Annexure B: JW Metering Guidelines and Specifications

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JOHANNESBURG WATER

WATER METERING GUIDELINES AND SPECIFICATIONS

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Prepared by
The Metering Task Team
Standard Committee

VERSION CONTROL

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1.0	June 2015	Mthokozisi Ncube	First draft
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1. INTRODUCTION

National regulation and by default local regulation adopts a universal metering policy whereby the quantity supplied to all water connections must be measured (or at least controlled) at regular intervals through the use of a measuring device. The de facto measuring device is an in-situ water meter complying with the relevant legislation.

This document serves to inform all aspects related to the *selection, sizing, installation, maintenance and removal/replacement of water meters and related ancillaries* within the City of Johannesburg area. The scope includes but is not limited to:

- *Bulk water meters* at the points of transfer of custody of bulk water supply from a bulk water provider to the water services provider responsible for distribution within its areas of supply (e.g. Rand Water to Johannesburg Water, Johannesburg Water to neighbouring municipalities etc.).
- *Zonal water meters* at strategic points downstream of bulk supply points for purposes of water management.
- *Consumer water meters* at the points of transfer of custody to individual customers. This also extends to sub-metering water meters of consumers on same premises that are supplied through a single water connection by Johannesburg Water, except where specified otherwise.

1.1. Outline of the document

The document consist of the following chapters

- Chapter 1: – summarises the purposes and scope of the document. The chapter is for information purposes
- Chapter 2: – summarises the legal framework and sets the pertinent scene for the specification. The chapter is for information purposes but the relevant legislation is normative.
- Chapter 3 – summarises the recommended guidelines and best practice for the management of the metering fleet. This section is mostly relevant to Johannesburg Water.
- Chapter 4: –summarises the technical meter specifications for use within the City of Johannesburg. This is a normative section of the document and its minimum requirements must be met at all times, by all parties.
- Chapter 5: –summarises the technical meter installation specifications for use within the City of Johannesburg. This is a normative section of the document and its minimum requirements must be met at all times, by all parties.

2. REGULATIONS

The key objective of regulations is to provide the standards and norms and a legal framework within which flow measurement of potable water, particularly for custody transfer purposes is carried out. The several sets of regulations that affect the metering of water supply include national legislation, provincial legislation, local by-laws, national standards, specifications and codes of practice and can be broadly classified into regulation relating to the installation and general measurement of water and those relating to metrology (i.e. the scientific study of measurement with required specifications.)

A number of the legislative documents are summarised below and the listing is not meant to be exhaustive but rather a selection of key documents. Readers are referred to the current versions of the relevant legislation and standards for a detailed definition of terms and requirements as these are not included in this document. Only salient requirements relevant to the setting of standards and guidelines within the City of Johannesburg are mentioned hereunder.

2.1. Metrology Regulation and Standards

2.1.1. Trade Metrology Act, 1973 (Act 77 of 1973) as amended

The main requirements of the act are that all meters used for trade purposes (i.e. billing purposes) shall be;

a) Verified before being put into use, to ensure the accuracy levels are within the required standards
b) The subject of on-going verification to also ensure the measurements are still within the prescribed tolerances.
c) Removed from service once the meter has become defective or its accuracy is not within the prescribed tolerances.

2.1.2. South African National Standards (SANS) 1529

This suite of standards (currently parts 1 – 4 and 9) determines the performance characteristics, dimensions, type approval requirements etc. for all metering devices used for trade purposes. The key requirements of the standards are that;

a) All water meters used for trade purposes must be type approved.
b) The prescribed flow rates are known as the minimum (q_{min}), transitional (q_t), permanent (q_p) and maximum or overload (q_s) flow rates.
c) The metrological class of a water meter describes the capacity of the meter to measure within prescribed tolerances of accuracy at prescribed flow rates which are expressed as ratios of its design flow rate capacity known as the permanent flow rate (q_p).
d) Only meters with metrological class B, C and D may be used for trade purposes

e) Meter verification can only be carried out in accredited institution by the accrediting authority (i.e. SANAS) and shall be carried out in terms of SANS 1529-1 : Annex B

f) The Permissible Tolerance on indication, which is the difference between the indicated volume and actual volume, shall not exceed the values given in Table 2.1.

Table 2.1: Permissible Tolerance on Indication

Meter Usage Status	***Flow Rates***	
	Less than q_t	***Not less than q_t***
New & Refurbished meters	5 %	2 %
Meters in use	8 %	3.5 %

g) All meters must be appropriately sealed meters such that, after verification there is no possibility of altering the meter or its adjustment device without damaging the seal. Such sealing can only be done in an accredited institution and by an accredited Verification Officer

h) Each meter shall be clearly and indelibly marked with the following information other than on its cover (specifically for meters up to 100mm)

- Manufacturer name, trade name or registered trade mark
- Permanent flow rate (q_p) in cubic meters per hour
- Serial number, which may include year of manufacture
- Direction of flow
- South African approval number
- Metrological class and the meter installation orientation for such class where appropriate
- Nominal working pressure, if other than 1600Kpa
- Pressure loss (either the group or in kPa)

The SANS 1529 is similar to previous versions of the ISO 4064 document. Despite being comparatively out-dated, it represents what is legal for custody transfer within South Africa.

2.1.3. ISO 4064 and OIML R 49

The ISO 4064 (current version 2014) is made up of five parts dealing with metrological and technical requirements, test methods, test report format, installation requirements and other non-metrological requirements. It applies to hot and cold water measurements by both mechanical devices and modern electronic devices.

The International Organization of Legal Metrology (OIML) is a worldwide, intergovernmental organization whose primary aim is to harmonize the regulations and metrological controls applied by the national metrological services. International Recommendations (OIML R),

which are model regulations that establish the metrological characteristics, required of certain measuring instruments and which specify methods and equipment for checking their conformity.

ISO 4064: 1 – 3 are essentially the same as OILM R49: 1 – 3 and represent the latest standards in water metering metrology and meters conforming to such requirements may demonstrate better performance.

2.2. Installation Requirements and Measurement Regulations

2.2.1. City of Johannesburg Water Services By Law

The by-law allows for the metering of every connection with a suitably sized meter, which can be resized accordingly whenever necessary with the City exercising the option to recover such costs from the consumer. Such meter remains the property of council.

Provision is also made for the testing of suspected defective meters upon payment of a requisite application and fee.

2.2.2. SANS 10252-1

The standard specifies the requirements of water supply installations for buildings. Salient requirements include;

a) All water supplied from a water main to an installation shall pass through an approved water meter complying with relevant legislation
b) The water meter shall be installed in accordance with the manufacturer's specifications in easily accessible and maintainable location
c) Meter installations size DN 15 to DN 40 shall include an upstream isolating valve.
d) An upstream strainer and downstream non-return valve shall be fitted, if not included in the water meter
e) An isolating valve accessible to the consumer shall be fitted downstream of the water meter.
f) Where meters are exposed to the elements, the meter shall be installed in a protective meter box or manifold assembly. An additional isolating valve shall be fitted downstream of the water meter, either incorporated in the meter box or in the service connection to the consumer
g) Installations where the water flow has a very high differential between low and high flow, combination meters shall be used

2.2.3. Regulation R509 of the Water Services Act 108 of 1997

These regulations relate to the compulsory national standards and measures to conserve water. Salient details include;

a) A water services authority must include a water services audit in its annual report that includes meter installation and meter testing information, containing at least
   - the number of new meters installed at consumer installations; and
   - the number of meters tested and the number of meters replaced expressed as a percentage of the total number of meters installed at consumer connections

b) a suitable water volume measuring device or volume controlling device must be fitted to separately measure or control the water supply to
   - all user connections provided with water supply services
   - every individual dwelling within a new sectional title development, group housing development or apartment building;
   - every individual building, having a maximum designed flow rate exceeding 60 litres per minute within any commercial or institutional complex; and
   - every irrigation system with a maximum designed flow rate exceeding 60 litres per minute that uses water supplied by a water services institution

2.2.4. SANS 10400 - W: Fire installation (National Building Regulations)

Main relevant requirements from the standard are that

a) In the case of a water meter installation for the purposes of measuring fire flow, such meter and any related valve(s) shall not significantly restrict the flow of water

b) The quantity, pressure and rate of flow of water shall be adequate for the supply of any hose reel, hydrant or sprinkler system connected thereto.

3. METER FLEET MANAGEMENT

This Chapter deals with the best practice in water meter management that Johannesburg Water is committing to adopting to allow for the prudent management of all meters within the company and the maximisation of revenue based on metering. The principles contained in the following sections are thereafter translated into the normative specifications of Chapter 4 and 5.

Figure 1 summarises what is regarded as the best practice in meter management – similar principles are contained in a 2011 Water Research Commission (WRC) publication entitled "*Introduction to Integrated Water Meter Management*" or the more comprehensive text published by the International Water Association (IWA) entitled "*Integrated Water meter Management*".

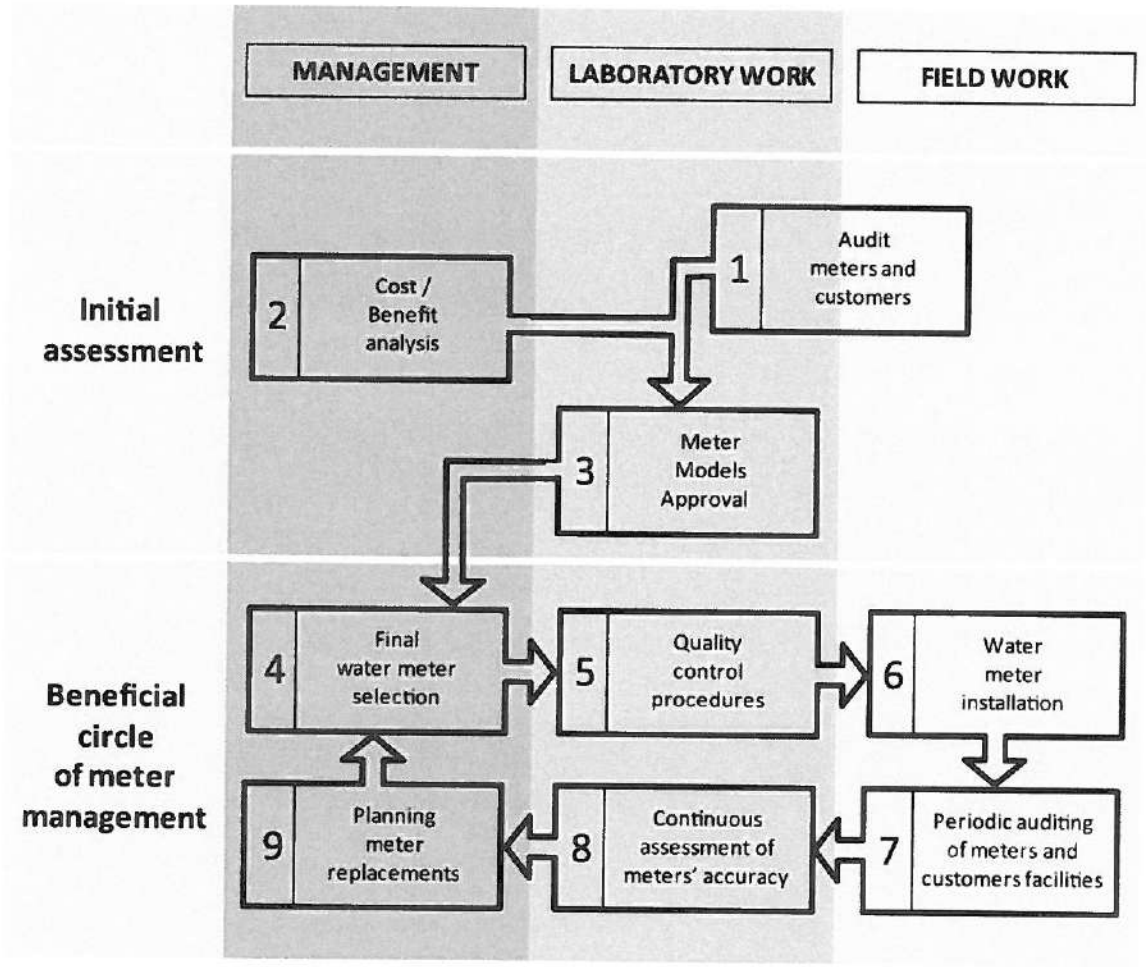

Figure 1: Nine steps towards better water meter management – Adopted from Arregui *et. al.* (2012), Water Science and Technology (65) 7.

JW adopts the nine steps as guiding principles for all meter management work and shall accordingly ensure that relevant departments, sections and units are appropriately assigned

relevant functions within the steps with a senior manager ultimately responsible for the integrity of the meter management process.

3.1. Minimum Requirement on Meter Information Datasets

JW will endeavour to appropriately update and/or procure its meter related information systems to ensure that such systems (individually or through interfaces as maybe deemed appropriate) are able to cater for the following minimum requirements;

a) The ability to support and manage all JW water meters including but not limited to conventional meters, prepayment meters, district metered zones (DMZ) meters, bulk meters, smart meters etc. and the ability to aggregate a group of meters against appropriate bulk and/or virtual meters for water balancing requirements. For each individual meter and or meter type, the following attributes shall at the minimum be kept;
   - Manufacturer name, trade name or registered trade mark
   - Permanent flow rate
   - Serial number
   - Direction of flow
   - South African approval number
   - Metrological class and the meter installation orientation for such class
   - Nominal working pressure, and pressure loss
   - Installation date
   - Geo-location information
   - Service type information

b) The ability to support meter reading and billing related functions such as validation, estimation, event creation and management, different billing methodologies, exception handling etc. Support for maintaining the integrity of the meter reading (physical counter) on the system must also be allowed for even in the case of financial transactions such as rebates etc.

c) The ability to support full blown asset management of meters that will support the storing of meter error curves, condition assessment and meter error determination, maintenance and calibration requirements etc.

3.2. Meter and Consumer Audit

It is understood that some of the requirements spelt out in §3.1 are currently not available or the data is largely inaccurate within JW datasets. As such, a meter audit seeking to fill this gap and also create a better understanding of the consumer and consumer group will be implemented within a reasonable period. Such an audit shall be the first crucial step in cleaning up the meter information within the company.

Subsequent to the initial meter audit, the company shall, also as part of quality control processes, perform random meter and consumer audits on an on-going basis as deemed appropriate. This may also be integrated into the routine meter reading program on a monthly basis.

Consumption characterisation through consumer meter logging for current and emerging group of consumers shall also be carried out on an on-going basis based on representative samples to inform meter selection and sizing.

3.3. Meter Selection and Sizing

Meter selection shall be conducted on a minimum of an annual basis and shall be based on the metrological performance of meters matched against consumption profiles (§3.2) of the relevant consumer groups. All relevant information contained with information systems in §3.1 and the testing done as part of §3.4 and other appropriate sources shall be the basis of such selection.

Meter sizing tools shall be developed for personnel dealing with the installation of meters and shall be based on empirical data, wherever possible. Default meter sizes for specific type of consumers shall be contained within relevant information systems and must only be changed upon approval by relevant personnel.

3.4. Meter Metrology Verification (Initial and Continuous)

As part of quality control procedures, JW shall endeavour to test samples of meters destined for delivery and installation before such meter meters are handed over to JW or any other party working on behalf of JW in the installation of meters. This invariably includes meters installed by private developers, the housing department and others that will eventually form part of the JW meter stock. Such requirements shall form part of any procurement to be done.

In keeping with the SANS 1529-1 all meters installed within JW shall be the subject of on-going verification (testing) to establish the accuracy of suitable groupings of meters. A proactive meter testing program shall be developed and implemented based on sampling techniques.

All data collected as part of the verification program shall be kept in the relevant information systems and shall form the basis of meter selection, sizing and maintenance requirements.

3.5. Meter Procurement and Material Management

The procurement of all meters and related material that shall form part of the JW meter fleet shall be centralised for control purposes. This may mean that all meters and fittings are only

procured through a JW meter and/or fittings supply contract or from JW approved/appointed meter/fittings suppliers as appropriate.

Stores withdraws shall also be installation specific for each connection and consumer to ensure that all installations are in keeping with the meter management philosophy and that all associated fittings comply with the meter spacing requirements, among others.

3.6. Meter Maintenance and Replacement

The proper and correct implementation of §3.1 to 3.5 will invariably inform which meters need to be maintained and/or replaced at any moment in time. While other methodologies maybe used in the determination of meter maintenance and replacement, such methods need to align with the empirical data collected as part of the JW process of managing meters. The average daily consumption figures for each connection shall be used as the basis of prioritising all meter maintenance and replacement work to minimise revenue losses to the company.

Rigorous quality control procedures shall be instituted and managed for all meter related installation to ensure the proper selection and installation of metering devices.

Approvals

Due to the importance of the preceding sections, the following heads of departments and executives fully support the initiative and accent to the full implementation of the same

General Manager: Operations

Senior Manager: Metering

17.06.2016

Chief Operations Officer

22/06/2016

Chief Financial Officer
Acting.

4. METER SPECIFICATION

4.1. JW Metering Requirements

Water meters compliant with this specification document shall be installed at **all user connections** (including temporary ones) provided with a water supply services. This further extends to

- every individual dwelling within sectional title developments, group housing developments or apartment buildings;
- every individual building, or subsystem (e.g. irrigation) having a maximum designed flow rate exceeding 60 litres per minute within any residential, commercial or institutional complex;
- Every pipeline that marks the beginning of a water distribution zone/boundary
- Every PRV installation
- Every water reservoir outlet
- Every inlet and outlet to any treatment facility

At any point in time, all meter installations in the above categories that could potentially become JW's asset must be sourced from approved metering supplier(s) appointed by JW for the purposes of supplying meters during the period in question.

4.2. Reference Standards and Definitions

SANS 1529 (various parts), the Trade Metrology Act No. 77 of 1973 and Regulation 80 of Part II of the Trade Metrology Regulations are the primary normative reference for this specification and users are referred to those standards for relevant definition of terms.
ISO 4064/OIML R49-1 is the secondary normative reference and must be used accordingly together with its definitions.

Other relevant standards include;

- SANS 1123: Steel pipe flanges,
- SANS 1217: The production of painted and power-coated steel pipes, and
- SANS ISO 6509: Corrosion of metals and alloys – determination of dezincification resistance of brass.
- SANS 15874 – Plastics piping systems for hot and cold water installations – polypropylene, specifically Part 2: pipes and Part 5: fitness for purpose of the system
- SANS 967 – Unplasticized polyvinyl chloride (PVC-u) soil, waste and vent pipes and pipe fittings
- SANS 16135 – Industrial valves: ball valves of thermoplastics materials

4.3. General Requirements for all Water Meters

Water meters must comply with SANS 1529 (various parts) and must be approved in terms of Section 18 of the Trade Metrology Act No. 77 of 1973 and Regulation 80 of Part II of the Trade Metrology Regulations, unless exempted.

All meters must be tested in a SANAS accredited laboratory in compliance with the SANS 10378. This test laboratory must be owned by the manufacturer and be situated within the borders of South Africa.

Meters must also be listed on the current JASWIC (Joint Acceptance Scheme for Water Services Installation Components) acceptance list.

All water meters offered and accepted must be accompanied by a calibration or verification certificate as applicable when delivered. The calibrations or verification certificates must show at least the following relevant details

- Date and validity of calibration or verification
- Test procedure number
- Accrediting authority and accreditation number
- Meter make & model
- Meter number
- Meter nominal bore and permanent flow rate
- Pressure test
- Test results in the case of calibrations
- Traceability
- Uncertainty of measurement.

4.3.1. Remote Output System (Pulse Output)

All meters must be fitted with a remote output system for data logging and telemetering purposes. The output system, including the communications port, shall not alter the metrological or mechanical performance of the meter. For large bore meters, preference will be given to those meters that incorporate both a low frequency output (e.g. reed switch) and a high frequency output (e.g. opto-coupler), wherever possible.

Necessary connection(s) should be easily be made to the meter(s) output system without

- Breaking the seal
- Using any specialized tools
- Replacing the register

4.3.2. Meter Markings

Each water meter shall be clearly and indelibly marked with the following information

- Manufactures name or trade name or registered trade mark and model of the meter
- Permanent flow rate, in cubic meters per hour
- Unique serial number
- Direction of flow, applied to the body of the meter and indicated for example by an arrow
- An indication of the orientation of mounting (horizontal or otherwise)
- Metrological class, e.g. B, C or D
- Nominal working pressure in kPa
- Pressure loss (either the group, or in kilopascals)
- Nominal bore of the meter in mm

The hinged cover of the water meter dial shall not be used for this purpose nor shall these markings be on any material that can degrade with time and cannot withstand harsh environmental conditions.

The meter serial number should be readable from the same position as the dial.

Additionally, all meters that shall become part of the JW meter stock must have a "JW" mark on the meter which shall be clear and indelible.

4.3.3. Pre-delivery Requirements

All meters purchased in bulk and that shall form part of the meter fleet of JW shall be subject to the following conditions prior to the delivery and subsequent installation and handover to JW;

- The meter manufacturer shall supply a file in a prescribed format to JW with the list of all meters intended to be supplied together with the specifications of such meters to include all parameters mentioned in Section 4.3.2 and any other parameters that are deemed necessary or might be required by JW.
- JW may generate a random sample from such list for the verification of the performance of such a batch of meters through testing at a laboratory of JW choice. The outcome of such quality control tests shall determine the suitability and therefore the acceptability of the meter batch.
- JW, or an assigned representative, may elect to be present during the delivery of such meters to inspect their suitability.
- JW, or an assigned representative, may elect to perform an independent audit of the manufacturer's quality control system and the physical inspection of the testing of meters destined to JW.

All meters meant for what JW deems as critical installations and/or consumers are automatically subject to the above requirements irrespective of the number of meters involved. Such quality control measures shall be done at the cost of JW for one test per batch, any subsequent tests for that batch shall be for the cost of the manufacturer/supplier.

4.4. Threaded Small Bore Water Meters

4.4.1. Preferred meter types

The preferred meter types are Inferential Multi-Jet and Semi-Positive Type Meters. All other alternative and approved type of meters (such as solid state meters) may be considered and offered, with the exception of single-jet meters, on a case by case basis.

4.4.2. Materials

Metal Bodies and Components

Copper alloy components intended to be in contact with the water being measured shall have a dezincification resistance quality that complies with the SANS 6509 standard. Metallic coatings on copper alloy components may be used to enhance mechanical operation and accuracy of the meter but shall not be used for the purpose of corrosion protection.

Stainless steel components intended to be in contact with the water being measured shall be of a grade not susceptible to crevice corrosion.

All metal bodied meters must be fusion bonded powdered epoxy coated internally and externally to a minimum coat film thickness of 250microns and a maximum thickness of 650microns. An external water resistant coating, preferably blue in colour, must be applied on all metallic meters.

Plastics Bodies

Plastics bodies or plastic components that are necessary to maintain the metrological integrity of the water meters, and manifolds in the case of manifold meters, shall only be manufactured from virgin materials and, when tested in accordance with the provisions of SANS 1529, shall show no sign of leakage or weeping through any joint or component part and no component part shall show signs of permanent damage.

4.4.3. Technical Specifications

The minimum performance specifications of the meters are summarised in Table 4.1 while Table 4.2 summarises the preferred meter physical characteristics.

Table 4.1: Minimum Performance Requirements

Flow rate and permissible error	Units	Nominal Bore				
		15mm	20mm	25mm	32mm	40mm
Maximum flow rate, Q_s (± 2%)	m^3/h	3	5	7	12	20
Continuous flow rate, Q_p (± 2%)	m^3/h	1,5	2,5	3,5	6	10
Transitional flow rate, Q_t (± 2%)	l/h	22.5	37.5	52.5	90	150
Minimum flow rate, Q_{min} (± 5%)	l/h	15	25	35	60	100

Table 4.2: Preferred Meter Details

Nominal Bore	Preferred Material	Thread/Flange	Overall Length
15mm	Plastic	½" BSP thread	114mm
20mm	Plastic	¾" BSP thread	190mm
25mm	Plastic	1" BSP thread	260mm
32mm	Plastic	1½" BSP thread	260mm
40mm	Plastic	1½" BSP thread	300mm

All meters offered shall be able to withstand a nominal working pressure of at least 1600kPa and, shall be fitted as standard with an internal strainer and a non-return valve. If the meter can be calibrated, the calibration device shall be fitted internally to prevent tampering.
In the case of wet dial meters, the cover to the dial shall be spring-loaded to close.

4.5. Meter with Integral Pulse Facility and Flow Restricting Device Pre-Fitted in a Plastic above-Ground Box

The meter is to comply with the specifications detailed in 4.4 for all meter sizes other than the 40mm meter. Suppliers are however encouraged to offer an appropriate above ground box for the 40mm meter, if available.

The meter box must be manufactured from a UV stabilized engineering plastic conforming to SANS 967, with a minimum 5mm wall thickness and approximate dimensions of ±800mm X ±250mm X ±100mm and must be white in colour, with a blue lid. The above ground meter box should comply with the following requirements;

- Design that facilitates the quick and watertight replacement of water meters in-situ without reassembling the internal piping of the box.
- When installed, the meter shall be capable of supporting the imposed loads that are expected to be applied to surface box installation, such as a person sitting on it. The design of the assembly shall ensure that all vertical load distribution is achieved without due deformation of the main body of the meter box or its components and that no stress is directly transmitted to the connecting pipe work.

- An attached base plate to prevent soil ingress and provide a founding base for the box
- The 20mm nominal diameter class 16 polypropylene or similar SANS/JASWIC approved pipe assembly **with a maximum of two bends both sides of the meter** within the housing and must terminate as follows;
  15mm meter – ¾" female threaded fitting – 25mm HDPE piping
  20mm meter – 1" female threaded fitting – 25mm HDPE piping
  25mm meter – 1¼" female threaded fitting – 32mm HDPE piping
- All fittings connected to piping inside the box must be fusion welded and manufactured from polypropylene or other SABS Mark bearing or JASWIC approved plastic material for use in potable water systems. Care should be taken that the internal welding bead is not excessive as this could be grounds for disqualification.
- The valves and fittings inside the box shall have a minimum pressure rating of PN16 and the assembled unit shall be hydraulically tested for leakage at a pressure of 2400 kPa for a minimum period of three minutes
- Hinged lids without a locking mechanism or a locked hinged lid with a slot through which the meter reading and serial number may be read.
- One ball-type stop valve on the inlet side of the meter inaccessible to the consumer and another ball-type stop valve, accessible to the consumer without having to open the box. Both valves must be compliant to SANS 16135.
- A SABS approved 3-way flow restriction device with a key unique to JW must come standard with the meter box to facilitate disconnections.
- Have the JW logo embossed on the cover (50 mm by 35 mm)
- The flow direction and a line indicating the recommended installation depth (approximately 400mm from the bottom) must be clearly visible on the side of the box.

End connections shall be

- 15mm meter – ¾" female threaded fitting – 25mm HDPE piping
- 20mm meter – 1" female threaded fitting – 25mm HDPE piping
- 25mm meter – 1¼" female threaded fitting – 32mm HDPE piping

The female treading shall be over a reinforced nylon threaded insert.

4.6. Plastic Surface Box for 32 - 40mm flanged meters

The requirement for surface meter boxes is limited to 32 - 40mm threaded meters only as all other meters must be above ground.

The meter box must be manufactured from a UV stabilized engineering plastic conforming to SANS 967, with a minimum 5mm wall thickness and must be black in colour with a blue lid. The surface meter box should comply with the following requirements;

- The surface meter box assembly when installed shall be capable of supporting the imposed loads that are expected to be applied to surface box installation and include loads from vehicular traffic.
- The design of the assembly shall ensure that all vertical load distribution is achieved without due deformation of the main body of the meter box or its components and that no stress is directly transmitted to the connecting pipe work.
- Where the meter box base is designed to assist in the distribution of top (surface) loading, no load shall be taken directly or indirectly by the inlet and outlet pipe work. Sufficient surface area shall be provided for the base of the meter box to provide stability to the box and safely transmit any imposed load to the formation level without deformation
- The surface meter box should at least incorporate the following
    - Meter box with an attached base plate
    - A design that facilitates the quick and watertight replacement of water meters in the field
    - Have the JW logo embossed on the cover (50 mm by 35 mm)
    - Plastic meter box lid must be ultraviolet light resistant.

4.7. Pre-Payment Meters

This section summarises the minimum normative requirements for prepayment meters. All other specific details over and above these requirements are contained in project specific documentation.

The measuring part (the meter) of the prepayment system must comply of Sections 4.4 – 4.5 in all aspects for it to be deemed compliant.

4.7.1. Standards

Only metering devices complying the following standards are required

- SANS 1529-1 and SANS 1529-9 in terms of metrological requirements
- IEC 62055-41 and IEC 62055-51 in terms of prepayment tokens

The devices must also fall within the JASWIC list of approved meters and by default, the NRCS list of approved prepayment devices and the STS Association list of approved water devices.

4.7.2. Technical Specifications

The prepayment device must be able to meet the following requirements;

- The system shall incorporate shutoff valve and non-return valve
- Housing options: Pillar box, above ground unit as well as a wall mount box all with the necessary plumbing for easy replacement of existing meters complying with the requirements of Section 4.5.
- Operate in varying modes that include credit, prepayment mode or flat rate mode
- Full calendar clock with non-volatile memory and dedicated long term battery
- Adequate storage of all meter alarms including battery and tamper alarm, all time stamped
- Customer Interface Unit (CIU) control and keyboard input that must withstand being dropped from a 2m height.
- In prepayment mode, the device must incorporate functionalities for emergency water supply, lifeline supply (trickle flow) and free basic water, which must all be programmable.
- Automatic disconnection of flow when a temper event is recorded

4.8. Flanged Large Bore Water Meters (Sizes 40mm and above)

The preferred meter types for these meters shall be a Woltmann WP type or similar (including hybrids) for all installations while other types such as electromagnetic and ultrasonic types will be evaluated on a case by case basis, particularly for water management installations.

4.8.1. Materials

The meter body must be manufactured from spheroidal graphite iron to SABS 936, Grade 42 to a working pressure of 1600kPa and flanged to SABS 1123 Table 16 with the bolt holes drilled off-center and be coated internally as well as externally with a non-toxic and non-tainting Fusion Bonded Powdered Epoxy Coating (SANS 1217 Type 2) with a minimum 250 microns and maximum 650 microns coat film thickness and incorporate a suitable UV protection top coat on the external coating for aboveground applications . The use of an Epoxy/polyester powder coating shall not be accepted. All cover bolts must be stainless steel to ensure ease of maintenance while internal plastic components must to be constructed of virgin materials. Stainless steel bolts should have a minimum grade of 304.

4.8.2. Technical Specifications

Table 4.3 summarises the minimum performance requirements of all meters. The meters to be supplied must conform to the following requirements;

- All meter sizes should provide the facility for the fitting of at least two pulsers of different pulse values, of which one will be a bi-directional high frequency pulser.
- All meters must be capable of accepting pre-calibrated measuring inserts without loss of accuracy and these must be supplied complete with registers, O-rings and/or appropriate sealing gaskets.

Table 4.3: Minimum Performance Requirements

Flow rate and permissible error	Units	Nominal Bore				
		40mm	50mm	80mm	100mm	150mm
Maximum flow rate, Q_s (± 2%)	m^3/h	60	90	200	250	600
Continuous flow rate, Q_p (± 2%)	m^3/h	40	50	120	180	450
Transitional flow rate, Q_t (± 2%)	m^3/h	0.8	1.0	2.0	2.0	4.0
Minimum flow rate, Q_{min} (± 5%)	m^3/h	0.3	0.5	0.75	1.2	1.8

- The registers (dry dial only) must be hermetically sealed copper/glass canned construction in compliance with IP68 standards ensuring a waterproof enclosure.
- The meter register should preferably be capable of being rotated through 360 degrees.
- The meter should offer an upgrade path to AMR without modifications to the measuring insert.
- The stated measuring accuracy under installation conditions should be guaranteed with not more than 3 diameters of unrestricted clear straight pipe in front of the meter.
- Meters must be flanged to SABS 1123 Table 16 and capable of withstanding a nominal working pressure of at least 1600 kPa.

4.8.3. Pre-calibrated Measuring Inserts

Pre-calibrated measuring inserts may be supplied complete with registers, O-rings and/or appropriate sealing gaskets and must be compliant with Table 4.3 requirements.

4.9. Combination Mechanical Water Meters

Combination meters are **not preferred** for use within JW and must only be used in cases where no suitable meter is available for the desired flow range.

Only compact combination meters consisting of 2 meters in one body are acceptable for sizes 50mm – 100mm while two separate bodies may be used for 150mm meters.
The technical specification of these meters must comply with those specified for the respective meter in sections 4.4.3 and 4.8.2 i.e. the main meter to Section 4.8.2 while the smaller meter to 4.4.3 with no exception.

4.10. Strainers for Large Bore Meters (40mm – 150mm)

The Inline strainer must be manufactured from spheroidal graphite iron to SABS 936, Grade 42 to a working pressure of 1600kPa and flanged to SABS 1123 Table 16 with the bolt holes drilled off centre. The strainer must have a heavy duty stainless steel sieve that must be securely supported at the top and bottom of the strainer body and be removable for cleaning purposes without disturbing the flange joints. The body length of the strainer (flange to flange dimension) shall be as follow:

- 40mm to 80mm Inline strainer – 200mm body length
- 100mm Inline strainer – 250mm body length
- 150mm Inline strainer – 300mm body length

After removal of all contaminants and the surfaces blast-cleaned with a suitable abrasive the inline strainer shall be coated internally as well as externally with a non-toxic and non-tainting Fusion Bonded Powdered Epoxy Coating (SANS 1217 Type 2) with a minimum 250 microns and maximum 650 microns coat film thickness and incorporate a suitable UV protection top coat on the external coating for aboveground applications . The use of an Epoxy/polyester powder coating shall not accepted.

The following information shall be legibly and indelibly cast on each strainer body:

- The manufacturers name ,trade name or trade mark
- Strainer size
- Direction of flow indicator
- Class of strainer e.g. Class16, PN16

5. METER INSTALLATION SPECIFICATION

5.1. Reference Standards and Definitions

The primary standard relating to metering installations is SANS 10252-1 which specifies the requirements of water supply installations for buildings. Other relevant standards include;

- SANS 62: Medium Class Steel Pipe for pipe nominal size 40mm to 150mm,
- SANS 815: Shoulder-ended and groove-ended piping systems
- SANS 967: Unplasticized polyvinyl chloride (PVC-u) soil, waste and vent pipes and pipe fittings
- SANS 1109: Pipe threads where pressure-tight joints are made on the threads
- SANS 1123: Steel pipe flanges,
- SANS 1217: The production of painted and power-coated steel pipes,
- SANS ISO 6509: Corrosion of metals and alloys – determination of dezincification resistance of brass.
- SANS 15874 – Plastics piping systems for hot and cold water installations – polypropylene, specifically Part 2: pipes and Part 5: fitness for purpose of the system, and
- SANS 16135 – Industrial valves: ball valves of thermoplastics materials

5.2. General Requirements for all Water Meter Installations

All metering installation within the City of Johannesburg shall be of the above ground type, except for threaded 32 - 40mm meters for which a surface meter box may be used. All plastic meters shall also be appropriately protected from exposure to sunlight in a meter box compliant with Section 4.5 and 4.6.

All fabricated fittings shall conform to the latest issue of SANS 815, with JIS steel buttweld fittings complying dimensionally to ANSI B16.9. Segmented bends and segmented reducers will not be accepted.

Flanged pipe and fittings shall be supplied complete with one insertion piece of the appropriate diameter and made of a material suitable for the maximum test pressure. The flanges must be flat faced and drilling of steel shall conform to the requirements of SANS 1123 (Table 1600/3), as applicable, appropriate to the class of pipe specified. All threading on fabricated steel fittings must be screwed to the latest issue of SANS 1109.

5.2.1. Pre-delivery Requirements for Fabricated Fittings and Pieces

Prior to delivery, all bulk purchases of materials shall be inspected to ensure compliance to specifications by a JW Materials Officer at the Manufacturers premises, with copies of the relevant test Certificates to specified SABS Specifications supplied on request. Such inspections shall be arranged for prior, with a minimum of 48 hours being given.
The outcome of such inspection shall determine the suitability of each consignment of fabricates Steel pipes and fittings.

All pipes must have end covers to prevent the ingress of dirt. After inspection the fabricated steel pipes and fittings shall be bubble wrapped, before delivery, for the protection of the coating during transportation and storage

5.3. Meter Selection, Sizing and Installation

The standard meter size for all small connections shall be a **15mm** diameter **Class C** meter complying with Section 3, regardless of the size of the connection pipe. 20mm and 25mm meters must only be installed where there is sufficient information and justification on the flow profile and pressure for the connection point.

New meter installations shall be appropriately designed using the best available flow profile information (not purely average flow) and loading units for the maximum expected flowrate. Existing installations shall at the least, be replaced with like for like in terms of meter class and flow regime and at best by downsizing them to the appropriate meter size and flowrate at the same class or better. Under no circumstances shall a meter be upsized without the relevant supporting information.

Meter selection for combined connections (fire + consumption) shall be based on meeting the required fire flow rate for a maximum duration of 4hrs without significantly restricting the flow – such a flow must invariably not be the permanent flow rate of a meter but the overflow flowrate or maximum flowrate that the meter can handle in four hours. JW accepts that the meter may be damaged by such high flows and undertakes to change such meters if and when a fire event occurs.

5.3.1. Straight Pipe Lengths

Adequate straight pipe lengths shall be allowed for both on the upstream and downstream side of the meter. The following are the required minimum lengths in the case of JW;
Upstream – 5 dia (or manufacturer's recommendation if greater)
Downstream – 3 dia (or manufacturer's recommendation if greater)

5.3.2. Installation Orientation and Detail

All meters shall be installed in the horizontal (longitudinally and laterally) position and must be such that it can be read facing downwards by a meter reader of average height.
Individually metered flats and sectional title stand may be installed in a vertical position (using a meter for vertical mounting) and must be such that they may be read from a kneeling position.

All installation of large flanged meters must be in accordance with relevant JW standard drawings, while the threaded small bore meters must be in the appropriate meter box referred to in Sections 4.5 and 4.6.
All associated valves for the above ground installations shall be appropriately housed and covered with a blue lid marked "V"

5.4. Fabricated Pipes and Fittings

5.4.1. Type and Grade of Pipes

The piping for the fabricated steel fittings and distance pieces must comply with the requirements of SANS 62, with the external and internal weld bead removed. For threaded spool pipes, only continues pipes with threaded ends are acceptable – no threaded to plain ended adaptors, welded onto the spool pipe, will be accepted. The following are the minimum wall thickness required

Table 5.1: Required Minimum Pipe Wall Thickness

Range	Nominal bore wall thickness (mm)
40mm	2.8
50mm	3.2
80mm	3.5
100mm	3.9
150mm	4.2

5.4.2. Spool Pipes Markings and Preparation

All fabricated steel pipes and fittings must be clearly marked with the following information, in compliance with in SABS 62:

- Trade Name or Trade Mark of Manufacture
- Contract and Order Number.
- Size of the Fitting
- Date of fabrication.

CHAPTER 1

INTERPRETATION

Definitions and interpretation

1. (1) In these By-laws, any word or expression that has been defined in the National Road Traffic Act, 1996 (Act No. 93 of 1996) including any regulations made thereunder or the Gauteng Provincial Road Traffic Act, 1997 (Act No. 10 of 1997) including any regulations made thereunder, has that meaning and, unless the context otherwise indicates –

"authorised official" means –
(a) a member of the Johannesburg Metropolitan Police established in terms of section 64A of the South African Police Service Act, 1995 (Act No. 68 of 1995); or
(b) any person or official authorised in writing as such by the Council.

"Council" means –

(a) the Metropolitan Municipality of the City of Johannesburg established by Provincial Notice No. 6766 of 2000 dated 1 October 2000, as amended, exercising its legislative and executive authority through its municipal Council; or

(b) its successor in title; or

(c) a structure or person exercising a delegated power or carrying out an instruction, where any power in these by-laws has been delegated or sub-delegated, or an instruction given, as contemplated in section 59 of the Local Government: Municipal Systems Act, 2000 (Act No. 32 of 2000); or

(d) a service provider fulfilling a responsibility under these by-laws, assigned to it in terms of section 81(2) of the Local Government: Municipal Systems Act, or any other law, as the case may be.

"municipal store" means the municipal store of the Council;

"prescribed" means determined by resolution of the Council from time to time;

"prescribed fee" means a fee determined by the Council by resolution in terms of section 10G(7)(a)(ii) of the Local Government Transition Act, 1993 (Act No. 209 of 1993), or any other applicable legislation;

"public road" means a square, road, sidewalk, island in a road, subway, avenue, bridge, public passageway and any thoroughfare shown on the general plan of a township or in respect of which the public has acquired a prescriptive or other right of way and which is

vested in the Council in terms of section 63 of Local Government Ordinance, 1939 (Ordinance No 17 of 1939) or any other law;

"storekeeper" means the person in the service of the Council who holds the position of storekeeper or a person acting in that capacity;

"token" in respect of a trolley, means a sign on which the name or trade name and the address of the owner appears;

"trolley" means a push trolley, push cart or any table, stand or basket on wheels;

"watercourse" means a watercourse as defined in section 1 of the National Water Act, 1998 (Act No. 36 of 1998);.

(2) If any provision in these by-laws vests or imposes any power, function or duty of the Council in or on an employee of the Council and such power, function or duty has in terms of section 81(2) of the Local Government: Municipal Systems Act, 2000 (Act No. 32 of 2000), or any other law been assigned to a service provider, the reference to such employee must be read as a reference to the service provider or, where applicable, an employee of the service provider authorised by it.

(3) The provisions of the Code of Practice for work in the road reserve set out in Schedule 2 to these By-laws, form part and parcel of these By-laws for all purposes.

CHAPTER 2

PUBLIC ROADS AND MISCELLANEOUS

Ropes, wires or poles across public road

2. No person may place any rope, wire or pole on, under or across any public road, or hang, or place anything whatsoever thereon, without the prior written permission of the Council.

Damage to trees

3. No person may climb upon, or break or damage or in any way mark or paint on any tree on any public road within the municipal area of the Council, and no person may, without the prior written permission of the Council, lop, top, trim, cut down or remove any such tree unless the person is authorised to do so in terms of these By-laws or any other law.

Barbed wire, dangerous and electrical fencing

4. (1) No owner or occupier of land -

(a) other than an owner or occupier of an agricultural holding or farm land, may along any public road erect or cause, or permit to be erected, any barbed-wire fence or any railing, paling, wall or other barrier which, by reason of spikes or other sharp or pointed protrusions or otherwise by reason of the nature of its construction or design, is or may become a danger to any member of the public using such public road;

(b) including an owner or occupier of an agricultural holding or farm land, may along any public road erect or cause, or permit to be erected, or after one year from the

date of commencement of these By-laws, have along a public road any electrified fence, railing or other electrified barrier unless –

(i) the fence, railing or other barrier is erected on top of a wall built of brick, cement, concrete or similar material, which wall may not be less than 1,8 metres high; and

(ii) the fence, railing, or other barrier is designed and installed in accordance with any relevant specifications determined by the Council and any standard issued in terms of the Standards Act, 1993 (Act No. 29 of 1993); or

(c) may erect, or cause, or permit to be erected, any electrified fence, railing, wall or other electrified barrier referred to in paragraph (b) without the prior written permission of the Council, in terms of the National Building Regulations and Building Standards Act, 1977 (Act No. 103 of 1977).

(2) The full technical details of the proposed electrified fence, railing, wall or other electrified barrier must accompany any application for permission submitted to the Council.

Protection of public roads

5. No person may place upon or off-load on a public road any material or goods which are likely to cause damage to a public road unless the person has taken reasonable precautions to protect the surface of the public road against damage.

Cleanliness of public roads

6. (1) No person may spill, drop or place or permit to be spilled, dropped or placed, on a public road any matter or substance that may interfere with the cleanliness of the public road, or cause or is likely to cause annoyance, danger or accident to any person, animal, vehicle or other traffic using the public road, without removing it or causing it to be removed from the public road immediately.

(2) If the person referred to in subsection (1), fails to remove the matter or substance, the Council may remove such matter or substance and recover the cost of removal from that person.

Article placed in building facing public road

7. No person may place any article likely to cause injury or damage to any person or property if it were to fall on a public road, in any near a public road without taking all reasonable steps to prevent it falling onto the public road.

Damaging of Council's property

8. Subject to the provisions of section 10, no person may deface, tamper, damage, remove, or in any way interfere with any of the Council's property or work on or along any public road.

Cleaning and repairing on public roads

9. No person may clean or repair any part of a vehicle or wash, dry or paint any article or object on any public road except in the case of an emergency breakdown of a vehicle, when emergency repairs may be done.

Excavations in public roads

10. (1) No person may make or cause to be made any hole, trench, pit or tunnel on or under any public road or remove any soil, metal or macadam therefrom without the prior written permission of the Council, unless such person is authorised to do so in terms of these By-laws or any other law.

(2) A person, who requires the permission in terms of subsection (1), must comply with the requirements contained in Schedule 2 to these By-laws.

(3) A person referred to in subsection (2) must pay the prescribed fee.

(4) A person referred to in subsection (2) must, if applicable, pay the prescribed fee for lane rental provided for in Schedule 2 to these By-laws.

Defacing, marking or painting public roads

11. No person may in any way deface, mark or paint any public road or part of a public road or any structure related to such road, without the prior written permission of the Council.

Races and sports events

12. (1) An application for consent to hold a race or sports event on any public road in terms of regulation 317(2) of the Road Traffic Regulations, 1999, under the National Road Traffic Act, 1996 (Act No. 93 of 1996), must be submitted in writing to the Council on the prescribed form at least 60 days prior to the envisaged event.

(2) The applicant must pay the prescribed deposit for the costs to be incurred by the Council during and after the race or sports event, to the Council prior to commencement of the race or sports event and an adjustment must be made after the conclusion of the race or sports event as soon as the Council has determined actual costs incurred by it.

Loitering on public roads

13. (1) No person may -

(a) lie or sit so as to obstruct traffic on any public road;

(b) stand, congregate, loiter or walk, or otherwise act, on any public road in a manner that may obstruct traffic; or

(c) jostle or loiter at or within 20 metres of the entrance of any place of public worship during the time of divine service or during an assembly at the place of worship or departure from such place of the congregation so as to obstruct or annoy any person going to, attending at, or leaving such place of worship.

(2) Any person contravening subsection (1) must, upon instruction by an authorised official, discontinue doing so.

Loitering and touting at places of public entertainment

14. (1) No person may loiter or, except when forming part of a queue, congregate on any public road within 20 metres of the entrance to any place of public entertainment so as to obstruct traffic or persons proceeding to, attending at, or departing from such place of entertainment.

(2) No person may, without the prior written permission of the Council tout or solicit a driver of any motor vehicle who parks a motor vehicle at a place of entertainment for the purpose of or under pretext of attending to the motor vehicle during the assembly thereat or the departure therefrom.

Public decency

15. (1) No person may appear unclothed or indecently clothed on any public road.

(2) No person may on or in view of any public road urinate, excrete, behave in any indecent manner by exposing his or her person or otherwise, make use of any indecent gesture, or commit, solicit or provoke any person to commit any riotous, disorderly or indecent act.

(3) No person may on any public road sing any obscene or profane song, or use any profane, foul, indecent or obscene language.

(4) No person may on any public road in any way loiter or solicit or importune any other person for the purpose of begging.

(5) No person may on a public road use any threatening, abusive or insulting words or gestures or behaviour with intent to cause a breach of the peace or whereby a breach of the peace is likely to be occasioned.

Trolleys

16. (1) The owner of a trolley must affix a prescribed token in a conspicuous position on the trolley.

(2) The owner or the person who controls or has the supervision over a trolley or who offers it to be used by any person, or who uses it for any purpose whatsoever, may not leave or abandon it or permit it to be left or abandoned on any public road.

(3) Any trolley which has been left or abandoned on any public road, may be removed, or caused to be removed, by an authorised official and be placed under the care of the storekeeper.

(4) The storekeeper must store any trolley which has been placed under his or her care in terms of subsection (3), at the municipal store and the Council must publish once a month in respect of eleven months of a year calculated from the first day of January, a notice in two newspapers circulating within the municipal area, which states –

(a) the name of the owner of every trolley being stored, if known;

(b) the number of trolleys being so stored;

(c) that the trolley may be claimed by the owner from the Council on payment of the prescribed storage charge;

(d) that any trolley which has not been claimed after a period of three months from the date of publication of the said notice, may be sold by the Council by public auction; and

(e) that the proceeds of the public auction will accrue to the Council.

Public road collections

17. (1) No collection on a public road may be organised or held without the prior written permission of the Council.

(2) Application for such permission must be made on a form provided for this purpose by the Council.

(3) Every application must be accompanied by proof that the organisation or person intending to hold the public road collection is authorised to collect a contribution in terms of the Nonprofit Organisations Act, 1997 (Act No. 71 of 1997), or the Fund-raising Act, 1978 (Act No. 107 of 1978), as the case may be.

(4) The Council may grant permission referred to in subsection (1) to an organisation or person to hold a collection on a specified public road, date and at a specified time and reserves the right to determine the number of collections which may be held on any one day on the public road so specified.

(5) Every organisation or person, holding a public road collection is entitled to use his, her or its own identifiable collection boxes and if any organisation or person does not possess any boxes, the Council's collection boxes may be used upon payment of the prescribed fee.

Control of stormwater and watercourses on public road

18. (1) No person may, without prior written permission of the Council, which permission may be conditional or unconditional -

(a) lead or discharge any water on or over or across a public road; or

(b) by any means whatever, raise the level of water in any river, dam or watercourse so as to cause interference with or endanger any public road.

(2) The Council may, subject to any laws which may be applicable and after obtaining consent of the owner and the occupier, if any, of the land concerned -

(a) deviate any watercourse, stream or river if the deviation is necessary for the protection of a public road or structure related to a public road or for the construction of a structure connected with or belonging to a public road;

(b) divert stormwater from or under any public road onto private property other than land occupied by buildings, other structures or improvements; and

(c) pay reasonable compensation as agreed between the owner or occupier and the Council, for any damage caused as a result of any action taken in terms of paragraph (a) or (b) or failing such agreement, compensation determined by arbitration in terms of the Arbitration Act, 1965 (Act No 42 of 1965).

Obstruction on public roads

19. No person may deposit or cause to be deposited or leave or cause to be left any sand, stone, earth, bricks, timber, lime, cement or other building or excavated material of whatever nature on any portion of any public road, sidewalk or footway unless it is deposited within an enclosure in respect of which the prior written permission of the Council has been obtained.

Planting on sidewalks

20. No owner of property may plant or cause to be planted, any tree, shrub or other plant on a sidewalk or footway adjacent to that property, which obstructs or interferes with pedestrian traffic on such sidewalk or footway or allow any such tree, shrub or plant to remain on that sidewalk or footway.

Permission to hoard in footway

21. (1) Any person who intends erecting, removing, altering, repairing or painting any part of a building or structure or carrying out any excavation, on part of any land which is within 2 metres of a public road, must before commencing any such work, enclose or cause to be enclosed a space in front of such part of the building, structure or land by means of a hoarding, fence or other enclosure or an enclosure specified in a permit issued in terms of subsection (3).

(2) If the enclosure contemplated in subsection (1), occupies or projects over any portion of a public road, the person concerned must apply for a written permit to the Council and if the person making the application is not the owner of the building or land on which the work is to be done, the owner must countersign the application.

(3) The Council may determine what portion of the public road is necessary for the purpose of carrying out any operations contemplated in subsection (1), and in every case where it determines that portion of a public road may be used for such purpose, grant a permit in writing specifying the portion which may be occupied for such purpose and the conditions under which such permit is granted.

(4) The Council reserves the right to withhold the issue of a permit required in terms of subsection (2), until all prescribed fees have been paid and the acceptance of any such permit by the applicant without objection, is taken to indicate that all kerbs, gutters and other works in the portion of the public road concerned were in good order and condition on the date of issue of such permit.

(5) Every permit granted by the Council for the erection of a hoarding, fence, scaffolding or an enclosure or a planked shed, must specify the area and precise position of that part of the public road where the enclosure, overhanging or covering is permitted and the period for which the permit is granted.

CHAPTER 3

TRAFFIC MATTERS

Control of traffic

22. An authorised official may direct all traffic by means of any visible or audible signal and every person must obey such signal.

Clinging to moving vehicles

23. No person travelling upon any pedal cycle, motor cycle, coaster, sled, roller-skates, or any other similar device may cling to or attach himself or herself or such cycle coaster, sled, roller-scates or device to any other moving vehicle, upon a public road.

Removal of obstructions

24. (1) If any person causes an obstruction on a public road, an authorised official, may order such person to refrain from causing, or to remove, the obstruction.

(2) If a person causing an obstruction cannot be found, or fails or neglects to remove, or to cease causing, such obstruction, an authorised official may take such steps as may be necessary to remove the obstruction, or to prevent its continuance and the Council may if the person concerned fails or neglects to remove or cease causing the obstruction, recover the cost of the removal of the obstruction from that person.

(3) An act done in terms of section 218 of the Standard Building By-Laws, adopted by the Council under Administrator's Notice 726, dated 16 June 1976, is for the purposes of this section deemed not to cause an obstruction except if permission of the Council in respect of that act is revoked.

Games, throwing stones, on public roads

25. (1) No person may roll a hoop or fly a kite or throw stones or use a bow and arrow, or by any means discharge any missile upon, over or across any public road, or play cricket, football or any other game on a public road.

(2) No person may erect a tent or place chairs or any article on a public road for the purpose of a funeral, party or any other event without the prior written permission of the Council.

Shoeing and cleaning of animals on public roads

26. No person may shoe or farry any animal, or clean, dress, train, break-in livestock on any public road.

Animals on public roads

27. (1) No person may turn any livestock loose on a public road.

(2) No person may leave any injured, feeble, emaciated, diseased or dying animal on a public road except for the purpose of seeking assistance for the removal of such animal.

(3) Any livestock at large on a public road may be taken to a place designated by the Council, by any authorised official.

(4) Any person contravening subsection (1) is liable, in addition to any penalty which may be imposed by a Court of Law, to pay to the Council the cost incurred by it in acting in terms of subsection (3).

(5) No person may walk a dog on a public road unless it is on a leash and under control of that person.

(6) Any excretion left by a dog on a public road, must immediately be removed by the person in charge of the dog and be deposited in a waste receptacle provided by the Council or removed from the road.

Additionally, all fittings must also bear the "JW" mark at suitable intervals and such marks shall be indelible.

Prior to the pipes being lined and coated, their surfaces must be cleaned and prepared in accordance to SABS 1217, Section 4 and thereafter all parts must be smooth and free from welding spatter, fins and burrs.

5.4.3. Corrosion Protection

All steel pipe pieces for above ground installations must be lined internally and coated externally with a non-toxic and non-tainting Fusion Bonded Powdered Epoxy Coating (SANS 1217 Type 2) with minimum 250 microns and maximum 650 microns coat film thickness. For flanged distance pieces and flanged bends a suitable UV protection top coat must be applied on the external coating for aboveground applications, proof of such to be provided on request. The final colour for all pipes and fittings shall be cornflower blue. The use of an Epoxy/Polyester powder coating shall not be accepted.

5.5. Minimum Information Requirements for Installations

The following are the minimum requirements for information to be collated on the meter installed. Such information shall be submitted for subsequent capturing

- Information described in Section 4.3.2 and in particular meter manufacturer, meter type, meter technology, class, complete serial number, permanent flowrate, size, factor and number of dials e.g. Sensus, WP Dynamic, Woltmann meter, Class B, 9999999, 40m^3/hr, 40mm, 1 and 6.
- Geo-location to less than 5m accuracy with description
- Service type e.g. combined, fire, consumption (Not the tariff type)
- Indication on whether it's a surface or above ground installation
- Date of installation and reading