

BASELINE RISK ASSESSMENT AND HAZARD IDENTIFICATION REPORT

PROJECT:

**George Municipality: Tender ENG0042016:
Installation of Perimeter Concrete Palisade Fence**

Date of survey: 29 JANUARY 2016

COMPILED BY:

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Annexure 1

Please find risk assessment template (Annexure 1) which can be used by the contractor to manage additional identified risks.

TITLE

The Hazard Identification and Risk Assessment of Occupational Health and Safety parameters on the premises of: **Pacaltsdorp Substation, ENG004/2016 Installation of Perimeter Concrete Palisade Fence**

TERMS OF REFERENCE

Mr. Roscoe Nel of Integrated Safety and Health Systems (Pty) Ltd conducted a Health and Safety Risk Assessment based on **scope of works set out, site visit and technical specifications of the works intended and approved architectural drawings**. The survey was conducted **on 29 January 2016**, during normal working hours.

EXECUTIVE SUMMARY

All construction and maintenance activities can subject workers to levels of environmental stressors and safety factors, e.g. noise, fumes, revolving machinery, tools, moving vehicles, electrocution, etc., which permanently harm the health and physical wellbeing of persons at work and greatly reduce productivity. The Occupational Health and Safety Act of 1993, and its relevant regulations, require employers to conduct surveys of the actual situation at every site. Measurements must be taken and the identified problems addressed by the employer. Improved conditions ensure better worker morale, loyalty and greater productivity.

This assessment and observations were made at the above site under the conditions which prevailed on the date of the survey. Detailed conclusions are given in the relevant sections of this report.

SCOPE OF WORK (WHAT IS BEING BUILT?)

This project, the **Installation of Perimeter Concrete Palisade Fence** of the **Pacaltsdorp Substation, ENG004/2016 (Fig 1)** consists of the following elements:

- Fence would require installation of 450mm coiled razor wire on top of fence.
- Fence would require spacing for 2 gates as per drawings.
- Existing substation perimeter fence must remain intact.
- Total length makes provision for installation of palisade fence 1000mm away from current perimeter fence for safety and security reasons.
- All materials to be supplied by contractor.

- After hours security costs for materials and site to be included in tender.
- Fence installation and materials used need to be covered by 12 month warrantee.
- **CAUTION MUST EXERGISED DURING INSTALLATION TO PREVENT ANY DAMAGE TO ENERGISED 11 000 VOLT UNDERGROUND CABLES.**
- Duration of fence installation must be specified.
- Staff complement for installation must be specified.
- Material, accommodation and transport costs must be specified in bill of quantities.
- **POSTS, CROSS BARS AND PALES MUST ALL BE REINFORCED CONCRETE.**
- Specifications (dimensions) of posts cross bars and pales to be used must be specified.
- Strength of concrete used for manufacture of posts, cross bars and pales must be specified.

Fig 1



Fig 2



LOCATION OF SITE AND ELEMENTS SPECIFIC TO THE LOCATION (MUNICIPAL BY-LAWS, WEATHER FACTORS, GEOGRAPHICAL FACTORS)

- The site is located within **GEORGE MUNICIPALITY**, Crescent Ave, Pacaltsdorp Substation.
- Special attention and consideration to internal **Municipal Regulations Module 1 – 5** (ref: EII/21/NT) should be strictly adhered to and emergency actions/plan of the facility/municipality should be adopted.
- Access to live chambers and prohibited areas is stringently controlled with specific authorisations to different categories of employees issued by the Director after competency regarding different categories has been achieved.
- The Contractor shall take every precaution to avoid damage to environment within the area and any damage caused is to be repaired at the Contractor's expense.

For convenience, the general findings are given as follows:

Hazard Identification and Risk Assessment (HIRA):-

From the HIRA investigation it was found that:

Chemical hazards

- Handling of potential hazardous chemical substances that include cement mortar and cement dust inhalation can pose a possible risk;
- Excavations include risk of contact with Biological agents. living things, or substances produced by living things, that can cause illness or disease in humans which include bacteria, viruses, and fungi as well as larger organisms such as parasites and plants

Physical hazard

- Site establishing containers and other tools and equipment falling when offloading;
- Transport of Labourers and work tools and equipment to and from site.
- Labourers falling from vehicles, Collisions with other vehicles. Collisions with items being transported on same vehicle; Collisions with pedestrians.
- Excavations include risk of contact with open trenches and excavations;
- Impalement, entrapment, collapse and collisions and fire (Equipment Risks): Machine running out of control, fuel catching a light, machine coming in contact with operator or employees body parts. Machine generating fumes and dust, Replacing drive belts, No machine guards, collapse of temporary works/ structures;
- Noise can pose a high risk from mechanical tools when cutting/chasing for plumbing/ electrical installations.
- Hot Work, Fire, and Explosive Hazards. Workers performing hot work such as welding, cutting, brazing, soldering, and grinding are exposed to the risk of fires from ignition of flammable or combustible materials in the space, and from leaks of flammable gas into the space.
- Work from Elevated positions, persons can fall from elevated positions when working from ladders, scaffold, and roof. Items can fall on persons from elevated positions.
- Electrocutation
- (Also noted: **Location of site and elements specific to the location Findings on page 3)**

Ergonomics

- Workplace conditions that pose the risk of injury to the musculoskeletal system of the worker including weather conditions.
- Manual material handling can pose a possible risk when lifting/carrying cement bags/ construction material.

HAZARD IDENTIFICATION AND RISK ASSESSEMENT

1.1 OBJECTIVE OF SURVEY

A HIRA (Hazard Identification and Risk Assessment) was conducted based on scope of works set out and approved architectural drawings of the facility: **Pacaltsdorp Substation, ENG004/2016 Installation of Perimeter Concrete Palisade Fence**

The objective of this HIRA was to comply with statutory requirements, inform the client of the occupational health and safety risk factors to which persons will be exposed when renovating / demolition of structures/ building.

It must be noted that perceptions were used during the HIRA and is not a quantifying survey and should only be used as an indicator for risk areas.

1.2 STATUTORY REQUIREMENTS

Section 9(1) of the OCCUPATIONAL HEALTH and SAFETY ACT 1993 (Act no. 85 of 1993), requires inter alia that the employer shall establish as far as is reasonably practicable, what the hazards to the health and safety of persons are attached to any work which is performed, further establish what precautionary measures should be taken with respect to such work and he shall provide the necessary means to apply such precautionary measures. The construction regulations further requires that a baseline risk assessment for an intended construction work project be compiled and a suitable, sufficiently documented and coherent site specific health and safety specification for the intended construction work based on the baseline risk assessment to be prepared.

1.3 HIRA METHOD

During the survey the presence of occupational health stresses and safety factors (i.e. chemical, physical and ergonomically) were considered, the severity of the risk factor, the frequency of exposure to the risk factor and possibility of occupational decease or injury was assessed and weights allocated on a scale of 1 – 5. Each of these weights carries a certain point's value as follows.

CATEGORY	SEVERITY	FREQUENCY	POSSIBILITY
1	40	10	10
2	15	6	6
3	7	3	3
4	3	2	1
5	1	1	0,5

A risk profile of the hazard is obtained by the multiplication of weights awarded (i.e. Noise hazard: - sev 7x freq 6 x poss 3 = 126 substantial risk) and the classification is as follows:.

More than 400	Very high risk	Consider stopping action
200 – 400	High risk	Immediate remedial action
70 – 200	Substantial risk	Remedial action required
20 – 70	Possible risk	Attention necessary
Below 20	Possibility of risk	Risk possible, but acceptable

The HIRA was conducted for construction conditions.

1.4 RESULTS AND DISCUSSION

The HIRA as described above was conducted for construction conditions based on scope of works set out and approved architectural drawings of the facility.

Activities are evaluated on the exposure to the following risk factors: **Chemical Hazards, Physical Hazards and Ergonomic Hazards** (as mentioned in depth with HIRA investigation).

The following risks classification was identified.

1.4.1 High Risk (200 – 400 points)

Physical Hazard:

- Contact (Impalement, entrapment, collapse, collisions and fires) with structures, plant and equipment, other vehicles and pedestrians (expose v-belts, pulleys, chains, flammable liquids, etc) on site.
- Equipment Risks: Improper use of Tools/Equipment; Equipment not Calibrated/Serviced/Inspected/Load tested; Machine generating fumes and dust, Replacing drive belts, No machine guards;
- Hot Work, Fire, and Explosive Hazards. Workers performing hot work such as welding, cutting, brazing, soldering, and grinding
- Collapse of temporary works/ structures/equipment;
- Transport of Labourers and work tools and equipment to and from site.
- Electrocution through, Arcing high voltage equipment, Re-energising circuits and equipment(programmed automatic switches),contact with equipment that carry residual charge, Flash downs, Contact with high voltage overhead/underground lines, Ground becoming live through contact with high voltage equipment,etc
- Vandalism and sabotage of systems due to failure of site security measures (fence)
- Excavations include risk of contact or collapse of, with open trenches and excavations;
- Work from Elevated positions and unstable elevated structures, persons can fall from elevated positions when working from ladders, scaffold, and roof. Items (tools and equipment) can fall on persons from elevated positions.

1.4.2 Substantial Risk (70 – 200 points)

Chemical Hazards:

- Handling cement mortar and cement dust inhalation can pose a substantial risk;

Physical Hazards:

- Noise and fumes can pose a high risk from mechanical tools when cutting/chasing for installations

Ergonomic Hazards:

- Manual handling (lifting, carrying) heavy construction equipment and material.
- Weather conditions: - Temperatures – Hot, cold rainy and windy conditions when working at heights.

1.4.3 Possible Risk (20 – 70 points)**Chemical Hazard -**

- Excavations include a possible risk of contact with Biological agents. living things, or substances produced by living things, that can cause illness or disease in humans which include bacteria, viruses, and fungi as well as larger organisms such as parasites and plants

1.5 CONCLUSION

From the HIRA investigation it was found that Physical hazards (Impalement, Entanglement, Collapse, Crushing, Collisions, Electrocution, Hot Works, and Working at Heights,) are high risk factors. Elimination and Engineering control measures applies.

The exposure to the Chemical hazard (Dust) is limited due to the specified construction material used for this project is pre-fabricated but PPE control measures for all activities is required..

Ergonomics (manual material handling) can pose a substantial risk due to repetitive activities like lifting and carrying heavy construction equipment and material. Administrative and PPE and control measures apply.

Although the possibility of excavations leading to the risk of chemical hazards (biological agent contact/exposure) is classified as unlikely especially because previous construction activities were already performed on that site without incident, the classification of possible risk remains and administrative and PPE control measures should be considered.

Annexure 1

ADDITIONAL RISK ASSESSMENT

ASSESSED BY:	COMPANY:
DATE OF ASSESSMENT:	TEL/CELL:

AREA/ WORK SITE ASSESSED:

INDICATE WORK TO BE DONE, ACTIVITIES/ PROCESSES, TODAY:				
INDICATE RISKS IDENTIFIED. INCLUDE WORKERS, VISITORS & THE PUBLIC WHO MAY BE EFFECTED BY WORK TO BE DONE, ACTIVITIES/ PROCESSES. <u>NB:ALL RISKS ARE TO BE TREATED AS HIGH RISKS.</u>	1. ADVERSE ENVIRONMENT	2. ASBESTOS	3. ASPHYXIATION (CO2, N2, ETC)	
	4. BURNS/SCALDS	5. COLLAPSE (e.g. SCAFFOLD/ FLOOR PLATES)		6. COLLISION
	7. CRUSHING	8. DROWNING		9. ELECTRICUTION
	10. ENTANGLEMENT IN MOVING OBJECTS	11. ENTRAPMENT		12. EXPLOSION (IGNITION SOURCES)
	13. EXPOSURE TO PATHOGENS	14. EYE INJURY/STRAIN		15. FALLING FROM HEIGHTS (PERSONNEL)
	16. FIRE	17. HIGH PRESSURE INJECTION INJURY		18. IMPACT INJURY FROM FLYING OBJECTS
	19. INGESTION OF CHEMICALS/OILS	20. INHALATION OF DUSTS/POWDERS		21. INHALATION OF GASSES/FUMES
	22. INJURY FROM FALLING OBJECTS	23. MANUAL HANDLING INJURY e.g. BACK/ARM STRAIN		24. NOISE
	25. POLLUTION TO WATERCOURSE, AIR, LAND	26. REPETITIVE STRAIN INJURY		27. SAFETT EQUIPMENT FAILURE
	28. SKIN CONTACT WITH CHEMICALS/OILS/HBA'S	29. SKIN LACERATION INJURY		30. SLIPS/TRIPS
	31. OTHER (SPECIFY)			
	(INDICATE RISK NUMBER ABOVE AND THEN IN DETAIL EXPLAIN THE STEPS TAKEN TO MINIMIZE RISK)			
RECORD THE NAMES OF PERSONNEL TO WHOM THE ABOVE RISKS HAVE BEEN DISCUSSED WITH. ENSURE ALL PERSONNEL UNDERSTAND WHAT HAS BEEN DISCUSSED. PERSONNEL MUST SIGN TO ACKNOWLEDGE THAT THEY UNDERSTAND THE STEPS TO BE TAKEN.	<u>NAME</u>	<u>SIGNATURE</u>	<u>NAME</u>	<u>SIGNATURE</u>