

INVITATION TO BID

YOU ARE HEREBY INVITED TO BID FOR THE REQUIREMENTS OF THE

South African Nuclear Energy Corporation SOC Ltd

BID NUMBER:	FIN-SCM-TEN-0065
BID DESCRIPTION:	Construction for Thabana pipe store extension
CLOSING DATE:	18 July 2024
CLOSING TIME:	11:00am
SITE MEETING	compulsory clarification meeting will be held virtually on 28th June 2024 at 10:00 AM South African Time. To ensure access for compulsory site briefing is arranged please forward a copy of your South African ID or Drivers Licence to Email address: Steward.Twala@necsa.co.za before 28 June 2023.
BID VALIDITY PERIOD:	90 Working Days (Commencing the Bid Closing Date)
DELIVERY ADDRESS:	BID DOCUMENTS MAY BE DEPOSITED IN THE BID BOX SITUATED AT: Necsa Gate 3 R104 Elias Motsoaledi Street (Church Street West Ext) Pelindaba Brits Magisterial District Madibeng Municipality North West 0240 GPS coordinates : S25°47'03.0" E027°56'38.8" NB: The physical size of the Bid Response must be limited to 400mm x 100mm x 150 mm as the Tender Box aperture cannot accommodate larger sizes.
ENQUIRES:	Mr. Buyani Nsibande Email: scm@necsa.co.za Tel: +27 (0) 12 305 6072

THIS BID IS SUBJECT TO THE PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT AND THE PREFERENTIAL PROCUREMENT REGULATIONS, 2022, CONDITIONS OF CONTRACT AND, IF APPLICABLE, ANY OTHER SPECIAL CONDITIONS OF CONTRACT.

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1. INTRODUCTION

1.1 Company Overview

The South African Nuclear Energy Corporation Limited (Necsa) is a state-owned public company (SOC), registered in terms of the Companies Act, (Act No. 61 of 1973), registration number 2000/003735/06.

The Necsa Group engages in commercial business mainly through its wholly-owned commercial subsidiaries: NTP Radioisotopes SOC Ltd (NTP), which is responsible for a range of radiation-based products and services for healthcare, life sciences and industry, and Pelchem SOC Ltd (Pelchem), which supplies fluorine and fluorine-based products. Both subsidiaries, together with their subsidiaries, supply local and global markets, earning valuable foreign exchange for South Africa and are among the best in their field in their respective world markets.

Necsa's safety, health, environment and quality policies provide for top management commitment to compliance with regulatory requirements of ISO 14001, OHSAS 18001 and RD 0034 (Quality and Safety Management Requirements for Nuclear Installations), ISO 9001 and ISO 17025.

1.2 Purpose

Since early 1900s, research and development in nuclear science and technology has led to a wide variety of useful applications in medicine, industry, research and the generation of electricity. As with any production environment, these practices produce waste that must be managed to ensure the protection of human health and the environment now and in the future, without placing excessive financial burdens on current and future generations. NLM, the Nuclear Liability Management department in the Nuclear Operations and Advanced Manufacturing Division in Necsa, performs its tasks in accordance with the requirements of the South African National and Strategy on radioactive waste management.

NLM has embarked on a project to build waste storage pipes to safely store spent nuclear fuel from SAFARI-1 research reactor and uranium residue from NTP's Hot Cell Complex. The purpose of this RFQ is to request suppliers of material to provide quotations in accordance with the itemised bill of material and respective technical data sheets. Bids will be evaluated in accordance with criteria stipulated in Section 0. The supplier with the highest score per scoring criteria will be awarded the tender to supply material.

2. ABBREVIATIONS

The following abbreviations are used in this document.

Acronym	Description
RSA	Republic of South Africa
SHEQ	Safety, Health, Environment and Quality
ITT	Invitation to Tender
Necsa	South African Nuclear Energy Corporation
BoQ	Bill of Quantities
SOW	Scope of Work
SOC	State Own Company
CSD	Central Supplier Database
COIDA	Compensation Commissioner Fund
WBS	Work Breakdown Structure

CAD	Computer-Aided Design
SANS	South African National Standard
COID	Compensation for Occupational Injuries and Diseases
CIDB	Construction Industry Development Board
VAT	Value Added Tax
BBBEE	Broad-Based Black Economic Empowerment

3. BILL OF QUANTITIES (BOQ), SPECIFICATION AND LINK OF DRAWINGS

The scope of works and details thereof is contained within the technical specifications and Drawings.

3.1 Technical Specifications (Annexure B)

Any bidder recognises and accepts that the Scope Document is merely aimed at achieving the objectives mentioned above. Regardless of the Scope of Work, the Contractor performs all necessary works to ensure the above objectives are met. The Contractor also considers any clarifications provided by Necsa throughout the bid process to ensure that its (Contractor's) price is all-encompassing.

3.2 Bill of Quantities (Annexure A)

Any bidder recognises and accepts that the Scope Document is merely aimed at achieving the objectives mentioned above. Regardless of the Scope of Work, the Contractor performs all necessary works to ensure the above objectives are met. The Contractor also considers any clarifications provided by Necsa throughout the bid process to ensure that its (Contractor's) price is all-encompassing.

3.3 Drawings

All the tender drawings are contained in the link below

Link : [Drawings](#)

3.4 Project Plan and Schedule

- 3.4.1 The bidder is required to provide a detailed project plan and schedule based on estimated delivery periods. The requestor may indicate preferences for the contract's start and end dates or duration.
- 3.4.2 The final delivery date, start and end dates or duration will be negotiated and fixed once the contract is awarded.

3.5 Applicable Necsa Policies

3.5.1 The following Necsa policies must be adhered to:

SHEQ-INS-0100	Necsa General Safety, Health and Environmental Policy.
SHEQ-INS-0102	Necsa Alcohol and Drug Policy.
FBD-SCM-2017-PRO-0001	Procedure for Necsa's Supply Chain Management Process.
SHEQ-INS-0800	SHEQ Approval of Projects

3.6 Requirements to Access Necsa Site

3.6.1 As Necsa site is a National Key Point, access for tenderers are restricted to enter the site and the building where the briefing session will be held only.

3.6.2 Access to any other area will only be allowed when escorted by Necsa staff that is conversant in the security and safety requirements and conditions of the specific area.

3.6.3 Nobody will be allowed to enter the site if they are not in possession of the above identification documents.

3.7 Emergencies, Incidents, Accidents

3.7.1 Necsa maintains an Emergency Control Centre, a Fire Brigade and Paramedics with a fully equipped ambulance, an on-site Medical Clinic with doctors and nursing staff and several highly trained response personnel.

3.7.2 The Emergency Control Centre and emergency response personnel are on call 24/7 and equipped to handle any emergencies foreseen.

3.7.3 If any emergency situation, incident, accident or injury occurs they Emergency Control Centre should be contacted at extension 3333 or 012 305 3333.

3.7.4 Emergency exercises and site alarm tests are conducted from time to time to ensure full preparedness of all Necsa staff. The site wide announcement will clearly state this is an exercise/test.

3.7.5 Everyone, including visitors, is required to follow emergency instructions. Your site host will explain the details during the compulsory briefing session.

3.8 Necsa Requirements for Quality

3.8.1 The bidder shall submit its company Quality Policy with its bid. It shall reflect the intention to submit a Quality Plan for ensuring all deliverables comply with the bid specifications.

3.9 Confidentiality

3.9.1 Bidders shall handle the contents of this document as confidential and private and may not disclose it to a third party or publish in any way whatsoever.

3.9.2 The signing of Necsa's Confidentiality agreement will only be required if information of a confidential nature is provided to the bidders.

3.9.3 Normally this is only required on entering into the contract, which is not part of the bid specification.

SECTION 2

5. INSTRUCTION TO BIDDERS

5.1 General

- 5.1.1 Bidders must familiarise themselves with and comply with the mandatory requirements and ensure their availability for site visits and presentations, as required, on the appropriate dates.

5.2 Bidder Information

- 5.2.1 The required information on the bidder must be completed as stipulated in Section 3 Paragraph 8. Failure to do so may result in disqualification.
- 5.2.2 Bidder to provide solvency statement signed by a qualified authority that the financial position of the bidder is sound and that the company will be able to mobilise the required resources for the execution of this contract.
- 5.2.3 The successful bidder shall demonstrate to Necsa that adequate pre-employment screening, including security screening, was performed on their employees/sub-contractors (staff).
- 5.2.4 The pre-employment screening shall as a minimum be able to:
 - 5.2.4.1 Authenticate that staff are who they claim to be;
 - 5.2.4.2 Confirm that staff have a right to work in the RSA;
 - 5.2.4.3 Obtain written declaration from staff of any criminal record; and
 - 5.2.4.4 Confirm that staff possesses the relevant qualifications to undertake the duties effectively and safely.
- 5.2.5 The successful bidder shall deploy competent staff, supervision and labour who are appropriately experienced and trained for the work they are to undertake.
- 5.2.6 Necsa and its representatives may seek formal assurance to this effect (including a formal audit) at any time during the contract period.

5.3 Consortium

- 5.3.1 Bidders forming part of a Consortium must submit with their bid a copy of their Consortium agreement in a separate attachment. This must clearly indicate:
 - 5.3.1.1 The form of agreement;
 - 5.3.1.2 The respective roles and responsibilities of the members;
 - 5.3.1.3 The identity of the lead company which will have the overall project responsibility;
 - 5.3.1.4 The name and address of the officer acting as the single point of contact for all communications between NECSA and the tenderers. He shall be fully empowered to act on behalf of all members; and
 - 5.3.1.5 The member's agreement to be jointly and severally liable to NECSA for the performance of the contract.

5.4 Sub-contracting

- 5.4.1 Bidders must detail any work to be sub-contracted, and the proposed sub-contractor(s) to be used.
- 5.4.2 Necsa reserves the right to reject the use of any of the bidder's proposed subcontractors and any subcontractor proposed during the contract term.

- 5.4.3 Bidders are advised that Necsa will not respond to any direct approach from potential sub-contractors for details in respect of any particular item in this bid.

5.5 Necsa's Bidding Rights

- 5.5.1 Necsa reserves the right to:
 - 5.5.1.1 Extend the closing date;
 - 5.5.1.2 Verify any information contained in a proposal;
 - 5.5.1.3 Request documentary proof regarding any bid issue;
 - 5.5.1.4 Give preference to locally manufactured goods or locally sourced services;
 - 5.5.1.5 Issue follow-up or supplementary questions during the response period or after receipt of tenders;
 - 5.5.1.6 Make known to all bidders any questions submitted by a bidder including commercial and technical clarifications, together with the answers given to any individual bidder, if it is considered to be relevant to the tender; and
 - 5.5.1.7 Cancel or withdraw this request for tender as a whole or in part.
- 5.5.2 Necsa may require bidders to arrange and/or participate in one or more of the following:
 - 5.5.2.1 Interviews with, or written references from, nominated reference;
 - 5.5.2.2 Reference site visits to the location(s) of nominated reference; and
 - 5.5.2.3 Interviews with bidder personnel who would be involved in the contract execution (day-to-day operations of the site).
- 5.5.3 Negotiate with the bidders.
- 5.5.4 Accepts no responsibility as to the accuracy of the information or data contained within this ITT.
- 5.5.5 Accepts no liability or responsibility for any of the costs associated with the preparation of any bidder's response to this ITT or any losses or costs incurred as a result of: attending pre or post tender meetings and site visits; participating in negotiations; modifications; extension of time limits; or cancellation of the ITT.
- 5.5.6 Reserves the right to modify the ITT at any stage during the tendering process. Any instruction to modify the ITT shall be issued in the form of an "addenda to the Invitation to Tender" and will be simultaneously issued to all bidders.
- 5.5.7 Reserves the right to award contracts to more than one bidder.
- 5.5.8 Does not undertake to accept the lowest priced tender or any tender at all, and may accept tenders in whole or in part.

5.6 Bidding Process

- 5.6.1 Bidders must familiarise themselves with and comply with the procurement timetable and ensure their availability for the site visit and presentations, as required, on the appropriate dates. Necsa is unlikely to be able to offer much flexibility to this timetable.
- 5.6.2 Bidders are required to:
 - 5.6.2.1 Respond in the English language;
 - 5.6.2.2 Provide a cover letter on the bidder's company letterhead with clear reference to the bid of interest should accompany both the technical and pricing proposals;
 - 5.6.2.3 Ensure all copies of the tender response have signatures on the Declaration of Compliance to the Necsa Contact Person;

- 5.6.2.4 Ensure that all document attachments are clearly marked and bound in a clear, logical and well-marked format with a table on context ensuring ease of finding individual documents or sections; and
- 5.6.2.5 Ensure the original document is signed in black ink by an authorised person, agent or representative and each and every page of the bidding documents shall contain the initials of the same signatory.
- 5.6.3 All costing and information must be typed and signed by the bidder, no hand-written costing/pricing will be accepted.
- 5.6.4 All bids in this regard shall only be accepted if they have been placed in the tender box by the closing date stipulated. Late bid submissions will not be considered.

5.7 Bid Submission Requirements

- 5.7.1 Bidders must submit their responses and all supporting documents in properly labelled and sealed envelopes clearly as follows:

- 5.7.1.1 Technical Proposal – Envelope One must include:

a set of Three (3) hard copies (one (1) original and two (2) copies) and one (1) electronic copy (on disk or memory stick).

No pricing information must be included in Envelope One.

- 5.7.1.2 Pricing Proposal – Envelope Two must include:

a set of one (1) hard copy and one (1) electronic copy (on disk or memory stick).

All compulsory returnable documents must be included in Envelope Two.

- 5.7.2 No proposal shall be accepted by Necsa if submitted in any manner other than as prescribed above.

- 5.7.3 Eligibility Requirements

5.8 Pre-qualification Criteria

Non-compliance to the following pre-qualification criteria will result in automatic disqualification:

Item	Requirement	Yes/No
1	Bidder company information	
2	Valid Compensation Commissioner Fund: Letter of good standing (COIDA)	
3	Central Supplier Database Summary Report (CSD)	
4	CIDB Grade 4 CE or Higher	

5.9 Technical / Functional Evaluation Criteria

Technical Evaluation Criteria

Qualitative Technical Evaluation Criteria

	Factor	Sub-factor	Description	Weight	What the evaluator is to look for
1.1	Company Profile	Provide a company profile relevant to scope and complexity of work as related to this contract. The company profile should include a comprehensive organogram signed off at CEO or highest authorized level for the main elements of this contract.	Company profile including signed organogram	10%	No Company profile including signed organogram=0% Company profile including signed organogram=10%
1.2	Company Track record	Table listing similar projects/contracts completed within the last five years demonstrating multi-disciplinary capability. The table should indicate project/contract name, project/contract scope, project/contract duration, and project/contract value. Five projects/contracts for each of the main elements of this contract should be listed.	Tenderer to submit either copies of Task Orders, Purchase Orders, Appointment letters on company letter heads for previous work completed (three or more contracts, appointment letters or completion certificate)	20%	3 project=5% 4-6 projects = 10% 6-9 Projects = 15% 10 projects or more = 20%. 0% for less than 3 projects
1.3	Key personnel	Copy of related qualifications and proof of 5 years' experience to be provided	Bidders are to provide details of key personnel and their proposed functions. Key personnel are those who will play an essential role in the contract. These include the persons responsible for managing the contract, coordinating the engineering, discipline lead engineers, subject matter experts and management of the construction monitoring phase where relevant	25%	No project team submitted = 0 Project team submitted but project roles and responsibilities are not outlined and/ no qualifications and certifications has been attached = 10 Project team submitted and it meets all the requirements = 25
1.4	Method Statement	Tenderers must provide a detailed method statement & Project Schedule demonstrating how the services to the required disciplines will be executed.	Method statement should provide logical approach of how the work will be executed including a list of subcontractors and Level 4 Project Schedule that aligns with the Methodology	25%	No methodology submitted=0 Method statement but no Schedule= 15% Level 4 Project Schedule but no Method statement = 15% Method statement with Project schedule = 25%
			Total	80%	

Note: Bidders that score less than 80 out of a 100 in respect of Technical / Functional Evaluation Criteria will be regarded as submitting a non-responsive bid and will not be evaluated further.

Note: Bidders that score <80 out of 100 regarding Technical / Functional Evaluation Criteria will be regarded as submitting a non-responsive bid and will not be evaluated further.

5.10 Specific Goal and Price Evaluation Criteria

5.10.1 Each tender that obtained the minimum qualifying score for functionality must be evaluated further in terms of price and the preference point system.

5.11 80/20 preference point system for acquisition of goods or services for Rand value equal to or above R30 000 and up to R50 million

5.11.1 The following formula must be used to calculate the points out of 80 for price in respect of a tender with a Rand value equal to or above R30 000 and up to a Rand value of R50 million, inclusive of all applicable taxes:

$$P_s = 80 \left(1 - \frac{P_t - P_{min}}{P_{min}} \right)$$

Where-

P_s = Points scored for price of tender under consideration

P_t = Price of tender under consideration; and

P_{min} = Price of lowest acceptable tender.

5.11.2 The following table must be used to calculate the score out of 20 for a specific goal:

Ownership	Number of Points
100% black ownership	20
At least more than 51% of black ownership	15
Less than 51 % black owned but more than 40% black ownership.	10
Less than 40% black ownership and more than 0% black ownership.	05
0% black ownership	0

5.11.3 A tenderer must submit proof of its B-BBEE status level of contributor (Specific goal).

5.11.4 A tenderer failing to submit proof of specific goal, may not be disqualified, but:

5.11.4.1 May only score points out of 80 for price; and

5.11.4.2 Score 0 points out of 20 for specific goal

5.11.5 The points scored by a tenderer for a specific goal must be added to the points scored for price and the total must be rounded off to the nearest two decimal places.

5.11.6 Subject to sub regulation 4(4), the contract must be awarded to the tenderer scoring the highest points.

5.11.7 If the price offered by a tenderer scoring the highest points is not market-related, the organ of state may not award the contract to that tenderer.

5.11.8 The organs of state may:

5.11.8.1 Negotiate a market-related price with the tenderer scoring the highest points or cancel the tender;

5.11.8.2 If the tenderer does not agree to a market-related price, negotiate a market-related price

with the tenderer scoring the second highest points or cancel the tender;

5.11.8.3 If the tenderer scoring the second highest points does not agree to a market-related price, negotiate a market-related price with the tenderer scoring the third highest points or cancel the tender; or

5.11.8.4 If a market-related price is still not agreed the organ of state must cancel the tender.

SECTION 3

7. RETURNABLE DOCUMENTS CHECKLIST

Please indicate that all mandatory documents are included in this bid by ticking the boxes in the checklist below. Responses received without all required documents will be considered invalid. Please also indicate where additional documents have been submitted to the main tender response.

7.1 Mandatory Documents

- 7.1.1 ☐ Bidder's Information (Section 3, Paragraph 8).
- 7.1.2 ☐ Original good standing letter from SARS (Tax clearance) OR a letter from SARS with PIN number issued for TAX compliance status.
- 7.1.3 ☐ If a Consortium, Joint Venture or Sub-contractor, a valid Tax Clearance Certificate for each member.
- 7.1.4 ☐ Compensation for Occupational Injuries and Diseases Act (COIDA).
- 7.1.5 ☐ Central Supplier Database Summary Report (CSD).

7.2 Price

- 7.2.1 ☐ Price Breakdown.

7.3 Compliance Documents

- 7.3.1 ☐ SBD 1 Invitation to Bid.
- 7.3.2 ☐ SBD 3.2 Pricing Schedule
- 7.3.3 ☐ SBD 4 Declaration of Interest.
- 7.3.4 ☐ SBD 6.1 Preference points claim form in terms of the preferential procurement regulations 2012.
- 7.3.5 ☐ SBD 7.2 Contract Form – Rendering of Services.
- 7.3.6 ☐ SBD 8 Declaration of Bidder's Past Supply Chain Management Practices.
- 7.3.7 ☐ Necsa Terms and Conditions of Contract.
- 7.3.8 ☐ Necsa Confidentiality Agreement.
- 7.3.9 ☐ Necsa Alcohol and Drug Control Policy.
- 7.3.10 ☐ Necsa Safety, Health and Environmental Policy.

8. BIDDER INFORMATION

A.1. The following information must be completed. Failure to do so may result in disqualification.

BIDDER INFORMATION	
Bidder Name:	
Registration Number:	
VAT Registration Number:	
Bidding Structure (Individual, Joint Venture, Consortium, Sub- contractors)	
Contact Person:	
Telephone Number:	
Fax Number:	
Email Address:	
Postal Address:	
Physical Address:	

HAS A TAX CLEARANCE AND PIN BEEN SUBMITTED?	Yes		No	
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IF YES, PLEASE INDICATE THE EXPIRY DATE	D	D	M	M	Y	Y	Y	Y
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HAS A VALID BBBEE CERTIFICATE BEEN SUBMITTED?	Yes		No	
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IF YES, PLEASE INDICATE THE EXPIRY DATE	D	D	M	M	Y	Y	Y	Y
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A.2. If bidding as a Joint Venture, Consortium or Sub-Contractors, complete the following company information.

Name of Company (1):	
Registration Number:	
VAT Registration Number:	
Contact Person:	
Telephone Number:	
Fax Number:	
Email Address:	

Postal Address:	
Physical Address:	

HAS A TAX CLEARANCE AND PIN BEEN SUBMITTED?	Yes		No	
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IF YES, PLEASE INDICATE THE EXPIRY DATE	D	D	M	M	Y	Y	Y	Y
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HAS A VALID BBBEE CERTIFICATE BEEN SUBMITTED?	Yes		No	
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IF YES, PLEASE INDICATE THE EXPIRY DATE	D	D	M	M	Y	Y	Y	Y
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Name of Company (2):	
Registration Number:	
VAT Registration Number:	
Contact Person:	
Telephone Number:	
Fax Number:	
Email Address:	
Postal Address:	
Physical Address:	

HAS A TAX CLEARANCE AND PIN BEEN SUBMITTED?	Yes		No	
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IF YES, PLEASE INDICATE THE EXPIRY DATE	D	D	M	M	Y	Y	Y	Y
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HAS A VALID BBBEE CERTIFICATE BEEN SUBMITTED?	Yes		No	
--	------------	--	-----------	--

IF YES, PLEASE INDICATE THE EXPIRY DATE	D	D	M	M	Y	Y	Y	Y
--	---	---	---	---	---	---	---	---

Name of Company (3):	
Registration Number:	
VAT Registration Number:	
Contact Person:	
Telephone Number:	

Fax Number:	
Email Address:	
Postal Address:	
Physical Address:	

HAS A TAX CLEARANCE AND PIN BEEN SUBMITTED?	Yes		No	
--	------------	--	-----------	--

IF YES, PLEASE INDICATE THE EXPIRY DATE	D	D	M	M	Y	Y	Y	Y
--	----------	----------	----------	----------	----------	----------	----------	----------

HAS A VALID BBBEE CERTIFICATE BEEN SUBMITTED?	Yes		No	
--	------------	--	-----------	--

IF YES, PLEASE INDICATE THE EXPIRY DATE	D	D	M	M	Y	Y	Y	Y
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I CERTIFY THAT THE INFORMATION PROVIDED ON THIS FORM IS TRUE AND CORRECT.
 I FURTHER ACCEPT THAT, IN ADDITION TO CANCELLATION OF CONTRACT, ACTION MAY
 BE TAKEN AGAINST ME SHOULD THIS DECLARATION PROVE TO BE FALSE.

SIGNATURE OF BIDDER
(DULY AUTHORISED)

DATE

CAPACITY UNDER WHICH THIS BID IS SIGNED

THABANA PIPE STORE BUILDING EXTENSION

NECSA

BILLS OF QUANTITIES

ANNEXURE A

2024/06/10

1 TENDER REQUIREMENTS

- Submit a complete priced tender Bill of Quantities
- Supply a level 3 Construction Schedule with your tender. (MS Project)
- Supply a full Organogram of personnel for the execution of this work.
- Supply a list of all equipment to be used for the work.
- Appointed Safety officer for the project execution is required.
- Appointed Construction Manager to be on site during execution.
- Supply a quotation for preparation and approval of a safety file
- Supply hourly labour rates for all employees to be involved during construction
- Supply all equipment hourly rates for all equipment to be used during construction
- Supply prices for all consumables to be used during construction
- Supply a price schedule (unit rates) for quantities of material to be used on site e.g. a price of excavating 1m³ of soil, breaking 1m³ of rock or as listed in the tender bill of quantities.
- Supply alternative pricing proposals for different drilling methods of the boreholes such as Auger Drilling, Air Percussion Drilling.

PRINCIPAL BUILDING AGREEMENT: CONTRACT DATA

PROJECT	Thabana Pipe Store Exntension Project
EMPLOYER	South African Nuclear Energy Corporation
CONTRACTOR	
CONTRACT DATE	
FILE CODE	

A TENDER INFORMATION

A1 Project name	Thabana Pipe Store Exntension Project		
A2 Works description	Extension of the Thabana Pipestore Facility		
A3 Site Description			
Erf No/Township	Pelindaba		
Local authority	District of Madibeng		
Street address	Church Street West Extension		
A4 Employer			
Name	South African Nuclear Energy Corporation		
Business (eg: public co.)	0123054000		
Business registration no.	Ref No.2000/003735/06	VAT/GST	
Contact person	Buyani Nsibande	Mobile	
E-mail	Buyani.Nsibande@necsa.co.za		
Registered str. Address	Church Street West Extension, Pelindaba, District of Madibeng		
Postal address	P.O Box 582 Pretoria 0001		
		Code	
Telephone	(012) 3045 4000	Fax	(012)
A5 Principal Agent			
Name			
Practice registration no.		VAT/GST	
Contact person		Mobile	
E-mail			
Registered str. Address			
Postal address			
		Code	
Telephone	(012)	Fax	(012)
A6 Agent			
Name			
Practice registration no.		VAT/GST	NA
Contact person		Mobile	
E-mail			
Registered str. Address			
Postal address			
Telephone			

B CONTRACT DATA

2.0 Law, regulations and notices

2.1/25.15 Law of the country applicable to the project

South Africa (Country/State)

5.0 Contract documents

5.1 Signed **contract documents** held by the **principal agent**, or

Principal Agent

5.5 No. of copies of docs. issued free to the **contractor**

Three

PRICED DOCUMENT

Lump sum priced document, or
Priced **BoQ**

yes/no?

No

yes/no?

Yes

System/method of measurement

Standard system for measuring builders work

Contract documents comprising...

Description	Marked?	Notes
JBCC® Principal Building Agreement Ed 6.1 - March 2014	A	
JBCC® PBA Contract Data Ed 6.1 - March 2014	B	

Contract drawings, as on cover page of tender document

Description	Date	Number	Revision

6.0 Employer's agents

6.3 Description if interests of **agents** in the project other than professional

--

10.0 Insurances

	Obligation/Currency (yes/no)	
By the employer in the joint names of the parties		NA
Contract Works Insurance (CWI) (including materials and goods , temporary works)	contract sum	Tender plus 10%
Allowance for professional fees and escalation of the insured value at 25% pa, or ? %	%	
Free issue material at new replacement value, added to CWI, where applicable		
Employer owned surrounding property (care, custody,		

control or worked on)

Public Liability Insurance (each and every claim OR unlimited / value ?)

Supplementary Insurance (Incl CWI extensions)

per CWI

Removal of Lateral Support Insurance

employer

Other:

Policy deductibles

Works / free issues

contractor

Employer owned surrounding properties

contractor

Public Liability

contractor

Supplementary Insurance

contractor

Removal of Lateral Support

contractor

Other:

OR...

By the **contractor** in the joint names of the **parties**

(yes/no)

Contract Works Insurance (CWI) (including **materials and goods**, temporary works)

contract sum

Allowance for professional fees and escalation of the insured value at 25% pa, or ? %

%

Free issue material at new replacement value

Public Liability Insurance (each and every claim OR unlimited for the period

Supplementary Insurance (Incl CWI extensions)

Policy deductibles

Other:

11.0 Security

11.1.1-5 **Contractor** shall provide **Guarantee for Construction** to the **employer**>D11.2-3

(yes/no)

12.0 Duties of the parties = employer = site

9.2.7 Alterations & additions to existing premises?

12.1.2 Premises occupied - yes/no? identify area?

12.1.3 Relevant natural features to be retained / relocated / removed

12.1.4 Areas the **contractor** may not occupy?

12.1.5 Utilities connections - location

12.1.6 Statutory and/or other notices to be complied with by the contractor before possession of site can be given

12.1.7 Possession of the **site** - intended date

Due date / yyyymmdd

12.1.12 Description of **free issue** by **employer**
(Attach separate page for multiple items)

14.0 Nominated subcontractors

14.1.4 Specialisation:

14.1.4 Specialisation:

14.1.4 Specialisation:

14.1.4 Specialisation:

14.1.4 Specialisation:

16.0 Direct contractors

16.1 Specialisation:

16.1 Specialisation:

16.1 Specialisation:

19/20/24 Practical completion / penalty for late completion

Practical completion of the **works** as a whole

Date for practical completion

Inspection

Penalty amount

yyyymmdd

(working days)

per Calander day

19.0

R 2 000

OR...(only one option can apply)

19/20/24 **Practical completion** of **works** in **sections: 1**

19/20/24 **Practical completion** of **works** in **sections: 2**

19/20/24 **Practical completion** of **works** in **sections: 3**

19.0 Practical completion

19.1.1 Items that do not have to be complete to achieve **practical completion**

19.1.1 Criteria to achieve **practical completion** (BoQ may contain more detailed description)

Practical completion will be when, in the opinion of the a principal agent:

- The works can effectively be used for the purpose intended.
- Where the work on the practical completion list has been completed.
- All outstanding work or work which has to be completely redone/ patched on the interior has been
- The city council temporary- or final occupation certificate has been issued.
- The whole interior- & exterior of structures to be absolutely clean.

25.0 **Payment**

25.0	Currency	R	
25.2	Issue of regular payment certificates on	date@month	or...day of week
25.3.2	Materials and goods off site - paid subject to...		
	Guarantee for Advance Payment provided?		
25.3.4/26.9.5	Contract price adjustment provisions	Method?	None

30.0 **Dispute resolution**

30.6.1	Alternative Dispute Resolution nominating body	Tinus Maritz, If not available, list from Association of Arbitrators from first to last
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CHANGES MADE TO JBCC® DOCUMENTATION

The employer shall retain FIVE percent (5%) of the value of certificate up to a limit of five percent (5%) of the contract amount to the date of practical completion. Two and a half percent (2.5%) of such value after the date of practical completion to, but not including, the date of issue of the final payment certificate. The retention held shall be increased to include any unpaid amount due in the previous certificate to the employer.

NOTE: The amendments contained herein or in the single referenced Annexure constitute the only amendments to the standard JBCC Agreement that will apply. No other amendments shall be of any force or effect.

THABANA PIPE STORE BUILDING EXTENSION
PRELIMINARIES AND GENERAL

Description	Unit	Quant	Rate	Fixed	Time	Value
SECTION 1						
PRELIMINARIES AND GENERAL						
<u>SUPPLEMENTARY NOTES</u>						
i) The agreement and schedule of conditions of building contract are the "Principal Building Agreement" with Bills of Quantities as recommended by the Joint Building Contracts Committee Series 2000 and shall be deemed to be included herein						
ii) The preambles are to be the "Modal Preambles for Trade" 1999 edition and shall be deemed to be included herein						
iii) TENDERERS are referred to the abovementioned documents for the full intent and meaning of each clause thereof (hereinafter referred to by heading and clause number only) for which such allowance must be made as may be considered necessary						
iv) Where standard clauses or alternatives are not entirely applicable to this contract such modifications, corrections or supplements as will apply are given under each relevant clause heading						
v) Where any item is not relevant to this specific contract such item is marked N/A (signifying "not applicable")						
vi) Notwithstanding anything to the contrary contained in any of the contract documents, the provision of the "Preliminaries" as hereafter set forth shall prevail and take precedence						
SECTION A: CONDITIONS OF CONTRACT						
DEFINITIONS						
Definitions and interpretation (clause 1)	Item					
OBJECTIVE						
Offer Acceptance and Performance (clause 2)	Item					
PREPARATION						
Documents (clause 3)	Item					
Design Responsibility (clause 4)	Item					
Employer's Agents (clause 5)	Item					
Site Representative (clause 6)	Item					
Compliance with Regulations (clause 7)	Item					
Works risk (clause 8)	Item					
Indemnities (clause 9)	Item					
Works Insurances (clause 10)	Item					
Liability Insurances (clause 11)	Item					
Effecting Insurances (clause 12)	Item					
Insurances - Government Contracts (clause 13)	Item					
Security (clause 14)	Item					
Replace first sentence of 14.2.1 with: The contractor shall have the right to select the security to be provided in terms of 14.2, 14.3, 14.4 or 14.8 as stated in the schedule.						
Add: 14.8 Retention The employer shall retain FIVE percent (5%) of the value of certificate up to a limit of five percent (5%) of the contract amount to the date of practical completion. Two and a half percent (2.5%) of such value after the date of practical completion to, but not including, the date of issue of the final payment certificate. The retention held shall be increased to include any unpaid amount due in the previous certificate to the employer.	Item					
EXECUTION						
Preparation for and Execution of the Works (clause 15)	Item					
Access to the Works (clause 16)	Item					
Contract Instructions (clause 17)	Item					
Setting out of the Works (clause 18)	Item					

Assignment (clause 19)	Item			
Nominated Subcontractors (clause 20)	Item			
Selected Subcontractors (clause 21)	Item			
Work by Others (clause 22)	Item			
COMPLETION				
No Clause (clause 23)	Item			
Practical Completion (clause 24)	Item			
Works Completion (clause 25)	Item			
Final Completion (clause 26)	Item			
Latent Defects Liability Period (clause 27)	Item			
Sectional Completion (clause 28)	Item			
Revision of Date for Practical Completion (clause 29)	Item			
Penalty for non-Completion (clause 30)	Item			
PAYMENT				
Interim Payment to the Contractor (clause 31)	Item			
Adjustments to the Contract Value (clause 32)	Item			
Recovery of Expense and Loss (clause 33)	Item			
Final Account and Final Payment (clause 34)	Item			
Payment to Third Parties (clause 35)	Item			
CANCELLATION				
Cancellation by Employer - Contractors Default (clause 36)	Item			
Cancellation by Employer - Loss or Damage (clause 37)	Item			
Cancellation by Contractor - Employer Default (clause 38)	Item			
Cancellation - Cessation of the Works (clause 39)	Item			
DISPUTE				
Settlement of Disagreements and Disputes (clause 40)	Item			
SCHEDULE				
Pre-tender Information (clause 41)	Item			
Post-tender Information (clause 41)	Item			
SECTION B: PRELIMINARIES				
Definitions and Interpretation (clause 1)	Item			
Documents (clause 2)	Item			
The Bill of Quantities is compiled in accordance with the method described in The Standard System for Measuring Building Work				
The following qualifications have been made:				
Arches and vaults in number, corbelling in m				
Bills (trades) totals are calculated in the rate column (column E) on the same line as the bill description				
Profit on Prime cost items and Profit and Attendance on Budgetary allowances are calculated at the bottom of prime cost or Budgetary allowances, should the tendered wish to price profit and attendance to each item separately, he is welcome				
Plumbing, Drainage and Electric are measured per point				
Plaster is measured over openings				
Prime cost items in one bill				
The tender document is available on a excel spreadsheet, the onus however lays on the tenderer to ensure all calculations are done correctly				
The site (clause 3)	Item			
Management of Contract (clause 4)	Item			
Samples and Shop Drawings (clause 5)	Item			
Temporary Works and Plant (clause 6)	Item			
Temporary services (clause 7)	Item			
Water - Alternative A	Item			
Electricity - Alternative A	Item			
Telecommunication equipment - Alternative A	Item			
Ablution Facilities - Alternative A	Item			
Prime Cost Amounts (clause 8)	Item			
All Prime Cost amounts exclude Value Added Tax				
All discounts negotiated by the employer are for the benefit of the employer, should the contractor negotiate additional discounts, it will be for the contractor's benefit				
Attendance on N/S subcontractors (clause 9)	Item			
Financial aspects (clause 10)	Item			
General (clause 11)	Item			
Schedule of Variables (clause 12)	Item			
SECTION C: SPECIFIC PRELIMINARIES				
Site instruction book	Item			

Site instructions must be in writing in an adequate triplicate carbon site book of A4 size which must be kept in the office on site and provided by the Contractor

Measurements
Unless otherwise stated all measurements in this Bill of Quantities is in millimetres, for example 1.000 means 1.000mm

NHBRC
According to Act 95 of 1998 of Housing Consumers Protection Measured Act all contractors must be registered with the National Home Builders Registration Council (NHBRC). Opportunity is given for contractors to allow for NHBRC fees at the end of the Bills of Quantities. No certificate will be paid without NHBRC Certificate. Not applicable with alterations.

LATE COMPLETION PAYMENT FOR PROFESSIONAL SITE
A R1,500,00 per site visit per professional team member, will be charged for the account of the contractor, if the project is late

PERMANENT FOREMAN
Tenderer has to allow for a permanent foreman who will be one person (not swopped around) on site for the entire duration of the contract

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No	Description	Unit	Quant	Rate	Total
	EXISTING AREA	m ²	375		
	NEW AREA	m ²	320		
	TOTAL AREA	m ²	695		

SECTION 1

PRELIMINARIES AND GENERAL

Herewith a possible breakdown for P&G, please adjust as required

	0% R 0	/m	R 0 R0	
1 Project manager	Mnth	7		R 0.00
2 Site agent	Mnth	7		R 0.00
3 Foreman	Mnth	7		R 0.00
4 Store man	Mnth	7		R 0.00
5 Night watch	Mnth	0		R 0.00
6 Contractor's office and admin	Mnth	7		R 0.00
7 Vehicle and fuel, transport and toll gates	Mnth	7		R 0.00
8 Bank costs	Mnth	7		R 0.00
9 Security: Cost of guarantee, null if retention	Fixed	0		R 0.00
10 Tools	Mnth	7		R 0.00
11 Scaffolding	Mnth	7		R 0.00
12 Builders water connection	Fixed	0		R 0.00
13 Builders electric connection	Fixed	0		R 0.00
14 Store / Sheds	Mnth	7		R 0.00
15 Site Chemical toilet	Mnth	7		R 0.00
16 Telecommunication facilities	Mnth	7		R 0.00
17 Site office	Mnth	7		R 0.00
18 Land surveyor - setting out of site	Fixed	0		R 0.00
19 Rubble removal	Mnth	7		R 0.00
20 Cleaning (Cleaning agent, cloth, broom, rake, labour)	Mnth	7		R 0.00
21 Site access for all workers. (International passport requires six week clearance and a valid work permit)	Mnth	7		R 0.00
				R 0.00
22 Quantity Surveyor fee's	Fixed/m2	695		R 0.00

BUILDER'S WORK

BILL NO 1

1 ALTERATIONS

	R874	/m ²	R 0	
1.01 BREAK OUT AND REMOVE				
1.02 Remove rubble	m ³	8		R 0.00
1.03 Break out strip footing and fence base	m ³	6		R 0.00
1.04 Break out reinforced surface bed 150mm thick	m ²	63		R 0.00
1.05 Hack together 75mm stone and remove	m ²	92		R 0.00
1.06 Break out vertical cladding and frame	m ²	160		R 0.00
1.07 Carefully remove existing barge flashing, store and re install in new position	m	56		R 0.00
1.08 Break out 200-250mm spotlight mass, 12m long and prepare for re-	No	1		R 0.00
1.09 Break out 175x75x20x3mm Lipped channel girder complete, 10.6m long average 100kg	No	6		R 0.00
1.10 Break out 406x178x60 column, 6.7m long, complete with foot and topplate, average 450kg	No	2		R 0.00
1.11 Break out single door and frame	No	2		R 0.00
1.12 Carefully take out and store for re-installation				
1.13 Light fitting	No	5		R 0.00

No	Description	Unit	Quant	Rate	Total
BILL NO 2					
2	PILING	R0	/m²	R 0	
2.01	Rotary percussion air drilled piling				
2.02	Design and guarantee	No	1		R 0.00
2.03	Establishment of plant, surveyor and tester	No	1		R 0.00
2.04	Setting out piles by surveyor	No	84		R 0.00
2.05	Sonic impact testing and certificate	No	84		R 0.00
2.06	Set up plant at pile position	No	84		R 0.00
2.07	250mm Piles drilling	m	1689		R 0.00
2.08	Placement or rigging				
2.09	Position shuttering collar (supplied)	No	84		R 0.00
2.10	Position steel bore hole casing (supplied)	No	84		R 0.00
2.11	Collect from warehouse				
2.12	Collect shuttering collar approximately 75kg, from warehouse, 1.5km from site	No	48		R 0.00
2.13	Collect shuttering collar approximately 100kg, from warehouse, 1.5km from site	No	36		R 0.00
2.14	Collect steel bore hole casing approximately 1.2ton, from warehouse, 1.5km from site	No	48		R 0.00
2.15	Collect steel bore hole casing approximately 1.6ton, from warehouse, 1.5km from site	No	36		R 0.00
2.16	Placement or rigging				
2.17	Detail methodology statement of executing construction and installation	Item	1		R 0.00
2.18	Position steel bore hole casing (supplied)	No	84		R 0.00
2.19	Temporary plugs				
2.20	350mm Diameter temporary plug	No	48		R 0.00
2.21	450mm Diameter temporary plug	No	36		R 0.00
2.22	FIRE CEMENT CASING				
2.23	200mm Diameter x9mm Nutec fibre cement casing	m	965		R 0.00
2.24	300mm Diameter x9mm Nutec fibre cement casing	m	724		R 0.00
BILL NO 3					
3	FOUNDATIONS (PROVISIONAL)	R0	/m²	R 0	
3.01	SITE CLEARANCE, ETC.				
3.02	Digging up and spread and level within 250m rubbish, debris, vegetation, hedges, shrubs and trees not exceeding 200mm girth, bush, etc.	m ²	1500		R 0.00
3.03	Dig up and spread and level on site within 250m 200mm topsoil with vegetation	m ²	1500		R 0.00
3.04	Take out and remove tree with trunk exceeding 200mm and not exceeding 500mm girth measured one meter above ground level including dry earth filling, watered and rammed	No	15		R 0.00
3.05	Take out and remove tree with trunk exceeding 500mm and not exceeding 1000mm girth measured one meter above ground level including dry earth filling, watered and rammed	No	5		R 0.00
3.06	EXCAVATION, ETC.				
3.07	Mass excavations in earth not exceeding 2m deep (Allow for bulking)	m ³	200		R 0.00
3.08	Excavate in earth for trenches not exceeding 2m deep, wet trenches and compact	m ³	309		R 0.00
3.09	E. o. excavation in mass, strip, etc. in ground for excavation in soft rock	m ³	10		R 0.00

No	Description	Unit	Quant	Rate	Total
3.10	E. o. excavation in mass, strip, etc. in ground for excavation in hard rock	m ³	3		R 0.00
3.11	Spread and level excavated material over site	m ³	89		R 0.00
3.12	E.o. excavations for carting away and spread and level surplus material from excavations and/or stockpiles on site to a dumping site located on the property within 2 km, including bulking.	m ³	421		R 0.00
3.13	Risk of collapse of excavations to sides of trench and hole excavations not exceeding 1.5m deep	m ²	62		R 0.00
3.14	Rib up and scarify and compact to 95% MOD AASHTO density	m ²	354		R 0.00
3.15	Keep excavations free from water	Item	1		R 0.00
3.16	SOIL POISONING				
3.17	Ant proofing under surface bed	m ²	354		R 0.00
3.18	CONCRETE				
3.19	UNREINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES				
3.20	25 MPa/19 mm concrete				
3.21	25 Mpa/19 stone concrete in blinding	m ³	49		R 0.00
3.22	REINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES				
3.23	25 MPa/19 mm High Density magnetite concrete - including 5% excavated surfaces and soft rock, 10% on % hard rock. (Provisional)				
3.24	25 Mpa mass concrete in surface beds on waterproofing	m ³	261		R 0.00
3.25	REINFORCED CONCRETE				
3.26	25 MPa/19 mm concrete				
3.27	Concrete Sundries				
3.28	Concrete pump establishment	No	4		R 0.00
3.29	Making and testing set of three 150x150x150 concrete strength test cube (provisional)	No	4		R 0.00
3.30	Concrete pump cost	m ³	261		R 0.00
3.31	Steel trowel finish to surface bed	m ²	354		R 0.00
3.32	ROUGH FORMWORK (DEGREE OF ACCURACY II)				
3.33	Formwork sundries				
3.34	Edges, risers, ends and reveals not exceeding 150mm high or wide	m	103		R 0.00
3.35	25x25mm Champher in foundations	m	103		R 0.00
3.36	MOVEMENT JOINTS ETC				
3.37	Expansion joints with impregnated softboard between concrete and brick surfaces				
3.38	Expansion joint formed of 10mm jointex horizontal	m ²	119		R 0.00
3.39	Expansion joint formed of 10mm jointex not exceeding 300mm high circular and horizontal around 300mm diameter	No	48		R 0.00
3.40	Saw cut joints				
3.41	Saw cut joints in top of concrete with first cut 3 x 40mm deep and second cut to be 6 x 20mm deep	m	26		R 0.00
3.42	REINFORCEMENT				
3.43	450 Mpa reinforcement to structural concrete work in foundations				
3.44	R20 Dowels 800mm long, Ccat one half of dowel with bitumen, includig opening in exising concrete for 400mm depth	No	88		R 0.00
3.45	Bars of varying diameters	Ton	13.713		R 0.00
3.46	Fabric reinforcement				
3.47	Type 245 fabric reinforcement in surface beds, slab, etc.	m ²	709		R 0.00
BILL NO 4					
4	WATERPROOFING	R0	/m²	R 0	
4.01	DAMP-PROOFING OF WALLS AND FLOORS				

No	Description	Unit	Quant	Rate	Total
4.02	Damp proof course				
4.03	375 Micron embossed black polyethylene damp proof coarse stepped under sills, ridges, hips, etc.	m	14		R 0.00
4.04	WATERSTOP				
4.05	Supercast Rearguard R or similar waterstop	m	26		R 0.00
4.06	Waterproofing of roofs, basements, etc shall be laid under a ten year guarantee. Waterproofing to roofs shall be laid to even falls to outlets etc. With necessary ridges, hips and valleys. Descriptions of sheet or membrane waterproofing shall be deemed to include additional labour to turn-ups and turn-downs				
4.07	Sealtraflex Waterproofing system or other approved				
4.08	Waterproofing around 325mm diameter shuttering collar	No	48		R 0.00
4.09	PROTECTIVE STONE DRESSING				
4.10	19mm Stone chipping, 35mm thick including geotextile/ bidum	m ²	120		R 0.00
4.11	JOINT SEALANTS ETC				
4.12	10x10mm Bostik two part grey poly sulphide sealing compound including backing cord, bond breaker, primer, etc in expansion joints in floors	m	225		R 0.00
BILL NO 5					
5	STRUCTURAL STEEL	R0	/m²	R 0	
5.01	SAFARI				
5.02	PORTAL FRAME COMPLETE WITH GIRDERS AND PURLINS				
5.03	114mm Rail, 22kg/m including fishplate and drill holes	Kg	676		R 0.00
5.04	457x191x82kg/m I-beam	Kg	2529		R 0.00
5.05	406x178x60kg/m I-column	Kg	4212		R 0.00
5.06	203x133x29.8kg/m I-Column	Kg	198		R 0.00
5.07	203x133x25.3 kg/m I-Beam	Kg	777		R 0.00
5.08	175x75x20x3x8.07kg/m Lipped channel purlin and girders	Kg	2240		R 0.00
5.09	260x90x10mm2 37.9kg/m C-channel	Kg	1169		R 0.00
5.10	178x54x8x14.5kg/m C-channel	Kg	152		R 0.00
5.11	L- and channel section minor support and cleats	Kg	351		R 0.00
5.12	60x60x85x4,57kg/m knee bracing	Kg	793		R 0.00
5.13	60x60x8x7.09kg/m cross bracing	Kg	176		R 0.00
5.14	50x50x3mmx2.33kg/m L-section Sag	Kg	201		R 0.00
5.15	50x50x8mmx5.82kg/m L-section Sag	Kg	487		R 0.00
5.16	20mm diameter round bar, 2.47kg/m	Kg	134		R 0.00
5.17	End and top plates	Kg	1147		R 0.00
5.18	Base plates	Kg	365		R 0.00
5.19	M16 Lindaptor clamp	No	132		R 0.00
5.20	Chemical anchors including hole through plate				
5.21	M10x35	No	410		R 0.00
5.22	M12 x 35	No	48		R 0.00
5.23	M12 x 40	No	24		R 0.00
5.24	M16 x 45	No	144		R 0.00
5.25	M20x50	No	36		R 0.00
5.26	M20 x 70	No	72		R 0.00
5.27	M20x340	No	4		R 0.00
5.28	M20 x 590	No	36		R 0.00
5.29	NTP				
5.30	PORTAL FRAME COMPLETE WITH GIRDERS AND PURLINS				
5.31	114mm Rail, 22kg/m including fishplate and drill holes	Kg	531		R 0.00
5.32	457x191x82kg/m I-beam	Kg	1978		R 0.00

THABANA PIPE STORE BUILDING EXTENSION

Tariff/m²

10 June 2024

No	Description	Unit	Quant	Rate	Total
5.33	406x178x60kg/m I-column	Kg	4212		R 0.00
5.34	203x133x29.8kg/m I-Column	Kg	198		R 0.00
5.35	203x133x25.3 kg/m I-Beam	Kg	610		R 0.00
5.36	175x75x20x3x8.07kg/m Lipped channel purlin and girders	Kg	1752		R 0.00
5.37	260x90x10mm2 37.9kg/m C-channel	Kg	914		R 0.00
5.38	178x54x8x14.5kg/m C-channel	Kg	152		R 0.00
5.39	L- and channel section minor support and cleats	Kg	351		R 0.00
5.40	60x60x85x4,57kg/m knee bracing	Kg	793		R 0.00
5.41	60x60x8x7.09kg/m cross bracing	Kg	1605		R 0.00
5.42	50x50x3mmx2.33kg/m L-section Sag	Kg	201		R 0.00
5.43	50x50x8mmx5.82kg/m L-section Sag	Kg	487		R 0.00
5.44	20mm diameter round bar, 2.47kg/m	Kg	134		R 0.00
5.45	End and top plates	Kg	1147		R 0.00
5.46	Base plates	Kg	365		R 0.00
5.47	M16 Lindaptor clamp	No	132		R 0.00
5.48	Chemical anchors including hole through plate				
5.49	M10x35	No	410		R 0.00
5.50	M12 x 35	No	48		R 0.00
5.51	M12 x 40	No	24		R 0.00
5.52	M16 x 45	No	144		R 0.00
5.53	M20x50	No	36		R 0.00
5.54	M20 x 70	No	72		R 0.00
5.55	M20x340	No	4		R 0.00
5.56	M20 x 590	No	36		R 0.00

BILL NO 5**5 ROOF COVERING**R0 /m²

R 0

5.01 STEEL ROOF COVERING AND VERTICAL CLADDING

5.02	0.58mm Colour dark green I.B.R roof covering, with pitch not exceeding 25 deg to steel purlins	m ²	356		R 0.00
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5.03	0.58mm Colour light green I.B.R cladding, with pitch not exceeding 25 deg to steel purlins	m ²	539		R 0.00
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5.04 SUNDRIES

5.05	Ridge	m	30		R 0.00
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5.06	0.58mm Barge flashing at gable 480mm girth, 5 times bent	m	60		R 0.00
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5.07	0.58mm Door fram and louvree flashing at gable 300mm girth, 3 times bent	m	21		R 0.00
------	--	---	----	--	--------

5.08 Roof sundries

5.09	Metal barge board	m	28		R 0.00
------	-------------------	---	----	--	--------

5.10	Broad flute closer	m	28		R 0.00
------	--------------------	---	----	--	--------

5.11 Gutter and downpipes

5.12	Chromadek 0.6mm steel rainwater gutter 100x75mm complete with stopped ends, angles, outlet, purlin brackets, etc.	m	60		R 0.00
------	---	---	----	--	--------

5.13	Chromadek 0.5mm steel rainwater downpipe 100x75mm complete with all necessary offsets, shoes, spreaders, holder bats, etc.	m	26		R 0.00
------	--	---	----	--	--------

BILL NO 6**6 DOORS AND FRAMES**R0 /m²

R 0

6.01 DOOR FRAMES**6.02 PRESSED STEEL DOOR FRAMES**

6.03	Steel door frame for single door for a half brick wall	No	2		R 0.00
------	--	----	---	--	--------

BILL NO 7**7 IRONMONGERY (Two hinges and lock included with hanging of door)**R0 /m²

R 0

No	Description	Unit	Quant	Rate	Total
7.01	Flush bolt and hook, cabin hook and eye, door stop, etc. Labour and rough material only	No	2		R 0.00
BILL NO 8					
8	PLASTERING	R0	/m²	R 0	
8.01	SCREED				
8.02	35mm Screed to floors	m ²	354		R 0.00
8.03	Screed to floors to falls average 50mm thick	m ²	0		R 0.00
8.04	25mm Screed to stairs & landings	m ²	0		R 0.00
8.05	NON-SHRINKING GROUT				
8.06	15-20mm Non-shrinking grout under base plates	m ²	3		R 0.00
BILL NO 9					
9	ELECTRICAL WORK	R0	/m²	R 0	
9.01	Measured according the principles of Small and simple buildings				
9.02	SUPPLY				
9.03	Cable garden light excavated 500mm and backfilling	m	90		R 0.00
9.04	Joint of cable	No	1		R 0.00
9.05	Testing and certification of installation on completion	Item	1		R 0.00
9.06	DIRECT COUPLINGS/ ISOLATOR				
9.07	PLUGS				
9.08	Single wall plug	No	0		R 0.00
9.09	Double wall plug 15 Amp	No	0		R 0.00
9.10	Waterproof single wall plug	No	0		R 0.00
9.11	LIGHT POINTS				
9.12	Ceiling, wall light point	No	6		R 0.00
9.13	Garden, fountain, water feature lights	No	6		R 0.00
9.14	Installation of light fittings	No	12		R 0.00
BILL NO 10					
10	PAINTING	R0	/m²	R 0	
10.01	PAINTING				
10.02	Prime coat and two coats Velvagro on steel frames	m ²	9		R 0.00
10.03	Universal undercoat and two coats enamel on steel frames	m ²	196		R 0.00
BILL NO 11					
11	PRIME COSTS	R28	/m²	R 19 600	
12	Doors, frames and ironmongery			R 10 000	
12.01	Door frame	No	2	R 1 000.00	R 2 000.00
12.02	Doors	No	2	R 3 000.00	R 6 000.00
12.03	Ironmongery	No	2	R 1 000.00	R 2 000.00
13	Light fittings and switches			R 9 600	
13.01	Light fittings, globes, transformers and fans	Item	12	R 800.00	R 9 600.00
14.00	Profit on Prime cost items	Item		R19 600	<u>R 0.00</u>

No	Description	Unit	Quant	Rate	Total
SECTION 2					
1	BUDGETARY ALLOWANCE / PROVISIONAL SUMS	R264	/m ²	R 183 210	
A	CONTRACTUAL			R 152 700	
1	Preliminaries and General			R 57 400	
1.01	Night watchman	Mnth	0	R 3 750.00	R 0.00
1.02	Insurance, SASRIA and Public liability	Item	1	R 20 000.00	R 20 000.00
1.03	Water consumption	Mnth	7	R 1 100.00	R 7 700.00
1.04	Site electricity	Mnth	7	R 1 100.00	R 7 700.00
1.05	Builder's deposit	Item	1	R 10 000.00	R 10 000.00
1.06	Notice boards	Item	1	R 12 000.00	R 12 000.00
2	Occupational health and safety act	Item	1	R 95 300	
2.01	Master file (main contractor)	No	1	R 6 500.00	R 6 500.00
2.02	Internal subcontractors file	No	10	R 3 500.00	R 35 000.00
2.03	Monthly file	Mnth	7	R 1 200.00	R 8 400.00
2.04	Audit	Mnth	7	R 3 500.00	R 24 500.00
2.05	Medical per worker	No	22	R 400.00	R 8 800.00
2.06	Ppe per worker (clothing)	No	22	R 550.00	R 12 100.00
B	BIUILDING			R 30 510	
3.00	Aluminium			R 30 510	
3.01	Fixed inlet type SL5 1130 x 1500mm with flanges for IBR cladding, colour dark green	No	6	R 5 085.00	R 30 510.00
4.00	Profit and attendance on budgetary or provisional items	Item		R183 210	R 0.00
SUB-TOTAL		R292	/m ²		R 202 810.00
Unforeseen (for the discretion of the client)		R576			R 400 000.00
SUB-TOTAL		R867	/m ²		R 602 810.00
VALUE ADDED TAX		R130	/m ²	15%	R 90 421.50
TOTAL CARRIED TO FORM OF TENDER		R997	/m ²		R 693 231.50

FORM OF TENDER

PROJECT:

THABANA PIPE STORE BUILDING EXTENSION

D TENDERER'S SELECTION

11.0 Securities

	Obligation	y/n ?
11.1.2 Guarantee for Construction (variable)	If specified, contractor's choice	
11.1.3 or Guarantee for Construction (fixed)	If specified, contractor's choice	
Retention 5% to maximum of 5%, 2.5% on practical Completion		
11.1.4 Guarantee for Advance Payment (where the contractor requests the employer to pay an advance for materials and goods)	Provided by the contractor	No
Purpose		
Currency		Amount
11.4 Guarantee for Payment	Provided by the employer	
Currency		Amount

19.0 Contractor's holiday periods during the construction period ?

	from	until
Contractor's annual holiday period - year 1		
Contractor's 'other' holiday period - year 1		
Contractor's annual holiday period - year 2		
Contractor's 'other' holiday period - year 2		
Contractor's annual holiday period - year 3		
Contractor's 'other' holiday period - year 3		

26.0 Payment / Adjustment of Preliminaries

Payment of preliminaries

Assessed by **principal agent**, an amount pro rated to the value of the **works** executed in the same ratio as the **preliminaries** to the **contract sum**, (including **tax**); shall exclude the amount of **preliminaries**, all contingency sum(s) and any allowance for CPAP

Option A

OR...

Option B An amount agreed by the **principal agent** and the **contractor** in terms of the **Bills of Materials** or the **priced document** to identify an initial establishment charge / a monthly charge / and a final disestablishment charge

Where the contractor does not indicate option 'A' or option 'B' - option 'A' shall apply

Option A **Adjustment of preliminaries** [26.9.4]
For the adjustment of preliminaries both the contract sum and the contract value (including tax) shall exclude the amount of preliminaries, all contingency sum(s) and any provision for Cost Price Adjustment Provisions:-
~ An amount which shall not be varied
~ An amount varied in proportion to the **contract value** as compared to the **contract sum**
~ An amount varied in proportion to the **construction period** as compared to the initial **construction period** (excluding revisions to the **construction period** to which the **contractor** is not entitled) to adjustment of the **contract value** in terms of the **agreement**

The **contractor** shall provide a breakdown of charges (including **tax**) within 15 **working days** of the date of acceptance of tender and, where applicable, an apportionment of preliminaries per section

Where such information is not provided the following subdivision shall be deemed to apply:

- ~ 10% of the amount shall not be varied
- ~ 15% varied in proportion of the **contract value** to the **contract sum**
- ~ 75% varied in proportion to the revised **construction period** compared to the initial **construction period**

OR...

Option B The **contractor** shall within 15 **working days** of the date of possession of the **site** provide the **principal agent** with a detailed breakdown of **preliminaries** amounts for the **works** as a whole, or per **section** where applicable, including administrative and supervisory staff charges and for the use of **construction equipment** in terms of the **programme**

NOTES

- 1 By submission of this tender to the **employer** the tenderer offers and agrees to execute and complete the **works** and remedy any **defects** in conformity with the specification for the tender sum stated - to be paid in instalments as work is completed
- 2 The tender shall remain in full legal force for forty five (45) **Calendar days** from the closing date of the tender. The tenderer accepts liability for **damages** that may be suffered by the **employer** should the tender validity period not be honoured
- 3 The lowest or any offer will not necessarily be accepted by the **employer** - nor need reasons be given for such a division
- 4 Any provision in this agreement that may confer any benefit or right in favour of any **subcontractor** shall be binding on the **parties** and be capable of acceptance by such **subcontractor** at any time
- 5 Annexures...marked
- 6 Supply references and numbers of three clients and three suppliers

TENDER SUM COMPILATION

	Currency	Amount
Tenderer's work excluding tax	R	
Tax ...at percentage	15%	
Total TENDER SUM inclusive of tax	R	0
Tender sum in words		

0

Capacity	TENDERER	who, by its SIGNATURE warrants authority thereto	Date	Location
----------	----------	---	------	----------

Capacity	WITNESS	SIGNATURE	Date	Location
----------	---------	-----------	------	----------

TENDERER'S DETAILS

Name			
Businesses: public co.			
Business register. no.		VAT/GST	
Contact person		Mobile	
E-mail			
Registered str. Address			
Postal address			
		Code	
Telephone			

ANNEXURE B

	THABANA PIPESTORE BUILDING WORKS TENDER SPECIFICATIONS	Doc. No	MES-CIV-SPE-0007
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Document Title	THABANA PIPESTORE BUILDING WORKS TENDER SPECIFICATIONS
Number	MES-CIV-SPE-0007
Revision	A.03

APPROVAL & DISTRIBUTION

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	THABANA PIPESTORE BUILDING WORKS TENDER SPECIFICATIONS		Doc. No	MES-CIV-SPE-0007
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DISTRIBUTION

*(Electronic distribution only)

REVISIONS

This document has been revised in accordance with the following schedule:

Rev. No	Date Approved	Nature of Revision	Prepared
A.03	See title page	Third Revision	PB van Aswegen

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1 DEFINITIONS AND ABBREVIATIONS

1.1 DEFINITIONS

Term	Definition
Thabana	Thabana refers to the area of Pelindaba site where nuclear waste is stored.
Thabana Pipestore	The Thabana Pipestore is a facility where nuclear waste is stored in lined boreholes. This facility is an interim storage

1.2 ABBREVIATIONS

Abbreviation	Definition
ECP	Engineering Change Proposal
FCCB	Facility Change Control Board
HCC	Hot Cell Complex
LTA	Lead Test Assemblies
LTS	Long Term Storage
NTP	Nuclear Technology Products
SAFARI-1	South African Fundamental Atomic Research Installation -1
SANS	South African National Standards
SSC	Structures, Systems and Components
TPS	Thabana Pipestore
UNF/SNF	Used Nuclear Fuel / Spent Nuclear Fuel
U-Residue	Uranium Residue

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2 REFERENCES

Document Title / Drawing Title	Preparer / Author	Document Number	Revision / Date of Issue
[1] Thabana Pipestore Consolidated Basic Design Report	OL Siko	MES-MEC-REP-0132	3.0
[2] Design Report: Detail Design Thabana Pipestore Portal Frame and Foundation	WJ Jarvis	MES-CIV-REP-0037	1.0
[3] The Geological Suitability of Thabana for the Extension of the Pipestore Facility	E Raubenheimer	NLM-REP-18/162	2019
[4] Thabana Pipestore Consolidated Detailed Design		MES-MEC-REP-0146	1.0
[5] Thabana Extension to Pipestore Facility: Site Layout	JMK	NNDD-THABANA-A-LG-0001_R2 SHT 1 OF 1	2.0
[6] Thabana Extension to Pipestore Facility: General Arrangement	JMK	NNDD-THABANA-A-LG-0002_R2 SHT 1 OF 1	2.0
[7] Thabana Extension to Pipestore Facility: Preparatory Earthworks	JMK	NNDD-THABANA-C-CONC-0005_R1 SHT 1 OF 1	1.0
[8] Thabana Extension to Pipestore Facility: Safari-1 Extension Steelwork Steelwork Arrangement 1	JMK	NNDD-THABANA-C-FR-0002_R2 SHT 1 OF 8	2.0
[9] Thabana Extension to Pipestore Facility: Safari-1 Extension Steelwork Steelwork Arrangement 2	JMK	NNDD-THABANA-C-FR-0002_R2 SHT 2 OF 8	2.0
[10] Thabana Extension to Pipestore Facility: Safari-1 Extension Steelwork Steelwork Details 1	JMK	NNDD-THABANA-C-FR-0002_R2 SHT 3 OF 8	2.0
[11] Thabana Extension to Pipestore Facility: Safari-1 Extension Steelwork	JMK	NNDD-THABANA-C-FR-0002_R2	2.0

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Steelwork Details 2		SHT 4 OF 8	
[12] Thabana Extension to Pipestore Facility: Safari-1 Extension Steelwork Steelwork Details 3	JMK	NNDD-THABANA-C-FR-0002_R2 SHT 5 OF 8	2.0
[13] Thabana Extension to Pipestore Facility: Safari-1 Extension Steelwork Steelwork Details 4	JMK	NNDD-THABANA-C-FR-0002_R2 SHT 6 OF 8	2.0
[14] Thabana Extension to Pipestore Facility: Safari-1 Extension Steelwork Steelwork Details 5	JMK	NNDD-THABANA-C-FR-0002_R2 SHT 7 OF 8	2.0
[15] Thabana Extension to Pipestore Facility: Safari-1 Extension Steelwork Steelwork Details 6	JMK	NNDD-THABANA-C-FR-0002_R2 SHT 8 OF 8	2.0
[16] Thabana Extension to Pipestore Facility: NTP Extension Steelwork Steelwork Arrangement 1	JMK	NNDD-THABANA-C-FR-0001_R2 SHT 1 OF 8	2.0
[17] Thabana Extension to Pipestore Facility: NTP Extension Steelwork Steelwork Arrangement 2	JMK	NNDD-THABANA-C-FR-0001_R2 SHT 2 OF 8	2.0
[18] Thabana Extension to Pipestore Facility: NTP Extension Steelwork Steelwork Details 1	JMK	NNDD-THABANA-C-FR-0001_R2 SHT 3 OF 8	2.0
[19] Thabana Extension to Pipestore Facility: NTP Extension Steelwork Steelwork Details 2	JMK	NNDD-THABANA-C-FR-0001_R2 SHT 4 OF 8	2.0
[20] Thabana Extension to Pipestore Facility: NTP Extension Steelwork Steelwork Details 3	JMK	NNDD-THABANA-C-FR-0001_R2 SHT 5 OF 8	2.0

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[21] Thabana Extension to Pipestore Facility: NTP Extension Steelwork Steelwork Details 4	JMK	NNDD-THABANA- C-FR-0001_R2 SHT 6 OF 8	2.0
[22] Thabana Extension to Pipestore Facility: NTP Extension Steelwork Steelwork Details 5	JMK	NNDD-THABANA- C-FR-0001_R2 SHT 7 OF 8	2.0
[23] Thabana Extension to Pipestore Facility: NTP Extension Steelwork Steelwork Details 6	JMK	NNDD-THABANA- C-FR-0001_R2 SHT 8 OF 8	2.0
[24] Thabana Extension to Pipestore Facility: NTP Extension Steelwork Final Skirting Slab and Drainage	JMK	NNDD-THABANA- C-CONC-0006_R1 SHT 1 OF 1	1.0
[25] Thabana Extension to Pipestore Facility: Safari1- Extension Concrete Floor and Foundation Detail	JMK	NNDD-THABANA- C-CONC-0002_R2 SHT 1 OF 3	2.0
[26] Thabana Extension to Pipestore Facility: Safari1- Extension Concrete Reinforcing details	JMK	NNDD-THABANA- C-CONC-0002_R2 SHT 2 OF 3	2.0
[27] Thabana Extension to Pipestore Facility: Safari1- Extension Concrete Bending Schedule	JMK	NNDD-THABANA- C-CONC-0002_R2 SHT 3 OF 3	2.0
[28] Thabana Extension to Pipestore Facility: NTP- Extension Concrete Floor and Foundation Detail	JMK	NNDD-THABANA- C-CONC-0001_R2 SHT 1 OF 3	2.0
[29] Thabana Extension to Pipestore Facility: NTP- Extension Concrete Reinforcing details	JMK	NNDD-THABANA- C-CONC-0001_R2 SHT 2 OF 3	2.0
[30] Thabana Extension to Pipestore Facility: NTP Extension Concrete Bending Schedule	JMK	NNDD-THABANA- C-CONC-0001_R2 SHT 3 OF 3	2.0

3 PURPOSE

This document outlines the Civil and Structural Building scope of work and applicable Civil and Structural works specifications for the construction of the Thabana Pipestore Extensions.

The specifications shall be read in conjunction with the relevant project standards and issued tender drawings as a part of the contract enquiries. No alterations, or modifications to the design specifications will be permitted.

4 INTRODUCTION

The Thabana Pipestore (TPS) is used as an interim storage facility for the SAFARI-1 Research Reactor Spent Nuclear Fuel (SNF) and the NTP U-Residue material from the NTP Hot Cell Complex (HCC) [4]. This interim storage facility was licensed under [1] in 1997 and extended in 2007 to include more storage spaces. The current extension will include both additional spaces for SNF and for the NTP U-Residue material. The extended TPS facility will be divided into two sections; one to store the spent fuel from SAFARI-1 research reactor, and a second section to store the U- Residue material from NTP HCC.

SAFARI-1 will require 48 additional pipes and NTP will require an additional 36 pipes [2]. The extension of the Thabana Pipestore building will be done in both the north and south direction. The pipes will be built in rows of 6; therefore, there will be 8 extra rows of SAFARI-1 pipes and 6 extra rows of NTP pipes. The storage pipes (borehole, steel liner, fibre cement pipe, storage vessel, spring, plug and monitoring gauges) required for the extension (both SAFARI-1 fuel element pipes and NTP LTS container pipes) will have the same design. Only the internal diameter of the LTS storage pipes will be larger.

The building footprint will increase in the northern direction by approximately 12 meters for the NTP pipes and 15.4 meters in the southern direction for the SAFARI-1 pipes. The new layout can be found in Drawing NNDD-Thabana-A-LG-0002. The existing building structure, concrete floor and overhead crane needs to be extended and the same design will be applied, thus no change in SSC classification is expected. The functional requirement of the building structure and crane, lifting and weather protection will remain the same.

5 THABANA FACILITY DESCRIPTION

5.1 CURRENT TPS FACILITY

5.1.1 Site map of facility

The TPS is located in the Thabana area of the Pelindaba site (Figure 1). The extension to the facility is planned for the southern and northern sides of the current TPS, adjacent to the existing SAFARI-1 SNF storage pipes and HCC storage pipes. The proposed new layout is detailed in the Site Layout Drawing NNDD-Thabana-A-LG-0001.



Figure 1: Location of the Pipestore on Thabana Hill at the Necsa Pelindaba Site.

5.1.2 Geology

The geology consists of interbedded slate and quartzite layers of the Timeball Hill belonging to the Pretoria Group of the Transvaal Sequence [3]. The facility is located such that the slate with different degrees of weathering is present below the site down to about 17 m.

Reverse circulation drilling is the preferred borehole drilling method to minimize the vibration impact on existing storage boreholes. The use of alternative drilling methods will

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be discussed with the appointed Contractor. The Contractor may propose alternative drilling methods pricing in this tender.

5.1.3 Seismicity

The seismic design of structures and facilities at Pelindaba should consider a ground acceleration of 1.80 m/s^2 as per previous studies. The seismic hazard considered and concluded that the seismic risk hazard to the TPS facility and its proposed extension is insignificant [3].

5.1.4 Ground water regime

The geohydrology investigation indicated little water seepage into boreholes east, west and north of Thabana. For the boreholes that have been drilled around the Pelindaba site, including at Thabana, the static water level is approximately 50 to 60 meters below the TPS. This confirms that the TPS is situated in an unsaturated zone which is suitable for the storage of radioactive material. This leaves 30 to 40 meters of unsaturated rock between the tip of the approximately 16.73 m deep Storage Vessel and the water level. The gradient of the water level is roughly 1:10 to the north, with a watershed well south of the site [3].

5.1.5 Topography

The terrain around the building is such that water flows away from the building. Changes that will be brought about by the new extension were analyzed and the terrain will be maintained such that the ground falls away from the building.

5.1.6 Environmental Impact

The site of the TPS is situated within the Necsa site. Thabana has been used as a radioactive material storage site for more than 20 years and the TPS itself was first built in 1994. The proposed extension of the facility conforms to general land use of the area. The environmental impact was dealt extensively in the Environmental Impact Assessment that has been performed for the extension and NECSA obtained an Environmental Authorization from Department Forestry, fisheries and the Environment.

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6 BUILDING EXTENSION

6.1 THABANA PIPESTORE BUILDING

6.1.1 Function of the building

The primary function of the TPS building is to provide shelter for the storage pipes and other equipment. It protects the TPS from rainwater, dust, and heat from sunlight. Access into the building is controlled by a lockout procedure designed to prevent unauthorized entry into the store [2].

For the facility extension 36 new storage pipes are required for the NTP U-Residue material at a maximum depth of 16.73 m and 48 pipes are required for the SNF from SAFARI-1 at 16.73 m depth. Figure 22 shows a schematic section view of the TPS facility [2].

The existing steelwork portal frame structure over Storage Facility must also be extended on both sides of the new NTP and SAFARI-1 storage pipes [2].

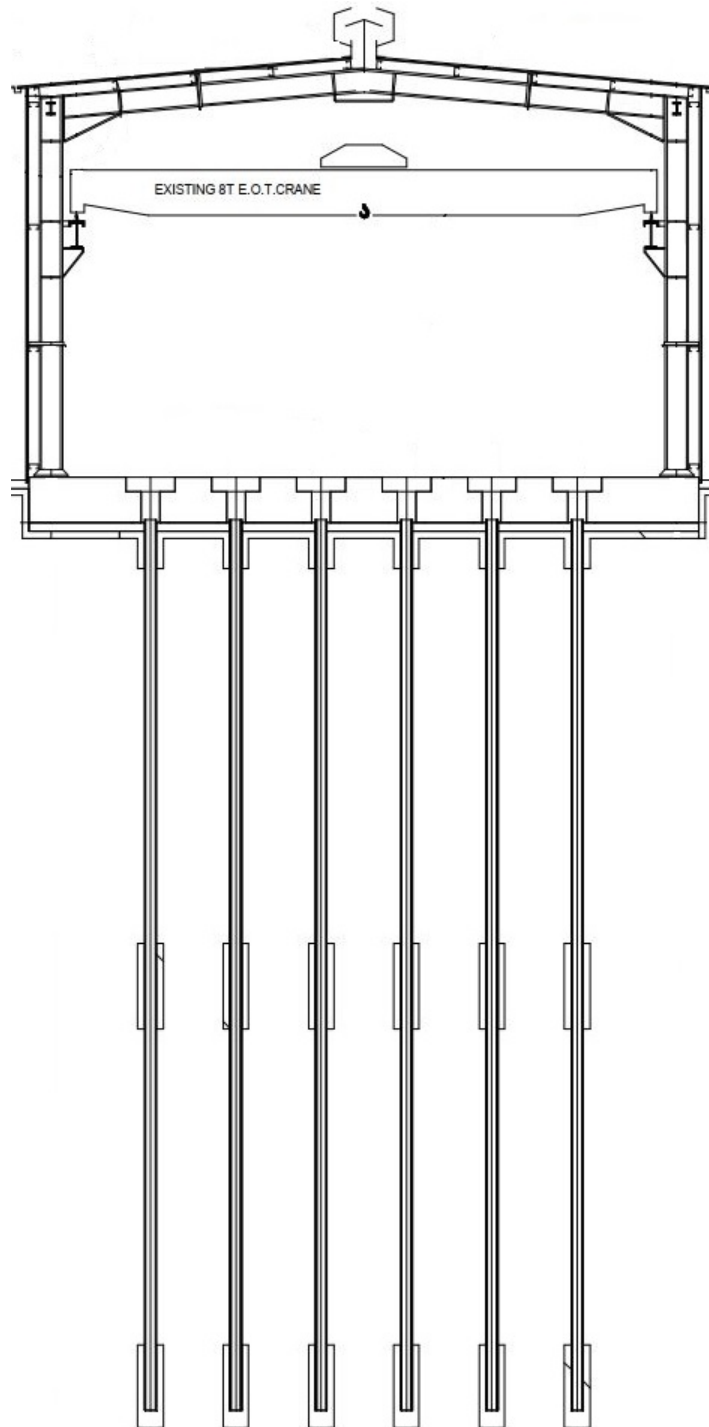


Figure 2: Schematic of the Thabana Pipestore (section view).

The layout of the two facility extensions can be seen in Figure 3.

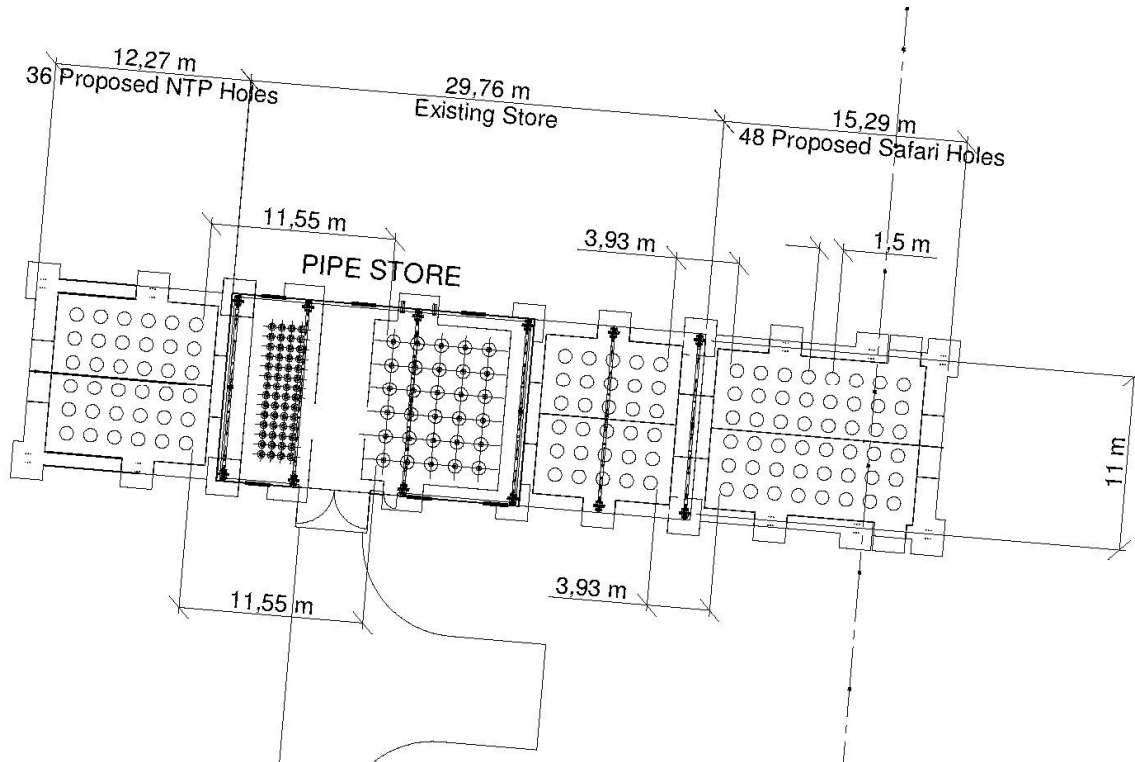


Figure 3: Plan layout of Existing Store Facility and Store Extensions on each side.

6.1.2 Fencing

No new fencing work is required. The existing 5m high security fence around the existing facility have already been moved on the northern side to accommodate the new northern extension.

6.1.3 Steelwork and Portal Frame

The existing steelwork structure consist of a portal frame structure with crawls beams on either side supporting an overhead crane. The columns and roof rafters consist of I-Sections

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spaced at approximately 4m with cold formed lipped channel purlins and side girts for supporting the roof and side wall sheeting cladding.

6.1.3.1 Cladding

The sheeting used for roof and wall cladding at the existing building is 0.6 mm IBR sheeting. 0.6 mm IBR sheeting is no longer in production and has been replaced by 0.58 mm IBR sheeting. The allowable spans of both the walls and roof was checked against the specifications of 0.58 mm IBR sheeting and the design was found to be compliant and must be used for the new extensions [2].

6.1.4 Concrete Works

The concrete works involved concrete foundations, plinths for the steelwork columns and concrete floors cast around the drilled storage pipes.

6.1.5 Earthworks

The earthworks drawings are prepared to assist in construction. These drawings are NNDD-THABANA-C-CONC-0005 and NNDD-THABANA-C-CONC-0006. The earthworks drawings dictate new working levels, compaction requirements and bank slopes. The earthworks shall be performed in accordance with the relevant SANS specifications as listed.

6.1.6 Crane Extension

The existing crane was independently assessed for compliance. The report found the crane to be correctly designed with the exception on the crane end stops, where not enough information was available to make a definitive conclusion. As such, it was recommended that limit switches be placed on the new end stops to prevent any collision. This recommendation will be followed during the installation of the extension [2].

7 LEGISLATIVE AND REGULATORY REQUIREMENTS

The contractor shall comply fully with the mandatory requirements as stipulated in the following acts and regulations as amended of the Republic of South Africa.

1. The Occupational Health and Safety Act of South Africa (OHS Act) (Act 85 of 1993 as amended).
2. National Environmental Management: Air Quality Act 39 of 2004, which provides measures for the prevention of air pollution.
3. National Environmental Management: Waste Act of 2008, which regulates waste management activities.
4. Environmental Conservation Act 73 of 1989, which provides for effective protection and control of the environment.

In addition, the Contractor also complies with the following Acts and Regulations:

5. The Hazardous Substances Act of South Africa (Act 15 of 1973).
6. National Building Regulations and Building Standards Act (Act 103 of 1977 as amended).
7. NECSA Site Specific regulations and requirements.

8 SOUTH AFRICAN CODES AND STANDARDS

The design, construction and installation will comply with relevant South African Codes and Standards (SANS) wherever they exist. Where applicable codes and standards do not exist or cannot be applied, other industry recognized international standards and recommended practices may be used subject to the approval of the NECSA.

Table 1: South African Codes and Standards

NO	TITLE	EDITION
SANS 2001 – BE1	Construction Works Part BE1: Earthworks (General)	2008
SANS 2001 – BS1	Construction Works Part BS1: Site Clearance	2008
SANS 2001 – CC1	Construction Works Part CC1 Concrete Works (Structural)	2012
SANS 2001 – CC2	Construction Works Part CC2 Concrete Works (minor works)	2007

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NO	TITLE	EDITION
SANS 2001 – CS1	Construction Works Part CS1 Structural Steelwork	2012
SANS 10400	The application of the national building regulations - all parts	2016
SANS 1200 C	Standard Specification for Civil Engineering Construction C: Site Clearance.	1980
SANS 1200 DA	Standard Specification for Civil Engineering Construction DA: Earthworks (Small Works).	1988
SANS 1200 DM	Standard Specification for Civil Engineering Construction DM: Earthworks (Roads, Subgrade).	1981
SANS 1200 HB	Cladding and sheeting	1985
SANS 1200 HC	Corrosion Protection of Structural Steelwork	1988
SANS 282	Bending dimensions and scheduling of steel reinforcement for concrete.	2011
SANS 878	Ready mixed concrete.	2012
SANS 920	Steel bars for concrete reinforcement.	2011
SANS 1024	Welded steel fabric for reinforcement of concrete.	2012
SANS 1083	Aggregates from natural sources – Aggregates for concrete.	2017
SANS 1491-1	Portland cement extenders – Part 1: Ground granulated blast furnace - Slag.	2005
SANS 1491-2	Portland cement extenders – Part 2: Fly ash.	2005
SANS 1491-3	Portland cement extenders – Part 3: Silica Fume.	2005
SANS 5860	Concrete Tests – Dimensions, tolerances, and uses of cast test specimens.	2006
SANS 5861-2	Concrete Tests – Sampling of freshly mixed concrete.	2006

NO	TITLE	EDITION
SANS 5861-3	Concrete Tests – Making and curing of test specimens.	2006
SANS 5862-1	Concrete Tests – Consistence of freshly mixed concrete – Slump Test.	2006
SANS 5862-2	Concrete Tests – Consistence of freshly mixed concrete – Flow Test.	2006
SANS 5863	Concrete Tests – Compressive strength of hardened concrete.	2006
SANS 51008	Mixing water for concrete – Specifications for sampling, testing, and assessing the suitability of water, including water recovered from processes in the concrete industry, as mixing water for concrete.	2002

The SANS 1200 series will apply for measurement and payment purposes of the works.

Where the SANS 2001 series section has been published, the SANS 2001 series shall take precedence over the SANS 1200 sections for technical requirements, and the SANS 1200 series section shall only be used for measurement and payment clauses

9 SANS 2001-CC1: CONCRETE WORKS (STRUCTURAL) (SPECIFICATION DATA)

Although not bound in or issued with the Works Information, the following standardized requirements apply and form part of the Works Information, and are subject to any amendments below. The *Contractor* ensures that he is in possession of the following documents:

- Standardized Specifications – Civil Works
SANS 2001-CC1 : Construction Works Part CC1:Concrete Works (Structural)

The following additions and amendments to the code shall apply:

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9.1 REQUIREMENTS (CLAUSE 4)

9.1.1 Materials (Subclause 4.2)

9.1.1.1 Admixtures, Air-entrainment Agents and Curing Agents (Subclause 4.2.4)

Admixtures are permitted, provided that the results of trial tests which demonstrate their suitability and the following are made available:

- a) the trade name of the admixture, its source and the manufacturer's recommended method of use;
 - b) typical dosages and possible detrimental effects of underdosages and overdosages;
 - c) whether compounds likely to cause corrosion of the reinforcement or deterioration of the concrete (such as those containing chloride, in any form, as an active ingredient) are present and, if so, the chloride content of admixtures, expressed as a mass fraction of chloride ions or expressed as an equivalent mass fraction of anhydrous calcium chloride;
- and
- d) the average expected air content of freshly mixed concrete containing an admixture that causes air to be entrained when the admixture is used at the manufacturer's recommended dosage.

9.1.2 Formwork (Subclause 4.3)

9.1.2.1 General (Subclause 4.3.1)

9.1.2.1.1 Subclause 4.3.1.8

The formed surfaces shall be as follows:

- a) Rough: All external surfaces more than 150mm below ground level. Degree of Accuracy III.
- b) Smooth: All surfaces not included in (a) or (c). Degree of Accuracy II.
- c) Smooth-Special, Special off-form and exposed aggregate finish: All surfaces designated as such on the drawings. Degree of Accuracy II or as shown on the drawings.

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9.1.3 Quality of Concrete (Subclause 4.7)

9.1.3.1 Defects (Subclause 4.7.19)

9.1.3.1.1 Subclause 4.7.19.1

All patching and remedial work methods shall be approved by the Engineer before the work is carried out.

10 SANS 2001 CS1 - SPECIFICATION DATA

Although not bound in or issued with the Works Information, the following standardized requirements apply and form part of the Works Information, and are subject to any amendments below. The Contractor ensures that he is in possession of the following documents:

- Standardized Specifications – Civil Works
SANS 2001-CS1 : Construction Works Part CS1: Structural Steelwork

The following additions and amendments to the code shall apply:

10.1 MATERIALS (SUBCLAUSE 4.1)

10.1.1 Structural Steel (Subclause 4.1.1)

Add the following after the first paragraph.

The following structural steel grades shall apply:

Rolled steel sections excluding angles with a leg 50mm or less	:	Grade S355JR
Plates and flats	:	Grade S355JR
Hollow sections	:	Minimum Grade 300WA

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Cold rolled sections and angles with a leg length 50mm or less : Commercial Quality Steel with minimum yield strength of 200 MPa

10.1.2 Test Certificates (Subclause 4.1.2)

Add the following:

The *Contractor* shall supply the manufacturer's mill test certificates pertaining to each batch of steel used on the project to the *Project Manager* before fabrication commences.

10.1.3 Bolting (New Clause 4.1.5.6)

All site connections are to be bolted unless otherwise specified. The *Contractor* is to supply all bolts excluding holding down bolts but including chemical anchors used as holding down bolts. Site bolts are to be suitably bagged and labelled. Bolt grades are to be as follows, unless specifically noted on the drawings:

Structural Connections: Minimum M16 Grade 8.8 with 18 mm diameter holes

10.2 WORKMANSHIP - ERECTION

10.2.1 Chemical Anchors (New Subclause 4.6.1.5)

Chemical anchor bolts for fixing steelwork to concrete elements shall be installed in accordance with the manufacturer's recommendations for hole diameter, depth of embedment and tightening torque.

10.2.2 Setting out and holding down bolts (New Subclause 4.6.1.6)

The *Contractor* shall, before commencing erection check all holding down bolts for deviation from line and level and report in writing to the *Project Manager* any deviations which fall outside the tolerances specified. Commencement of erection shall infer acceptance of the holding down bolts and concrete work as constructed or remedied.

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10.2.3 Verification of dimensions (New Clause)

All existing structures dimensions must be confirmed on site by the contractor. Where connections or modifications or extensions are made to existing structures, all relevant dimensions are to be checked on site before commencing fabrication drawings or fabrication

11 SANS 1200 HB - CLADDING AND SHEETING

11.1 MATERIALS (CLAUSE 3)

11.1.1 Thickness of Sheeting (Subclause 3.1)

Unless shown otherwise on the drawings, roof sheeting and side sheeting shall have a minimum thickness of 0,58 mm.

All flashings shall have a minimum thickness of 0,8mm and shall be of galvanized steel, Zincalume, aluminium or stainless steel, as shown on the project drawings.

11.2 CONSTRUCTION (CLAUSE 5)

11.2.1 Responsibility (Subclause 5.1)

11.2.1.1 Safety Precautions (Subclause 5.1.1)

In line 9 omit "Machinery and Occupational Safety Act, 1983 (Act No. 6 of 1983)" and replace with "Occupational Health and Safety Act, 1993".

11.2.1.2 Installation details (Subclause 5.1.4)

Omit this subclause and substitute the following:

- a. The *Contractor* shall be fully responsible for the production of erection and full detail drawings of the sheeting including:

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general layout, joint details, provisions and assumptions for sheet expansion and contraction, edge details (all sides), lap details, fixing details, choice of proprietary fixing systems and spacings, connection to secondary members (gutters etc.) etc.

b. The *Contractor* shall submit the above drawings to the Engineer for approval or comments.

11.2.2 Installation of Sheeting (Clause 5.5)

Box ribbed sheeting shall be lapped by one trough only.

11.2.3 Flashings (Subclause 5.6)

11.2.3.1 General (Subclause 5.6.1)

Add the following.

All flashings laid at right angles to box ribbed sheeting shall be supplied complete with matching serrated ridge or eaves closure and closed cell expanded polyethylene closures held in position by double sided tape or a serrated closure over.

12SANS 1200 HC - CORROSION PROTECTION OF STRUCTURAL STEELWORK

Corrosion Protection System and Paint Colours shall be as indicated on the drawings or as per NECSA site specifications.

12.1 INTERPRETATIONS (CLAUSE 2)

12.1.1 Supporting Specifications (Subclause 2.1 c))

Omit "SABS 1200 H or SABS 1200 HA" and substitute "SANS 2001 – CS1 and SANS 1921 – 3".

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12.2 CONSTRUCTION (EXECUTION OF WORK) (CLAUSE 5.0)

The following Coating Systems (Clause 5.7) shall apply unless shown otherwise on the drawings or as indicated in NECSA site specific specifications.

Table 1: Table of Coatings

COAT	PAINT TYPE	DFT
Primer	Inorganic Zinc Silicate with minimum 85% zinc in the dry film	75-100 µm
Intermediate	Re-coat able MIO Epoxy	75-150 µm
Finish	Water borne Acrylic	40-70 µm

All coating systems are to be applied in strict accordance with the manufacturer's instructions.

12.2.1 Application of Paint Coatings (Clause 5.8)

Add the following to paragraph 1:

"No coating shall be applied when the relative humidity is above 85%. The first coating of prepared steelwork shall take place within four hours of completion of the surface preparation and the relative humidity is below 85%. If the coating is not possible within the time limit, then the steelwork concerned shall be prepared afresh".

There shall be a colour contrast between successive coats.

12.2.2 Application of Metal Coatings (Clause 5.9)

Hot dip galvanizing shall comply with the requirements of SABS 763.

All bolts, nuts and washers used to connect galvanized members shall be hot dip galvanized.

Flame cutting and welding of galvanized members will not be permitted.

Holes may be drilled through galvanized members only with the *Project Manager's* written approval in each case, and the exposed steel shall be made good as specified in Subclause 5.10.

12.2.3 Repair of Damaged Coatings (Clause 5.10)

Add at beginning of paragraph 1:

“All items of steelwork shall be examined on site, before and after erection, for damage to coatings.

Add after paragraph 3:

“Where approved site cutting or welding are required, the area for a distance of about 50 mm on either side of the cut shall be cleaned of all coatings, the cutting or welding carried out, the weld de-slagged, all flux and weld spatter removed, the steelwork ground down to ‘white metal’ and coated as specified above”.

13 STEELWORK CONSTRUCTION AND PLANNING

The steelwork contractor is required to provide the *Employer* with a detailed method statement for the erection of each structure before the dates shown in the works information.

13.1.1 Steelwork detailing and Workshop drawings

The Contractor shall be responsible for producing all steelwork workshop drawings and submit to the Engineer for approval before commencing steelwork fabrication.

The Steelwork Contractor must submit to the Engineer workshop drawings in electronic format PDF and DWG for approval. The Engineer will review and approve the workshop drawings for structural intent only. Fabrication dimensions, connections and erection tolerances remains the Contractor’s responsibility.

Connections shall be designed generally according to SANS 10162 and the following:

- a) No Eccentricities are permitted in connections unless shown on the drawings or as requested by the *Contractor* and approved by the *Project Manager*. Should approval be given for eccentric connections, the *Contractor* is to design these connections to resist the secondary effects of these eccentricities.
- b) For angle connections, bolts are to be placed on the standard back mark position, which is to correspond with the center line shown on the drawings.
- c) The *Contractor* must ensure that suitably qualified and experienced technical staff are employed to undertake the design and detailing of connections

- d) The *Contractor* shall ensure that details that are likely to initiate corrosion are avoided.
- e) The *Contractor* must ensure that where details are likely to trap water that drainage holes is provided to drain the water away.

If no specific loadings are supplied, it should be assumed that:

- a) For bracing members, the connection shall be designed to carry the full tension capacity of the member.
- b) For floor beams, the greater of the standard simple beam end connections published in the South African Steel Construction Handbook, or a minimum strength of half the member shear strength, shall be used.

14 ORDER OF PRECEDENCE

On technical issues, where a conflict occurs between this document and either the project specifications or the Obsideo specifications, or between either set of specifications, then the order of precedence is as follows:

- Contractor's scope of work and tender specifications (this document).
- NECSA Issued specifications and drawings.
- Project Specification.
-

On commercial issues the order of precedence is as follows:

- Bill of Quantities.
- Project Specification.
- NECSA specification and drawings.
- Contractor's scope of work and tender specifications (this document).

15 SCOPE OF WORKS DESCRIPTION

The overall order of preference for construction works is for the SAFARI-1 Extension works to be constructed before the NTP Extension works.

15.1 NTP EXTENSION

Three dimensional model view of the building works on the side of the NTP Extension is shown in Figure 4.

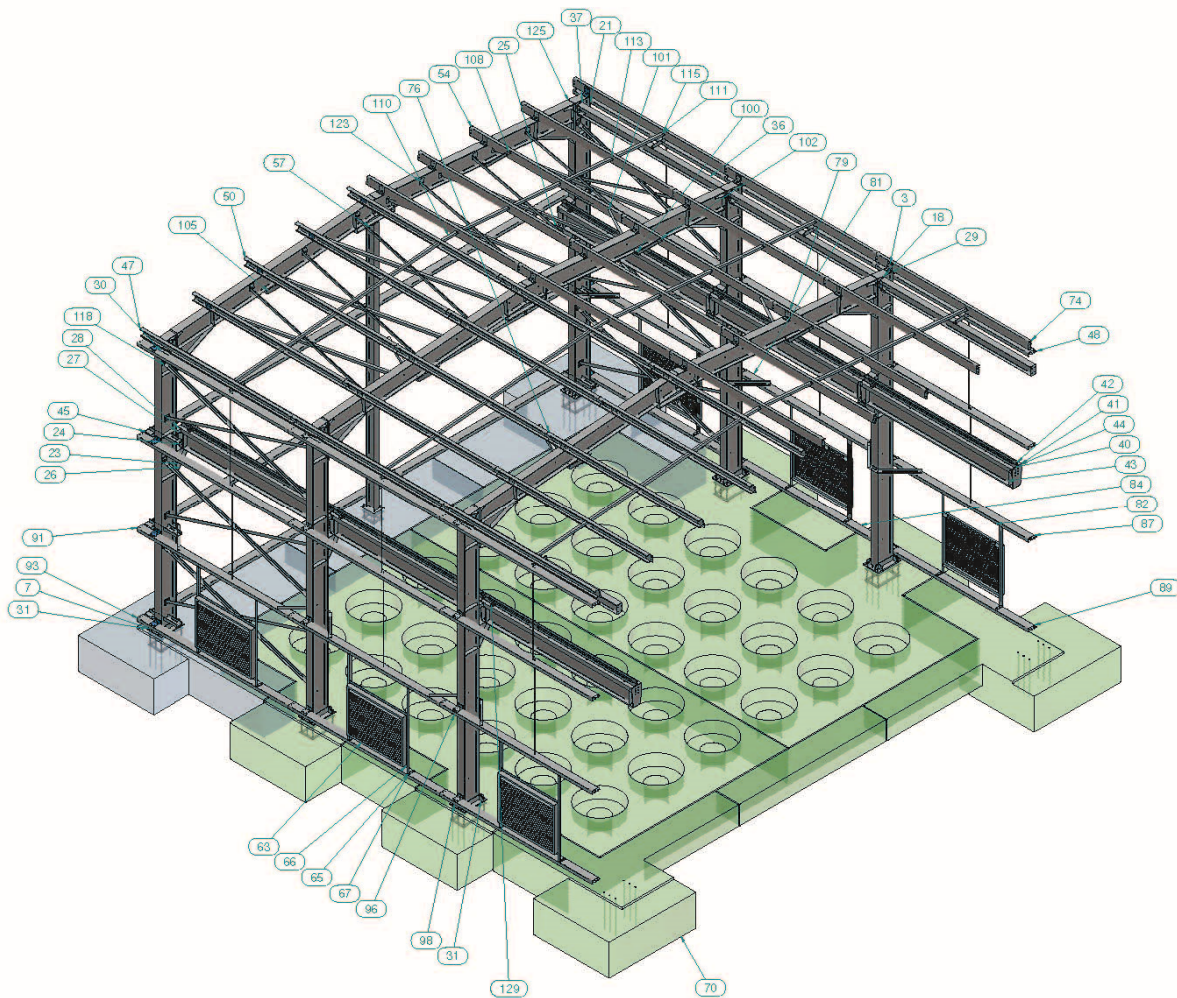


Figure 4: NTP Store Extension – Three Dimensional Model View.

15.1.1 Site Clearing and Earth Works

The following works are involved with Earth works and drilling – Refer issued drawing NNDD-THABANA-C-CONC-0005.

- Site Clearing and grubbing – Remove existing vegetation and topsoil from area
- Remove existing paving and crushed stone around building perimeter and store on site to be re-used.
- Remove portion of existing external slab on the NTP side of the new building extension
- Cut to spoil minimum 950mm below final floor level in-situ soil from area underneath footprint where NTP building extension will be constructed
- Final Earthworks and surface finishing – Finish off final ground levels around building, replace crushed stone layer around building apron.

15.1.2 Civil Works – Drilling

- Reverse Circulation Drilling of x36 new bore holes, typical nominal diameter 450mm (for 406mm diameter steel bore hole casing pipe), approximately 20m deep.
- Verticality of each borehole is essential. Suitable tests shall be carried out to confirm verticality while the holes are drilled. These tests shall be done at least every meter, and results recorded and presented to NECSA.
- Bore hole steel lining pipe to be supplied by others and installed by the Contractor. The contractor is to collect the fabricated steel lining pipes from the NECSA fabrication facility that is on the Pelindaba site. The steel lining pipe is there to prevent collapse of material into the bore hole and the lining pipe for each newly drilled bore hole must be installed before proceeding to drill any of the next adjacent boreholes. The Contractor shall submit a works methodology to the Client for Approval of collecting the steel linings pipes, transporting the pipes to the Thabane site, storing the lining pipes on site and lifting and installing the lining pipes into the boreholes.
- After installing the steel lining pipe a fibre cement pipe must be installed inside each of the boreholes. The fibre cement pipes will be off the shelf commercially available pipes and must be procured and installed by the Contractor. The contractor is to procure, deliver, store on site, lift and install the fibre cement into each of the steel pipe lined bore holes.

- After installing the fibre cement pipe a temporary plug is placed to avoid rubble entering the bore hole. The contractor is to collect the fabricated plug from the NECSA fabrication facility that is on the Pelindaba site.
- Cast concrete blinding layer — Refer description in Concrete Works.
- On top of the blinding layer, and over each bore hole liner, permanent shuttering must be installed. The Contractor is to collect the shuttering from the NECSA fabrication facility that is on the Pelindaba site.
- A concrete floor is cast – Refer description in Concrete Works.
- Installation of Pedestal. The Contractor must collect a pedestal from the NECSA fabrication site that is on the Pelindaba site.
- A stainless steel inner pipe must be installed in each bore hole. The contractor is to collect the stainless steel pipes from the NECSA fabrication facility that is on the Pelindaba site. The stainless steel pipe must be lowered through the shuttering into the fibre cement lined bore hole. The Contractor shall submit a works methodology to the Client for Approval of collecting the stainless steel pipes, transporting the pipes to the Thabane site, storing on site and lifting and installing the pipes into the bore holes and lowering onto the pedestal.

15.1.3 Concrete Works

The following Concrete Works are involved – Refer issued drawing NNDD-THABANA-C-CONC-0001 (x3 Sheets) and NNDD-THABANA-C-CONC-0006.

- Cast concrete blinding layer, 25 MPa strength, 100mm to 150mm thick and level with wood float finish.
- Cast new concrete floor slab base, 25 MPa High Density Magnetite Concrete 800mm to 900mm thick slab with steel float finish to Degree of Accuracy I as per SANS 2001-CC1:2012 together with a further restriction that the maximum deviation from level flatness of the top of the floor is 5mm.
- Apply concrete surface sealant to top of floor.
- Cast new building apron slab, 20 MPa strength un-reinforced, nominal 1000mm wide. Jointed at maximum 1.5m centres, broom swept surface finish.

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15.1.4 Steel works

The following Steelworks are involved – Refer issued drawing NNDD-THABANA-C-FR-0001 (x8 Sheets).

- Fabricate and erect new steelwork for NTP building extension as per issued drawings including all steelwork and sheeting, flashings, corrosion protection. The contractor shall submit a Works methodology and Program Schedule to the Client for approval indicating the erection of new steelwork and then the removal of the existing gable ends and tying into the existing steel girts, purlins, crane crawl beam, etc. with minimal disruption time to existing building operations.

15.2 SAFARI-1 EXTENSION

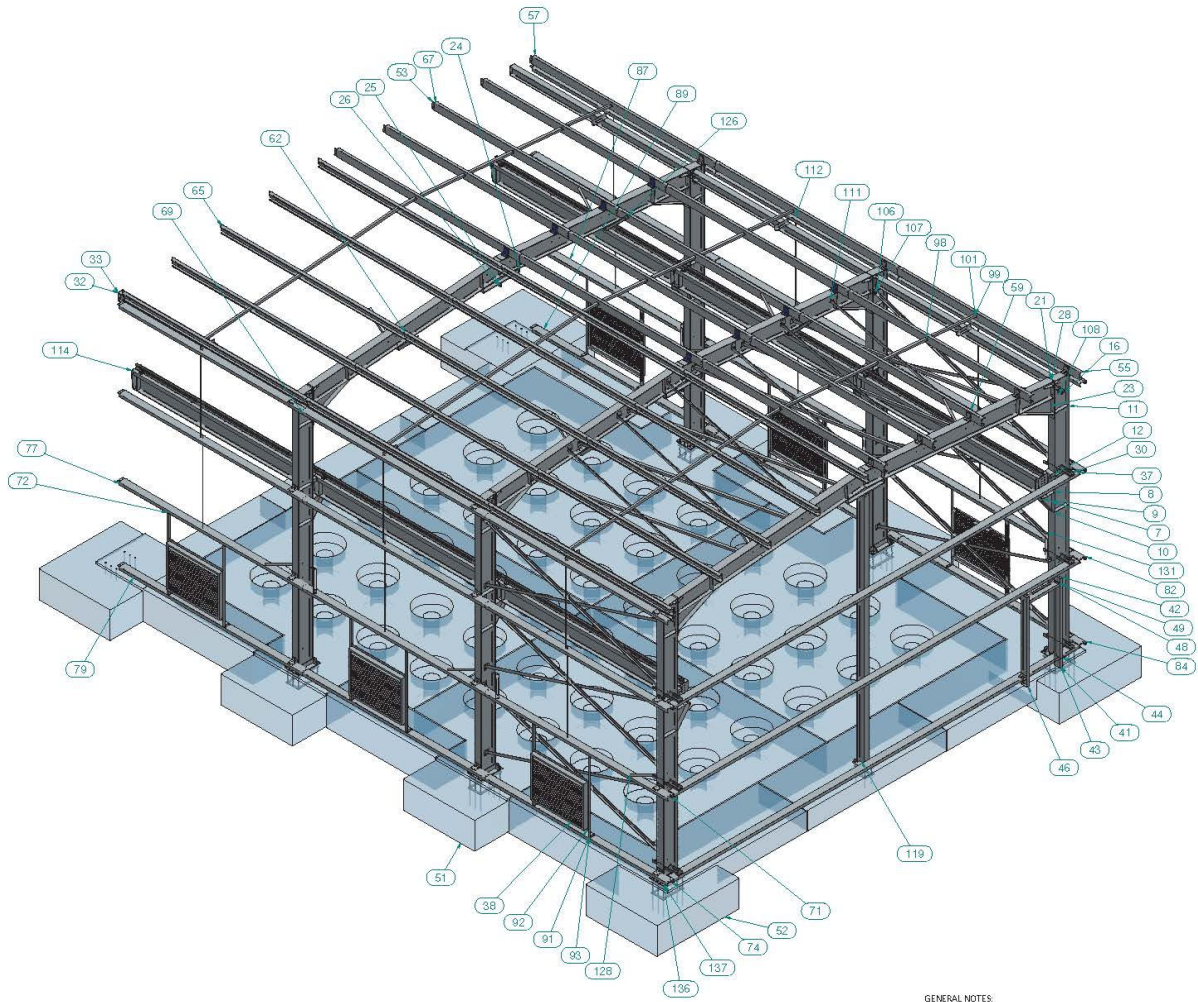


Figure 5: SAFARI-1 Store Extension – Three Dimensional Model View.

15.2.1 Site Clearing and Earth Works

The following works are involved with Earth works and drilling – Refer issued drawing NNDD-THABANA-C-CONC-0005.

- Site Clearing and grubbing – Remove existing vegetation and topsoil from area
- Remove existing paving and crushed stone around building perimeter and store on site to be re-used.

- Remove portion of existing external slab on the SAFARI-1 side of the new building extension
- Cut to spoil minimum 950mm below final floor level in-situ soil from area underneath footprint where SAFARI-1 building extension will be constructed
- Final Earthworks and surface finishing – Finish off final ground levels around building, replace crushed stone layer around building apron.

15.2.2 Civil Works - Drilling

- Reverse Circulation Drilling of x48 new bore holes, typical nominal diameter 300mm (for 276mm diameter steel bore hole casing pipe), 16m deep.
- Verticality of each borehole is essential. Suitable tests shall be carried out to confirm verticality while the holes are drilled. These tests shall be done at least every meter, and results recorded and presented to NECSA.
- Bore hole steel lining pipe to be supplied by others and installed by the Contractor. The contractor is to collect the fabricated steel lining pipes from the NECSA fabrication facility that is on the Pelindaba site. The steel lining pipe is there to prevent collapse of material into the bore hole and the lining pipe for each newly drilled bore hole must be installed before proceeding to drill any of the next adjacent boreholes. The Contractor shall submit a works methodology to the Client for Approval of collecting the steel linings pipes, transporting the pipes to the Thabane site, storing the lining pipes on site and lifting and installing the lining pipes into the boreholes.
- After installing the steel lining pipe a fibre cement pipe must be installed inside each of the boreholes. The fibre cement pipes will be off the shelf commercially available pipes and must be procured and installed by the Contractor. The contractor is to procure, deliver, store on site, lift and install the fibre cement into each of the steel pipe lined bore holes.
- After installing the fibre cement pipe a temporary plug is placed to avoid rubble entering the bore hole. The contractor is to collect the fabricated plug from the NECSA fabrication facility that is on the Pelindaba site.
- Cast concrete blinding layer — Refer description in Concrete Works.
- On top of the blinding layer, and over each bore hole liner, permanent shuttering must be installed. The Contractor is to collect the shuttering from the NECSA fabrication facility that is on the Pelindaba site.
- A concrete floor is cast – Refer description in Concrete Works.

- Installation of Pedestal. The Contractor must collect a pedestal from the NECSA fabrication site that is on the Pelindaba site.
- A stainless steel inner pipe must be installed in each bore hole. The contractor is to collect the stainless steel pipes from the NECSA fabrication facility that is on the Pelindaba site. The stainless steel pipe must be lowered through the shuttering into the fibre cement lined bore hole. The Contractor shall submit a works methodology to the Client for Approval of collecting the stainless steel pipes, transporting the pipes to the Thabane site, storing on site and lifting and installing the pipes into the bore holes and lowering onto the pedestal.

15.2.3 Concrete Works

The following Concrete Works are involved – Refer issued drawing NNDD-THABANA-C-CONC-0002 (x3 Sheets) and NNDD-THABANA-C-CONC-0006.

- Cast concrete blinding layer, 25 MPa strength, 100mm to 150mm thick and level with wood float finish.
- Cast new concrete floor slab base, 25 MPa High Density Magnetite Concrete 800mm to 900mm thick slab with steel float finish to Degree of Accuracy I as per SANS 2001-CC1:2012 together with a further restriction that the maximum deviation from level flatness of the top of the floor is 5mm.
- Apply concrete surface sealant to top of floor.
- Cast new building apron slab, 20 MPa strength un-reinforced, nominal 1000mm wide. Jointed at maximum 1.5m centres, broom swept surface finish.

15.2.4 Steel works

The following Steelworks are involved – Refer issued drawing NNDD-THABANA-C-FR-0002 (x8 Sheets).

- Fabricate and erect new steelwork for SAFARI-I building extension as per issued drawings including all steelwork and sheeting, flashings, corrosion protection. The contractor shall submit a Works methodology and Program Schedule to the Client for approval indicating the

erection of new steelwork and then the removal of the existing gable ends and tying into the existing steel girts, purlins, crane crawl beam, etc. with minimal disruption time to existing building operations.

16 BATTERY LIMITS

The battery limits will be as per the layout drawings provided.

17 CONSTRUCTION REQUIREMENTS, MATERIALS & TESTING

- The existing storage facility will remain closed during drilling and construction of the new works until all the new storage pipes have been placed
- Interface construction program between new and existing steelwork must be agreed with the client with the actual construction time to join the new steelwork to the existing steelwork to be minimized.
- There will be special radiological measures and security in place when the existing facility will be opened in order to connect the new steelwork to extend the facility.
- The supply and installing of the bore hole steel lining pipes in the bore holes must be installed by the Civil Works Contractor and is part of this contract.
- Reference for all SHE specifications, personnel site access, training and requirements will be as per NECSA site specifications for contractors.
- All imported natural gravel to be used for bulk earthworks must be graded, classified and submitted for approval to the Engineer.
- Compaction of all backfilling and layer works must be tested and results submitted to the Engineer for approval.
- All Concrete mix designs must be submitted to the Engineer for approval before casting on site.
- All reinforcement must be inspected by the Engineer and approved before casting concrete.

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- All concrete quality control tests and results to be submitted to the Engineer for review and approval.
- All materials testing to be done in accordance with the relevant requirements of applicable SANS standards.
- All testing to be witnessed by the Engineer's Representative.
- All testing results to be forwarded to the Engineer for recording purposes.

18 TENDER REQUIREMENTS

- Submit a complete priced tender Bill of Quantities
- Supply a level 3 Construction Schedule with your tender. (MS Project)
- Supply a full Organogram of personnel for the execution of this work.
- Supply a list of all equipment to be used for the work.
- Appointed Safety officer for the project execution is required.
- Appointed Construction Manager to be on site during execution.
- Supply a quotation for preparation and approval of a safety file
- Supply hourly labour rates for all employees to be involved during construction
- Supply all equipment hourly rates for all equipment to be used during construction
- Supply prices for all consumables to be used during construction
- Supply a price schedule (unit rates) for quantities of material to be used on site e.g. a price of excavating 1m³ of soil, breaking 1m³ of rock or as listed in the tender bill of quantities.
- Supply alternative pricing proposals for different drilling methods of the boreholes such as Auger Drilling, Air Percussion Drilling.

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19 TENDER BILL OF QUANTITIES

Refer Annexure A

20 TENDER DRAWINGS

Refer Annexure B

End of Document