

[illegible]

Guide: How to submit a response on the E-tender Portal

- Submit on E tender portal, following the below:
 1. (<https://www.etenders.gov.za/>)
 2. Search/Click Browse Opportunities by organ of state (Johannesburg Water)/search by RFQ reference number .
 3. Click the **+ sign** to expand the tender/ RFQ information.
 4. start the e submission process.
 5. Supplier login
 6. Use your CSD Credentials to Login. Contact CSD on (csd@treasury.gov.za) in case you forgot your login credentials. “My profile should show if you have logged in successfully”.
 7. select supplier.
 8. check the submission checklist and attached the compulsory documents.
 9. confirm and proceed .

If the application is not going through on the E-tender portal Contact:

eTenders Contact Centre

+27(0)12 406 9222 / 012 406-9229 / 012 312-5000

etenders@treasury.gov.za

<https://etenders.treasury.gov.za>

POPIA PRIVACY STATEMENT

Johannesburg Water SOC Limited

In terms of the Protection of Personal Information Act, 213 (Act 4 of 2013), also called the POPI Act or POPIA, Johannesburg Water SOC Limited, undertakes all reasonable measures to protect personal information and to keep it private and confidential.

1. Privacy Notice applies to:

Suppliers, vendors, contractors, service providers, etc whether appointed or prospective.

2. Definitions of personal information

According to the Act “personal information” means information relating to an identifiable living, natural person, and where it is applicable, an identifiable, existing juristic person. All addresses including residential, postal and email addresses.

3. About the Public Entity

Johannesburg Water (SOC) Limited, registration number 2000/029271/30

3.1 The information we collect

We collect information directly from you where you provide us with your personal details. Where possible, we will inform you what information you are required to provide to us and what information is optional.

3.2 How Johannesburg Water use your information

We will use your personal information only for the purposes for which it was collected and agreed with you. For example: to gather contact information, to confirm and verify your identity, for the evaluation and adjudication of bids and quotations for tenders, request for quotations, and other personal information for the procurement of goods and services by the Entity.

3.3 Disclosure of information

We may disclose your personal information to our Shareholder, the City of Johannesburg, and other Government agencies such as National Treasury, and the Auditor-General of South Africa. We have agreements in place to ensure that they comply with the privacy requirements as required by the Protection of Personal Information Act.

We may also disclose your information:

- Where we have a duty or a right to disclose in terms of law;
- Where we believe it is necessary to protect our rights.

3.4 Information Security

We are legally obliged to provide adequate protection for the personal information we hold and to stop unauthorised access and use of personal information. We will, on an ongoing basis, continue to review our security

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controls and related processes to ensure that your personal information remains secure.

When we contract with third parties, we impose appropriate security, privacy and confidentiality obligations on them to ensure that personal information that we remain responsible for, is kept secure. We will ensure that anyone whom we pass your personal information agrees to treat your information with the same level of protection as we are obliged to.

3.5 Your rights: Access to Information

You have the right to request a copy of the personal information we hold about you. To do this, simply contact us at informationofficer@jwater.co.za, and specify what information you require.

3.6 Correction of your personal information

You have the right to ask us to update, correct or delete your personal information. We will require a copy of your identification document to confirm your identity before making changes to personal information we may hold about you. We would appreciate it if you would keep your personal information accurate and up to date.

3.7 How to contact us

If you have any queries about this document; you need further information about our privacy practices; wish to withdraw consent; exercise preferences or access or correct your personal information, please contact us at the numbers listed on our website or send an email to informationofficer@jwater.co.za.



a world class African city



City of Johannesburg

Johannesburg Water SOC Ltd

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65 Ntengi Piliso Street
Newtown
Johannesburg

Johannesburg Water
PO Box 61542
Marshalltown
2107

Tel +27(0) 11 688 1400
Fax +27(0) 11 688 1528

www.johannesburgwater.co.za

PLEASE SUPPLY THE FOLLOWING DOCUMENTS TO ENABLE US TO EVALUATE YOUR SUBMISSION :

Returnable Documents	Description	Yes/No	
1	A, certified /original/valid, BBEE certificate /sworn affidavit (Please note that the Sworn Affidavit must be compliant as per B-BBEE Practice Guide 01 of 2018 , NON COMPLIANT AFFIDAVIT WILL BE SCORED ZERO)		COMPULSORY
2	Municipal rates and taxes (Must not be older than 90 days in arrears in line with regulation 38.		COMPULSORY
3	Signed Declaration of Interest form (MBD 4)		COMPULSORY
4	Declaration of Bidders past supply chain management practices (MBD 8)		COMPULSORY
5	Certificate of Independent Proposal Determination (MBD 9)		COMPULSORY
6	Proof of CSD registration /MAAA Supplier Number		COMPULSORY
7	Preference points claim form in terms of the preferential procurement regulations 2022 (MBD 6.1)		COMPULSORY

MBD 4

DECLARATION OF INTEREST

1. No bid will be accepted from persons in the service of the state¹.
2. Any person, having a kinship with persons in the service of the state, including a blood relationship, may make an offer or offers in terms of this invitation to bid. In view of possible allegations of favouritism, should the resulting bid, or part thereof, be awarded to persons connected with or related to persons in service of the state, it is required that the bidder or their authorised representative declare their position in relation to the evaluating/adjudicating authority.

3 In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.

3.1 Full Name of bidder or his or her representative:.....

3.2 Identity Number:

3.3 Position occupied in the Company (director, trustee, hareholder²):.....

3.4 Company Registration Number:

3.5 Tax Reference Number:.....

3.6 VAT Registration Number:

3.7 The names of all directors / trustees / shareholders members, their individual identity numbers and state employee numbers must be indicated in paragraph 4 below.

3.8 Are you presently in the service of the state? **YES / NO**

3.8.1 If yes, furnish particulars.

.....

¹MSCM Regulations: "in the service of the state" means to be –

(a) a member of –

- (i) any municipal council;
- (ii) any provincial legislature; or
- (iii) the national Assembly or the national Council of provinces;

(b) a member of the board of directors of any municipal entity;

(c) an official of any municipality or municipal entity;

(d) an employee of any national or provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act No.1 of 1999);

(e) a member of the accounting authority of any national or provincial public entity; or

(f) an employee of Parliament or a provincial legislature.

² Shareholder" means a person who owns shares in the company and is actively involved in the management of the company or business and exercises control over the company.

3.9 Have you been in the service of the state for the past twelve months?**YES / NO**

3.9.1 If yes, furnish particulars.....

.....

3.10 Do you have any relationship (family, friend, other) with persons in the service of the state and who may be involved with the evaluation and or adjudication of this bid? **YES / NO**

3.10.1 If yes, furnish particulars.

.....

.....

3.11 Are you, aware of any relationship (family, friend, other) between any other bidder and any persons in the service of the state who may be involved with the evaluation and or adjudication of this bid? **YES / NO**

3.11.1 If yes, furnish particulars

.....

.....

3.12 Are any of the company's directors, trustees, managers, principle shareholders or stakeholders in service of the state? **YES / NO**

3.12.1 If yes, furnish particulars.

.....

.....

3.13 Are any spouse, child or parent of the company's directors trustees, managers, principle shareholders or stakeholders in service of the state? **YES / NO**

3.13.1 If yes, furnish particulars.

.....

.....

3.14 Do you or any of the directors, trustees, managers, principle shareholders, or stakeholders of this company have any interest in any other related companies or business whether or not they are bidding for this contract. **YES / NO**

3.14.1 If yes, furnish particulars:

.....

.....

4. Full details of directors / trustees / members / shareholders.

Full Name	Identity Number	State Employee Number

.....
Signature

.....
Date

.....
Capacity

.....
Name of Bidder

PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS 2022

This preference form must form part of all tenders invited. It contains general information and serves as a claim form for preference points for specific goals.

1. GENERAL CONDITIONS

1.1 The following preference point systems are applicable to invitations to tender:

- the 80/20 system for requirements with a Rand value of up to R50 000 000 (all applicable taxes included); and

1.2 **To be completed by the organ of state**

a) The applicable preference point system for this tender is the 80/20 preference point system.

1.3 Points for this tender (even in the case of a tender for income-generating contracts) shall be awarded for:

- (a) Price; and
- (b) Specific Goals.

1.4 **To be completed by the organ of state:**

The maximum points for this tender are allocated as follows:

	POINTS
PRICE	80
SPECIFIC GOALS	20
Total points for Price and SPECIFIC GOALS	100

1.5 Failure on the part of a tenderer to submit proof or documentation required in terms of this tender to claim points for specific goals with the tender, will be interpreted to mean that preference points for specific goals are not claimed.

1.6 The organ of state reserves the right to require of a tenderer, either before a tender is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the organ of state.

2. DEFINITIONS

- (a) **“tender”** means a written offer in the form determined by an organ of state in response to an invitation to provide goods or services through price quotations, competitive tendering process or any other method envisaged in legislation;

- (b) **“price”** means an amount of money tendered for goods or services, and includes all applicable taxes less all unconditional discounts;
- (c) **“rand value”** means the total estimated value of a contract in Rand, calculated at the time of bid invitation, and includes all applicable taxes;
- (d) **“tender for income-generating contracts”** means a written offer in the form determined by an organ of state in response to an invitation for the origination of income-generating contracts through any method envisaged in legislation that will result in a legal agreement between the organ of state and a third party that produces revenue for the organ of state, and includes, but is not limited to, leasing and disposal of assets and concession contracts, excluding direct sales and disposal of assets through public auctions; and
- (e) **“the Act”** means the Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000).

3. FORMULAE FOR PROCUREMENT OF GOODS AND SERVICES

3.1. POINTS AWARDED FOR PRICE

3.1.1 THE 80/20 PREFERENCE POINT SYSTEMS

A maximum of 80 points is allocated for price on the following basis:

80/20

$$Ps = 80 \left(1 - \frac{Pt - P_{min}}{P_{min}} \right)$$

Where

- Ps = Points scored for price of tender under consideration
- Pt = Price of tender under consideration
- Pmin = Price of lowest acceptable tender

3.1.1. POINTS AWARDED FOR PRICE

A maximum of 80 points is allocated for price on the following basis:

80/20

$$Ps = 80 \left(1 + \frac{Pt - P_{max}}{P_{max}} \right) \text{ o}$$

Where

- Ps = Points scored for price of tender under consideration
- Pt = Price of tender under consideration
- Pmax = Price of highest acceptable tender

4. POINTS AWARDED FOR SPECIFIC GOALS

- 4.1. In terms of Regulation 4(2); 5(2); 6(2) and 7(2) of the Preferential Procurement Regulations, preference points must be awarded for specific goals stated in the tender. For the purposes of this tender the tenderer will be allocated points based on the goals stated in table 1 below as may be supported by proof/ documentation stated in the conditions of this tender:

Table 1: Specific goals for the tender and points claimed are indicated per the table below.

Note to tenderers: The tenderer must indicate how they claim points for each preference point system.)

The specific goals allocated points in terms of this tender	Number of points allocated (80/20 system)	Number of points claimed (80/20 system)	Proof of documents per specific goals
Businesses owned by Women - 51% or more.	20		Valid BBBEE Certificate issued by SANAS accredited verification agency or DTI/CIPC BBBEE Certificate for Exempted Micro Enterprises or Affidavit sworn under oath.

DECLARATION WITH REGARD TO COMPANY/FIRM

4.2. Name of company/firm.....

4.3. Company registration number:

4.4. TYPE OF COMPANY/ FIRM

- ☐ Partnership/Joint Venture / Consortium
- ☐ One-person business/sole propriety
- ☐ Close corporation
- ☐ Public Company
- ☐ Personal Liability Company
- ☐ (Pty) Limited
- ☐ Non-Profit Company
- ☐ State Owned Company

[TICK APPLICABLE BOX]

4.5. I, the undersigned, who is duly authorised to do so on behalf of the company/firm,

- ☐ Close corporation
 - ☐ Public Company
 - ☐ Personal Liability Company
 - ☐ (Pty) Limited
 - ☐ Non-Profit Company
 - ☐ State Owned Company
- [TICK APPLICABLE BOX]

4.5. I, the undersigned, who is duly authorised to do so on behalf of the company/firm, certify that the points claimed, based on the specific goals as advised in the tender, qualifies the company/ firm for the preference(s) shown and I acknowledge that:

- i) The information furnished is true and correct;
- ii) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form;
- iii) In the event of a contract being awarded as a result of points claimed as shown in paragraphs 1.4 and 4.2, the contractor may be required to furnish documentary proof to the satisfaction of the organ of state that the claims are correct;
- iv) If the specific goals have been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the organ of state may, in addition to any other remedy it may have –
 - (a) disqualify the person from the tendering process;
 - (b) recover costs, losses or damages it has incurred or suffered as a result of that person's conduct;
 - (c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation;
 - (d) recommend that the tenderer or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted from obtaining business from any organ of state for a period not exceeding 10 years, after the *audi alteram partem* (hear the other side) rule has been applied; and
 - (e) forward the matter for criminal prosecution, if deemed necessary.

..... SIGNATURE(S) OF TENDERER(S)	
SURNAME AND NAME:	
DATE:	
ADDRESS:	
	
	
	

DECLARATION OF BIDDER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES

- 1 This Municipal Bidding Document must form part of all bids invited.
- 2 It serves as a declaration to be used by municipalities and municipal entities in ensuring that when goods and services are being procured, all reasonable steps are taken to combat the abuse of the supply chain management system.
- 3 The bid of any bidder may be rejected if that bidder, or any of its directors have:
 - a. abused the municipality's / municipal entity's supply chain management system or committed any improper conduct in relation to such system;
 - b. been convicted for fraud or corruption during the past five years;
 - c. willfully neglected, reneged on or failed to comply with any government, municipal or other public sector contract during the past five years; or
 - d. been listed in the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004).
- 4 **In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.**

Item	Question	Yes	No
4.1	Is the bidder or any of its directors listed on the National Treasury's Database of Restricted Suppliers as companies or persons prohibited from doing business with the public sector? (Companies or persons who are listed on this Database were informed in writing of this restriction by the Accounting Officer/Authority of the institution that imposed the restriction after the <i>audi alteram partem</i> rule was applied). The Database of Restricted Suppliers now resides on the National Treasury's website(www.treasury.gov.za) and can be accessed by clicking on its link at the bottom of the home page.	Yes ☐	No ☐
4.1.1	If so, furnish particulars:		
4.2	Is the bidder or any of its directors listed on the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004)? The Register for Tender Defaulters can be accessed on the National Treasury's website (www.treasury.gov.za) by clicking on its link at the bottom of the home page.	Yes ☐	No ☐
4.2.1	If so, furnish particulars:		
4.3	Was the bidder or any of its directors convicted by a court of law (including a court of law outside the Republic of South Africa) for fraud or corruption during the past five years?	Yes ☐	No ☐

4.3.1	If so, furnish particulars:		
Item	Question	Yes	No
4.4	Does the bidder or any of its directors owe any municipal rates and taxes or municipal charges to the municipality / municipal entity, or to any other municipality / municipal entity, that is in arrears for more than three months?	Yes ☐	No ☐
4.4.1	If so, furnish particulars:		
4.5	Was any contract between the bidder and the municipality / municipal entity or any other organ of state terminated during the past five years on account of failure to perform on or comply with the contract?	Yes ☐	No ☐
4.7.1	If so, furnish particulars:		

CERTIFICATION

**I, THE UNDERSIGNED (FULL NAME)
CERTIFY THAT THE INFORMATION FURNISHED ON THIS
DECLARATION FORM TRUE AND CORRECT.**

**I ACCEPT THAT, IN ADDITION TO CANCELLATION OF A CONTRACT,
ACTION MAY BE TAKEN AGAINST ME SHOULD THIS DECLARATION
PROVE TO BE FALSE.**

.....
Signature

.....
Date

.....
Position

.....
Name of Bidder

CERTIFICATE OF INDEPENDENT BID DETERMINATION

- 1 This Municipal Bidding Document (MBD) must form part of all bids¹ invited.

- 2 Section 4 (1) (b) (iii) of the Competition Act No. 89 of 1998, as amended, prohibits an agreement between, or concerted practice by, firms, or a decision by an association of firms, if it is between parties in a horizontal relationship and if it involves collusive bidding (or bid rigging).² Collusive bidding is a *pe se* prohibition meaning that it cannot be justified under any grounds.

- 3 Municipal Supply Regulation 38 (1) prescribes that a supply chain management policy must provide measures for the combating of abuse of the supply chain management system, and must enable the accounting officer, among others, to:
 - a. take all reasonable steps to prevent such abuse;
 - b. reject the bid of any bidder if that bidder or any of its directors has abused the supply chain management system of the municipality or municipal entity or has committed any improper conduct in relation to such system; and
 - c. cancel a contract awarded to a person if the person committed any corrupt or fraudulent act during the bidding process or the execution of the contract.

- 4 This MBD serves as a certificate of declaration that would be used by institutions to ensure that, when bids are considered, reasonable steps are taken to prevent any form of bid-rigging.

- 5 In order to give effect to the above, the attached Certificate of Bid Determination (MBD 9) must be completed and submitted with the bid:

¹ Includes price quotations, advertised competitive bids, limited bids and proposals.

² Bid rigging (or collusive bidding) occurs when businesses, that would otherwise be expected to compete, secretly conspire to raise prices or lower the quality of goods and / or services for purchasers who wish to acquire goods and / or services through a bidding process. Bid rigging is, therefore, an agreement between competitors not to compete.

CERTIFICATE OF INDEPENDENT BID DETERMINATION

I, the undersigned, in submitting the accompanying bid:

(Bid Number and Description)

in response to the invitation for the bid made by:

(Name of Municipality / Municipal Entity)

do hereby make the following statements that I certify to be true and complete in every respect:

I certify, on behalf of:_____that:

(Name of Bidder)

1. I have read and I understand the contents of this Certificate;
2. I understand that the accompanying bid will be disqualified if this Certificate is found not to be true and complete in every respect;
3. I am authorized by the bidder to sign this Certificate, and to submit the accompanying bid, on behalf of the bidder;
4. Each person whose signature appears on the accompanying bid has been authorized by the bidder to determine the terms of, and to sign, the bid, on behalf of the bidder;
5. For the purposes of this Certificate and the accompanying bid, I understand that the word "competitor" shall include any individual or organization, other than the bidder, whether or not affiliated with the bidder, who:
 - (a) has been requested to submit a bid in response to this bid invitation;
 - (b) could potentially submit a bid in response to this bid invitation, based on their qualifications, abilities or experience; and
 - (c) provides the same goods and services as the bidder and/or is in the same line of business as the bidder

6. The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement or arrangement with any competitor. However communication between partners in a joint venture or consortium³ will not be construed as collusive bidding.
7. In particular, without limiting the generality of paragraphs 6 above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:
 - (a) prices;
 - (b) geographical area where product or service will be rendered (market allocation)
 - (c) methods, factors or formulas used to calculate prices;
 - (d) the intention or decision to submit or not to submit, a bid;
 - (e) the submission of a bid which does not meet the specifications and conditions of the bid; or
 - (f) bidding with the intention not to win the bid.
8. In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications and conditions or delivery particulars of the products or services to which this bid invitation relates.
9. The terms of the accompanying bid have not been, and will not be, disclosed by the bidder, directly or indirectly, to any competitor, prior to the date and time of the official bid opening or of the awarding of the contract.

³ Joint venture or Consortium means an association of persons for the purpose of combining their expertise, property, capital, efforts, skill and knowledge in an activity for the execution of a contract.

10. I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to bids and contracts, bids that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition Act No 89 of 1998 and or may be reported to the National Prosecuting Authority (NPA) for criminal investigation and or may be restricted from conducting business with the public sector for a period not exceeding ten (10) years in terms of the Prevention and Combating of Corrupt Activities Act No 12 of 2004 or any other applicable legislation.

.....
Signature

.....
Date

.....
Position

.....
Name of Bidder

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	SCALE	REV:	DESCRIPTION				DATE:	UR1214		SEWER – A				
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PS1.1.1 Internal pipe surveying

PS1.1.1.1 CCTV equipment

The Contractor's CCTV equipment, at minimum, shall:

- a) Be capable of surveying a minimum continuous conduit length up to 350m where entry to the pipe is obtained at each end or up to 150m where a self-propelled unit is used where entry is at one end only.
- b) Be a complete range of CCTV survey equipment to enable surveying of difficult locations such as steep slopes and sewer backdrops to be surveyed under safe working conditions.
- c) Use colour cameras with pan and rotate heads with forward and side viewing capabilities, to enable the internal conditions of junctions and connections to the conduit to be surveyed closely.
- d) Contain a means of transporting the CCTV camera in a stable condition through the conduit being surveyed. Such equipment shall ensure the maintained location of the CCTV camera on or near to the central axis of the conduit.
- e) Where the CCTV camera is towed by a winch and bond through the conduit, have stable winches with either lockable or ratcheted drums. All bonds shall be steel or of an equally non-elastic material to ensure the smooth and steady progress of the CCTV camera. All winches shall be inherently stable under loaded conditions.
- f) Carry sufficient numbers of guides and rollers such that, when surveying, all bonds are supported away from the conduit and manhole structures and all CCTV cables and/or lines used to measure the camera's location within the conduit are maintained in a taut manner and set at right angles, where possible, to run through or over the measuring equipment.
- g) Be maintained in full working condition and shall satisfy the Engineer or his duly authorised representative at the commencement of each working shift that all equipment items have been provided and are in full working condition and fully calibrated in accordance with the manufacturer's recommendation.

PS1.1.1.2 Camera position

The Contractor shall ensure:

- a) Wherever prevailing conditions allow that the camera shall be positioned to reduce the risk of picture distortion. The camera lens shall be positioned looking along the axis of the conduit. A positioning tolerance of +/-10% of the vertical conduit dimension shall be allowed. In addition, the camera shall be positioned so that the long side of the photograph is horizontal.
- b) That when a photograph or video print is taken to illustrate a specific defect during the CCTV survey it may be necessary to relax the afore-mentioned requirements. Where a photograph print is taken to illustrate a specific defect it shall occupy the central part of the photograph print and be clearly in focus and accurately reflect the defect. If necessary, a second photograph print shall be taken at the location to put the defect depicted in the specific photograph prints into perspective in the overall context of the pipe.
- c) That photograph or video prints to illustrate the degree of mortar loss, size of a crack or fracture, size of a void or any other quantifiable defects shall include a suitable metric scale in the photograph, are clearly visible and in focus within the photograph or print.

PS1.1.1.3 Camera speed

The Contractor shall ensure that the:

- a) Speed of the CCTV camera in the conduit shall be limited to:

Conduit diameter	Camera speed
≤ 200mm	0.1m/s
> 200mm and ≤ 300mm	0.15m/s
> 300mm	0.2m/s

Alternatively, such other speed shall be allowed as agreed with the Engineer or his duly authorised representative to enable all details to be extracted from the video recordings.

- b) Camera shall be 'stopped' for a few seconds to ensure that an accurate and clear record is taken whenever defects are being noted on the coding sheet.

PS1.1.1.4 Linear measurement

The Contractor shall ensure that:

- a) The CCTV monitor display shall incorporate an automatically updated record in metres and tenths of a metre of the meterage (*measurement*) of the camera position from the cable calibration point which shall be referred to as the 'adjusted zero'.
- b) He utilises a suitable metering device which enables the cable length to be accurately measured, which shall be accurate to +/- 1% or 0.3m whichever is the greater. Testing of the cable shall be done before any works in a shift.
- c) He demonstrates that the tolerance in the afore-mentioned sub-clause is being complied with using one or both of the following methods, where practical, in conjunction with a linear measurement audit form which shall be completed and submitted to the Engineer or his duly authorised representative each day during the CCTV survey:
- use of a cable calibration device, and/or
 - Tape measurement of the surface between manholes, centre-to-centre.
- d) When requested by the Engineer or his duly authorised representative in writing at any time during the course of the survey, he shall demonstrate that the above tolerance is being complied with. The device used by the Contractor to measure the distance along the conduit shall be compared with a standard tape measure and the results shall be noted. Where the Contractor fails to meet the required minimum standard of accuracy, the Engineer or his duly authorised representative shall instruct him to:
- provide a new measuring device; and
 - Re-survey those conduit lengths first inspected with the original measuring device recording inaccurate measurements using the new replacement measuring device, the cost of which shall be for the account of the Contractor.

PS1.1.1.5 Data display, video recording and start of survey

- a) At the start of each manhole length being surveyed, the conduit length from zero chainage up to the cable calibration point shall be recorded and reported in order to obtain a full record of the conduit length.

The meterage reading entered onto the data display at the cable calibration point must allow for the distance from the start of the survey to the cable calibration point such that the meterage at the start of the survey is zero.

The survey team leader shall ensure that the meterage counter starts to register immediately when the camera commences the survey (thus to move).

- b) At the start of each manhole length a data generator shall electronically generate and clearly display on the viewing monitor and video recording a record of data in alpha-numeric form containing the following minimum information:
- automatic update of the CCTV camera's meterage position in the conduit from 'adjusted zero';
 - conduit dimensions;
 - conduit classification (sewer, water, and stormwater drainage);
 - conduit material;

- v) manhole prescribed reference number;
- vi) direction of survey (upstream or downstream);
- vii) time of survey start;
- viii) road name or location;
- ix) date of survey; and
- x) name of qualified operator.

NOTA BENE: The size and position of the data display shall be such as not to interfere with the main subject of the recording picture.

- c) Once the survey of the manhole length is under way, the following minimum information shall be continuously displayed and updated:
 - i) automatic update of the CCTV camera's meterage position in the conduit from 'adjusted zero';
 - ii) conduit dimension;
 - iii) conduit material;
 - iv) manhole length reference numbers; and
 - v) Direction of survey (upstream or downstream).
- d) The Contractor shall demonstrate the:
 - i) correct adjustment of the recording apparatus and monitor by use of the test tape or other device approved by the Engineer or his duly authorised representative; and
 - ii) Demonstrate satisfactory performance of the camera by the recording of the appropriate test device at the commencement of each day for a minimum of 15 seconds.
- e) All video recording media shall be:
 - i) supplied by the Contractor;
 - ii) the best suitable quality, new and unused prior to recording; and
 - iii) of a DVD format, with a minimum running time to ensure that a full manhole length survey is always contained on a single DVD.

The disc shall be usable on the same diameter platter as a CD, 120mm diameter.

- f) CCTV survey video recordings shall also be convertible to CD-ROM digital formats.

PS1.1.1.6 CCTV picture quality

The Contractor shall:

- a) Ensure the CCTV camera shall have suitable illumination and shall be capable of providing an accurate and clear record of the conduit's internal conditions.
- b) submit to the Engineer or his duly authorised representative for approval a test device for the CCTV camera equipment and make available on site for the duration of the Contract Period, enabling all tests specified in this clause to be checked by the Engineer or his duly authorised representative. The test card shall be Marconi Resolution Chart No. 1 or its derivatives with a colour bar, clearly differentiating between colour with no tinting to show white, yellow, cyan, green, magenta, red, blue and black.

At the start of each working shift, the camera shall be positioned centrally at right angles to the test card at a distance where the full test card just fills the monitor screen, ensuring that the edges of the test card's castellation coincide with the edges of the horizontal and vertical scan. The card shall be illuminated evenly and uniformly without any reflection. The illumination shall be to the same colour temperature as the colour temperature of the lighting that shall be used on the CCTV camera in the conduit. The test shall be recorded, for at least 15 seconds, and submitted to the Engineer or his duly authorised representative on a daily basis. The recording shall show the camera being introduced into the test device and reaching its stationary position.

The Contractor may, propose alternative test devices, for the approval by the Engineer, that will yield at minimum the same or a better result.

- c) ensure the electronic systems, television camera and monitor shall be of such quality as to enable the following to be achieved:

i) Shades of grey

They grey scale shall show equal changes in brightness ranging from black to white with a minimum of five clearly recognisable stages.

ii) Colour

By adjusting the monitor control for corrected saturation, the 6 colours plus black and white shall be clearly resolved with the primary and complementary colours in order of decreasing luminance. The grey scale shall appear in contrasting shades of grey with no tint.

iii) Linearity

The background grid shall show squares of equal size, without convergence over the whole of the picture. The centre circle shall appear round and have the correct height/width relationship (+/-5%).

iv) Resolution

The live picture must be clearly visible with no interference and capable of registering a minimum number of television lines or picture height lines. The resolution shall be checked by the Contractor with the colour monitor turned down. In the case of tube cameras this shall be 350 lines and in the case of CCD type cameras 250 lines.

v) Colour constancy

To ensure the camera shall provide similar results when used its own illumination source, the lighting shall be fixed in intensity prior to commencing the survey. In order to ensure colour constancy, generally no variation in illumination shall take place during the survey.

- d) Note that the Engineer or his duly authorised representative may periodically check both the live and video picture colour consistency against the colour bar. Any differences shall necessitate re-survey of the affected conduit length(s) at the Contractor's expense.
- e) Ensure as little quality loss as possible by making certain that conversion and compression of footage shall be limited to only what is needed to provide the required product. The footage recorded shall be compressed only enough to ensure that the required picture quality is achieved. The image data shall not be compressed to, or recorded at a lower resolution/quality and subsequently resized to meet the required resolution/image size.

PS1.1.1.7 Video playback

Recording playback of CCTV camera surveys shall be capable of a minimum resolution of a 720x576 lines recorded at standard speed and be played back at a bit rate of minimum 6 Mbit/s and at 25 frames per second.

PS1.1.1.8 Focus or iris or illumination

The adjustment of focus and iris shall allow optimum picture quality to be achieved and shall be remotely operated. The adjustment of the focus and iris shall provide a minimum focus range of 150mm in front of the camera's lens to infinity. The distance along the conduit in focus from the initial point of observation shall be a minimum of twice the vertical height of the conduit. The illumination shall be such as to allow an even distribution of the light around the conduit perimeter without the loss of contrast, flare out picture or shadowing.

PS1.1.2 Photographs and video prints

PS1.1.2.1 Required photographs and video prints

Photographs and video prints shall be provided for:

a) water and sewer pipelines:

- i) all junctions and connections defective or otherwise (as defined in the WRC MSCC, including cracks, fractures, holes, broken conduits, deformation, collapse and severe joint displacement or open joints). **PRINTS AND PHOTOGRAPHS, where the latter is possible**
- ii) Continuous defects, at the beginning of the defect thereafter at the 5m intervals. **PRINTS ONLY**
- iii) in addition to the requirements of sub-clauses PS4.2.21.3 (Camera position) video prints, at maximum 25m intervals for each manhole length as a record of the general condition of the pipeline. **PRINTS ONLY**

- b) All manholes or chambers or pits: all junctions and connections and other appropriate features.
PRINTS AND PHOTOGRAPHS, where the latter is possible

PS1.1.2.2 Format

Photographs and CCTV video prints shall be provided on both electronic and hard copy format.

PS1.1.2.3 Quality and size

Photographs and CCTV video prints shall:

- a) have high quality colour; and
- b) Be minimum 80X60mm in size, or as otherwise agreed with the Engineer or his duly authorised representative.

PS1.1.2.4 Record of photographs and video prints

Photographs and video prints shall be supplied in hard copy format in card index files. All photographs or prints relating to a particular manhole length shall be kept together and in order of chainage (prescribed interval) sequence. Each manhole length shall be clearly identified by inserting a divider (metal, cardboard or plastic). The divider shall have an annotation on the top face to show the start manhole number and the finish manhole number to the annotation specification laid out in sub-clause PS4.2.7.5 (Photographs and video print annotation). The annotation of the finish or start manhole shall be clearly visible when all photographs or prints are installed in the drawer. Each drawer shall contain approximately 20 photographs or prints, however, every effort shall be made to ensure that a complete manhole length's photographs or prints is always filed together.

PS1.1.2.5 Photographs and video print annotation

An annotation shall be provided on all issued photographs and video prints that shall:

- a) clearly identify the location (manhole reference), survey direction, chainage (in relation to the referenced manhole), print number and date;
- b) be clearly visible and in contrast to its background;
- c) have black type-printed Arial-type font with a size no greater than 5mm; and
- d) not interfere with the subject of the photograph or print.

PS1.1.3 CCTV camera operator qualifications

ONLY CCTV camera operators who have successfully attained the appropriate qualification, such as the WRC Level of Qualification for CCTV Operators or have completed an accepted alternate recognised training program shall be permitted to operate inspection equipment. A valid copy of the WRC Operators Certificate for each operator shall be submitted to the Engineer at least 10 days before commencement of the CCTV survey parts of the works.

Where no recognized qualification authority exists to facilitate such training and accreditation the Contractor shall provide conclusive proof that the proposed operator has minimum of 5 years of successful experience, having successfully completed at least 100km of water and sewer pipe surveys, in all aspects of water and sewer survey and capable of making accurate observations and recording all conditions that may be encountered in the water and sewer pipes.

PS1.1.4 Picture quality, camera, video recorder and monitor

The Contractor shall provide the test device(s) to enable practical demonstration of the quality of the video recordings, video prints and photographs that shall be provided for the duration of the Contract Period. Test devices for cameras shall utilise the Marconi Resolution Chart No.1 or its derivatives, or such device as may be approved by the Engineer or his duly authorised representative.

PS1.1.5 Condition grading

Evaluating the rate of conduit deterioration is important in order to facilitate educated decisions on scheduling required rehabilitation or the next survey. Thus, surveyed conduits are to be assigned condition grades according to their observed structural and functional integrity, from the best condition just after installation, to the worst condition just before rehabilitation work is required.

The Contractor shall be required through the use of CCTV cameras to video survey, record and assess the condition of water and sewer conduits according to WRC defect coding standards contained in the MSCC, including but not limited to:

- a) Structural condition of conduit walls. Length, size, material type, and depth of each conduits (all depths) shall be referenced from the top of the manhole frame to the invert of the conduit being inspected;
- b) any blockage or obstructions located within the conduit;
- c) condition of conduit joints, and lateral connections;
- d) any change in conduit diameter or conduit materials encountered in the manhole length;
- e) report on grade of conduit as to whether it is uniform or whether there appears to be sectional settlement or grade changes;
- f) infiltration;
- g) explanations for water level fluctuations;
- h) Location and condition of property connections, **including pan and tilt of all junctions/connections** unless otherwise specified by the Engineer or his duly authorized representative; and video prints shall be taken of all significant structural and/or operational deficiencies.

SCOPE OF WORK

Employer's Objectives

The objective of the Employer is to appoint an experienced Service Provider to provide an internal pipe assessment (CCTV) for a sewer network to analyse the physical conditions of the pipe to check which sections needs to be replaced. The project shall cover the following residential area.

PROJECT SURBURB	REGION LENGTH (m)
Davidsonville	2000m
TOTAL	2000m

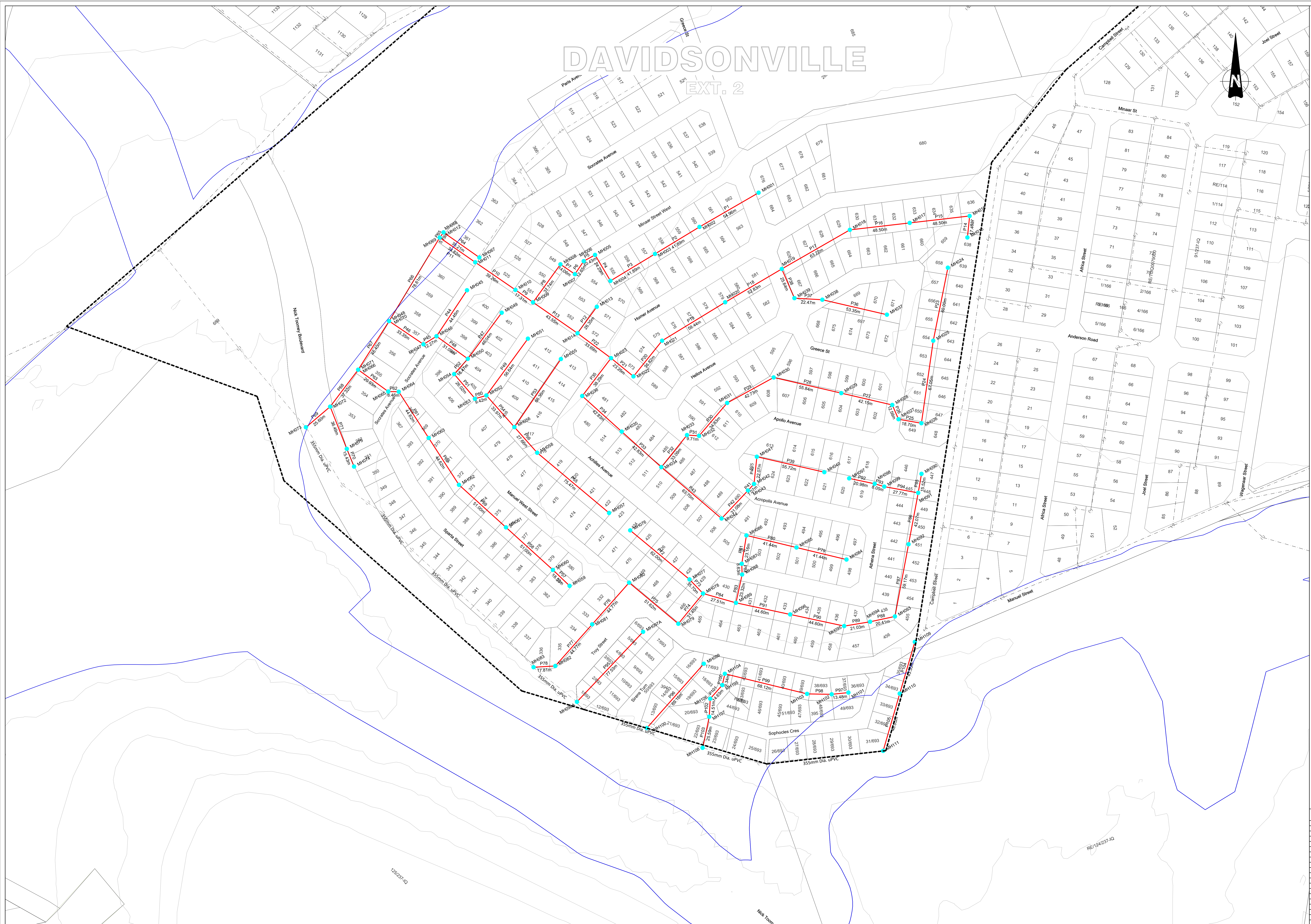
The total length that needs to be covered by the CCTV should not exceed 2000m. The sewer network of the area of Davidsonville. The successful service provider will be expected by the employer to meet on site prior to the commencement of any activity, to agree on the extent of the CCTV.

DAVIDSONVILLE
EXT. 2



- NOTES
1. ALL PIPES TO BE LAID IN ACCORDANCE WITH SANS 1200, LATEST REVISION AND THE REQUIREMENTS OF JOHANNESBURG WATER SOC LTD.
 2. ALL PIPES TO LAID UNDER TRENCH CONDITIONS UNLESS OTHERWISE SHOWN.
 3. CONTRACTOR TO CONFIRM LEVELS OF EXISTING PIPES BEFORE COMMENCING CONSTRUCTION.
 4. POSITIONS OF ALL EXISTING SERVICES ARE APPROXIMATED AND MUST BE VERIFIED ON SITE.
 5. ALL CONSTRUCTION WORK TO BE CARRYOUT IN STRICT ACCORDANCE WITH REQUIREMENTS OF JOHANNESBURG WATER.
 6. SEWERS GENERALLY 1,5m FROM BOUNDARIES UNLESS OTHERWISE SHOWN.

- LEGEND
- NEW 160mm Ø HDPE PN 8 SEWER PIPE (PIPE CRACKING)
 - NEW SEWER MANHOLE
 - EXISTING SEWER PIPE
 - EXISTING SEWER MANHOLE
 - DIRECTION OF FLOW
 - CONTOURS
 - 1 IN 100r FLOOD LINES



REFER TO DRAWING No:

REFERENCE DRAWINGS	
LAYOUT	
JW....DV2-LAY-S01	LAYOUT PLAN
JW....DV2-L-S-001	LONG SECTION SHEET 1
JW....DV2-L-S-002	LONG SECTION SHEET 2
JW....DV2-L-S-003	LONG SECTION SHEET 3
JW....DV2-L-S-004	LONG SECTION SHEET 4
JW....DV2-L-S-005	LONG SECTION SHEET 5
JW....DV2-L-S-006	LONG SECTION SHEET 6
JW....DV2-L-S-007	LONG SECTION SHEET 7
JW....DV2-L-S-008	LONG SECTION SHEET 8
JW....DV2-L-S-009	LONG SECTION SHEET 9
JW....DV2-L-S-010	LONG SECTION SHEET 10

DETAILS	
JW100-DET01-S01	MANHOLE DETAILS
JW100-DET02-W01	BEDDING DETAILS
JW100-DET03-S01	CONNECTION DETAILS

DRAWING No: JW.....DV2-LAY-S01

UR1214

PROJECT No:

A0

SHEET

SEWER

DISCIPLINARY

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ORIGINAL PAGE SIZE

FILE No:



DAVIDSONVILLE EXT 2
SEWER PIPE REPLACEMENT PROJECT
LAYOUT PLAN

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DRAWN	M. BALLIM	DATE	
CHECKED	C. MPHAHLE	DATE	
APPROVED BY:	T. MPANDAGUTA	DATE	
		ECSA REG. No.	

AMENDMENTS			
SCALE	REV.	DESCRIPTION	DATE:
1:1000	A	ISSUE FOR REVIEW	SEP 2021

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