

**QUALITY MANAGEMENT SYSTEM****SCOPE OF WORK  
RECOMMENDATION**

Form No: SAM DO 00001 T

Revision No: 02

Effective Date: November 2022

**SCOPE OF WORK RECOMMENDATION OF:****CONDUCT MAJOR HAZARD INSTALLATION RISK ASSESSMENT AT VEREENIGING WATER  
TREATMENT WORKS****PROJECT NUMBER: P.03753****PROGRAMME MANAGER: SPHELELE MDLETSHE****RECORD OF SCOPE OF WORK REVISIONS:**

Date	Revision Number	Description of Each Revision
23/02/2024	1	First issue

**TEAM MEMBERS**

Name	Discipline
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### **Conduct Major Hazard Installation Risk Assessment at Vereeniging Water Treatment Works**

The assessment to be carried out in order to address legislated requirements in terms of Occupational Health and Safety Act, 85 of 1993, Major Hazard Installation Regulations Jan 2023 that requires that Duty Holders of all existing and proposed facilities to conduct a risk assessment in accordance to SANS 1461 MHI Risk assessments to determine the potential for causing major incidents (i.e. incidents that can affect the public outside the perimeter of the facility and the employees as well). Such a risk assessment will be used to determine the classification of the MH establishment and acceptability of risk, to provide the required documentation for the establishment, assess whether there are sufficient and suitable emergency plans and facilities in place to deal with any such major incident, should it occur, The assessment shall indicate organizational measures that may be required, risk reduction proposals and any other relevant matter, and in so doing, coordinate the notification process as required by MHI regulations 4.

#### **Existing MHI Facilities**

Vereeniging Water Treatment Works receives, treat/dose, pump and supply water to users in the Gauteng area. At the station the water is disinfected with chlorine that is purchased in 1 ton drums. There are currently two chlorination plants on site. Each plant consists of 2 banks with 10 drums/bank, therefore holding an operational volume of 40 tons. Standby chlorine stock is kept for both these plants at a maximum of 10 tons, therefore current chlorine plant operations house a maximum of 50 tons of chlorine at any given time. The handling of the abovementioned chlorine resulted in the station being previously assessed as a Major Hazard Installation (MHI).

The other substances handled onsite are Nitrogen gas cylinders (at a maximum of 136 kg) and Ammonia (dilute 25% – at a maximum quantity of 1lt).

See Annexure 1 which shows the positioning of the existing Chlorine Plants 1 & 2, at the Vereeniging Pumping Station site works.

The approved inspection authority (AIA) shall carry out the statutory 5 yearly risk assessments in accordance with SANS 1461 and provide such assessments and required attachments to the client. In addition, the AIA shall facilitate the update of notifications of existing establishments and send them to the chief inspector, relevant chief director: provincial operations and local government on Form A on behalf of the Duty Holder. Where Rand Water MHIs have been assessed, the AIA shall provide proof of their monthly submissions of such to the chief inspector on the form contemplated in Annexure E of the MHI Regulations.



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### Changes to the Proposed Installation

The AIA shall carry out the statutory risk assessments when there is a proposed change to an establishment in accordance with SANS 1461 and provide the results such assessments including the required attachments to the Duty Holder. In addition, the AIA shall facilitate the update of the notifications of such establishments and send them to the chief inspector, relevant chief director: provincial operations and local government on Form A on behalf of the client within the relevant timeframes. Where Rand Water MHIs have been assessed, the AIA shall provide proof of their monthly submissions of such to the chief inspector on the form contemplated in Annexure E of the MHI Regulations.

A new Chlorine plant installation will be installed at the Vereeniging Pumping Station used for the purposes of disinfection of water through the dosing of Chlorine. This new chlorine plant installation is being established in order to comply with the Potable Water Quality Working Committee (PWQWC) requirements of a dosing capability of 4mg/l.

The new Chlorine plant similarly utilizes 1 ton drums which will be stored in 2 designated drum Chlorine Storage drum rooms, inclusive of the drums in the operational areas. The chlorine capacity for the new installation will hold a maximum of up to 64 tons in total. The Chlorine plant area inclusive of the Chlorine drum storage rooms are self-contained in the Chlorine Building.

The building is fitted with an emergency wet scrubber installation complete with neutralizing scrubber solution (situated adjacent to the building). The scrubber serves as air abatement equipment which is automatically controlled via Chlorine sensors within the building for detection of a potential chlorine leak. The scrubber system ensures air quality safety to enhance the Health & Safety aspect of the operation or during an emergency event. This is also aligned to the minimum requirements of the NEMAQA (National Environmental Management Air Quality Act of 2014).

See Annexure 2 which shows the positioning of the New Chlorine plant at the Vereeniging Pumping Station site works.

### MHI Risk Assessment

The risk assessment shall be carried out by an Approved Inspection Authority who is competent to express an opinion as to the risks associated with the major hazard installation; and at least include:

- A general process description of the major hazard installation;
- A description/identification of the major incidents/hazards associated with the operation and type of installation and the consequences and effects of such incidents/hazards, which shall include potential incidents;



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- An estimation of the probability of a major incident;
- A copy of the onsite emergency plan
- An estimation of the total result in the case of an explosion
- An estimation of the effects of thermal radiation in the case of fire
- In the case of toxic release, an estimation of concentration effects of such release
- The potential effect of a major incident at one major hazard installation or part thereof on an adjacent major hazard installation or part thereof
- The potential effect of a major incident on any other installation, members of the public, which includes all persons outside the premises of the major hazard installation and on residential areas
- Quantifying the hazards in terms of their magnitude (release rate and duration).
- Quantifying the consequences of the hazards and the severity of the effects using dispersion, radiation and explosion modelling.
- Determining the lethality of the effects of the hazardous consequences
- Quantifying the likely frequency of the hazardous events.
- Estimating the individual risks by combining the severity (lethality) and the likelihood of the various hazards.
- Estimating the societal risks by taking the surrounding population into account.
- Comparing risks with international acceptability criteria.
- Reviewing the suitability of the emergency plan in accordance with SANS 1514 MHI Emergency Response Planning and organisational measures in terms of the risks.
- Proposing measures to reduce or eliminate the risks where necessary.
- Meteorological tendencies
- The suitability of existing emergency procedures, for the risks identified
- Any requirements as laid down in terms of the Environmental Conservation Act, 1989 (Act No, 73 of 1989); and
- Any organisational measures that may be required
- Site inspection, interviews and report writing
- Furnish the site with MHI risk assessment report and attachments as required in terms of SANS 1461
- Any other relevant matter
- The Assessment shall include identification of all hazards and risk and recommendations on what need to be done to address the hazards and risks identified.



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## GENERAL AND/OR OTHER CONDITIONS

The Service Provider shall comply with the following:

- The service provider shall submit a SHE file to the Site Risk Control department for assessment and approval before commencing with work
- The SHE file must include the following as proof of competence:
  - Certificate of AIA
  - SANAS certificate and schedule
  - Assessor competence records
- The service provider shall at all times adhere to the safety, health and environmental programmes, standard and procedures, and plan of Rand Water.
- Ensure that all people performing work have the necessary PPE, have submitted all required documents, and are inducted before the work commences.
- To meet with the relevant person(s)/section representatives before undertaking any assessment(s).
- Proof of training for the inspectors should also be provided before commencing with the survey.
- The service provider should be a recognized approved inspection authority as listed by the Department of employment and Labour (DEL) to conduct the occupational hygiene surveys and must be registered with the authorizing body and provide proof of registration. The accredited person should be on site to supervise the work.
- Instrumentation used during the survey must be calibrated and the final report be accompanied by the calibration certificate.
- The service provider shall provide Rand Water with a report, calibration certificates of equipment used & registration certificate before payment where applicable.
- Include the reporting, presentation of the report as well as accreditation certificates and Approved Inspection Authority letter.
- The service provider can recommend necessary steps to be taken to lower the exposure as is reasonably practicable.
- The report must contain recommendations to rectify problem areas and compare the results to the recognised OHSA or other relevant standards.

NB: For all deviations identified there should be a recommendation for each that can be practically implemented.



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**DELIVERABLES**

- A comprehensive MHI risk report in accordance to SANS 1461 and to be submitted within 14 days (or as agreed), after the assessment.
- Reports must be presented to the site team at the specific site.
- Preparation and review of MHI Documentation depending on classification.
- Guidance and coordination of the notification process
- Placement of Advert in local newspaper
- Involvement and facilitation of public participation
- Payment of the applicable fee to DEL



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**COMMENTS AND APPROVALS PAGE**

Name	Designation	Signature	Comment
A Harrypurshad	Executive Manager		..... ..... .....

Annexure 1 : Site Map – showing facilities, specifically existing Chlorine plants A & B





Annexure 2: Site Map with New Chlorine Plant included

