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C 3.5

ANNEXURES

DEPARTMENT OF CO-OPERATIVE GOVERNANCE, HUMAN SETTLEMENTS AND TRADITIONAL AFFAIRS OF THE NORTHERN CAPE

TENDER NO. NC/03/2022

ZF MGCAWU 5 INDIVIDUALS: THE CONSTRUCTION OF 5 BNG HOUSES THROUGHOUT THE ZF MGCAWU DISTRICT

C 3.5 ANNEXURES

ANNEXURE A	**MONTHLY FORMS TO BE COMPLETED**
ANNEXURE B	**OCCUPATIONAL HEALTH AND SAFETY SPECIFICATIONS**
ANNEXURE C	**GFSH-02**

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ANNEXURE A
MONTHLY FORMS TO BE COMPLETED

Participant's Registration Form 1 of 2

Participant's personal details

No	First Name	Initials	Surname	ID number	Gender (F/M)	Disability (Y/N)	Education level	Start Date	End Date	Cell Number

Participant's Registration Form 2 of 2

	Grants			Experience /Literacy	Location Details			Contacts & Nationality		Household Details		
No.	Beneficiary Code	Beneficiary Project Link Code	Government Grant (Y/N) and Type	First Language	District	Municipality	Physical address	Cell Number	Nationality (RSA/ Non-RSA)	Number of people in Household	Number of Dependants in Household	Number of Children attending school

Registration and Business Form

Reference No	
Profile ID	
Project Name	
PROJECT DETAILS	
Project Name	
Project Reference Number	
Project description	
Project Start Date	
Project End Date	
Estimated Budget	
Project Location	
Province	
District/Metro Municipality	
Local Municipality/Metro Region	
Latitude (in decimal format)	
Longitude (in decimal format)	
PUBLIC BODY DETAILS	
Public body sphere	
Reporting public body that is the project owner (and will report on the project)	
Implementing public body type	
Public body that will implement the project	
IDP reference number allocated to the project	
EPWP DETAILS	
EPWP Sector	
EPWP Program	
EPWP Sub programme	
Budget Amount	
April 2014/March 2015	
April 2015/March 2016	
Total Budget Amount	
Wages	
UIF	
COIDA	

Training	
Administration	
Equipment and materials	
Other	
Describe other	
OUTPUTS AND TRAINING	
Output	
Description	
Target Quantity	
Number of persons to be trained	
CONTACT PERSON	
Title	
Initials	
First Name	
Surname	
Email	
Tel (Office)	
Fax Number	
Cell Number	
Physical Address 1	
Physical Address 2	
Physical Address 3	
Physical Address 4	
Postal Address 1	
Postal Address 2	
Postal Address 3	
Postal Address 4	

Beneficiary Details

First Name	Initials	Surname	ID number	Nationality	Gender	Disability	Education	Start Date	End Date	Language ID	Address	Cell Number	Government Grant

Experience/Literacy				Location Details				Household Details		
First Language	Other Language I	Other Language 2	Highest Level of Education	Province	District	Muncipality /Village	Ward Name/Number	Number of people in Household	Number of Dependants in Household	Number of Children attending school

Payment Upload														
Initials	Surname	ID number	Date of Birth	Wage Rate	Total Paid Days	Amount Paid	Work Days	Training Days Paid	Training Days Non-Paid	Total Training Days	Training Course Id	Project Profile Id	Month	Year

Training										
ID	Course Name	Code	Type	Start	End	Number of Trainees	Number of Days	Cost	Status	Training Provider

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ANNEXURE B
OCCUPATIONAL HEALTH AND SAFETY SPECIFICATIONS

HEALTH AND SAFETY SPECIFICATION

ZF MGCAWU 5 INDIVIDUALS: THE CONSTRUCTION OF 5 BNG HOUSES THROUGHOUT THE ZF MGCAWU DISTRICT

1. HEALTH AND SAFETY SPECIFICATION

1.1 Scope

This Health & Safety Specification has been developed to address all aspects of occupational health and safety, as affected by the proposed construction work in accordance with the provisions in the Construction Regulations.

The specification provides the requirements that the Principle Contractor and other Contractors shall have to comply with to reduce the risks associated with the construction work to a level as low as reasonably practicable.

1.2 Introduction

In terms of Construction Regulation 5(1) (b) and (c) of the Occupational Health and Safety Act, No. 85 of 1993, the Client, or his Health and Safety Agent, is required to compile a Site-Specific Health & Safety Specification for any intended project and provide such specification to the Designer as well as to any prospective tenderers.

The Client's further duties are stipulated in Clause 3, and in the Construction Regulations, published in Government Gazette No 37305 of 2014. This specification has an objective to ensure that Principle Contractors and other Contractors entering in to a Contract with the Client, achieve an acceptable level of Occupational Health & Safety performance. This document forms an integral part of the Contract and Principle Contractors should make it part of any Contracts that they may have with Contractors and/or Suppliers.

Compliance with this document does not absolve the Principle Contractor and other Contractors from complying with minimum legal requirements. All Contractors remain responsible for the health & safety of his employees, persons other than his employees in terms of Section 9 of the Occupational Health and Safety Act, No. 85 of 1993 and those of his Mandatory's

1.3 General Occupational Health and Safety Provisions

1.3.1 Hazard Identification & Risk Assessment

*1.3.1.1 **Development of Risk Assessments***

Every Contractor shall appoint a competent person in writing to perform a Risk Assessment before the commencement of any Construction work. This Risk Assessment shall form part of the Occupational Health and Safety Plan and be implemented and maintained as contemplated in Construction regulation 5(1).

The Risk Assessment shall include at least the following:

- the identification of the risks and hazards to which persons may be exposed to
- the analysis and evaluation of the identified risks and hazards
- a documented plan of safe work procedures to mitigate, reduce or control the risks and hazards that have been identified
- a monitoring plan, and
- a review plans
- material safety data sheets

Based on the Risk Assessments, the Contractor must develop a set of site-specific Occupational Health & Safety rules that will be applied to regulate the Occupational Health & Safety aspects of the construction. The Risk Assessments, together with the site-specific Occupational Health & Safety rules shall be submitted to the Client before mobilisation on site commences.

The Contractor is required to conduct a baseline Risk Assessment of the risks he anticipates encountering during the project. The baseline Risk Assessment must include the Standard Working Procedures (SWP) and the applicable Method Statements based on the Risk Assessments.

1.3.1.2 ***Review of Risk Assessments***

The Contractor is to review the Hazard Identification, Risk Assessments and Safe Work Procedure's at each Production Planning and Progress Report meeting as the Contract work develops and progresses and each time changes are made to the designs, plans and construction methods and processes [monthly].

The Contractor shall provide the Client, other Contractors and all other concerned-parties with copies of any changes, alterations or amendments brought about by the above.

1.3.2 Legal Requirements

All Contractors entering into a Contract with the Client**,** shall, as a minimum, comply with the:

- Occupational Health & Safety Act and Regulations (Act 85 of 1993). **A current, up-to-date copy of the Occupational Health Safety Act shall be available on site always**.
- Compensation for Occupational Injuries & Diseases Act (Act 130 of 1993). The principle Contractor will be required to submit a letter of Registration and "good-standing" from the Compensation Insurer before being awarded the Contract. **A current, up-to-date copy of the Compensation for Occupational Injury and Diseases Act (COIDA) shall be available on site at all times.**
- The Client must determine the competency of Contractors/persons he allows (authorise) to enter such premises.

1.3.3 Structure and Responsibilities

1.3.3.1 ***Overall Supervision and Responsibility for Occupational Health and Safety***

- The Client is to ensure that the Contractor, appointed in terms of Construction Regulation 5(1) (k), implements and maintains the agreed and approved Occupational Health & Safety Plan.

- The Chief Executive Officer of the Contractor, in terms of Section 16(1) of the Act, is to ensure that the Employer (as defined in the Act) complies with the Act. Annexure 5. "Audit System" may be used for this purpose.

- It is a requirement that the Contractor, when he appoints Contractors in terms of Construction Regulations 7 includes an Occupational Health & Safety Act Section 37(2) agreement (“Agreement with Mandatory”) in his agreement with such Contractors.

- Every project must have an Occupational Health & Safety Act (85 /1993), Section 16(2) Appointee.

- The client must ensure that the contractor appoints a Construction Supervisor and Assistant Construction Supervisor in terms of Construction Regulation 8(8).

1.3.3.2 ***Further (Specific) Supervision Responsibilities for Occupational Health & Safety***

The Contractor shall appoint designated competent employees and/or other competent persons as required by the Act and Regulations. The appointments shall be in writing and the responsibilities clearly stated together with the period for which the appointment is made. This information must be communicated and agreed with the appointees.

1.3.3.3 ***Designation of* Occupational Health & Safety *Representatives* (Section 18 of the Occupational Health & Safety Act)**

The Contractors shall ensure Occupational Health & Safety Representatives are appointed for every workplace where employees (including the employees of other Contractors) are exposed to risk.

Occupational Health & Safety Representatives have to be designated in writing and the designation must include the area of responsibility of the person and term of the designation.

The Contractor shall ensure that the designated OH&S Representatives conduct an inspection of their respective areas of responsibility using a checklist and report thereon.

Occupational Health & Safety representatives shall be included in accident/incident investigations and must attend all Occupational Health & Safety committee meetings.

1.3.4 Administrative Controls and the Occupational Health & Safety File

1.3.4.1 ***The* Occupational Health & Safety *File***

As required by Construction Regulation 7(1)(b), the Principal Contractor and other Contractors will each keep an updated Occupational Health & Safety File on site containing the following documents as a minimum:

- Permit to construct Notification of Construction Work (Construction Regulations 4)
- Copy of Occupational Health & Safety Act (updated) (Gen Administrative Regulation 4)
- Proof of Registration and good standing with a COID Insurer (Construction Regulation 5(1) (j)
- Occupational Health & Safety Programme/Plan agreed with the Client including the underpinning Risk Assessment/s & Method Statements (Construction Reg 5(1)(q)
- Copies of Occupational Health & Safety Committee and other relevant Minutes
- Designs/drawings
- A list of Contractors including copies of the agreements between the parties (Section 37(2) agreement in terms of the OHS act) and the type of work being done by each Contractor
- Appointment/Designation forms (For example H&S rep, first aider etc.)
- Electrical Installations, -Equipment & -Appliances including temporary certificate of compliance
- All other applicable records

1.3.5 OH&S Goals & Objectives & Arrangements for Monitoring & Review of Occupational Health and Safety Performance

The Contractor is required to report all incidents to the Project Manager/Client. The Project manager must also submit an up to date report regarding all incidents to the Head, OHS.

1.3.6 Notification of Construction Work

The Contractors shall, where the Contract meets the requirements laid down in Construction Regulation 4, notify the Department of Labour at least 7 days before the commencement of work of the intention to carry out construction work.

A copy must be held on the Occupational Health & Safety File and included into the project file.

1.3.7 Training, Awareness and Competence

1.3.7.1 ***General Induction Training***

All persons on site are to attend a general induction session presented by the Contractor.

All persons on the site shall be in possession of documentation/proof that they have undergone General Induction training.

The Contractor will be required to develop project specific induction training based on the Risk Assessments for the Contract work and train all employees and other Contractors and their employees in this.

1.3.7.2 ***Other Training***

All operators, drivers and users of construction vehicles, mobile plant and other equipment (for example overhead cranes) shall be in possession of documentation proving that they have undergone training to operate said vehicles, plant and equipment.

All employees in jobs requiring training in terms of the Act and Regulations shall be in possession of valid proof of training as required in the portfolio of evidence of the contractor.

1.3.7.3 ***Awareness & Promotion***

The Contractor is required to have scheme in place to promote an Occupational Health & Safety awareness and culture in employees. The following are some of the methods that may be used:

- Toolbox Talks
- Occupational Health & Safety Posters
- Videos
- Competitions
- Suggestion schemes
- Participative activities such as Occupational Health & Safety circles.

1.3.7.4 ***Competence***

The Contractor shall ensure that all appointed staff is competent and that all training required to do the work safely and without risk to health, has been completed before work commences.

The Contractor shall ensure that follow-up and refresher training is conducted as the contract work progresses and the work situation change. Records of all training shall be kept on the Health & Safety file for auditing purposes.

1.3.8 Consultation, Communication and Liaison

Occupational Health & Safety Liaison between the Client, Principal Contractor, other Contractors, Designer and other concerned parties will be through the Client/Project Manager. In addition to the above, communication may be directly with the Client or his appointed Agent, verbally or in writing, as and when the need arises.

The Principle Contractor will be required to do Site Safety Audits with the Client/Project Manager on a basis to be determined between the two parties.

1.3.9 Checking, Reporting and Corrective Actions

3.3.9.1 ***Monthly Audit by Client*** **(Construction Regulation 4(1)(d)**

The **Client or his agent** will conduct minimum monthly audits to comply with Construction Regulation 5(1) (o) to ensure that the Contractor has implemented and is maintaining the agreed and approved Occupational Health & Safety Plan.

The Contractor is to conduct his own minimum monthly internal audits to verify compliance with his own Occupational Health & Safety plan.

The Occupational Health & Safety Representative is to conduct monthly inspections of their areas of responsibility and report thereon to their supervisor

All the results of the abovementioned inspections shall be in writing, reviewed, endorsed and placed on the Occupational Health & Safety File.

1.3.10 Incident Reporting and Investigation

1.3.10.1 ***Reporting of Accidents and Incidents***

The Contractor shall report all incidents where an employee is injured on duty to the extent that he/she:

- dies
- becomes unconscious
- loses a limb or part of a limb
- is injured or becomes ill to such a degree that he/she is likely either to die or to suffer a permanent physical defect or likely to be unable for a period of at least 14 days either to work or continue with the activity for which he/she was usually employed

OR where:

- a major incident occurred
- the health or safety of any person was endangered
- where a dangerous substance was spilled
- the uncontrolled release of any substance under pressure took place
- machinery or any part of machinery fractured or failed resulting in flying, falling or uncontrolled moving objects
- machinery ran out of control

to the **Client** and to the Provincial Director of the Department of Labour forthwith (Section 24 of the Act & General Administrative Regulation 8.)

The Contractor is required to provide the **Client** with copies of all internal and external accident/incident investigation as well as all statutory reports required in terms of the Act within 7 days of the incident occurring.

1.3.10.2 ***Accident and Incident Investigation***

The Contractor is responsible for the investigation of all accidents/incidents where employees and non-employees were injured to the extent that he/she/they had to be referred for medical treatment by a doctor, hospital or clinic and the results of the investigation shall be entered into the Accident/Incident Register.

The Contractor is responsible for the investigation of all minor, non-injury incidents and near misses. The Client reserves the right to hold its own investigation into an incident or call for an independent external investigation.

1.3.11 Operational Control

1.3.11.1 **Emergency Preparedness, Contingency Planning and Response**

The Contractor shall appoint a competent person to act as Emergency Coordinator.

The Contractor shall conduct an emergency identification exercise and establish what emergencies could possibly develop. He/she must then develop detailed contingency plans and emergency procedures.

1.3.11.2 **First Aid**

The Contractor shall provide relevant First Aid equipment and have qualified First Aider/s on site as required by General Safety Regulation 3 of the Occupational Health & Safety Act.

1.3.11.3 **Security**

The Contractor shall develop, implement and maintain Security- and Site Access Control rules and procedures throughout the construction period. Access control shall include the rule that non-employees will not be allowed on site unaccompanied.

1.3.11.4 **Fall Protection (Working in Elevated Positions)**

Any work undertaken at height above ground level higher than two metres or any floor level will be classified as "Work in Elevated Positions" and a pre-emptive Risk Assessment shall be carried out.

Workers working in elevated positions shall be trained to do this safely, without risk and compliant with legislation.

Risk Assessment shall take the possibility into account of persons falling through fragile material, skylights and other openings in the roof.

1.3.11.5 **Structures**

The Contractor shall ensure that:

- Steps are taken to ensure that no structure becomes unstable or collapses due to construction work being performed on it or in the vicinity of it
- No structure is overloaded to the extent where it becomes unsafe
- He/she has received from the designer the following information:
- Information on known or anticipated hazards relating to the construction work and the relevant information required for the safe execution of the construction work.
- A geo-scientific report (where applicable)
- The loading the structure is designed to bear
- The methods and sequence of the construction process
- All drawings pertaining to the design are on site and available for inspection

1.3.11.6 **Temporary Works**

Temporary work shall be carried out under the supervision of a competent person designated in writing to do so.

All drawings pertaining to the temporary work shall be kept available on site. A competent person shall check all equipment used in the erection of temporary work before it is used.

1.3.11.7 **Access Scaffolding**

Access Scaffolding shall be erected, used and maintained safely in accordance with Construction Regulation 16 and SA Bureau of Standards Code of Practice, SANS 085 entitled, "The Design, Erection, Use & Inspection of Access Scaffolding.

Detailed consideration shall be given to all scaffolding to ensure that it is properly planned to meet the working requirements.

Scaffolding may only be erected, altered or dismantled by a person who has adequate training and experience in this type of work or under the supervision of such a person (Proof of competence to be put on the OHS File).

1.3.11.8 **Construction Vehicles & Mobile Plant (CV&MP)**

All Construction Vehicles and Mobile Plant shall be inspected by the Contractor prior to being allowed on a project site and suppliers of hired vehicles, plant and equipment will be required to comply with this specification as well as the Occupational Health & Safety Act and Regulations.

No unauthorised persons are to be allowed to drive CV&MP. Operators/drivers of CV&MP shall be competent to operate the equipment safely and be in possession of a valid medical certificate issued by an Occupational Medicine Practitioner testifying that the holder is physically and psychologically fit to operate the equipment.

1.3.11.9 **Electrical Installations**

Temporary electrical installations shall be carried out by competent persons, and controlled by a competent person that has been appointed to do so in writing, in accordance with Construction Regulation 24 and the Electrical Installation Regulations. Temporary electrical installations shall be inspected at least once per week by a competent person and a record of the inspections kept in the Occupational Health & Safety File.

The Contractor shall ensure that:

- existing electrical services are located and marked before construction commences and during the progress thereof. Where this is not possible, workers with jackhammers etc. are to be protected against electric shock by the use of suitable protective equipment like insulated handles, rubber mats etc.

- electrical installations and -machinery are sufficiently robust to withstand working conditions on site.
- all electrical machinery used on site are inspected before start-up on a daily basis by a competent person and that a record of the inspection is kept in the Occupational Health & Safety File.

An electrical and mechanical lock-out procedure for the construction site shall be developed by the Principle Contractor and submitted for approval by the Project Manager before construction commences. This lock-out procedure shall be adhered to by all Contractors on site.

1.3.11.10 **Housekeeping**

The Contractor shall ensure that good housekeeping practises are implemented so that:

- an unimpeded work space is maintained for every employee.
- the walls and roof of every indoor workplace is sound and leak-free.
- every workplace is kept clean, orderly and free of tools and materials that is not required for the work being done.
- every floor, walkway, stair, passage and gangway is kept in a good state of repair, skid-free and free of obstruction, waste and materials.
- catch platforms or -nets are erected over entry and exit ways or over places where persons are working to prevent them being struck by falling objects.
- openings in floors, hatchways, stairways and open sides of floors or buildings are barricaded, fenced, boarded over or provided with protection to prevent persons from falling through or off them.
- materials and equipment are stored properly.
- materials ready for use is placed safely and not allowed to accumulate or cause an obstruction to pedestrian and vehicular traffic.
- Scrap, waste and debris is removed regularly and in a safe manner.
- construction sites are fenced off to prevent entry by unauthorised persons.

1.3.11.11 **Eating-, Changing-, Washing- and Toilet Facilities**

Eating facilities should be provided in a location that is sheltered from the elements.
Adequate changing-, washing – and toilet facilities shall be provided for both sexes.
At least 1 shower per 15 workers and 1 toilet per 30 workers shall be provided. Chemical toilets may be used instead of the water borne sewerage type.

1.3.11.12 **Personal & Other Protective Equipment**

The Contractor shall identify the hazards in the workplace and endeavour to eliminate them. Where this is not possible, suitable steps shall be taken to protect workers from these hazards. Engineering- and other solutions to mitigate the hazard(s) should be attempted before the issue of **personal protective equipment (PPE)** is considered.

The Contractor is required to inform employees of health and safety hazards and issue them with suitable equipment to protect them from these hazards. It is a further requirement that the Contractor maintains the equipment and instructs and train employees in the use of the equipment. Employees do not have the right to refuse to use/wear safety equipment.

1.3.11.13 **Portable Electrical Tools & Equipment**

Portable electrical tools and equipment is defined as units taking electrical power from 220Volt 15 Amp power outlets and is moved around the workplace to perform work like drilling, sawing, grinding etc. and also include portable lights. Electrical appliances, on the other hand, include items like fridges, stoves and heaters.

1.3.11.14 **Public Health & Safety**

The Contractor is responsible for ensuring that non-employees affected by the construction work, like visitors, the surrounding community and passers-by, are made aware of the dangers likely to arise from the construction work as well as the precautionary measures to be observed to avoid or minimise these dangers. Appropriate signage must be posted to this effect and all employees on site shall be instructed to ensure that non-employees are protected at all times. All non-employees entering the site must receive induction into the hazards and risks and the control measures.

Annexure "A"

CONSTRUCTION OCCUPATIONAL HEALTH - SAFETY – RISK ASSESSMENT

Denotes items applicable to both Construction sites and Contractors Plant/Storage Yards

ELEMENT	REMARKS
1. Administrative & Legal Requirements	• Dept. of labour will be notified – Annexure 2 • Updated copy of OHS Act will be available on site • All legally required appointments will be made as specified in the OHS Act and Construction Regulations • Site specific health and safety specification will be drawn up and provided to all prospective tendering contractors • Site specific risk assessment will be conducted and monitored and reviewed on a regular basis • Written proof of registration and good standing of contractor with COID will be obtained • Health and safety committee will be established and meetings conducted • All contractors will be required to enter into a Section 37(2) agreement • All incidents/accidents will be reported and investigated as required • Detailed and site-specific fall protection plan will be drawn up and implemented – Employees fitness to work at heights will be determined and records kept • Cherry pickers will be load tested and valid load test certificates will be kept on file – Regular safety inspections by competent persons done and records kept • Only persons medically tested in the form of Annexure 3 of the Construction Regulations and declared medically fit for the type of construction work to be done will be allowed to work on site • All excavations will be inspected by a competent person before every shift as required, edges will be sloped to at least the angle of repose, the excavations will be substantially barricaded and egress will be provided at least every 6 metres • Demolition work will be carried out under the supervision of a competent person, detailed and site specific risk assessment will be carried out and engineering survey and method statement will be available on site

	• Inspections to prevent premature collapse will be carried out by competent person before each shift. Inspection register kept • Cranes/Lifting Machines & equipment will be operated under the supervision of a competent person • Valid load test certificates and 3 monthly inspection records of all lifting tackle will be kept on site • Emergency and fire protection plan will be drawn up and displayed, emergency teams trained and available • All the legally required first aid equipment will be provided and clearly located - Trained and qualified first aiders available on site • Assessment will be conducted to determine the personal protective equipment requirements, all equipment issued free of charge and the wearing of the equipment will be strictly enforced • Gas welding/cutting equipment only used by competent persons and equipment placed on register and inspected regularly to ensure its safety • Alphabetical list of all chemicals on site will be drawn up and material safety data sheets for all hazardous substances obtained – first aiders will be trained in the correct first aid measures to be taken in case of injury or illness caused by hazardous chemicals • All construction vehicles will be inspected daily before start up and only operated by operators who are competent and medically fit to do so
2. Education, Training & Promotion	• **All employees entering the site will be required to undergo a site specific health and safety induction training programme – A copy of the site rules will also be made available to them** • **Relevant employees will receive specific safety training such a training in the safe work procedures for plant, equipment and substances they are required to use** • **All visitors to the site will be given induction training and will only be allowed on the site if they are accompanied by a member of the site staff** • **Specific training will include inter alia first aid training, general safety training, firefighting training, operator training**

3. Public Safety & Emergency Preparedness	• **Signage will be used to limit access to the site – "No unauthorised entry", "Visitors to report to site office" and other relevant signage will be used** • **General signage warning of overhead work and other hazards on site will be deployed** • **Netting or other measures will be used to protect persons from falling objects** • **Security measures such as patrols to prevent unauthorised entry as well as an entry register will placed in use**
4. Personal Protective Equipment	• Assessment will be conducted to determine the personal protective equipment required on site • All equipment will be issued free of charge and the wearing thereof strictly enforced – this will also count for visitors to the site
5. Housekeeping	• Removal of rubble will form part of the project – Rubble to be crushed and removed by truck to predetermined dump site • High standards of housekeeping will be enforced on all contractors
6. Scaffolding, Formwork & Support work	All legal requirements to be addressed and adhered to
7. Ladders	All legal requirements to be addressed and adhered to
8. Electrical Safeguarding	All legal requirements to be addressed and adhered to
9. Emergency/Fire Prevention & Protection	• Sufficient firefighting equipment will be provided, correctly located and clearly signposted • Emergency plan will be formulated for evacuation and published
10. Excavations & Demolition	• Demolition work will be carried out under the supervision of a competent person, detailed and site specific risk assessment will be carried out and engineering survey and method statement will be available on site • Inspections to prevent premature collapse will be carried out by competent person before each shift. Inspection register kept • All excavations will be inspected by a competent person before every shift as required, edges will be sloped to at least the angle of repose, the excavations well be substantially barricaded and egress will be provided at least every 6 metres

	• All excavations will be inspected by a competent person before every shift as required, edges will be sloped to at least the angle of repose, the excavations will be substantially barricaded and egress will be provided at least every 6 metres
11. Tools	• All hand tools will be in good condition and will be inspected regularly for safety – Findings will be entered into a register kept for this purpose
12. Cranes	• Cranes/Lifting Machines & equipment will be operated under the supervision of a competent person • Valid load test certificates and 3 monthly inspection records of all lifting tackle will be kept on site
13. Personnel & Material Hoists	• Cherry pickers will be load tested and valid load test certificates will be kept on file – Regular safety inspections by competent persons done and records kept – Only persons medically tested for physical and psychological fitness and declared competent will be allowed to work on cherry pickers
14. Transport & Materials Handling	• All construction vehicles will be inspected daily before start up and only operated by operators who are competent and medically fit to do so
15. Site Plant & Machinery	• All construction vehicles will be inspected daily before start up and only operated by operators who are competent and medically fit to do so
16. Plant & Storage Yards/Site Workshops Specifics	• Good housekeeping practices and environmental protection to be practiced as far as is reasonably practicable
17. Health & Hygiene	• All hygiene facilities such as toilets, eating areas, change rooms and the like will be provided in line with the Facilities Regulations and the Construction Regulations and will be kept in a clean and hygienic condition

1. ADMINISTRATIVE & LEGAL REQUIREMENTS

OHS ACT SECTION / REGULATION	SUBJECT	REQUIREMENTS	YES / NO
Construction. Regulation 4	**Notice of carrying out Construction work**	Department of Labour notified Copy of Notice available on Site	Yes
General Admin. Regulation 4	***Copy of OH&S Act (Act 85 of 1993)**	Updated copy of Act & Regulations on site. Readily available for perusal by employees.	Yes
COID Act Section 80	***Registration with Compensation Insurer**	Written proof of registration/Letter of good standing available on Site	Yes
Construction. Regulation 5, 6 & 7	**A.1.1 OH&S Specification & Programme**	OH&S Spec received from Client OH&S programmed developed Updated regularly	Yes
Section 8(2)(d) Construction. Regulation 5, 6 & 7	**A.1.2 *Hazard Identification & Risk Assessment**	Hazard Identification carried out/Recorded Risk Assessment and – Plan drawn up/Updated RA Plan available on Site Employees/Sub-Contractors informed/trained	Yes
Section 16(2)	***Assigned duties (Managers)**	Responsibility of complying with the OH&S Act assigned to other person/s by CEO.	Yes
Construction. Regulation 7	**Designation of Person Responsible on Site**	Competent persons appointed in writing as Construction Managers and Supervisors	Yes
Section 17 & 18 General Administrative Regulations 6 & 7	***Designation of Occupational Health & Safety Representatives**	More than 20 employees - one OH&S Representative, one additional OH&S Rep. for each 50 employees or part thereof. Designation in writing, period and area of responsibility specified. Meaningful OH&S Rep. reports. Reports actioned by Management.	Yes
Section 19 & 20 General Administrative Regulations 5	***Occupational Health & Safety Committee/s**	OH&S Committee/s established. Members appointed in writing. Meetings held monthly. Minutes kept. Actioned by Management.	Yes
Section 37(1) & (2)	***Agreement with Mandataries/ Sub-Contractors**	Written agreement with(Sub- Contractors) List of (Sub-) Contractors displayed. Proof of Registration with Compensation Insurer/Letter of Good Standing Construction Supervisor designated Written arrangements re. OH&S Reps & OH&S Committee Written arrangements re. First Aid	Yes

Section 24 & General Admin. Regulation 8 COID Act Sect.38, 39 & 41	***Reporting of Incidents (Dept. of Labour)**	Incident Reporting Procedure displayed. All incidents in terms of Sect. 24 reported to the Provincial Director, Department of Labour, within 3 days. (Annexure 1)(WCL 1 or 2) Cases of Occupational Disease Reported Copies of Reports available on Site Record of First Aid injuries kept	Yes
General Admin Regulation 9	***Investigation and Recording of Incidents**	All injuries which resulted in the person receiving medical treatment other than first aid, recorded and investigated by investigator designated in writing. Copies of Reports (Annexure 1) available on Site Tabled at OH&S Committee meeting Action taken by Site Management.	Yes
Construction. Regulation 10	**Fall Prevention & Protection**	Competent person appointed to draw up and supervise the Fall Protection Plan Proof of appointees competence available on Site Risk Assessment carried out for work at heights Fall Protection Plan drawn up/updated Available on Site	Yes
Construction. Regulation 10(5)	**A.1.3 Roof work**	Competent person appointed to plan & supervise Roof work. Proof of appointees competence available on Site Risk Assessment carried out Roof work Plan drawn up/updated Roof work inspect before each shift. Inspection register kept Employees medically examined for physical & psychological fitness. Written proof on site	Yes
Construction. Regulation 11	**Structures**	Information re. the structure being erected received from the Designer including: - geo-science technical report where relevant - the design loading of the structure - the methods & sequence of construction - anticipated dangers/hazards/special measures to construct safely Risk Assessment carried out Method statement drawn up All above available on Site Structures inspected before each shift. Inspections register kept	Yes

Construction. Regulation 12	**Temporary work**	Competent person appointed in writing to supervise erection, maintenance, use and dismantling of Support & Formwork Design drawings available on site Risk Assessment carried out Support & Formwork inspected: - before use/inspection - before pouring of concrete - weekly whilst in place - before stripping/dismantling. Inspection register kept	Yes
Construction. Regulation 16	**A.1.4 Scaffolding**	Competent persons appointed in writing to: - erect scaffolding (Scaffold Erector/s) - act as Scaffold Team Leaders - inspect Scaffolding weekly and after inclement weather (Scaffold Inspector/s) Written Proof of Competence of above appointees available on Site Copy of SABS 085 available on Site Risk Assessment carried out Inspected weekly/after bad weather. Inspection register/s kept	Yes
Construction. Regulation 17	**A.1.5 Suspended Platforms**	Competent persons appointed in writing to: - control the erection of Suspended platforms - act as Suspended platforms Team Leaders - inspect Suspended Scaffolding weekly and after inclement weather Risk Assessment conducted. Certificate of Authorisation issued by a registered professional engineer available on Site and a copy forwarded to the Department of Labour. The following inspections of the whole installation carried out by a competent person - after erection and before use - daily prior to use. Inspection register kept The following tests to be conducted by a competent person: - load test of whole installation and working parts every 12 months - hoisting ropes/hooks/load attaching devices quarterly. Tests log book kept. Employees working on Suspended Platform shall be medically examined for physical & psychological fitness and written proof thereof shall be available.	Yes

Construction. Regulation 13	**A.1.6 Excavations**	Competent person/s appointed in writing to supervise and inspect excavation work Written Proof of Competence of above appointee/s available on Site Risk Assessment carried out Inspected: - before every shift - after any blasting - after an unexpected fall of ground - after any substantial damage to the shoring - after rain. Inspections register kept Method statement developed where explosives will be/ are used	Yes
Construction. Regulation 14	**A.1.7 Demolition Work**	Competent person/s appointed in writing to supervise and control Demolition work Written Proof of Competence of above appointee/s available on Site Risk Assessment carried out Engineering survey and Method Statement available on Site Inspections to prevent premature collapse carried out by competent person before each shift. Inspection register kept	Yes
Construction. Regulation 19	**A.1.8 Materials Hoist**	Competent person appointed in writing to inspect the Material Hoist Written Proof of Competence of above appointee available on Site. Materials Hoist to be inspected weekly by a competent person. Inspections register kept.	Yes
Construction. Regulation 22/ Driven Machinery Regulations 18 & 19	**A.1.9 Cranes & Lifting Machines Equipment**	Competent person appointed in writing to inspect Cranes, Lifting Machines & Equipment. Written Proof of Competence of above appointee available on Site. Cranes & Lifting tackle identified/numbered Register kept for Lifting Tackle Log Book kept for each individual Crane Inspection: - All cranes - **daily by operator** - Tower Crane/s - **after erection/6monthly** - Other cranes - **annually by comp. person** - Lifting tackle(slings/ropes/chain slings etc.) - **3 Monthly**	Yes

Construction. Regulation 24/Electrical Machinery Regulations 9 & 10/ Electrical Installation Regulations	***Inspection & Maintenance of Electrical Installation & Equipment (including portable electrical tools)**	Competent person appointed in writing to inspect/test the installation and equipment. Written Proof of Competence of above appointee available on Site. Inspections: - Electrical Installation & equipment inspected after installation, after alterations and quarterly. Inspection Registers kept Portable electric tools and -lights and extension leads identified/numbered. Monthly visual inspection by User/Issuer/ Storeman. Register kept.	Yes
Construction. Regulation 28/ General Safety Regulation 8(1)(a)	***Designation of Stacking & Storage Supervisor**.	Competent Person/s with specific knowledge and experience designated to supervise all Stacking & Storage Written Proof of Competence of above appointee available on Site	Yes
Construction. Regulation 29/ Environmental Regulation 9	**A.1.10 *Designation of a Person to Co-ordinate Emergency Planning** **A.1.11 And Fire Protection**	Person/s with specific knowledge and experience designated to co-ordinate emergency contingency planning and execution and fire prevention measures Emergency Evacuation Plan developed: - Drilled/Practiced - Plan & Records of Drills/Practices available on Site Fire Risk Assessment carried out All Fire Extinguishing Equipment identified and on ***register***. Inspected weekly. Inspection Register kept Serviced annually	Yes
General Safety Regulation 3	***First Aid**	Every workplace provided with sufficient number of First Aid boxes. (Required where 5 persons or more are employed) First Aid freely available Equipment as per the list in the OH&S Act. One qualified First Aider appointed for every 50 employees. (Required where more than 10 persons are employed) List of First Aiders and Certificates Name of person/s in charge of First Aid box/es displayed. Location of F/Aid box/es clearly indicated. Signs instructing employees to report all Injuries/illness including first aid injuries.	Yes
General Safety Regulation 2	**Personal Safety Equipment (PSE)**	PSE Risk Assessment carried out Items of PSE prescribed/use enforced Records of Issue kept Undertaking by Employee to use/wear PSE	Yes

General Safety Regulation 9	***Inspection & Use of Welding/Flame Cutting Equipment**	Competent Person/s with specific knowledge and experience designated to Inspect Electric Arc, Gas Welding and Flame Cutting Equipment Written Proof of Competence of above appointee available on Site Equipment identified/numbered and entered into a register Equipment inspected monthly. Inspection Register kept	Yes
Hazardous Chemical Substances **(HCS)** Regulations Construction Regulation 29	***Control of Storage & Usage of HCS and Flammables**	Competent Person/s with specific knowledge and experience designated to Control the Storage & Usage of **HCS** (including Flammables) Written Proof of Competence of above appointee available on Site Risk Assessment carried out Register of HCS kept/used on Site	Yes
Vessels under Pressure Regulations	**Vessels under Pressure (VUP)**	Competent Person/s with specific knowledge and experience designated to supervise the use, storage, maintenance, statutory inspections & testing of VUP's Written Proof of Competence of above appointee available on Site Risk Assessment carried out Certificates of Manufacture available on Site Register of VUP's on Site Inspections & Testing by Approved Inspection Authority (AIA): - after installation/re-erection or repairs - every 36 months. - Register/Log kept of inspections, tests. Modifications &repair	
Construction. Regulation 23	**Construction Vehicles & Earth Moving Equipment**	Operators/Drivers appointed to: - Carry out a daily inspection prior to use - Drive the vehicle/plant that he/she is competent to operate/drive Written Proof of Competence of above appointee available on Site Record of Daily inspections kept	Yes
General Safety Regulation 13A	***Inspection of Ladders**	Competent person appointed in writing to inspect Ladders Ladders inspected at arrival on site and monthly thereafter. Inspections register kept	Yes
General Safety regulation 13B	**A.1.12 Ramps**	Competent person appointed in writing to Supervise the erection & inspection of Ramps. Inspection register kept.	N/A

2. EDUCATION & TRAINING

SUBJECT	REQUIREMENT	YES / NO
*Company OH&S Policy Section 7(1)	Policy signed by CEO and published/Circulated to Employees Policy displayed on Employee Notice Boards Management and employees committed.	Yes
*Company/Site OH&S Rules (Section 13(a)	Rules published Rules displayed on Employee Notice Boards Rules issued and explained to employees: written proof Follow-up to ensure employees understand/adhere to the rules.	Yes
*Induction & Task Safety Training (Section 13(a)	All new employees receive OH&S Induction Training. Training includes Task Safety Instructions. Employees acknowledge receipt of training. Follow-up to ensure employees understand/adhere to instructions.	Yes
*General OH&S Training (Section 13(a)	All employees receive basic OH&S training: written proof Operators of Plant & Equipment receive specialised training Follow-up to ensure employees understand/adhere to instructions.	Yes
*Occupational Health & Safety Promotion	<u>Incident Experience Board indicating e.g.</u> Number of hours and days worked without an Injury Star Grading - Board kept up to date. Safety Posters displayed & changed regularly Employee Notice Board for OH&S Notices. Site OH&S Competition. Company OH&S Competition. Participation in Regional OH&S Competition. Suggestion scheme.	Yes

3. PUBLIC SAFETY, SECURITY MEASURES & EMERGENCY PREPAREDNESS

SUBJECT	REQUIREMENT	YES /NO
*Notices &Signs	Notices & Signs at entrances / along perimeters indicating **"No Unauthorised Entry".** Notices & Signs at entrance instructing visitors and non - employees what to do, where to go and where to report on entering the site/yard with directional signs. e.g. **"Visitors to report to Office"** Notices & Signs posted to warn of overhead work and other hazardous activities. e.g. **General Warning Signs**	Yes
SUBJECT	**REQUIREMENT**	**YES /NO**
Site Safeguarding	Nets, Canopies, Stulls, Fans etc. to protect members of the public passing / entering the site.	Yes
*Security Measures	Access control measures/register in operation Security patrols after hours/weekends Sufficient lighting after dark Guard has access to telephone/other means of emergency communication	Yes
*Emergency Preparedness	Emergency contact numbers displayed near Telephone Emergency Evacuation instructions posted up on all notice boards (including employees' notice boards) Emergency contingency plan available on site/in yard Doors open outwards/unobstructed Emergency alarm audible all over (including in toilets)	Yes
*Emergency Drill & Evacuation	Adequate No. of employees trained to use Fire Equipment. Emergency Evacuation Plan available displayed and practised.	Yes

4. PERSONAL PROTECTIVE EQUIPMENT

Subject	Requirement	Yes/No
*PPE needs analysis	Need for PPE identified and prescribed in writing.	Yes
*Head Protection	All persons on site wearing Safety Helmets including Sub-contractors and Visitors (where prescribed)	Yes
*Foot Protection	All persons on site wearing Safety Footwear including Gumboots for concrete / wet work and non-slip shoes for roof work.	Yes
*Eye and Face Protection	Eye and Face Protection (Goggles, Face Shields, Welding Helmets etc.) used when operating the following: * Cable jointing (lead sweating only) * Jack/ Kango Hammers * Angle / Bench Grinders * Electric Drills (Overhead work into concrete / cement / bricks * Explosive Powered tools * Concrete Vibrators / Pokers * Hammers & Chisels * Cutting / Welding Torches * Arc Welding Equipment * Skill / Bench Saws * Spray Painting Equipment etc.	Yes
*Hearing Protection	Hearing Protectors (Muffs, Plugs etc.) used when operating the following: * Jack / Kango Hammers * Explosive Powered Tools * Wood/Aluminium Working Machines e.g. saws, planers, routers	Yes
*Hand Protection	Protective Gloves worn by employees handling / using: using: * Cable jointing * Cement / Bricks / Steel / Chemicals * Welding Equipment * Hammers & Chisels * Jack / Kango Hammers etc.	Yes

*Respiratory Protection	Suitable/efficient Respirators worn correctly by employees handling / using: * Cable jointing (lead fumes) * Dry cement * Dusty areas * Hazardous chemicals * Angle Grinders * Spray Painting etc.	Yes
*Fall Prevention Equipment	Suitable Safety Belts / Fall Arrest Equipment correctly used by persons working on / in unguarded, elevated positions e.g.: * Scaffolding * Riggers * Lift shafts * Edge work * Ring beam edges etc. Other methods of fall prevention applied e.g. catch nets	Yes
*Protective Clothing	All jobs requiring protective clothing (Overalls, Rain Wear, Welding Aprons etc.) Identified and clothing worn. Fire retardant and flash proof clothing for all work inside a substation.	Yes
*PPE Issue & Control	Identified Equipment issued free of charge. All PPE maintained in good condition. (Regular checks). Workers instructed in the proper use & maintenance of PPE. Commitment obtained from wearer accepting conditions and to wear the PPE. Record of PPE issued kept on file.	Yes

5. HOUSEKEEPING

Subject	Requirement	Yes / No
*Scrap Removal System	All items of Scrap / Unusable Off cuts / Rubble and redundant material removed from working areas on a regular basis. (Daily). Scrap / Waste removal from heights by chute / hoist / crane. (Nothing thrown / swept over sides). Scrap disposed of in designated containers / areas. Removal from site/yard on a regular basis.	Yes
Stacking & Storage **(See Section 1 for Designation & Register)**	<u>Stacking:</u> * Stable/* On firm level surface / base. * Not leaning / collapsing. * Irregular shapes bonded. * Not exceeding 3 x the base. * Stacks accessible * Removal from top only <u>Storage:</u> * Adequate storage areas provided. * Functional - e.g. demarcated storage areas/racks / bins etc. * Special areas identified and demarcated. E.g. Flammable Gas, Cement etc. * Neat, safe, stable and square. * Store/storage areas clear of superfluous material. * Storage behind sheds etc. neat/under control * Storage areas free from weeds, litter etc.	Yes
*Waste Control/Reclamation	Re-usable Off cuts and other re-useable material removed daily and kept to a minimum in the work areas. All re-useable materials neatly stacked / stored in designated areas. (Nails removed / bent over in re-useable timber). Issue of hardware / nails / Screws / cartridges etc. controlled and return of unused items monitored.	Yes
Sub-Contractors (Housekeeping)	Sub-contractors required complying with Housekeeping requirements.	Yes

6. WORKING AT HEIGHTS (including Roof work)

Subject	Requirement	Yes/No
Openings	Unprotected openings adequately guarded/fenced/barricaded/catch nets installed	Yes
	Roof work discontinued when bad/hazardous weather Fall protection measures (including warning notices) when working close to edges or on fragile roofing material Covers over openings in roof of robust construction/secured against displacement	Yes

7. SCAFFOLDING / FORMWORK / SUPPORT WORK

Subject	Requirement	Yes/No
Access/System Scaffolding	Foundation firm / stable Sufficient bracing. Tied to Structure/prevented from side or cross movement Platform boards in good condition/sufficient/secured. Handrails and toe boards provided. Access ladders / stairs provided. Area/s under scaffolding tidy. Safe/unsafe for use signs Complying with OH&S Act/SABS 085	Yes
Free Standing Scaffolding	Foundation firm / stable Sufficient bracing. Platform boards in good condition/sufficient/secured. Handrails and toe boards provided. Access ladders / stairs provided. Area/s under scaffolding tidy. Safe/unsafe for use signs Height to base ratio correct Outriggers used /tied to structure where necessary Complying with OH&S Act/SABS 085	Yes

*Mobile Scaffolding	Foundation firm / stable Sufficient bracing. Platform boards in good condition/sufficient/secured. Handrails and toe boards provided. Access ladders / stairs provided. Area/s under scaffolding tidy. Safe/unsafe for use signs	Yes
*Mobile Scaffolding	Wheels / swivels in good condition Brakes working and applied. Height to base ratio correct. Outriggers used where necessary Complying with OH&S Act/SABS 085	Yes
Suspended Scaffolding	Outriggers securely supported and anchored. Correct No. of steel wire ropes used. Platform as close as possible to the structure. Handrails on all sides All winches / ropes / cables / brakes inspected regularly. Scaffolding complies with OHS Act (Act 85/93) Winches maintained by competent person	Yes
Temporary Work	All components in good condition. Foundation firm / stable. Adequate bracing / stability ensured. Good workmanship / uprights straight and plumb. Good cantilever construction. Safe access provided. Areas under support work tidy. Same standards as for system scaffolding.	Yes
Special Scaffolding	Special Scaffolding e.g. Cantilever, Jib and Truss-out scaffolds erected to an acceptable standard and inspected by specialists.	Yes
Edges & Openings	Edges barricaded to acceptable standards. Manhole openings covered / barricaded. Openings in floor / other openings covered, barricaded/fenced. Stairs provided with handrails. Lift shafts barricaded / fenced off.	Yes

8. LADDERS

Subject	Requirement	Yes/No
*Physical Condition / Use & Storage	Stepladders - hinges/stays/braces/stiles in order. Extension ladders - ropes/rungs/stiles/safety latch/hook in order. Extension / Straight ladders secured or tied at the bottom / top. No joined ladders used All ladders stored on hooks / racks and not on ground. Ladders protrude 900 mm above landings / platforms / roof. Fixed ladders higher than 5 m have cages/Fall arrest system	Yes

9. ELECTRICITY

Subject	Requirement	Yes/No
*Electrical Distribution Boards & Earth Leakage	Colour coded / numbered / symbolic sign displayed. Area in front kept clear and unobstructed. Fitted with inside cover plate / openings blanked off / no exposed "live" conductors / terminals/Door kept close Switches / circuit breakers identified. Earth leakage protection unit fitted and operating. Tested with instrument: Test results within 15 – 30 milli-amps Aperture/Opening/s provided for the plugging in and removal of extension leads without the need to open the door	Yes
*Electrical Installations & Wiring	Temporary wiring / extension leads in good condition / no bare or exposed wires. Earthing continuity / polarity correct: **" Brown is live, Blue is not, Green and Yellow earth the lot"** Cables protected from mechanical damage and moisture. Correct loading observed e.g. no heating appliance used from lighting circuit etc. Light fittings/lamps protected from mechanical damage/moisture.	Yes
*Physical condition of Electrical Appliances & Tools	Electrical Equipment and Tools: (includes all items plugging in to a 15 Amp supply socket) Insulation / casing in good condition. Earth wire connected/intact where not of double insulated design Double insulation mark where no earth wire. Cord in good condition/no bare wires/secured to machine & plug. Plug in good condition, connected correctly and correct polarity.	Yes

10. EMERGENCY/FIRE PREVENTION AND PROTECTION

Subject	Requirement	Yes/No
*Fire Extinguishing Equipment	Fire Risks Identified and on record Fire Extinguishing Equipment available for: * Offices * General Stores * Flammable Store * Fuel Storage Tank/s * Gas Welding / Cutting operations * Where flammable substances are being used / applied.	Yes
*Maintenance	Fire equipment serviced minimum annually/preferably 6 monthly	Yes
*Location & Signs	Fire Extinguishing Equipment: * Clearly visible * Unobstructed * Sign posted including “No Smoking” / “No Naked Lights” where required. (Flammable store, Gas store, Fuel tanks etc.)	Yes
* Storage Issue & Control of Flammables (incl. Gas cylinders	Storage Area provided for flammables with suitable doors, ventilation, bund etc. Flammable store neat / tidy and no Class A combustibles. Decanting of flammable substances carried out in ignition free and adequately ventilated area. Container bonding principles applied Only sufficient quantities issued for one day’s usage Special gas cylinder store/storage area. Gas Cylinders stored / used / transported upright and secured in trolley/cradle/structure and ventilated. Types of Gas Cylinders identified/stored separately Full cylinders stored separately from empty cylinders	Yes
*Storage, Issue & Control of Hazardous Chemical Substances (HCS)	HCS storage principles applied: products segregated Provision made for leakage/spillage containment Emergency showers/eye wash facilities provided HCS under lock & key controlled by designated person Decanted/issued in containers with information/warning labels Disposal of unwanted HCS by recognised disposal agent	Yes

11. EXCAVATIONS

Subject	Requirement	Yes/No
Excavations deeper than 1.5 m.	Shored / Braced to prevent caving / falling in. Provided with an access ladder. Excavations guarded/barricaded/lighted after dark in public areas Soil dumped at least 1 m away from edge of excavation On sloping ground soil dumped on lower side of excavation	Yes

12. TOOLS

Subject	Requirement	Yes/No
*Hand Tools	Shovels / Spades / Picks: * Handles free from cracks and splinters * Handles fit securely * Working end sharp and true Hammers: * Good quality handles, no pipe or reinforcing steel handles. * Handles free from cracks and splinters Handles fit securely Chisels: * No mushroomed heads / heads chamfered * Not hardened * Cutting edge sharp and square Saws: * Teeth sharp and set correctly * Correct saw used for the job	Yes
*Explosive Powered Tools.	Only used by trained / authorised personnel. Prescribed warning signs placed / displayed where tool is in use. Inspected at least monthly by competent person and results recorded. Issue and return recorded including cartridges / nails and unused cartridges / nails / empty shells recorded. Cleaned daily after use.	Yes

13. CRANES

Subject	Requirement	Yes/No
Tower Crane	Only operated by trained authorised operator with valid certificate of training Structure - no visible defects Electrical installation good/safe Crane hook: Throat pop marked/safety latch fitted/functional SWL/MML displayed Limit switches fitted/operational Access Ladder fitted with backrests/Fall arrest system installed Lifting tackle in good condition/inspection colour coding current	Yes
*Mobile Crane	Only operated by trained authorised operator with valid certificate of training Rear view mirrors Windscreen visibility good Windscreen wipers operating effectively Indicators operational Hooter working Tyres safe/sufficient tread/pressure visibly sufficient No missing Wheel nuts Headlights, taillights operational Grease nipples and grease on all joints No Oil leaks Hydraulic pipes visibly sound/no leaks No corrosion on Battery terminals Boom visibly in good condition/no apparent damage Cable/sheaves greased/no visible damage/split wires/corrosion Brakes working properly Crane hook: Throat pop marked/safety latch fitted/functional SWL/MML displayed By-pass valves operational Deflection chart displayed/visible to operator/driver Outriggers functional used	Yes
*Gantry Crane	Only operated by trained authorised persons Correct slinging techniques used Recognised/displayed on chart signals used Log book kept/up to date Prescribed inspections conducted on crane &lifting tackle “Crane overhead” signage, where applicable Crane hook: Throat pop marked/safety latch fitted/functional SWL/MML displayed/load limiting switches fitted/operational	Yes

14. BUILDER'S HOIST

Subject	Requirement	Yes/No
Builder's Hoist	**"Hoist In Operation" -** sign displayed. General construction strong and free from patent defects. Tower: * Adequately secured / braced. * At least 900 mm available for over travel. * Barricaded at least 2 100 mm high at ground level and floors. * Landing place provided with gate at least 1 800 high. Platform: * No persons conveyed on platform * Steel wire ropes with breaking strain of six times max. weight. * Signal systems used. * Goods prevented from moving / falling off. * Effective brake capable of holding max. weight.	Yes

15. TRANSPORT & MATERIALS HANDLING EQUIPMENT

Subject	Requirement	Yes/No
*Site Vehicles	All Site Vehicles, Dumpers, Bobcats, Loaders etc; checked daily before used by driver / operator. Inventory of vehicles used/operated on site Inspection by means of a checklist / results recorded. No persons may ride on equipment not designed for passengers. Site speed limit posted and not exceeded. Drivers / Operators trained / licensed. No unauthorised persons allowed to drive/operate equipment.	Yes
Conveyors	Conveyor belt nip points and drive guarded. Emergency stop/lever/brake fitted, clearly marked & accessible.	Yes

16. SITE PLANT AND MACHINERY

Subject	Requirement	Yes/No
Brick Cutting Machine	Operator Trained. Only authorised persons use the machine. Emergency stop switch clearly marked and accessible. Area around the machine dry and slip/trip free/clear of off cuts All moving drive parts guarded/electrical supply cable protected Operator using correct PPE - eye/face/hearing/foot/hands/body.	Yes
*Electric Arc Welder	Welder Trained. Only authorised / trained persons use welder. Adequately earthed. Electrode holder in good condition/safe Cables, clamps & lugs/connectors in good condition. Area in which welding machine is used is dry/protected from wet. Welder using correct PPE - eye/ face/foot/body/respirator. Screens & warning signs placed	Yes
*Woodworking Machines	Operators Trained. Only authorised persons use machines. Provided with guards. Guards used. Operators using correct PPE - eye/face/foot/hearing	Yes
*Compressors	Relief valves set and locked / sealed. Maximum Safe Working Pressure (MSWP) indicated on face of pressure gauge face: not on glass cover. All drives adequately guarded. Receiver/lines drained daily Hoses good condition/clamped, not wired	Yes
Concrete Mixer / Batch Plant	Top platform provided with guardrails. Dust abatement methods in use. Operators using correct PPE - eye / hands / respirators. All moving drive parts guarded. Emergency stops identified / indicated and accessible. Area kept clean/dry/and free from tripping and slipping hazards. Banksman identified and crane signals displayed and used.	Yes
*Gas Welding / Flame Cutting Equipment	Only authorised/trained persons use the equipment. Torches and gauges in good condition. Flashback arrestors fitted at cylinders and gauges. Hoses in good condition/correct type/all connections with clamps Cylinders stored, used and transported in upright position, secured in trolley / cradle / to structure. Fire prevention/control methods applied/hot work permits	Yes

17. PLANT & STORAGE YARDS/SITE WORKSHOPS SPECIFICS

Subject	Requirement	Yes/No
Section 8(2) (1)General Machinery Regulation 2(1): **Supervision: Person appointed for supervision of the Use & Maintenance of Machinery**	Person/s with specific knowledge and experience designated to Supervise the Use & Maintenance of Machinery Critical items of Machinery identified/numbered/placed on register/inventory Inspection/maintenance schedules for abovementioned Inspections/maintenance carried out to above schedules Results recorded	Yes
General Machinery Regulation 9(2): **Notices re. Operation of Machinery**	Schedule D Notice posted in Work areas	Yes
V Pressure Vessel Regulation 13(1)(b): **Supervision of the Use & Maintenance of Pressure equipment (PE)**	Person/s with specific knowledge and experience designated to Supervise the Use & Maintenance of VUP's VUP's identified/numbered/placed on register/Manufacturers plate intact Inspection/maintenance schedules for abovementioned Inspections/maintenance carried out to above schedules Results recorded/Test certificates available.	Yes

Lock–out Procedure	Lock-out procedure in operation	Yes
Ergonomics	Ergonomics survey conducted – results on record Survey results applied	Yes
Demarcation & Colour Coding	Demarcation principles applied All services, pipes, electrical installation, stop-start controls, emergency controls etc. colour coded to own published or SABS standard Employees trained to identify colour coding	Yes
Portable & Bench Grinders	Area around grinder clear/trip/slip free Bench grinders mounted securely/grinder generally in good condition/No excessive vibration On/Off Switch/button clearly demarcated/accessible Adequate guards in place Tool rest – secure/square/max. 2 mm gap Stone/disk - correct type and size/mounted correctly/dressed Use of Eye protection enforced	Yes
Battery Storage & Charging	Adequately ventilated, ignition free room/area/no smoking sign/s Batteries placed on rubber/wooden surface Emergency shower/eye wash provided No acid storage in area	Yes
Ancillary Lifting Equipment	Chain Blocks/Tirfors/jacks/mobile gantries etc. identified/ numbered on register Chains in good condition/links no excessive wear Lifting hooks – throat pop marked/safety latch fitted SWL/MML marked/displayed	Yes
Presses/Guillotines/ Shears	Only operated by trained/authorised persons Interlocks/lock-outs fitted	Yes

18. WORKPLACE ENVIRONMENT, HEALTH AND HYGIENE

Subject	Requirement	Yes/No
***Lighting**	**Adequate lighting in places where work is being executed e.g. stairwells and basements.** **Light fittings placed / installed causing no irritating/blinding glare.**	**Yes**
*Ventilation	Adequate ventilation / extraction / exhausting in hazardous areas e.g. chemicals / adhesives / welding / petrol or diesel/ motors running and in confined spaces / basements.	Yes
*Noise	Tasks identified where noise exceeds 85 dBa. All reasonable steps taken to reduce noise levels at the source. Hearing protection used where noise levels could not be reduced to below 85 dBa.	Yes
*Heat Stress	Measures in place to prevent heat exhaustion in heat stress problem areas e.g. steel decks, when the WBGT index reaches 30. (See Environmental Regulation 4) Cold drinking water readily available when extreme temperatures are experienced.	Yes
*Ablutions	Sufficient toilets provided - 1 per 30 employees (National Building Regulations prescribe chemical toilets for Construction sites) Toilet paper available. Sufficient showers provided. Facilities for washing hands provided Soap available for washing hands Means of drying hands available Changing facilities / area provided. Ablution facilities hygienic and clean.	Yes
*Eating / Cooking Facilities	Adequate storage facilities provided. Weather protected eating area provided, separate from changing area Refuse bins with lids provided. Facilities clean and hygienic.	Yes
*Pollution of Environment	Measures in place to minimize dust generation. Accumulation of empty cement pockets, plastic wrapping / bags, packing materials etc. prevented. Spillage / discarding of oil, chemicals and dieseline into storm water and other drains prevented.	Yes
*Hazardous Chemical Substances	All substances identified and list available e.g. acids, flammables, poisons etc. Material Safety Data Sheets (MSDS) indicating hazardous properties and emergency procedures in case of incident on file and readily available. Substances stored safely.	

Comments:

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_____

_____

I, …… the responsible person for the principal contractor have received this health and safety specification for the project: **ZF MGCAWU 5 INDIVIDUALS: THE CONSTRUCTION OF 5 BNG HOUSES THROUGHOUT THE** ZF MGCAWU DISTRICT together with the tender document and will use this specification as a guideline from which to formulate my site specific health and safety plan and risk assessment for the above mentioned project.

_____ _____

SIGNATURE DATE

V3 CONSULTING ENGINEERS

COGHSTA
Co-operative Governance
Human Settlement & Traditional Affairs

Annexure "B"

LIST OF CONTRACTORS

NAME OF PROJECT …….

CONTRACTOR NAME	SUMMARY OF SERVICES	SECTION 37(2) AGREEMENT IN PLACE	LETTER OF GOOD STANDING IN PLACE	RISK ASSESSMENT, HEALTH AND SAFETY PLAN AND FILE IN PLACE

V3 CONSULTING ENGINEERS

COGHSTA
Co-operative Governance
Human Settlement & Traditional Affairs

ANNEXURE C
GFSH-02

REPUBLIC OF SOUTH AFRICA

National Department of Housing

GEOTECHNICAL SITE INVESTIGATIONS FOR HOUSING DEVELOPMENTS

Project Linked Greenfield Subsidy Project Developments

Generic Specification GFSH-2
September 2002

PROJECT LINKED GREENFIELD SUBSIDY HOUSING PROJECTS	**Generic specification GFSH-2** (September 2002)	Geotechnical Site Investigations for Housing Developments

INTRODUCTION

The National Housing Code in Chapter 3 of Part 3 makes provision for the conducting of a geotechnical investigation in three phases, namely:

*The applicant for housing subsidies commissions the **preliminary investigation** when project descriptions are required. Such an investigation comprises the gathering of all known information relating to geotechnical conditions of the land and the interpretation of this information leading to a preliminary determination of the suitability of the land for a project-linked greenfield project development*

*The **Phase 1** investigation is commissioned by the developer (i.e. a municipality or a provincial housing department) when feasibility reports are required. Such an investigation comprises a stability investigation, if underlain by dolomites or undermined ground, or in undulating terrain where there is a potential for slope instability, and an investigation into the foundation characteristics of the near surface horizons in accordance with the NHBRC requirements for the enrolment of a project in the Warranty Scheme under the provisions of the Housing Consumer Protection Measures Act, 1998 (Act No, 95 of 1998) and the Joint Structural Division of the South African Institution of Civil Engineering and Institution of Structural Engineers' code of practice for foundations and superstructures for single storey residential buildings of masonry construction.*

*The **Phase 2** investigation is commissioned by the developer during the installation of township services. Such an investigation comprises observations, and in some instances, additional investigations, after the township has been pegged, to confirm the site class designations of individual erven in accordance with the NHBRC requirements for the enrolment of top structures in the Warranty Scheme under the provisions of the Housing Consumer Protection Measures Act, 1998 (Act No, 95 of 1998) and the Joint Structural Division of the South African Institution of Civil Engineering and Institution of Structural Engineers' code of practice for foundations and superstructures for single storey residential buildings of masonry construction.*

A critical outcome of the Phase 1 and Phase 2 investigations are the residential site class and dolomitic area designations in respect of the site and individual erven, respectively. The interpretation of these designations in accordance with the aforementioned code of practice may be summarized as follows:

RESIDENTIAL SITE CLASS DESIGNATIONS	TYPICAL FOUNDING MATERIAL	CHARACTER OF FOUNDING MATERIAL	SINGLE STOREY MASONRY HOUSE CONSTRUCTION TYPE
R	Rocks	Stable	Normal
H	Clays, silty clays, clayey silts and sandy clays.	Expansive soils	Normal
H1			Modified normal / soil raft
H2			Stiffened or cellular raft / piled or split construction / soil raft
H3			Stiffened or cellular raft / piled construction / soil raft.
C	Silty sands, sands, sandy and gravely soils	Compressible and potentially collapsible soils	Normal
C1			Modified normal / compaction of in-situ soils below individual footings / deep strip foundations / soil raft.
C2			Stiffened strip footings, stiffened or cellular raft / deep strip foundations / compaction of in-situ soils below individual footings / piled or pier foundations / soil raft.
P	Contaminated soils, controlled fill, dolomitic areas, landslip, landfill, marshy areas, mine waste fill, mining subsidence, reclaimed areas, uncontrolled fill, very soft silts / silty clays.	Variable	Variable
S	Clayey silts, clayey sands of low plasticity, sands, sandy and gravely soils	Compressible soils	Normal
S1			Modified normal / compaction of in-situ soil below individual footings / deep strip foundations / soil raft.
S2			Stiffened strip footings, stiffened or cellular raft / deep strip foundations / compaction of in-situ soils below individual footings / piled or pier foundations / soil raft.

DOLOMITIC AREA DESIGNATION	DESCRIPTION	SINGLE STOREY MASONRY HOUSE CONSTRUCTION TYPE
D1	No site and service precautionary measures required	As for site class R, H – H3, C – C2 and S – S2
D2	General site and service precautionary measures required	As for site class R, H – H3, C – C2 and S – S2
D3	Precautionary measures in addition to D2 are required	Special foundations e.g. fill mattresses, rafts spanning near surface pinnacles.
D4	Unsuitable for housing developments	-

This generic specification was prepared by the Task Team: Implementation of National Housing Programmes to facilitate compliance with the requirements of Chapter 3 of Part 3 of the National Housing Code.

CONTENTS

1. SCOPE

This specification contains requirements applicable to three phases of Geotechnical Site Investigations in townships, which may be underlain by dolomites or undermined land, where unoccupied land or undeveloped parcels of land are to be utilised for housing development purposes.

2. NORMATIVE REFERENCES

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Watermeyer R.B. and Tromp B.E. A systematic approach to the design and construction of single storey residential masonry structures on problem soils. The Civil Engineer in South Africa. March 1992.

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3. DEFINITIONS

Collapsible Soil: a soil with a collapsible soil structure (open textured with a low density) that, when subjected to a combination of an applied load and an increase in soil moisture content, will experience sudden or rapid settlement.

Competent Person (Geotechnics): a person registered as a professional engineer in terms of the Engineering Profession Act, 2000 (Act No. 46 of 2000) or a person who has a BSc degree, or higher, in geology or engineering geology and is registered in terms of Section 11 of the Natural Scientific Professions Act 1993 (Act No. 106 of 1993), who has the following experience in relation to the category of work contemplated:

- **Category of Work 1:** (preliminary Geotechnical Site Investigations in all areas and Phase 1 and Phase 2 Geotechnical Site Investigations of near surface soil horizons): not less than 1 200 hours per annum

experience over the last 6 years in Geotechnical Site Investigations in Southern Africa in partially saturated soils.

- **Category of Work 2:** (Geotechnical Site Investigations in undermined ground and or Contaminated Land): not less than 1200 hours per annum experience over the last 10 years in Geotechnical Site Investigations in Southern Africa in partially saturated soils.

- **Category of Work 3:** (Geotechnical Site Investigations in Dolomitic Areas): not less than 1200 hours per annum experience over the last 10 years in Geotechnical Site Investigations in Southern Africa with not less than 600 hours per annum experience over the last 4 years in Geotechnical Site Investigations involving areas underlain by dolomites and the investigation of sinkholes and dolines and the rehabilitation of sinkholes and dolines or an accumulative experience of 25 000 hours in Geotechnical Site Investigations in Southern Africa in partially saturated soils with not less than 3 500 hours experience in dolomitic related work.

Compressible Soil: soil that experiences gradual settlement as its volume decreases when subjected to an applied load.

Contaminated Land: any land in a condition, by reason of substances in, or under the land, which presents an unacceptable risk to the health and safety of occupants of housing units constructed on such land.

Council: the National Home Builders Registration Council.

Data: facts collected and assembled during the Geotechnical Site Investigation.

Development Risk: the likelihood and extent of loss of life, loss or damage to property or financial loss.

Differential Heave: the expected relative surface displacement between:

- the centre and edge of the mound formed by heave movements (doming/hogging), or
- the centre and edge of the dish formed by heave movements (edge heave or dishing/sagging) of the soil beneath a structure before allowances for heave suppression due to loading are made.

Differential Movement: Differential Heave or Differential Settlement.

Differential Settlement: the relative displacement (vertical) due to uneven settlement of different portions of a structure.

Dolomitic Areas: geographical areas underlain by dolomite or limestone rock directly or at shallow depth less than:

- 30 metres in areas underlain by limestone;
- 60 metres in areas underlain by dolomites where no de-watering has taken place and the local authority has jurisdiction, is monitoring and has control over the groundwater levels over the areas under consideration; or
- 100 metres in areas underlain by dolomites where de-watering has taken place or where the local authority has no jurisdiction or control over ground water levels.

Expansive Soil: a fine grained soil whose clay mineralogy is such that it changes in volume to varying degrees in response to changes in moisture content i.e., the soil may increase in volume (heave or swell) upon wetting and decrease in volume (shrink) upon drying out.

Factual Data: materials, statistics and properties that can be seen, measured or identified by means of accepted or standardized criteria, classifications and tests.

Founding Horizon: a stratum of soil that exhibits similar geotechnical and engineering properties and characteristics and supports a structure.

Foundation Indicator Tests: verification tests in the form of basic physical characteristics of disturbed samples.

Geotechnical: pertaining to the nature, condition and physical properties of the earth's crust (whether soil or rock and including water and gases therein) which affect its performance in civil engineering and building works.

Geotechnical Site Investigation: the process of evaluating the geotechnical character of a site in the context of existing or proposed works or land usage, which may include one or more of the following:

a) Evaluation of the geology and hydrogeology of the site.
b) Examination of existing geotechnical information pertaining to the site.
c) Excavating or boring in soil or rock.
d) In-situ assessment of geotechnical properties of materials.
e) Recovery of samples of soil or rock for examination, identification, recording, testing or display.
f) Testing of soil or rock samples to quantify properties relevant to the purpose of the investigation.
g) Evaluation of geotechnical properties of tested soils
h) Reporting of the results.

Hazard: inherently dangerous quality of a substance, procedure or an event.

Heave / Shrinkage : the anticipated (vertical) surface movement produced by an expansive soil horizon caused by seasonal cyclic fluctuation in moisture content within the horizon.

Identified Land Parcel: a tract of land, comprising one or more farm portions or erven registered in a Deeds Registry, identified for the purpose of housing development under the Subsidy Scheme.

Inherent Risk: the chance, in Dolomitic Areas, for a certain size sinkhole or doline to occur within the postulated scenario of land use and dewatering or non-dewatering situation.

Interpretative Data: information derived from Factual Data using accepted and proven techniques, or from reasonable judgment exercised in the assessment of geological conditions or processes evident at the site.

In-situ: in its original place.

Land Slip: The sudden movement of a soil/rock slope, or gradual creep of a slope (typically with both a vertical and horizontal movement component) over a period of time.

Opinion: conclusions or recommendations derived by the Competent Person (Geotechnics) from consideration of Factual and Interpretative Data, and from the exercise of judgment.

Risk Management Plan: a comprehensive programme of action to be implemented by a responsible group, who have a direct interest in the sustainability of a specific housing development that is in a Dolomitic Area which addresses all aspects of good governance on such land including storm water management, pro-active maintenance, monitoring and emergency reaction planning.

Settlement: The (vertical) movement within a structure due to the distribution or re-distribution of loading and stresses within the various elements of construction or the downward movement of a structure under applied load.

Site Class: areas which are designated as having common foundation and engineering characteristics

Soil Profile: a record of the vertical succession of the different soil (rock) horizons as they occur at any particular location on site.

Subsidence: The downward movement of a foundation caused by loss of support beneath the foundations.

Variability: the change in the properties or conditions of common materials or horizons in the soil profile with time or over short lateral and/or vertical distances.

4 OBJECTIVES

4.1 Objective of the preliminary Geotechnical Site Investigation

The objective of the preliminary Geotechnical Site Investigation is to make an initial determination for an Identified Land Parcel as to whether or not such land is:

a) fit for human settlements; and
b) suitable for project linked subsidy housing development.

Note: The preliminary Geotechnical Site Investigation is incorporated in the project descriptions that form part of the submission to a Provincial Government for the conditional approval of housing subsidies against the selected parcel of land.

4.2 Objective of the Phase 1 Geotechnical Site Investigation

The objective of a Phase 1 Geotechnical Site Investigation is, with respect to the identified parcel of land for which a Provincial Government has granted conditional approval of housing subsidies, to:

a) identify any potential Hazards;
b) define the ground conditions and provide Site Classifications including detailed soil profile and groundwater occurrences within the zone of influence of foundation work;
c) determine the suitability of Dolomitic Land for subsidy housing developments;
d) provide the geotechnical basis for safe and appropriate land use planning, infrastructure design, housing unit design, and the formulation of precautionary measures and risk management procedures;
e) broadly classify the land which is to be developed for subsidy housing in terms of the Council's residential Site Class designations;
f) designate Dolomitic Land in accordance with the Council's dolomitic area designations and to obtain the Council's in principle acceptance of such designations;
g) gather certain Factual Data which has a bearing on the determination of housing subsidy variations and the installation of township services; and
h) obtain necessary information for the Council's in principle approval for the enrolment of the project in terms of the Housing Consumers Protection Measures Act (Act 95 of 1998).

Note: The Phase 1 Geotechnical Site Investigation is undertaken after a Provincial Government has granted conditional approval of housing subsidies. The Report of the Phase 1 Geotechnical Site Investigation forms part of the feasibility study report which is required for the confirmation of housing subsidies.

4.3 Objective of the Phase 2 Geotechnical Site Investigation

The objective of a Phase 2 Geotechnical Site Investigation is, with respect to the Identified Land Parcel for which a Provincial Government has confirmed housing subsidies, to:

a) confirm and refine the residential Site Class designations in respect of each erf so that the necessary documentation required for the enrolment of individual houses with the Council can take place; and
b) confirm and refine, in sites with D2 and D3 dolomitic area designations, that the mandatory precautions have been observed.

Note: Work associated with Phase 2 can only be undertaken once the erven have been pegged. This phase of the Geotechnical Site Investigation must be co-ordinated with the installation of township services. The Phase 2 investigation in Dolomitic Areas is **essentially** a risk management and verification process.

5 REQUIREMENTS

5.1 General requirements

5.1.1 Geotechnical Site Investigations shall satisfy the objectives stated in section 4 for the particular investigation that is undertaken.

5.1.2 Geotechnical Site Investigations shall be undertaken under the direction of a Competent Person (Geotechnics), who has the necessary experience in relation to the Category of Work that is required. Such a person shall spend not less than 50% of the professional person-hours allocated to such investigation in the design of the investigation, the gathering of Data, the evaluation of Factual Data, the determination of Interpretative Data, and the drafting of reports and any interactions which may be required with the Council for Geoscience, the Government Mining Engineer and the Council.

5.1.3 The Competent Person (Geotechnics) shall formulate all Opinions.

5.1.4 The Competent Persons (Geotechnics) shall document and formulate all Opinions in such a manner that a peer review, if conducted on the same Data and Factual Data, will arrive at substantially similar Opinions.

5.1.5 Sites underlain by dolomites, which are recommended for housing developments shall have an Inherent Risk class, determined in accordance with Tables 1 and 2, of between 1 and 4.

5.1.6 Sites on former mine land shall have specific activities of ^{226}Ra, ^{228}Ra, ^{nat}Th and ^{nat}U of less than 200 becquerels / kilogram.

NOTE: Levels of specific and total activity of radioactive material and the radiation dose is governed by the provisions of the Nuclear Energy Act of 1993.

5.1.7 The Competent Person (Geotechnics) shall demonstrate in the case of Contaminated Land that the risk to the health and safety of occupants of subsidy housing is acceptable.

Table 1: Inherent risk of doline and a specified-size sinkhole forming (Buttrick, Van Schalkwyk, Kleywegt and Watermeyer, 2001)

INHERENT RISK CLASS	SMALL SINKHOLE	MEDIUM SINKHOLE	LARGE SINKHOLE	VERY LARGE SINKHOLE	RISK OF DOLINE FORMATION #
SINKHOLE DIAMETER	**< 2m**	**2 – 5 m**	**5 – 15 m**	**> 15 m**	
Class 1	Low	Low	Low	Low	Low NDS or DS
Class 2	Medium	Low	Low	Low	Medium NDS
Class 3	Medium	Medium	Low	Low	Medium NDS
Class 4	Medium	Medium	Medium	Low	Medium NDS
Class 5	High	Low	Low	Low	High NDS
Class 6	High	High	Low	Low	High NDS
Class 7	High	High	High	Low	High NDS
Class 8	High	High	High	High	Low-High NDS or DS

NDS = Non Dewatering Scenario and DS = Dewatering Scenario

Table 2: Inherent risk characterisation and anticipated number of ground-movement events (Buttrick, Van Schalkwyk, Kleywegt and Watermeyer, 2001)

INHERENT RISK CHARACTERISATION	GROUND-MOVEMENT EVENTS PER ha IN A 20-YEAR PERIOD AFTER AN INITIAL 20-YEAR PERIOD (STATISTICS BASED ON INAPPROPRIATE AND POOR SERVICE DESIGN)
Low	$0 \leq 0,1$
Medium	$>0,1 \leq 1,0$
High	$> 1,0$