**195,648**	**178,762**	**182,649**	**182,895**	**183,800**	**183,965**	**187,633**	**184,785**	**187,684**
Total Operating PV	**1,583,846**	**$**	**61,083**	**65,399**	**68,934**	**71,740**	**70,767**	**71,976**	**72,737**	**69,090**	**68,929**	**69,410**	**67,847**	**67,413**	**65,927**	**63,791**	**56,106**	**54,239**	**52,203**	**50,463**	**48,350**	**46,420**	**44,347**	**42,620**	**36,216**	**34,413**	**32,047**	**29,952**	**27,880**	**26,445**	**24,221**	**22,879**
HWC Maintenance Costs ($ 2010/2011)																																
Water Supply																																
Mains	#DIV/0!	$																														
Pump Station	#DIV/0!	$																														
Reservoir	#DIV/0!	$																														
Chemical Dosing	#DIV/0!	$																														
Total Water Supply Cost		*$*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Rising Mains	0.00%	$	8,219	8,219	8,219	8,219	8,219	8,219	8,219	8,219	8,219	8,219	8,219	8,219	8,219	8,219	8,219	8,219	8,219	8,219	8,219	8,219	8,219	8,219	8,219	8,219	8,219	8,219	8,219	8,219	8,219	8,219
Gravity Mains	0.00%	$	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508
Pump Station	0.00%	$	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000
Chemical Dosing	#DIV/0!	$																														
Total Sewer Cost		*$*	*26,727*	*26,727*	*26,727*	*26,727*	*26,727*	*26,727*	*26,727*	*26,727*	*26,727*	*26,727*	*26,727*	*26,727*	*26,727*	*26,727*	*26,727*	*26,727*	*26,727*	*26,727*	*26,727*	*26,727*	*26,727*	*26,727*	*26,727*	*26,727*	*26,727*	*26,727*	*26,727*	*26,727*	*26,727*	*26,727*
Total Maintenance Costs		**$**	**26,727**	**26,727**	**26,727**	**26,727**	**26,727**	**26,727**	**26,727**	**26,727**	**26,727**	**26,727**	**26,727**	**26,727**	**26,727**	**26,727**	**26,727**	**26,727**	**26,727**	**26,727**	**26,727**	**26,727**	**26,727**	**26,727**	**26,727**	**26,727**	**26,727**	**26,727**	**26,727**	**26,727**	**26,727**	**26,727**
Total Maintenance PV	**338,531**	**$**	**26,727**	**24,856**	**23,116**	**21,498**	**19,993**	**18,594**	**17,292**	**16,082**	**14,956**	**13,909**	**12,935**	**12,030**	**11,188**	**10,405**	**9,676**	**8,999**	**8,369**	**7,783**	**7,238**	**6,732**	**6,261**	**5,822**	**5,415**	**5,036**	**4,683**	**4,355**	**4,051**	**3,767**	**3,503**	**3,258**
Total O & M Costs		**$**	**87,810**	**97,048**	**106,429**	**115,916**	**121,329**	**130,188**	**139,152**	**141,552**	**149,906**	**160,103**	**166,912**	**176,499**	**184,224**	**190,591**	**181,697**	**187,818**	**193,440**	**200,013**	**205,254**	**211,027**	**216,051**	**222,376**	**205,489**	**209,376**	**209,623**	**210,527**	**210,692**	**214,360**	**211,512**	**214,412**
Total O & M PV	**1,922,377**	**$**	**87,810**	**90,255**	**92,051**	**93,238**	**90,761**	**90,570**	**90,030**	**85,172**	**83,885**	**83,319**	**80,782**	**79,443**	**77,115**	**74,196**	**65,782**	**63,238**	**60,572**	**58,246**	**55,589**	**53,151**	**50,607**	**48,443**	**41,631**	**39,449**	**36,731**	**34,307**	**31,930**	**30,212**	**27,724**	**26,137**
Lifecycle Costs		**$**	**16,213,172**	**97,048**	**106,429**	**115,916**	**121,329**	**130,188**	**139,152**	**141,552**	**149,906**	**160,103**	**166,912**	**176,499**	**184,224**	**190,591**	**181,697**	**406,143**	**193,440**	**200,013**	**205,254**	**211,027**	**216,051**	**222,376**	**205,489**	**209,376**	**209,623**	**210,527**	**210,692**	**214,360**	**211,512**	**432,737**
Total PV (Inc GHG)	**18,147,864**	**$**	**16,213,172**	**90,255**	**92,051**	**93,238**	**90,761**	**90,570**	**90,030**	**85,172**	**83,885**	**83,319**	**80,782**	**79,443**	**77,115**	**74,196**	**65,782**	**136,749**	**60,572**	**58,246**	**55,589**	**53,151**	**50,607**	**48,443**	**41,631**	**39,449**	**36,731**	**34,307**	**31,930**	**30,212**	**27,724**	**52,751**
Total PV (Ex GHG)	**18,025,367**	**$**	**16,206,459**	**83,792**	**85,828**	**87,248**	**84,994**	**85,018**	**84,684**	**80,026**	**78,930**	**78,550**	**76,190**	**75,022**	**72,859**	**70,098**	**61,838**	**132,951**	**56,916**	**54,726**	**52,200**	**49,889**	**47,466**	**45,419**	**38,719**	**36,646**	**34,032**	**31,709**	**29,429**	**27,804**	**25,406**	**50,519**

	East	West	Common		
Option Reference	Option SE1A				
Real Discount Rate	7.0%				
Length RM (m)	4,430	3900	2600	4430	2600
Diam RM (mm)	450	300	500	300	500
Pump Duty (L/s)	241	121.8	363.1	121.8	363.1
Length GM (m)	1,100				
Wet Well diameter (m)	5.5	3.8			

Costs

2010/2011 Energy Cost	0.157	/ kWh
Annual Real Energy Increase	2.18%	
2010/2011 GHG Cost	25.00	/ tonnes CO_2-e
Real GHG Increase	3.52%	

FY Ending		Units	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
Discount Factor			1.00	0.93	0.86	0.80	0.75	0.70	0.65	0.60	0.56	0.52	0.48	0.45	0.42	0.39	0.36	0.34	0.31	0.29	0.27	0.25	0.23	0.22	0.20	0.19	0.18	0.16	0.15	0.14	0.13	0.12
Developer Capital Costs ($ 2010/2011)																																
Water Supply																																
Mains		$																														
Pump Station		$																														
Reservoir		$																														
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Water Supply Cost		*$*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Internal Transfer																																
Gravity Mains		$	2,359,273																													
Rising Mains		$	9,936,725																													
Sewer Pump Station		$	3,532,714																													
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Sewer Cost		*$*	*15,828,712*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Developer Capital Costs		**$**	**15,828,712**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Developer PV	**15,828,712**	**$**	**15,828,712**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HWC Capital Costs ($ 2010/2011)																																
Water Supply																																
Mains		$																														
Pump Station		$																														
Reservoir		$																														
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Water Supply Cost		*$*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Mains		$																														
Pump Station		$															238,875															238,875
Telemetry & SCADA		$																														
Chemical Dosing		$																														
Total Sewer Cost		*$*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*238,875*	-	-	-	-	-	-	-	-	-	-	-	-	-	*238,875*
Total HWC Capital Costs		**$**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**238,875**	-	-	-	-	-	-	-	-	-	-	-	-	-	**238,875**
Total HWC Capital PV	**109,548**	**$**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**80,429**	-	-	-	-	-	-	-	-	-	-	-	-	-	**29,119**
HWC Operating Costs ($ 2010/2011)																																
Water Supply																																
Mains	#DIV/0!	$																														
Pump Station	#DIV/0!	$																														
Reservoir	#DIV/0!	$																														
Chemical Dosing	#DIV/0!	$																														
Total Water Supply Cost		*$*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Mains	#DIV/0!	$																														
Pump Station	#DIV/0!	$																														
ET			200	400	600	800	1,000	1,200	1,400	1,600	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200	3,400	3,600	3,800	4,000	4,200	4,400	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500
ADWF (L/s)			2.2	4.4	6.6	8.8	11.0	13.2	15.4	17.6	19.8	22.0	24.2	26.4	28.6	30.8	33.0	35.2	37.4	39.6	41.8	44.0	46.2	48.4	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5
ADWF (ML/y)			69.4	138.8	208.1	277.5	346.9	416.3	485.7	555.0	624.4	693.8	763.2	832.6	901.9	971.3	1040.7	1110.1	1179.4	1248.8	1318.2	1387.6	1457.0	1526.3	1561.0	1561.0	1561.0	1561.0	1561.0	1561.0	1561.0	1561.0
Detention Time (hr)			192.4	96.2	64.1	48.1	38.5	32.1	27.5	24.0	21.4	19.2	17.5	16.0	14.8	13.7	12.8	12.0	11.3	10.7	10.1	9.6	9.2	8.7	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5
Dose Cost Rate ($/ML)			99.0	99.0	99.0	99.0	99.0	87.0	87.0	87.0	87.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0	62.0
Chemical Dosing	9.55%	$	6,869	13,737	20,606	27,474	34,343	36,216	42,252	48,288	54,324	52,034	57,238	62,441	67,645	72,848	78,052	83,255	88,458	77,427	81,729	86,030	90,332	94,633	96,784	96,784	96,784	96,784	96,784	96,784	96,784	96,784
Total Sewer Cost		*$*	*7,431*	*14,475*	*21,583*	*28,708*	*35,838*	*37,964*	*44,267*	*50,572*	*56,876*	*54,844*	*60,318*	*65,791*	*71,265*	*76,739*	*82,213*	*87,687*	*93,162*	*82,388*	*86,961*	*91,533*	*96,106*	*100,679*	*102,965*	*102,965*	*102,965*	*102,965*	*102,965*	*102,965*	*102,965*	*102,965*
Chemical Dosing PV	**688,570**		**7,431**	**13,462**	**18,668**	**23,091**	**26,809**	**26,411**	**28,641**	**30,429**	**31,827**	**28,542**	**29,193**	**29,613**	**29,831**	**29,874**	**29,765**	**29,524**	**29,172**	**23,993**	**23,551**	**23,054**	**22,512**	**21,932**	**20,860**	**19,400**	**18,042**	**16,779**	**15,604**	**14,512**	**13,496**	**12,551**
Energy																																
kWh/year		kWh/year	249,591	249,591	249,591	249,591	249,591	249,591	249,591	249,591	249,591	249,591	249,591	249,591	249,591	249,591	249,591	249,591	249,591	249,591	249,591	249,591	249,591	249,591	249,591	249,591	249,591	249,591	249,591	249,591	249,591	249,591
$/kWh	2.18%	$/kWh	0.156	0.162	0.169	0.176	0.183	0.191	0.199	0.207	0.215	0.230	0.233	0.246	0.252	0.254	0.250	0.254	0.256	0.261	0.262	0.265	0.265	0.269	0.271	0.282	0.281	0.282	0.281	0.291	0.280	0.287
Total Energy Cost		*$*	*38,854*	*40,461*	*42,135*	*43,877*	*45,692*	*47,582*	*49,550*	*51,600*	*53,734*	*57,384*	*58,222*	*61,348*	*62,924*	*63,367*	*62,377*	*63,340*	*63,880*	*65,195*	*65,396*	*66,025*	*66,020*	*67,079*	*67,613*	*70,410*	*70,180*	*70,480*	*70,153*	*72,707*	*69,853*	*71,736*
Energy Cost PV	**682,181**		**38,854**	**37,629**	**36,442**	**35,293**	**34,180**	**33,102**	**32,059**	**31,048**	**30,069**	**29,863**	**28,178**	**27,613**	**26,340**	**24,668**	**22,583**	**21,327**	**20,003**	**18,986**	**17,711**	**16,630**	**15,465**	**14,613**	**13,698**	**13,266**	**12,297**	**11,485**	**10,632**	**10,247**	**9,156**	**8,745**
GHG Costs																																
kg CO_2-e/kWh		kg CO_2-e/kWh	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Tonnes CO_2-e		Tonnes CO_2-e	222	222	222	222	222	222	222	222	222	222	222	222	222	222	222	222	222	222	222	222	222	222	222	222	222	222	222	222	222	222
$ / tonne CO_2-e	3.52%	$	25.00	25.88	26.79	27.73	28.71	29.72	30.77	31.85	32.97	34.13	35.33	36.58	37.86	39.20	40.58	42.01	43.48	45.01	46.60	48.24	49.94	51.70	53.51	55.40	57.35	59.37	61.46	63.62	65.86	68.18
GHG Cost		*$*	*5,553*	*5,749*	*5,951*	*6,161*	*6,378*	*6,602*	*6,834*	*7,075*	*7,324*	*7,582*	*7,849*	*8,125*	*8,411*	*8,707*	*9,014*	*9,331*	*9,659*	*9,999*	*10,351*	*10,716*	*11,093*	*11,483*	*11,888*	*12,306*	*12,739*	*13,188*	*13,652*	*14,132*	*14,630*	*15,145*
GHG PV	**101,332**		**5,553**	**5,346**	**5,147**	**4,955**	**4,771**	**4,593**	**4,422**	**4,257**	**4,098**	**3,946**	**3,799**	**3,657**	**3,521**	**3,390**	**3,263**	**3,142**	**3,025**	**2,912**	**2,803**	**2,699**	**2,598**	**2,502**	**2,408**	**2,319**	**2,232**	**2,149**	**2,069**	**1,992**	**1,918**	**1,846**
Total Operating Costs		**$**	**51,839**	**60,685**	**69,669**	**78,746**	**87,908**	**92,149**	**100,652**	**109,247**	**117,935**	**119,810**	**126,388**	**135,264**	**142,600**	**148,813**	**153,604**	**160,358**	**166,701**	**157,583**	**162,708**	**168,274**	**173,219**	**179,241**	**182,466**	**185,681**	**185,885**	**186,633**	**186,770**	**189,804**	**187,448**	**189,846**
Total Operating PV	**1,472,083**	**$**	**51,839**	**56,437**	**60,257**	**63,340**	**65,760**	**64,107**	**65,121**	**65,734**	**65,994**	**62,351**	**61,170**	**60,883**	**59,692**	**57,932**	**55,611**	**53,993**	**52,199**	**45,890**	**44,066**	**42,383**	**40,575**	**39,046**	**36,966**	**34,984**	**32,571**	**30,413**	**28,305**	**26,751**	**24,570**	**23,142**
HWC Maintenance Costs ($ 2010/2011)																																
Water Supply																																
Mains	#DIV/0!	$																														
Pump Station	#DIV/0!	$																														
Reservoir	#DIV/0!	$																														
Chemical Dosing	#DIV/0!	$																														
Total Water Supply Cost		*$*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer																																
Rising Mains	0.00%	$	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600	8,600
Gravity Mains	0.00%	$	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508
Pump Station	0.00%	$	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000
Chemical Dosing	#DIV/0!	$																														
Total Sewer Cost		*$*	*19,108*	*19,108*	*19,108*	*19,108*	*19,108*	*19,108*	*19,108*	*19,108*	*19,108*	*19,108*	*19,108*	*19,108*	*19,108*	*19,108*	*19,108*	*19,108*	*19,108*	*19,108*	*19,108*	*19,108*	*19,108*	*19,108*	*19,108*	*19,108*	*19,108*	*19,108*	*19,108*	*19,108*	*19,108*	*19,108*
Total Maintenance Costs		**$**	**19,108**	**19,108**	**19,108**	**19,108**	**19,108**	**19,108**	**19,108**	**19,108**	**19,108**	**19,108**	**19,108**	**19,108**	**19,108**	**19,108**	**19,108**	**19,108**	**19,108**	**19,108**	**19,108**	**19,108**	**19,108**	**19,108**	**19,108**	**19,108**	**19,108**	**19,108**	**19,108**	**19,108**	**19,108**	**19,108**
Total Maintenance PV	**242,031**	**$**	**19,108**	**17,771**	**16,527**	**15,370**	**14,294**	**13,294**	**12,363**	**11,498**	**10,693**	**9,944**	**9,248**	**8,601**	**7,999**	**7,439**	**6,918**	**6,434**	**5,983**	**5,565**	**5,175**	**4,813**	**4,476**	**4,163**	**3,871**	**3,600**	**3,348**	**3,114**	**2,896**	**2,693**	**2,505**	**2,329**
Total O & M Costs		**$**	**70,947**	**79,794**	**88,778**	**97,854**	**107,016**	**111,257**	**119,761**	**128,355**	**137,043**	**138,919**	**145,497**	**154,373**	**161,708**	**167,921**	**172,712**	**179,467**	**185,809**	**176,691**	**181,817**	**187,382**	**192,328**	**198,350**	**201,574**	**204,789**	**204,993**	**205,741**	**205,878**	**208,912**	**206,556**	**208,955**
Total O & M PV	**1,714,114**	**$**	**70,947**	**74,208**	**76,784**	**78,710**	**80,054**	**77,400**	**77,484**	**77,231**	**76,687**	**72,295**	**70,418**	**69,484**	**67,691**	**65,371**	**62,529**	**60,427**	**58,183**	**51,455**	**49,241**	**47,196**	**45,051**	**43,209**	**40,838**	**38,585**	**35,919**	**33,527**	**31,201**	**29,444**	**27,075**	**25,472**
Lifecycle Costs		**$**	**15,899,659**	**79,794**	**88,778**	**97,854**	**107,016**	**111,257**	**119,761**	**128,355**	**137,043**	**138,919**	**145,497**	**154,373**	**161,708**	**167,921**	**172,712**	**418,342**	**185,809**	**176,691**	**181,817**	**187,382**	**192,328**	**198,350**	**201,574**	**204,789**	**204,993**	**205,741**	**205,878**	**208,912**	**206,556**	**447,830**
Total PV (Inc GHG)	**17,652,374**	**$**	**15,899,659**	**74,208**	**76,784**	**78,710**	**80,054**	**77,400**	**77,484**	**77,231**	**76,687**	**72,295**	**70,418**	**69,484**	**67,691**	**65,371**	**62,529**	**140,856**	**58,183**	**51,455**	**49,241**	**47,196**	**45,051**	**43,209**	**40,838**	**38,585**	**35,919**	**33,527**	**31,201**	**29,444**	**27,075**	**54,591**
Total PV (Ex GHG)	**17,551,042**	**$**	**15,894,106**	**68,862**	**71,637**	**73,754**	**75,283**	**72,807**	**73,062**	**72,974**	**72,589**	**68,349**	**66,619**	**65,827**	**64,170**	**61,981**	**59,266**	**137,714**	**55,158**	**48,543**	**46,438**	**44,497**	**42,452**	**40,707**	**38,429**	**36,266**	**33,687**	**31,378**	**29,132**	**27,453**	**25,157**	**52,745**