ANNEXURE 1

Bill of Quantities

ltem No		Quantity	Rate	Amount	
Ē	BILL NO. 1				
	ESTABLISHMENT, DE-ESTABLISHMENT, ONGOING OPERATIONAL AND OVERHEAD COST & NCIDENTAL EXPENDITURE PROVISIONS				
•	lote: Tenderers are advised to study the General Preambles for Trades 2017 published by ASAQS before pricing this bill				
•	lote : Tenderers are advised to study the Specifications Of Materials And Methods To Be Used as published by the Department of Public Works				
•	lote : Unless otherwise stated herein, all items in this Bill shall be deemed to be a fixed price for the duration of the project				
 1 0 0 1 1 1 1 1 1 1 1 1 1	PRICING INSTRUCTIONS TO TENDERS . The rates and/or prices for items scheduled in this Section inder the following headings - ONCE-OFF ESTABLISHMENT COST - DE-ESTABLISHMENT COST and - ONGOING DPERATIONAL AND OVERHEAD COST include everything to cover the Contractor's direct costs, overheads, profit and expenses required for all risks, liabilities and obligations in terms of this contract . The total value of pricing this section cannot exceed 15% excluding VAT) of the total value of the package document. excluding VAT) . The rates and/or prices for items scheduled in this section inder the following headings - INCIDENTAL EXPENDITURE PROVISIONS must be priced in this tender. The Contractor ereby agrees that these rates will be used for compensation vent cost calculation and pricing where applicable instead of Defined Cost, unless otherwise decided by the Employer, at the Employer's sole discretion. Any items not priced are leemed to be included . Lump sum prices in this section are fixed for the contract, and are not subject to adjustment in compensation event ssessments. DICE-OFF ESTABLISHMENT COST Claimable for payment upon completion of all related activities issociated with each item)				
	Carried to Collection		R		
E F 1	ill No. 1 reliminaries 808Q057-BOQ, Provisional Bills of Quantities				

	Contractual Requirements			
A	Preliminaries allowance	Item		
В	Compliance with all clauses of the Contract and Works Information	Item		
С	Compliance with the law, regulations and bylaws	Item		
D	Compliance with the Occupational Health and Safety Act, Construction Regulations and Health and Safety Specification is compulsory	ltem		
E	Compliance with the stipulations of the Environmental Specification	Item		
F	Insurance and liabilities	Item		
G	Performance bond	Item		
	Establish Facilities on the Site			
	Facilities for Project Manager			
Н	Air conditioned office accommodation with suitable tables and chairs for meetings to be held on the site	Item		
J	Contract name board	Item		
	Facilities for Contractor			
к	Offices (shared with Project Manager)	Item		
L	Workshops	Item		
М	Laboratories	Item		
N	Ablutions and latrine facilities	Item		
Ρ	Tools and equipment	Item		
Q	Water supply	Item		
R	Electricity supply	Item		
s	Communication	Item		
	Carried to Collection		R	
	Bill No. 1 Preliminaries 1808Q057-BOQ, Provisional Bills of Quantities			
			1	11

	DE-ESTABLISHMENT COST				
A	Costs for complete removal of site establishment and restoration of the site to the Project Mangers satisfaction at the end of the contract		ltem		
	ONGOING OPERATIONAL AND OVERHEAD COST				
	Claimable for payment as a time-related cost during execution of the contract				
	Contractual Requirements				
В	Compliance with all clauses of the Contract and Works Information	Days	170		
С	Compliance with the law, regulations and bylaws	Days	170		
D	Compliance with the Occupational Health and Safety Act, Construction Regulations and Health and Safety Specification is compulsory	Days	170		
E	Compliance with the stipulations of the Environmental Specification	Days	170		
F	Insurance and liabilities	Days	170		
G	Performance bond	Days	170		
	Facilities for Project Manager				
Н	Air conditioned office accommodation with suitable tables and chairs for meetings to be held on the site	Days	170		
J	Contract name board	Days	170		
	Facilities for Contractor				
к	Offices (shared with Project Manager)	Days	170		
L	Workshops	Days	170		
М	Laboratories	Days	170		
Ν	Ablutions and latrine facilities	Days	170		
Ρ	Tools and equipment	Days	170		
	Carried to Collection			R	
	Preliminaries 1808Q057-BOQ, Provisional Bills of Quantities				

А	Water supply	Days	170		
В	Electricity supply	Days	170		
С	Communication	Days	170		
	<u>Other</u>				
D	Company and head office costs	Days	170		
	INCIDENTAL EXPENDITURE PROVISIONS				
	The quantities listed are included for tender evaluation purposes only, and do not reflect actual quantities envisaged for the project. The rates offered shall apply for compensation event pricing for the duration of the contract where applicable				
	Plant and Equipment				
	Scaffolding				
E	Access to works, for working at height inclusive of rigging, scaffolding or any means to accordance with all applicable regulations and safety standards	Days	1		
	<u>Plant</u>				
	All wet rates shall include fuel and operator cost				
F	TLB (4x4) (wet rate)	Hrs	40.00		
G	TLB (4x4) (standing rate)	Hrs	40.00		
Н	Tracker excavator (20 tons) (wet rate)	Hrs	40.00		
J	Tracker excavator (20 tons) (standing rate)	Hrs	40.00		
к	Front-end loader (2m ³ minimum bucket size) (wet rate)	Hrs	40.00		
L	Front-end loader (2m ³ minimum bucket size) (standing rate)	Hrs	40.00		
М	Water cart (9000 litres) (wet rate)	Hrs	40.00		
Ν	Water cart (9000 litres) (standing rate)	Hrs	40.00		
Ρ	Self-propelled vibrating roller (12 tons) (wet rate)	Hrs	40.00		
Q	Self-propelled vibrating roller (12 tons) (standing rate)	Hrs	40.00		
	Carried to Collection			R	
	Bill No. 1 Preliminaries 1808Q057-BOQ, Provisional Bills of Quantities				

Α	Vibrating plate compactor (wet rate)	Hrs	40.00		
В	Vibrating plate compactor (standing rate)	Hrs	40.00		
с	Rammer (wet rate)	Hrs	40.00		
D	Rammer (standing rate)	Hrs	40.00		
Е	Tipper truck (7 tons) (wet rate)	Hrs	40.00		
F	Tipper truck (7 tons) (standing rate)	Hrs	40.00		
G	Tipper truck (8 tons) (wet rate)	Hrs	40.00		
н	Tipper truck (8 tons) (standing rate)	Hrs	40.00		
J	Tipper truck (10 tons) (wet rate)	Hrs	40.00		
к	Tipper truck (10 tons) (standing rate)	Hrs	40.00		
L	LDV (1 ton)	km	2 000		
	People				
	All compensation event costs related to people are allocated according to the breakdown of categories below (or nearest matching category, if no exact description match). The following rate adjustments will apply for after hours work: Weekdays after hours and Saturdays - Rate X 1.5 Sundays and Public Holidays - Rate X 2				
М	Contract/Project Manager	Days	5		
N	Site Manager	Days	5		
Ρ	Safety Officer	Days	5		
Q	Registered Professional (QS, Eng, Arch)	Days	5		
R	Registered Technologist	Days	5		
s	Registered Technician	Days	5		
т	Site Foreman (General Supervisor)	Days	5		
U	Foreman (Supervisor)	Days	5		
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	Bill No. 1			R	╞
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Administrative clerk		Days	5		
Journeyman (Messenger)		Days	5		
Skilled Labourer (Artisan)		Days	5		
Unskilled Labourer		Days	5		
Bill No. 1	Carried to Collection			R	
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Bill No. 1			
Preliminaries			
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		Quantity	Rate	Amount
<u>BILL N</u>	<u>10. 2</u>			
DEMO	LITIONS			
Note:	Tenderers are advised to study the General Preambles for Trades 2017 published by ASAQS before pricing this bill			
Note:	Tenderers are advised to study the Specifications Of Materials And Methods To Be Used as published by the Department of Public Works			
Note:	Unless otherwise stated herein, all items in this Bill shall be deemed to be a fixed price for the duration of the project			
<u>SUPPL</u>	EMENTARY PREAMBLES			
<u>View sit</u>	<u>e</u>			
Before s and sati be done building claim fo nature a material	submitting his tender the tenderer shall visit the site isfy himself as to the nature and extent of the work to e and the value of the materials contained in the s or portions of the buildings to be demolished. No r any variations of the contract sum in respect of the and extent of the work or of inferior or damaged Is will be entertained			
<u>Explosiv</u>	ves			
No expl purpose	osives whatsoever may be used for demolition as unless otherwise stated			
<u>General</u>	L			
Water s encount be effec new cor proper f	upply pipes and other piping in ground that may be tered and found necessary to disconnect or cut, shall ctually stopped off or grubbed up and removed, and any nections that may be necessary shall be made with ittings to the satisfaction of the principal agent			
Unless of property	otherwise described all materials are to become the and are to be removed from the site			
	Carried to Collection		R	
Bill No. Demoliti 1808Q05	∠ ions 57-BOQ, Provisional Bills of Quantities			
	BILL N DEMO Note: Note: Note: Note: Note: SUPPL View sit Before s and sati be done building claim fo nature a materia Explosit No expl purpose Genera Water s encount be effect new cor proper fi Unless property	BILL NO. 2 DEMOLITIONS Mathematical And Methods to study the General Ereambles for Trades 2017 published by ASAQS before pricing this bill Materials And Methods To De Used as published by ABAQS and the Department of Public Works Materials And Methods To De Used as published by ABAQS and the Department of Public Works Materials And Methods To De Used as published by ABAQS and the Department of Public Works Materials And Methods To De Used as published by ABAQS and the Department of Public Works Materials and Methods To De Used as published by ABAQS and the Department of Public Works Materials and be deemed to be a fixed price for the duration of the project DUPLEMENTARY PREAMBLES View site Before submitting his tender the tenderer shall visit the site and satisfy himself as to the nature and extent of the work to be demonished. No claim for any variations of the contract sum in respect of the nature and extent of the work or of inferior or damaged materials will be entertained. Deposites Mater supply pipes and other piping in ground that may be encountered and found necessary to disconnect or cut, shall be effectually stopped of or grubbed up and removed, and any nev connections that may be necessary shall be made with proper fittings to the satisfaction of the principal agent Muter supply pipes and other piping in ground that may be for cubic study stopped of or grubbed up and removed, and any nev connections that may be necessary shall be made with proper fittings to the satisfaction of the principal agent	Quantity BILL NO.2 DEMOLITIONS Materials For Trades 2017 published by ASAQS Defere prioring this bill Materials And Methods To Be Used as published by the Department of Public Works Miterials And Methods To Be Used as published by the Department of Public Works Supplementation of Public Works Miterials And Methods To Be Used as published by the Department of Public Works Supplementation of Public Works Supplementation of Public Works Before submitting his tender the tenderer shall visit the site and satisfy himself as to the nature and extent of the work to be done and the value of the materials contained in the buildings or portions of the buildings to be demolished. No claim for any variations of the contract sum in respect of the nature and extent of the work or of inferior or damaged materials will be entertained Explosives No explosives whatsoever may be used for demolition purposes unless otherwise stated General Water supply pipes and other piping in ground that may be encountered and found necessary shall be made with proper fittings to the satisfaction of the principal agent Unless otherwise described all materials are to become the property of the contractor and are to be removed from the site Demolitions 1808Q0057-BOQ, Provisional Bills of Quantities	Cluantity Rate BILL NO. 2 DEMOLITIONS Note: Tenderers are advised to study the General. Demolition of the solution of the solution of the specifications of the solution of the solution of the solution of the solution of the building or portion. Image: Solution of the solut

Take down and remove			
Steel diamond mesh fence 1,300mm high with timber posts and droppers m	50		
Extra over removal of mesh fence for removal of 450 x 450 x 600mm concrete footings for posts No	15		
Latte fence 1,500mm high with timber posts and droppers m	43		
Extra over removal of latte fence for removal of 450 x 450 x 600mm concrete footings for posts No	19		
Steel swing gate and frame, 3,000 x 1,500mm high No	1		
Timber swing gate and frame, 1,500 x 1,900mm high No	1		
Precast feature columns, 300 x 300 x 2,100mm high No	2		
Pergola roof structure, 3,400 x 3,360 x 2,310mm high overall No	1		
Take down sundry joinery work, fittings, etc and set aside for re-use			
Pergola structure 3,987 x 1,670 x 2,454mm high overallsupported by 120mm Diameter gumpolesNo	1		
Disassemble timber sheds and set-aside for re-use			
Single storey shed with pitched roof, 9,962 x 6,480mm on plan and 2,680mm high at eaves, comprising 50mm external painted tongue and groove timber panels fixed to timber frame structure and "Kliplock 406" roof covering on timber trusses (surface bed and foundations to remain) (White Shed)			
 Note: The following items are to remain the property of the employer and are to be carefully taken out and temporarily stored for later re-use: 1. "Kliplock 406" roof sheeting 2. Timber trusses and purlins 3. Tongue and groove timber panels 			
 Timber frame structures Sectional overhead garage doors No 	1		
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Bill No. 2 Demolitions 1808Q057-BOQ, Provisional Bills of Quantities			
	Take down and remove Steel diamond mesh fence 1,300mm high with timber posts and droppers m Extra over removal of mesh fence for removal of 450 x 450 x 600mm concrete footings for posts No Latte fence 1,500mm high with timber posts and droppers m Extra over removal of late fence for removal of 450 x 450 x 600mm concrete footings for posts No Steel swing gate and frame, 3,000 x 1,500mm high No Timber swing gate and frame, 1,500 x 1,900mm high No Precast feature columns, 300 x 300 x 2,100mm high No Pergola roof structure, 3,400 x 3,360 x 2,310mm high overall No Take down sundry joinery work, fittings, etc and set aside for reuse No Pergola structure 3,987 x 1,670 x 2,454mm high overall supported by 120mm Diameter gumpoles No Disassemble timber sheds and set-aside for re-use No Single storey shed with pitched roof, 9,962 x 6,480mm on plan and 2,680mm high at eaves, comprising 50mm external painted tongue and groove timber panels fixed to timber frame structure and "Kliplock 406" roof sheeting No Not The following items are to remain the property of the employer and are to be carefully taken out and temporarily stored for later re-use: No 1. "Kliplock 406" roof sheeting No No So angue and groove timber panelas No No <td>Take down and remove Steel diamond mesh fence 1,300mm high with timber posts and droppers m 50 Extra over removal of mesh fence for removal of 450 x 450 x 600mm concrete footings for posts No 15 Latte fence 1,500mm high with timber posts and droppers m 43 Extra over removal of latte fence for removal of 450 x 450 x 600mm concrete footings for posts No 19 Steel swing gate and frame, 3,000 x 1,500mm high No 1 Timber swing gate and frame, 1,500 x 1,900mm high No 1 Trimber swing gate and frame, 1,500 x 1,900mm high No 1 Precast feature columns, 300 x 300 x 2,100mm high overall No 1 Take down sundry joinery work, fittings, etc and set aside for re-use No 1 Pergola structure 3,987 x 1,670 x 2,454mm high overall supported by 120mm Diameter gumpoles No 1 Disassemble timber sheds and set-aside for re-use Single storey shed with pitched roof, 9,962 x 6,480mm on plan and 2,680mm high at eaves, comprising 50mm external painted tongue and groove timber panels fixed to timber frame structure and fixed to be carefully taken out and temporarily stored for later re-use: 1 Not: The following items are to remain the property of the emporarily stored for later re-use: 1 1. "Kliplock 406" roof sheeting 1 <td< td=""><td>Take down and remove 50 Steel diamond mesh fence 1,300mm high with timber posts and droppers m 50 Extra over removal of mesh fence for removal of 450 x 450 x 600mm concrete footings for posts No 15 Latte fence 1,500mm high with timber posts and droppers m 43 Extra over removal of latte fence for removal of 450 x 450 x 600mm concrete footings for posts No 19 Steel swing gate and frame, 3,000 x 1,500mm high No 1 Timber swing gate and frame, 1,500 x 1,900mm high No 1 Precast feature columns, 300 x 2,100mm high overall No 1 Pregola roof structure, 3,400 x 3,360 x 2,310mm high overall No 1 Disassemble timber sheds and set-aside for re-use No 1 Single storey shed with pitched roof, 9,962 x 6,480mm on plan and 2,680mm high at eaves, comprising 50mm external painted tongua and groove timber panels fact to timber frame structure and fruidpitons to remain (White Shed) 1 Note: The following items are to remain the property of the employer and reu to be carefully taken out and temportally stored for later re-use: 1 1. "Kliplock 406" roof sheeting 3. Tomber trusses and purifis 1 2. Timber trusses and purifis 3. Sectional overhead garage doors No 1</td></td<></td>	Take down and remove Steel diamond mesh fence 1,300mm high with timber posts and droppers m 50 Extra over removal of mesh fence for removal of 450 x 450 x 600mm concrete footings for posts No 15 Latte fence 1,500mm high with timber posts and droppers m 43 Extra over removal of latte fence for removal of 450 x 450 x 600mm concrete footings for posts No 19 Steel swing gate and frame, 3,000 x 1,500mm high No 1 Timber swing gate and frame, 1,500 x 1,900mm high No 1 Trimber swing gate and frame, 1,500 x 1,900mm high No 1 Precast feature columns, 300 x 300 x 2,100mm high overall No 1 Take down sundry joinery work, fittings, etc and set aside for re-use No 1 Pergola structure 3,987 x 1,670 x 2,454mm high overall supported by 120mm Diameter gumpoles No 1 Disassemble timber sheds and set-aside for re-use Single storey shed with pitched roof, 9,962 x 6,480mm on plan and 2,680mm high at eaves, comprising 50mm external painted tongue and groove timber panels fixed to timber frame structure and fixed to be carefully taken out and temporarily stored for later re-use: 1 Not: The following items are to remain the property of the emporarily stored for later re-use: 1 1. "Kliplock 406" roof sheeting 1 <td< td=""><td>Take down and remove 50 Steel diamond mesh fence 1,300mm high with timber posts and droppers m 50 Extra over removal of mesh fence for removal of 450 x 450 x 600mm concrete footings for posts No 15 Latte fence 1,500mm high with timber posts and droppers m 43 Extra over removal of latte fence for removal of 450 x 450 x 600mm concrete footings for posts No 19 Steel swing gate and frame, 3,000 x 1,500mm high No 1 Timber swing gate and frame, 1,500 x 1,900mm high No 1 Precast feature columns, 300 x 2,100mm high overall No 1 Pregola roof structure, 3,400 x 3,360 x 2,310mm high overall No 1 Disassemble timber sheds and set-aside for re-use No 1 Single storey shed with pitched roof, 9,962 x 6,480mm on plan and 2,680mm high at eaves, comprising 50mm external painted tongua and groove timber panels fact to timber frame structure and fruidpitons to remain (White Shed) 1 Note: The following items are to remain the property of the employer and reu to be carefully taken out and temportally stored for later re-use: 1 1. "Kliplock 406" roof sheeting 3. Tomber trusses and purifis 1 2. Timber trusses and purifis 3. Sectional overhead garage doors No 1</td></td<>	Take down and remove 50 Steel diamond mesh fence 1,300mm high with timber posts and droppers m 50 Extra over removal of mesh fence for removal of 450 x 450 x 600mm concrete footings for posts No 15 Latte fence 1,500mm high with timber posts and droppers m 43 Extra over removal of latte fence for removal of 450 x 450 x 600mm concrete footings for posts No 19 Steel swing gate and frame, 3,000 x 1,500mm high No 1 Timber swing gate and frame, 1,500 x 1,900mm high No 1 Precast feature columns, 300 x 2,100mm high overall No 1 Pregola roof structure, 3,400 x 3,360 x 2,310mm high overall No 1 Disassemble timber sheds and set-aside for re-use No 1 Single storey shed with pitched roof, 9,962 x 6,480mm on plan and 2,680mm high at eaves, comprising 50mm external painted tongua and groove timber panels fact to timber frame structure and fruidpitons to remain (White Shed) 1 Note: The following items are to remain the property of the employer and reu to be carefully taken out and temportally stored for later re-use: 1 1. "Kliplock 406" roof sheeting 3. Tomber trusses and purifis 1 2. Timber trusses and purifis 3. Sectional overhead garage doors No 1

A	Single s plan and treated t and gun covering remain)	torey shed with pitched roof, 17,926 x 5,570mm on d 2,400mm high at eaves, comprising 50mm external tongue and groove timber panels fixed to timber rails n pole structure and profiled corrugated metal roof g on timber trusses (surface bed and foundations to (Brown Shed)				
	Note:	The following items are to remain the property of the employer and are to be carefully taken out and temporarily stored for later re-use:				
		 Corrugated roof sheeting and ridge capping Timber trusses and purlins Tongue and groove timber panels Timber gum poles and rails 	No	1		
В	Deduct:	Allowance of credit for materials salvaged from the demolitions		ltem		
	Bill No.	2 Carried to Collection			R	 <u> </u>
	Demoliti 1808Q05	ons 7-BOQ, Provisional Bills of Quantities				

Bill No. 2			
Demolitions			
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		Quantity	Rate	Amount
<u>BILL N</u>	<u>IO. 3</u>			
ALTEF	RATIONS			
Note:	Tenderers are advised to study the General Preambles for Trades 2017 published by ASAQS before pricing this bill			
Note:	Tenderers are advised to study the Specifications Of Materials And Methods To Be Used as published by the Department of Public Works			
Note:	Unless otherwise stated herein, all items in this Bill shall be deemed to be a fixed price for the duration of the project			
SUPPI	EMENTARY PREAMBLES			
View sit	te			
Before and sat be done building claim fo nature a materia	submitting his tender the contractor shall visit the site isfy himself as to the nature and extent of the work to e and the value of the materials contained in the gs or portions of the buildings to be demolished. No or any variations of the contract sum in respect of the and extent of the work or of inferior or damaged Is will be entertained			
<u>Explosi</u>	ves			
No expl unless (losives whatsoever may be used for alteration purposes otherwise stated			
<u>Genera</u>	<u>I</u>			
The cor little me disturba provide directed during t principa	ntractor shall carry out the whole of the works with as ess and noise as possible and with a minimum of ance to adjoining premises and their tenants. He shall proper protection and provide, erect and remove when d, any temporary tarpaulins that may be necessary the progress of the works, all to the satisfaction of the al agent			
Doors, [.] are to re taken o	fanlights, windows, fittings, frames, linings, etc which emain the property of the employer shall be carefully ut and temporarily stored on-site			
	Carried to Collection		R	
Bill No. Alteratio 1808Q09	3 ons 57-BOQ, Provisional Bills of Quantities			

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Doors, fanlights, windows, fittings, frames, linings, etc which are to be re-used shall be thoroughly overhauled before refixing including taking off, easing and rehanging, cramping up, re-wedging as required and making good cramps, dowels, etc, and oiling, adjusting and repairing ironmongery as necessary, replacing any glass damaged in removal or subsequently and stopping up all nail and screw holes with tinted plastic wood to match timber, unless otherwise described. Re-painting or re-varnishing is given separately

Prices for taking out of doors, windows, etc shall include for removal of all beads, architraves, ironmongery, etc

Prices for taking out and removing doors and frames shall include for removing door stops, cabin hooks, etc

With regard to building up of openings in existing walls, cement screeds and pavings, granolithic, tops of walls, etc, shall be levelled and prepared for raising of brickwork

Making good of finishes shall include making good of the brick and concrete surfaces onto which the new finishes are applied, where necessary

The contractor will be required to take all dimensions affecting the existing buildings on the site and he will be held solely responsible for the accuracy of all such dimensions where used in the manufacture of new items (doors, windows, fittings, etc)

Asbestos material

Asbestos removal and disposal must be done by an registered Asbestos Contractor with the Department of Labour

The removal and disposal of asbestos must be done strictly in accordance with the Occupational Health and Safety Act, 1003, Draft Asbestos Abatement Regulations

Erect a safety net to stop spillage from falling onto the ground when cleaning the roof sheets.

Prices for taking out and removing asbestos shall include for safe removal of asbestos products contaminated debris and the safe transporting and dumping of asbestos material to an approved dumping site including any statutory charges therein

Carried to Collection

Bill No. 3 Alterations 1808Q057-BOQ, Provisional Bills of Quantities

REMOVAL OF ASBESTOS			
Take down, remove and dispose asbestos structure in strict accordance with all statutory requirements			
Profiled roof and side cladding, purlins and girths including accessories, e.g. ridges, hips, gables, apex, headwall and sidewall flashings, corner trims, etc	m²	273	
Fascias and barge boards not exceeding 300mm high overall	m	85	
REMOVAL OF EXISTING WORK			
Break up, remove and set-aside for later re-use			
85mm Thick brick paving on concrete bedding (re-fixing elsewhere)	m²	178	
Break up and remove reinforced concrete, including cutting off and removing reinforcement			
100mm Thick reinforced concrete surface beds, paving, etc	m²	59	
200mm Thick plinth	m²	3	
Break down and remove brickwork etc			
Half brick walls	m²	1	
One brick walls	m²	20	
330mm Hollow walls of two half brick skins	m²	3	
<u>Take out and remove doors, windows, etc from brickwork to be</u> <u>demolished</u>			
Timber single door and frame not exceeding 2.5m ²	No	2	
Timber single door and steel frame not exceeding 2.5m ²	No	1	
Timber double door and frame exceeding 2.5m ² and not exceeding 5m ²	No	1	
Glazed timber window not exceeding 2.5m ²	No	1	
Carried to Collection Bill No. 3 Alterations 1808Q057-BOQ, Provisional Bills of Quantities			R
	REMOVAL OF ASBESTOS Take down, remove and dispose asbestos structure in strict accordance with all statutory requirements Profiled roof and side cladding, purlins and girths including accessories, e.g. ridges, hips, gables, apex, headwall and sidewall flashings, corner trims, etc Fascias and barge boards not exceeding 300mm high overall REMOVAL OF EXISTING WORK Break up, remove and set-aside for later re-use 85mm Thick brick paving on concrete bedding (re-fixing elsewhere) Break up and remove reinforced concrete, including cutting off and removing reinforcement 100mm Thick reinforced concrete surface beds, paving, etc 200mm Thick plinth Break down and remove brickwork etc Half brick walls 030mm Hollow walls of two half brick skins Take out and remove doors, windows, etc from brickwork to be demolished Timber single door and frame not exceeding 2.5m² Timber single door and frame exceeding 2.5m² and not exceeding 5m² Glazed timber window not exceeding 2.5m² Bill No. 3 Alterations 1080Q057-BOQ, Provisional Bills of Quantities	REMOVAL OF ASBESTOS Take down, remove and dispose asbestos structure in strict accordance with all statutory requirements Profiled roof and side cladding, purlins and girths including accessories, e.g. ridges, hips, gables, apex, headwall and sidewall flashings, corner trims, etc m² Fascias and barge boards not exceeding 300mm high overall m REMOVAL OF EXISTING WORK m Break up, remove and set-aside for later re-use 85mm Thick brick paving on concrete bedding (re-fixing elsewhere) Break up and remove reinforced concrete, including cutting off and removing reinforcement m² 100mm Thick reinforced concrete surface beds, paving, etc m² 200mm Thick plinth m² Break down and remove brickwork etc m² Half brick walls m² 330mm Hollow walls of two half brick skins m² Take out and remove doors, windows, etc from brickwork to be demolished No Timber single door and frame not exceeding 2.5m² No Glazed timber window not exceeding 2.5m² No Bill No, 3 Alterations 1808Q057-BOQ, Provisional Bills of Quantities Sm²	REMOVAL OF ASBESTOS Take down, remove and dispose asbestos structure in strict accordance with all statutory requirements Profiled roof and side cladding, purifus and giths including accessories, e.g. ridges, hips, gables, apex, headwall and sidewall flashings, corner times, etc m² Fascias and barge boards not exceeding 300mm high overall m REMOVAL OF EXISTING WORK m² Break up, remove and set-aside for later re-use 85mm Thick brick paving on concrete bedding (re-fixing elsewhere) Break up and remove reinforced concrete, including outling off and removing reinforcement m² 100mm Thick reinforced concrete surface beds, paving, etc m² 200mm Thick plinth m² 3 Break down and remove brickwork etc m² 10 Half brick walls m² 10 One brick walls m² 20 330mm Hollow walls of two half brick skins m² 3 Take out and remove doors, windows, etc from brickwork to be demolished 1 Timber single door and frame not exceeding 2.5m² No 1 Glazed timber window not exceeding 2.5m² and not exceeding 2.5m² No 1 Glazed timber window not exceeding 2.5m² No

	<u>Take out and remove doors, windows, etc including</u> thresholds, sills, etc (build up openings and make good finishes elsewhere)			
A	Timber single door and frame not exceeding 2.5m ²	No	2	
В	Timber single door and steel frame not exceeding 2.5m ²	No	3	
С	Glazed aluminium sliding door and frame exceeding 2.5m ² and not exceeding $5m^2$	No	1	
D	Glazed timber window not exceeding 2.5m ²	No	1	
Е	Glazed steel window not exceeding 2.5m ²	No	7	
F	Glazed aluminium window not exceeding 2.5m ²	No	2	
G	Roller shutter door 2,800 x 2,400mm high	No	1	
	Take down and remove gates from existing boundary walls, including cutting off steel hinges and making good wall cement plaster			
Н	Timber swing gate, 3,500 x 1,900mm high	No	1	
	Take out doors, windows, etc including thresholds, sills, etc and set aside for re-use and later refix in similar new position			
J	Timber single door and frame 900 x 2,100mm high overall with mosquito and safety door, including set up and build in frame in new brickwork and rehanging door on new 100mm brass hinges	No	1	
	<u>Take down and remove roofs, floors, panelling, ceilings, partitions, etc</u>			
К	Timber pole walkway	m²	5	
L	Pitched roof 9,860 x 2,788 x 990mm high overall, of timber rafter and purlins, "Kliplok 406" sheet steel covering, eaves, fascias, barge boards, gutters, rainwater pipes and gumpole posts	No	1	
М	Trim back roof by 550mm, including cutting back ends of trusses at approximately 1,200mm centres trusses, purlins, fascia boards, etc	m	34	
N	Tongued and grooved timber suspended floors, including timber joists, bearers, skirtings, etc	m²	19	
	Carried to Collection			R
	Bill No. 3 Alterations 1808Q057-BOQ, Provisional Bills of Quantities			

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A	Gypsum plasterboard ceilings, including timber brandering, cornices, etc	m²	176	
В	Drywall partitions 2,600mm high, including doors, glazed borrowed lights, etc	m	5	
	Take out and remove sundry joinery work, fittings, etc			
С	Timber wall cupboard 1,276 x 350 x 1,200mm high	No	2	
D	Timber floor cupboard 1,870 x 643 x 900mm high	No	1	
E	Timber sink cupboard 3,436 x 630 x 900mm high, including sink and disconnecting waste pipe	No	1	
	Take out and remove sundry joinery work, fittings, etc and set aside for re-use and later re-fix in similar new position			
F	Timber skirtings	m	165	
G	Timber counter 3,436 x 700 x 1,100mm high	No	1	
	<u>Take up and remove wood block floor coverings, vinyl floor</u> <u>coverings, carpets, etc and prepare screeds for new screeds,</u> <u>floor coverings, tile finish, etc</u>			
н	Vinyl sheet floor covering with welded joints	m²	60	
J	Carpet tile floor covering	m²	34	
	Take out/off and remove sundry metalwork			
к	"Trellidor" burglar proofing with frame 570 x 900mm high bolted to brickwork, including making good cement plaster	No	2	
L	"Trellidor" burglar proofing with frame 570 x 1,000mm high bolted to brickwork, including making good cement plaster	No	2	
М	"Trellidor" burglar proofing with frame 1,190 x 1,200m high bolted to brickwork, including making good cement plaster	No	2	
Ν	"Trellidor" burglar proofing with frame 1,770 x 600mm high bolted to brickwork, including making good cement plaster	No	1	
Ρ	"Trellidor" burglar proofing with frame 1,770 x 900mm high bolted to brickwork, including making good cement plaster	No	1	
Q	"Trellidor" burglar proofing with frame 1,770 x 1,200mm high bolted to brickwork, including making good cement plaster	No	3	
	Carried to Collection			
	Bill No. 3 Alterations 1808Q057-BOQ, Provisional Bills of Quantities			

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A	"Trellidor" burglar proofing with frame 1,770 x 1,480mm high bolted to brickwork, including making good cement plaster	No	1		
В	Internal combustion fire place 400 x 480 x 850mm high, including 125mm diameter flue, 3,600mm high and fire resistant back board	No	1		
С	Free standing fire place 710 x 530 x 1,010mm high, including 275mm diameter flue, 4,770mm high and fire resistant back board	No	1		
	Hack up/off and remove ceramic tiles including removing mortar bed or adhesive from concrete or brickwork and prepare surfaces for new screed, plaster, tile finish, etc				
D	Tiles to floors	m²	87		
E	Tiles to walls	m²	73		
	Hack up/off and remove 100mm stone cladding including removing mortar bed or adhesive from concrete or brickwork and prepare surfaces for new plaster finish, etc				
F	Cladding to walls	m²	12		
	<u>Take out and remove sanitary fittings, tanks, geysers, etc</u> including disconnecting from pipes, traps, etc from walls to be demolished				
G	Vitreous china wash hand basin	No	3		
	Take out and remove sanitary fittings, tanks, geysers, etc including disconnecting from pipes, traps, etc and set aside for re-use and later refix in similar new position				
н	Stainless steel sink and drainer including timber cupboard 1,700 x 643 x 900mm high	No	1		
J	Vitreous china wash hand basin	No	3		
к	2500L "JOJO" Water tanks from plinths on the ground	No	3		
L	Water pump	No	1		
	<u>Take out and remove sanitary fittings, tanks, geysers, etc</u> including disconnecting from pipes, traps, etc (make good tiling and paintwork elsewhere)				
м	Vitreous china WC pan with cistern and flush pipe	No	2		
	Carried to Collection			R	
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	1808Q057-BOQ, Provisional Bills of Quantities				

Α	Built-in bath tub with shower head and curtain rail	No	1		
	CUTTING THROUGH FLOORS AND CEILINGS				
	Cutting through reinforced concrete, including cutting off and removing reinforcement				
В	100mm Thick reinforced concrete surface bed for 600mm wide concrete wall footings and make good concrete on both sides of new half brick walls (make good floor finishes elsewhere)	m	3		
С	100mm Thick reinforced concrete surface bed for 800mm wide concrete wall footings and make good concrete on both sides of new one brick walls (make good floor finishes elsewhere)	m	6		
	BUILDING UP OPENINGS				
	Brickwork in NFP bricks in class II mortar in build up openings, including bonding new to existing and make good cement plaster on both sides (make good paintwork elsewhere)				
D	Opening 790 x 1,200mm high overall in one brick wall	No	1		
Е	Opening 900 x 2,100mm high overall in half brick wall	No	2		
F	Opening 900 x 2,100mm high overall in one brick wall	No	1		
	Partitions with 18mm thick shutterply board cladding to match existing on both sides and filled in with 100mm thick "Isotherm" insulation (make good paintwork elsewhere)				
G	Opening 1,000 x 2,175mm high overall in 127mm drywall	No	1		
	Partitions with 12.5mm thick board cladding to match existing on both sides and filled in with 25mm thick glasswool insulation in blanket form with a density of not less than 32kg/m² (make good paintwork elsewhere)				
н	Opening 800 x 2,100mm high overall in 76mm drywall	No	1		
	Sundries				
J	Cut toothings and bond new brickwork to existing	m²	11		
	MAKE GOOD OF FINISHES, ETC				
	Make good cement screeds				
К	25mm Thick on floors in patches	m²	200		
	Carried to Collection			R	
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Α	Floors where one brick walls removed	m	7	
	Make good internal cement plaster			
В	Walls in patches	m²	49	
С	Walls where half brick walls removed	m²	1	
D	Walls where one brick walls removed	m²	3	
	OPENINGS THROUGH EXISTING WALLS ETC			
	Alter openings			
E	Alter opening in one brick wall where 790 x 1,200mm high steel window removed to form opening for new aluminium sliding door and frame 1,680 x 2,480mm high overall by breaking out brickwork on both sides and bottom, including prestressed concrete lintels, make good cement plaster on both sides and into reveals with 20 MPa concrete threshold with steel trowelled finish (new door and frame and make good paintwork elsewhere)	No	1	
F	Alter opening in one brick wall where 1,190 x 1,200mm high aluminium window removed to form opening for new aluminium swing door and frame 1,600 x 2,100mm high overall by breaking out brickwork on both sides and top, including prestressed concrete lintels, make good cement plaster on both sides and into reveals with 20 MPa concrete threshold with steel trowelled finish (new door and frame and make good paintwork elsewhere)	No	1	
G	Alter opening in one brick wall where 1,300 x 2,100mm high timber double door removed to form opening for new aluminium sliding door and frame 2,000 x 2,500mm high overall by breaking out brickwork on both sides and top, including prestressed concrete lintels, make good cement plaster on both sides and into reveals with 20 MPa concrete threshold with steel trowelled finish (new door and frame and make good paintwork elsewhere)	No	1	
Η	Alter opening in one brick wall where 1,770 x 590mm high steel window removed to form opening for new aluminium window 1,770 x 590mm high overall by breaking out brickwork on one side and building it up on the other side, including prestressed concrete lintels, make good cement plaster on both sides and into reveals with 20 MPa concrete threshold with steel trowelled finish (new window and make good paintwork elsewhere)	No	1	
	Carried to Collection Bill No. 3 Alterations 1808Q057-BOQ, Provisional Bills of Quantities			R

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А	Alter opening in one brick wall where 1,800 x 950mm high aluminium window removed to form opening for new aluminium swing door and frame 1,500 x 2,100mm high overall by breaking out brickwork on both sides and top, including prestressed concrete lintels, make good cement plaster on both sides and into reveals with 20 MPa concrete threshold with steel trowelled finish (new door and frame and make good paintwork elsewhere)	No	1		
В	Alter opening in one brick wall where 2,800 x 2,400mm high steel roll-up garage door removed to form opening for aluminium new swing door and frame 900 x 2,100mm high overall by building up brickwork on both sides and top, including prestressed concrete lintels, make good cement plaster on both sides and into reveals with 20 MPa concrete threshold with steel trowelled finish (new door and frame and make good paintwork elsewhere)	No	1		
С	Alter opening in 127mm drywall where 1,500 x 1,250mm high steel window removed to form opening for new aluminium swing door and frame 1,500 x 2,100mm high overall by breaking out drywall on both sides and bottom, including stud and frame support as required (new door and frame and make good paintwork elsewhere)	No	1		
	Break out for and form plain openings through brick walls, including prestressed concrete lintels, make good cement plaster on both sides and into reveals and with 20 MPa concrete thresholds with steel trowelled finish (make good paintwork elsewhere)				
D	Opening 920 x 2,100mm high through half brick wall	No	1		
	Break out for and form openings through brick walls for new doors and frames, including prestressed concrete lintels, make good cement plaster on both sides and into reveals and with 20 MPa concrete thresholds with steel trowelled finish (new doors and frames and make good paintwork elsewhere)				
E	Opening for door with timber frame 800 x 2,200mm high overall through half brick wall	No	1		
F	Opening for door with timber frame 900 x 2,100mm high overall through half brick wall	No	1		
G	Opening for door with aluminium frame 1,600 x 2,100mm high overall through one brick wall	No	1		
н	Opening for aluminium sliding door with externally fixed sliding track 1,600 x 2,100mm high overall through one brick wall	No	1		
	Corried to Collection				
	Bill No. 3			к	
	Alterations 1808Q057-BOQ, Provisional Bills of Quantities				

Α	Opening for door with aluminium frame 1,815 x 2,100mm high overall through half brick wall	No	1		
	Break out for and form openings through brick walls for new windows, including prestressed concrete lintels, make good cement plaster on both sides and into reveals and with sloping fibre-cement sills on outside and flat fibre-cement sills on inside (new windows and make good paintwork elsewhere)				
В	Opening for window 1,100 x 590mm high through one brick wall	No	1		
	Break out for and form openings through dry walls for new windows, including frame and stud support as required, make good skim plaster on both sides and into reveals (new windows and make good paintwork elsewhere)				
С	Opening for louvre 1,000 x 250mm high through 127mm drywall	No	10		
D	Opening for window 1,500 x 1,250mm high through 127mm drywall	No	2		
	Carried to Collection			R	
	Alterations 1808Q057-BOQ, Provisional Bills of Quantities				

Bill No. 3			
Alterations			
COLLECTION			
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		Quantity	Rate	Amount
<u>BILL N</u>	I <u>O. 4</u>			
EARTH	IWORKS			
Note:	Tenderers are advised to study the General Preambles for Trades 2017 published by ASAQS before pricing this bill			
Note:	Tenderers are advised to study the Specifications Of Materials And Methods To Be Used as published by the Department of Public Works			
Note:	Unless otherwise stated herein, all items in this Bill shall be deemed to be a fixed price for the duration of the project			
<u>SUPPL</u>	EMENTARY PREAMBLES			
Nature o	of ground			
The nat material "soft roo	ure of the ground is assumed to be loose sandy l, therefore "earth", but possibly interspersed with ck" or "hard rock"			
<u>Classific</u>	cation of materials to be excavated			
"Hard ro hardnes splitting	ock": granite, quartzitic sandstone or rock of similar ss, the removal of which requires drilling, wedging and , or the use of explosives			
"Soft roo use of p compac	ck": hard material, the removal of which warrants the neumatic tools and includes hard shale, ferricrete, t ouklip and material of similar hardness			
"Earth": "soft roc concrete	all ground other than that classified as "hard rock" or k", including made-up ground and loose stones or e pieces not exceeding 0.03m³ in volume			
<u>Excavat</u>	tion for working space in rocks			
Notwiths of Meas rock will and give excavat	standing Clause 10, page 13 of the Standard System suring Building Work, excavation for working space in I be measured in cubic meters to the extent executed en as "extra over" bulk excavation or trench and hole ion as the case may be			
	Carried to Collection		R	
Bill No. Earthwo 1808Q05	4 orks 57-BOQ, Provisional Bills of Quantities			

1		I			1	1
	Subterranean water					
	No subterranean water is expected					
	Carting away of excavated material					
	Descriptions of carting away of excavated material shall be deemed to include loading excavated material onto trucks directly from the excavations or, alternatively, from stock piles situated on the building site					
	Filling					
	Notwithstanding the reference to prescribed multiple handling in clause 1, page 10 of the Standard System of Measuring Building Work, prices for filling and backfilling shall include for all selection and any necessary multiple handling of material					
	Filling and layer work materials					
	References such as "G1", "G2", etc and "C1", "C2", etc in descriptions of filling and layer work materials refer to corresponding references in the document "Guidelines for Road Construction Materials. TRH 14 : 1985" compiled by the Committee of State Road Authorities and the properties set out therein for each kind shall be applicable to the respective materials described hereinafter					
	Testing					
	Prices for filling are to include for all necessary density and other tests					
	SITE CLEARANCE					
	Site clearance					
A	Dig up and remove rubbish, debris, vegetation, hedges, shrubs, bush, etc and trees not exceeding 200mm girth	m²	132			
	REMOVAL OF TREES ETC					
	Cut down and remove, grub up roots and fill in holes					
в	Hedge not exceeding 2,000mm high	m	28			
С	Tree exceeding 200mm and not exceeding 500mm girth	No	1			
	Carried to Collection			R		
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	EXCAVATION, FILLING, ETC		
	EXCAVATIONS ETC		
	Excavation in earth not exceeding 2m deep		
А	Reduced levels under floors m ³	11	
В	Trenches m ³	106	
С	Holes m ³	2	
	Extra over trench and hole excavations in earth for excavation in		
D	Soft rock m ³	11	
Е	Hard rock m ³	6	
	Back excavation of vertical sides of excavations in earth for working space including backfilling compacted to 98% Mod AASHTO density		
F	Not exceeding 500mm deep to place and remove formwork to walls etc, 300mm away from excavated face m ²	4	
	Extra over all excavations for carting away		
G	Surplus material from excavations and/or stock piles on site, to a dump site to be located by the contractor m ³	67	
	Risk of collapse of excavations		
н	Sides of trench and hole excavations not exceeding 1.5m deep m ²	285	
	Keep excavations free of water		
J	Keep excavations free of all water other than subterranean water	ltem	
	FILLING ETC		
	Earth filling obtained from the excavations and/or prescribed stock piles on site, compacted to 98% Mod AASHTO density		
К	Under floors, steps, pavings, etc m ³	5	
L	Backfilling to trenches, holes, etc m ³	47	
	Carried to Collection		
	Bill No. 4 Earthworks 1808Q057-BOQ, Provisional Bills of Quantities		

	Filling of coarse river sand supplied by the contractor, compacted to 98% Mod AASHTO density, not consolidate				
A	Under floors etc	m³	9		
	Compaction of ground surfaces				
В	Compaction of natural or excavated ground surface under floors etc including scarifying for a depth of 100mm, break down oversize material, add suitable material where necessary and compact to 98% Mod AASHTO density	m²	84		
	WEED KILLERS, INSECTICIDES, ETC				
	Soil insecticide in accordance with SANS 5859				
С	Under floors etc including forming and poisoning shallow furrows against foundation walls etc fill in furrows and ramming	m²	88		
D	To bottoms and sides of trenches etc	m²	377		
	TESTS				
	Prescribed tests to determine degree of compaction or other properties of ground or filling				
E	"Modified AASHTO Density" test	No	10		
	Carried to Collection			R	
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Bill No. 4				
Earthworks				
COLLECTION				
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		Quantity	Rate	Amount
<u>BILL N</u>	<u>10. 5</u>			
CONC	RETE, FORMWORK AND REINFORCEMENT			
Note:	Tenderers are advised to study the General Preambles for Trades 2017 published by ASAQS before pricing this bill			
Note:	Tenderers are advised to study the Specifications Of Materials And Methods To Be Used as published by the Department of Public Works			
Note:	Unless otherwise stated herein, all items in this Bill shall be deemed to be a fixed price for the duration of the project			
SUPPL	LEMENTARY PREAMBLES			
<u>Cost of</u>	tests			
The cos as requ include purpose tests fo approve contrac	sts of making, storing and testing of concrete test cubes irred under clause 7 "Tests" of SANS 1200 G shall the cost of providing cube moulds necessary for the e, for testing costs and for submitting reports on the r approval. The testing shall be undertaken by an ed independent firm or institution nominated by the tor (test cubes are measured separately)			
Formwo	<u>ork</u>			
Descrip waste c "permai wedging necessa recondi	otions of formwork shall be deemed to include use and only (except where described as "left in" or nent"), for fitting together in the required forms, g, plumbing and fixing to true angles and surfaces as ary to ensure easy release during stripping and for tioning as necessary before re-use			
The ver constru support newly c	rtical strutting shall be carried down to such ction as is sufficiently strong to afford the required t without damage and shall remain in position until the constructed work is able to support itself			
Formwo slabs no	ork to soffits of solid slabs etc shall be deemed to be to ot exceeding 250mm thick unless otherwise described			
	Carried to Collection		R	
Bill No. Concrel 1808Q0!	5 te, Formwork & Reinforcement 57-BOQ, Provisional Bills of Quantities			

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	Formwork to soffits of slabs, beams, etc shall be deemed to be propped up exceeding 1,5m and not exceeding 3,5m high unless otherwise described				
	Formwork to sides of bases, pile caps, ground beams, etc will only be measured where it is prescribed by the engineer for design reasons. Formwork necessitated by irregularity or collapse of excavated faces will not be measured and the cost thereof shall be deemed to be included in the allowance for taking the risk of collapse of the sides of the excavations, provision for which is made in "Earthworks"				
	UNREINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES				
	15MPa/19mm concrete				
А	Surface blinding under footings and bases	m³	5		
	UNREINFORCED CONCRETE CAST AGAINST BRICKWORK				
	15MPa/19mm concrete				
В	Filling to cavity of hollow walls in foundations	m³	2		
С	Filling to cavity of hollow walls	m³	3		
	REINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES				
	<u>30MPa/19mm concrete</u>				
D	Strip footings	m³	30		
Е	Bases	m³	2		
F	Surface beds on waterproofing	m³	10		
	REINFORCED CONCRETE CAST ON/IN FORMWORK				
	25MPa/19mm concrete				
G	Steps including landings, beams and inverted beams	m³	1		
	<u>30MPa/19mm concrete</u>				
н	Slabs including beams and inverted beams	m³	1		
	Carried to Collection			R	
	Bill No. 5 Concrete, Formwork & Reinforcement 1808Q057-BOQ, Provisional Bills of Quantities				

Α	Beams	m³	0.3		
В	Steps including landings, beams and inverted beams	m³	1		
С	Stub columns in foundations	m³	1		
D	Stub columns	m³	1		
	TEST CUBES				
E	Making and testing 150 x 150 x 150mm concrete strength test cube	No	10		
	CONCRETE SUNDRIES				
	Finish top surfaces of concrete smooth with a wood float				
F	Surface beds, slabs, etc	m²	5		
G	Surface beds, slabs, etc to falls and currents	m²	2		
	Finish top surfaces of concrete smooth with a power float				
Н	Surface beds, slabs, etc	m²	84		
	25MPa Non-shrink grout				
J	Bedding approximately 10mm thick under 145 x 135mm base plate including chamfered edges all round	No	2		
	ROUGH FORMWORK (DEGREE OF ACCURACY II)				
	Rough formwork to sides				
к	Rectangular stub columns in foundations	m²	14		
L	Rectangular stub columns	m²	9		
М	Edges, risers, ends and reveals not exceeding 300mm high or wide	m	32		
Ν	Sloping and stepped outer edges of stairs not exceeding 300mm high extreme	m	3		
	Rough formwork to sides and soffits				
Ρ	Beams propped up exceeding 1.5m and not exceeding 3.5m high	m²	3		
	Carried to Collection			R	
	Bill No. 5 Concrete, Formwork & Reinforcement 1808Q057-BOQ, Provisional Bills of Quantities				

	MOVEMENT JOINTS ETC			
	Two layers of 375 micron dampproof course in slip joints between horizontal concrete and brick surfaces including cement mortar bed			
A	Exceeding 300mm wide	m²	2	
В	Not exceeding 300mm wide	m	13	
	Expansion joints with 10mm softboard between vertical concrete and brick surfaces			
С	Not exceeding 300mm high to edges of surface beds	m	26	
	Saw-cut joints			
D	3 x 25mm Saw-cut joints in top of concrete	m	3	
	REINFORCEMENT			
	Mild steel reinforcement to structural concrete work			
Е	Bars of varying length and diameter	t	1	
	High tensile steel reinforcement to structural concrete work			
F	Bars of varying length and diameter	t	2	
	High tensile steel dowel bars			
G	20mm Diameter dowel bar 500mm long with one end embedded 150mm deep in side of concrete at expansion joint and other end greased and wrapped in polythene sheeting, including hole through formwork	No	23	
	Fabric reinforcement			
н	Type 888 fabric reinforcement in concrete surface beds etc	m²	10	
J	Type 193 fabric reinforcement in concrete surface beds etc	m²	88	
	Carried to Collection Bill No. 5 Concrete, Formwork & Reinforcement 1808Q057-BOQ, Provisional Bills of Quantities			R

Bill No. 5				I I
Concrete, Formwork & Reinforcement				
COLLECTION				
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Concrete, Formwork & Reinforcement 1808Q057-BOQ, Provisional Bills of Quan	tities			

BILL NO. 6		
MASONRY		
Note : Tenderers are advised to study the General Preambles for Trades 2017 published by ASAQS before pricing this bill		
Note : Tenderers are advised to study the Specifications Of Materials And Methods To Be Used as published by the Department of Public Works		
Note : Unless otherwise stated herein, all items in this Bill shall be deemed to be a fixed price for the duration of the project		
SUPPLEMENTARY PREAMBLES		
Sizes in descriptions		
Where sizes in descriptions are given in brick units, "one brick" shall represent the length and "half brick" the width of a brick		
BRICKWORK		
FOUNDATIONS		
Brickwork of NFX bricks (14 MPa nominal compressive strength) in class II mortar		
A Half brick walls m ² 2		
B One brick walls m ² 43		
C 330mm Hollow walls of two half brick skins including wire ties with concrete infill (concrete elsewhere) m ² 57		
SUPERSTRUCTURE		
Brickwork of NFP bricks in class II mortar		
D Half brick walls m ² 19		
E One brick walls m ² 59		
Carried to Collection	R	
Bill No. 6 Masonry 1808Q057-BOQ, Provisional Bills of Quantities		

A	330mm Hollow walls of two half brick skins including wire ties with concrete infill (concrete elsewhere) m ²	30		
	BRICKWORK SUNDRIES			
в	Splayed mortar fillets one course high in 110mm cavities m	20		
С	Closing 110mm cavities of hollow walls vertically with brickwork half brick wide m	32		
D	Closing 110mm cavities of hollow walls horizontally with one course of brickwork m	43		
	Joint forming material in movement joints			
Е	10mm "Jointex" board built in vertically between brick skins m ²	13		
	2.5mm Brickwork reinforcement			
F	75mm Wide reinforcement built in horizontally m	863		
G	150mm Wide reinforcement built in horizontally m	371		
	Prestressed fabricated concrete lintels including necessary temporary supports			
н	75 x 114mm Lintels in lengths not exceeding 3m m	16		
	Galvanised hoop iron cramps, ties, etc			
J	30 x 1.2mm Wall tie 800mm long with one end shot pinned to concrete and other end built into brickwork No	147		
к	30 x 1.6mm Roof tie 1.5m long with one end built into brickwork and other end fixed to timber No	16		
	Carried to Collection		R	
	Bill No. 6 Masonry 1808Q057-BOQ. Provisional Bills of Quantities			
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Bill No. 6						
Masonry						
COLLECTION						
Total Brought Forward from Page No.	Page No 33 34		Amount			
Carried to Summary Bill No. 6 Masonry 1808Q057-BOQ, Provisional Bills of Quantities		R				
ltem No				Quantity	Rate	Amount
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	BILL N	<u>IO. 7</u>				
	WATE	RPROOFING				
	Note:	Tenderers are advised to study the General Preambles for Trades 2017 published by ASAQS before pricing this bill				
	Note:	Tenderers are advised to study the Specifications Of Materials And Methods To Be Used as published by the Department of Public Works				
	Note:	Unless otherwise stated herein, all items in this Bill shall be deemed to be a fixed price for the duration of the project				
	<u>SUPPL</u>	EMENTARY PREAMBLES				
	<u>Waterpr</u>	roofing				
	Waterpr ten year even fal valleys. be deen downs	roofing of roofs, basements, etc shall be laid under a r guarantee. Waterproofing to roofs shall be laid to Is to outlets etc with necessary ridges, hips and Descriptions of sheet or membrane waterproofing shall ned to include additional labour to turn-ups and turn-				
	DAMPI	PROOFING OF WALLS AND FLOORS				
	<u>One lay</u> course (er 375 micron embossed polyethylene dampproof (SANS 952-1985 type B)				
А	In walls		m²	50		
	<u>One lay</u> (SANS s adhesiv	er 250 micron green polyethylene waterproof sheeting 952-1985 type C) sealed at laps with PVC self- e tape				
В	Under s	urface beds	m²	88		
	WATE	RPROOFING TO WALLS AND FLOORS				
	<u>"Sika Ce</u> bonding specifica	emflex" or other equal and approved waterproofing and agent applied according to manufacturers ations, including bandages				
С	On floor	'S	m²	3		
		Carried to Collection			R	
	Bill No. Wateror	7 oofina				
	1808Q05	7-BOQ, Provisional Bills of Quantities				

Α	On shower walls	m²	13		
	<u>WATERSTOPS, SEALING STRIPS, JOINT</u> <u>SEALANTS, ETC</u>				
	<u>"Sikaflex PRO 3" or other equal and approved polysulphide</u> sealing compound including backing cord, bond breaker, primer, etc				
В	3 x 25mm In saw cut joints in floors	m	3		
С	10 x 10mm In expansion joints in floors	m	22		
	<u>"Thioflex" or other equal and approved two-part polysulphide</u> sealing compound including backing cord, bond breaker, primer, etc				
D	10 x 10mm In expansion joints in walls etc including raking out expansion joint filler as necessary	m	28		
				_	
	Bill No. 7	1		R	
	vvaterproofing 1808Q057-BOQ, Provisional Bills of Quantities				

Bill No. 7		I	
Waterproofing			
COLLECTION			
COLLECTION Total Brought Forward from Page No.	Page No 36 37		Amount
Carried to Summary Bill No. 7 Waterproofing		R	
1808Q057-BOQ, Provisional Bills of Quantities			

ltem No				Quantity	Rate	Amount
	<u>BILL N</u>	IO. 8				
	ROOF	COVERINGS, CLADDINGS, ETC				
	Note:	Tenderers are advised to study the General Preambles for Trades 2017 published by ASAQS before pricing this bill				
	Note:	Tenderers are advised to study the Specifications Of Materials And Methods To Be Used as published by the Department of Public Works				
	Note:	Unless otherwise stated herein, all items in this Bill shall be deemed to be a fixed price for the duration of the project				
	<u>PROFI</u>	LED METAL SHEETING AND ACCESSORIES				
	0.8mm and app accesso	Z150 Zincalume "Safintra Classicorr" or other equal proved corrugated sheet steel in single lengths and pries, fixed to timber purlins				
А	Roof co	vering with pitches not exceeding 25 degrees	m²	203		
	0.8mm and app	Z150 Zincalume "Safintra Classicorr" or other equal proved sheet accessories to preceding roof covering				
В	Ridge c	appings 450mm girth	m	17		
С	Barge fa	ascias 245mm girth, including packing pieces	m	29		
D	Drip edg	ge flashings 231mm girth	m	22		
E	Head w	all flashings 462mm girth	m	10		
F	Narrow	and broad flute closers	m	58		
	<u>Re-purp</u> purlins, one side Brown S	bosed corrugated steel sheeting fixed to existing timber rust treated and painted (Colour to be confirmed) on e according to manufacturer's specification (From Shed roof)				
G	Roof co	vering with pitches not exceeding 25 degrees	m²	59		
		Carried to Collection			R	
	Bill No. Roof Co 1808Q05	8 overings, Claddings, etc. 57-BOQ, Provisional Bills of Quantities				

R

	Re-purposed "Kliplok 406" sheeting and accessories fixed to timber purlins (purlins measured elsewhere), with finish (Colour to be confirmed) on one side and protective primer coating on the reverse side according to manufacturer's specification (From White Shed roof)			
A	Roof covering with pitches not exceeding 25 degrees	m²	28	
в	Side wall cladding	m²	53	
	"Kliplok 406" troughed 0.53mm Aluminium sheeting or other equal and approved sheet accessories to preceding roof coverings and claddings			
С	Barge flashing 660mm girth	m	7	
D	Drip flashing 231mm girth	m	19	
Е	Eaves flashing 660mm girth	m	15	
F	Internal Corner 736mm girth	m	10	
G	Sill flashing 736mm girth	m	10	
	"Kliplok 406" troughed 0.53mm Aluminium sheeting or other equal and approved fixed to timber purlins (purlins measured elsewhere), with ColourPlus AZ-150 finish (Colour to be confirmed) on one side and protective primer coating on the reverse side according to manufacturer's specification			
Н	Side wall cladding	m²	90	
	"Kliplok 406" troughed 0.53mm Aluminium sheeting or other equal and approved sheet accessories to preceding roof coverings and claddings			
J	Barge flashing 660mm girth	m	18	
к	Eaves flashing 660mm girth	m	20	
L	Drip flashing 231mm girth	m	55	
М	Ridge flashing 450mm girth	m	10	
N	Internal Corner 736mm girth	m	68	
	Carried to Collection Bill No. 8 Roof Coverings, Claddings, etc. 1808Q057-BOQ, Provisional Bills of Quantities			

	ROOF AND WALL INSULATION			
	Type "Alububble 1983" polyethelene bubblefold aluminium foil faced both sides sheeting			
A	Insulation sheeting laid taut over purlins at approximately 1,200mm centres and fixed concurrent with roof covering with minimum 150mm stapled laps including PVC coated steel straining wires at not exceeding 400mm centres and double-sided tape at edges where required m ²	229		
	Carried to Collection		R	
	Bill No. 8 Roof Coverings, Claddings, etc. 1808Q057-BOQ, Provisional Bills of Quantities			

Bill No. 8	1		
Roof Coverings, Claddings, etc.			
COLLECTION			
Total Brought Forward from Page No.	Page No 39 40		Amount
	41		
Carried to Summary		R	
Bill No. 8 Roof Coverings, Claddings, etc. 1808Q057-BOQ, Provisional Bills of Quantities			

ltem No			Quantity	Rate	Amount
	<u>BILL N</u>	<u>IO. 9</u>			
	CARPE	ENTRY AND JOINERY			
	Note:	Tenderers are advised to study the General Preambles for Trades 2017 published by ASAQS before pricing this bill			
	Note:	Tenderers are advised to study the Specifications Of Materials And Methods To Be Used as published by the Department of Public Works			
	Note:	Unless otherwise stated herein, all items in this Bill shall be deemed to be a fixed price for the duration of the project			
	<u>SUPPL</u>	EMENTARY PREAMBLES			
	Fixing				
	Items de hardene or conci	escribed as "nailed" shall be deemed to be fixed with ed steel nails or pins, or to be shot-pinned, to brickwork rete			
	ltems de screwin 500mm have be	escribed as "plugged" shall be deemed to include g to fibre, plastic or metal plugs at not exceeding centres, and where described as "bolted", the bolts een given elsewhere			
	Notwith System to be inc	standing Clause 5, Rule 10 on page 55 of the Standard of Measuring Building Work, pelleting shall be deemed cluded in the descriptions of the relevant work			
	<u>Decorat</u>	tive thermosetting plastic laminate covering			
	Laminat strips of similar f	te covering shall be glued under pressure and edge f same shall be butt jointed at junctions with adjacent finish			
		Carried to Collection		R	
	Bill No. Carpent 1808Q05	9 try & Joinery 57-BOQ, Provisional Bills of Quantities			

	STRUCTURAL TIMBERWORK ETC				
	ROOF SUPPORT STRUCTURE - GATE HOUSE				
	<u>Wrought "SAP" softwood grade 5 timber beam and post</u> structure as per engineer details (Drawings AD 200-202 Rev B, PS-22-023-004 Rev B & PS-22-023-005 Rev B)				
A	45 x 145mm Bolted posts in lengths exceeding 2.4m and not exceeding 3.9m	m	7		
В	70 x 222mm Bolted bearers in lengths exceeding 3.9m and not exceeding 6.6m, bolted to posts	m	11		
С	45 x 222mm Bearers in lengths exceeding 3.9m and not exceeding 6.6m	m	6		
	PERGOLAS - GATE HOUSE				
	<u>Wrought "SAP" softwood grade 5 timber pergolas as per</u> engineer details (Drawings AD 200 - 202 Rev B, PS-22-023- 004 Rev B & PS-22-023-005 Rev B)				
D	45 x 145mm Common rafters in lengths not exceeding 2.4m	m	21		
E	45 x 222mm Common rafters in lengths exceeding 2.4m and not exceeding 3.9m	m	25		
F	32 x 106mm Posts in lengths not exceeding 2.4m	m	2		
G	32 x 106mm Posts in lengths exceeding 2.4m and not exceeding 3.9m	m	31		
н	45 x 145mm Posts in lengths not exceeding 2.4m	m	4		
J	45 x 145mm Posts in lengths exceeding 2.4m and not exceeding 3.9m	m	21		
К	32 x 106mm Bearers in lengths exceeding 3.9m and not exceeding 6.6m	m	9		
L	45 x 145mm Bearers in lengths exceeding 2.4m and not exceeding 3.9m	m	10		
М	70 x 145mm Bearers in lengths exceeding 2.4m and not exceeding 3.9m	m	8		
N	70 x 145mm Bearers in lengths exceeding 3.9m and not exceeding 6.6m	m	9		
	Carried to Collection			R	
	Bill No. 9 Carpentry & Joinery 1808Q057-BOQ, Provisional Bills of Quantities				

Α	38 x 50mm Tilting fillets	m	8	
В	22 x 70mm Latte purlins	m	596	
	RESERVE SHED - ADMIN BUILDING			
	Wrought "SAP" softwood grade 5 timber shed frame as per engineer details (Drawings AD 220-222 Rev B, PS-22-023-002 Rev B & PS-22-023-003 Rev B)			
С	120mm Diameter posts in lengths exceeding 2.4m not exceeding 3.9m	m	33	
	Wrought laminated Saligna			
D	100 x 294mm Bolted beams	m	7	
	CANOPIES - ADMIN BUILDING			
	<u>Wrought "SAP" softwood grade 5 timber canopy as per</u> engineer details (Drawings AD 220-222 Rev B, PS-22-023-002 Rev B & PS-22-023-003 Rev B)			
Е	38 x 114mm Common rafters in lengths not exceeding 2.4m	m	10	
	PERGOLAS - ADMIN BUILDING			
	<u>Wrought "SAP" softwood grade 5 timber pergolas as per</u> engineer details (Drawings AD 220 - 222 Rev B, PS-22-023- 002 Rev B & PS-22-023-003 Rev B)			
F	45 x 145mm Common rafters in lengths not exceeding 2.4m	m	58	
G	45 x 145mm Common rafters in lengths exceeding 2.4m and not exceeding 3.9m	m	20	
Н	45 x 145mm Common rafters in lengths exceeding 3.9m and not exceeding 6.6m	m	140	
J	45 x 145mm Posts in lengths not exceeding 2.4m	m	19	
К	45 x 145mm Posts in lengths exceeding 2.4m and not exceeding 3.9m	m	47	
L	32 x 106mm Bearers in lengths exceeding 2.4m and not exceeding 3.9m	m	9	
М	45 x 222mm Bearers in lengths not exceeding 2.4m	m	4	
	Carried to Collection Bill No. 9 Carpentry & Joinery 1808Q057-BOQ, Provisional Bills of Quantities			R

A	22 x 70mm Latte purlins	m	468		
	GARAGE - MANAGER'S HOUSE				
	Wrought "SAP" softwood grade 5 timber garage frame as per engineer details (Drawings AD 210-212 Rev B, PS-22-023-006 Rev B & PS-22-023-007 Rev B)				
В	120mm Diameter posts in lengths not exceeding 2.4m	m	11		
с	38 x 114mm Posts in lengths not exceeding 2.4m	m	14		
D	50 x 152mm Common rafters in lengths exceeding 2.4m and not exceeding 3.9m	m	3		
E	50 x 228mm Common rafters in lengths exceeding 2.4m and not exceeding 3.9m	m	18		
F	50 x 76mm Purlins	m	119		
	CLADDING RAILS - MANAGER'S HOUSE				
	Wrought "SAP" softwood grade 5 timber				
G	50 x 76mm Branders	m	71		
	PLATE NAILED TIMBER ROOF TRUSS CONSTRUCTION ETC				
	SUPPLEMENTARY PREAMBLES				
	Trusses are at maximum 1,350mm centres				
	Roof covering is type corrugated steel sheet from existing Brown Shed on purlins (removal elsewhere)				
	References given in descriptions refer to the respective types of trusses detailed on the engineer's drawings numbered PS- 023-001 Rev A & PS-023-002 Rev A annexed to these bills of quantities for tender purposes				
	Dimensions in descriptions of trusses are nominal and actual measurements are to be obtained from the engineer and/or taken on site before design or fabrication commences				
	<u>Sawn "SAP" softwood grade 5 timber trusses and purlins</u> reinstated from Brown Shed (removal elsewhere)				
Н	35 x 50mm Purlins	m	106		
					-
	Carried to Collection			R	 ╞
	Carpentry & Joinery 1808Q057-BOQ, Provisional Bills of Quantities				

А	Truss type A, 5,438 x 968mm high overall	No	8		
	EAVES, VERGES, ETC				
	Wrought "SAP" softwood grade 5				
В	32 x 220mm Fascias and barge boards	m	105		
	6mm "Everite Nutec" or other equal and approved fibre- cement plain ceiling boards				
С	6mm Eaves soffit covering including 38 x 38mm sawn softwood branders along edges, along centre and at 600mm centres across sheets	m²	11		
	FLOORS AND SKIRTINGS				
	SKIRTINGS				
	Wrought softwood				
D	20 x 75mm High skirtings with pencil round profile, nailed	m	78		
	Reinstated wrought softwood (removal elsewhere)				
Е	20 x 75mm High skirtings with pencil round profile, nailed	m	165		
	TIMBER DOORS, WINDOWS, ETC				
	DOORS ETC				
	Note: Tenderers are referred to architect's drawings numbered AD 205 - 207 Rev B, AD 215 - 216 Rev B & AD 225 - 226 Rev B accompanying these bills of quantities for tender purposes				
	Solid folding doors including sliding gear, hinges, etc as per architect's details				
F	Double door for opening 1,815 x 2,100mm high fixed to brickwork or concrete (Admin Building: D07)	No	1		
	Solid sliding doors including sliding gear, etc as per architect's details				
G	Single door for opening 900 x 2,032mm high fixed to brickwork or concrete (Gate House: D05)	No	1		
	Carried to Collection			R	
	Bill No. 9 Carpentry & Joinery				
	1808Q057-BOQ, Provisional Bills of Quantities				

	Semi-solid flush doors with commercial veneer including hinges, etc as per architect's details				
A	44mm Door 813 x 2,032mm high (Gate House: D02, Admin Building: D03)	No	3		
	FRAMES ETC				
	FRAMED FRAMES, MULLIONS, TRANSOMS, ETC				
	"Swartland Cape Culture" or other equal and approved door frame				
в	86 x 67mm Rebated frame for 813 x 2,032mm high door (Gate House: D02, Admin Building: D03)	No	3		
с	86 x 67mm Rebated frame for 900 x 2,032mm high door (Gate House: D05)	No	1		
D	86 x 67mm Rebated frame for 2,700 x 2,032mm high door opening (Admin Building: D07)	No	1		
	PANELLING				
	<u>Wrought softwood panels taken from existing White Shed</u> (removal elsewhere)				
Е	140mm Flush panelling (grounds and cover strips elsewhere)	m²	20		
	Wrought softwood panels taken from existing Brown Shed and bolted through cladding rails to gum poles at 2,700mm centres (removal elsewhere)				
F	Flush panelling fixed to gum poles at 2,700mm centres	m²	59		
	Wrought "SAP" softwood grade 5 timber				
G	50 x 76mm Grounds, nailed	m	40		
н	30 x 170mm Head plate in lengths not exceeding 2.4m	m	3		
J	30 x 170mm Head plate in lengths exceeding 3.9 and not exceeding 6.6m	m	5		
	Carried to Collection			R	
	Carpentry & Joinery 1808Q057-BOQ, Provisional Bills of Quantities				
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Bill No. 9			
Carpentry & Joinery			
COLLECTION			
	Page No		Amount
Total Brought Forward from Page No.	43		
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	46		
	47		
	48		
Carried to Summary		R	
Bill No. 9 Carpentry & Joinery 1808Q057-BOQ, Provisional Bills of Quantities			

ltem No			Quantity	Rate	Amount
	<u>BILL N</u>	<u>IO. 10</u>			
	<u>CEILIN</u>	IGS, PARTITIONS AND ACCESS FLOORING			
	Note:	Tenderers are advised to study the General Preambles for Trades 2017 published by ASAQS before pricing this bill			
	Note:	Tenderers are advised to study the Specifications Of Materials And Methods To Be Used as published by the Department of Public Works			
	Note:	Unless otherwise stated herein, all items in this Bill shall be deemed to be a fixed price for the duration of the project			
	<u>SUPPL</u>	EMENTARY PREAMBLES			
	Fixing				
	Items de hardene or conci	escribed as "nailed" shall be deemed to be fixed with ed steel nails or pins, or to be shot-pinned, to brickwork rete			
	ltems de screwin 500mm have be	escribed as "plugged" shall be deemed to include g to fibre, plastic or metal plugs at not exceeding centres, and where described as "bolted", the bolts een given elsewhere			
	<u>Ceilings</u>	2			
	Unless horizont	otherwise described ceilings shall be deemed to be tal			
	<u>Bulkhea</u>	ads			
	Unless horizont	otherwise described bulkheads shall be deemed to be tal along the length			
	Steel co	omponents			
	All steel galvanis	l components for ceilings, partitions, etc are to be sed in accordance with SANS 121			
		Carried to Collection		R	
	Bill No. Ceilings 1808Q05	10 5, Partitions & Access Flooring 57-BOQ, Provisional Bills of Quantities			

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	CEILING TIMBERS, BEADS, INSULATION, ETC					
	"Isotherm" or other equal and approved insulation					
A	150mm Insulation in blanket form closely fitted and laid on top of brandering between roof timbers etc	m²	78			
	NAILED-UP CEILINGS					
	SUPPLEMENTARY PREAMBLES					
	<u>Openings</u>					
	Prices for openings for light fittings, ventilation grilles, air conditioning diffusers, etc are to include for any necessary additional support, trimming around, etc					
	6.4mm Taper-edge gypsum plasterboard with taped joints and the whole finished with gypsum plaster trowelled to a smooth polished surface to the thickness recommended by the manufacturer					
В	Ceilings including 38 x 38mm sawn softwood brandering at 400mm centres generally in one direction and 38 x 38mm branders and cross branders at joints and edges of boards	m²	162			
С	Opening for 85mm diameter downlighter	No	8			
D	Extra over ceiling for 900 x 900mm trap door of 38 x 38mm wrought softwood rebated framing with one cross brander, covered with ceiling board and fitted flush in opening, including necessary trimmers around	No	3			
	<u>12.5mm Taper-edge moisture gypsum plasterboard with taped</u> joints and the whole finished with gypsum plaster trowelled to a smooth polished surface to the thickness recommended by the manufacturer					
E	Ceilings including 38 x 38mm sawn softwood brandering at 400mm centres generally in one direction and 38 x 38mm branders and cross branders at joints and edges of boards	m²	14			
F	Opening for 85mm diameter downlighter	No	3			1
G	Extra over ceiling for 900 x 900mm trap door of 38 x 38mm wrought softwood rebated framing with one cross brander, covered with ceiling board and fitted flush in opening, including necessary trimmers around	No	3			
	Carried to Collection			R		
	Bill No. 10 Ceilings, Partitions & Access Flooring 1808Q057-BOQ, Provisional Bills of Quantities					

	Gypsum plasterboard cornices				
A	75mm Coved cornices	m	209		
	PARTITIONS ETC				
	DRYWALL PARTITIONS				
	SUPPLEMENTARY PREAMBLES				
	<u>System</u>				
	Partitions consisting of 114 x 38mm "SA Pine" timber studs at 600mm centres as vertical support clad on both sides with 18mm "York Timber BC" faced shutter ply, including additional studs as necessary at abutments, ends, etc. Board cladding shall be screw fixed to both sides with 44 x 9mm cover strips to all joints				
	Wall paper and paint or varnish finishes are given separately				
	<u>114 x 38mm "SA Pine" or other equal and approved with one</u> layer of 18mm "York timber BC" shutter ply cladding on both sides				
В	Partitions 2,600mm high with bottom and top tracks plugged	m	6		
С	Extra over partition 2,600mm high for corner	No	5		
D	Extra over partition 2,600mm high for T-intersection	No	5		
	SUNDRIES				
	SUNDRIES Insulation				
E	SUNDRIES Insulation 100mm Think "Isotherm" fibre blanket in cavity of partitioning (partitions elsewhere)	m²	17		
E	SUNDRIES Insulation 100mm Think "Isotherm" fibre blanket in cavity of partitioning (partitions elsewhere)	m²	17		
E	SUNDRIES Insulation 100mm Think "Isotherm" fibre blanket in cavity of partitioning (partitions elsewhere)	m²	17		
E	SUNDRIES Insulation 100mm Think "Isotherm" fibre blanket in cavity of partitioning (partitions elsewhere)	m²	17		
E	SUNDRIES Insulation 100mm Think "Isotherm" fibre blanket in cavity of partitioning (partitions elsewhere)	m²	17		
E	SUNDRIES Insulation 100mm Think "Isotherm" fibre blanket in cavity of partitioning (partitions elsewhere)	m²	17		
E	SUNDRIES Insulation 100mm Think "Isotherm" fibre blanket in cavity of partitioning (partitions elsewhere) Carried to Collection	m²	17	R	
E	SUNDRIES Insulation 100mm Think "Isotherm" fibre blanket in cavity of partitioning (partitions elsewhere)	m²	17	R	
E	SUNDRIES Insulation 100mm Think "Isotherm" fibre blanket in cavity of partitioning (partitions elsewhere)	m²	17	R	
E	SUNDRIES Insulation 100mm Think "Isotherm" fibre blanket in cavity of partitioning (partitions elsewhere)	m²	17	R	

Bill No. 10	1		
Ceilings, Partitions & Access Flooring			
COLLECTION			
Total Brought Forward from Page No.	Page No 50 51 52		Amount
Carried to Sum	mary	R	
Bill No. 10 Ceilings, Partitions & Access Flooring 1808Q057-BOQ, Provisional Bills of Quantities			

m o			Quantity	Rate	Amount	
-	BILL N	IO. 11				
	FLOOP	R COVERINGS, WALL LININGS, ETC				
	Note:	Tenderers are advised to study the General Preambles for Trades 2017 published by ASAQS before pricing this bill				
	Note:	Tenderers are advised to study the Specifications Of Materials And Methods To Be Used as published by the Department of Public Works				
	Note:	Unless otherwise stated herein, all items in this Bill shall be deemed to be a fixed price for the duration of the project				
	<u>SUPPL</u>	EMENTARY PREAMBLES				
	Fixing					
	Floor co fixed with the floor	overings, wall linings, etc shall, where applicable, be th adhesive as recommended by the manufacturers of ring, linings, etc				
	FLOOP	R COVERINGS				
	<u>300 x 30</u>	00mm (PC R180/m²) Semi-flexible vinyl tiles				
А	On floor	rs m	2 8			
		Carried to Summary		R		
	Bill No. Floor Co 1808Q05	11 overings, Wall Linings, etc 57-BOQ, Provisional Bills of Quantities				

ltem No			Quantity	Rate	Amount
	BILL N	<u>IO. 12</u>			
	STRUC	CTURAL STEELWORK			
	Note:	Tenderers are advised to study the General Preambles for Trades 2017 published by ASAQS before pricing this bill			
	Note:	Tenderers are advised to study the Specifications Of Materials And Methods To Be Used as published by the Department of Public Works			
	Note:	Unless otherwise stated herein, all items in this Bill shall be deemed to be a fixed price for the duration of the project			
	<u>SUPPL</u>	LEMENTARY PREAMBLES			
	<u>Descrip</u>	tions			
	Descrip washers	tions of bolts shall be deemed to include nuts and s			
	Descrip deemed embedd	tions of L-shaped and U-shaped anchor bolts shall be d to include bending, threading, nuts and washers and ding in concrete			
	Descrip anchors and mo	tions of expansion anchors and bolts and chemical s and bolts shall be deemed to include nuts, washers rtices in brickwork or concrete			
	Notwith Standar black be with stru descript	standing item 2, measurement rule 10, page 67 of the rd System of Measuring Building Work, welding, holes, olts, nuts, washers, rivets, bolting and riveting integral uctural steelwork shall be deemed to be included in the tions of the relevant work			
	Shop D	rawings			
	A comp archited	lete set of shop drawings shall be submitted to the ct/engineer for approval before fabrication commences.			
		Carried to Collection		R	
	Bill No. Structur 1808Q05	12 ral Steelwork 57-BOQ, Provisional Bills of Quantities			

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	GALVANISED STEEL COLUMNS AND BEAMS				
	Welded columns in single lengths with flat base, cap, bearer and connection plates, bolted to concrete				
А	114 x 5mm Circular Hollow Section columns	kg	30		
	GALVANISED STEEL PLATES, ETC				
	Note : Tenderers are referred to engineer's drawings numbered PS-22-023-000 to PS-22-023-007 accompanying these bills of quantities for tender purposes				
	Welded base plates, etc to timber pergolas				
В	Base plate assembly consisting of two 180 x 165 x 5mm thick plates with each plate two times holed for M12 bolts and welded to 180 x 165 x 5mm thick base plate, four times holed for M16 chemical anchors, bolted to side of brickwork (chemical anchors elsewhere)	No	4		
С	Base plate assembly consisting of two 248 x 115 x 6mm thick plates with each plate two times holed for M12 bolts and welded to $248 \times 150 \times 6$ mm thick base plate, four times holed for M12 chemical anchors, bolted to top of concrete (chemical anchors elsewhere)	No	2		
D	Base plate assembly consisting of two 250 x 115 x 5mm thick plates with each plate two times holed for M12 bolts and welded to $234 \times 116 \times 5$ mm thick base plate, four times holed for M12 chemical anchors, bolted to top of concrete (chemical anchors elsewhere)	No	1		
E	Base plate assembly consisting of two 290 x 170 x 5mm thick plates with each plate four times holed for M12 bolts and welded to 290 x 165 x 5mm thick base plate, four times holed for M12 chemical anchors, bolted to side of brickwork (chemical anchors elsewhere)	No	6		
F	Base plate assembly consisting of two $390 \times 140 \times 5$ mm thick plates with each plate two times holed for M12 bolts and welded to $185 \times 145 \times 5$ mm thick base plate, four times holed for M12 chemical anchors, bolted to top of concrete (chemical anchors elsewhere)	No	17		
G	Base plate assembly consisting of two 400 x 145 x 5mm thick plates with each plate two times holed for M12 bolts and welded to 275 x 145 x 5mm thick base plate, four times holed for M12 chemical anchors, bolted to top of concrete (chemical anchors elsewhere)	No	5		
			Ū		
	Carried to Collection			R	
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A	Anchor assembly consisting of two $345 \times 145 \times 5$ mm thick plates with each plate four times holed for M16 bolts and welded to $255 \times 145 \times 5$ mm thick base plate, four times holed for M16 chemical anchors, embedded in top of concrete (casting in by others and chemical anchors elsewhere)	No	2		
	Connection plates, bolts, etc to pergolas				
В	Fixing connections as per Engineer's Detail 2 (Gate House)	No	2		
С	Fixing connections as per Engineer's Detail 2 (Manager's House)	No	10		
D	Fixing connections as per Engineer's Detail 3 (Admin Building)	No	85		
E	Fixing connections as per Engineer's Detail 3 (Gate House)	No	8		
F	Fixing connections as per Engineer's Detail 4 (Gate House)	No	2		
G	Fixing connections as per Engineer's Detail 4 (Manager's House)	No	36		
н	Fixing connections as per Engineer's Detail 5 (Admin Building)	No	33		
J	Fixing connections as per Engineer's Detail 5 (Gate House)	No	18		
к	Fixing connections as per Engineer's Detail 6 (Admin Building)	No	1		
L	Fixing connections as per Engineer's Detail 6 (Gate House)	No	4		
м	Fixing connections as per Engineer's Detail 8 (Gate House)	No	6		
N	Fixing connections as per Engineer's Detail 9 (Gate House)	No	4		
	BOLTS, FASTENERS, ETC				
Ρ	12mm Diameter chemical anchor	No	120		
Q	16mm Diameter chemical anchor	No	24		
R	12mm Diameter U-shaped threaded anchor bolt 350mm girth embedded in top of concrete	No	20		
	SHOP DRAWINGS				
s	Provision for shop drawings		ltem		
	Carried to Collection			R	
	Bill No. 12 Structural Steelwork 1808Q057-BOQ, Provisional Bills of Quantities				

Bill No. 12				
Structural Steelwork				
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1			Quantity	Rate	Amount
	BILL N	I <u>O. 13</u>			
	<u>METAI</u>	<u>_WORK</u>			
	Note:	Tenderers are advised to study the General Preambles for Trades 2017 published by ASAQS before pricing this bill			
	Note:	Tenderers are advised to study the Specifications Of Materials And Methods To Be Used as published by the Department of Public Works			
	Note:	Unless otherwise stated herein, all items in this Bill shall be deemed to be a fixed price for the duration of the project			
	<u>SUPPL</u>	EMENTARY PREAMBLES			
	Descrip	tions of bolts, anchors, etc			
	Descrip washers	tions of bolts shall be deemed to include nuts and s			
	Descriptions of expansion anchors and bolts and chemical anchors and bolts shall be deemed to include nuts, washers and mortices in brickwork or concrete				
	ltems de exclude	escribed as "holed for bolt(s)" shall be deemed to the bolts unless otherwise described			
	Items de screwin 600mm	escribed as "plugged" shall be deemed to include g to fibre, plastic or metal plugs at not exceeding centres			
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R

<u>Aluminiu</u>	um doors, windows, etc				
Doors and windows shall comply with AAAMSA design criteria					
Glazing single cl window SAGGA schedule	shall comply with SAGGA regulations. Glass shall be ear safety glass as described in the headings to descriptions. Glass thickness shall comply with regulations irrespective of thicknesses shown on the es/drawings				
Doors an plastic a have be	nd windows shall be supplied with protective tape and nd shall be removed only once surrounding trades en completed				
For purp annexed	oose made windows and doors, refer to drawings to these bills of quantities				
The follo	owing certificates shall be provided prior to acement of site work:				
1	A copy of the relevant AAAMSA Performance Test Certificate from the manufacturer/contractor supplying the architectural aluminium product				
2	A Certificate of Conformance confirming that anodising or powder coating has been processed in accordance with SANS 999 and SANS 1796 respectively				
3	A powder guarantee of not less than 15 years issued by the powder manufacturer. The specific conditions contained in this guarantee shall form part of the powder coating process				
4	A Certificate of Conformance confirming that glazing has been installed in accordance with SANS 0137, ensuring that safety glazing materials have been installed in the mandatory areas and that each individual pane of safety glazing materials has been permanently marked				
5	A warranty from the manufacturer of the laminated safety glass and/or hermetically sealed glazing units guaranteeing the products against delamination and colour degradation for a period of not less than five years				
	Carried to Collection				
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	ALUMINIUM WINDOWS, DOORS, ETC				
	Note: Tenderers are referred to architect's drawings numbered AD 215 - 216 Rev B & AD 225 - 226 Rev B accompanying these bills of quantities for tender purposes				
	<u>Powder coated casement window units as per architect's</u> details, complete with subframes, 30 x 30mm aluminium angles, damp proofing, ironmongery, glass, sealing, etc and fixing to brickwork or concrete				
А	Window 570 x 970mm high (Manager's House: W04, W05)	No	2		
В	Window 900 x 800mm high (Manager's House: W08)	No	1		
С	Window 1,100 x 590mm high (Admin Building: W02)	No	1		
D	Window 1,500 x 950mm high (Manager's House: W07)	No	1		
E	Window 1,500 x 1,250mm high (Manager's House: W01, W02, W03, W06)	No	4		
F	Window 1,770 x 590mm high (Admin Building: W01)	No	1		
	ALUMINIUM SWING DOORS				
	Note: Tenderers are referred to architect's drawings numbered AD 215 - 216 Rev B & AD 225 - 226 Rev B accompanying these bills of quantities for tender purposes				
	Powder coated swing doors as per architect's details, complete with subframes, aluminium angle, damp proofing, ironmongery, glass, sealing, etc and fixing to brickwork or concrete				
G	Single door 1,500 x 2,100mm high overall (Manager's House: D01)	No	1		
Н	Double door 1,600 x 2,100mm high overall (Admin Building: D02)	No	1		
J	Double door 2,500 x 2,100mm high overall (Manager's House: D02)	No	1		
	Powder coated swing doors as per architect's details, complete with subframes, aluminium angle, damp proofing, ironmongery, sealing, etc and fixing to brickwork or concrete				
к	Single door 900 x 2,100mm high (Admin Building: D04 & Manager's Building: D03)	No	2		
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	Note: Tenderers are referred to architect's drawings numbered AD 205 - 207 Rev B & AD 225 - 226 Rev B accompanying these bills of quantities for tender purposes <u>Powder coated sliding doors as per architect's details,</u> <u>complete with subframes, ironmongery, aluminium angle,</u> <u>damp proofing, glass, sealing, etc and fixing to brickwork or</u> <u>concrete</u>				
A [Powder coated sliding doors as per architect's details, complete with subframes, ironmongery, aluminium angle, damp proofing, glass, sealing, etc and fixing to brickwork or concrete				
A [[
	Door 1,600 x 2,100mm high (Admin Building: D06)	No	1		
В	Door 1,680 x 2,480mm high (Gate House: D01)	No	1		
С	Door 2,000 x 2,480mm high (Gate House: D06)	No	1		
4	ALUMINIUM FRAMED AND UNFRAMED SHOWER CUBICLE PANELS AND DOORS ETC				
<u>F</u> <u>c</u> <u>t</u> <u>\</u>	Powder coated aluminium framed shower cubicle panels and doors with frames, pivot hinges, cleats, stops, etc and 6mm toughened clear safety glass, plugged to tiled walls and sealed with silicone sealant				
D	Swing door 1,100 x 1,860mm high	No	1		
E	Swing door 1,200 x 1,860mm high	No	1		
1	ALUMINIUM ROLLER SHUTTERS ETC				
۲ بر t	Note: Tenderers are referred to architect's drawings numbered AD 215 - 216 Rev B & AD 225 - 226 Rev B accompanying these bills of quantities for tender purposes				
<u>F</u> <u>t</u>	Powder coated roller shutters with 76mm slats (18kg/m²), fixed to timber frame				
F N	Manual push-up slatted roller shutter for 2,680 x 2,400mm high opening (Manager's House: GR01)	No	1		
<u>F</u> <u>r</u> <u>e</u>	Roller shutters previously set-aside from White Shed and modified, fixed to and including timber frame (removal elsewhere)				
G M	Manual sectional overhead push-up roller shutter for 3,030 x 2,575mm high opening (Admin Building: GR02 & GR03)	No	2		
H M	Manual sectional overhead push-up roller shutter for 3,080 x 2,130mm high opening (Admin Building: GR01)	No	1		
	Carried to Collection			P	
E	Bill No. 13				
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	ALUMINIUM SHOPFRONTS				
	Note: Tenderers are referred to architect's drawings numbered AD 225 - 226 Rev B accompanying these bills of quantities for tender purposes				
	Powder coated shopfronts complete with subframes, aluminium angle, ironmongery, glass, sealing, etc and fixing to brickwork or concrete				
A	Shopfront 1,500 x 2,100mm high with one single door 900 x 2,100mm high (Admin Building: D05)	No	1		
	Carried to Collectio	n		R	
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Bill No. 13				
Metalwork				
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ו			Quantity	Rate	Amount	
	<u>BILL N</u>	IO. 14				
	PLAST	TERING				
	Note:	Tenderers are advised to study the General Preambles for Trades 2017 published by ASAQS before pricing this bill				
	Note:	Tenderers are advised to study the Specifications Of Materials And Methods To Be Used as published by the Department of Public Works				
	Note:	Unless otherwise stated herein, all items in this Bill shall be deemed to be a fixed price for the duration of the project				
	<u>SUPPL</u>	EMENTARY PREAMBLES				
	GRANC	DLITHIC				
	Method					
	The me or the b	thod to be used shall be either the monolithic method onded method				
	<u>Prepara</u>	ation				
	For gran be swep the slab be remo For gran hardene mechar and swe wetted a granoliti	nolithic applied monolithically, the concrete floor shall of clean after bleeding of the concrete has ceased and of has begun to stiffen; any remaining bleed water shall oved and the granolithic applied immediately thereafter. nolithic to be bonded to the floor slab after it has ed, the slab surface shall be hacked (preferably by nical means) until all laitance, dirt, oil, etc is dislodged ept clean of all loose matter. The slab shall then be and kept damp for at least six hours before applying the hic				
	<u>Mix</u>					
	Granolit 41MPa. and sha Where t of the c size cor	thic shall attain a compressive strength of at least . The coarse aggregate shall comply with SANS 1083 all generally be capable of passing a 10mm mesh sieve. the thickness of the granolithic exceeds 25mm, the size oarse aggregate shall be increased to the maximum mpatible with the thickness of the granolithic				
		Carried to Collection		R		
	Bill No. Plasterii 1808Q05	14 ng 57-BOQ, Provisional Bills of Quantities				

	Panels			
	Granolithic shall be laid in panels not exceeding 14m ² for monolithic finishes, not exceeding 9,5m ² for bonded finishes and not exceeding 6m ² for all external granolithic. Wherever possible, panels shall be square but at no time should the length of the panel exceed 1,5 times its width			
	Where possible joints between panels shall be positioned over joints in the floor slab and shall be at least 3mm wide through the full thickness of the finish, separated by strips of wood or fibreboard and finished with V-joints			
	Laying			
	Monolithic granolithic shall be applied to the partially set slab and thoroughly compacted and lightly wood floated to the required levels			
	Bonded granolithic shall be applied to the slab after applying a 1:1 sand-and-cement slurry brushed over the surface and allowed to partially set before applying the granolithic. The granolithic shall be throughly compacted and lightly wood floated to the required levels			
	After wood floating, the monolithic and bonded granolithic shall remain undisturbed until bleeding has ceased and the surface has stiffened. Any remaining bleed water and laitance shall then be removed and the surface steel trowelled or power floated			
	Curing, seasoning and protection			
	Granolithic shall be covered with clean hessian with waterproof building foil over and kept wet for at least seven days after laying			
	Colour			
	Coloured granolithic shall be tinted with an approved colouring pigment mixed into a true and even colour			
	SCREEDS			
	Screeds wood floated, on concrete			
A	30mm Thick on slabs m ²	7		
В	Average 30mm thick on floors with upper surface to falls and currents m ²	2		
	Carried to Collection Bill No. 14		R	
	Plastering 1808Q057-BOQ, Provisional Bills of Quantities			

В

	GRANOLITHIC			
	Black granolithic, on concrete			
А	45mm Thick on floors and landings m	266		
В	45mm Thick on treads and risers of stairs m	2 5		
	INTERNAL PLASTER			
	Cement plaster wood floated for tiles, on brickwork			
С	On walls m	² 69		
D	On narrow widths not exceeding 300mm wide m	2 3		
	Cement plaster steel trowelled on brickwork			
Е	On walls n	2 70		
F	On narrow widths not exceeding 300mm wide m	2 5		
	EXTERNAL PLASTER			
	Cement plaster steel trowelled, on brickwork			
G	On walls m	2 234		
н	On narrow widths not exceeding 300mm wide m	2 6		
	Cement plaster steel trowelled, on concrete			
J	On narrow widths not exceeding 300mm wide m	2 1		
	Carried to Collection		R	
	Bill No. 14			
	Plastering 1808Q057-BOQ, Provisional Bills of Quantities			

Bill No. 14				
Plastering				
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ltem No			Quantity	Rate	Amount
	BILL N	<u>O. 15</u>		P	
	TILING				
	Note:	Tenderers are advised to study the General Preambles for Trades 2017 published by ASAQS before pricing this bill			
	Note:	Tenderers are advised to study the Specifications Of Materials And Methods To Be Used as published by the Department of Public Works			
	Note:	Unless otherwise stated herein, all items in this Bill shall be deemed to be a fixed price for the duration of the project			
	<u>SUPPL</u>	EMENTARY PREAMBLES			
	Patterns	2			
	Unless of joints in	otherwise described, tiles shall be laid with continuous both directions			
	<u>Fixing</u>				
	Unless of elsewhe columns backing be deen	described as "fixed with adhesive to plaster (plaster ere)" descriptions of tiling on brick or concrete walls, s, etc shall be deemed to include 1:4 cement plaster and descriptions of tiling on concrete floors etc shall ned to include 1:3 plaster bedding			
	Tiling de concrete coat	escribed as "fixed with adhesive on power floated e" shall be deemed to include for approved tiling key-			
	Ceramic grouted by the m	c, porcelain, marble and granite tiles are to be fixed and with suitable adhesives and grouts as recommended nanufacturer of the tiles			
	<u>Grouting</u>	<u>a joints</u>			
	Joints to	be 3 to 5mm maximum width			
		Carried to Collection		R	
	Bill No.	15			
	1808Q05	7-BOQ, Provisional Bills of Quantities			

	Prime Cost (PC) Sums				
	Prime Cost (PC) Sums means an amount of money provided in the bills of quantities for material and goods to be obtained from a supplier nominated by the architect and to be fixed by the contractor				
	The prime cost amount shall be omitted from the contract sum and the amounts actually paid by the contractor in respect of the purchase of the nett quantity of such items including delivery to site shall be added to the contract sum				
	The contractor has to allow for labour, profit and waste in his rate over and above the PC amount				
	The contractor is to price based on Grade 1 full bodied and rectified tiles				
	WALL TILING				
	<u>300 x 300mm Porcelain tiles (PC R250/m²) fixed with adhesive</u> to plaster (plaster elsewhere) and flush pointed with tinted grout				
А	On walls	m²	51		
в	On narrow widths not exceeding 300mm wide	m²	1		
с	Fair exposed cutting and fitting around rectangular handrail, baluster, etc not exceeding 300mm girth	No	2		
D	Fair exposed cutting and fitting around pipe not exceeding 100mm external diameter	No	13		
E	Fair exposed cutting and fitting around pipe exceeding 100mm and not exceeding 150mm external diameter	No	4		
	<u>300 x 300mm Porcelain tiles (PC R250/m²) fixed with adhesive</u> to plaster (plaster elsewhere) and flush pointed with tinted waterproof grout				
F	On walls	m²	13		
G	Fair exposed cutting and fitting around pipe not exceeding 100mm external diameter	No	4		
	Carried to Collection			R	
	Bill No. 15 Tiling				 =
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1	600 v 600mm Davadain tilas (DC D450/m²) fived with adhesive	1		1	1	
	to plaster (plaster elsewhere) and flush pointed with tinted					
	grout					
A	On walls	m²	4			
	FLOOR TILING					
	<u>300 x 300mm Ceramic tiles (PC R250/m²) fixed with adhesive</u> to screed (screed elsewhere) and flush pointed with tinted waterproof grout					
В	On shower floors	m²	2			
	SUNDRIES					
	<u>"Kirk marketing" or other equal and approved aluminium</u> dividing strips, edge trims, etc					
С	10mm Straight edge trim (code SQE100)	m	45			
D	28mm Transition cover (code ACTC280)	m	3			
	Carried to Collection			R		
	Bill No. 15					=
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Bill No. 15						
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Tiling						
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n			Quantity	Rate	Amount	
	BILL N	IO. 16				
	PLUME	BING AND DRAINAGE				
	Note:	Tenderers are advised to study the General Preambles for Trades 2017 published by ASAQS before pricing this bill				
	Note:	Tenderers are advised to study the Specifications Of Materials And Methods To Be Used as published by the Department of Public Works				
	Note:	Unless otherwise stated herein, all items in this Bill shall be deemed to be a fixed price for the duration of the project				
	<u>SUPPL</u>	EMENTARY PREAMBLES				
	Wire gra	atings				
	Descrip wire bal	tions of gutter outlets etc shall be deemed to include loon gratings				
	<u>Stainles</u>	s steel basins, sinks, wash troughs, urinals, etc				
	Stainles worktop	s steel for economy basins, domestic sinks and s shall be Type 430 (17/0)				
	Stainles institutio	es steel for urinals, basins, quality sinks, wash troughs, onal equipment, etc shall be Type 304 (18/8)				
	Units sh tiling ke	all have standard aprons on all exposed edges and ys against walls where applicable				
	<u>Sealing</u>	of edges				
	Outer eo sealed a	dges of sinks, basins, baths, urinals, etc are to be against adjacent surfaces with approved silicone				
	PVC-U	pipes and fittings				
	Sewer a sealed v	and drainage pipes and fittings shall be jointed and with butyl rubber rings				
	Soil, wa jointed o	ste and vent pipes and fittings shall be solvent weld or sealed with butyl rubber rings				
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PVC-U pressure pipes and fittings

Pipes of 50mm diameter and smaller shall be plain ended with solvent welded uPVC loose sockets and fittings

Pipes of 63mm diameter and greater shall have sockets and spigots with push-in type integral rubber ring joints. Bends shall be PVC-U and all other fittings shall be cast iron, all with similar push-in type joints

High density polyethylene (HDPe) pipes and fittings

Pipes shall be type IV and of the class specified with compression fittings

Polypropylene pipes

Polypropylene pipes 54mm diameter and smaller shall be seamless copper coloured Class 16 pipes jointed with heat welded thermoplastic or where so described compression fittings

Pipes shall be firmly fixed to walls, etc with coloured nylon snap-in pipe clips with provision for accommodating thermal movement and jointed and fixed strictly in accordance with the manufacturer's instructions

Copper pipes

Pipes shall be hard drawn and half-hard pipes of the class described. Class 0 (thin walled hard drawn) pipes shall not be bent. Class 1 (thin walled half-hard), Class 2 (half-hard) and Class 3 (heavy walled half-hard) pipes shall only be bent with benders with inner and outer formers. Fittings to copper waste, vent and anti-syphon pipes, capillary solder fittings and compression fittings shall be "Cobra Watertech" type. Capillary solder fittings shall comply with ISO 2016

Copper pipes are to be installed in accordance with the latest revision of the Code of Practice for Copper Plumbing soldering techniques. Flux, solder, etc to be strictly in accordance with the manufacturer's requirements with special attention to copper flux composition

Reducing fittings

Where fittings have reducing ends or branches they are described as "reducing" and only the largest end or branch size is given. Should the contractor wish to use other fittings and bushes or reducers he may do so on the understanding that no claim in this regard will be entertained

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Fixing of pipes Unless specifically otherwise stated, descriptions of pipes shall be deemed to include fixing to walls, etc, casting in, building in or suspending not exceeding 1m below suspension level Paper wrapping to pipes Pipes chased into brickwork must be wrapped with two layers of stout brown paper tied with wire. Rates are to include for wrapping around joints and fittings Disinfection of water pipework Water pipework is to be disinfected at completion "Densyl" petrolatum anti-corrosion tape Pipes to be taped shall be coated with the appropriate primer and the tape shall be applied in the appropriate widths and with 25mm overlaps Couplings and fittings to pipes shall be taped in strict accordance with the manufacturer's instructions Prices for wrapping of pipes shall include for all work as described to couplings in the length Laying, backfilling, bedding, etc of pipes Pipes shall be laid and bedded in accordance with manufacturers' instructions and trenches shall be carefully backfilled Where no manufacturers' instructions exist, pipes shall be laid in accordance with the relevant section of SANS 2001 General Descriptions of service pipes and flexible connecting pipes shall be deemed to include connections to taps, cisterns, etc. and to steel pipes (adaptors for connections to copper pipes, etc are given separately) Descriptions of WC pans, slop hoppers, etc shall be deemed to include for joints to soil pipes (pan connectors are separately measured) **Carried to Collection** Bill No. 16 Plumbing & Drainage 1808Q057-BOQ, Provisional Bills of Quantities

	Drawings				
	Where required, the contractor shall prepare an updated set of as-built drawings. At completion of the contract the contractor shall hand these drawings to the principal agent for reproducing onto the originals for handing over to the employer (provision for allowance of as-built drawings elsewhere)				
	RAINWATER DISPOSAL				
	<u>"Watertite" or other equal and approved seamless aluminium</u> prepainted gutters and rainwater pipes				
А	100 x 80mm Ogee roof gutters	m	105		
в	Extra over gutter for stopped end	No	20		
с	Extra over gutter for angle	No	2		
D	Extra over gutter for outlet for 80mm diameter pipe	No	16		
Е	80mm Diameter rainwater pipes	m	60		
F	Extra over rainwater pipe for bend	No	16		
G	Extra over rainwater pipe for shoe	No	16		
н	Extra over rainwater pipe for eaves or plinth offset	No	16		
	PRECAST CONCRETE CHANNELS				
J	220 x 100mm Channel 1000mm long with segmental channel with one open end and one stopped end formed therein and finished smooth, including placing in position under shoe of rainwater pipe on a well rammed earth bottom	No	16		
	SOIL DRAINAGE				
	Precast gulleys				
к	120mm Gulley not exceeding 500mm deep	No	7		
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	SANITARY FITTINGS				
	<u>WHB</u>				
	<u>"Vaal" or other equal and approved vitreous china wash hand basins</u>				
A	455 x 570mm "Weaver" vanity basin mounted in vanity slab or cupboard top (vanity slab or cupboard elsewhere) (Code 704201/702500)	No	1		
	<u>wc</u>				
	"Vaal" or other equal and approved sanitary ware vitreous china WC suites				
В	"Quartz" close-coupled WC suite comprising pan with double flap heavy duty plastic seat and matching 9 litre cistern (code 771363)	No	4		
	<u>SINK</u>				
	Stainless steel (removal elsewhere)				
С	1,200 x 500mm Sink with two 350 x 280mm end bowls on cupboard (new cupboard elsewhere)	No	1		
	"Franke" or other equal and approved				
D	340mm Diameter type "Rondo" drop-in preparation bowl (Code: RDX61034)	No	1		
	WASTE UNIONS ETC				
	"Cobra Watertech" or equal and approved				
Е	32mm Chromium plated pop-up basin waste (Code 302-32)	No	1		
	TRAPS ETC				
	<u>uPVC</u>				
F	32mm Rubber "P" or "S"trap	No	1		
	"Cobra Watertech" traps or other equal and approved				
G	40mm "373" Shower floor trap with chrome plated grating	m	2		
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	TAPS, VALVES, ETC				
	"Cobra Watertech" or other equal and approved				
А	15mm Star hose bibtap (code: 107 EC-15)	No	5		
	"Franke" or other equal and approved				
В	"Saturn" chromium plated basin mixer (FRA-1150037)	No	2		
	"Hansgrohe" or other equal and approved				
С	"Logis E" chromium plated shower mixer, including full "Talis" set (HG-71609000)	No	2		
D	"Chroma 1" chromium plated shower head (HG-28492002)	No	2		
Е	15mm "Classic" chromium plated shower arm (HG-27411000)	No	2		
F	"Logis E" chromium plated basin mixer (HG-71160003)	No	2		
	DRIP TRAYS, TANKS, ETC				
	"Rainqueen" or other equal and approved corrugated galvanised mild steel drinking water tanks with vinyl lining internally, including 40mm threaded outlet, 40mm threaded overflow, eye bolts, etc				
G	700 Litre "Streamline" tank with lining, 800mm diameter x 1,300mm high, approximately 900mm above ground level	No	1		
Н	1100 Litre circular tank 900mm diameter x 1,800mm high, approximately 730mm above ground level	No	1		
	<u>SLEEVES</u>				
	PVC sleeves for pipes exceeding 100mm and not exceeding 200mm external diameter				
J	Sleeve not exceeding 250mm long	No	4		
	AS-BUILT DRAWINGS				
к	Provision of as-built drawings		Item		
	Carried to Collection				
	Bill No. 16				
	Plumbing & Drainage 1808Q057-BOQ, Provisional Bills of Quantities				

Bill No. 16			
Plumbing & Drainage			
COLLECTION			
	Page No		Amount
Total Brought Forward from Page No.	73		
	74		
	75		
	76		
	77		
	78		
Carried to Summary		R	
Bill No. 16 Plumbing & Drainage 1808Q057-BOQ, Provisional Bills of Quantities			

		Quantity	Rate	Amount
BILL N	<u>NO. 17</u>			
MECH	ANICAL - WET SERVICES			
Note:	Tenderers are advised to study the General Preambles for Trades 2017 published by ASAQS before pricing this bill			
Note:	Tenderers are advised to study the Specifications Of Materials And Methods To Be Used as published by the Department of Public Works			
Note:	Unless otherwise stated herein, all items in this Bill shall be deemed to be a fixed price for the duration of the project			
PRELI	MINARIES AND GENERAL			
<u>1.1 CO</u>	MPLIANCE WITH CONTRACT			
<u>Allow fo</u> with the Prelimit	or costs directly associated with expenses to comply e Conditions of Contract and the Main Contract naries, excluding the items detailed below (1.2 to 1.6)			
1.1.1 F	ixed cost component		SUM	
1.1.2 C	component variable with time for completion (per month)		SUM	
<u>1.2 SIT</u>	E ESTABLISHMENT			
1.2.1 F	ixed cost component		SUM	
1.2.2 C	component variable with time for completion (per month)		SUM	
<u>1.3 CO</u>	NTRACT ADMINISTRATION			
1.3.1 F	ixed cost component		SUM	
1.3.2 C	component variable with time for completion (per month)		SUM	
<u>1.4 PR</u>	OVISION OF PERFORMANCE BOND			
1.4.1 F	ixed cost component		SUM	
1.4.2 C	component variable with time for completion (per month)		SUM	
	Carried to Collection		R	
Bill No. Mechar 1808Q0	17 nical - Wet Services 57-BOQ, Provisional Bills of Quantities			

1	1.5 INSURANCE				
А	1.5.1 Fixed cost component			SUM	
В	1.5.2 Component variable with time for completion (per month)			SUM	
	1.6 DETAILS OF ANY OTHER ITEMS CONTRACOR MAY WISH TO TO ADD:				
С	1.6.1 Allowance for overtime/night work			SUM	
	1.6.2				
	1.6.3				
	1.6.4				
	1.6.5				
	PLUMBING				
	GENERAL ALLOWANCE FOR FIXTURES				
	<u>Toilet - WC</u>				
D	DN15 CW Potable Supply	m	21		
Е	DN15 Clamping ring	No	14		
F	Bellow-stop Valve	No	7		
G	1/2" Braided Connection Hose	No	7		
	Wash Hand Basin - WB				
Н	DN15 CW Potable Supply	m	18		
J	DN15 HW Water Supply	m	18		
к	DN15 HW Insulation	m	18		
L	DN15 Clamping ring	No	12		
М	Bellow-stop Valve	No	6		
Ν	1/2" Braided Connection Hose	No	6		
	Carried to Collection			R	
	Bill No. 17 Mechanical - Wet Services 18080057-BOO, Provisional Bills of Quantition				

	Shower - SH			
А	DN15 CW Potable Supply n	6		
В	DN15 HW Water Supply n	6		
с	DN15 HW Insulation n	6		
D	DN15 Clamping ring No	4		
Е	Bellow-stop Valve No	4		
F	1/2" Braided Connection Hose No	4		
	Bath - BA			
G	DN15 CW Potable Supply n	3		
н	DN15 HW Water Supply n	3		
J	DN15 HW Insulation n	3		
к	DN15 Clamping ring No	2		
L	Bellow-stop Valve No	2		
м	1/2" Braided Connection Hose No	2		
	<u>Sink - ST</u>			
N	DN15 CW Potable Supply n	9		
Ρ	DN15 HW Water Supply n	9		
Q	DN15 HW Insulation n	9		
R	DN15 Clamping ring No	6		
s	Bellow-stop Valve No	6		
т	1/2" Braided Connection Hose No	6		
	Water supply to connection point 500mm above FFL			
U	DN15 CW Potable Water Supply n	42		
V	DN15 Clamping ring No	38		
	Carried to Collection		R	
	Bill No. 17 Mechanical - Wet Services 1808Q057-BOQ, Provisional Bills of Quantities			

Α	Gate Valve	No	19	
	DISTRIBUTION			
	Piping - Cold Water Supply			
В	DN15 CW Potable Supply	m	25	
С	DN20 CW Potable Supply	m	29	
D	DN25 CW Potable Supply	m	20	
	Piping - Hot Water Supply & Insulation			
Е	DN15 HW Potable Supply	m	22	
F	DN15 HW Insulation	m	22	
G	DN20 HW Potable Supply	m	22	
н	DN20 HW Insulation	m	22	
	Fittings - 90 Degree Elbows			
J	DN15	No	21	
к	DN20	No	15	
L	DN25	No	8	
	<u>Fittings - T-pieces - Equal Sizes</u>			
М	DN15 to DN15	No	8	
Ν	DN20 to DN20	No	14	
Ρ	DN25 to DN25	No	5	
	Fittings - Piping Reducers			
Q	DN20 to DN15	No	11	
R	DN25 to DN15	No	4	
s	DN25 to DN20	No	4	
	Carried to Collection			R
	Bill No. 17 Mechanical - Wet Services 1808Q057-BOQ, Provisional Bills of Quantities			

R

	Fittings - Clamping Rings			
А	DN15 Rings	No	22	
В	DN20 Rings	No	24	
С	DN25 Rings	No	10	
	DRAINAGE			
	<u>Toilet - WC</u>			
D	DN110 uPVC piping	m	7	
Е	DN110 pan connector	No	7	
F	DN110 access bend	No	7	
G	DN110 Two-way vent valve	No	7	
	<u>Wash Hand Basin - WB</u>			
Н	DN40 uPVC piping	m	6	
J	DN40 Deep seal "P" or "S" trap	No	6	
к	DN40 access bend	No	6	
	Shower - SH			
L	DN50 uPVC piping	m	2	
М	DN50 Deep seal "P" or "S" trap	No	2	
Ν	DN50 access bend	No	2	
	Bath - BA			
Ρ	DN50 uPVC piping	m	1	
Q	DN50 Deep seal "P" or "S" trap	No	1	
R	DN50 access bend	No	1	
	<u>Sink - ST</u>			
S	DN40 uPVC piping	m	3	
	Carried to Collection			
	Bill No. 17 Mechanical - Wet Services 1808Q057-BOQ, Provisional Bills of Quantities			

Α	DN40 Deep seal "P" or "S" trap	No	3	
В	DN40 x300mm for double bowl with deep seal "P" trap	No	3	
с	DN40 access bend	No	3	
	<u>Drainage Piping</u>			
D	DN110 uPVC piping	m	14	
Е	DN40 uPVC piping	m	30	
	<u>Fittings - 45 Degree Elbows</u>			
F	DN110 uPVC piping	No	4	
G	DN40 uPVC piping	No	6	
	Fittings - 90 Degree Elbows			
Н	DN110 uPVC piping	No	3	
J	DN40 uPVC piping	No	6	
	Fittings - Junctions			
к	Y-Junction DN40-DN110	No	5	
L	Y-Junction DN110	No	6	
М	Y-Junction DN40	No	2	
	Additional items to bill items			
Ν	Rodding Eyes	No	4	
	HOT WATER GENERATION			
	Managers House			
Ρ	Horizontal Indirect Solar Geyser, 200L, as per drawing schedule	No	1	
Q	Solar Collector Panel, as per drawing schedule	No	1	
R	Solar geyser controller/timer	No	1	
	Carried to Collection Bill No. 17 Mechanical - Wet Services 1808Q057-BOQ, Provisional Bills of Quantities			R

Α	Plant electrical connection	No	1	
В	DN25 mm Strainer and Shut of Valves	No	1	
С	Commissioning	No	1	
	Administration Office			
D	Horizontal Indirect Solar Geyser, 200L, as per drawing schedule	No	1	
Е	Solar Collector Panel, as per drawing schedule	No	1	
F	Solar geyser controller/timer	No	1	
G	Plant electrical connection	No	1	
Н	DN25 mm Strainer and Shut of Valves	No	1	
J	Commissioning	No	1	
	Description Description			R

Bill No. 17			
Mechanical - Wet Services			
COLLECTION			
	Page No		Amount
Total Brought Forward from Page No.	80		
	81		
	82		
	83		
	84		
	85		
	86		
Carried to Summary		R	
Bill No. 17 Mechanical - Wet Services			
1808Q057-BOQ, Provisional Bills of Quantities			

ltem No				Quantity	Rate	Amount	
	<u>BILL NO. 18</u>						
	MECHANICAL - FIRE SE	ERVICES					
	Note : Tenderers are advi Preambles for Trac before pricing this I	sed to study the General les 2017 published by ASAQS pill					
	Note: Tenderers are advi Materials And Meth the Department of	sed to study the Specifications Of ods To Be Used as published by Public Works					
	Note: Unless otherwise s shall be deemed to the project	tated herein, all items in this Bill be a fixed price for the duration of					
	FIRE PROTECTION						1
	SERVICING						
	The reconditioning and serv carried out in accordance wi and SANS 10105-1	cing of fire extinguishers shall be th the requirements of SANS 1475					
А	Overall maintenance, servic pressure testing of fire extin	ing, internal inspection and guishers	No	4			
	Supply and Install Portable I & wall brackets and accessor requirements of SANS 1475	Fire Extinguishers c/w Back Board pries in accordance with the and SANS 10105-1					
В	Install 4.5 kg DCP Fire Extir	guishers	No	2			1
	FIRE SIGNAGE						1
	Photoluminescent signs as SABS stamp of approval. Si aluminium frame and mecha	per SANS 1186-5 with visible gnage to be placed inside nically fixed to the wall					
С	Install Photoluminescent Sig 190x190mm combined)	ns 190 x 380mm (2 off	No	5			
		Carried to Collection			R		_
	Bill No. 18 Mechanical - Fire Services						-
	1808Q057-BOQ, Provisional E	ills of Quantities					1
							1
							I

	Illuminated escape route signs(emergency exit light) as per SANS 1186-3 with visible SABS stamp of approval and emergency back-up battery. Signage to be mechanically fixed to the wall				
A	SABS Approved Emergency Exit Lights	No	2		
	Supply and Install Fire Blanket c/w wall brackets and accessories in accordance with the requirements of SANS 1475 and SANS 10105-1				
в	Fire Blanket	No	2		
	Carried to Collection	ı		R	
	Mechanical - Fire Services 1808Q057-BOQ. Provisional Bills of Quantities				

Mechanical - Fire Services Image: Collection
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Page No Amount 38 89 89 99
Carried to Summary Bill No. 18 Mechanical - Fire Services 1808Q057-BOQ, Provisional Bills of Quantities

		Quantity	Rate	Amount
BILL NO	<u>. 19</u>			
ELECTR	ICAL INSTALLATION			
Note: T P b	enderers are advised to study the General reambles for Trades 2017 published by ASAQS efore pricing this bill			
Note: T N tr	enderers are advised to study the Specifications Of laterials And Methods To Be Used as published by ne Department of Public Works			
Note: U si tř	Inless otherwise stated herein, all items in this Bill hall be deemed to be a fixed price for the duration of his project.			
SUPPLE	MENTARY PREAMBLES			
Specificati	ons, drawings, etc			
Tenderers numbered prepared b bills of qua of the follo conjunctio	are referred to the specification and drawings 1801481-E-001 Rev A to 1801481-E-003 Rev A by Element Consulting Engineers, annexed to these antities for the electrical work, for the full descriptions wing items which are to be read and priced in n with the said specification and drawings			
Distributio	n boards etc			
Rates for c jumpers, n identificatio and workir	distribution boards etc are to include for busbars, eutral bars, internal wiring and connections, circuit on markers, control gear labels, circuit legend cards ng drawings, unless otherwise stated			
Switches,	socket outlets etc			
Rates for s screwing to	switches, socket outlets, etc are to include for outlet boxes, connecting up and cover plates			
Light fitting	<u>15</u>			
Rates for li connecting lamps of th	ight fittings are to include for hanging, fixing and g and for lamp holders and fluorescent tubes and ne type and wattage described			
	Carried to Collection		R	
Bill No. 19 Electrical II 1808Q057-I) nstallation BOQ, Provisional Bills of Quantities			

1	Drawings		
	Allow for 4 sets of operating and maintenance manuals and as-built drawings as per the specification		
	Allow for submission of 3 sets of shop drawings as specified		
	Testing and commissioning		
	Tests are to be done on the systems. Any second fix installations will again be tested on completion		
	The engineer is to witness the start and end of the tests and shall be given 24 hour prior notice of all said tests		
	Labelling and marking		
	Allow for marking and labelling of all the equipment as per the specification		
	PRELIMINARIES AND GENERAL		
	1.1 COMPLIANCE WITH CONTRACT		
	Allow for costs directly associated with expenses to comply with the Conditions of Contract and the Main Contract Preliminaries, excluding the items detailed below (1.2 to 1.6)		
А	1.1.1 Fixed cost component	SUM	
В	1.1.2 Component variable with time for completion (per month)	SUM	
	1.2 SITE ESTABLISHMENT		
С	1.2.1 Fixed cost component	SUM	
D	1.2.2 Component variable with time for completion (per month)	SUM	
	1.3 CONTRACT ADMINISTRATION		
Е	1.3.1 Fixed cost component	SUM	
F	1.3.2 Component variable with time for completion (per month)	SUM	
	1.4 PROVISION OF PERFORMANCE BOND		
G	1.4.1 Fixed cost component	SUM	
	Carried to Collection	R	
	Bill No. 19 Electrical Installation		
	1808Q057-BOQ, Provisional Bills of Quantities		

Α	1.4.2 Component variable with time for completion (per month)	SUM	
	1.5 INSURANCE		
в	1.5.1 Fixed cost component	SUM	
с	1.5.2 Component variable with time for completion (per month)	SUM	
	1.6 DETAILS OF ANY OTHER ITEMS CONTRACOR MAY WISH TO TO ADD:		
	1.6.1		
	1.6.2		
	1.6.3		
	1.6.4		
	1.6.5		
	GENERAL COSTS		
	Cleaning and tidying of the site		
D	Allow for the clearing and tidying of the Site	SUM	
	As built documentation		
E	Allow for the mark up of record drawings, submission of 3 sets of as-built files containing material specifications, DB workshop drawings, COC's, IR scanning report, etc. Files to comply with the Electrical Engineer's specification and requirements	SUM	
	Infrared photographic scanning		
F	Allow for infrared photographic scanning of all DB's and submission of report to Engineer	SUM	
	Labelling		
G	Allow for labelling of all light and plug circuits and Isolators	SUM	
	Repair of incidental damage		
н	Allow for the repair of incidental damage	SUM	
	Carried to Collection	R	
	Bill No. 19 Electrical Installation		=
	1808Q057-BOQ, Provisional Bills of Quantities		

	Inspection, testing and commissioning				
A	Inspection, testing and handing over of the complete installation in the presence of Engineer and certify the results on the Certificate of compliances by an accredited (Master Installation Electrician)			SUM	
	LV RETICULATION, DISTRIBUTION BOARD'S AND WIREWAYS				
	UPGRADING of EXISTING SUPPLY				
В	Allowance for upgrading the existing 40kVA TP to 80kVA TP supply		ltem		
	STANDBY DIESEL GENERATOR				
	Supply, installation, inclusive of all material & waste, fixing materials, hoisting equipment and sundries of a 40kVA Standby Generator				
С	40kVA Standby Diesel Generator complete with integral base tank, all field wiring, control panel installed, with set mounted change over, super sound, weather proof canopy - 60dba, manual fuel pump & hose, including testing and commissioning	No	1		
	LV CABLES (600/1000V. PVC/PVC/SWA/PVC)				
	LV "Aberdare" or equal and approved cables installed in sleeves, on cable tray or within trenches				
D	35mm²/4C/CU	m	25		
Е	16mm²/4C/CU	m	30		
	LV CABLE TERMINATIONS				
	Include glands, shrouds, lugs and all sundries to facilitate neat termination of cables				
F	35mm ² /4C/CU	No	4		
G	16mm ² /4C/CU	No	2		
	Carried to Collection			R	
	Bill No. 19				
	Electrical Installation 1808Q057-BOQ, Provisional Bills of Quantities				

	EARTH CONDUCTOR				
	Include lugs and all sundries to facilitate neat termination of earth conductors				
А	25mm²	m	25		
В	10mm²	m	30		
	EARTH CONDUCTOR TERMINATIONS				
	Termination of bare copper earth continuity conductors including lugs and connections at DB's				
С	25mm²	No	4		
D	10mm ²	No	2		
	DISTRIBUTION BOARDS				
	Service and maintenance of the existing Distribution board. All Distribution Boards's to comply with the quality and general technical specifications				
Е	Main DB	No	1		
F	SDB - Admin Building	No	1		
G	SDB - Manager House	No	1		
Н	SDB - Guard House	No	1		
	TRENCHING AND EXCAVATIONS (600mm wide & 800mm deep)				
J	Pickable soil	m	55		
к	Bedding	m	55		
L	Backfilling	m	55		
	SUPPLY & INSTALL PVC SLEEVES				
М	110 diameter pipe	m	30		
	Carried to Collection			R	
	Bill No. 19 Electrical Installation				
	1808Q057-BOQ, Provisional Bills of Quantities				

	DRAW PITS, MANHOLE ETC				
А	Draw pits, Manhole, including covers etc. exceeding 750mm and not exceeding 1000mm deep	No	3		
	WARNING TAPE				
В	Cable warning tape placed 300mm above cables in excavations for LV reticulation	m	55		
	WIREWAYS AND ACCESSORIES				
	Pricing to include supply, installation and conduiting, outlet box, wiring, crade, cover plate, termination and connection, fixing material, wastage and sundries				
	Powerskirting - Rate shall include 90 deg bends, elbows, end caps, clips, covers, fixing material, wastage, hoisting equipment and sundries				
	"O-Line Rapid 45" or equal and approved				
С	2 Compartment, 2 Tier PVC Powerskirting (White) , including clips and covers	m	17		
D	3x25mm Diameter conduit links in ceiling space, recessed for offices	No	4		
Е	Allow for securing cables to cable way and neatened up and amended			SUM	
	LIGHTING, SMALL POWER AND AUXILIARY INSTALLATION				
	LIGHTING INSTALLATION				
	Include installation of luminaire and lamps, hoisting equipment, fixing materials, wastage, cutting of downlighter holes where required, conduiting, wiring, 5A unswitched socket outlets where applicable, termination and connection, sundries				
	All lighting circuits to be wired in 2.5mm ² Live, Neutral and Earth unless otherwise shown				
	ECG denotes electronic control gear; EMG denotes emergency battery pack and control gear				
	Carried to Collection			R	
	Electrical Installation 1808Q057-BOQ, Provisional Bills of Quantities				

	Light fittings				
А	17W LED decorative ceiling mounted luminaires Internal	No	14		
В	10W LED downlight recessed - Round trim with 3 meter cord + 5amp socket outlet for Manager's house and Admin	No	24		
С	17W LED decorative wall mounted luminaires External	No	32		
D	15W LED decorative wall mounted luminaires Guard house	m	5		
Е	36W/840 LED Batten, Diffused, Surfaced	No	6		
F	LED pendant light for Reception Guard House	No	2		
G	36W/840 LED Vapour proof, Surface, ECG, triphosphor lamps, back reflector, IP65	No	2		
	LIGHT SWITCHES				
	Pricing to include supply, install, terminate, conduiting, outlet box, wiring, crade, coverplate, termination and connection, fixing material, wastage and sundries				
	"Crabtree" or equal and approved				
н	1L, 1W, white cover, recessed	No	21		
J	1L, 2W, white cover, recessed	No	1		
к	2L, 1W, white cover, recessed	No	5		
L	2L, 2W, white cover, recessed	No	3		
М	3L, 2W, white cover, recessed	No	1		
N	Day light switch/photocell. Unit to be housed in a shell of new Round PVC bulkhead fitting (PL9) & Silicone sealed to keep out moisture	No	4		
	SMALL POWER INSTALLATION				
	Pricing to include supply, installation and connection conduiting, outlet box, wiring, crade, coverplate, termination and connection, fixing material, wastage and sundries				
	All SSO circuits to be wired in 2.5mm ² Live, Neutral and Earth unless otherwise shown				
	Carried to Collection			R	
	Bill No. 19 Electrical Installation 1808Q057-BOQ, Provisional Bills of Quantities				

	AC circuits shall be wired in 4 mm ² unless otherwise shown				
	"Crabtree" or equal and approved				
А	1x16A Normal Combination SSO, recessed	No	12		
В	2x16A Normal Combination SSO, recessed	No	8		
С	1x16A RSA plug, in powerskirting	No	4		
D	2x16A Normal SSO, in powerskirting	No	8		
Е	2x16A Normal SSO, Surface mounted Water Tight	No	1		
F	Stove Isolator	No	1		
G	Geyser Isolator	No	2		
	AUXILIARY INSTALLATION				
н	Dual Telkom and Data blank, recessed	No	4		
	Carried to Collectio	n		R	
	Bill No. 19 Electrical Installation				 T
	1808Q057-BOQ, Provisional Bills of Quantities				

Bill No. 19			
Electrical Installation			
COLLECTION			
	Page No		Amount
Total Brought Forward from Page No.	91		
	92		
	93		
	94		
	95		
	96		
	97		
	98		
Carried to Summary		R	
Bill No. 19 Electrical Installation 1808Q057-BOQ, Provisional Bills of Quantities			

ltem No			Quantity	Rate	Amount
	BILL N	<u>10. 20</u>			
	PAINT	WORK			
	Note:	Tenderers are advised to study the General Preambles for Trades 2017 published by ASAQS before pricing this bill			
	Note:	Tenderers are advised to study the Specifications Of Materials And Methods To Be Used as published by the Department of Public Works			
	Note:	Unless otherwise stated herein, all items in this Bill shall be deemed to be a fixed price for the duration of the project			
	<u>SUPPL</u>	LEMENTARY PREAMBLES			
	<u>PREPA</u>	RATORY WORK TO EXISTING WORK			
	<u>Previou</u>	usly painted plastered surfaces			
	Surface complet paint sh filled wi	es shall be thoroughly washed down and allowed to dry tely before any paint is applied. Blistered or peeling nall be completely removed and cracks shall be opened, th a suitable filler and finished smooth			
	<u>Previou</u>	usly painted metal surfaces			
	Surface Blistere bare me	es shall be thoroughly rubbed and cleaned down. Ind or peeling paint shall be completely removed down to etal			
	Previou	usly painted wood surfaces			
	Surface peeling crevices smooth	es shall be thoroughly cleaned down. Blistered or paint shall be completely removed and cracks and s shall be primed, filled with suitable filler and finished			
	PAINT	SPECIFICATIONS			
	All pain manufa	ting shall be done in accordance with architect's and cturer's specifications unless otherwise described			
		Carried to Collection		R	
	Bill No. Paintwo 1808Q05	20 ork 57-BOQ, Provisional Bills of Quantities			

	COLOURS					
	Unless otherwise described paintwork on ceilings shall be deemed to be in the "White" colour group and paintwork on all other components shall be deemed to be in the "Pastel" colour group in accordance with the Natural Colour System (NCS) adopted by the SA National Standards					
	PAINTWORK ETC TO NEW WORK					
	ON INTERNAL FLOATED PLASTER SURFACES					
	<u>One coat "Plascon" plaster primer, with two coats "Polvin", or other equal and approved paint (paint colours in light 'off white' tones)</u>					
A	Walls	m²	124			
В	Walls ("Pastel" colour group)	m²	59			
С	Walls ("Deep" colour group)	m²	30			
	ON EXTERNAL FLOATED PLASTER SURFACES					
	<u>One coat "Plascon" plaster primer, with two coats "Plascon</u> Wall and All" to exterior, or other equal and approved paint (paint colours to medium-dark tones)					
D	Walls	m²	157			
Е	Walls ("Pastel" colour group)	m²	73			
F	Walls ("White" colour group)	m²	46			
	ON GYPSUM PLASTERBOARD SURFACES					
	<u>One coat "Plascon" plaster primer, with two coats "Polvin", or</u> other equal and approved paint (paint colours in light 'off white' <u>tones)</u>					
G	Ceilings and cornices	m²	193			
						-
	Carried to Collection			R		<u> </u>
	Paintwork 1808Q057-BOQ. Provisional Bills of Quantities					
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	ON WOOD SURFACES				
	Two coats "Plascon" wood (UC2) or other equal and approved				
А	Backs of frames, linings, etc not exceeding 300mm wide	m	100		
	One coat primer and two coats "Plascon Velvaglo" or other equal and approved enamel paint				
В	Boarded panelling	m²	33		
	<u>Three coats "Plascon" woodcare water based (X45), or other</u> equal and approved varnish				
С	Doors	m²	22		
D	Door frames etc	m²	6		
Е	Pergola and screen timbers	m²	540		
F	Roof timbers at eaves and verges	m²	53		
G	Skirtings, rails, etc not exceeding 300mm girth	m	189		
	PAINTWORK, ETC TO PREVIOUSLY PAINTED WORK				
	ON INTERNAL FLOATED PLASTER SURFACES				
	Two coats "Polvin", or other equal and approved paint (paint colours in light 'off white' tones), on work in sound condition				
Н	Walls	m²	291		
J	Walls ("Pastel" colour group)	m²	165		
К	Walls ("Deep" colour group)	m²	82		
	ON EXTERNAL FLOATED PLASTER SURFACES				
	<u>Two coats "Plascon Wall and All" to exterior, or other equal</u> and approved paint (paint colours to medium-dark tones), on work in poor condition				
L	Walls	m²	136		
М	Walls ("Pastel" colour group)	m²	80		
	Carried to Collection Bill No. 20			R	
	Paintwork 1808Q057-BOQ, Provisional Bills of Quantities				

Α	Walls ("White" colour group)	m²	40		
	ON PLASTERBOARD SURFACES				
	<u>Two coats low odour premium quality highly washable and stain resistant acrylic emulsion paint, on work in sound condition</u>				
В	Partitions	m²	171		
	ON WOOD SURFACES				
	Two coats "Plascon" woodcare water based (X45) varnish, or other equal and approved varnish, on work in sound condition				
С	Doors	m²	30		
D	Door frames etc	m²	8		
Е	Cupboards	m²	28		
F	Windows, sash doors and fanlights	m²	7		
G	Skirtings, rails, etc not exceeding 300mm girth	m	165		
	Two coats "Harlequin Easy Seal" polyurethane or other equal and approved floor sealer, including sanding down existing tongue and groove floor boards, on work in sound condition				
н	Floors	m²	53		
	ON METAL SURFACES				
	Spot priming bare metal surfaces, one coat alkyd based unniversal undercoat and two coats "Plascon water based velvaglo (VLW/TVW)" paint, or other equal and approved paint, on work in poor condition				
J	On roller shutters including boxes and guide tracks	m²	44		
к	On corrugated roof sheeting	m²	119		
					_
	Carried to Collection			R	
	Carried to Collection Bill No. 20 Paintwork			R	
	Carried to Collection Bill No. 20 Paintwork 1808Q057-BOQ, Provisional Bills of Quantities			R	
	Carried to Collection Bill No. 20 Paintwork 1808Q057-BOQ, Provisional Bills of Quantities			R	

Bill No. 20				
Paintwork				
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Bill No. 20			<u> </u>	
Paintwork 1808Q057-BOQ, Provisional Bills of Quantities				
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ltem No				Quantity	Rate	Amount
	<u>BILL N</u>	<u>IO. 21</u>				
	EXTER	RNAL WORKS				
	Note:	Tenderers are advised to study the General Preambles for Trades 2017 published by ASAQS before pricing this bill				
	Note:	Tenderers are advised to study the Specifications Of Materials And Methods To Be Used as published by the Department of Public Works				
	Note:	Unless otherwise stated herein, all items in this Bill shall be deemed to be a fixed price for the duration of the project				
	FENCI	NG, SCREENS AND GATES				
	Note: To AD 200 these bi	enderers are referred to architect's drawings numbered - 202 Rev B & AD 210 - 212 Rev B accompanying ills of quantities for tender purposes				
	<u>Galvani</u> standar steel bo prepara PS-22-0	sed security fence with bitumen dipped timber ds and posts, stays, gates, etc including galvanised olts, straining eye bolts, etc, site clearance and tion of ground (see Typical Fencing Detail on drawing 023-002 Rev B)				
A	Security wire tied 2,5mm straining	y fence 1,800mm high of 3 strands of 2.24mm straining d to posts and eye bolts and covered with 150 x 150 x welded wire mesh tied at 1,000mm centres to each g wire (posts elsewhere)	m	28		
В	50mm [450 x 4	Diameter intermediate post 1,800mm long, including 50 x 600mm thick concrete base	No	13		
С	100mm 450 x 6	Diameter straining post 1,800m long, including 450 x 00mm thick concrete base	No	8		
D	Fence 2 tied to p 2.15mm straining	2,130mm high of 3 strands of 2.24mm straining wire posts and eye bolts and covered with 150 x 150 x n welded wire mesh tied at 1,000mm centres to each g wire (posts elsewhere)	m	8		
E	120mm 450 x 60	Diameter gum pole post 2,430m long, including 450 x 00mm thick concrete base	No	8		
		Carried to Collection			R	
	Bill No. Externa 1808Q05	21 I Works 57-BOQ, Provisional Bills of Quantities				

	<u>Wrought "SAP" softwood grade 5 timber screens (see Typical</u> Fencing Detail on drawing PS-22-023-002 Rev B)				
A	22 x 70mm Lattes fixed to gum poles at 80mm centres (posts elsewhere)	m	727		
В	100mm Diameter gum pole post 1,800mm long, including 450 x 450 x 600mm thick concrete base	No	29		
с	Extra over for latte screen gate 1,120 x 1,800mm high	No	1		
D	120mm Diameter gum pole post 2,200m long, including 450 x 450 x 600mm thick concrete base	No	4		
	Carried to Collection Bill No. 21	n		R	
	External Works 1808Q057-BOQ, Provisional Bills of Quantities				

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	106						
Carried to Summary		R					
External Works 1808Q057-BOQ, Provisional Bills of Quantities							
SANS Pay Ref	ltem No		Unit	Quantity	Rate	Amount	
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		<u>BILL NO. 22</u>					
		CIVIL WORKS					
		Note: Tenderers are advised to study the SANS 1200: Standardized Specification for Civil Engineering Construction published by the South African Bureau of Standards before pricing this bill					
		Note : Tenderers are advised to study the Specifications Of Materials And Methods To Be Used as published by the Department of Public Works					
		Note : Unless otherwise stated herein, all items in this Bill shall be deemed to be a fixed price for the duration of the project					
		GENERAL COSTS					
		Preliminaries & General					
	A	Civil Works subcontractor's Preliminaries & General		ltem			
SANS 1200C		SITE CLEARANCE					
		SITE CLEARANCE					
8.2.1	В	Clear and grub (to a depth of 100mm)	m³	150			
PSC 8.2.10	С	Remove topsoil to a nominal depth of 100mm (within the road reserve and bulk earthworks areas) and temporarily stockpile and re-spread after the completion of all bulk earthworks	m³	225			
PSC 8.2.11	D	Remove existing water tanks (2500L capacity), temporarily store and maintain for re-use	No	10			
		Carried to Collection Bill No. 22 Civil Works 1808Q057-BOQ, Provisional Bills of Quantities			R		

<u>SANS 1200L</u>		MEDIUM PRESSURE PIPELINES					
<u>SANS 1200DB</u>		EARTHWORKS (PIPE TRENCHES)					
8.3.2		Excavation					
		(a) Excavate in all materials for trenches, backfill, compact and dispose of surplus unsuitable material					
	А	For water pipes with diameter of ≥50mm and up to ≤110mm for depths over 0.0m and up to 1.0m	m	500			
		Exposing existing services					
<u>SANS 1200DB</u> PSDB 8.3.2	В	(d) Excavate by hand in soft and intermediate material to locate and expose existing services parallel to trenches; backfill and compact to minimum of 93% of mod. AASHTO maximum density (100% for sand) in layers of 150mm	m³	10			
PSDB 8.3.2	С	(e) Excavate by hand in soft and intermediate material to locate and expose existing services that crosses trenches; backfill and compact to minimum of 93% of mod. AASHTO maximum density (100% for sand) in layers of 150mm	m³	5			
		Protection of existing services					
<u>SANS 1200DB</u> 8.3.5		(a) Services that intersect a trench					
	D	(i) Sewer line	No	5			
	E	(ii) Stormwater	No	5			
	F	(iii) Telkom lines	No	2			
	G	(iv) Electrical LV cable	No	5			
	н	(v) Electrical 11kv cable	No	5			
<u>SANS 1200DB</u> 8.3.5		(b) Services that adjoin a trench					
		Carried to Collection			R		
		Bill No. 22 Civil Works 1808Q057-BOQ, Provisional Bills of Quantities					

	A	(i) Sewer line	m	10		
	В	(ii) Stormwater	m	10		
	с	(iii) Telkom lines	m	10		
	D	(iv) Electrical LV cable	m	10		
	E	(v) Electrical 11kv cable	m	10		
SANS 1200LB		BEDDING				
8.2.1		Provision of bedding from trench excavation				
	F	Selected granular material	m³	60		
	G	Selected fill material	m³	150		
SANS 1200LB 8.2.2		Supply only of bedding by importation commercial sources (Provisional)				
8.2.2.3	н	Provide 19mm stone bedding (150mm thick) in wet or soft conditions as instructed by the Engineer	m³	5		
SANS 1200L		MEDIUM PRESSURE PIPELINES				
8.2.1		Supply, lay, joint with sealed spigot and socket joint and bed Class 12 (as per SABS 966-1976) uPVC pressure pipes. Include for disinfecting and testing				
	J	For 50mm diameter	m	500		
<u>SANS 1200L</u> 8.2.2		Extra-over Class 12 uPVC pressure pipes for the supplying, laying, and bedding of specials complete with couplings				
		uPVC bends				
	к	For 50mm x 90 degree	No	6		
	L	For 50mm x 45 degree	No	6		
	М	For 50mm x 22.5 degree	No	8		
		Carried to Collection			R	
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		Cast iron tees				
	А	50 x 50mm Diameter	No	2		
		Cast iron end caps				
	В	50mm Diameter	No	1		
		Valves				
<u>SANS 1200L</u> 8.2.3		Extra-over 8.2.1 for the Supplying, Fixing and Bedding of Valves				
		Supply in valve box on concrete support, joint, including cutting pipes where necessary, with T-piece and adapt with sections of pipe to suit levels including couplings when necessary and tests				
	С	50mm Diameter plain ended gate valves	No	4		
		Anchor and thrust blocks				
<u>SANS 1200L</u> 8.2.11	D	Anchor/thrust blocks and pedestals			SUM	
8.2.13		Valves and hydrant chamber, etc.				
	E	For gate valves (as per details drawing no. 18-016-10-600-T provided)	No	4		
		MISCELLANEOUS				
<u>SANS 1200L</u> PSL 8.2.16	F	Allow for all costs involved in cutting into existing water main to make connection including all fittings	No	1		
PSL 8.2.17		Supply and install markers (in positions as specified by the Engineer)				
	G	For stop valves	No	4		
		Carried to Collection			R	
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<u>SANS 1200L</u> PSL 8.2.18	AB	 (a) Amount allowed provisionally by the Engineer for Supply and Installation of a Water Treatment System Complete (including holding room / container) by a credible Subcontractor (b) Contractor's charge to allow for handling costs and profit (in respect of subitem 2.4.3(a) above) 		ltem	%	350 000.00
SANS 1200LD		<u>SEWER</u>				
SANS 1200DB		EARTHWORKS (PIPE TRENCHES)				
8.3.2		Excavation				
		(a) Excavate in all materials for trenches, backfill, compact and dispose of surplus unsuitable material				
	С	For sewer pipes with diameter of 110mm for depths over 0.0m and up to (and including) 1.5m	m	60		
SANS 1200LB		BEDDING				
8.2.1		Provision of bedding from trench excavation				
	D	Selected granular material	m³	7		
	E	Selected fill material	m³	15		
SANS 1200LD		SEWER				
8.2.1		Supply, lay, joint, bed and test heavy duty (Class 34) uPVC socketed pipes (with butyl rubber "O" rings) in accordance with SANS 791				
	F	For 110mm diameter	m	60		
		Carried to Collection			R	
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SANS 1200LD 8.2.2		Extra-over 8.2.1 for the Supplying, Laying, Bedding, Jointing and Testing of each Special Complete				
	Δ	110mm x 110mm diameter	No	3		
		For Bonds (Hoovy Duty uP)(C)		0		
		110 Denus (Neavy Duly ur VC)	Na	0		
	В	Tiomm x 90 deg		2		
	С	110mm x 45 deg	No	3		
		For End Caps (Heavy Duty uPVC)				
	D	110mm diameter	No	4		
		Rodding Eyes Complete				
	E	Over 0.0m and up to (and including) 1.5m	No	3		
<u>SANS 1200LD</u> 8.2.3		Supply all materials and construct pre-cast concrete manholes for depths:				
	F	Over 0.0m and up to (and including) 1.5m	No	3		
		MISCELLANEOUS				
<u>SANS 1200LD</u> PSL 8.2.13		Allow for all costs involved in demolishing the existing septic infrastructure complete				
	G	(i) For suction manholes	No	3		
	н	(ii) For septic tanks	No	3		
<u>SANS 1200LD</u> PSL 8.2.14		Supply and install new conservancy tanks complete				
	J	For 5000 litre tanks	No	3		
<u>SANS 1200LD</u> PSL 8.2.15	к	Supply and install new suction manholes complete (in positions as specified by the Engineer)	No	3		
		Carried to Collection Bill No. 22 Civil Works 1808Q057-BOQ, Provisional Bills of Quantities			R	

SANS 1200LF		ERF CONNECTIONS (WATER)				
SANS 1200DB		EARTHWORKS (PIPE TRENCHES)				
8.3.2		<u>Excavation</u>				
		(a) Excavate in all materials for trenches, backfill, compact and dispose of surplus unsuitable material				
	А	For 15mm to 40mm diameter for erf connections from water main to erven at depths 0.0m and up to 1.0m	m	250		
		Extra over excavations				
	В	2) Hard rock excavation (Provisional Qty)	m³	5		
<u>SANS 1200LF</u>		ERF CONNECTIONS (WATER)				
8.2.2		Supply, lay and test erf connections				
		Type PN16 (PE100) HDPE pipe				
	с	(i) For 25mm diameter	m	250		
<u>SANS 1200LF</u> 8.2.3		Extra over type PN16 (PE100) HDPE pipe				
		Saddle pieces for 50mm diameter drilled to fit saddle piece and elbow for:				
	D	(i) 25mm Diameter	No	10		
		<u>Fittings</u>				
	E	For 25mm x 25mm diameter tee	No	10		
	F	For 25mm male to elbow	No	11		
	G	For 25mm end stop	No	11		
		Corried to Collection			P	
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		Ball valves				
		Supply and install ball valves to fit saddle pieces and elbow pipes for:				
	A	(i) For 25mm diameter ball valve	No	11		
		Single water house connections (as per details drawing no. 18-016-10-600 provided) including end caps and including standpipe complete				
		For 50mm diameter supply pipe:				
	В	(i) 25mm diameter (nominal)	No	6		
<u>SANS 1200LF</u> 8.2.8		Markings or marker posts				
PSLF 8.2.8	С	Supply and place a 1m long timber stake at least 600mm deep at the stop end of connections (including a 3mm galvanised wire tied to the end cap and timber stake)	No	11		
SANS 1200M		ROADS (GENERAL)				
SANS 1200DM		EARTHWORKS (ROADS, SUBGRADE)				
8.3.5		Selected layer compacted to 93% of modified AASHTO maximum density				
	D	(i) 150mm In-situ (for 50mm paved areas)	m³	45		
	E	(ii) 150mm In-situ (for 80mm paved areas)	m³	80		
<u>SANS 1200DM</u> 8.3.6		Extra-over item 8.3.5 for excavating and breaking down material in				
	F	(a) Intermediate excavation	m³	125		
<u>SANS 1200DM</u> PSDM 8.3.7		Cut to spoil or stockpile from				
	G	(b) Intermediate excavation	m³	160		
		Carried to Collection			R	
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<u>SANS 1200GA</u>		CONCRETE (SMALL WORKS)				
8.2		SCHEDULED FORMWORK ITEMS				
8.2.1		Rough				
	А	(i) Vertical formwork to non-exposed surfaces for edge beams	m²	40		
<u>SANS 1200GA</u> 8.4		SCHEDULED CONCRETE ITEMS				
8.4.3		Strength Concrete, Grade 30MPa/19mm (using OPC)				
	В	(i) For 300mm x 300mm edge beam	m³	6		
<u>SANS 1200GA</u> 8.4.4		Unformed Surface Finishes				
	С	(i) Wooden-floated finish for edge beams	m²	20		
<u>SANS 1200GA</u> 8.5		JOINTS				
	D	(i) Construct saw-cut joints for concrete edge beam	m	4		
<u>SANS 1200ME</u>		<u>SUBBASE</u>				
<u>SANS 1200GA</u> 8.3.3		Construct the subbase course with material from commercial sources				
	E	(i) 100mm G5 gravel material compacted to 95% mod. AASHTO density (for 50mm paved areas)	m³	25		
	F	(ii) 150mm G5 gravel material compacted to 95% mod. AASHTO density (for 80mm paved areas)	m³	70		
<u>SANS 1200MK</u>		KERBING AND CHANNELLING				
8.2.1		Concrete Kerbing				
	G	Supply and lay concrete edging (E3) complete (as per tender drawings)	m	380		
		Carried to Collection			R	
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<u>SANS 1200MJ</u>		SEGMENTED PAVING				
8.2.2		Construction of paving complete				
		Supplied from Commercial Sources				
	А	(i) 200mm x 100mm x 50mm Bond Paver (or equivalent) complete as per tender drawings, on 25mm thick sand base	m²	250		
	В	(ii) 200mm x 100mm x 80mm Interlocking Paver (or equivalent) complete as per tender drawings, on 25mm thick sand base	m²	225		
		<u>Using existing pavers stockpiled on site by</u> <u>Employer</u>				
	С	(i) 200mm x 100mm x 80mm Interlocking Paver (or equivalent) complete as per tender drawings, on 25mm thick sand base	m²	225		
<u>SANS 1200MJ</u> 8.2.3	D	Cutting units to fit edge restraints	m	760		
8.2.4	E	Rolling to Locked up Condition	m²	700		
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ltem No			Quantity	Rate	Amount
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	<u>BUDG</u>	ETARY ALLOWANCES			
	Note:	Tenderers are advised to study the Model Preambles for Trades 2008 published by ASAQS before pricing this bill			
	Note:	Tenderers are advised to study the Specifications Of Materials And Methods To Be Used as published by the Department of Public Works			
	<u>SUPPL</u>	EMENTARY PREAMBLES			
	<u>General</u>	1			
	Work fo measure and Cor in part if profit on	r which budgetary allowances are provided will be ed and valued in accordance with NEC4: Engineering nstruction Contract (ECC4B) and deducted in whole or f not required without any compensation for loss or n the said allowances			
	Builder's	<u>s work</u>			
	Builder's elsewhe	s work in connection with specialist services is given ere in these bills of quantities			
	<u>BUDG</u>	ETARY ALLOWANCES			
	<u>BRAAI</u>	AND COWL			
A	Allow th Thousar directed part if ne	e Budgetary Allowance of R20 000.00 (Twenty nd Rand) NET for Braai and Cowl to be used as I by the Project Manager and deducted in whole or in ot required	Item		20 000 00
В	Sub-cor	ntractor fee percentage		%	
	ELECT	RICAL PLANT AND GENERATOR ROOM			
С	Allow th and Thi Generat Manage	e Budgetary Allowance of R130 000.00 (One Hundred rty Thousand Rand) NET for Electrical Plant & tor Room to be used as directed by the Project er and deducted in whole or in part if not required	ltem		130 000 00
D	Sub-cor	ntractor fee percentage		%	
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	FIRE PLACE			
A	Allow the Budgetary Allowance of R18 000.00 (Eighteen Thousand Rand) NET for Fire Place to be used as directed by the Project Manager and deducted in whole or in part if not required	Item		18 000 00
в	Sub-contractor fee percentage		%	
	FUEL STORE			
С	Allow the Budgetary Allowance of R50 000.00 (Fifty Thousand Rand) NET for Fuel Store to be used as directed by the Project Manager and deducted in whole or in part if not required	ltem		50 000 00
D	Sub-contractor fee percentage		%	
	GATES AND SCREENS			
E	Allow the Budgetary Allowance of R160 000.00 (One Hundred and Sixty Thousand Rand) NET for Gates and Screens to be used as directed by the Project Manager and deducted in whole or in part if not required	ltem		160 000 00
F	Sub-contractor fee percentage		%	
	GRANITE VANITIES			
G	Allow the Budgetary Allowance of R60 000.00 (Sixty Thousand Rand) NET for Granite Vanities to be used as directed by the Project Manager and deducted in whole or in part if not required	Item		60 000 00
н	Sub-contractor fee percentage		%	
	IRONMONGERY			
J	Allow the Budgetary Allowance of R60 000.00 (Sixty Thousand Rand) NET for Ironmongery to be used as directed by the Project Manager and deducted in whole or in part if not required	Item		60 000 00
к	Sub-contractor fee percentage		%	
	Carried to Collection		R	
	Bill No. 23 Budgetary Allowances 1808Q057-BOQ, Provisional Bills of Quantities			

	JOINERY			
A	Allow the Budgetary Allowance of R250 000.00 (Two Hundred and Fifty Thousand Rand) NET for Joinery to be used as directed by the Project Manager and deducted in whole or in part if not required	Item		250 000 00
В	Sub-contractor fee percentage		%	
	LANDSCAPING			
С	Allow the Budgetary Allowance of R45 000.00 (Forty Five Thousand Rand) NET for Landscaping to be used as directed by the Project Manager and deducted in whole or in part if not required	ltem		45 000 00
D	Sub-contractor fee percentage		%	
	ROOF REPAIRS			
E	Allow the Budgetary Allowance of R121 000.00 (One Hundred and Twenty One Thousand Rand) NET for Roof Repairs work to be used as directed by the Project Manager and deducted in whole or in part if not required	ltem		121 000 00
F	Sub-contractor fee percentage		%	
	SUNDRY ALTERATIONS			
G	Allow the Budgetary Allowance of R155 000.00 (One Hundred and Fifty Five Thousand Rand) NET for Sundry Alteration work to be used as directed by the Project Manager and deducted in whole or in part if not required	ltem		155 000 00
н	Sub-contractor fee percentage		%	
	SUNDRY ALUMINIUM WORKS			
J	Allow the Budgetary Allowance of R5 000.00 (Five Thousand Rand) NET for Sundry Aluminium Works work to be used as directed by the Project Manager and deducted in whole or in part if not required	ltem		5 000 00
к	Sub-contractor fee percentage		%	
	Carried to Collection		R	
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	TIMBER FLOOR REPAIRS			
А	Allow the Budgetary Allowance of R15 000.00 (Fifteen Thousand Rand) NET for Floor Repairs to be used as directed by the Project Manager and deducted in whole or in part if not required	Item		15 000.00
в	Sub-contractor fee percentage		%	
	WATER FILTRATION PLANT ROOM			
с	Allow the Budgetary Allowance of R90 000.00 (Ninety Thousand Rand) NET for Water Filtration Plant Room to be used as directed by the Project Manager and deducted in whole or in part if not required	ltem		90 000 00
D	Sub-contractor fee percentage		%	
	<u>CONTINGENCIES</u>			
E	Allow the Budgetary Allowance of R783 700.00 (Seven Hundred and Eighty Three Thousand Seven Hundred Rand) NET for Contingencies to be used as directed by the Project Manager and deducted in whole or in part if not required	Item		783 700.00
	Carried to Collection		R	
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1808Q057-BOQ, Provisional Bills of Quantities			
	SUMMARY Preliminaries Demolitions Alterations Earthworks Concrete, Formwork & Reinforcement Masonry Waterproofing Roof Coverings, Claddings, etc. Carpentry & Joinery Ceilings, Partitions & Access Flooring Floor Coverings, Wall Linings, etc Structural Steelwork Metalwork Plastering Tiling Plumbing & Drainage Mechanical - Wet Services Electrical Installation Paintwork External Works Civil Works Carried Forward	SUMMARYPage NoPreliminaries7Demolitions11Alterations22Earthworks27Concrete, Fornwork & Reinforcement32Masonry35Waterproofing38Roof Coverings, Claddings, etc.42Carpentry & Joinery49Ceilings, Partitions & Access Flooring53Floor Coverings, Wall Linings, etc54Structural Steelwork64Plastering68Tiling72Plumbing & Drainage90Bechanical - Fire Services90Electrical Installation99Paintwork104External Works118Korka118Bill No: 23 Budgetary Allowances128Bill No: 23 Budgetary Allowances128Bill No: 23 Budgetary Allowances128Structural Stein S	SUMMARY Page No Preliminaries 7 Demolitions 11 Atterations 22 Earthworks 27 Concrete, Fornwork & Reinforcement 32 Masonry 35 Waterproofing 38 Roof Coverings, Claddings, etc. 42 Carpentry & Joinery 49 Ceilings, Partitions & Access Flooring 53 Floor Coverings, Wall Linings, etc 54 Structural Steelwork 68 Plastering 68 Tiling 72 Pumbing & Drainage 79 Mechanical - Fire Services 90 Electrical Installation 99 Paintwork 104 External Works 118 Bill No. 23 Floor Gouernal Bills of Quantities

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ANNEXURE 2

Construction Health and Safety Specification



CONSTRUCTION HEALTH AND SAFETY SPECIFICATION

CONSTRUCTION HEALTH AND SAFETY SPECIFICATION

issued in terms of the Occupational Health and Safety Act & Construction Regulations, 2014



Compiled by: Ricardo Jackson PrCHSA112/2020 Associate Dr JNR Lapere Credit ref: M.D.(Louv)D.B.G.(Stell)L.L.M.(UPE)PrCHSA 017/2015 Lize Britz CHSM038/2015 On behalf of: LHSE Consultancy Date: 25.05.2022 Rev 02 - final

CI000691 – CAPENATURE CI000691 DE MOND NATURE RESERVE INFRASTRUCTURE AND ACCOMMODATION UPGRADE PHASE 1.



Acknowledgement by Principal Contractor

Construction Health & Safety Specification

issued in terms of the Occupational Health and Safety Act, 1993 Construction Regulations, 2014

For

CI000691 CI 000691 DE MOND NATURE RESERVE PHASE 1

١,_

_representing

____ Principal Contractor have satisfied myself with the

content of this Construction Occupational Health and Safety Specification and shall ensure that the Principal Contractor, all contractors and sub-contractors and all employees on site comply with it.

Signature of Principal Contractor

Signature of Agent

Date

Date



Acknowledgement by Contractor

Construction Health & Safety Specification

issued in terms of the Occupational Health and Safety Act, 1993 Construction Regulations, 2014

For

CI000691 CI 000691 DE MOND NATURE RESERVE PHASE 1

١,_

_representing

______ as Contractor have satisfied myself with the content of this Construction Occupational Health and Safety Specification and shall ensure that the contractor and any sub-contractors and all employees on site comply with it.

Signature of Contractor

Signature of Principal Contractor

Date

Date

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PROJECT DETAILS

DATE OF COMPILATION	25.5.22 REV02	PROJECT SPECIFIC - CHSS
VALUE	TBC	
PROJECT MANAGER & ARCHITECT	JUSTIN COOKE	ARCHITECTURE CO-OP
DTPW		
PROJECT LEADER & ARCH	SIMONE LE FEVRE	
ARCHITECT	C MORKEL	
QUANTITY SURVEYOR	J BOTHA	
STRUCTURAL ENGINEER	A SKINNER	
CIVIL ENGINEER	H BOUWER	
ELECTRICAL ENGINEER	S OLCKERS	
MECHANICAL ENGINEER	E JAKOET	
CAPENATURE		
PROJECT LEADERS	W WILLIAMS & R MATTHEWS	
CONSULTANTS		
STRUCTURAL ENGINEER	M FIRFIREY & A DAVIDS	PROSTRUCT ENGINEERING
CIVIL ENGINEER	M GUZGAY, N ADAMS & S ORRIE	OWS ENGINEERING
ELECTRICAL ENGINEER	W V TROON & L LEHLOHONOLO	ELEMENT ENGINEERS
MECHANICAL	P FOURIE	ELEMENT ENGINEERS
QUANTITY SURVEYOR	W VISSER & P DU PLESSIS	FARROW LAING
ENVIRONMENTAL	S RANGER & C DU PLESSIS	FOOTPRINT
OCCUPATIONAL HEALTH & SAFETY AGENT	LIZE BRITZ	LHSE CONSULTANCY

The project is situated at: R316, De Mond Road, Bredasdorp, RSA







1. Definitions

For the purpose of this Construction Health and Safety Specification, all definitions in the Occupational Health and Safety Act & Regulations, the abbreviations and the definitions given hereunder shall apply; where definitions may overlap, the most onerous requirement shall apply:

- 1. Agent" refers to Lize Britz appointed by CapeNature to act on its behalf, and who is appointed in writing.
- 2. **"CHSS"** refers to Construction Health & Safety Specifications compiled by the H&S Agent, based on the occupational health and safety construction risks and issued to the principal contractor.
- 3. "Client" refers to CapeNature
- 4. "COIDA" means Compensation for Occupational Injuries and Diseases Act 130 of 1993.
- 5. **"Construction site"** means the construction, lay-down, storage and access areas, where construction work is performed or where the principal contractor controls the CI 000691 De Mond Nature Reserve Phase 1 site and includes all access roads, loading- and parking areas.
- 6. **"Construction vehicle"** means a vehicle used as a means of conveyance for transporting persons or material, or persons and material, on and off the construction site for the purposes of performing construction work; and includes a bakkie or LDV used by the principal contractor or any contractor.
- 7. "Construction work" refers to all work done for the CI 000691 De Mond Nature Reserve Phase 1 project.
- 8. **"Contractor"** refers to a Contractor of the Principal Contractor or a sub-contractor to such a contractor and includes the principal contractor
- 9. "CR" refers to the Construction Regulations, 2014
- 10. "DEL" means Department of Employment and Labour
- 11. **"DSTI"** refers to a documented daily safe task instruction compiled, defined for a specific task and including a risk assessment and H&S risk controls, as issued by a contractor and trained to all relevant employees.
- 12. "H&S" refers to Health and Safety
- 13. **"Hot Work"** means any work where there is a fire or explosion risk, including but not limited to all welding, plasma cutting, LPG-or acetylene gas applications, grinding, work with flammable or explosive substances and work with chemicals with the potential of exothermic reactions.
- 14. **"Medical certificate of fitness"** means a valid medical certificate of fitness issued by an occupational medicine practitioner after personally examining and testing the employee; such medical testing shall be relevant to the risks of the construction work on the Construction Site and shall conform to the Occupational Health and Safety Act and Regulations and to the requirements in this H&S specification. The medical certificate of fitness shall be documented on the registered doctor's letterhead and shall contain the information required in Annexure 3 of the Construction Regulations. The medical certificate of fitness shall include proof of registration of the occupational medicine practitioner issuing the medical certificate and the practice number of the practitioner, including a statement that the doctor has personally examined the employee prior to issuing the medical certificate of fitness
- 15. **"Method statement"** refers to a document detailing the key activities to be performed in order to reduce as reasonably as practicable the hazards identified in the risk assessment.
- 16. "OHSA" refers to the Occupational Health & Safety Act of 1993
- 17. "PPE" refers to personal protective equipment
- 18. "Principal agent" means Architecture Coop and its professional staff, appointed in this capacity by the client.
- 19. "Principal Contractor" which is the Contractor performing construction work for the client.
- 20. "Regulations" refers to the Regulations issued under the Occupational Health & Safety Act.
- 21. "S" refers to a Section in the Occupational Health & Safety Act of 1993.
- 22. "SACPCMP" means the South African Council for the Project and Construction Management Professions



- 23. "Site" refers to the construction site and means a workplace where construction work is being performed and includes all access roads and parking areas.
- 24. **"Sub-Contractor"** means an employer appointed by a contractor of a Principal Contractor to perform construction work on the site and an employer appointed by a sub-contractor to perform work on the Site.

2. Introduction to this Construction H&S Specification

- 1. This Construction Health & Safety Specification is published in terms of the Occupational Health & Safety Act of 1993 (OHSA), Construction Regulations 2014, Regulation 5(1)(b).
- 2. This CHSS is based on the occupational health and safety risks identified by the client.
- 3. The CHSS does not replace the Construction Regulations, 2014, but is a supplementary specification as required in terms of the Regulations. Partial references to or quotes from the Regulations do not imply that the sections not referred to or quoted from are of lesser importance or are not applicable.
- 4. The Principal Contractor, and any contractor working on the site, are at all times, required to and will remain responsible to fully address all requirements and standards of the Occupational Health and Safety Act, Regulations and the full Construction Regulations in the Health and Safety Plan and the implementation thereof.
- 5. This Health & Safety Specification may be supplemented during the project with further specific Construction Health & Safety Specifications which deal with health & safety issues as these arise.
- 6. The client has appointed a Construction Health and Safety Agent who will (inter alia) be responsible for this riskbased specification, for the approval of all Principal Contractors' H&S Plans, for the auditing of the Principal Contractors' implementation thereof, for stopping unsafe or non-compliant work and for maintaining the document control associated with the CHSS.

3. Limitation of liability

- 1. The client or its H&S Agent shall not be responsible for any acts or omissions of any Contractor which may directly or indirectly result from the application of the CHSS or any project specific version thereof.
- 2. All contractors must ensure that articles, work, equipment, machinery, plant and work practices are, at all times, compliant to the legal requirements as these apply.
- 3. The client or its Agent shall limit its responsibility to the application of the Construction Regulations' Client Requirements only.
- 4. The Principal Contractor shall enter into a Mandatary Agreement with the client, as defined in Section 37(2) of the Occupational Health and Safety Act.

4. Purpose of the Construction H&S Specification

- 1. The purpose of the CHSS is for the specification to be used as the standard on which all Contractors' H&S Planning and safe work execution must be based.
- 2. This CHSS will be applicable to all construction during the CI 000691 De Mond Nature Reserve phase 1 site.
- 3. This CHSS defines the client's standard by which all occupational health and safety risks shall be controlled at the construction site.
- 4. All employers working on the construction site shall conform to the standard in the CHSS. All the duties of a Principal Contractor in this CHSS equally apply, in full, to contractors of such Principal Contractor and to sub-contractors of such contractors.



5. Implementation of the Construction H&S Specification

- 1. This CHSS forms an integral part of the Contract, and the Principal Contractor are required to make it an integral part of their contracts with subcontractors and suppliers.
- 2. The Principal Contractor shall ensure that the H&S plan contains sufficient evidence of:
 - a. Adequate provision for the cost of health and safety measures.
 - b. The principal contractor's access to and intention to appoint persons with the necessary competencies to carry out the construction work safely.
 - c. The principal contractor's access to the necessary resources to carry out the construction work safely and without risk to the health of the workers.
- 3. The Principal Contractor shall confirm in writing that he has familiarised himself with the content of the CHSS and that he will comply with all obligations in respect thereof. For this purpose, page 2 of this document must be signed by the Principal Contractor and returned to the client Agent; a copy must be placed in the H&S plan of the principal contractor.
- 4. Each contractor and sub-contractor shall confirm in writing that he has familiarised himself with the content of the CHSS and that he will comply with all obligations in respect thereof. For this purpose, page 3 of this document must be signed by each contractor and placed in the H&S plan of the contractor or sub-contractor.
- 5. The Principal Contractors shall allow in their tenders for the cost of complying with the requirements of this CHSS; resources for the following H&S controls shall be in place:

	H&S COST ITEM	DESCRIPTION
1.	Construction health and safety officer	Where committed in the approved H&S plan, the site attendance and defined professional duties by a SACPCMP- registered health and safety officer from the start of construction until the end of defect liability period. This CHSO shall be required to do one site audit per month and one site inspection per month, which shall be available in the Contractor's OHS file on site for external audit purposes.
2.	Competent H&S design	Services of competent designers for temporary works, scaffolding, fall arrest and recovery systems, work methods. Services of competent designers for contractor-managed designs.
3.	First aiders (training, rehearsal)	Standard first aid training Special (additional) fall recovery first aid training
4.	Competent inspectors (trained, certified competent)	Statutory inspections of temporary works, fire extinguishers, lifting equipment, lifting machinery, ladders, construction vehicles and mobile plant, portable electrical equipment, electrical installations, pressure equipment etc.
5.	Mandatory training in site legal register and risk assessments	Training of all employees holding statutory appointments as 'competent' persons, ensuring that they are familiar with the Act and Regulations. SAQA approved training certificates for HIRA & OHSACT. H&S induction and Risk Assessment training all employees Daily safe task instructions
6.	Training of employees in H&S	Occupational health and safety training in accordance with the skills matrix included in the approved H&S plan
7.	Occupational hygiene measurement and/or AIA certification	Measurement or certification of risk exposure levels of: Mobile plant operators [noise]



	H&S COST ITEM	DESCRIPTION
		Operators of compactors, jackhammers, grinders, concrete floaters, concrete pumps, saws [noise]
8.	Medical certificates of fitness	Medical examination of all employees and certification of fitness by an occupational medicine practitioner (not a nurse) in accordance with the occupational health requirements in this CHSS
9.	Medical surveillance in hearing conservation program	Pre-placement, periodical and exit audiometry by registered audiometrist
10.	Medical surveillance in respiratory conservation program	Pre-placement, periodical and exit spirometry by competent spirometry technician
11.	Medical surveillance in hazardous chemical substance management	Pre-placement, periodical and exit medical examination of all exposed employees + sampling and assessment of biological exposure tests against the prescribed BEI
12.	Supply & training for PPE	Standard set for all employees Special sets including fall arrest, special respiratory, adapted hearing protection, adapted hand protection, adapted eye and face protection.
13.	Employee facilities	See Occupational Health and Safety Act Facilities- and Construction Regulations (drinking water, change facility, personal lockers, wash facilities, eating facilities)
14.	First aid facilities	Standard first aid box per first aider Fall recovery additional items
15.	Edge and drop protection	Protection of all edges from falling off and from falling objects in the drop zone
16.	Safety signage	Access control, access and egress notification, drop zones, danger areas, road signs, etc.
17.	Communication	Communication with CI 000691 De Mond Nature Reserve, relevant municipal authorities and affected community, where required

6. Scope

- 1. This CHSS covers the client's requirements for addressing, mitigating and controlling Occupational Health and Safety related risks, problems, incidents and injuries during the construction work for the CI 000691 De Mond Nature Reserve Phase 1 project.
- 2. The scope addresses legal compliance, hazard identification and risk assessment, and the promotion of a health and safety culture amongst those working at the CI 000691 De Mond Nature Reserve Phase 1 site.
- 3. The construction H&S specification contains clauses that are generally applicable to construction and imposes controls associated with activities that impact on human health and safety.
- 4. The Principal Contractor is required to comply with the provisions of the OHSA, all applicable Regulations and this CHSS.
- 5. The client H&S Agent will monitor the Principal Contractor's compliance with the requirements of the OHSA and the approved H&S Plan.
- 6. The project will be done in a phased approach which could trigger that two Principal Contractors working simultaneously for the construction client.
- 7. The Scope of work will include:
 - a. Phase 1:
 - i. Existing masonry thatched Gate house alterations and upgrade



- ii. Existing masonry, asbestos roof Manager's house conversion to office and utility items
- iii. Existing dry wall metal roof Tourist house converted to Manager's home
- iv. Services Upgrade including: Borehole water treatment and/or possible rain water collection, existing electrical supply to the site to be made bigger and paving of entrance road
- v. New fence, new entrance gate and paving of parking outside the entrance.
- vi. Note: The borehole is across the river with an existing pipe to the development that may be replaced.
- b. Phase 2 Construction of new Tourist cabins (not part of this contract)
 - i. X5 New Tourist cabins at non impacted areas requiring and EA.
 - ii. The aim is for this construction work to start as phase 1 finishes.
 - iii. Anticipated start date: April 2023.

This specification focuses on Phase 1.

7. Compensation for Occupational Injuries and Diseases Act

- 1. The Principal Contractor, each contractor and each sub-contractor shall submit proof of Good Standing with the COIDA Commissioner, or a Mutual Association licensed in terms of Section 30 of COIDA, prior to starting any work on the site.
- 2. A copy of the Letter of Good Standing with the COIDA Commissioner must be included in the H&S Plan of each contractor working on the site and must remain updated for the duration of the construction work.
- 3. Contractors whose Letter of Good Standing expires will not be permitted to continue work at the CI 000691 De Mond Nature Reserve Phase 1 project.

8. Notification of construction work

- 1. The Principal Contractor shall notify the Provincial Director of the Department of Employment and Labour before work commences.
- 2. The notification shall be in the format defined in the Construction Regulations.
- 3. A copy of the fully completed and signed notification letter to the Provincial Director and proof of notification must form part of the H&S Plan presented for approval to the client agent.

9. Construction Manager

- 1. The principal contractor shall appoint a full-time competent person as the construction manager with the duty of managing all the construction work on the site.
- 2. The construction manager must be dedicated to the CI 000691 De Mond Nature Reserve Phase 1 project and is not permitted to manage any construction work on or in any construction site other than the CI 000691 De Mond Nature Reserve Phase 1 site.
- 3. Proof of competency of the construction manager shall be incorporated in the H&S plan; the Agent shall only allow work to commence if the designated construction manager has sufficient evidence of H&S competence and, as a minimum this shall include:
 - a. Proof of professional training



- b. Proof of experience in the construction scope of work defined in this CHSS
- c. Proof of experience in H&S management for work as defined in the scope
- d. Proof of training in the OHSA, CR and evidence that a training provider certifies the construction manager to be familiar with the OHSA and with the applicable regulations made under the Act.
- 4. The construction manager shall be responsible to ensure that the following duties are executed and shall actively communicate with the client-agent in order to:
 - e. Confirm and provide proof of compliance; and
 - f. Discuss any compliance constraints which may be experienced.
- 5. The construction manager may be assisted by the health and safety officer and the H&S plan of the Principal Contractor shall clearly define the respective duties of the construction manager and of the health and safety officer.
- 6. The construction manager shall be appointed in writing and each of the tasks in this chapter shall be included in (1) the H&S plan and (2) the signed letter of appointment.
- 7. The construction manager shall present the site-specific health and safety plan, based on this health and safety specification to the client agent and shall discuss and amend the H&S plan until finally approved by the client agent.
- 8. The construction manager shall ensure that the H&S plan is applied from the commencement of and for the duration of the construction work.
- 9. The construction Manager shall ensure that all risk areas on the CI 000691 De Mond Nature Reserve shall at all times be secured so as to prevent the unauthorized access of persons (fishermen, children and all visitors) to the construction risk areas and processes.
- The construction manager shall establish and maintain the required communication with the client in respect of any disruptions in electrical services and/or for facility-maintenance and/or special permissions at CI 000691 De Mond Nature Reserve.
- 11. The construction manager shall ensure that the H&S plan is reviewed and updated as work progresses.
- 12. Where applicable, the construction manager shall be responsible for planning and coordinating the scope of work and methods well in advance, so that risk -structures, -articles and any risk-environment (such as, for instance, stacks or live-energy holding reticulations in the work area, flammable materials, breathing zone pollution etc.) may be identified and appropriate planning and safeguarding can take place prior to the work commencing.
- 13. The construction manager shall review all daily safe task instructions and verify that DSTI's consist of an adequate scope, risk assessment and safe task instructions formulated by a competent person and that these are trained to all employees, prior to work commencing. The construction manager may be assisted in this duty by, amongst other, the construction H&S officer.
- 14. The construction manager shall open and keep the Site health and safety file and ensure that, at all times, this file is on site and available to an inspector, the client, the client's agent or a contractor.
- 15. The construction manager shall provide contractors and sub-contractors with this CHSS.
- 16. Whenever a contractor or sub-contractor H&S plan is approved by the Construction Manager or safety officer, and before work may commence, the Construction Manager shall communicate with the H&S Agent (at lize@lhse.co.za) to notify that the H&S plan has been assessed and finally approved, in accordance with the client construction health and safety specifications.
- 17. The construction manager shall only approve a H&S plan by a contractor and a sub-contractor if there is sufficient evidence that the contractor:
 - g. Has made sufficient provision for health and safety measures during the construction process
 - h. Has the necessary competencies to perform the construction work safely; and



- i. Has made the necessary resources available to perform the construction work safely.
- 18. The construction manager shall ensure that all contractors appointed by the Principal Contractor have a compliant H&S plan, prior to appointing the contractor and prior to allowing the contractor to start working on site.
- 19. The construction manager shall ensure that contractors have evidence of both registration and good standing in terms of COIDA and shall not permit any contractor to start work or to continue with work on site unless a valid Letter of Good Standing is on site.
- 20. Additional to the requirements of the Construction Regulations, the Principal Contractors' construction manager shall ensure that all sub-contractors appointed by any of the contractors of the Principal Contractor comply with the construction regulations and, in particular, the construction manager shall:
 - j. Assess and finally approve H&S plans of all these sub-contractors; without such approval, these contractors are not permitted onsite;
 - k. Ensure that employees of these contractors are also inducted in the H&S induction program of the Principal Contractor;
 - I. Appoint these contractors on the site in writing;
 - m. Audit these contractors monthly;
 - n. Stop unsafe work or work not in accordance with the approved H&S plan.
 - o. Inform the Client Agent in writing whenever a contractor or sub-contractor's H&S plan is approved.
- 21. The construction manager shall ensure that daily inspections of the health and safety compliance of all contractors and all sub-contractors on site are performed and documented in the Principal Contractors' H&S file; this shall include planned H&S task observations and planned H&S inspections for which a procedure shall be included in the principal contractor's H&S plan.
- 22. The construction manager shall ensure that monthly site audits and document verification is conducted of all contractors and all sub- contractors on site.
- 23. The construction manager shall stop all construction work which is not in accordance with this CHSS or with the principal contractor's health and safety plan or which poses a threat to the health and safety of persons.
- 24. The construction manager shall ensure that, where changes are brought about to the design and construction on the site, sufficient health and safety information and appropriate resources are made available to any contractor to which the changes apply.
- 25. The construction manager shall hand over a consolidated health and safety file to the client agent upon completion of the construction work.
- 26. The construction manager shall ensure that a comprehensive and updated list of all the contractors on the site (that is both those directly accountable to the principal contractor and those accountable to contractors) is kept in the H&S file. The list must refer also to the work performed by the contractors, the approved H&S plan, the expiry date of the COIDA Letter of Good Standing, the last monthly audit date and any agreements between the parties.
- 27. The construction manager shall ensure that no employee accesses the worksite unless that employee is in possession of a valid medical certificate of fitness specific to the construction work to be performed and filed on site in the H&S file.
- 28. The construction manager shall ensure that site rules and regular communication processes are in place in order to obtain co-operation between all contractors on site.
- 29. Where applicable, the construction manager shall be responsible for ensuring that all coordination and communication controls between other Principal Contractors on the site are complied with at all times; for this purpose, the construction manager shall, where so requested, attend all coordination meetings.



- 30. The construction manager shall ensure that all persons on site have undergone the relevant site health and safety induction of the Principal Contractor.
- 31. The construction manager shall ensure that the Principal Contractor keeps an up-to-date register of all employees on site (including those of contractors and sub-contractors) indicating the date of H&S induction, the expiry date of medical certificates of fitness and the employee's job title
- 32. The construction manager shall ensure that all fall risk work is performed in accordance with the fall protection plan and that, at all times, an updated fall protection plan is filed in the H&S file on site. Where fall recovery procedures are defined, the construction manager shall be responsible for ensuring that the necessary emergency engineering- and administrative risk controls are in place, on stand-by and adequately controlled to ensure immediate assistance at all times when work is performed which poses a suspension risk. Where environmental conditions prevent safe work, the construction manager shall ensure timeous work stoppage.
- 33. The construction manager shall ensure that all work on site is performed under supervision of a competent person appointed by the Principal Contractor. This applies also when contractors or sub-contractors are working on site in the absence of personnel of the Principal Contractor; the rule is "no work unless under the supervision of a competent and authoritive supervisor appointed by the Principal Contractor".
- 34. The construction manager shall ensure that all incidents are investigated and that the final reports thereof are assessed and approved in writing by the construction manager.
- 35. The construction manager shall ensure that all Finding- and Audit Reports are assessed, that corrective action is planned and executed and confirmed as such in writing by the construction manager.
- 36. The construction manager may be assisted by an assistant reported in writing. The duties of the assistant shall be included in (1) the H&S plan and (2) the letter of appointment of the assistant construction manager. The construction manager shall ensure that either he/she is on site at all times when work is performed; if the construction manager is not on site, then an assistant construction manager, appointed in writing as per the above, shall be on site.
- 37. Contractors and sub-contractors shall appoint a Construction Supervisor with the exact same duties and requirements as listed for the Principal Contractors' Construction Manager.

10. Construction Health and Safety Officer

- 1. The Principal Contractor must appoint a competent Construction health and safety Officer for the construction work at the client. Copy of the SACPCMP valid certificate shall be available as a CHSO. The CHSO shall be required to conduct an audit once a month and a site inspection once a month, copies of such to be available in the OHS file on site.
- 2. The principal contractor's designated construction health and safety officer shall have knowledge, training and experience, specific to the scope of work and construction of structures defined in the scope of the construction work. Such competence shall be documented in the H&S plan.
- 3. The authority and relationship of the health and safety officer with the construction manager must be documented in the H&S plan and the letter of appointment.
- 4. Contractors and sub-contractors may appoint a competent Construction health and safety Officer for the construction work at the client.
- 5. Contractors shall consult with the Principal Agent and the H&S Agent whether to appoint a full-time or parttime construction health and safety officer; provided that, subject to Construction Regulation 8(5), where the question arises as to whether a construction health and safety officer is necessary, the decision of the client H&S Agent shall be decisive.



- 6. The authority and relationship of a contractor's health and safety officer with the construction supervisor of the contractor or sub-contractor must be documented in the H&S plan and the letter of appointment.
- 7. The construction H&S officer shall assist the manager and construction supervisors with the review of all daily safe task instructions; including the verification that DSTI's consist of an adequate scope, risk assessment and safe task instructions formulated by a competent person and that DSTI's are trained to all employees, prior to work commencing.
- 8. The Principal Contractor and any contractor shall define the duties of the appointed health and safety officer in the H&S plan and in the respective letters of appointment.
- 9. Any construction health and safety officer appointed for work on the construction site shall be registered with the South African Council for the Projects and Construction Management Professions.
- 10. Proof of competence and proof of registration of the appointed construction health and safety officer must be included in the H&S Plan.

11. Principal Contractor's Health & Safety Plan

- 1. The Principal Contractor shall submit a suitable, sufficiently documented and coherent specific health and safety plan and start-up H&S file for the CI 000691 De Mond Nature Reserve Phase 1 project, in accordance with the legal requirements and prior to work starting.
- 2. The Principal Contractor's H&S plan shall be named the Construction Health & Safety Plan for the CI 000691 De Mond Nature Reserve Phase 1 project and shall be applied by all contractors working on site; the Principal Contractor's health and safety plan shall therefore formulate the H&S risk controls for all risks identified for all site-specific risk-bearing activities, as identified in the scope of work. This includes all risk-bearing activities performed by contractors and sub-contractors. The Principal Contractor, to all contractors and to all sub-contractors.
- 3. All contractors and sub-contractors shall adopt the Principal Contractor's health and safety plan integrally.
- 4. This Principal Contractor's H&S plan & file must be presented to and approved by the H&S agent prior to the site being handed over to the Principal Contractor and prior to the Principal Contractor being allowed on site. No work may start- by any Principal or other Contractor unless the relevant health and safety plan is approved.
- 5. All site-H&S plans shall be presented as part of the start-up H&S file; all evidence of controls which are documented in the H&S plan must be placed in the H&S file; this start-up H&S file, including the H&S plan, must be presented for approval to the H&S Agent prior to any work starting by the Principal Contractor.
- 6. The Principal Contractor's and each contractor or sub-contractor's H&S Plan and File must follow the exact index as defined in Annexures A and B respectively.
- 7. Chapters not relevant in the table of contents must be left blank, but the numbering must be continuous and identical to the Annexures.
- 8. Additional controls or chapters may be added at the end.
- 9. Besides the legal requirements, the Principal Contractor's and each contractor's or sub-contractor's site-specific health and safety plan and file for approval shall include:
 - a. A cover page indicating:
 - i. The contract references.
 - ii. The name, address, contact telephone and e-mail of the Contractor and the name and address of the CEO, as designated in Section 16 of the OHSA.
 - iii. Where such appointment is made, the name, contact telephone, e-mail, final approval certification and signature of the designated person in terms of section 16(2).



- iv. The name, contact telephone, e-mail, final approval certification and signature of the Principal Contractor's Construction Manager and, in the case of contractors, the contractors most senior manager on site, appointed in terms of Section 8(2)(i) by the contractor and in terms of Construction Regulation 8(7) by the Principal Contractor.
- v. A space for the Client H&S Agent to sign for final approval.
- b. An index for the H&S file and an index for the H&S plan.
- c. The Principal Contractors' Occupational Health and Safety Policy signed by the CEO. This Policy shall be adopted by all contractors and sub-contractor's CEO in writing.
- d. A detailed site-specific overview of the scope and activities of the project; this overview must include all work controlled by the Principal Contractor, whether directly or through the services of a contractors or sub-contractors. The scope of work must, as a minimum, match the activities planned in the approved construction work program.
- e. An overview of the machinery, plant, tools and equipment used in the project; this overview must include all machinery, plant, tools and equipment directly or indirectly (through the services of a contractor, sub-contractor or rented plant) controlled by the Principal Contractor.
- f. A site-specific organisational chart of the staff deployed in the project, which identifies legal appointments, responsibilities, fitness for work and the competency of the appointees (see Annexure C, as example).
- g. Proof of the competency in occupational health and safety of the Principal Contractor.
- h. Proof of competency of responsible persons holding statutory positions for the Principal Contractor.
- i. A designer list for all contractor-designs planned and conforming to the Contractor Design chapter in this CHSS.
- j. Where applicable, an engineering assessment of the supported- or supporting structures in terms of supporting strength and the required H&S controls to ensure safe work with, on and beneath these structures.
- k. Signed letters of appointment of all responsible persons (see Annexure C, as example).
- I. An overview of the site-specific budgeted resources for occupational health and safety.
- m. A site-specific overall hazard identification and risk assessment, as performed by the appointed risk assessor:
 - i. Risk assessments of all activities identified in the scope of work shall form an integral part of the Health and Safety plan.
 - ii. This risk assessment will include all work which is planned to be done by all contractors and sub-contractors.
 - iii. All risk assessments shall be conducted in terms of an acceptable and documented methodology, prior to commencement of work and in accordance with the provisions of the CR. The hazard identification must relate to conforming site processes; failure modes may be included, once all process risk controls are identified.
 - iv. The risk assessment must be based on the scope of work and the machinery and plant as defined above.
- n. Controls for identified hazards must be formulated in method statements or operating procedures for the activities of the project:
 - i. The method statements must be based on the scope of work and the risk assessment.
 - ii. Where specialised processes or a contractor's occupational health and safety management system apply, the applicable policies, procedures or work instructions may be used as cross reference, provided these are directly applicable to the construction site; the contractors'


H&S management system, as it applies to the site, may be included as reference in the H&S plan.

- o. A detailed outline of the site-specific emergency and accident arrangements on site. Particular attention must be made to fall risk- and confined space risk emergency management.
- p. An outline of the PPE to be used and the management of such PPE on site.
- q. A list of the inspection registers which will be kept on site.
- r. A training versatility chart indicating employee's competency in safe working processes.
- s. Medical certificates of fitness for all employees planned to start work.
- t. Baseline medical surveillance records for employees exposed to occupational health risks requiring medical surveillance (this may be the latest periodical medical surveillance record also).
- u. A list of all employees engaged in the start-up of the construction work, including their name, designation, expiry date of medical fitness certification and date of H&S induction.
- v. The Principal Contractor's actions to ensure that all appointed contractors and subcontractors fully comply with the Regulations and with this CHSS, including but not limited to the approval methodology for H&S plans of contractors and sub-contractors;
- w. The site-specific health and safety induction document used to ensure that all employees and all visitors on site are conversant with the risks on site and the content of the health and safety plan and what role they are expected to play in ensuring health and safety on the construction site.
- 10. Where, applicable, the contractor's specialised processes or a contractor's occupational health and safety management system's applicable policies, procedures or work instructions.
- 11. All above requirements for an H&S plan shall mutatis mutandi apply to contractors and sub-contractors of the Principal Contractor.

12. Hazard Identification and Risk Assessment

- 1. The Principal Contractor shall appoint competent person(s) to perform a site-specific baseline- and, thereafter, ongoing issue-based hazard identification and risk assessments. There may be more than one risk assessor appointed if this is required.
- 2. The competent risk assessor(s) shall form part of the full-time construction team working on the construction site.
- The risk assessment must be based on the scope of work, the site-specific materials required, and the sitespecific machinery, equipment and structures applied during the CI 000691 De Mond Nature Reserve Phase 1 project.
- 4. Risk assessments of all site-specific risk-bearing activities identified in the scope of work, including those performed by contractors and sub-contractors, shall form an integral part of the H&S Plan and all risk controls (including those executed by contractors and sub-contractors) shall be documented. Where the scope of work is highly specialised and beyond the competence of the Principal Contractor, a process shall be defined to ensure that such risk assessment is performed by a competent person. The Principal Contractor's Construction Manager shall assess and finally approve such additional risk assessments in writing.
- 5. The Principal Contractor shall include an emergency risk assessment in the H&S Plan.
- 6. The risk assessments shall be included in the H&S Plan.
- 7. The Principal Contractor shall include a daily safe task instruction-method in the H&S plan ensuring that daily pre-task H&S risks assessment and safe task instructions are formulated by a competent person and trained to all employees, prior to work commencing. The Principal Contractor's DSTI procedure shall be defined in the Construction Health & Safety Plan.



- 8. Additional risk assessments shall be conducted when:
 - a. A new machine is introduced onto site.
 - b. A system for work is changed or operations altered.
 - c. After an accident or near miss has occurred.
 - d. New knowledge comes to light and information is received which may influence the level of risk to employees on site.
- 9. All risk assessments shall be conducted in terms of an acceptable and documented methodology, prior to commencement of work and in accordance with the provisions of the CR:
 - a. The baseline risk assessment shall identify the non-failure hazards; it may also include a failure mode analysis; both shall, as a minimum standard, document:
 - i. The planned engineering controls mitigating the risk
 - ii. The planned administrative controls, including
 - 1. Competency and responsibility appointments.
 - 2. Method statements and/or safe work instructions, training and competency.
 - 3. Occupational hygiene measurements.
 - 4. Workplace organisation, including demarcation, signage, colour coding, routing, housekeeping, storage, stacking, access.
 - 5. Emergency controls.
 - 6. Medical fitness testing, medical surveillance and job placement requirements.
 - 7. PPE.
 - b. Issue-based risk assessment, risk monitoring and risk review shall be done at the hand of pre-task risk assessment communicated to all employees; a system of daily safe task instructions shall be used. The risk assessment must include:
 - i. A daily documented listing of hazardous events.
 - ii. A daily documented listing of H&S risk controls.
 - iii. Proof of communication of the above to all employees: the client requires that the Principal Contractor shall ensure that all employees on site are conversant with the content of all relevant risk assessments, the appropriate measures to either eliminate or reduce the identified risks. The Principal Contractor shall outline to employees what role they are expected to play in the Risk Assessment and control measure process.
 - iv. Conforming to OHSA Section 8(2)(j) each employee shall, in a language clear and evident to that employee, be informed of her/his scope of work authority and each employee on site shall be required to work in accordance with direct instructions only. Each DSTI shall include this risk control, as well as a clear instruction that where work controls cannot be met, the employee must not 'invent' or 'make-shift design' a work method; work must be stopped until the construction supervisor or construction manager shall be required to re-assess the risk and define risk controls.
- 10. The Principal Contractor shall include a method in the H&S plan ensuring that daily pre-task risks assessment and safe task instructions are formulated by a competent person and trained to all employees. The method statement shall include the duty of the construction manager or delegated competent person to review all daily safe task instructions and verify that DSTI's consist of an adequate scope, risk assessment and safe task instructions formulated by a competent person and that these are trained to all employees, prior to work commencing.
- 11. The principal contractor shall include a method in the H&S plan for risk review ensuring that all risks on site are adequately managed



- 12. All risk assessments must document all H&S controls which any Contractor plans to put in place.
- 13. All above risk assessment requirements shall, mutatis mutandi, apply to contractors and sub-contractors of the Principal Contractor.

13. Health & Safety File, including OHS close-out requirements

- 1. The Principal Contractor shall provide and maintain an H&S File, containing all relevant documents as prescribed in the OHSA and Regulations and all forms or records referred to in the H&S Plan.
- 2. The Principal Contractor's H&S file shall be entitled 'The Construction Health & Safety File for the CI 000691 De Mond Nature Reserve Phase 1 project'.
- 3. The start-up H&S file shall be presented together with the H&S plan for approval prior to work starting.
- 4. The H&S File shall be kept on the construction site and available for inspection by the client Agent or the Department of Employment and Labour Inspectors.
- 5. The content of the H&S file shall strictly follow a specific order as per Annexure B.
- 6. Chapters not relevant in the table of contents in Annexure B must be left blank, but the numbering must be continuous and remain identical to Annexure B.
- 7. Additional controls or chapters may be added at the end.
- 8. The H&S File shall include an index as per Annexure B.
- 9. The H&S File becomes the property of the client after completion of the project. The principal contractor is also required to scan the file in an electronic format and hand over the electronic format, together with the hard copy to the Principal Agent.
- 10. The Principal Contractor is required to compile a consolidated file and hand this to the Agent at the end of the construction; the consolidated file shall include:
 - a. A copy of the approved H&S plan of the principal contractor;
 - b. An index of the H&S file archived by the contractor;
 - c. A reference record of all drawings, designs and materials used;
 - d. A reference record of H&S statutory certificates required by the owner; this reference record shall indicate the designated person at the principal contractor, who is responsible for the document and the client-designate to whom the document has been handed. Reference records applicable to this project shall include, as applicable:
 - i. Electrical certificate of compliance.
 - ii. Maintenance and/or inspection manual
 - iii. Fire safety certification, where required
 - iv. Warranties of installations placed by the principal contractor.
 - e. The comprehensive list of all the contractors on site accountable to the principal contractor, including a list of the agreements between the parties and the type of work being done;
 - f. An index of all inspections and reference to the inspection registers for the site
 - g. A list of all responsible persons appointed in statutory positions for the duration of the project
 - h. A list of all occupational injuries and diseases including the name of the injured, the reference number of the Annexure I document and the reference number of the COIDA notification of the injury (if any).
 - i. All documents relating to any reportable injury or disease during the construction work, as defined in Section 24 and 25, of the Occupational Health and Safety Act, respectively.



14. Induction

- 1. Each employee working for the Principal Contractor, or any contractor appointed by the Principal Contractor shall be inducted in health and safety by the Principal Contractor.
- 2. The same applies to visitors, project- and professional team members accessing risk areas, where there is a residual H&S risk similar to that of an employee working there.
- 3. The Principal Contractor shall develop a project-specific induction training programme in health and safety for the CI 000691 De Mond Nature Reserve Phase 1 project., to ensure that all employees on site are conversant with:
 - a. The risks of the construction project.
 - b. The controls documented in the H&S Plan.
 - c. The role of employees in ensuring health and safety on the construction site.
 - d. The emergency arrangements of the site.
 - e. Their scope of work authority, including the unambiguous instruction that where work controls cannot be met, the employee must not 'invent' or 'make-shift design' a work method; work must be stopped until the construction supervisor or construction manager shall be required to re-assess the risk and define risk controls.
- 4. The Principal Contractor shall ensure that all employees on site, including those of contractors and subcontractors, have gone through the Principal Contractor's induction training before commencing duties on site.
- 5. The contents of the Principal Contractor's H&S induction programme and method of ensuring that all employees are inducted will be documented in the H&S Plan; the Principal Contractor is advised that a generic induction or the Principal Contractor's business- or human-resource induction shall not be sufficient for the client to accept the H&S planning for the construction work.
- 6. Each visitor to the site shall be inducted in the risks and risk controls which the visitor may be exposed to; the visitor's induction and method to ensure compliance shall be documented in the H&S plan.

15. Public Health and Safety

- 1. All risk areas on the site shall at all times be secured so as to prevent the unauthorized access of persons to the construction risk areas and processes.
- 2. Overall site access control shall be managed by the principal contractor, in accordance with the requirements stipulated in the construction contract and also defined by the Principal Agent.
- 3. In the event that staff or visitors attend the resort the Principal Contractor shall document a risk assessment and an H&S method statement for the management of De Mond reserve where applicable for:
 - a. Closure for tourists visiting the De Mond reserve
 - b. Management of risk areas for De Mond operations staff
 - c. Any visitors (fishermen, day visitors or children accessing the De Mond reserve during the construction period.
- 4. Appropriate health and safety signage shall be posted.
- 5. The Principal Contractor shall ensure that site access control is strictly applied and at all times, enforced and that sufficient security measures are in place to prevent access to risk areas such as fall risks, machinery, stacking and storages areas, amongst other.



- 6. The Principal Contractor shall ensure that each person visiting the site shall be inducted to the site and such abridged induction shall outline the hazards likely to arise from on-site activities and the precautions to be observed to avoid or minimise those risks.
- 7. Any visitor on site shall be required to be authorised to visit the site by the principal Contractor; any contractor wishing to allow a visitor on site shall first obtain authorisation from the principal Contractor; i.e., prior to allowing the visitor on site.
- 8. Any visitor shall, at all times, be accompanied by a designated person from the principal Contractor.

16. Health and Safety Training and competence

- 1. Competency of employees and ongoing training in H&S matters shall be documented by including a training & competency matrix in the H&S plan.
- 2. The matrix in the H&S plan shall be a training needs-matrix and shall indicate competency requirements and all start-up employees' current competency in safe working processes:
 - a. Each applicable safe work instruction must be included in the H&S Plan.
 - b. The method of training and ensuring competence must be included in the H&S Plan.
- 3. Each competent person appointed in terms of the H&S plan shall produce evidence of such competence as defined in CR 1 and in the relevant legislation governing the appointment.
- 4. The Principal Contractor shall ensure that specific daily pre-task health and safety instructions are given to all employees.
- 5. The methods for ensuring that training in safe work instructions and that daily pre-task instructions occur, including the method of documenting the contents and attendance, shall be described in the H&S Plan.
- 6. All above training and competency requirements shall, mutatis mutandi, apply to contractors and subcontractors of the Principal Contractor.

17. Inspection, Monitoring and Reporting

- 1. The Principal Contractor shall plan (in the H&S plan) and carry out safety planned task observations and planned H&S inspections on the site and shall take steps to rectify any unsafe condition of which he is aware.
- 2. The appointed Construction Manager (or a person designated by the Construction Manager), and the Health & Safety Officer shall perform regular inspections and document these in the H&S File.
- 3. The relevant inspection templates and the frequency of inspections shall be included in the H&S Plan.
- 4. The H&S Plan shall contain a list and template of all the inspection registers which shall be kept on site:
 - a. The templates must correlate with the machinery and equipment listed on site;
 - b. The inspector responsible for the inspection and maintenance of the register must be appointed in writing. Proof of training and competency in the performance of the inspections must be documented.
- 5. All above Inspection, Monitoring and Reporting requirements shall, mutatis mutandi, apply to contractors and sub-contractors of the Principal Contractor.



18. Night-, Weekend-, Overtime-Work and Fatigue

- 1. The site risk assessment shall include a fatigue risk assessment including rostering risks, personal risks and work environment risks for all employees working on site. Abnormal working hours shall be included in the risk assessment.
- 2. The rostering risk control shall include the maintenance of an up-to-date working schedule for all employees on site. This shall be documented in the employee register (see also chapter staffing on site').
- 3. A fatigue management procedure addressing al rostering-, personal and work environment risk controls shall be defined in the H&S plan.
- 4. No night-, Weekend-, Public Holiday-, or overtime work shall be performed unless authorised by the principal agent.
- 5. Where overtime or week-end work is planned, the principal contractor shall ensure that its construction manager or supervisor is on site; this applies even if only contractors or sub-contractors are working on the site.
- 6. Where overtime or week-end work is planned, each contractor or sub-contractor shall ensure that its construction supervisor is on site; this applies even if the principal contractors' manager or supervisor is on the site.

19. Staffing on site

- 1. The Principal Contractor shall compile a list of all employees on site indicating:
 - a. Name and ID number
 - b. Designation (job title)
 - c. Date of OHS Induction for the site
 - d. Date of expiry of medical certificate of fitness
 - e. Where applicable, competency in the safe work instructions included in the H&S plan
 - f. Working hours worked.
- 2. This employee list shall be included in the start-up H&S file and maintained thereafter.
- 3. The employee list shall include all persons working on site, whether employed by the Principal Contractor, a contractor, sub-contractor, hired plant operator or delivery personnel working on the site (such as concrete truck- or concrete pump operators, crane erectors etc.).

20. Contractor Design

- The Principal Contractor shall include a list of designs which will be executed by the principal contractor or a contractor appointed by the principal contractor. The list shall be placed in the H&S plan and shall include the name of the competent designer, who shall also be appointed in writing. Additional designs and designers may be identified in the H&S file.
- 2. Contractor designs may be required for:
 - a. Site organisation (including drop-zone safety), traffic and access to risk areas.
 - b. Temporary work, including scaffolding.
 - c. Machinery and processes for rigging, lifting, in-situ placement and on-site manufacturing.
 - d. Specialised designs.
 - e. Fall prevention- and fall arrest designs.
 - f. Temporary installations.



- g. Temporary reinforcing for structures-in-construction which lack inherent stability or stability during inclement weather.
- h. Access structures used during construction.
- i. Erection processes of risk structures.
- 3. Any contractor- design shall conform to Construction Regulation 6 and 12, as these apply.
- 4. All contractor-designs shall be documented in a drawing or other relevant document and shall include construction sequences and method statements for erection/construction, maintenance, inspection and dismantling, where required.
- 5. All structures designed by contractors, which require access with a fall risk, shall make provision for safe access.
- 6. The Principal Contractor's and any Contractor's designers are hereby mandated and required by the client to:
 - a. Carry out the necessary inspections at appropriate stages to verify that the erection / construction of the relevant structure is carried out in accordance with the design.
 - b. Stop any employee from executing any construction work which is not in accordance with the relevant design.
 - c. Inspect and formally declare the structure safe for use in writing and communicate this to the H&S Agent.

21. Wind and weather hazards and controls

- 1. The wind risk relates, amongst other, to:
 - a. Wind effects on structures, including scaffolds, temporary works, rigging, lifting, and working at heights.
 - b. Windblown fixed objects (toilets, empty container or offices, signs, scaffolds, work-in-progress [walls, temporary works. Etc.)
 - c. Windblown working materials (false work planks, packaging, cement and other dusts)
 - d. Dust and particulates (eye-, respiratory risks).
- 2. Design wind controls
 - a. All temporary structures placed on site shall be assessed by a competent person or by their designer.
 - b. Such assessment shall verify that the structures can withstand the forces imposed by prevailing wind effects.
 - c. The H&S file shall include the certification of each structure by the competent person.
- 3. Wind-effect controls must include:
 - a. Daily wind predictions to be monitored; wind speed measurement process to be applied.
 - b. DSTI to include wind risk assessment for every relevant construction process.
 - c. Risk assessment of all fixtures and appropriate attachment.
 - d. Risk assessment of temporary works and stacked or stored materials + this to be repeated daily in DSTI.
 - e. Risk assessment for rigging and DSTI.
 - f. Risk controls for safe welding, safe elevated work, safe rigging.
 - g. Where applicable, site watering in accordance with a watering plan defined in the H&S plan; such watering plan must include the number of watering tanks (and size) planned to be in use, the approved water source and the approximate duration of a round trip, the site watering over weekend and holiday periods.
 - h. Good housekeeping-, storage- and stacking practices to incorporate wind risks.



- i. Include wind-effects in H&S induction and emphasize the duty for employees to early-report any effects.
- j. H&S planning of high-risk work to include adapted working hours to start at sunrise.
- k. All materials placed in an elevated position shall be tied down.
- 4. Other weather controls include:
 - a. Dealing with heavy rains and the risk of flooding. The Principal Contractor shall ensure that all workin-progress is designed to accommodate sudden excess storm water and adequate run-off systems shall be designed and implemented during construction.
 - b. Dealing with slippery access road to and from and in the De Mond reserve. Where applicable, the Principal Contractor shall ensure that risk of slippery surfaces is planned in a pre-task risk assessment and that adequate control measures are applied.

22. Contractors and sub-contractors

- Contractors and sub-contractors must be given a copy of this H&S Specification and any additional specification issued by the client and shall comply with these specifications integrally. All employers working on this site shall conform to the standard in the CHSS. All the duties of a Principal Contractor in this CHSS equally apply, in full, to contractors of such Principal Contractor and to sub-contractors of such contractors.
- 2. Contractors and sub-contractors must confirm their compliance to the CHSS by signing page 3 of this CHSS and placing the signed page with the CHSS in their H&S file in site.
- 3. Specialised contractors:
 - a. Every contractor shall possess and document its experience in the scope of the construction work for which the contractor is appointed.
 - b. Every contractor's designated Section 8(2)(i) appointee, supervisor and risk assessor shall individually or collectively have knowledge, training and experience and, where applicable, qualifications, specific to the scope of work of the construction for which the contractor is appointed.
 - c. Such competence shall be documented in the H&S plan.
- 4. Each contractor- and sub-contractor's H&S plan shall adopt the Principal Contractor's health and safety plan integrally. The H&S plan may include amendments and additions where risks are identified which were not addressed in the Principal Contractor's health and safety plan. The Principal Contractor shall ensure that all contractors and sub-contractors under his control, plan the construction work in an H&S Plan, approved by the Principal Contractor; such H&S plan and H&S file shall be in accordance with Annexures A and B respectively.
- 5. Whenever a contractor or sub-contractor's H&S plan is approved, the Principal Contractor shall communicate with the Agent (at lize@lhse.co.za) to notify that the H&S plan has been assessed and finally approved, in accordance with the client construction health and safety specifications.
- 6. Principal Contractors shall ensure that all contractors and sub-contractors comply with their H&S Plans, based on all applicable H&S Specifications, the requirements of the OHSA and all other relevant legislation.
- 7. Regular planned task observations planned H&S inspections and monthly audits of all contractors and subcontractors must be recorded and filed in the principal contractor's H&S File, for inspection by the client H&S Agent.
- 8. The Principal Contractor shall ensure that the comprehensive and updated list of all the contractors and subcontractors on site, placed in the H&S file, includes:



- a. A reference to the agreements between the parties, including all contractor's Section 37(2) agreements with the Principal Contractor
- b. The type of work being done.
- c. The date of the approval of the H&S plan.
- d. The date of expiry of the COIDA certificate of good standing.
- e. The date of the last monthly audit.
- f. The number of staff per contractor.
- 9. The Principal Contractors' H&S Plan must include the Principal Contractor's procedures to ensure that all contractors and all sub-contractors fully comply with all H&S requirements; this must include, but is not limited to, defining the submission, assessment and final approval method (including the nominated responsible person) of H&S Plans of sub-contractors.

23. Personal Protective Equipment and Clothing

- 1. The Principal Contractor shall ensure that every employee is issued with, and wears SABS-approved PPE, consisting of all PPE identified in the risk assessment.
- 2. With respect to the manufacturing on site, employees shall be supplied with and use effective protection PPE for the eyes and respiratory system, for the face, hands, feet, legs and body; the PPE shall protect against heat, incandescent or flying particles or dangerous radiation.
- 3. All employees shall wear full length overalls and shall wear identification with respect to the employer.
- 4. All employees performing construction work shall wear steel-capped safety boots and a hard hat.
- 5. Hard hats used by employees working with a fall risk shall have an adequate chinstrap.
- 6. Hard hats shall be worn on the skull without any other head cover; only sunshades may be worn under the hard hat.
- 7. Employees working in the vicinity of mobile plant or construction vehicles shall wear a reflective vest; reflective stripes on overall do not meet the required visibility and shall not suffice.
- 8. Respiratory Protective Equipment:
 - a. The use of respiratory protective equipment shall be defined in the site risk assessment and validated at the hand of hygiene measurements of airborne pollutants for the specific risk.
 - b. Systems of air purification shall match the measured airborne pollution in the hygiene monitoring.
 - c. All respiratory PPE shall meet the prescribed South African standards.
- 9. Welding PPE:
 - a. All welding- and flame cutting PPE shall conform to the standard incorporated in the OHSA (see General Safety Regulations).
 - b. Welders shall use the prescribed welding kit, including full skin cover hoods, protective yoke and, where the welding risks identify spatter, the necessary aprons and leg/shoe covers.
 - c. Unless technically contraindicated, all welders shall use automated face shields.
 - d. Manufacturers working during assembly, tacking or assisting with welding operations shall use automated face shields.
- 10. The H&S Plan shall contain an outline of the PPE to be used and the management of such PPE on site, including the issuing of PPE, overnight storage, any sanitising of PPE and all disposal of PPE.
- 11. Failure to use protective equipment as per the site risk assessment shall require disciplinary intervention and this process shall be documented in the site induction.
- 12. Disposal of PPE must conform to the Environmental legislation.



24. Occupational Health and Safety Signage

- 4. The Principal Contractor shall erect and maintain quality safety signage.
- 5. The signage shall include, but is not be limited to:
 - Restricted and controlled entrance signage, including a sign indicating that all visitors must report to the site office and must be accompanied by the principal contractor when accessing the site.
 - b. The name and telephone number of the responsible person(s).
 - c. Designated person and contact details dealing with complaints
 - d. Emergency telephone number(s).
 - e. Perimeter signage in respect of public health risks (falling objects, noise and dust, etc.), where applicable.
 - f. PPE to be worn at the particular site.
 - g. Traffic controls, within the CI 000691 De Mond Nature Reserve
 - h. Where falling objects may occur, relevant warning signs must be erected.
 - i. Heights structures, temporary structures and all risk areas must be indicated as per the specific methods defined in the H&S plan.
 - j. No access restrictions and, where applicable, signage, which shall apply to fall risk areas, confined space areas, scaffold access, temporary structures, demolition work, asbestos work and any others identified in the risk assessments.
 - k. Lock-out signage

25. First Aid Management

- 1. The Principal Contractor shall ensure that adequately trained first aiders are on site, at all times when construction employees are on site; this applies even if less than 10 employees are on site.
- 2. First aiders shall be identified and shall have immediate access to a comprehensively stocked first aid box.
- 3. Such first aid box shall be stocked to include all first aid equipment as per the minimum requirements listed under General Safety Regulation 3, and any additional items identified in the risk assessment.
- 4. Work groups performing fall risk work shall have a first aider trained in the specific risks of dealing with falland suspension injuries. The first aid box for these teams shall contain suitable additional equipment which takes into account the type of injuries that are likely to occur, the nature of the activities performed and the number of employees employed.
- 5. Where shift work is performed, each shift shall comply with the above first aid requirements.
- 6. All the above controls shall be documented in the H&S Plan.
- 7. All above first aid requirements shall, mutatis mutandi, apply to contractors and sub-contractors of the Principal Contractor.

26. Incidents, Accidents and Emergencies



- 1. All near misses, incidents and accidents must be recorded, investigated and managed in accordance with the statutory provisions.
- 2. Each H&S incident and accident must be recorded in a register kept in the H&S file; a template of the register shall be included in the H&S Plan.
- 3. Every accident shall be reported to the client and the client H&S Agent immediately; that is as soon as the construction manager or the supervisor or the principal contractor becomes aware of it. Such reporting must occur via direct contact (person-to-person or via telephone) and via e mail to lize@lhse.co.za.
- 4. Each H&S incident and accident must be recorded in a register kept in the H&S file; a template of the register shall be included in the H&S Plan.
- 5. A record of all incident investigations shall be kept in the health and safety file and all records shall be made available to the client without exception; this includes records relating to Section 24 of the OHSA.
- 6. Where a fatality or permanent disabling injury or any incident referred to in Section 24 occurs on the construction site, the Principal Contractor must ensure that the provincial director is provided with a report contemplated in section 24 of the Act, in accordance with regulations 8 and 9 of the General Administrative Regulations, 2013, and that the report includes the measures that the Principal Contractor intends to implement to ensure a safe construction site as far as is reasonably practicable. The Principal Contractor shall ensure that contractors apply the same measure and shall require that this process is documented in the contractor's H&S plan. The Principal Contractor's H&S plan shall include a specific procedure in this regard, which shall include that all documents and instructions in respect of any incident referred to in Section 24 shall immediately and unconditionally be forwarded to the Client's agent at lize@lhse.co.za.
- 1. The contractor shall organise and document detailed emergency and accident arrangements on site and outline these, in detail, in the H&S Plan. These arrangements shall be specific for the site H&S risks and shall make specific provisions for:
 - a. A specified ambulance service;
 - b. A registered medical practitioner or registered hospital service which can deal with the identified emergencies (in terms of facility, equipment and competence of emergency personnel);
 - c. A method to ensure that the appropriate COIDA documents are available on site, so that prompt medical aid, as defined in the COIDA, may be available to any injured employee.
 - d. The health service where employees can be sent for screening and testing must be identified in the emergency protocol for the site.
- 2. The emergency arrangements shall be displayed on site and shall include:
 - a. A comprehensive emergency and evacuation plan must take into account:
 - i. The nature and location of the construction site;
 - ii. The distance and condition of access roads to the construction site.
 - iii. Where applicable, any other obstructions, e.g., overgrown vegetation, trees, etc. preventing easy accessibility.
 - b. An emergency flow chart;
 - c. An updated list of emergency telephone numbers.

27. Facilities for Employees



- 1. The Principal Contractor shall document the construction site's method to ensure the statutory application of employee's rights in terms of employee facilities as defined in the OHSA, the General Safety Regulations and the Construction Regulation, including:
 - a. The provision of facilities for safekeeping and changing.
 - b. The method of ensuring that employees requiring to change on site can do so in privacy.
 - c. The provision of an eating area.
 - d. The provision and maintenance of sufficient toilets on site
 - e. Sufficient and hygienic drinking water.
 - i. Water in existing water tanks and in the boreholes are not allowed to be consumed due to the risk of potential health issues.
 - ii. This rule that be documented in the HS Induction of the Principal Contractor.
 - f. A hand-washing facility.
 - g. The provision of employee facilities compliant with the Hazardous Chemical Agent Regulations' provisions, in the case employees are exposed to hazardous chemical agents.
 - h. The Principal Contractor will provide facilities for construction workers. Such facilities will be communicated during the site induction.
 - i. It is strictly forbidden for any contractor's employees to reside overnight on the construction site.
- 2. Contractor's toilets must be:
 - a. Where portable toilets are provided, toilets will be fixed so as to avoid becoming wind-blown.
 - b. Be available for both sexes and sign-written: 'Male' and 'Female'.
 - c. Sanitised daily; an inspection and sanitising record must be kept in the H&S file.
 - d. Supplied with toilet paper, flushing water and a hand basis with water, soap and a towel system.
 - e. Inspected daily and, where bucket collections are in place, emptied at least twice a week and one of these occasions must be on Fridays.
 - f. Preferably, portable male urinal (open stand-up) systems should also be used.

28. Audits and inspections

- 1. The client H&S Agent shall conduct regular health & safety inspections and audits to ensure legal compliance and compliance with the Principal Contractors' H&S Plan.
- 2. During audits and inspections by the client, designers, the H&S Agent, any unsafe work shall be stopped by their authority. Work stoppage findings shall be documented. Where required, work stoppage as a result of inspections by the H&S Agent shall be confirmed in site instructions (contract instructions) by the Principal Agent or the H&S Agent.
- 3. Records of findings and audits shall be kept in the Principal Contractor's H&S File together with a record of any non-conformance report, investigation and corrective & preventative action.
- 4. The Principal Contractor shall document corrective action planning and forward this to the Client Agent within 72 hours of receiving a finding.
- 5. The Principal Contractor's H&S Plan shall document the corrective and preventative action procedure applicable to the project, including the planned method to ensure that non-conformities are managed immediately.
- 6. The client H&S Agent shall stop all or any work which does not conform to the H&S Plan, which is contradictory to statutory requirements or which poses a threat to the health and safety of persons.



- 7. The Principal Contractor shall conduct and document monthly health & safety audits of all contractors and sub-contractors to ensure compliance with the OHSA, its Regulations and the Principal Contractors' H&S Plan and of these contractor's H&S plan.
- Records of Principal Contractor audits of all contractors and sub-contractors on site shall be kept in the Principal Contractor's H&S File together with a record of any non-conformance reports, investigation and corrective & preventative action by sub-contractors and shall be made available to the H&S Agent during monthly H&S audits.

29. Hot Work, Fire Risks, Fire Extinguishers and Fire Fighting Equipment

- 1. No open fires are allowed on site.
- 2. No smoking is allowed on the construction site, except in the designated smoking area; the necessary controls will be formulated in the principal contractor's H&S plan.
- 3. The Principal Contractor shall provide suitable fire extinguishers, which shall be serviced regularly, in accordance with the manufacturer's recommendations.
- 4. Safety signage shall be prominently displayed in all areas where fire extinguishers are located. The Principal Contractor shall arrange for the training of the relevant personnel, in the use of fire extinguishers.
- 5. The fire extinguisher inspection register and the letter of appointment of the competent inspector shall be included in the H&S Plan.
- 6. No hot work is permitted, unless authorised by the Client;
 - a. Taking into account that construction work is done in the CI 000691 De Mond Nature Reserve, which is surrounded with Fybos (high fire risk) hot works must be controlled with strict measures in place.
 - b. The Principal Contractor shall include a detailed method statement on how any hot work shall be managed.
 - c. No hot woks are allowed without a hot works permit issued by the client?
- 7. Hot work areas:
 - a. If hot manufacturing work is required on site, the principal contractor shall arrange for a dedicated hot work area with the Client?
 - b. Hot work areas must be barricaded and indicated with signs.
 - c. Screens must be placed so as to arrest all electro-magnetic emissions, flying particles and sparks.
 - d. All employees must use the full hot work kit; this includes manufacturers or assistants to the person performing the hot work.
 - e. Serviceable fire extinguishers must be in place.
 - f. All employees doing hot work must be trained and certified competent in the use of the appropriate fire extinguisher.
 - g. A post-work and daily final area inspection must be done by the principal contractor and documented in a register in the H&S file; special attention must be made for the potential of smouldering remnants.

30. Live Energy Work and Electrical Reticulations and Machinery



- The Principal Contractor shall appoint a competent electrician who shall ensure zero potential of all electrical reticulations worked on and who shall ensure that dedicated power sources are safely installed for the use during the construction. Where applicable, a registered competent electrician shall also be responsible to ensure safe and compliant electrical installations.
- 2. The Principal Contractor shall appoint a competent registered Electrician(s), with competence, experience and registration adequate for the type of electrical work performed.
- 3. As per the scope of competence and authority, the Electrician shall be responsible to ensure and certify safe and compliant electrical installations.
- 4. The Principal Contractor shall appoint a competent person to identify and inspect all exposed underground cables, overhead cables or any other electrical installations to ensure that these are not a hazard to any person.
- 5. The competent person shall certify and inspect all temporary electrical installations and machinery, including generators and leads; the frequency shall be determined in the H&S plan.
- 6. The letters of appointment, proof of competency and registers applicable to these inspections shall be included in the H&S Plan.
- 7. All electrical cables shall be assumed "alive" and, where applicable, the Principal Contractor shall take adequate steps to ensure that all persons are prevented from accessing any electrical installations.
- 8. All existing electrical services must be assumed live at all times.
- 9. In any event where CI 000691 De Mond Nature Reserve's electrical supply may be affected by the work, the Principal Contractor and the electrical contractor shall, via the Principal Agent, communicate with the CapeNature and obtain permission to interrupt or discontinue supply.
- 10. No live energy work shall be performed. Where live electrical work is required, a dangerous work permit shall be in place. The permit system shall be defined in the principal contractor's H&S plan.
- 11. Contractors will ensure that all energy is brought to zero potential, that residual energy is purged, that energy sources are switched off and locked out by all employees working in the danger zone and are tagged, prior to any work being performed on the energy source or reticulation. The contractor shall include a zero Potential, Lock Out and Tag Out method statement and safe work instruction(s) in the H&S Plan.
- 12. No electrical machinery shall be allowed to have any joined leads.
- 13. The Principal Contractor shall ensure that all electrical testing equipment to be used on site has a valid calibration and that the calibration sticker is affixed to the equipment, clearly indicating the calibration date and the next due date.
- 14. Any unsafe condition shall be reported immediately to the Principal Agent and to the H&S Agent; and the Principal Contractor shall take immediate steps to prevent employees or members of the public from gaining access to the dangerous installation and the area surrounding it.
- 15. The Principal Contractor shall appoint a competent person to inspect all portable electrical tools, including leads. The letter of appointment and template of this inspection register shall be included in the H&S Plan.
- 16. The Principal Contractor shall include a method statement for the safe use of portable electrical tools, including the management of the hazards of extension leads.
- 17. Where temporary installations are installed a COC for these installations shall be included in the H&S File.
- 18. Where applicable, the contractor shall include any 'electrical dangerous work procedure' in the H&S Plan.

31. Excavation Work



- 1. The letters of appointment and proof of competency of the competent excavation supervisors and inspectors shall be placed in the H&S plan.
- 2. A template of the inspection registers must be placed in the start-up H&S file.
- 3. The principal contractor shall take cognisance of the geotechnical study pertaining to the conditions at the construction site and must plan all excavation work in accordance with the recommendations of the professional engineer.
- 4. The Principal Contractor shall take cognisance of the mapping of existing services on the site to be worked on. The Principal Contractor shall take cognisance of the fact that the mapping may be incorrect or incomplete; the Principal Contractor's H&S plan shall document the planned system for identification of services.
- 5. The principal contractor must ensure that every excavation, including all bracing and shoring, is inspected daily, prior to the commencement of each shift and that no person enters the excavation or works in a risk zone until the excavations is assessed and declared safe.
- 6. All excavations must be left open for the minimum of time required and those that are left open on the site must be protected by a barrier or a fence of at least one metre in height, as close to the excavation as is practicable. The protective barrier or fence must adequately prevent persons from falling in the excavation and barrier taping is not sufficient for this purpose.
- 7. Excavation shoring and bracing, if required, shall be designed by a designer appointed in writing, who shall inspect and approve the installed shoring and bracing.
- 8. Where persons work, inspect or test excavations, warning signs must be in place next to an excavation.
- 9. The risk controls for ensuring excavation safety, including working inside and around excavations must be documented in the H&S plan.
- 10. Excavations made in roadways shall be safely closed, compacted and the road surface shall be restored so as to not pose a traffic hazard.
- 11. All excavations that are accessible to the public shall be closed daily and none shall remain open after sunset.
- 12. Dewatering of excavations must be done in such a way that extracted water is collected. No water must be pumped in the stormwater systems.
- 13. All above excavation safety requirements shall, mutatis mutandi, apply to contractors and sub-contractors of the Principal Contractor.

32. Demolition Work

- 1. Any demolition work during the construction at the Construction of the CI 000691 De Mond Nature Reserve project must be addressed through a specific risk assessment and method statement by a competent person appointed in writing.
- 2. Structural safety of all planned demolition shall be risk assessed by a competent person appointed in writing and shall be used during all DSTI's for demolition.
- Specifically, structural safety of any services affected by demolition (e.g., bulk fire sprinkler conduits, electrical conduits etc.) shall be risk assessed by a competent person appointed in writing and shall be used during all DSTI's for demolition.
- 4. The Principal Contractor shall ensure that demolition materials are safely disposed of. The Principal Contractor shall be fully responsible for all demolition waste which may find their way into recycling as also defined in S 10 of the OHSA.
- 5. The demolition method statements must include the engineering survey, where applicable, and shall be approved in writing by the construction manager.



- 6. The H&S Plan must document the name, signed letter of appointment, competency and the curriculum vitae of the competent person(s) appointed to design and supervise all demolition work.
- 7. Safe work instructions for employees working on demolition must be documented in writing.

33. Asbestos

- 1. The principal contractor shall ensure that asbestos work is carried out in strict abeyance of all requirements of the Asbestos Abatement Regulations, 2020 Published under Government Notice R1196 in GG 43893 of 10 November 2020, under the Occupational Health and Safety Act.
- 2. The removal of asbestos must be by an asbestos approved Contractor and monitored by an asbestos approved inspection authority (AAIA) as per the Asbestos Regulations.
- 3. The Client appointed AAIA shall ensure that the duties of the Client for Asbestos work is undertaken as per the Asbestos Abatement Regulations 2020.

These duties shall include but not limited to:

- a) Identification of Asbestos in place
- b) Inventory of Asbestos in place
- c) Risk Assessment for exposure to Asbestos
- d) Compile the Asbestos Management Plan
- 4. Proof of notification to Department of employment and Labour (as per Annexure 2) as per AR sec10 must be in place prior to any Asbestos related work starting. No work will be allowed without the proof of Registration of the Asbestos Contractor with the Department of employment and Labour.
- 5. The Asbestos Contractor shall ensure that compliance with Asbestos Regulation 2020, is adhered to at all times on site. The location of the Asbestos shall be determined and recorded in a Register, which shall be updated annually.
- 6. All asbestos-containing materials shall, immediately upon removal, be packed in a double layer of sturdy plastic and packed in a safe, dedicated area which will be sign posted. Stacked sheets shall be secured as to avoid theft.
- 7. All asbestos-containing materials shall be transported by a registered waste transporter; transported materials shall be packed in a double layer of sturdy plastic.
- 8. Proof of final deposit at a registered waste site which is permitted to accept fibre-cement asbestos products shall be placed in the H&S file.
- 9. The principal contractor shall:
 - a. Develop a compressive risk assessment.
 - b. Employees likely to be exposed to asbestos are trained in accordance with regulation 7 of Asbestos Abatement Regulations, 2020
 - c. Medical surveillance is performed for employees likely to be exposed to asbestos, in accordance with regulation 17 as Asbestos Abatement Regulations, 2020.
 - d. Develop a safe operating procedure for handling and removing asbestos materials.
 - e. Notification of the asbestos work to the relevant provisional office of the Department of employment and labour, 7 days prior to commencement of work, in accordance with regulation 10 of the Asbestos Abatement Regulations, 2020.
 - f. Air monitoring conducted by AIA, where the risk assessment indicates monitoring as a necessary control measure.
 - g. Ensure that asbestos waste is transported and disposed of safely in accordance with regulation 21 of the Asbestos Abatement Regulations, 2020.



- 10. The removal of asbestos-containing fibre cement structures requires a Risk Assessment to deal with the risks associated with the following:
 - a. Access to structures
 - b. Fall risk work, with a high fall-through risk
 - c. Drop zone risk work
 - d. Demolition work, with a high structural collapse risk
 - e. Hazardous biological agent risk, emanating from moulds and mould dusts and from any biological dusts emanating from infestation of ceiling structures.
 - f. Hazardous chemical agent risk, which is largely determined by asbestos fibres risk.
 - g. Temporary storage of asbestos containing waste on site.

34. Temporary Work

- 1. Where temporary work is required, the Principal Contractor shall appoint a Temporary works designer in writing.
 - a. The Principal Contractor shall submit the proof of competency and appointment letter of the competent person(s) appointed as temporary works designer in the H&S plan.
 - b. The temporary works designer shall be competent to design, inspect and approve the erected temporary works on site before use.
 - c. The principal contractor, the construction manager and the temporary works designer shall ensure that:
 - i. The temporary works drawing, or any other relevant document includes construction sequences and methods statements, including those for the removal of temporary structures in high-risk areas.
 - ii. The temporary works designer has been issued with the latest revision of any relevant structural design drawing;
 - iii. The temporary works design and drawing is used only for its intended purpose and for a specific portion of a construction site;
 - iv. The temporary works drawings are approved by the temporary works designer before the erection of any temporary works.
 - v. The temporary works design and drawing are used solely for its intended purpose.
 - d. Temporary work design management shall be documented as a procedure in the H&S plan.
- 2. Where temporary work is required, the Principal Contractor shall appoint a temporary works supervisor
 - a. The Principal Contractor shall submit the proof of competency and appointment letter of the competent person(s) appointed as temporary works supervisor in the H&S plan.
 - b. The temporary works supervisor shall supervise all temporary works operations and shall ensure that all equipment used in temporary works structure are carefully examined and checked for suitability before being used.
- 3. Where temporary work is required, the Principal Contractor shall define risk controls in the H&S plan which ensure:
 - a. That a team of competent persons adequately erect, support brace and maintain all temporary works structures; the H&S plan shall contain the evidence that all persons required to erect, move or



dismantle temporary works structures are provided with adequate training and instruction to perform those operations safely;

- b. That all temporary works structures are capable of supporting all anticipated vertical and lateral loads that may be applied to them and that no loads are imposed onto the structure that the structure is not designed to withstand; this includes the requirement that the foundation conditions are suitable to withstand the loads caused by the temporary works structure and any imposed load in accordance with the temporary works design;
- c. That all temporary works structures are done with close reference to the structural design drawings;
- d. That, where any uncertainty exists, the services of a structural designer are available, and that consultation and advice is acquired prior to risk work performed;
- e. That detailed activity-specific drawings pertaining to the design of temporary works structures are kept in the H&S file;
- f. That all erected temporary works structures are inspected and approved by the temporary works designer before use. This process shall be defined in the H&S plan and shall include a written letter of approval by the temporary work designer upon completion of the structure's construction.
- g. That all temporary works structures are inspected by the temporary works supervisor immediately before, during and after the placement of concrete, after inclement weather or any other imposed load and at least on a daily basis until the temporary works structure has been removed; the inspector must be appointed in writing and proof of competency must be included in the H&S plan. The register documenting the results of the inspection must be placed in the H&S file;
- h. That no person casts concrete or place a load on a temporary work structure until authorization in writing has been given by the designer;
- i. That after casting concrete, the temporary works structure is left in place until the concrete has acquired sufficient strength to safely support its own weight and any imposed load, and is not removed until authorization in writing has been given by the temporary works supervisor;
- j. That any non-conformity identified during work with temporary works structures is prevented and corrected;
- k. Safe use of solvents or oils or any other similar substances used in temporary works operations (see also hazardous chemical agents);
- I. That all access to temporary work structure is solely by means of secured ladders or staircases for all work to be carried out above the foundation bearing level and fall prevention structures must be erected preventing persons from falling off the temporary work structure during erection & dismantling, during the casting of concrete, during inspections and during any work performed on top of the structure after casting. Where no fall prevention can be secured, a fall arrest system shall be included in the design and shall be complied with at all times.

35. Fall Protection and Fall Risk Work

- The Principal Contractor shall submit the name and the curriculum vitae of the competent person who has been appointed to prepare the fall protection plan together with the signed letter of appointment, in the H&S Plan. The fall protection plan developer must be a person employed by the Principal Contractor and who works full time at the Construction Site during the performance of fall risk work.
- 2. The Principal Contractor's fall protection plan shall accommodate for all fall risk work on site, including that of work done by contractors and sub-contractors. The Principal Contractor's fall protection plan shall be adopted in full by any contractor involved in fall risk work.



- 3. The fall protection plan shall strictly comply with the requirements of the OHSA, and the planning shall be commensurate with the fall risk work.
- 4. The fall protection plan shall include all fall risk work which is planned to be performed by contractors or subcontractors.
- 5. The site-wide fall protection plan shall be based on a policy of zero harm and zero tolerance:
 - a. No person shall be required or permitted to work in a fall risk position, unless all controls formulated in the approved fall protection plan are fully and permanently met.
 - b. Any person found in breach of the fall protection plan shall be removed off site immediately and permanently.
- 6. The Principal Contractor and any contractor shall ensure that:
 - a. All fall risk work is planned and forms part of the daily safe task instructions; note that
 - i. Work from a ladder or work where ladders are used as access tool are potential exposures of employee to falling either from, off or into and such work is considered 'heights work'.
 - ii. There is no minimum of maximum height defining fall risk.
 - iii. Fall risk work done on an ad hoc basis or which forms part of abnormal or emergency processes shall be risk assessed and employees shall be instructed in the safe work process prior to work commencing.
 - b. Only trained and competent persons with a valid medical certificate of fitness are permitted to perform fall risk work.
 - c. All medical certificates of fitness for fall risk work are issued by a registered occupational medical practitioner and are included in the H&S Plan. The medical requirements for these examinations are included in this CHSS and the medical certificate of fitness shall confirm that the employee has passed these tests.
 - d. All elevated areas are reached by means of a ladder, scaffold or man cage; and climbing on machinery, installations or make-shift means of access is not permitted.
 - e. No person must be allowed to work in a drop zone or under an area where there is a risk of falling tools or materials.
 - f. All openings through which persons can fall are closed off with material which can support the weight of a person; such material shall be permanently fixed over the opening.
 - g. Where openings cannot be closed, a sturdy barricade of at least 1.5 m high, which adequately prevents persons from falling through the opening, shall be in place at all times; this also applies to all deck areas presenting a fall risk.
 - h. Man-lift machinery must not be used for the lifting of materials in position.
 - i. All decks, shafts or other areas where persons can fall off shall have adequate edge protection at all times.
- 7. A copy of the fall protection plan, the signed appointment letter and proof of competency must be included in the H&S Plan.
- 8. Where the use of any harnesses is indicated in the fall protection plan, the H&S Plan shall contain the following:
 - a. The need for the use of fall prevention- or fall arrest harnesses
 - b. The safe application, attachment and maintenance processes for harnesses
 - c. The type of harness and the type of hook to be used
 - d. The specific attachment points applicable to the fall risk work; any safety attachment shall be risk assessed by a competent person appointed in writing who shall also inspect and finally approve the attachment.
 - e. The method of storing the harnesses when not in use



- f. The method and register for the safety inspection of harnesses
- g. A fall recovery method statement.
- 9. Where a residual fall-risk is identified in work requiring access to temporary works, steel structures, high walls, decks, platforms or roofs etc., a life line will be available and used at all times;
 - a. The life line will be designed and erected by competent person(s) appointed in writing
 - b. A life line inspection method and record will be included in the H&S Plan.
 - c. The contractor shall identify the competent designer(s) in the H&S plan.
 - d. The life line design management shall be documented as a procedure in the H&S plan.
- 10. Where fall arrest controls are planned or where suspension risk is identified, adequate provisions for fall recovery must be planned and documented.
- 11. The fall protection plan shall include a section on the safe erection, inspection, maintenance and removal of temporary work structures.

36. Ladders

- 1. Ladders shall be compliant to the statutory requirements.
- 2. Ladders shall only be used for the purpose for which they are designed. No make-shift ladders are permitted on site.
- 3. Ladders shall be identified, inspected regularly and the record of the inspection shall be kept in the H&S file.
- 4. A-frame ladders shall have a patent spreader bar system and shall not be used as vertical ladders, unless expressly designed to do so.
- 5. Ladders shall extend at least 90 cm above any level or opening accessed with the ladder.
- 6. No vertical ladders shall be accessed by any person unless firmly attached at the bottom and top or held in place by a fixed installation or a buddy.

37. Scaffolding

- 1. The Principal Contractor shall submit the appointment letter of the competent person(s) appointed:
 - a. To design the scaffolding; and
 - b. To erect, maintain, move or dismantle scaffolds; and
 - c. To supervise all scaffolding operations and to inspect erected scaffolds
- 2. The H&S Plan must include the signed letters of appointment and the proof of competency.
- 3. The Principal Contractor shall ensure that all scaffolding complies with the requirements of the OHSA and Regulations and with the requirements of Temporary Works in this CHSS.
- 4. Scaffold erectors and inspectors must be formally trained and certified competent; such training must conform to the requirements of SANS 10085.
- 5. Scaffolds must be clearly tagged with safe access signage; scaffolds must be inspected daily prior to use. All scaffolds on site must be individually identified and display a safe/not safe sign.
- 6. Inspections by the scaffold inspector must be documented on the scaffold tag and in a register; a template of the tag and of the register shall be included in the H&S Plan.
- 7. All scaffolds must be accessed with a ladder only. Ladders must be inside the scaffolds and hatches must close ladder-openings in decks.
- 8. All scaffold decks must be fully covered and barricaded so as to prevent persons working there from falling off.



- 9. All scaffolds shall be erected, maintained, adapted or changed and dismantled by a scaffolding team supervised by a competent supervisor appointed in writing and who shall define the scope of work and the controls to be applied; scaffold erectors shall not be the persons deciding on any design, sequence- or method of work.
- 10. Scaffold erectors must attach a fall prevention harness at all times; the double lanyards must be fitted with scaffold hooks only.
- 11. The H&S Plan shall include the safe work instruction applicable to all employees working on scaffolds and the method of ensuring competency.

38. Cranes and lifting operations

- 1. Lifting operations require that:
 - a. Each lift or lift-type is identified, planned, risk assessment and the necessary risk controls are defined, applied and adhered to.
 - a. All lifting machines and all lifting equipment are adequate, safe, inspected and certified safe for use.
 - b. All lifting machine operators are fit and competent for the work.
 - c. Slinging-, rigging-, and banks men controllers are trained and competent for the lifts.
 - d. No person is allowed to access the drop zone of any lift.
 - e. Lifts are subject to a risk assessment and DSTI, which are communicated to all involved.
 - f. The H&S plan includes the communication plan for all lifts.
- 2. The contractor shall include a method statement relating to all crane lifts, planned at the construction phase and update this with subsequent alternative lift plans.
- 3. Each crane shall have (in the cab or operating area), the following legal documents on site at all times:
 - a. The latest and up-to-date load certificate of the crane;
 - b. A record of the 6-monthly inspection of the crane by a registered inspector;
 - c. The crane operator(s) current crane license;
 - d. The crane operator(s) medical certificate of fitness, issued by an occupational medical practitioner;
 - e. The inspection register or certification of 3-monthly inspection of all lifting equipment used with the crane;
- 4. The H&S Plan shall include the method statement for safe use of the crane, including the method of communication, the protection of fall zones and the method of determining whether the weather permits safe crane work.
- 5. Any fixed crane's load test certificates shall be included in the H&S file.
- 6. All lifting equipment and gear used on site shall be identified, SWL-indicated and listed in a register contained in the H&S file.
- 7. The requirements for cranes and lifting operations apply equally to delivery trucks and the principal contractor shall ensure that all deliveries requiring lifting or rigging comply with the legal requirements.
- 8. The H&S plan shall include a specific method statement listing the planned lifts and the planned methods of attachment and rigging.
- 9. The principal contractor shall include the letter(s) of appointment, method statements and work instructions, including all certificates of competency and of conformance in the H&S plan.
- 10. Where man-lift equipment is used, the principal contractor shall ensure compliance with Driven Machinery Regulation 18 and that competent persons are appointed in writing to ensure:
 - a. That all scissors' lifts, cherry pickers, forklift with man-cages or any other lifting machine used to lift personnel are used only by a trained and competent operator in possession of a competency certificate issued by and accredited provider who holds a valid accreditation issued by an authorised body, in



terms of the SAQA Act, and who is approved by the Chief Inspector, in terms the Driven Machinery Regulation 18.

- b. That all lifting machines are load tested and inspected as required in Driven Machinery Regulation 18 and that the records thereof are either with the machine or in the principal contractor's H&S file.
- 11. Where applicable, the principal Contractor shall ensure that deliveries using cranes comply with the above requirements and that all legal documents are kept in the cab of the delivery truck whilst on the client's site.

39. Concrete Works

All concrete, mortar or cement-containing work shall conform to the following:

- 1. If concrete or cement mixing is to be undertaken on the site, this must be undertaken on an impermeable surface.
- 2. Any contaminated water generated by these activities must be contained and appropriately treated / disposed of.
- 3. No contaminated water may be discharged to the environment.
- 4. Cement mixers must be placed on large trays to prevent accidental spills from coming into contact with the soil surface.
- 5. All excess cement-containing material and any waste generated during construction must be removed from the site on an ongoing basis and disposed of at a suitably registered waste disposal site.
- 6. Washing of the excess concrete into the ground is not allowed.

40. Flammable liquids and gasses

- 1. Where authorised by the Client, any flammable substances must be stored safely in a flammable store or cabinet approved by the Municipal Chief Fire Officer; no other materials shall be stored in the flammable store or cabinet.
- 2. Where authorised by the Client, any flammable gasses must be stored in accordance with a method statement approved by the Principal Agent.
- 3. Where required, the H&S Plan shall include a method statement detailing the safe use, storage, decanting and spill controls for all flammable liquids used or stored on site.
- 4. Combustible fuels must be stored and decanted in accordance with a method statement in the H&S plan; all fuel operations must prevent soil pollution and run-off and appropriate controls must be planned and implemented.
- 5. Storage management must comply with CapeNature's environmental management plan & the Environmental legislation.

41. Hazardous Chemical Agents

1. With respect to hazardous chemical agents (HCA) used, the contractor shall ensure that:



- a. The H&S plan includes a list of all HCA which are planned for use on site.
- b. All SDS are included in the H&S file.
- c. An HCA risk assessment for all the HCA on site, is included in the H&S plan.
- d. The safe use, storage, emergency procedures and safe disposal of hazardous agents are addressed in a method statement/s, included in the H&S Plan.
- e. Proof of competency and signed letters of appointment of the person responsible for chemical handling, is included in the H&S file.
- 2. Any hazardous chemical agent intended to be applied on site during the project (i.e., after approval of the H&S Plan) shall be subject to an issue-based risk assessment and method statement, which must be presented to the client Agent prior to the agent being introduced on site.
- 3. Work with hazardous chemical agents shall be subject to a specific control program compliant to the Hazardous Chemical Agents Regulations of the OHSA; the program shall, as a minimum, include:
 - a. Identification of hazardous substances: each HCA shall be risk assessed and such risk assessment recorded, as defined in the Hazardous Chemical Agents Regulations of the OHSA:
 - i. The SDS of each HCA shall be placed in the H&S file.
 - ii. The risk assessment shall be included in the H&S plan.
 - b. Educating and training of exposed employees.
 - c. Zoning of risk areas.
 - d. Air monitoring where airborne chemical vapors may be present.
 - e. Medical surveillance, as may be required.
 - f. Spill, leak and accidental exposure controls.
 - g. Waste handling.

42. Housekeeping, stacking, storage and drop zones

- 1. The Principal Contractor shall include a campsite management method statement in the H&S plan, to address, as is applicable,
 - a. Access and egress.
 - b. Parking areas for plant.
 - c. Parking areas for vehicles (contractor's and visitors).
 - d. Material, equipment lay-down areas.
 - e. Storage areas of hazardous materials, if applicable.
 - f. Egress and emergency routes.
 - g. Any planned manufacturing areas.
- 2. The Principal Contractor shall appoint a person responsible for general housekeeping and stacking and storage of materials and equipment on the entire site.
- 3. A method statement for the safe management of any drop zone shall be included in the H&S plan.
- 4. A method statement for the safe lowering of materials shall be included in the H&S Plan.
- 5. All deliveries of materials shall be controlled by the appointed person and no haphazard storage shall occur; amongst other. Cognizance must be taken with regards to the overhanging Milkwood trees at the CI 000691 De Mond Nature Reserve site access point. Where Milkwood, or any other vegetation are obstructing egress, the Principal Contractor shall communicate with the Client and the decision of the Client shall be decisive to deal with clearing overgrown vegetation.
- 6. All deliveries of building materials shall be controlled by the appointed person who shall communicate with the site security services and shall also ensure that there is direct communication with delivery trucks,



ensuring that these do not enter other construction sites and off-load under direct control of the Principal Contractor.

7. Storage- and stacking areas shall be secured and protected so as to avoid unauthorised access.

43. Waste

- 1. The Principal Contractor shall appoint a person responsible for site-wide control & removal of scrap, waste and debris.
- 2. No hazardous waste, combustible materials and containers shall accumulate on the construction site.
- 3. The Principal Contractor shall document a waste management method statement in the H&S Plan.
- 4. All waste must be contained in drums or bins with lids at all times.
- 5. All food waste must be removed off site daily; there must be no household waste drums overnight.
- 6. The Principal Contractor must appoint a responsible person who shall ensure that:
 - a. Waste does not accumulate on site;
 - b. Waste skips and the storage area are clean and hygienic;
 - c. Waste skips are regularly removed;
 - d. Hazardous waste is not mixed with general waste;
 - e. Wastes are transported and managed by registered waste transporters.
 - f. Contractor rubble must be placed in waste skips and not stacked on site.
 - g. Waste skips must be removed regularly so as to avoid overflowing.
- 7. Waste manifests must accompany waste skips and the completed waste manifests must be filed in the H&S file on site.
- 8. Hazardous liquid and solid waste must be identified in the waste management section of the H&S plan and the waste stream must be clearly outlined;
- 9. Waste management must comply with the CapeNature's environmental management plan & Environmental legislation.
- 10. All waste skips removed from site must be recorded and a proof of final deposit at a registered waste site (waste disposal certificate) must be on record in the H&S file.

44. Hazardous Biological Agents

- 1. Where live sewer hazards are identified, a risk assessment in respect of sewer-borne hazardous chemical substances and hazardous biological agents shall be done and a method statement formulated and trained to all persons working there.
- 2. In view of the risk of macro biological hazards (including snakes, scorpions, etc.), the contractor's H&S plan shall include a method statement for dealing with the identified H&S risks.
- 3. The Principal Contractor shall plan, implement and maintain controls to prevent work-acquired covid-19 in accordance with the regulations for hazardous biological Agents, 2022, the applicable DoEL COP and DOH regulations.

45. Occupational Health

- 1. The H&S Plan shall include all medical certificates of fitness for all employees working on the site.
- 2. The standard for the occupational medical testing is defined in the table hereunder.



- 3. Only medical certificates of fitness issued by a registered occupational medicine practitioner are deemed valid, and all medical certificates of fitness
 - a. Must be issued after the doctor has personally examined and evaluated the employee and the relevant tests;
 - Must be on the doctor's stationary headed by the practice name registered with the Health Professions Council of South Africa (HPCSA) (and not in the name of a company which is not registered with the HPCSA);
 - c. Must be in the format defined in Annexure 3 to the Construction Regulations;
 - d. Must include the Occupational medical Practitioners MP registration number and practice number and proof of registration as Occupational Medicine Practitioner with the HPCSA.
 - e. Must include certification that the doctor personally examined the employee.
 - f. Medical certificates issued by Professional Nurses or General Medical Practitioners are explicitly not acceptable.
- 4. The H&S plan shall include the name and proof of registration of the Occupational Medicine Practitioner(s) appointed by the Principal Contractor to perform the medical examinations and a commitment in writing stating that no employee shall work on site unless certified fit for work by the appointed occupational medicine practitioner.

46. Access, traffic management and camp site

- 1. Access to all work risk-areas shall be controlled by the Principal Contractor in order to ensure that no member of the public or visitors can reasonably access any area, machine or article which places the health or safety of such a person at risk.
- 2. The Principal Contractor shall also post up a notice at every entrance to such risk areas, prohibiting the entry of unauthorised persons.
- 3. All employees of all contractors working at the construction site shall be transported in vehicles which have seats firmly secured and adequate for the number of employees to be carried; this means that strictly no personnel may be transported in the load body of an LDV or a truck or by construction mobile plant.
- 4. No employee shall be transported together with goods or tools.
- 5. The Principal Contractor shall ensure that all employees and visitors are aware and comply with the site's safe speed restriction, defined by the principal contractor at the hand of the risk assessment.
- 6. All activities planned to occur in the campsite shall be risk assessed and planned; this includes risk controls for the parking of staff- and visitor's vehicles, parking of mobile plant and machinery, dedicated storage areas, planned and compliant stacking practices, traffic controls, including the safe separation of De Mond staff and any member of the public from risk areas.
- 7. No plant maintenance shall be performed on the construction site.
- 8. Where generators and fuel supply are needed during construction must be placed on trip trays.
- 9. Every construction vehicle, including hired plant and delivery trucks entering the site, shall:
 - a. Be in serviceable condition and safe.
 - b. Be inspected by a competent person daily and the result of the inspection logged in a register kept in the vehicle.
 - c. Where non-conformities are identified, these shall be subject to immediate and documented appropriate corrective action.
 - d. Have a serviced portable fire extinguisher installed at all times.
 - e. Be operated by a competent driver appointed in writing; the driver shall:



- i. Be in possession of a conforming driver's license;
- ii. Be in certified medically fit as a driver.
- f. Be parked overnight in a dedicated area with drip tray protection.
- 10. All mobile construction plant, including hired plant, shall:
 - a. Be in serviceable condition and safe.
 - b. Be inspected by a competent person daily and the result of the inspection logged in a register kept with the operator.
 - c. Where non-conformities are identified, these shall be subject to immediate and documented appropriate corrective action.
 - d. Be operated by a competent operator appointed in writing, who shall:
 - i. Be trained in the operation of the plant; and
 - ii. Be in certified medically fit as a mobile plant operator.
 - e. Be parked overnight in a dedicated area with drip tray protection.
- 11. Operators employed by hire companies for hired plant and vehicles shall be subject to the same requirements as contractor-employees and the contractor hiring such vehicle or plant shall ensure that the following evidence is placed in the contractors' H&S file:
 - a. Hire company COIDA letter of good standing
 - b. The emergency arrangements between the hire company and a registered hospital
 - c. Proof of training and competency of the operator; and
 - d. Medical certificate of fitness of the operator.
- 12. Traffic rules throughout the site shall require that:
 - a. All vehicles are roadworthy, in good state of repair and registered.
 - b. No vehicle or plant leaks oil or fuel.
 - c. Each vehicle and plant are inspected daily for health and safety compliance and the inspection record is kept in the vehicle.
 - d. Any vehicle fitted with a crane shall have the following documents on site: the crane's latest 6monthly inspection record; the crane's latest annual load test certificate; the 3-monthly inspection record of all lifting equipment in the truck, the crane operator's license.
 - e. Construction plant using adjacent roads and access routes, within the CI 000691 De Mond Nature Reserve are accompanied by an escort.
 - f. All drivers of vehicles hold the appropriate drivers' license and professional drivers permit, where applicable.
 - g. Driving speed is, at all times, adapted to the displayed speed limit.
 - h. No persons are transported by construction plant.
 - i. No persons are transported in the load body of a construction vehicle.
 - j. All loads are secured individually to the load body of a transport vehicle.
 - k. All loads are placed safely, even for short transport on site.
 - I. No towing is permitted on site.
 - m. All driving is left-hand of the road.
 - n. Where applicable, all traffic signs at CI 000691 De Mond Nature Reserve and on site are obeyed.
 - o. No dumper truck is permitted to travel with its load body raised.
 - p. No dumper truck is permitted to travel on site, access the site or egress the site unless its load body's flap is closed and locked and does not spill materials.
 - q. Every truck leaving the site shall have its load secured; dumper and haul truck load bodies shall be fitted with a functional back lid, which shall be closed when leaving the site. Truck leaving the site shall



be inspected to ensure that no part of the load or rubble/stone fallen on protruding parts are a risk to other road users.

- r. No concrete trucks shall be washed on site.
- s. No vehicle may be operated by a driver/operator holding a cell phone with any part of the body.
- t. No on-site mechanical repairs or maintenance; where such is required, the vehicle or plant must be removed off site.
- u. On-site refuelling shall be defined in a Refuelling Method Statement in the H&S plan.

13. Parking

- a. All vehicles shall be parked in dedicated parking areas.
- b. All parked vehicles shall have the handbrake engaged.
- c. All parking shall be reverse parking only.
- d. All load bodies shall be lowered

47. Principal contractors' communication and coordination

- 1. The Principal Contractor shall establish a communication and coordination system for:
 - a. Emergency communication methods.
 - b. Communication with the Principal Agent and the Client; at the Client, the Principal Contractor shall establish and maintain the required communication with the responsible person for H&S and/or for electrical services and/or for facility-maintenance and/or special permissions at CI 000691 De Mond Nature Reserve.
 - c. The management of all contractors on site.
- 2. The communication and coordination method statements shall be documented in the H&S plan.

48. Environmental Management

- 1. All environmental impact that the construction work poses to the CI 000691 De Mond Nature Reserve (sensitive area) will be management by CapeNature.
- 2. The Principal Contractor should ensure that sufficient resources, competency and procedures are in place to execute the work with the least negative environmental impact.
- 3. The following environmental impacts have been identified by the HS Agent:
 - a. Impairment of fauna: monkeys, baboons, snakes, etc.
 - b. Natural water environment (river)
 - c. Use of borehole water and rain water in existing water tanks (non-potable)
 - d. Storage of HCS; controls required: Spill kit, Drip trays, etc.
 - e. No removal of wildlife or indigenous vegetation
 - f. Identification of all "No-Go areas"
 - g. Traffic on gravel roads (dust, erosion)
 - h. Dust control: Suppression measures and enforcement of speed restrictions.
 - i. Water usage
 - j. Effluent from earthworks and excavation flooding/rainwater
 - k. Effluent from construction activities: cement products, paint products, other chemicals and washing of utensils



- I. Contamination of the soil or surface water
- m. Fire hazards: open fires, gas fires, welding, soldering, combustible and flammable storage, combustion engines
- n. Edible waste and infestation (rats, etc.)
- o. On-site storage of waste materials
- p. Storage and seepages (chemicals, cement, fuels, parking of vehicles and mobile plant)
- q. Waste site for removal
- r. Housekeeping, littering, windblown waste
- s. Rehabilitation requirements (possibility post phase 2?)

ANNEXURE A CONTENTS AND NUMBERING SYSTEM FOR THE H&S PLAN

- 1. Index of the H&S Plan
- 2. Signed page 2 of CHSS (contractors sign page 3)



- 3. Letter of good standing COIDA
- 4. Occupational Health and Safety Policy
- 5. Scope & activities, construction program, machinery, plant, equipment, hazardous articles and selected contractors to be used and hazardous materials and articles used in the project
- 6. Project-specific baseline hazard identification and risk assessment & risk register
- 7. Health and Safety Resources and Budget
- 8. OHS competency of Principal Contractor (Contractors)
- 9. Section 37(2) agreement between the Client and the principal contractor
- 10. Organisational chart including:
 - a. List of employees
 - b. List of competent person appointments
 - c. Signed letters of appointed competent persons
 - d. Evidence of competency and OHS competency
 - e. Medical certificates of fitness of all employees; medical surveillance reports of health-risk exposed employees
- 11. Safety officer: duty, responsibility, authority, document control, communication
- 12. Camp site method statement
 - a. Camp site plan with facilities
 - b. Employee facilities management
 - c. Fuel handling-, spill- and fire control
 - d. Camp site work
 - e. Access road
- 13. Principal Contractor H&S management processes:
 - 1) Management of the issue-based risk-, risk review- and risk monitoring
 - 2) H&S Induction, training and H&S competency management (including OHS Induction and applicable safe work instruction templates)
 - 3) General record keeping management
 - 4) PPE management
 - 5) Safety Inspections and Inspection Register management
 - 6) Internal Audit management
 - 7) Contractor and Sub-contractor management
 - 8) Site communication management
 - 9) Occupational hygiene, occupational health and fitness for work management
 - 10) Fatigue management
 - 11) Night and week-end work management
 - 12) Wind and weather management
 - 13) Public H&S management
 - 14) First aid, accident & incident and emergency management
 - 15) Hazardous chemical agents' management
 - 16) Asbestos Management
 - 17) Fire prevention, fire equipment & hot work management
 - 18) Safety signage management
 - 19) Security and access management
 - 20) Construction plant and machinery management
 - 21) Hired plant and machinery management
 - 22) Material handling management (incl. offloading, stacking, storage)
 - 23) Excavation management
 - 24) Hazardous Biological Agents management
 - 25) Demolition Management
 - 26) Housekeeping
 - 27) Lifting and rigging management
 - 28) Temporary work management



- 29) Fall protection plan and method statements for heights work
- 30) Scaffolding management
- 31) Electrical management, including LOTO
- 32) Concrete works and batching
- 33) Waste management
- 34) Other

ANNEXURE B: CONTENTS AND NUMBERING SYSTEM FOR THE H&S FILE

- 1. Index of the H&S File
- 2. Notification of construction work & proof of submission
- 3. H&S Plan



- 4. Fall Protection plan
- 5. Issue Based Risk Assessments, Registers and DSTI records
- 6. Risk monitoring and review records
- 7. Start-up and Updated Organisational charting
 - a. Updated Project and OHS organogram
 - b. Signed letters of the appointed competent persons and evidence of competency (registrations, qualifications and other proof of competency)
 - c. Employee lists
 - d. Contractor list
 - e. Medical Certificates of Fitness
- 8. Training and Competency Matrix and Training records
 - a. H&S Induction records (including HIRA training)
 - b. Training and competency records for method statements, operating procedures and safe work instruction
 - c. Visitor Induction Records
- 9. Monthly statistics
- 10. Incident Register & Investigation reports & COIDA Accident and incident management
- 11. H&S Inspection & Maintenance Registers
- 12. Contractor designs
- 13. HS committee meeting minutes
- 14. Site communication and coordination minutes
- 15. PPE Issue Register
- 16. Internal Audits
- 17. Letters of approval of contractors and sub-contractors H&S Plans
- 18. Letters appointment of contractors and sub-contractors
- 19. Signed Section 37(2) agreements
 - a. Agreement between the client and the principal contractor
 - b. Agreement between the Principal Contractor and each contractor and sub-contractors
- 20. Inspections and audits by Client Agent
- 21. Corrective / Preventive Action plans for client findings and audits
- 22. Principal contractor's contractor- and sub-contractor audits
- 23. Material Safety Data Sheets
- 24. Certified documents (COC- PV test- Lifting equipment certificates, etc.
- 25. Waste Manifests
- 26. DEL audits
- 27. H&S management system of Principal Contractor (if referred to in H&S plan)
- 28. CHSS
- 29. Copy of CR & OHSA
- 30. Archived documents

ANNEXURE C: CONSTRUCTION APPOINTMENTS

	Designation	Legal reference	Type of construction work when required
1.	Assigned Responsibility Designation	OHSA S16(2)	All construction work
2.	Construction manager	CR 8(1)	All construction work



	Designation	Legal reference	Type of construction work when required
3.	Assistant Construction manager	CR 8(2)	All construction work
4.	Construction Supervisor	CR 8(7)	All construction work
5.	Construction Supervisor Assistant	CR 8(8)	All construction work
6.	Contractor	CR 7(1)(c)(v)	
7.	Emergency / Fire Co-ordinator	S 8	All construction work
8.	Fire Extinguisher Inspector	CR 29(h)- PER 19	All construction work
9.	First Aider	GSR 3	All construction work
10.	Safety Officer	CR 8(5)	All construction work
11.	Incident Investigator	GAR 9	All construction work
12.	Risk Assessor	CR 9(1)	All construction work
13.	Issue-based Risk Assessor	CR 9(1)	All construction work
14.	Fall Protection Plan Developer	CR 10(1)(a)	When there is a risk of persons falling
15.	Temporary works designer	CR 12(1)	For temporary works
16.	Temporary works supervisor	CR 12(2)	For temporary works
17.	Excavations works supervisor	CR 13(1)	All excavation work
18.	Demolition work supervisor	CR 14(1)	All demolition work
10	Construction Vehicle & Mobile Plant	CR 23(1)(k)	When using construction vehicles;
1.5.	Inspector (if applicable)		When using mobile plant;
20.	Construction Vehicle & Mobile Plant	CR 23(1)(d)	When using construction vehicles;
21		CR 23(2)(d) & (i)	When using registered plant on a public road
21.	Electrical Installation Controller (if		When any electrical installations are brought to
22.	applicable)	CR 24(c)	site or used on site or installed on site
22	Electrical Installation Inspector (if	CP 24(d)	When any electrical installations are brought to
25.	applicable)		site or used on site or installed on site
24.	Ladder Inspector	GSR 13A	When ladders are used
	Lifting Machine Operator	DMR 18	When cranes, block and tackle, gantries or A
25.			trames are used for lifting;
26	Portable Electrical Equipment Inspector	FMR 9	All construction work
20.	Scaffold designer	CR 6 16	Scaffold work
<i>∠1</i> .		SANS 10085-1:2003	
28.	Scaffold Erector	Item 16.1(a)	Scaffold work
29.	Scaffold Inspector	SANS 10085-1:2003 16.1(c)	Scaffold work
30.	Scaffolding Supervisor	CR 16(1)	Scaffold work
31.	Stacking & Storage Supervisor, including chemicals	CR 28	All construction work



LHS	E CHSS CI000691 DE MOND NATURE RESERVI		
	Designation	Legal reference	Type of construction work when required
32.	Responsible for housekeeping	CR 27	All construction work



CI00691 CAPENATURE DE MOND NATURE RESERVE INFRASTRUCTURE AND ACCOMMODATION UPGRADE PROJECT

Date: 25.05.2022

BASELINE CONSTRUCTION HEALTH AND SAFETY RISK ASSESSMENT

Contents

- 1. Scope of the construction work
- 2. Risk scoring methodology
- 3. Construction Baseline HIRA and risk profile
- 4. Construction Health and safety Baseline Risk assessment

Revision				
Revision No.	Description of Revision	Revised By	Date	
01	Administrative	L Britz	22.4.22	
02	Updating of additional Risks	L Britz	25.5.22	



DATE OF COMPILATION	25.5.22 BLHIRA - final	RICARDO JACKSON on behalf of LHSE CONSULTANCY
PROJECT MANAGER & ARCHITECT	JUSTIN COOKE	ARCHITECTURE CO-OP
DTPW		
PROJECT LEADER & ARCH	SIMONE LE FEVRE	
ARCHITECT	C MORKEL	
QUANTITY SURVEYOR	J BOTHA	
STRUCTURAL ENGINEER	A SKINNER	
CIVIL ENGINEER	H BOUWER	
ELECTRICAL ENGINEER	S OLCKERS	
MECHANICAL ENGINEER	E JAKOET	
ОНЅ	ISRAEL FINI	
CAPENATURE		
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CONSULTANTS		
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CIVIL ENGINEER	M GUZGAY, N ADAMS & S ORRIE	OWS ENGINEERING
ELECTRICAL ENGINEER	W V TROON & L LEHLOHONOLO	ELEMENT ENGINEERS
MECHANICAL	P FOURIE	ELEMENT ENGINEERS
QUANTITY SURVEYOR	W VISSER & P DU PLESSIS	FARROW LAING
ENVIRONMENTAL	S RANGER & C DU PLESSIS	FOOTPRINT
OCCUPATIONAL HEALTH & SAFETY AGENT	LIZE BRITZ	LHSE CONSULTANCY



1. Scope of the construction work

- 1. The project will be done in a phased approach which could trigger two Principal Contractors working simultaneously for the construction client. This Risk Assessment is done for Phase 1 of the work.
- 2. The Scope of work will include:
 - a. Phase 1:
 - i. Existing masonry thatched Gate house alterations and upgrade
 - ii. Existing masonry, asbestos roof Manager's house conversion to office and utility items
 - iii. Existing dry wall metal roof Tourist house converted to Manager's home
 - iv. Services Upgrade including Borehole water treatment and/or possible rain water collection, existing electrical supply to the site to be made bigger and paving of entrance road
 - v. New fence, new entrance gate and paving of parking outside the entrance.
 - vi. Note: The borehole is across the river with an existing pipe to the development that may be replaced.
 - b. Phase 2 Construction of new Tourist cabins (not part of this contract)
 - i. X5 New Tourist cabins at non impacted areas requiring and EA.
 - ii. The aim is for this construction work to start as phase 1 finishes.
 - iii. Anticipated start date: April 2023.


2. Risk scoring methodology:

Job-specific risk score, taking into account the scope of work and the duration of exposure during this specific construction project

A. <u>Probability</u>	
Near impossible	1
Unlikely but has happened	2
Likely	3
R Severity	
D. <u>Sevency</u>	
No injury/disease or first aid	1
Lost time/ reversible disease	2
Irreversible disease/fatality	3
re from highest to lowest	

Risk rating = score from highest to lowest Risk/Impact = A x B



3. Construction Baseline HIRA and risk profile:

Hazard	Task-machinery-installation exposure	Probability	Severity	Risk score	CHSS control	Safety risk	Health risk
Noise	Grinders, generators, welding, compactor, all work within 3 meters of mobile plant.	2	3	6	Noise induced hearing loss	Acoustic trauma Communication error leading to accidents	Noise induced hearing loss Noise effecting De Mond Nature Reserve staff and visitors.
Whole Body Vibration	Mobile plant operators- lifting machine operators, Hand-held compactor operators	1	3	3	Hazard Identification and Risk Assessment Principal Contractor's Health & Safety Plan Health and Safety Competency Induction and H&S awareness Health and Safety Training and competence		Whole body Vibration back and muscular strain
Hand Arm Vibration	Grinders, jackhammer-operator, torquing equipment	2	3	6	Hazard Identification and Risk Assessment Principal Contractor's Health & Safety Plan Health and Safety Competency Induction and H&S awareness Health and Safety Training and competence		Work related upper limb disorders
Thermal	Winter cold Summer heat Hot work	1	2	2	Hazard Identification and Risk Assessment Principal Contractor's Health & Safety Plan Health and Safety Training and competence Personal Protective Equipment (PPE) and Clothing		<u>Cold:</u> Hypothermia- Frost bite <u>Heat:</u> Dehydration, heat stroke, heat exhaustion, Burns
Electricity	Electrical reticulation & portable machinery, installed electrical	3	3	9	Construction Manager	Electrocution	



Hazard	Task-machinery-installation exposure	Probability	Severity	Risk score	CHSS control	Safety risk	Health risk
	conduits, Generators, Live energy work, Overhead conduits, Unknown underground services, Unknown or unidentified live installations, working with or near live electrical installations				Hazard Identification and Risk Assessment Principal Contractor's Health & Safety Plan Health and Safety Competency Induction and H&S awareness Health and Safety Training and competence Inspection, Monitoring and Reporting Occupational Health and Safety Signage LOTO Principal contractors' communication and coordination	Fire; De Mond Nature reserve, which is surrounded with Fynbos (high fire risk area) High voltage flashes	
Dust	Building, cement aggregate, concrete sanding dust	2	2	4	Hazard Identification and Risk Assessment Principal Contractor's Health & Safety Plan Health and Safety Competency Induction and H&S awareness Health and Safety Training and competence Housekeeping, Stacking, Storage and Drop Zones Occupational Hygiene and Health Personal Protective Equipment (PPE) and Clothing Hazardous Chemical Agents Occupational Health and		Respiratory irritation- silica induced illness (concrete sanding) Eye irritation Nuisance to De Mond Nature Reserve staff and visitors.
Fuels	Diesel, petrol, LPG	2	3	6	Hazard Identification and Risk Assessment Principal Contractor's Health & Safety Plan Health and Safety Competency Induction and H&S awareness	Fire, explosion, eye splash (High fire risk: Fynbos area)	



Hazard	Task-machinery-installation exposure	Probability	Severity	Risk score	CHSS control	Safety risk	Health risk
					Health and Safety Training and competence Inspection, Monitoring and Reporting Housekeeping, Stacking, Storage and Drop Zones Personal Protective Equipment (PPF) and Clothing		
Welding / cutting	Welding, soldering and gas cutting gasses and fumes	2	2	4	Hazard Identification and Risk Assessment Principal Contractor's Health & Safety Plan Health and Safety Competency Health and Safety Training and competence Inspection, Monitoring and Reporting Housekeeping, Stacking, Storage and Drop Zones Occupational Hygiene and Health Personal Protective Equipment (PPE) and Clothing Hot Work, Fire Risks, Fire Extinguishers and Fire Fighting Equipment	Burns, fire explosion, all sorts of accident-risks, including foreign body in eye. No hot work is permitted, unless authorised by the Client. Dedicated hot work area, with hot work permit system.	Lung cancer, bronchial disease, UV skin damage, eye disease (arc eye, cataract)
Asbestos fibres	Asbestos demolition	3	3	9	Hazard Identification and Risk Assessment Principal Contractor's Health & Safety Plan Health and Safety Competency Health and Safety Training and competence Personal Protective Equipment (PPE) and Clothing Hazardous Chemical Agents Occupational Health and Safety Signage		Asbestos-related illnesses



Hazard	Task-machinery-installation exposure	Probability	Severity	Risk score	CHSS control	Safety risk	Health risk
					Asbestos Demolition		
Lifting/bending	All manual work	2	2	4	Hazard Identification and Risk Assessment Principal Contractor's Health &	Acute muscular strain	Chronic muscular strain
Repetitive actions	Most labourer's manual work	2	2	4	Safety Plan Health and Safety Competency Induction and H&S awareness Health and Safety Training and competence		Chronic muscular- synovial –skeletal damage
Awkward positions	Installation work	2	2	4	Inspection, Monitoring and Reporting Housekeeping, Stacking, Storage and Drop Zones	Muscle strain - falls	
Prolonged standing	Most labourer's manual work	1	2	2	Occupational Hygiene and Health Personal Protective Equipment (PPE) and Clothing		Venous stasis, oedema, backache
Impact strain	Work with hammer, pick, spade	2	2	4	Hazard Identification and Risk Assessment Principal Contractor's Health & Safety Plan Induction and H&S awareness Health and Safety Training and competence Occupational Hygiene and Health Personal Protective Equipment (PPE) and Clothing		Headaches, muscular pain neck and shoulders
Climbing	Access and egress to structures, including scaffolds, ladders, man lifts.	3	3	9	Hazard Identification and Risk Assessment Principal Contractor's Health & Safety Plan Health and Safety Competency Induction and H&S awareness Health and Safety Training and competence Personal Protective Equipment (PPE) and Clothing	Falls	



Hazard	Task-machinery-installation exposure	Probability	Severity	Risk score	CHSS control	Safety risk	Health risk
Fitness for duty	Intoxication by employees- drugs/alcohol/medication	1	3	3	Hazard Identification and Risk Assessment Principal Contractor's Health & Safety Plan Health and Safety Competency Induction and H&S awareness Health and Safety Training and competence Inspection, Monitoring and Reporting Occupational Hygiene and Health Night- Week-End & overtime- Work and Fatigue	Accidents	
Employee wellness	Personal, social, financial, professional, health. Employees with chronic disease.	1	3	3	Hazard Identification and Risk Assessment Principal Contractor's Health & Safety Plan Health and Safety Competency Induction and H&S awareness Health and Safety Training and competence Occupational Hygiene and Health Night- Week-End & overtime- Work and Fatigue	Accident	Psycho-social disease
Fatigue	Monotonous work, overtime, work rostering, personal issues. <u>Work rostering</u> : travel to work, shifts, long hours, overtime, Abnormal working hours <u>Personal factors</u> : chronic disease, medication, home and social events, alcohol and drugs, financial constraints	2	3	6	Hazard Identification and Risk Assessment Principal Contractor's Health & Safety Plan Health and Safety Competency Induction and H&S awareness Health and Safety Training and competence Occupational Hygiene and Health Night- Week-End & overtime- Work and Fatigue	Lacerations, fractures, caught in machine, fall injuries Possible long transport of employees- if daily, can lead to fatigue.	



Hazard	Task-machinery-installation exposure	Probability	Severity	Risk score	CHSS control	Safety risk	Health risk
Dangerous work	Working inside exactions, live energy work, rigging, lifting, demolition work, asbestos work, heights work, roof access and roof work, false work: fall risk and drop zone risk, hot works (welding, grinding, etc.), site manufacturing work	3	3	9	Hazard Identification and Risk Assessment Principal Contractor's Health & Safety Plan Health and Safety Competency Induction and H&S awareness Health and Safety Training and competence Inspection, Monitoring and Reporting Housekeeping, Stacking, Storage and Drop Zones Occupational Hygiene and Health Personal Protective Equipment (PPE) and Clothing Excavation Occupational Health and Safety Signage Site manufacturing Concrete Works Fall Protection and Fall Risk Work: Ladders, Scaffolding, roof work Demolition work Asbestos work	Crush accidents, lacerations, fractures, electrical shock, caught in machine, falls, death. Rolling, pitching of trucks/rig Flying particles' injury Falls and dropping/collapsing objects	Skin, eye, respiratory disease, Asbestos-related illnesses
Dangerous equipment	Cranes and other lifting machinery Mobile construction plant, moving vehicles, small mechanical plant, guarded machinery, Power tools, Cranes	3	3	9	Hazard Identification and Risk Assessment Principal Contractor's Health & Safety Plan Health and Safety Competency Induction and H&S awareness Health and Safety Training and competence Inspection, Monitoring and Reporting Housekeeping, Stacking, Storage and Drop Zones Occupational Hygiene and Health	All sorts of accident-risks	



Hazard	Task-machinery-installation exposure	Probability	Severity	Risk score	CHSS control	Safety risk	Health risk
Dangerous Actions	Access to heights Work with live residual energy Working in drop zones Working on structures Fire risk work; hot works, working with fuels, etc. Working near water environments		3	9	Personal Protective Equipment (PPE) and Clothing Occupational Health and Safety Signage Site manufacturing Cranes and lifting operations Hazard Identification and Risk Assessment Principal Contractor's Health & Safety Plan Health and Safety Competency Induction and H&S awareness Health and Safety Training and competence Inspection, Monitoring and Reporting Housekeeping, Stacking, Storage and Drop Zones Occupational Hygiene and Health Personal Protective Equipment (PPE) and Clothing Occupational Health and Safety Signage Live Energy Work and electrical reticulations Demolition work	All sorts of accident-risks Electrical shock, machine entrapment Collisions Fire risks Water pollution Risk of drawing	All sorts of disease- risks Exposure dust, noise, fibre cement dust
					Principal contractors' communication and coordination		
Biological hazards: snakes, scorpions, etc.	All site related activities and work	2	3	6	Hazard Identification and Risk Assessment Principal Contractor's Health & Safety Plan Housekeeping, Stacking, Storage Hazardous Biological Agents	Snakes bite could be vital.	
COVID-19	Infection in the workplace via employee, contractor employee or De Mond staff /visitors	2	3	6	Covid-19 CHSS		Work-acquired COVID-19



Hazard	Task-machinery-installation exposure	Probability	Severity	Risk score	CHSS control	Safety risk	Health risk
	Access of sick employee						
Failure Mode: access	Public access- unauthorised access- COVID-19 sick person access	2	3	6	Construction Manager Construction Health and Safety Officer Public health Occupational Health and Safety Signage Construction Manager		Work-acquired COVID-19
Failure Mode: access	Unauthorised access to risk areas on site (unsafe structures, fall areas, supported structures)	2	3	6	Construction Manager Construction Health and Safety Officer Communication DSTI Barricading work areas with physical barriers Occupational Health and Safety Signage	Severe injury	Exposure to hazardous chemical agents
Failure Mode: Workers residing on the reserve	Living accommodation	2	3	6	It is strictly forbidden for any contractor's employees to reside overnight on the construction site.	Injuries; e.g., starting accidental fires, etc.	
Failure Mode: weather	Weather effects	2	3	6	Wind hazards and controls Site manufacturing Stacking and storages	Windblown materials	
Failure Mode: Fire	All hot work or fire risk work	3	3	9	Construction Manager Work permits Hot Work, Fire Risks, Fire Extinguishers and Fire Fighting Fouriement		
Failure Mode: Falls	Fall risk work	2	3	6	Construction Manager Fall Protection and Fall Risk Work - Ladders -Scaffolding- roof work- Demolition work – asbestos demolition work	Severe injury – Possible death	



4. Construction Health and Safety Baseline Risk assessment

Construction aspect	Hazardous Event	Health & Safety Risk	Р	S	RS	Risk control	HS Specification
Professional team	Access to risk areas	Falls, drops, uneven terrain, airborne pollutant	2	3	6	H&S Specification	Project- and professional team members accessing risk areas, including, but not limited to, excavations, fall risk areas and any other risk areas where there is a residual H&S risk similar to that of an employee working there, shall: a. Be fully inducted in the H&S of the site, as if they were employees of the Principal Contractor. b. Be in possession of a corresponding medical certificate of fitness.
Construction design	Construction to be done in a phased approach	Possibly, multiple PC's working simultaneously	1	2	2	H&S Specification Overlapping of PC's could trigger coordination function to Client.	Coordination and communications
Design: Site facilities	Principal contractor working at De Mond nature reserve	Haphazard Establishment Traffic control Dust Washing effluent Drinking water	2	2	4	HS Plan Housekeeping, stacking, storage and drop zones Communicate with the Client	CHSS Contractor design Access, traffic management and camp site



Construction aspect	Hazardous Event	Health & Safety Risk	Р	S	RS	Risk control	HS Specification
		Overgrown vegetation, trees, etc. preventing easy accessibility.					
Design: Site access and security	Unauthorised access	Unauthorized access Traffic accidents	1	3	3	HS Plan Construction Manager	CHSS Contractor design Occupational Health and Safety Signage
Site access and security	Unauthorised access	Risk to De Mond staff and visitors entering construction site, exposed to construction activities.	2	3	6	All risk areas on the site shall at all times be secured so as to prevent the unauthorized access of persons	CHSS Public safety Contractor design Occupational Health and Safety Signage
Design: Site electrical energy	Unauthorised access	Ongoing use of generators Non-compliant reticulations; electrocution: Risk to De Mond staff and visitors	2	3	6	Temporary electrical installation inspections	CHSS Contractor design Occupational Health and Safety Signage Electrical management, including LOTO procedure
Limited space for movement and construction activities	Construction activities, delivery vehicles, loading and offloading of materials, parking of vehicles and mobile plant	Plant or motor vehicle accident, falls, crush injuries Risk to De Mond staff and visitors	2	3	6	Coordination and planning Organized parking arrangement and laydown areas with PA.	Public Health Induction and H&S awareness Contractors and sub-contractors Site organisation and security Access and camp site management Traffic controls and parking Occupational Health and Safety Signage Housekeeping, stacking, storage and drop zones
Transport on and to site	Transportation, traffic control, uneven terrain Overhanging Milkwood trees at the De Mond Nature Reserve site access point.	Motor vehicle accident and fatalities	1	3	3	Where Milkwood, or any other vegetation are obstructing egress, the Principal Contractor shall communicate with the Client and the decision of the Client shall be decisive to deal with clearing overgrown vegetation.	Site organisation and security Traffic controls and parking Access, traffic management and camp site Communicate with the Client
Transport on and to site	Emergency access routes:	The distance and condition of access roads to the	2	3	6	Emergency Planning	Incidents, Accidents and Emergencies



Construction aspect	Hazardous Event	Health & Safety Risk	Р	S	RS	Risk control	HS Specification
		construction site could pose a risk. Duration of emergency services to access the site. Rain conditions could make accessibility impossible. Alternative access to be addressed in the OHS Plan.					
Construction work within the De Mond nature reserve premises	Construction process risks, including truck, plant and personnel movement, drop zone access, hot work risk zones, excavation, roof work, asbestos work, demolition work, etc.	Plant or motor vehicle accident, falls, crush injuries	2	3	6	In the event that staff or visitors attend the resort the Principal Contractor shall document a risk assessment and an H&S method statement for the management of De Mond reserve where applicable for: Closure for tourists visiting the De Mond reserve Management of risk areas for De Mond operations staff Any visitors (fishermen, day visitors or children accessing the De Mond reserve during the construction period.	Public HS Occupational Health and Safety Signage Coordination and Communication with client.
Site camp erection & dismantling	Rigging – off loading- placement of containers and machinery	Falling objects - Sliding objects Cuts and lacerations – crush injuries	2	3	6	H&S specification	Access and camp site management Cranes and lifting operations
Off-loading equipment, machinery, materials	Manual rigging and crane operations- rigging- movement of equipment	Falling and moving objects or machinery Ergonomic strain, crush, death	2	3	6	H&S specification	Cranes and lifting operations Wind hazards and controls Access, traffic management and camp site
Storage & stacking	Moving storage or stacks Placement of material stacks, Unstable placement	Falling objects or machinery- crush injuries	2	3	6	H&S specification	Cranes and lifting operations Housekeeping, Stacking, Storage and Drop Zones Wind hazards and controls Occupational Health and Safety Signage



Construction aspect	Hazardous Event	Health & Safety Risk	Р	S	RS	Risk control	HS Specification
Electrical supply	Electricity	Electrocution, death, fire	2	3	6	H&S specification	Live Energy Work and electrical reticulations Occupational Health and Safety Signage LOTO Interface with De Mond Nature reserve
Electrical installation work	Electricity	Electrocution, death, fire	2	3	6	H&S specification	Live Energy Work and electrical reticulations Occupational Health and Safety Signage LOTO Interface with De Mond Nature Reserve
Live electrical energy work	Live energy work	Electrocution, death, fire	2	3	6	H&S specification	Construction Manager Live Energy Work and electrical reticulations LOTO Interface with De Mond Nature Reserve
General construction work	Hand tools- small portable electrical tools- manual handling- sharp articles– electricity- concrete work, etc.	Hand, eye injuries, crush injuries, noise exposure, and dust exposure – ergonomic strain – electrical shock –fire, slip, trip and falls. Health effects: noise induced hearing loss - respiratory disease – skin disease	2	3	6	H&S specification	Construction Manager Induction and H&S awareness Health and Safety Training Personal Protective Equipment (PPE) and Clothing Live Energy Work and electrical reticulations Occupational Hygiene and Health
Manual work	Use of hands – strain on muscles and back Handling sharp objects	Lacerations, crush injury, back injury, muscle injury	1	2	2	Manual work	Induction and H&S awareness Health and Safety Training Personal Protective Equipment (PPE) and Clothing
Excavation	Fall in – collapse Working with plant adjacent	Crush injuries- fall injuries death	2	3	6	H&S specification	Excavation Work Occupational Health and Safety Signage



Construction aspect	Hazardous Event	Health & Safety Risk	Ρ	S	RS	Risk control	HS Specification
	Working inside Possible Hard rock Working on De Mond Nature Reserve premises	Risk to De Mond Nature Reserve staff and visitors					Interface with De Mond Nature Reserve
Demolition	Collapsing structures Noise Flying objects	Severe injury- death Noise induced hearing loss- nuisance noise to De Mond nature Reserve staff and visitors Ergonomic hazards Collapse Fall risks, drop risks Building stability – services Structural integrity of the part-demolished structures Asbestos demolition	3	3	9	H&S specification	Construction Manager Demolition Work Asbestos work Occupational Health and Safety Signage Structural safety of all planned demolition shall be risk assessed by a competent person appointed in writing
Asbestos	Handling of asbestos	HCS-specific illness - respiratory disease - Asbestosis	3	3	9	H&S specification	Construction Manager Demolition Work Occupational Health and Safety Signage Structural safety of all planned demolition shall be risk assessed by a competent person appointed in writing Engineering survey Asbestos work
Concrete works		Splash- vibration- noise	2	3	6	H&S specification	Construction Manager Concrete Works Contractor design
Manufacturing	Lifting and rigging Stacking storage Manufacturing Electrical	Crush injuries-laceration- death- electrocution	2	3	6	H&S specification	Construction Manager Site manufacturing Cranes and lifting operations Contractor design Electrical safety LOTO



Construction aspect	Hazardous Event	Health & Safety Risk	Р	S	RS	Risk control	HS Specification
Elevated work	Lifting and rigging Height's work Temporary work Roof work Demolition Ceiling repair work Asbestos demolition work	Falls- drops- sliding objects, causing crush injuries- laceration- death Access to elevated work Support structural strength when working on existing structures	3	3	9	H&S specification	Construction Manager Site manufacturing Cranes and lifting operations Temporary Work Fall Protection and Fall Risk Work Ladders Scaffolding Roof work and Demolition Contractor design Wind hazards and controls Occupational Health and Safety Signage
Scaffolding & ladder work	Collapsing –fall -drop	Severe injury- death	2	3	6	H&S specification	Construction Manager Temporary & scaffold Work Fall Protection and Fall Risk Work Ladders Wind hazards and controls
Chemical substances	Fuels - LPG- acetylene- welding- abrasive- painting	HCS-specific illness Burns- fire (including veld fires)- explosion -death	1	3	3	H&S specification	Construction Manager Site manufacturing Hazardous Chemical Agents Hot Work, Fire Risks, Fire Extinguishers and Fire Fighting Equipment Occupational Hygiene and Health Personal Protective Equipment (PPE) and Clothing Occupational Health and Safety Signage Storage and use of flammable liquids
Lifting, rigging operations	Lifting articles and placement of articles	Falling articles - severe injury, death	2	3	6	H&S specification	Construction Manager Contractor design Cranes and lifting operations Fall Protection and Fall Risk Work Wind hazards and controls Occupational Health and Safety Signage



Construction aspect	Hazardous Event	Health & Safety Risk	Р	S	RS	Risk control	HS Specification
Exposure to elements and environment	Sun, wind, temperature, emissions	Skin cancer, heat exhaustion, lung cancer	1	2	2	H&S specification	Construction Manager Site manufacturing Occupational Hygiene and Health Personal Protective Equipment (PPE) and Clothing
Traffic accommodation	All work relating to traffic with Cape Nature Reserve	Motor vehicle accident and fatalities Risk to public (visitors and children)	2	3	6	H&S specification	Construction Manager Hazard Identification and Risk Assessment Principal Contractor's Health & Safety Plan Health and Safety Competency Induction and H&S awareness Health and Safety Training and competence Access, traffic management and camp site
Interference with emergency process of De Mond Nature Reserve	Emergency access patency De Mond risks affect construction personnel Construction risks affects De Mond personnel or visitors	Entrapment – fire – failed detection systems	3	3	9	H&S specification	Construction Manager Hazard Identification and Risk Assessment Principal Contractor's Health & Safety Plan Incidents, Accidents and Emergencies
Accidents	Emergency services	Emergency services not in close vicinity to the site location.	3	3	9	H&S specification	Emergency planning Accident and incident planning
Fire risk work, rubble waste, seepage and run-off of chemicals, erosion and flooding, damage to fauna and flora, permits for protected trees, equipment and fuel/oil leaks, water use, etc.	Construction activities	Environmental impacts	2	3	6	Appointment of Environmental Control Officer – Reserve Manager and Contractor to monitor Environmental issues.	Environmental Management: All environmental impacts that the construction work poses to the De Mond Nature Reserve (sensitive area) will be management by Cape Nature.



ANNEXURE 3

Construction Environmental Plan

ANNEXURE 4.1

Architecture





/		
	For	Council

Revision Schedule

Rev. Date Description

A 2022-05-16 Road Amended

Note: This drawing is copyright and remains the property of the Architect - All work carried out to comply with local authority by-laws, and SANS 10400 & SANS 204 National Building Regulations - All dimensions & levels to be checked on site prior to commencement of work - Any discrepancies to be reported to the Architect prior to the commencement of work - Do not scale off this drawing - Where the drawing represents additional work the contractor is to notify the architect in writing prior to commencement of work. **Client Endorcement:** It is agreed that the client, by signing this drawing, accepts and approves the conceptual design and / or technical informationcontained herein. Client :

Signature :

Date:

Architect : Andrew Cooke Duly employed by the client to act on his/her behalf in terms of the Architectural Profession Act, 44 of 2000. Signature : Date:



Edge of High Canopy

Edge of Low Vegetation

Trees & cluster of trees

De Mond Nature Reserve

ERF 269, Portion 4, Bushy Park, Bredaarsdorp





--NOTES:

ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH LOCAL AUTHORITY BY-LAWS AND SANS 10400 NATIONAL BUILDING REGULATIONS.

OUTLINE SPECIFICATION

SPATIAL & STRUCTURAL RESTRICTIONS:

No building work to protrude over property boundary line. All habitable rooms to have a minimum linear dimension of 2m and a minimum area of 6sqm.

SANS 10400 XA:

All requirements of SANS 10400 XA & SANS 204:2011 are fulfilled 'deemed to satisfy' by this design.

<u>Existing gate House</u> Floor area = 40,5sqm Glazed area = 7,9 sqm Percentage =19,5% This complies with SANS XA2 regulations

Existing administration Floor area = 109sqm Glazed area = 16,6sqm Percentage = 15,2%

This complies with SANS XA2 regulations

Existing managers House =70,2sqm Floor area Glazed area =13,4sqm Percentage = 19% This complies with SANS XA2 regulations

LIGHT & VENTILATION:

To comply with SANS 10400- 0:2011 Light areas to be a minimum of 10% of all habitable room areas. Ventilation areas to be a minimum of 5% of all habitable room areas.

ALTERATIONS AND ADDTIONS:

This phase of work comprises primarily of alterations and additions. Contractor to ensure adequate protection of existing buildings, components and finishes being altered in this contract. Contractor to ensure that all existing buildings to be demolished are done in an approved method of dis- assembly. All materials to be preserved for re use on site. Any asbestos to be removed and disposed of by specialist approved subcontractor and disposed of at a registered land fill site.

FOUNDATIONS:

All foundations, foundation walls, retaining walls to comply with SANS 10400 – H: 2012 and engineer's specifications and details.

Depth and type of foundations to be determined on site following assessment of ground conditions & existing foundations. Fill to be well compacted with plate compactor in layers 150mm to 98% AASHTO or to Structural Engineer's design and specifications.

- Strip foundations: Typically 800x300mm 15MPa concrete minimum depth 500mm below existing ground level or to match existing.
- Pad footings: 600x600x300mm th 15MPA concrete. Surface bed thickening: Allow for 400x300mm deep thickening to all edges of surface beds.

FLOORS:

To comply with SANS 10400 - J :2010

SURFACE BEDS/SLABS/PRECAST FLOORS: All mesh reinforced surface beds/slabs/precast concrete, beams as per engineer's drawings. Weather steps to all openings to later detail.

- Surface beds 100mm th reinforced surface bed on 35mm XPS insulation (R=1) on 500 micron DPM, on 50mm sand blinding on compacted fill. To receive screed, or finishes as indicated.
- Paving Nominal 75mm th reclaimed interlocking and regular brick paving to falls away ٠ from buildings as indicated in drawings. 260x300mm coved 'in situ' mesh reinforced concrete water bars set flush with paving as shown in layouts.
- <u>Grass block paving</u> 200m thick concrete grass block to selection on base course to • engineers specification. Precast concrete kerbs to all edges to later detail.
- Access driveway 75mm th reclaimed interlocking and regular brick paving to falls away from buildings as indicated in drawings. 260x300mm coved 'in situ' mesh reinforced concrete water bars set flush with paving as shown in layouts. Specification and design by Civil Engineers.

FLOOR FINISHES:

As indicated on drawings.

WALLS:

To Comply with SANS 10400 – Part K. All to comply with Table F.1 SANS 10 249 for compressive strength specifications. Use fired clay ROK bricks, plastered and painted as indicated on drawings.

- <u>External walls</u> generally existing. All modifications to match existing. Base, seat, plinth walls - 230mm plastered walls as shown. Stone cladding where indicated.
- External walls to have stepped DPC's at floor level.
- to Engineers design and specification. <u>100mm Plaster bands</u>, sills in brickwork to later detail.

GENERAL WALL FINISHES:

- Generally as indicated in drawings, comprised as follows: Internally – Existing re-decorated and made good to match existing where altered. • <u>Internally</u> – Existing gypsum board cladding to stud walls repaired, made good and •
- redecorated. <u>Externally</u>- Existing re-decorated and made good to match existing where altered.
- Externally New tinted plaster finished and stone clad as indicated on drawings.
- to exterior of existing managers house.
- <u>Re-purposed cladding</u> Reseal existing cladding with clear sealer.

DOORS & WINDOWS & GLAZING:

All doors and windows to be full glazed Aluminium to comply with SANS 10400 XA regulations, AAMSA Certification. See drawings for sizes and configurations. Allow for the installation and protection of all doors and windows as shown on drawings. All glazing to be single clear intruderproof safety glazed to comply with SANS 10400 – Part N. Glazing certificate of Compliance to be provided by installer/supplier.

GENERAL TIMBER NOTES:

All structural timber sizes, spacings, and timber grades to engineer's specification and detail. All timber FSC registered. All timber to be treated to correct hazard class as per SABS 05:1999. Where timber cut, planed, drilled to be treated using approved brush on treatment such as *Timberlife Cugard 20* or similar approved.

All timber from the existing dis- assembled structures to be carefully removed for reuse in building work as instructed. Treated for beetle infestation as may be required.

TONGUE AND GROOVE FLOORS:

Existing floors to managers house to have vinyl removed, to be sanded, and sealed with Harlequin Easy Seal. Install new shutterply to existing floor to receive Marmoleum floor finish to managers house Kitchen, bathroom and toilet.

Subfloor ventilation louvres (22x70mm SA Pine) fixed to 76x50mm studs with SS insect mesh to provide ventilation below existing managers house floor.

DRY WALLS:

- •
- External Cliplok Profile 0.8mm gauge Aluminium roof sheeting vertically fixed to 76x50mm battens on existing timber cladding/ on 21mm Shutter ply screw fixed to existing Stud framework.
- Internal 21mm Shutterply/ gypsum board painted with cover strips, skirtings and • cornice to match existing.
- Reserve Store and utility shed: Existing dis assembled shed re- purposed. Vertical • drawings.

Pre-stressed concrete lintels over all openings in brick work, or in situ concrete beams

<u>New cladding</u> – New Hazy Grey Aluminium *Cliplok* cladding fixed on 76x50 SAP purlins

General - 150x38mm treated SA Pine studs at 600mm ccs with double header and sole plate, bracing and whole structure secured to rest of house to Engineers design.

shiplap boarding on stud frame wall panel structure secured to 120mm diam. gum pole structure bolted to concrete stub columns and 230 plinth wall as indicated on engineers

ROOFS:

All roofs to comply with SANS 10400 - L:2011.

<u>Reserve administration</u>

- Pitched roof Safintra Victorian Profile 0.8mm gauge Aluminium roof sheeting (with Class 5 roof fixings) at nominal 10 degree fixed to 76x50 SA Pine battens at 1200 mm ccs on Alububble 1983 double sided radiant barrier on existing roof structure. Complete structure, braced as required all to engineer's specification.
- <u>Managers house</u> Repair and make good existing *Cliplok* roof.
- <u>Pergola/stoeps</u>
- Twin 145x45mm SA Pine posts bolted with shoe bracket to stub columns to Engineers specification & design. 145x45mm rafters at nom 800mm ccs bolted to walls and timber structure and
- adjacent existing walls to Engineers specification and design. 22x70mm SA Pine slats at 100mm ccs SS screw fixed to rafters

<u>Pergola roofed areas</u> with Safintra Victorian Profile 0.8mm gauge Aluminium roof sheeting at nominal falls fixed to 76x50 SA Pine battens at 800mm ccs using Class 5 roof fixings.

Flashings

All flashings to match roof sheeting to later detail. Pitched roof to be flashed with 450mm girth aluminium ridge and verge flashings to later detail.

CEILINGS:

Existing – repaired where required with Gypsum ceiling boards painted to match.

STORM WATER & RAINWATER GOODS:

- Generally, to comply with SANS 10400 R:2012
- <u>Gutters, pitched roofs</u> Continuous square 100x100mm continuous aluminium gutters: Downpipes and rainwater channels- All gutters to falls as required to powder coated 85mm diam. tubular aluminium down pipes to lead away from building as required. Where water lead away from house to landscape care taken to disperse water to minimise possibility of erosion. Stone packed channels flush with ground lead to rock filled sumps and to 'delta' run off channels by Landscaper.

ROOF INSULATION:

Roof and ceiling insulation to comply with SANS 428, SANS 10400-part XA and SANS 204, all installed manufacturer's strict specifications. Generally- 150mm *Isotherm* insulation tightly fitted between purlins with *Alububble* 1983

double sided radiant barrier to achieve a minimum R value of 3,7.

STEPS AND HANDRAILS: Steps and handrails to comply with SANS 10400-M:2011.

PLUMBING & DRAINAGE:

All plumbing work to be in accordance with SANS 10400 Part P, SANS 10252-1 & SANS 10106, full installation by registered artisan.

All sewer pipes running under buildings or structures to be encased in 300mm concrete and adequately protected. All plumbing to be concealed. Drainage fixtures to be anti-syphoned or deep seal traps provided. Maximum length of drain to not exceed 25m without the provision of inspection chamber or rodding eye. Rodding eyes to be adequately marked and protected.

All vent pipes to have a minimum diameter of 110mm. All sewer and drain pipes to be 110mm \varnothing PVC at minimum fall of 1:60. All waste pipes to be minimum 40mm \varnothing PVC at minimum fall of 1:60. All waste pipes to enter separately into soil and vent stacks.

<u>Septic Tank</u>

Draft For Tender

Revision Schedule

Rev. Date Description

110mm Ø PVC sewer pipes to fall to two Forever Plastics 2500l heavy duty Conservancy tank with suction points. Existing septic tanks and soakaways to be decommissioned and demolished. All to comply with SANS 10400 Part P. Top of Conservancy tank to be 400mm below existing ground level.

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Signature :

signing this drawing, accepts and approves the conceptual design and / o Architect : Andrew Cooke Duly employed by the client to act on his/her behalf in terms of the Architectural Profession Act, 44 of 2000. Signature :

Date:

AD 150

PIPING:

Free standing ACR Birchdale matt black Closed Combustion fire or similar approved. Fireplace to be provided with a non-combustible hearth, a minimum of 500mm deep and extending a minimum of 300mm past the side of the fire grate or basket, or to be pre-manufactured units with SABS mark of approval. Fireplace to include spark arrestors and stainless steel 'turbo cowl'. Fireplace complete to be installed by specialist with SS chimney flue secured to structure and to be min. of 200mm from all combustible materials. Certificate of Compliance to be provided by installer.

BRAAI:

Remove existing rusted braai unit and install new SS Jetmaster braai on existing structure with, new flue walls, SS flue and turbo cowl installed by specialist.

HOT WATER HEATING:

2 x 200 l Solar Geysers with circulation pumps to specialist installation. Solar hot water system to provide a minimum of 50% of all hot water requirements.

25-35mm *Isover* "Snap-on" insulation to all hot water pipes to have min. R value of 1.0. All pipework to be less than $80 \text{mm} \emptyset$.

ELECTRICAL& LIGHTING:

Electrical installation to comply with relevant municipal requirements and to be carried out by registered electrician.

L.E.D and compact fluorescent lighting to be used throughout. Lighting installed to be less than 4 watts/sqm. This is deemed to satisfy.

FIREPLACE:

Fire place and braai installation to comply with SANS 10400 – V:2010.

Mond Nature Reserve

Erf 269, Portion 4, Bushy Park Council Specification





For Tender	Note: This drawing is copyright and remains t with local authority by-laws, and SANS 10400 levels to be checked on site prior to commence	De M	
Revision Schedule	Architect prior to the commencement of work - additional work the contractor is to notify t	Gate Ho	
Rev. Date Description B 2022-05-16 New cladding to Albution facility with amended sliding	Client Endorcement: It is agreed that the client, by signing this technical informationcontained herein.	Erf 269, 1	
door D05.	Client : Signature :	Architect : Andrew Cooke Duly employed by the client to act on his/her behalf in terms of the Architectural Profession Act, 44 of 2000.	Ground
	Date:	Signature : Date:	AD 200

Mond Nature Reserve

Portion 4, Bushy Park d Floor Plan O B



1 : 50 2022/03/29



Section A 1:50



Section C

1:50

New 300 x 800 mm r.c. strip footing to eng. detail

3800

Internal Pergola structure: New SAP pergola structure, comprising twin 145x45 mm posts at 1600 mm c/c fixed to 260 mm brick wall, 145x45 canopy beam bolted to posts, 145x45 mm rafters at max 800 mm c/c, العدية المرتجع الحاري المراجع 22x70 mm slats at 100mm c/c, to eng. detail. New interior wall paneling: Wall panelling comprised of re-purposed 140 mm timber panel taken from Ex. Brown Shed fixed to ex. wall & new SAP twin 145x45 mm timber posts at 1600 mm c/c, new 222 x 32 mm SAP timber head plate. 気を Ex. high & low cupboards with ex. sink & N O plumbing to be demolished New Openings: Form two new openings in ex. walls with concrete lintel & threshold to receive new alum. sliding doors. Finish & made good ex. walls with tinted plaster. dding from Ex. White Shed 1030 570 5/0 460 D02 D03 20 Ex. Reception **Ex. Ablutions** Natural tinted plaste ex. footing ex. footing Countertop Screening: New 70 x 22 mm timber latte/screening fixed onto new 106 x 32 mm SAP timber single studs fixed to u/s of high bar counter top to arch.

Section B

specs.

For Tender

1 : 50



1:50

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Signature Date:

Architect : Andrew Cooke Duly employed by the client to act on his/her behalf in terms of the Architectural Profession Act, 44 of 2000. Signature : Date:

Gate House Erf 269, Portion 4, Bushy Park Sections



400 x 2000 x 30 mm thick stone vanity laid onto battens to fall laid onto 18 mm marine plywood fixed to cantilevered 145 x 45 mm

SAP beams bolted to studs.



De Mond Nature Reserve

AD 201 B







South Elevation

West Elevation

1 : 50

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mond Nature	Reserve	ARCHITECTURE
House		(00)
, Portion 4, Bushy Park		
tions	1 : 50	083 232 9451 9 Westerford Road,
2 A	2019/04/02	Rondebosch, 7700 info@architecturecoop.co.za www.architecturecoop.co.za



Aluminium Glazed Door Schedule

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Revision Schedule	Architect prior to the commencement of additional work the contractor is to	of work - Do not scale off this drawing - Where the drawing represents notify the architect in writing prior to commencement of work.	Gate House		
Rev. Date Description	Client Endorcement: It is agreed that the client, by sig technical informationcontained herei	ming this drawing, accepts and approves the conceptual design and / or \ensuremath{n} .	Erf 269, Portion 4, Bushy Park		
A 26-04-2022 New conservancy tank spec. added, low wall open width alteration; Driveway layout alteration; Pergola alteration; disabled bathroom size adjusted with ne timber paneling	ING a width W Signature :	Architect : Andrew Cooke Duly employed by the client to act on his/her behalf in terms of the Architectural Profession Act, 44 of 2000.	Window & Door Schedule	1 : 5	
B 16-052022 New cladding to Albution facility with amended slid door. Window & door schedule amended.	ing Date:	Signature : Date:	AD 205 B	04/20/	

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For Tender	Note: This drawing is copyright and remains the p with local authority by-laws, and SANS 10400 & SAU levels to be checked on site prior to commencement	De	Mond	Nature	Reserve	
Revision Schedule	Architect prior to the commencement of work - Do additional work the contractor is to notify the an	Gate House				
Rev. Date Description	Client Endorcement: It is agreed that the client, by signing this draw technical informationcontained herein.	wing, accepts and approves the conceptual design and $/\ {\rm or}$	Erf 269), Portion 4	, Bushy Park	
A 26-04-2022 New conservancy tank spec. added, low wall opening width alteration; Driveway layout alteration; Pergola width alteration; disabled bathroom size adjusted with new timber paneling	Client : Signature :	Architect : Andrew Cooke Duly employed by the client to act on his/her behalf in terms of the Architectural Profession Act, 44 of 2000.	Windo	w & Doo:	r Scedule	1 :
B 16-052022 New cladding to Albution facility with amended sliding door. Window & door schedule amended.	Date:	Signature : Date:	AD 20)6 B		04/2

1940 mm a.f.f.l.
Drive Way Landing level 3625 AMSL
Ex. Fence
Drive Way Landing level
3625 AMSL



20/22

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Timber door schedule

1:50

For Tender Revision Schedule		Note: This drawing is copyright and remains the property of the Architect - All work carried out to comply with local authority by-laws, and SANS 10400 & SANS 204 National Building Regulations - All dimensions & levels to be checked on site prior to commencement of work - Any discrepancies to be reported to the Architect prior to the commencement of work - Do not scale off this drawing - Where the drawing represents additional work the contractor is to notify the architect in writing prior to commencement of work.		De	Mond	Nature	Reserv
				Gate House			
Rev. Date	Description	Client Endorcement: It is agreed that the client, by signing this drawing, accepts and approves the conceptual design and / or technical informationcontained herein.		Erf 26	9, Portion 4	, Bushy Park	
A 26-04-2022	New conservancy tank spec. added, low wall opening width alteration; Driveway layout alteration; Pergola width alteration; disabled bathroom size adjusted with new timber paneling	Client : Signature :	Architect : Andrew Cooke Duly employed by the client to act on his/her behalf in terms of the Architectural Profession Act, 44 of 2000.	Windo	ow & Door	r Scedule	1
B 16-052022	New cladding to Albution facility with amended sliding door. Window & door schedule amended.	Date:	Signature : Date:	AD 2	07 B		04/





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t For Tender		Note: This drawing is copyright and remains the property of the Architect - All work carried out to comply with local authority by-laws, and SANS 10400 & SANS 204 National Building Regulations - All dimensions & levels to be checked on site prior to commencement of work - Any discrepancies to be reported to the Architect prior to the commencement of work - Do not scale off this drawing - Where the drawing represents additional work the contractor is to notify the architect in writing prior to commencement of work.			
sion Schedule					
ate	Description	Client Endorcement: It is agreed that the client, by signing this drawing, accepts and approves the conceptual design and / or technical informationcontained herein.			
6-05-2022	Removal of water storage tanks with their respective subbases; pump enclosure removed. Fencing amended.	Client :	Architect : Andrew Cooke		
)22-05-16	Removal of water storage tanks with their respective subbases; pump enclosure removed. Fencing amended. DP	Signature :	behalf in terms of the Architectural Profession Act, 44 of 2000.]	
	included	Date:	Signature :		
			Date:		



Aluminium window door schedule

	1 : 50						
Draft For Tender Revision Schedule Rev. Date Description		Note: This drawing is copyright and remains the property of the Architect - All work carried out to comply with local authority by-laws, and SANS 10400 & SANS 204 National Building Regulations - All dimensions & levels to be checked on site prior to commencement of work - Any discrepancies to be reported to the Architect prior to the commencement of work - Do not scale off this drawing - Where the drawing represents additional work the contractor is to notify the architect in writing prior to commencement of work. Client Endorcement: It is agreed that the client, by signing this drawing, accepts and approves the conceptual design and / or technical informationcontained herein		De Mon	d Nature	Reserv	
				New Managers House			
				Erf 269, Portion 4, Bushy Park			
	B 16-05-2022	Removal of water storage tanks with their respective subbases; pump enclosure removed. Fencing amended. Window & door framework amended.	Client :	Architect : Andrew Cooke Duly employed by the client to act on his/her behalf in terms of the Architectural Profession	Window & D	oor Schedule	1
			Signature : Date:	Act, 44 67 2000. Signature :	AD 215 B		04/
			Date:	Signature : Date:	AD 215 B		04/





Aluminium Garage Door

1:50

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	Revision Schedule			New Managers	House	
	Rev. Date Description	Client Endorcement: It is agreed that the client, by signing this drawing, accepts and approves the conceptual design and / or technical informationcontained herein.		Erf 269, Portion 4	, Bushy Park	
	B 16-05-2022 Removal of water storage tanks with their respective subbases; pump enclosure removed. Fencing amended. Window & door framework amended.	Client : Signature :	Architect : Andrew Cooke Duly employed by the client to act on his/her behalf in terms of the Architectural Profession Act, 44 of 2000.	Window & Doo:	r Schedule	1 : 5
<		Date:	Signature : Date:	AD 216 B		04/21/
~						

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De Mond Nature Reserve



1 : 50 2022/04/11



Section A _____ 1 : 50







Draft For Tender Revision Schedule Rev. Date Description A 26-04-2022 New conservancy tank spec. New door type for D06 & D07; Ex. DB relocated; Driveway layout amended; Parking lot paved layout amended



 Pergola structure: New SAP pergola structure, comprising twin 145x45 posts @ 2400mm ccs, 220x45 canopy beam bolted to posts, 145x45mm rafters at 1200mm ccs, 22x70mm slats at 100mmccs. Corrugated aluminium roof sheeting with flashings on purlins, with a luminium gutters to later detail.

Slatted Screens: 70x22 mm SAP slats at 100mm ccs on 106x32mm studs at 800mm ccs bolted to 220x45 header beam bolted to 145x45 rafters, with integrated signage all to later detail. Ground Floor Plan

2490

De Mond Nature Reserve New Reserve Administration



Sections

1 : 50 2022/04/11



De Mond Nature Reserve New Reserve Administration



Elevations AD 222 A

1 : 50 2022/04/11



Timber & aluminium schedule

1 : 50

Draft For Tender Revision Schedule		Note: This drawing is copyright an with local authority by-laws, and levels to be checked on site prior	d remains the property of the Architect - All work carried out to comply SANS 10400 & SANS 204 National Building Regulations - All dimensions & to commencement of work - Any discrepancies to be reported to the	De Mond Nature Rea	serv	
		Architect prior to the commencement additional work the contractor is a	it of work - Do not scale off this drawing - Where the drawing represents to notify the architect in writing prior to commencement of work.	New Reserve Administration		
	Rev. Date Description	Client Endorcement: It is agreed that the client, by s technical informationcontained her	igning this drawing, accepts and approves the conceptual design and / or ein.	Erf 269, Portion 4, Bushy Park		
	A 26-04-2022 New conservancy tank spec. New door type D07; Ex. DB relocated; Driveway layout ame Parking lot paved layout amended	for D06 & Client :	Architect : Andrew Cooke Duly employed by the client to act on his/her behalf in terms of the Architectural Profession	Window & Door Scedule	1	
	B 16-05-2022 Possible location of fuel storage room, electr room, generator and water filtration plant room	ical plant ^{Signature :} om. Awaiting	Act, 44 of 2000. Signature :			
	for specialist feedback. Window & door sche amended	duled Date:	Date:	AD 225 B	04/2	





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Aluminium Garage, Glazed Window & Door Schedule

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ANNEXURE 4.2

Civil









	NAME	SIGNATURE	DRAWING STATUS CODES:		FIRST ISSUE DATE	APRIL 2	022	
Вү	N. ADAMS		D-DRFLIMINARV			SCALE	SHEET	SHEET SIZE
(Y.CONRAD		T=TENDER A=AS-E		T/RECORD	AS SHOWN	1 OF 1	A0
IECKED BY	M.S. ORRIE		PROJ.	No.	DISCIPLINE	NUMBER	STATUS	REVISION
CHECKED BY	M. GUZGAY			- / -			_	
APPROVAL - CONSULTANT		18-0	016	- 10 -	500 -	- T ·	- 00	
M.S. ORRIE	SIGNATURE	Mornie						
23/05/2022	PROFESSIONAL REG N	lo. 810082			COPYRIGHT RES	ERVED		





18-016

Monie

M.S. ORRIE

PROFESSIONAL REG No. 810082

SIGNATURE

NAME

- 10 - 600

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DRAWN				CLIENT
Y.C		OWS CIVILS (PTY) LTD		WESTERN CAPE GOVERNMENT
		CIVIL ENGINEERING & PROJECT MANAGEMENT	CONSULTING SERVICES	
		446 IMAM HARON RD	TEL. NO. (021) 565 0496	DRAWING TITLE
	C, In	ZANSDOWNE 7764 PR. ENG, REG. NO. 760189	FAX. NO. n/a e-mail : info@owscivils.co.za	
	VILS (Pro)			WATER RETICULATION DETAILS
	DISCIPLINE			

		ANGLE OF BEND				T-PIECE OR				
(mm)	11 <u>1</u> °		22 ¹ °		45°		90°		END CAP	
	Х	Y	Х	Y	Х	Y	Х	Y	Х	Y
50	75	75	125	100	150	150	275	175	175	175
63	100	100	150	125	200	175	350	200	225	200
75	125	100	175	150	225	225	400	225	250	250
90	150	125	200	175	275	250	475	275	300	300
110	175	150	225	225	325	300	575	325	375	350
125	200	175	250	250	350	350	650	375	400	400
140	200	200	300	275	400	375	700	400	450	450
160	225	225	325	325	450	425	800	450	500	500
200	275	275	400	375	575	500	1000	550	675	550
250	350	325	500	450	750	575	1325	600	950	600
315	425	400	625	550	1100	600	2000	600	1425	600

DOCUMENT NO: 18-016

CONTRACT NO. CI000691

SPECIFICATIONS

FOR

CIVIL ENGINEERING WORKS

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SABS 1200 A: SABS 1200 C: SABS 1200 DB: SABS 1200 DM: SABS 1200 LF: SABS 1200 M: SABS 1200 ME: SABS 1200 ME:	GENERALSITE CLEARANCEEARTHWORKS (PIPE TRENCHES)EARTHWORKS (ROAD SUBGRADE)ERF CONNECTIONS	5

PART A: SPECIFICATIONS

The following specifications, as listed below, are relevant and shall apply to this contract:

1. Standard Specifications

Where reference is made to the standard specifications in this contract, it shall mean the **SANS Standard Specifications for Civil Engineering Construction**, prepared by Standards South Africa complete with any corrections and amendments applicable at the time of tendering.

The tenderer shall obtain / purchase it from Standards South Africa, Private Bag X191, Pretoria, 0001, Tel: (012) 428 7911, Fax: 0800 00 77 88, Web: <u>www.sabs.co.za</u>. This document may also be inspected, by appointment, at the offices of the Client and the consulting Engineers during normal office hours.

2. **Project Specifications**

Amendments to, omissions from or additions to the standard specifications, as defined above, that may be required in connection with this specific project are bound in Part B: Project Specifications referring to the Standard Specifications.

PART B: PROJECT SPECIFICATIONS REFERRING TO THE STANDARD SPECIFICATIONS

Amendments to the standard specifications are included in this Part B: Project Specifications referring to the Standard Specifications.

- (i) The project specifications form an integral part of the contract documents and supplement the standard specifications.
- (ii) In the event of any discrepancy between the project specifications and a part of the standard specifications, the bill of quantities, or the drawings with regard to the scope or quality of the works, the project specifications shall take precedence.
- (iii) The standard specifications, which form part of this contract, have been written to cover all phases of work normally required for civil engineering construction contracts, and they may therefore cover items not applicable to this particular contract.

In certain clauses the standard specifications allow a choice to be specified in the project specifications between alternative materials or methods of construction and for additional requirements to be specified to suit a particular contract. Details of such alternatives or additional requirements applicable to this contract are contained in this part of the project specifications.

The number of each clause and each payment item in this part of the project specifications consists of the prefix PS followed by a number corresponding to the number of the relevant clause or payment item in the standard specifications. The number of a new clause or a payment item which does not form part of a clause or a payment item in the standard specifications and which is included here, is also prefixed by PS followed by a new number. The new numbers follow on the last clause or item number used in the relevant section of the standard specifications.

CLAUSE	DESCRIPTION				
	VARIATIONS AND/OR ADDITIONS TO THE STANDARDISED SPECIFICATIONS				
PSA	General				
PSC	Site Clearance				
PSDB	Earthworks (Pipe Trenches)				
PSDM	Earthworks (Road Subgrade)				
PSLF	Erf Connections				
PSM	Roads (General)				
PSME	Subbase				
PSMJ	Segmented Paving				

The particular standard specifications that are affected are described in the table below.

SANS 1200 A: GENERAL

PSA 3: MATERIALS

PSA 3.1: Quality

Substitute the second sentence of the firth paragraph of A3.1 with the following:

All pipes, fitting and materials used in the Works, must bear the official standardisation mark of the SABS where applicable. The mark on a pipe shall be visible from above after the pipe is laid.

The Client's Project Manager or Supervisor's approval of all manufacturers' instructions with regard to installation of pipelines and sealing of joints between RC manhole rings is required.

Substitute the second paragraph with the following:

Samples on which control testing is required by the Client's Project Manager or Supervisor, shall be delivered free of charge to a commercial soils laboratory specified or approved by the Project Manager or Supervisor. The Contractor is responsible for the cost of all testing to ascertain that the materials do comply with the relevant minimum requirements and all such costs shall be deemed to be included in the tendered rates. The cost of control test done by the Client's Project Manager or Supervisor and of which the results do not comply with the minimum requirements shall be for the Contractor's account.

The Contractor shall inform the Project Manager or Supervisor of any control testing to be done at least 48 hours before such test are required and allow in his programme for the time necessary for the tests and the processing of the results thereof.

PSA 5: CONSTRUCTION

PSA 5.1: Survey

PSA 5.1.1: Setting out the works

Bench marks as well as reference pegs have been placed on the site and these will be used to set out the Works. Setting out of the works is the sole responsibility of the Contactor and shall be done from survey pegs along the street reserve boundaries and from bench marks as indicated on the drawing. The positions and values these pegs are given on the drawings.

The Contractor shall within two (2) weeks after the Land Surveyor has set out the pegs, check levels over all references pegs and bench marks and line pegs. This must be done before the Contractor intends construction of any portion of the Works influenced by such pegs or bench marks.

The Client's Project Manager or Supervisor shall be informed in writing of any discrepancy discovered in the positions or levels immediately on discovery but in any event at least seven (7) days before such construction is due to start. Any costs or subsequent costs arising from discrepancies, which have not been reported to the Project Manager or Supervisor within the aforementioned period, shall be the sole responsibility of the Contractor.

If no written statement is received from the Contractor, it will be held that the Contractor has satisfied himself that the positions and levels of the reference pegs and bench marks are correct.

PSA 5.1.2: Preservation and replacement beacons and pegs subject to the land survey act

Replace A.5.1.2 with the following:

Immediately on taking over the site as well as after the replacement of corner and erf pegs, after the completion of mass earthworks, the Contractor, under the direction of the Client's Project Manager or Supervisor, shall search for all pegs and the Contractor shall compile a list of such pegs that are apparently in their correct positions. The Contractor shall certify this list for future reference.

In the case where erf boundary pegs have already been placed, these pegs will be pointed out and handed over to the Contractor and he shall take all precautions necessary to ensure that pegs and the pegs referred to in PSA 5.1.1 are not disturbed or destroyed. Any costs in connection with the replacement of pegs, for which the Contractor is responsible in terms of Subclause 5.1.2, will be recoverable from the Contractor by deduction from the monthly certificate of payment.

All erf boundary pegs disturbed by the Contractor will be replaced by a Land Surveyor after the completion of all operations and to the satisfaction of the Project Manager or Supervisor.

PSA 5.4: Protection of overhead and underground services

Add the following to A.5.4:

The Contractor shall as soon as possible after handing over of the site, commence with the detection of existing services continuously without interruptions, and finalise it at least seven (7) days before excavation starts at that particular section.

Provision must be made for the protection and maintenance of existing services for the duration of the contract. No payment will be made in respect of this and all costs must be included in the tendered rates.

PSA 7: TESTING

Add the following:

PSA 7.4: Statistical analysis of control tests

Test results will not be analysed by statistical methods, and all results must comply with the minimum requirements of the materials concerned.

SANS 1200 C: SITE CLEARANCE

PSC 4: MATERIAL

PSC 3.1: Disposal of Material

Substitute the first sentence of C3.1 with the following:

Material obtained from clearing and grubbing, demolition of founding structures, dismantling of pipes etc. shall be disposed of at an approved site identified by the Contractor and approved by the Client or his Project Manager or Supervisor. The Contractor to maintain records of materials disposed from site and must provide such records to the Employer's Agent on a monthly basis.

PSC 5: CONSTRUCTION

PSC 5.1: Areas to be cleared and grubbed

Substitute the first sentence with the following:

The Contractor may proceed with clearing and grubbing after the handing over of the site. Measurement and payment for the required works shall only occur along areas as required in writing by the Project Manager or Supervisor.

Substitute the last paragraph with the following:

The Contractor shall program his work in such a way that re-clearing will not be necessary. The cost of re-clearing shall be borne by the Contractor.

PSC 8: MEASUREMENT AND PAYMENT

PSC 8.2: Scheduled Items

Add the following items:

PSC 8.2.10: Remove topsoil to a nominal depth of 100mm...... Unit: m³

The unit of measurement shall be per cubic metre. The rate shall cover the cost of excavation, removal, temporary stockpiling, maintenance of the temporary stockpile, loading, transporting and respreading of the material by the Contractor after the completion of all bulk earthworks.

PSC 8.2.11: Remove existing water tanks, store and maintain...... Unit: No.

The unit of measurement shall be per number of tanks that must be removed, dismantled and temporarily stored on site as directed by the Client or his Project Manager or Supervisor. The tendered rate shall cover the cost for dismantling the tanks, any excavation, removing the founding structure, transporting, temporarily store and maintaining for re-use by the Client.

SANS 1200 DB: EARTHWORKS (PIPE TRENCHES)

PSDB 3.1: CLASSES OF EXCAVATION (SUB-CLAUSE 3.1)

Refer to Clause PSD 1 for excavation classification.

The Contractor should anticipate encountering services which have been abandoned or services which are in use, but not recorded. The requirements of sub-clause 5.1.2 of SANS 1200 D shall apply.

PSDB 5.2: MINIMUM BASE WIDTHS (SUB-CLAUSE 5.2)

A side allowance of 300mm shall be applicable to pipes of less than 125mm diameter.

PSDB 5.4: EXCAVATION (SUB-CLAUSE 5.4)

Trenches shall be excavated true to line and level in accordance with the Contract Drawings. Allowance shall be made in the excavation rates for the pipe wall thickness.

PSDB 5.5: TRENCH BOTTOM (SUB-CLAUSE 5.5)

Any accidental over-excavation below the specified levels shall be refilled as ordered by the Employer's Agent with approved material and compacted as directed. The Contractor will not be entitled to extra payment in respect of such additional excavation and backfilling.

PSDB 5.6.2: BACKFILLING (SUB-CLAUSE 5.6)

The Contractor shall inform the Project Manager or Supervisor of his intention to backfill any trench or other excavation and allow the Project Manager or Supervisor reasonable time to examine the pipes, bedding and manholes and perform any appropriate tests.

All vegetable matter, rubble, rubbish, etc. shall be excluded from the backfill material.

PSDB 5.6.3: Disposal of Excavation material

Surplus excavation material will be spoiled off-site at a site identified by the Contractor and approved by the Project Manager or Supervisor.

PSDB 5.7.2: AREAS SUBJECT TO TRAFFIC LOADING (SUB-CLAUSE 3.5b AND 5.7.2)

All trenches shall be considered to be subject to traffic loading with respect to provisions of above clauses. Rates tendered for excavation and backfill shall include for the requirements of these clauses.

Notwithstanding bedding details given elsewhere materials in the pipe trench above the pipe within one meter vertically of the road surface shall be compacted to the same density as specified for the surrounding layers.

Add the following sub-clause:

PSDB 5.11: DEALING WITH WATER

Where water is encountered in the excavation an approved dewatering system shall be provided to keep the excavations sufficiently dry at all times to ensure the proper execution of the works. Excessive over excavation resulting from a lack of suitable dewatering methods will not be allowed.

The Contractor is to ensure that no sludge is pumped onto the site.

PSDB 5.13: UNSUITABLE MATERIAL

Material unsuitable for backfilling of trenches or roadworks shall be spoiled off site to a location identified by the Contractor and agreed with the Project Manager or Supervisor.

PSDB 5.14: PIPES IN COMMON TRENCH

Wherever pipes are laid in a common trench (clearance between pipes 600mm or less), excavation and backfilling shall be paid for only once for the deeper trench.

PSDB 5.15: BACKFILL AND BEDDING

All bedding shall be Class B unless otherwise ordered by the Employer's Agent.

Backfill material shall be suitable material excavated from trenches, suitable excess cut material or borrow from site as ordered by the Project Manager or Supervisor.

Imported backfill and bedding material shall only be used if ordered by the Employer's Agent.

PSDB 5.17: TRANSPORT FOR EARTHWORKS FOR TRENCHES

The provisions of Clause PSD 4.2.7 shall apply. No separate payment for overhaul of materials shall be applicable.

PSDB 5.18: SELECTION (SUB-CLAUSE 3.7)

Notwithstanding sub-clause 3.7 in terms of which the Contractor has a choice regarding methods of selection, the Contractor is required to use selective methods of excavation. The Contractor shall selectively remove and separate the suitable material from unsuitable material and place it adjacent to the trench for reuse as backfill, selected fill, selected granular material or for other use as ordered by the Employer's Agent.

Material which in terms of sub-clause 6.2 of SANS 1200 D or SANS 1200 LB, is too wet for immediate use in the trench (but which is otherwise suitable) will not be regarded as "unsuitable" material and, if so ordered by the Project Manager or Supervisor, the Contractor shall spread such material in a suitable area until it has dried sufficiently for later use.

When preparing his programme and construction methods, the Contractor shall make allowance for selective excavation and the handling and drying out of material which is too wet for immediate use.

PSDB 8.3: MEASUREMENT AND PAYMENT

Add the following to DB 8.3.2:

PSDB 8.3.2(d): Excavate by hand in soft and intermediate material to locate and expose existing services parallel to trenches......Unit: m³

The depth of excavation shall be measured from the final finished level.

The rate for excavation shall cover the costs of excavation, backfilling and compaction to the specified mod. AASHTO maximum density. The rate shall also provide for the fact that the excavation width in sand will be wider than normal.

PSDB 8.3.2(d): Excavate by hand in soft and intermediate material to locate and expose existing services that crosses trenches......Unit: m³

The depth of excavation shall be measured from the final finished level.

The rate for excavation shall cover the costs of excavation, backfilling and compaction to the specified mod. AASHTO maximum density. The rate shall also provide for the fact that the excavation width in sand will be wider than normal.

SANS 1200 DM: EARTHWORKS (ROAD SUBGRADE)

DM 2: INTERPRETATIONS

DM 2.3: Definitions and Abbreviations

PSDM 2.3.1: Roadbed

Paved areas shall also be taken as roads. Therefore all references to, roadbed will refer to work under paved areas.

DM 3: MATERIALS

DM 3.2: Classification for placing purpose

PSDM 3.2.3: Selected layers

Substitute DB 3.2.3 with the following:

Materials used for selected layers shall comply with the following:-

Description	Lower Selected Layer (G9 – TRH 14)	Upper Selected Layer (G7 – TRH 14)
Minimum CBR at 93% mod. AASHTO density	7	15
Maximum CBR swell at 100% mod. AASHTO		
density	1.5%	1.5%
Maximum size of aggregate after compaction	100mm	100 mm
Minimum Grading Modulus (GM)	0.5	0.75
Maximum Plasticity Index (PI)	18	10 + 3 GM
Maximum Group Index	-	1

All imported material underlying the sub-base or base of the final road prism, whichever may be applicable, that does not comply with the requirements for lower selected layer or upper selected layer in the respective depth categories, shall be removed and replaced with material complying with the requirements of selected layers, all to the Contractor's expense.

DM 5: CONSTRUCTION

DM 5.2: Methods and procedures

PSDM 5.2.2.3 (b): Cut to spoil

Substitute DM 5.2.2.3 (b) with the following:

All surplus and/or unsuitable material shall be removed from the site and disposed of at an approved spoil site or at points designated by the Project Manager or Supervisor and the area shall be shaped to establish a free draining surface. No additional payment shall be made for overhaul. The rates tendered to compensate for any overhaul or free haul (if applicable).

PSDM 5.2.2.4: Temporary stockpile of materials

Add the following to DM 5.2.2.4:

The Contractor shall program the works in such a manner that suitable excavated material shall if practically possible, be placed directly in the appropriate position to ensure that temporary stockpiling is limited to an absolute minimum. No payment shall be made for the temporary stockpiling of material where such material is to be used as backfilling for pipe trenches, fill to sidewalks, shaping or

finishing off of cut and fill slopes, medians and interchange areas except when so ordered in writing by the Employer's Agent.

DM 5.2.3: Treatment of road bed

PSDM 5.2.3.3: Treatment of road bed

a) Preparation and compaction of road bed.

Substitute the first paragraph of DM 5.2.3.3 (a) with the following:

The road-bed shall be scarified to a depth of 150mm, shaped and compacted to 93% of mod. AASHTO density (100% for sand), except where otherwise ordered by the Employer's Agent.

PSDM 5.2.5: Selected layer

Add the following to DM 5.2.5:

The Client's Project Manager or Supervisor may, depending on the quality of the in-situ material, order the omission of one or both of the selected layers. To determine the amount of selected layers, if any, the Project Manager or Supervisor may order the Contractor to dig test holes with maximum dimensions of 1.5m x 1.5m and 1.0m deep at positions indicated by the Employer's Agent, before construction commences. The Contractor shall backfill all test holes with selected material and compact it to 95% of mod. AASHTO density after the Employer's Agent has taken samples and profiled the holes.

DM 6: TOLERANCES

PSDM 6.5: Dimensions and level control

The Contractor shall submit to the Project Manager or Supervisor, in a form acceptable to the Project Manager or Supervisor, records of dimensions and level control, prior to requesting the Project Manager or Supervisor to carry out any routine inspections.

DM 7: TESTING

PSDM 7.2: Process control

Amend Table 1 of DM 7.2 as follows:

Substitute "2 000m²" with "500m²", "1 500 m² with "400 m²" and "5 000 m²" with "1 250 m²".

DM 7.3: Routine inspection and testing

Substitute DM 7.3.2 with the following:

No density shall be less than the specified minimum density for the relevant layer. The cost of all routine testing done by the Project Manager or Supervisor, and of which the results do not comply with the Specified minimum requirements for the material, shall be borne by the Contractor and will be subtracted from the monthly payment certificates.

PSDB 8.3: MEASUREMENT AND PAYMENT

Add the following to DB 8.3:

PSDM 8.3.7: Cut to spoil or stockpile from.....Unit: m³

The rate for excavation shall cover the costs of excavation, backfilling and compaction to the specified mod. AASHTO maximum density. The rate shall also provide for the fact that the excavation width in sand will be wider than normal.

SANS 1200 LF: ERF CONNECTIONS (WATER)

PSLF 8: MEASUREMENT AND PAYMENT

PSLF 8.2.8: Supply and place a 1m long timber stake at least 600mm......Unit: No.

The rate shall be measured per number. The rate must allow for all costs involved in the supply and installation of the particular marker complete.

SANS 1200 M: ROADS (GENERAL)

PSM5: CONSTRUCTION

PSM6: TOLERANCES

PSM 6.3: Frequency of Checks

Replace "sufficient checks" with "do sufficient checks and submit to the Project Manager or Supervisor for approval".

PSM7: TESTING

PSM 7.3: Routine inspection and testing

Substitute M 7.3.3 with the following

Statistical evaluation of test results shall not be applicable to this contract all tests shall meet the specified minimum requirements for the specific material.

PSM8: MEASUREMENT AND PAYMENT

Add the following to M 8.1:

The cost of all routine acceptance control testing required by the Project Manager or Supervisor, and of which the results do not comply with the specified minimum requirements for the material, shall be borne by the Contractor and will be subtracted from the monthly payment certificates and/or payment held back until the layer complies with the required specifications.

SANS 1200 ME: SUBBASE

PSME 3: MATERIAL

PSME 3.2: Physical Properties

PSME 3.2.1: Subbase Material

Substitute ME 3.2.1 with the following;

a) Materials of G5 quality (TRH 14) for use in the unstabilised subbase shall comply with the following requirements

i)	Maximum size of aggregate after compaction	63mm
ii)	Maximum liquid limit	30
iii)	Maximum plasticity index (PI)	10
iv)	Maximum linear shrinkage	5%
v)	Minimum CBR at 95% of Mod AASHTO density	.45%
vi)	Maximum CBR swell at 100% of Mod AASHTO density	0.5%
vii)	Maximum group index	0
viii)	Minimum grading modulus (GM)	1.5%

b) Materials of upper selected quality for use in the unstabilised subbase shall comply with the requirements of upper selected layer (G7 material TRH 14) as specified in PSDM 3.2.3, except that the maximum aggregates size after compaction shall **not** be greater than 63mm.

PSME 3.2.2: Gravel shoulder and gravel wearing coarse material

Substitute ME 3.2.2 with the following;

The material used for gravel shoulders and / or gravel wearing shall comply with the following requirements:

i)Max	kimum aggregate size after compaction	37.5mm
ií)	Oversize index (Io)	Nil
iii)	Shrinkage product (Sp)	100-240
iv)	Gradient coefficient (Gc)	
v)	Minimum CBR at 95% of Mod AASHTO of density	45%

Where:

Oversize index (Io) is the mass of the material larger than 37.5mm expressed as a percentage of the total mass of material;

Shrinkage product (Sp) is the product of the linear shrinkage and the percentage smaller than 0.425mm (expressed as a percentage of the material smaller than 37.5mm) of the material; and

Grading coefficient (Gc) is the product of percentage of material smaller than 26.5mm but larger than 2.0mm and the percentage smaller than 4.75mm (expressed as a percentage of the material smaller than 37.5mm) divided by 100.

PSME 5.4: Placing and Compaction

PSME 5.4.1: Placing

Substitute "the project specification" in the second paragraph of ME 5.4.1 with "ME 6.1.4".

PSME 5.4.4: Compaction

PSME 5.4.4.3: Penetration

Add the following new sub-clause:

The Contractor must provide for the penetration of the subbase material in the sand selected layer. The specified layer thickness will be a net homogenous layer. Only the homogenous layer will be measured for payment.

PSME 5.7: Transport

PSME 5.7.1: Freehaul

Substitute ME 5.7.1 with the following:

An unlimited freehaul distance shall apply to subbase material.

PSME 7: TESTING

PSME 7.2.2: Routine inspection and testing

Substitute the second sentence of ME 7.2.2 with the following:

No density shall be less than the specified minimum density for the relevant layer.

PSME 8: MEASUREMENT AND PAYMENT

PSME 8.2: Compaction Quantities

Substitute ME 8.2 with the following:

Measurement and payment shall be to the exact dimensions as shown on the drawings.

SANS 1200 MJ: SEGMENTED PAVING

MJ 3: MATERIALS

PSMJ 3.1.2: Class, Strength and Type

Add the following to sub-clause 3.1.2:

Prior to ordering the paver units, the Contractor shall submit samples and test information of the paver units to the Client's Project Manager or Supervisor for the approval.

MJ 5: CONSTRUCTION

PSMJ 5.4: LAYING OF UNITS

Add the following to MJ 5.4:

The laying of the paver units shall conform to the pattern(s) as specified on the drawings.

Before the Contractor commences with the construction of the segmented and permeable paving, he shall if so ordered, demonstrate by laying a trial section of 50m² to 200m² in areas in accordance with the specified requirements and design.

Only when such a trial section has been satisfactorily constructed, and is found to comply with the specified requirements, will the Contractor be allowed to commence with the construction of the remainder of the permanent works. No additional payment shall be made for any trial section.

Should the Contractor make any alteration in the methods, processes, equipment or materials used, or should the work consistently fail to comply with the applicable requirements of the specifications, the Project Manager or Supervisor may require that further trial sections be laid at the cost of the Contractor before allowing the Contractor to continue with the permanent work.

Trial sections shall be laid where indicated by the Project Manager or Supervisor. The Contractor shall prepare the surface on which a trial section is to be laid and shall also, if the work fail to comply with the applicable requirements of the specification, remove the trial section after completion and acceptably restore the surface on which it was constructed; all at his own cost.

ANNEXURE 4.3

Structural

GENERAL

- These notes are to be read in conjunction with all PROSTRUCT engineering drawings and pr4.3ct Unless otherwise specified concrete grades shall be as follows: 1.1 specifications. Notes on drawings take preference over General Notes.
- Structural drawings must be read in conjunction with the relevant drawings and documentation from other Consultants and Specialists, including but not limited to architectural, drainage, mechanical, electrical and plumbing drawing. Any discrepancies (including dimensions and levels) shall be brought to the attention of the Engineer immediately prior to casting of concrete.
- 1.3 All Engineers' and other Consultants' instructions must be recorded in the site instruction (SI) book or confirmed via email. The current edition of all relevant SANS specifications for the project, including but not
- limited to those mentioned in the notes, on the drawings and in the project specifications must be available at all times on site. Any reference to a SANS or other specification is a reference to the latest published edition of that specification.
- 1.5 The Contractor shall confirm all levels and dimensions on site before erecting formwork and casting concrete. Any discrepancies shall be reported to the Engineer immediately. 1.6 The Contractor may not use alternative products or designs other than those prescribed, unless written approval from the Engineer is obtained. Alternative design/drawings are to then be submitted at no extra cost to the Client unless otherwise agreed.
- 1.7 Care must be exercised to ensure that waterproofing membranes and filters are not damaged during construction. Water proofing by specialist to Architect's approval.
- 1.8 Written dimensions take preference over scaled dimensions. DO NOT SCALE OFF DRAWINGS. Request required dimensions.
- 1.9 The works will be inspected from time to time by the PROSTRUCT Engineer (and other Consultants and Specialists where relevant) to ascertain that the Contractor is carrying out the works in general conformity with the construction documentation. It remains the Contractor's responsibility to ensure that the works are carried out in acccordance with the latest relevant construction documentation and good building practices.

EARTHWORKS

- All earthworks shall be in accordance with **SANS 1200D** and relevant drawings. The Contractor shall confirm the nature and location of any and all existing services 2.2
- which may be affected by construction works. 2.2.1 The Contractor shall ensure proper damage protection of these services during
- construction works. 2.2.2 The Contractor shall notify and/or arrange with the relevant authorities of any service/ supply discontinuance, and undertake all relevant cutting, disconnecting and/or sealing of services and drains as required.
- All dimensions and levels are to be confirmed by the Contractor with Architect's and other relevant Consultant's drawings prior to any excavations commencing. Any discrepancies shall be brought to the Engineer's attention and resolved prior to excavations commencing.
- The Contractor is responsible for implementing and maintaining a temporary site drainage system to channel water away from the works to ensure the local protection of the structure and surface beds against damage caused by water (including but not limited to stormwater, and water from neighbouring systems) and transportable solids during construction.
- 2.4.1 The Contractor's temporary drainage system shall provide the necessary pumps, temporary sumps and drains to ensure that excavations remain free of water at all times
- The Contractor is responsible for ensuring that all site work are maintained in a safe and stable condition. 2.5.1Bulk excavation batters are to be provided around the perimeter of the site at one (1)
- meter from the site boundary and at 1V:1H, unless otherwise indicated on drawings or agreed upon in writing by the Engineer.
- Temporary construction batters shall be limited to 1V:2H, or as per the geotechnical 2.5.2 report. The Contractor shall engage with the Geotechnical Engineer for approval on steeper slopes
- 2.5.3 Slope stabilisation and erosion protection shall be provided at the Contractors's expense.
- 2.5.4 The Contractor shall design and install all bracing and/or shoring necessary to retain earth banks, roads, pavements, walls, and footings of adjacent properties and structures, as well as to prevent caving and displacement of adjacent soil and structures All excavations to be inspected and approved in writing by the Engineer. 2.7 Footing levels shown on the drawings are preliminary and based on the geotechnical
- report. Excavations shall continue until the required soil bearing capacity as per the geotechnical report is found, and shall be confirmed by the Geotechnical Engineer. Any deviation from the footing founding level as noted on the drawings is to be discussed between the Contractor and the Engineer to determine whether the over-excavations are to be filled with mass concrete (15 MPa/19 mm) or whether the reinforcing steel is to be appropriately adjusted.
- 2.8 Over-excavations are to be be filled with mass concrete (15 MPa/19 mm) at the Contractor's expense, unless written approval is obtained from the Engineer. Over-excavated materials shall not be used for backfill, leveling of uneven areas or 2.8.1 filling in of over-excavations and shall be removed from site to a place of legal disposal, unless written approval is obtained from the Engineer
- 2.9 Backfill material to be compacted in layers not exceeding 150 mm to 98 % MOD AASHTO, and approved by Geotechnical Engineer.
- 2.9.1 Column bases shall be backfilled with approved material in accordance with the project specification 2.9.2 Sub-soil drains shall be inspected and approved by Engineer/relevant Consultant before
- being covered with backfill. 2.9.3 Waterproofing (by Specialist Contractor) for retaining walls to be inspected and
- approved by Engineer /relevant Consultant and/or Architect before being covered over with backfill.

FOUNDATIONS 3.

- 3.1 Footing levels shown in the drawings are preliminary and shall be confirmed by the Engineer in order to obtain the specified allowable soil bearing pressure (refer § 2.7) No foundations are to be cast on fill. Over-excavations to be filled with mass concrete (15 MPa/19 mm) at the Contractor's expense.
- 3.3 A 50 mm thick blinding layer (15 MPa/19 mm) shall be cast under all foundations of the concrete structure at the discretion of the Engineer. Alternatively a 250 µm DPC membrane shall be placed in the excavation trench. Engineer and Contractor to discuss. 3.4 All footings shall be placed concentrically below columns and symmetrically below
- brickwork unless otherwise indicated. 3.5 Final foundation levels shall be confirmed on site and submitted by the Contractor for
- approval by the Engineer before further work is conducted. All strip footings for load bearing walls shall be 300 dP x 800 mm unless otherwise
- specified on relevant drawings. All other strip footings shall be 250 dP x 600 mm unless otherwise specified on relevant 3.7 drawings.
- 3.8 All reinforced masonry columns (excluding those with RWDPs) shall be reinforced with 1Y16 reinforcing bar, and the cavity shall be filled with 25 MPa concrete to top of column
- 3.9 Waterproofing (by Specialist Contractor) for retaining walls to be inspected and approved by relevant Consultant and/or Architect before being covered.

CONCRETE

- All concrete work to be executed in accordance with the current edition of SANS 1200G, except where specified otherwise in writing by the Engineer Concrete mixes to be designed by a recognised specialist and submitted to and 4.2
- approved by the Engineer in writing prior to any concrete being ordered.

CONCRETE (continued)

4.4

Mass concrete:	15 MPa/19 mm
Blinding:	15 MPa/19 mm
Unreinforced wall footings:	30 MPa/19 mm
Reinforced wall footings:	30 MPa/19 mm
Reinforced bases:	30 MPa/19 mm
Columns:	30-60 MPa/19 mm (Refer to relevant drawings)
Beams:	30 MPa/19 mm
Suspended slabs:	30 MPa/19 mm
Light industrial floors:	30 MPa/19 mm
Surface beds:	30 MPa/19 mm
Miscellaneous elements:	30 MPa/19 mm (Unless indicated differently on

relevant drawings) All casting procedures, construction methods and positioning of construction joints shall be submitted in writing to the Engineer for approval.

Slabs and downstand beams are to be cast simultaneously unless otherwise approved 4.4.1 by the Engineer in writing.

4.4.2 No horizontal joints are permitted in footings, beams and slabs. 4.4.3 Any construction joints in retaining walls and slabs shall be discussed between the Contractor and the Engineer and approved by the Engineer in writing prior to being constructed.

4.4.4 All pipes, sleeves and conduits etc passing through an expansion joint shall be provided with an approved flexible coupling.

- 4.4.5 Refer Typical Detail on S 0001 for typical slab construction joint. 4.5 The Contractor shall coordinate the details and positions of all penetrations and embedded items from the latest services and Architect drawings (including but not limited to RWDPs, stormwater, sewerage, drainage, electrcical and mechanical services) with the latest structural drawings. Discrepancies and/or clashes to be reported to the Engineer and resolved prior to casting of concrete.
- 4.5.1 The Contractor shall ensure that all embedded items for services are placed and provided for prior to casting of concrete.
- The Contractor is to obtain written approval from the Engineer prior to constructing any 4.5.2 additional penetrations and/or embedded service items not indicated on the drawings. 4.6 Minimum concrete cover to reinforcing, except where noted otherwise on bending
 - schedules, shall be as follows:

oundations:	60 mm
olumns (to stirrups):	30 mm
etaining walls (soil side):	40 mm
etaining walls (non-soil side):	25 mm
eams (to stirrups):	30 mm
-h	Overster of C

Greater of 30 mm and diameter of main reinforcment

- 4.7 Beam dimensions are given on plan as DEPTH x WIDTH, and include the slab depth unless otherwise specified on the relevant drawings.
- 4.8 All surface beds shall be reinforced with 193 mesh unless specified otherwise. 49 No masonry walls or partitions are to be constructed on suspended slabs before the 28
- day strength has been obtained and all supporting formwork has been removed. Concrete cover block strength shall be greater than or equal to the strength as the
- structural element it is being used in. Shuttering shall be free from shavings, dust, dirt, wire and all other debris prior to casting 4.11 of concrete.
- 4.12 All columns shall be cured with an approved plastic membrane and approved engineering methods
- 4.13 If kickers are required, they shall be cast with the same strength concrete as and as monolithic with the concrete elements below them. The concrete in kickers shall be thoroughly compacted and cured.
- 4.14 Stripping times of shuttering and propping shall be in accordance with the current edition of SANS 1200G (refer to table in § 8). Formwork as per Specialist Contractor specifications
- 4.15 Propping for beams shall remain in position until at least the minimum specified time has expired after casting the concrete.
- 4.16 Refer Architect's drawings for details of finishes, including but not limited to V-joints, drip joints, chamfers, grooves and special finishes in normal and off-shutter concrete. 4.17 All off-shutter concrete corners shall receive a 20 x 20 mm chamfer (confirm with
- 4.18 Concrete compressive strength testing to be in accordance with the following: All cube testing to be in accordance with the current edition of **SANS 1200G**,
 - unless othewise specified in writing by the Engineer. A sample comprising a minimum of three (3) concrete cubes, from a minimum of each 50 m³ of each grade of concrete placed each day shall be taken on site (as per the latest version of SANS 1200GB 1984 - § 7.12). Note that as per iii) below that this implies a minimum of nine (9) cubes per batch.
 - Concrete strength testing shall, at minimum, take place three (3), fourteen (14) and twenty eight (28) days after casting of concrete. iv) Test cube results shall be submitted to the Engineer for approval no later than 5
 - days after testing.

REINFORCEMENT 5.

Architect)

Bending of reinforcement shall be in accordance with the current edition of **SANS 282.** Reinforcement shall be fixed to comply with the tolerances specified in the current 5.2 edition of SANS 1200G.

5.3 No heat treatment (including but not limited to welding) or cutting of steel is allowed without the written approval of the Engineer. Any site bending of steel reinforcement shall be done using a proper bar re-bending tool, and bars should only be re-bent once.

- 5.4 The Contractor shall exercise care that no damage to waterproofing materials underneath surface beds is caused during fixing of steel or other operations. The cost to repair or replace waterproofing materials shall be at the Contractor's expense.
- 5.5 Vertical element (columns and walls) reinforcement to be adjusted and approved in writing by the Engineer after levels to foundations have been confirmed on site.

5.6 All re-entrant corners of openings in slabs and walls shall have two (2) Y12 corner bars of length 1200 mm on both sides of the concrete element, unless specifed otherwise on the relevant bending schedule.

5.6 All reinforcement must be inspected and approved by the Engineer in writing before concreting. The Engineer shall be given at least 24 hours advance notification of an inspection. Inspection will only be done if all steel is properly fixed, spacer blocks positioned, shuttering cleaned out and reinforcement checked by the Contractor prior to the Engineer arriving for inspection.

5.7 It is the Contractor's responsibility to maintain reinforcement (including mesh) in the correct position with approved spacers and/or stools during concreting. 5.8 The following quantities are given in terms of rebar mass per cubic metre of concrete,

and shall be verified against project specifications by the Engineer and Contractor: 100 kg/m³ Bases:

Columns:	200 kg/m
Beams:	250 kg/m
Slabs:	110 kg/m
Strip Footings:	45 kg/m³
Concrete Walls:	120 kg/m
Reinforced masonry:	100 kg/m

MASONRY

6.1 Masonry units shall comply to the current editions of relevant specifications, including but not limited to <u>SANS 227</u>

SANS 285 SANS 1215

6.2 Brickwork to be built according to the current edition of **SANS 0164**

MASONRY (continued)

6.3

6.4

6.5

6.9

- Minimum brickwork strengths: Load-bearing bricks: 14 MPa
 - Non load-bearing bricks: 7 MPa.
- All mortar for brickwork shall be Class 2 according to SANS 0164 Part 1-1980. All brickwork anchors, wall ties and straps shall be hot dipped galvanized. Butterfly wall ties shall be built into cavitiy walls at three per square meter (3/m²)
- (staggered) or similar approved spacing 6.6 Hoop iron straps shall be built in a minimum of every fourth course (i.e. minimum every
 - 340 mm) for a minimum of 700 mm, and shot-fixed to steel/RC vertical elements. See Typical Details on S 0001.
- 6.7 Concrete lintels to be supplied and installed above all openings in brickwork in accordance with supplier's specification. 6.8
 - Brickforce: Brickwork shall be reinforced with an approved brickforce every fourth course
 - (i.e. minimum every 340 mm) First two brickwork courses above window and door openings, and below window openings to contain brickforce extending 600 mm past these openings.
 - In filled cavity retaining walls, brickforce should be placed every second course. V-joints are to be cut through the plaster where brickwork and concrete join.
- 6.10 Refer Architect's drawings for details of reinforced brick lintels. 6.11 PROSTRUCT drawings indicate load-bearing brickwork. Refer Architect's drawings for the
- extent of all brickwork. 6.12 Where filled cavities are indicated, any reinforcing steel shall be properly secured before the cavity is filled with the same strength concrete as the elements they act with. 6.13 All non-load bearing walls and partitions shall be kept 20 mm clear of the underside of
- beams and slabs, unless otherwise specifed on the relevant drawings.

RIB AND BLOCK

7.1 All concrete work is to be done in accordance with the current edition of **SANS 1200G**. 7.2 All concrete sizes on drawings are without finishes unless indicated otherwise. 7.3 Unless otherwise specifed by a Specialist Consultant or Specialist Contractor and

- approved by the Engineer in writing: Ribs to bear a minimum of 90 mm onto the supporting structure.
- Ribs to be propped at a maximum of <u>1500</u> mm c/c.
- Props are to remain in place for at least ten (10) days after casting.
- No blocks may be taken more than 20 mm onto supporting walls. Rib soffits to be cambered at a rate of 6 mm per 3 m span.

74 The Engineer shall be given at least 48 hours advance notice when inspections are due. 7.5 Ribs and topping to be cast simultaneously unless otherwise specified in writing by the

Engineer 7.6 All concrete is to be mechanically vibrated during casting.

Position of any walls on top of the slab may not be altered without Engineer's written 7.7 approval.

7.8 Prestressed lintels and minimum four courses of brickwork with brickforce every layer to be placed over openings where reinforced concrete beams have not been specified. 7.9 No in-situ concrete may be poured onto the slab before the layout of the pre-cast units and the reinforcing steel has been inspected and approved in writing by the Engineer.

POWER FLOATING

- 8.1 Only concrete with a slag or fly ash content of less than 15 % may be power floated. 8.2 The following must occur prior to concrete power-floating commencing: Concrete must be properly placed, struck off and tamped or rolled Bleeding must cease and the bleed water must have completely evaporated.
- The concrete mix must have stiffened enough for an average sized man standing on the concrete surface to leave only a slight imprint. 8.3 The time lapse between tamping and power floating of a concrete surface may vary
- from two (2) to eight (8) hours depending on weather conditions, concrete temperature and concrete mixture. Contractor to consult with Engineer and concrete supplier. If more than one floating operation is required to achieve the desired surface finish, the 8.4 concrete shall be allowed to stiffen prior to the second floating operation commencing. Sprinkling dry cement and/or a mixture of dry cement and SANSd on the surface of fresh 8.5 concrete to absorb water or to stiffen the concrete mix is absolutely not permitted at any
- 8.6 Power floating shall continue until the surface attains an even, fine matt texture.

STRUCTURAL STEEL 9.

- 9.1 All structural steel work shall comply with **SANS 10162-1**. All steel work to be fabricated and erected in accordance with SANS 2001-CS1. 9.2
- Hot rolled steel to be grade 350W unless otherwise specified. Mill test certificates shall 9.3 be supplied by the Contractor to the Engineer for approval prior to any orders being placed.
- 9.4 All cold formed sections shall have a yield stress of 250 MPa. All bolts and bolt fixings (including washers and nuts) shall be Grade 8.8 galvanized 9.5
- mild steel (GMS), unless otherwise specified. 9.6 All structural steel members shall be hot dip galvanized (HDG). Coating to be applied
- in accordance with SANS 121/ISO 1461. The Contractor shall check all dimensions on site prior to fabrication of structural steel 9.7 elements. Any discrepancies are to be reported to the Engineer immediately and
- resolved prior to fabrication of the structural steel elements. Workshop drawings of all structural steel elements are to be submitted to the Engineer
- for written approval prior to manufacture. 9.8.1 The workshop drawings should indicate all positions, levels and orientation of cast in plates and bolts where applicable.
- 9.8.2 The workshop drawings shall indicate the method of forming and position of all splices. Fire protection to be applied as specified to manufacturer's specifications 9.9 9.10 Painting to be in strict accordance with the project specifications. The paint system
- shall be applied according to manufacturer recommendations, unless otherwise specified. The following applies to all structural steel welds: 9.11
- 9.11.1 Welding and welding surface preparation welding shall be in accordance with SANS 2001-CS1.
- 9.11.2 Welds shall be minimum 6 mm continuous fillet welds.
- 9.11.3 Welds shall be with E70XX electrodes unless specified otherwise. 9.11.4 Welds shall be allowed to develop to full strength before loading.
- 9.11.5 Welds, modifications and damaged steel elements to be de-scaled, de-fluxed and
- painted as per relevant specifications. All connections shall develop the full tensile capacity of members. The following 9.12
- minimum edge distances for bolts should be applied if none are specifed

MINIMUM BOLT EDGE DISTANCES AND PITCH

Unless otherwise indicated on drawings, the following minimum edge distances, end distances and spacings to the center of bolt holes will be applicable to structual steel connections, as pSANS 10162-1 §22.3.2 MINIMUM EDGE DIGTANOE

BOLT SIZE	MIN	IMUM EDGE DISTANCE	RECOMMENDED	RECOMMENDED
(Ø)	SHEARED EDGES	ROLLED, SAWN OR GAS-CUT EDGES	END DISTANCE	PITCH
(mm)	(mm)	(mm)	(mm)	(mm)
12	21	15	30	50
16	28	22	35	70
20	34	26	40	70
24	42	30	50	90
30	52	38	60	100
36	64	46	70	120
>36	1.75 x Ø	1.25 x Ø		

FORMWORK, TEMPORARY WORKS AND PROP STRIPPING 10.

- 10.1 PROSTRUCT is responsible for the structural design of the building in its final condition. The Contractor is responsible for the structure in its temporary state, and must engage with the Engineer and/or qualified and appropriate Consultants. The Contractor's
 - responsibilities include but are not limited to: Ensuring the structure is not overloaded in any way during construction;
 - Propping and support of excavations;
 - Propping and support of the structure in its temporary state.
 - Maintaining the structure and surrounding structures and services in a safe and stable condition during construction
- 10.2 The following weather specifications as per **SANS 1200G** are relevant to the table below: Weather conditions in which the ambient temperature is 5 °C or less COI D. Weather conditions in which the ambient temperature is between 5°C COOL: and 15℃. NORMAL Weather conditions in which the ambient temperature is between 15°C
 - and 32℃. Weather conditions in which the ambient temperature is higher than 32°C.

full		PORTLAND CEMENT AND PORTLAND CEMENT 15				RAPID HARDENING PORTLAND CEMENT AND RAPID HARDENING PORTLAND CEMENT 15					
	MEMBER OR FORMWORK		WEATHER								
		HOT OR NORMAL	COOL	COLD		HOT OR NORMAL	COOL	COLD		⊦ N	
	A) Beam sides, wall and unloaded columns	0.75	#	1.5		0.5	#	1			
	B) Slabs with props left underneath	4	#	7	AYS	2	#	4	AYS		
	C) Beam soffits with props left underneath and ribs of ribbed floor construction	7	#	12	E IN D	3	#	5	E IN D		
	D) Slab props (including cantilever)	10	#	17	TIM	5	#	9	TIM		
	E) Beam props (including cantilever)	14	#	21		7	#	12	1		

: In cool weather stripping times shall be determined by interpolation between the periods specified for normal and NEW CONCRETE cold weather.

11. WELDING NOTES

HOT:

11.1 All welding to be minimum 6mm fillet welds & to be developed to full strength. 11.2 Welding and surface preparation to be in accordance with SANS 2001-CS1. 11.3 Welds, modifications and damaged steel elements to be de-scaled, de-fluxed and painted as per specifications. 11.4 E70XX Electrodes to be used.

12. RETAINING WALLS NOTES

WATERPROOFING NOTES 13.

All waterproofing to be designed, detailed and applied by specialist contractor

14. BACK PROPING METHODOLOGY:

NEW FLOOR

• The sketch below indicates propping required for multiple level structures unless otherwise indicated by an M&K engineer.

100 %	
50 %	
25 %	

11. STANDARD ABBREVIATIONS AND UNITS

11.1 The following abbreviations will generally occur in drawings and other project documents. Any ambiguities shall be clarified with the M&K Engineer.

٩LT	-	Alternating	MIN	-	Minimum
C/C	-	Centre to centre	MJ	-	Movement joint
CJ	-	Construction joint	NF	-	Near face
CL	-	Center line	NTS	-	Not to scale
COL	-	Column	O/A	-	Overall
DIA (Ø)	-	Diameter	RC	-	Reinforced concrete
DPC	-	Damp-proof course	REINF	-	Reinforcement
DPM	-	Damp-proof membrane	SPEC	-	Specification
DRG	-	Drawing	THK	-	Thick
DWG	-	Drawing	TOC	-	Top of concrete
ΞF	-	Each face	TOS	-	Top of steel
EW	-	Each way	TYP	-	Typical
F	-	Far face	U/S	-	Upstand (beam)
FL	-	Finished floor level	UNO	-	Unless noted otherwise
MAX	-	Maximum			

11.2 The following abbreviations relating to structural steel may occur in drawings and other project documents. Any ambiguitues shall be clarified with the M&K Engineer

CFLC	-	Cold forned lipped channel
CHS	-	Circular hollow section
ΞA	-	Equal leg angle
HD	-	Holding down (bolt)
HDG	-	Hot dip galvanised
PFC	-	Parallel flange channel
RHS	-	Rectangular hollow section
SHS	-	Square hollow section
ΓFC	-	Taper flange beam
ΓFC	-	Taper flange channel
JA	-	Unequal leg angle
JB	-	Universal beam
JC	-	Universal column
RMB	-	Rienforced Masonary Brick Beam
		·

The following units are used in the drawings and project documents. Any ambiguities shall be clarified with the M&K Engineer.

٨g	-	Kilogram
kg/m²	-	Kilogram per square metre
km	-	Kilometre
٨N	-	Kilonewton
κN.m	-	Kilonewton metre
кРа	-	Kilopascal
m	-	Metre
m²	-	Square metre
m³	-	Cubic metre
mm	-	Millimetre
mm²	-	Square millimetre
MPa	-	Megapascal
N	-	Newton
Pa	-	Pascal



PS-023-000

В

STRUCTURAL TIMBER

1. DESIGN LOAD CAPACITY OF MODULAR DECKS

FOUNDATION TYPE	DESIGN LOAD CAPACITY (ie. design variable load)	APPROXIMATE EQUIVALENT LOAD FROM ADULT OCCUPANTS
1	1.5 kN/m ²	2 persons per square metre
2	3.0 kN/m ²	4 persons per square metre

Note: Balustrade design load = 1 kN/m horizontal load acting inward or outward on the balustrade.

2. MODULAR DECK MEMBER SCHEDULE

	SIZE:	TIMBER	MODILLAR DECK FRAMING REQUIREMENTS
MEMBER (MORK)	WIDTH X DEPTH (mm)	GRADE	MODULAR DECK TRAMINO REGUREMENTS
Decking (-)	105 X 22	\$5	Joist spacing = 400 mm maximum. Decking to span continuously over 3 bays ie. 1200 mm minimum board length. Decking joints to be staggered.
Joist (J)	50 X 152	\$5	Maximum joist span = 1500 mm. Joist to span continuously over 2 bays minimum. Stock timber length required = 3000 mm.
Bearer (B)	50 X 228	\$5	Maximum bearer span = 1800 mm. Bearer to span continuously over 2 bays minimum. Stock timber length required = 3600 mm.
Vertical brace / Knee brace (VB)	38 X 152	\$5	As indicated on the drawings. Bracing to be selected to suit deck height above NGL ie. the specific site requirements. Maximum permissible brace length = 2000 mm between end connections.
Balustrade (BD)	38 X 152	\$5	As indicated on the drawings.
Post (P)	Class 6 ie. 150 mm nominal diameter (1)	SANS 457-2 Softwood SANS 457-3 Hardwood	Maximum permissible post height = 2700 mm between NGU ⁽²⁾ and deck level.
Note (1): Diameteri	in the range 140 to 159	mm at thin end	d of pole.

Note (2): NGL = compacted ground level at post foundation location.

3. PRESERVATIVE TREATMENT OF TIMBER

All structural timber is to be pressure treated with WCCA preservative to SANS 10005 in accordance with the Hazard Classes tabulated below:

TIMBER	HAZARD CLASS	APPLICATION	FINISHING COATS TO BE APPLIED TO DECK ELEMENTS
Decking	НЗ	Exterior decking boards	Galseal exterior decking oil (sealer) to be applied to all decking boards with particular attention paid to board ends. <u>Note</u> : The underside of decking boards is to be pre-oiled before installation.
Sawn timber	нз	Exterior deck framing - not in contact with the ground but exposed to leaching and weathering.	Waksol heavy wood oil to be applied to below deck framing (joists, bearers and braces) prior to the installation of decking boards. Galseal exterior decking oil to be applied to the remaining deck framing (balustrades, steps etc).
Poles	H5	Posts buried in the ground - may be in contact with wet soils.	Waksol heavy wood oil to be applied to posts prior to the installation of decking boards.

- minimise the need to cut timber.
- be sealed with Waksol heavy wood oil prior to installation of the bearers.
- suspended deck.

CONNECTIONS AND FASTENERS

All steel fasteners and hardware used in forming connections (eg. angle brackets, hurricane clips etc) are to be corrosion protected to provide a minimum service life of 20 years in a category C4 atmospheric corrosivity environment (ISO 9223).

Minimum corrosion protection requirements are tabulated below:

NOTE:

CUTS, DRILLED HOLES AND BUILT-IN ENDS TO BE PRE-TREATED BEFORE ASSEMBLY

STRUCTURAL STEEL (BRACKETS AND CONNECTORS)

CLASS 4 BRACKETS AND CONNECTORS TO BE USED OF HOT DIPPED GALVANISED SPECIFICATION (HOT DIPPED GALVANISING THICKNESS TO BE 0.45 MICRONS)

3.1 Pre-treated standard lengths of timber are to be used for construction as far as is possible to

3.2 Cuts and drill holes in all timber are to be treated with a minimum of 2 coats of remedial timber preservative (Enseal or CuGard 20 or similar approved) applied by brushing or dipping.

3.3 After the excavation and compaction of foundations, deck posts are to be cut to the exact length required before installation. Freshly cut surfaces are to be treated with a minimum of 2 coats of remedial timber preservative. In addition the rebates cut in posts to support bearer beams are to

3.4 A minimum air gap of 400 mm is to be allowed between ground level and the underside of deck framing to enable the circulation of air beneath the deck and to allow access for maintenance.

3.5 Care shall be taken to ensure that sawdust, timber offcuts etc which provide a source of nourishment to fungi, termites and borers, are removed from the site particularly from under the

FASTENER	REQUIRED CORROSION PROTECTION	NOTES
Decking screws	Grade A2 stainless steel.	Grade A2 = Type 304 austenitic stainless steel. Galvanised posi-drive screws may not be used.
Nuts, bolts and washers	Hot dip galvanised to SANS 121. Minimum coating thickness = 0.45 µm.	Electroplated ('electro-galvanised') fasteners may not be used in lieu of hot dip galvanised.
Threaded bar ('ready bar')	Grade A2 stainless steel.	Grade A2 = Type 304 austenitic stainless steel.
Coach screws	Grade A2 stainless steel or Hot dip galvanised to SANS 121. Minimum coating thickness = 0.45 µm	Electroplated ('electro-galvanised') fasteners may not be used in lieu of hot dip galvanised.
Ring shank nails	Grade A2 stainless steel.	Grade A2 = Type 304 austenitic stainless steel.
Connection hardware	Hot dip galvanised to SANS 121. Minimum coating thickness = 0.45 µm.	Electroplated ('electro-galvanised') hardware may not be used in lieu o hot dip galvanised.

4.1 Bolt installation:

- Bolt holes are to be drilled to the same diameter as the bolt shank and treated with remedial preservative (see 3.2).
- Bolts are to be provided with over size washers under both the bolt head and the nut. M16 bolt: Washer 50 x 50 x 4 mm thick.
- M12 bolt: Washer 38 x 38 x 4 mm thick. Bolt heads and nuts are not to be countersunk.
- Bolts may be substituted with threaded bar of the same diameter.

4.2 Coach screw installation:

- Coach screws may not be used in lieu of bolts when bolts are specified in the connection details.
- Predrill coach screw holes.
- The lead hole for the unthreaded shank is to have the same diameter and length as the shank.

The diameter of the lead hole for the threaded portion of the coach screw is to be determined to suit the density of the timber (usually +/- 0.5 x coach screw diameter for softwoods).

- Coach screws are to be installed by turning with a wrench (not driving with a hammer). Installation may be lubricated with a non-corrosive lubricant eg. hand soap.
- Coach screws are not be countersunk. Coach screws are to be provided with over size washers under the screw head. M16 screw: Washer 50 x 50 x 4 mm thick. M12 screw: Washer 38 x 38 x 4 mm thick. M10 screw: Washer 30 x 30 x 3 mm thick.

4.3 Installation of nails:

Pilot holes are to be drilled for the installation of nails in hardwood when deemed necessary to avoid the splitting of timber.

A.ABRAH FOR TENDER A 2022-05-16 AMS REV DATE AMENDMENT Issued by **CAPE NATURE** CLIENT ARCHITECT Approver OWS CIVILS (PTY) LTD **CIVIL ENGINEERINGS & PROJECT** MANAGEMENT CONSULITNG ENGINEERS 446 IMAM HARON RD LANSDOWNE 7780 TEL NO. (021) 565 0496 VILS E-MAIL : INFO@OWSCIVILS.CO.ZA PROJECT **DEMOND NATURE RESERVE** BREDAARSDORP **NEW RESERVE ADMINISTRATION** DRAWING TITLE **GENERAL NOTES DRAWING** DISCIPLINE STATUS STRUCTURAL TENDER Author DESIGNED BY Designer DRAWN BY Checker Checker CHECKED BY CHECKED BY 2022-05-16 SCALE ISSUED DRAWING SIZE A1 PROJECT NUMBER PS-22-023 DRAWING NUMBER REVISION

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Foundation Layout

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PROJECT

DEMONT NATURE RESERVE BREDAARSDORP

Gound Floor Layout

Section B 1:25

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Roof Layout

BY	Author
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	2022-05-16

Detail 1 - Base Plate Connection 1:5

Gound Floor Layout 1:5

Detail 1 - Base Plate Connection

Detail 4 - Purlin Into Post & Column Connection 1:5

Detail 4 - Purlin Into Post & Column

3D - VIEW

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NEW MANAGERS HOUSE DEMONT NATURE RESERVE BREDAARSDORP

1:5

Detail 2 - Rafter to Gumpost Connection

Section 5.1

3D View - 230x230 RC Stub with Insitu- Casted Base Plate

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ANNEXURE 4.4

Mechanical

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Date Received	09/05/22											CT 98 (

- FIRE HOSE REEL AND FIRE HYDRANT WATER INSTALLATIONS TO
- LEAST 1000MM NATURAL GROUND AND THRUST BLOCKS TO BE FIRE AND DOMESTIC PIPING TO BE SPLIT AS PER TYPICAL ERF CONNECTION DETAIL PROVIDED, WITH BOOSTER CONNECTION,
- ALL ABOVE GROUND FIRE PIPING SHALL BE SANS 62 BLACK MILD DRENCHER SPRINKLERS WHERE REQUIRED SHALL BE INSTALLED
- ON THE INSIDE OF THE APARTMENT WINDOWS, RATED AT 68°C, FAST RESPONSE AND BE OF THE SIDEWALL TYPE(15MM). THE SPRINKLER SHALL BE MOUNTED 200MM ABOVE THE WINDOW LINTEL AND PROTRUDE 50MM FROM THE WALL. THE SPRINKLER
- EACH ABOVE GROUND DRENCHER WATER SUPPLY PIPE SHALL
- FIRE HOSE REELS ON THE HIGHEST STOREY TO BE FITTED WITH

FIRE NOTES:

EN 1125.

- ARTIFICIAL LIGHTING TO BE PROVIDED WITH A MINIMUM AVERAGE ILLUMINANCE OF 50 LX ON A HORIZONTAL PLANE 100
- MM ABOVE THE FLOOR, AS PER SANS 10400: PART T. STRUCTURAL STABILITY AS PER SANS 10400: PART-T, TABLE 6, 60
- MINUTES FOR A THREE STOREY H3 BUILDING. ESCAPE STAIRCASES TO COMPLY WITH SANS 10400: PART M. HANDRAILS TO BE INSTALLED ON ONE SIDE OF STAIRWELL.THE BUILDING IS NOT DESIGNED TO CATER FOR PERSONS WITH
- DISABILITIES AND DOES NOT COMPLY TO SANS 10400: PART-S. NO EMERGENCY ROUTES CREATED, TRAVEL DISTANCE BELOW 45.0M. FIRE EXTINGUISHERS, FIRE HOSE REELS AND FIRE HYDRANTS
- TO SANS 10400: PART-T AND BE SERVICED BY A CERTIFIED INSTALLER BEFORE OCCUPATION OF THE BUILDING. 5.1. FIRE HOSE REELS SHALL BE 30.M LONG
- FIRE EXTINGUISHERS SHALL BE 4.5 KG DCP AND BE HUNG 5.2. ONTO FIXED BACK BOARDS. 5.3. FIRE HYDRANTS SHALL HAVE A 65/75MM COUPLING.
- 5.4. MIN WATER PRESSURE FLOW = 20 L/S @ 3.0 BAR. FIRE SIGNAGE TO SANS 1186, PHOTO LUMINESCENT TYPE. 190X190MM. SIGNAGE SHALL BE MECHANICALLY FIXED AND NO DOUBLE SIDED TAPE MAY BE USED.
- PRESSURE GAUGES TO BE INSTALLED AT EACH HOSE REEL ON THE HIGHEST STOREY. ANY OPENING IN ANY EXTERNAL WALL OF ANY DIVISION MUST BE
- EQUAL OR GREATER THAN 1000MM APART. VERTICAL SHAFTS THAT INTERLINK MORE THAN TWO STOREYS MUST BE FIRE SEALED.
- . ROOF INSULATION MATERIAL TO BE NON-COMBUSTIBLE. . FIRE TRUCK ACCESS REQUIRED INTO SITE = 4.0m(W)X4.0m(H).
- 2. NO SMOKE VENTILATION REQUIRED, AS THE AREA OF EACH ROOM IS LESS THAN 500M². . IRONMONGERY PANIC HARDWARE DEVISE IN ACCORDANCE TO

		0 5 10 15 20 30 50mm ORIGINAL SIZE A1	
С	26/05/2022	FOR TENDER - NOTES CORRECTION	MM
В	23/05/2022	FOR TENDER	MM
А	13/05/2022	FOR INFORMATION	MM
Rev.	Date	Description	Rev. by
		Client/Employer	

A FIFTH DIMENSION TO ENGINEERING

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Project

DE MOND NATURE RESERVE

Plan Description

NEW MANAGERS HOUSE **FIRE PLAN - GROUND FLOOR**

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FIRE AND DIRECTIONAL SIGNAGE

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Project/DWG No.	2022-03-	
REVision	-	
Date Received	09/05/22	

FIRE PIPING AND SPRINKLERS:	FIRE NOTES:	
 FIRE HOSE REEL AND FIRE HYDRANT WATER INSTALLATIONS TO SANS 10400: PART-TW: 2010 AND SANS 10252-1:2004. ALL UNDERGROUND FIRE PIPING SERVING FIRE HYDRANTS SHALL BE AT LEAST Ø100MM CLASS 12 UPVC OR SIMILAR APPROVED. ALL UNDERGROUND FIRE PIPING TO BE COVERED WITH AT LEAST 1000MM NATURAL GROUND AND THRUST BLOCKS TO BE INSTALLED ON ALL BENDS TO CIVIL ENGINEERS DETAILS. FIRE AND DOMESTIC PIPING TO BE SPLIT AS PER TYPICAL ERF CONNECTION DETAIL PROVIDED, WITH BOOSTER CONNECTION, ISOLATING VALVES AND NON-RETURN VALVE. ALL ABOVE GROUND FIRE PIPING SHALL BE SANS 62 BLACK MILD STEEL AND PAINTED SIGNAL RED, SANS 630. DRENCHER SPRINKLERS WHERE REQUIRED SHALL BE INSTALLED ON THE INSIDE OF THE APARTIMENT WINDOWS, RATED AT 68°C, FAST RESPONSE AND BE OF THE SIDEWALL TYPE(15MM). THE SPRINKLER SHALL BE MOUNTED 200MM ABOVE THE WINDOW LINTEL AND PROTRUDE 50MM FROM THE WALL. THE SPRINKLER SHALL BE PROTECTED WITH A METAL SHIELD. EACH ABOVE GROUND DRENCHER WATER SUPPLY PIPE SHALL BE FITTED WITH AND ACCESSIBLE AND CLEARLY MARKED ISOLATING VALVE TO BE CLOSED BY OCCUPANTS IN CASE OF A LEAKING OR DAMAGED SPRINKLER. FIRE HOSE REELS ON THE HIGHEST STOREY TO BE FITTED WITH A PRESSURE GAUGE AND AIR RELEASE VALVE. NO PIPE WORK SHALL BE EMBEDDED IN THE SCREED OR CONCRETE FLOORS. PIPE SUPPORT BRACKETS SHALL BE MAXIMUM 4.0M AND BE GALVANIZED. FIRE HOSE THE ORERSURE TEST FOR 24 HOURS AT 1.5 TIMES THE OPERATING PRESSURE TEST FOR 24 HOURS AT 1.5 TIMES THE OPERATING PRESSURE OF THE SYSTEM BY A CERTIFIED PLUMBER OR SPRINKLER INSTALLER. PIPE SIZES ON DRAWINGS ARE DN(NOMINAL DIAMETER). BELOW GROUND STEEL PIPING TO BE DENSO WRAPPED AND PROTECTED AGAINST CORROSION. CURRENT WATER REESSURE IS SUFFICIENT FOR THE FIRE PROTECTION INSTALLATION, THE PRESSURE IS HOWEVER REGULATED BY COUNCIL AND ADDITIONAL PUMP SETS AND WATER STORAGE MAY BECOME A REQUIREMENT. 	 ARTIFICIAL LIGHTING TO BE PROVIDED WITH A MINIMUM AVERAGE ILLUMINANCE OF 50 LX ON A HORIZONTAL PLANE 100 MM ABOVE THE FLOOR, AS PER SANS 10400: PART T. STRUCTURAL STABILITY AS PER SANS 10400: PART T. STRUCTURAL STABILITY AS PER SANS 10400: PART T. STRUCTURAL STABILITY AS PER SANS 10400: PART M. HANDRAILS TO BE INSTALLED ON ONE SIDE OF STAIRWELL.THE BUILDING IS NOT DESIGNED TO CATER FOR PERSONS WITH DISABILITIES AND DOES NOT COMPLY TO SANS 10400: PART-S. NO EMERGENCY ROUTES CREATED, TRAVEL DISTANCE BELOW 45.0M. FIRE EXTINGUISHERS, FIRE HOSE REELS AND FIRE HYDRANTS TO SANS 10400: PART-T AND BE SERVICED BY A CERTIFIED INSTALLER BEFORE OCCUPATION OF THE BUILDING. FIRE EXTINGUISHERS SHALL BE 30.M LONG FIRE HOSE REELS SHALL BE 30.M LONG FIRE HYDRANTS SHALL BE 4.5 KG DCP AND BE HUNG ONTO FIXED BACK BOARDS. FIRE HYDRANTS SHALL BE 4.5 KG DCP AND BE HUNG ONTO FIXED BACK BOARDS. FIRE SIGNAGE TO SANS 1186, PHOTO LUMINESCENT TYPE. 190X190MM. SIGNAGE SHALL BE MECHANICALLY FIXED AND NO DOUBLE SIDED TAPE MAY BE USED. PRESSURE GAUGES TO BE INSTALLED AT EACH HOSE REEL ON THE HIGHEST STOREY. ANY OPENING IN ANY EXTERNAL WALL OF ANY DIVISION MUST E EQUAL OR GREATER THAN 1000MM APART. VERTICAL SHAFTS THAT INTERLINK MORE THAN TWO STOREYS MUST BE FIRE SEALED. ROOF INSULATION MATERIAL TO BE NON-COMBUSTIBLE. FIRE TRUCK ACCESS REQUIRED INTO SITE = 4.0m(W)X4.0m(H). NO SMOKE VENTILATION REQUIRED, AS THE AREA OF EACH ROOM IS LESS THAN 500M². IRONMONGERY PANIC HARDWARE DEVISE IN ACCORDANCE TO EN 1125. 	30 3E
1 (OFFICE) (1 DEPSON DEP 15m ²)		
(TPERSON PER ISIIF)		
4.5 kg DCP (MIN 1 REQUIRED @ 1/200m)	0 5 10 15 20 30 50mm ORIGINAL SIZE A1	
	C 26/05/2022 FOR TENDER - NOTES CORRECTION	M
	B 23/05/2022 FOR TENDER Mi A 13/05/2022 FOR INFORMATION M	M
	Rev. Date Description Reb	∍v. y
	Western Cape Government FOR YOU	
	ELECTOR Engineers Consulting Engineers A FIFTH DIMENSION TO ENGINEERING Block C, Oxford Gate, 54 Oxford Street, Durbanville 7550 P O Box 1142, Durbanville 7551 Tel: +27 21 975 1718 Fax: +27 21 975 5167 E-Mail: info@eceng.co.za	
	Project	
	DE MOND NATURE RESERVE	
SLEEVE P.V.C PIPE	Plan Description	
120 MINUTE SEAL 100mm ROCKWOOL PANEL COATED BOTH SIDES WITH FLAMSAVE 325	GATE HOUSE FIRE PLAN - GROUND FLOOR	
D IN ACCORDANCE WITH SABS 0177 PART II	Designed PF Scale 1:50	
AIL 2: TYPICAL CABLE FIRE	Drawn MM Date MAY 2022 Checked Approved	
PROOFING DETAIL		
	Contract No. 1801481	
	Drawing No. 1801481/M/201	
2022-03-14 GATE HOUSE - SHEET -AD 200	Revision A B C	
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REVision Date Received 09/05/22

ELEMENT CONSULTING ENGINEERS (PTY) LTD IN TERMS OF THE COPYRIGHT ACT (ACT 98 OF 1978).

ANNEXURE 4.5

Plumbing

PLUMBING LEGEND:

M - WATER METER

ISOLATING VALVE

NON-RETURN VALVE

HOT WATER GEYSER

X-X-X TYPICAL WATER METER INSTALLATION

PRV(PRESSURE REDUCING VALVE)

GARDEN TAP

STRAINER

ACCESS HATCH

NON-POTABLE WATER

COLD WATER SUPPLY

HOT WATER SUPPLY

——— PIPE RUN SUB - SURFACE

PIPE CHASED IN WALL/FLOOR

🚫 DOWN

——— PIPE UNDER SOFFIT / IN CEILING SPACE

BOREHOLE WATER

PUMP

WM

M

k

GEYSER

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K

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PLUMBING NOTES:

- PLUMBING INSTALLATION TO COMPLY WITH SANS 10252. 2. ALL DETAILS, DIMENSIONS AND LEVELS TO BE CHECKED ON SITE BEFORE COMMENCEMENT OF WORK.
- ALL ABOVE GROUND PIPES TO BE SERBCO PPR PN 16(OR SIMILAR APPROVED), UNLESS OTHERWISE STATED.
- ALL HOT WATER PIPES SHALL BE INSULATED TO SANS 10252, THERMAL CONDUCTIVITY GUIDELINES. EXTERNAL HOT WATER PIPING SHALL BE COVERED WITH GALVANIZED SHEET METAL MUFFS TO PROTECT AGAINST THE WEATHER. PIPING 2.0M AROUND HOT WATER STORAGE TANKS TO BE COPPER.
- ALL FITTINGS TO BE OF THE SAME MANUFACTURE AS THE PIPES AND ALL CUTTING AND JOINTING ON SITE TO BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS
- PIPING AND SANITARY FITTINGS TO BE CLEARED OF ALL DEBRIS AT FINAL INSPECTION AND HAND OVER OF THE PROJECT. ADEQUATE ACCESS TO BE PROVIDED FOR INSPECTION, TESTING AND MAINTENANCE.
- AS BUILT DRAWINGS TO BE PRODUCED BY THE PLUMBER AND TO BE ISSUED TO THE ENGINEERING CONSULTANTS. PIPE SIZES ON DRAWINGS ARE DN(NOMINAL DIAMETER) AND
- NOT EXTERNAL DIAMETER. ALL SETTING OUT TO BE DONE TO ARCHITECTS DRAWINGS AND DIMENSIONS.

WHB:	WASH HAND BASIN, DN15 @ 450 AFFL
WC:	WATER CLOSET, DN15 @ 300 AFFL
PB:	PREP BOWL, DN15 @ 450 AFFL
SH:	SHOWER, DN15
B:	BATH, DN15
WM:	WASHING MACHINE, DN15 @ 450 AFFL
DW:	DISH WASHER, DN15 @ 450 AFFL
S:	SINK, DN15 @ 450 AFFL
UR:	URINAL, DN15 @ 400 AFFL
HT:	HOSE TAP, DN15 @ 700 AFFL
WT:	WATER TROUGH, DN 15 @ 450 AFFL
G:	GEYSER
O:	CONVO OVEN, DN 15
WP:	COLD WATER POINT, DN 15

		ORIGINAL SIZE A1	
в	23/05/2022	FOR TENDER	MM
А	13/05/2022	FOR INFORMATION	MM
Rev.	Date	Description	Rev. by
		Client/Employer	

Consulting Engineers A FIFTH DIMENSION TO ENGINEERING

> Block C, Oxford Gate, 54 Oxford Street, Durbanville 7550 P O Box 1142, Durbanville 7551 Tel: +27 21 975 1718 Fax: +27 21 975 5167 E-Mail: info@eceng.co.za

> > Project

DE MOND NATURE RESERVE

Plan Description												
NEW MANAGERS HOUSE SANITARY PLUMBING SUPPLY GROUND FLOOR												
Designed	Designed PF				Sc	ale	1:50					
Drawn	Drawn MM					te		MAY 2022				
Checked						Approved						
Contract No. 1801481												
Drawing No. 1801481/M/300												
Revision		A	В									

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GATE HOUSE

ARCHITECT	ARCHITECTURE COOP										
Project/DWG No.	2022-03-	2022-03-14 GATE HOUSE - SHEET -AD 200									
REVision	-										
Date Received	09/05/22										

PLUMBING LEGEND:

M - WATER METER

ISOLATING VALVE

NON-RETURN VALVE

HOT WATER GEYSER

X-X-X TYPICAL WATER METER INSTALLATION

PRV(PRESSURE REDUCING VALVE)

GARDEN TAP

STRAINER

PUMP

NON-POTABLE WATER

COLD WATER SUPPLY

HOT WATER SUPPLY

🚫 DOWN UP UP

PIPE RUN SUB - SURFACE

PIPE CHASED IN WALL/FLOOR

PIPE UNDER SOFFIT / IN CEILING SPACE

BOREHOLE WATER

ACCESS HATCH

WM

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GEYSER

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PLUMBING NOTES:

- PLUMBING INSTALLATION TO COMPLY WITH SANS 10252.
 ALL DETAILS, DIMENSIONS AND LEVELS TO BE CHECKED ON SITE BEFORE COMMENCEMENT OF WORK.
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- ALL FITTINGS TO BE OF THE SAME MANUFACTURE AS THE PIPES AND ALL CUTTING AND JOINTING ON SITE TO BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS PIPING AND SANITARY FITTINGS TO BE CLEARED OF ALL DEBRIS
- AT FINAL INSPECTION AND HAND OVER OF THE PROJECT. ADEQUATE ACCESS TO BE PROVIDED FOR INSPECTION, TESTING AND MAINTENANCE.
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WT:	WATER TROUGH, DN 15 @ 450 AFFL
G:	GEYSER
O:	CONVO OVEN, DN 15
WP:	COLD WATER POINT, DN 15

		0 5 10 15 20 30 50mm ORIGINAL SIZE A1								
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A	13/05/2022	FOR INFORMATION	ММ							
Rev.	Date	Description	Rev. by							
	Client/Employer									





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Project

DE MOND NATURE RESERVE

Plan Description													
GATE HOUSE SANITARY PLUMBING SUPPLY GROUND FLOOR													
Designed		F	۶F		Sc	ale		1:50					
Drawn		Ν	/M		Da	te		M	MAY 2022				
Checked					Approved								
Contract No				180)14	81							
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Revision		A	В										

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PLUMBING LEGEND:

WM	M - WATER METER
\bowtie	ISOLATING VALVE
M	GARDEN TAP
Þ	NON-RETURN VALVE
X-X-A	TYPICAL WATER METER INSTALLATION
GEYSER	HOT WATER GEYSER
Й	STRAINER
N	PRV(PRESSURE REDUCING VALVE)
\bigcirc	PUMP
	ACCESS HATCH
I	NON-POTABLE WATER
I	BOREHOLE WATER
	COLD WATER SUPPLY
	HOT WATER SUPPLY
	PIPE RUN SUB - SURFACE
	PIPE UNDER SOFFIT / IN CEILING SPACE
⊗ [DOWN
🛑 ι	JP

PLUMBING NOTES:

- 1. PLUMBING INSTALLATION TO COMPLY WITH SANS 10252. 2. ALL DETAILS, DIMENSIONS AND LEVELS TO BE CHECKED ON SITE BEFORE COMMENCEMENT OF WORK.
- 3. ALL ABOVE GROUND PIPES TO BE SERBCO PPR PN 16(OR SIMILAR APPROVED), UNLESS OTHERWISE STATED.
- 4. ALL HOT WATER PIPES SHALL BE INSULATED TO SANS 10252, THERMAL CONDUCTIVITY GUIDELINES. EXTERNAL HOT WATER PIPING SHALL BE COVERED WITH GALVANIZED SHEET METAL MUFFS TO PROTECT AGAINST THE WEATHER. PIPING 2.0M
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- 6. PIPING AND SANITARY FITTINGS TO BE CLEARED OF ALL DEBRIS AT FINAL INSPECTION AND HAND OVER OF THE PROJECT. ADEQUATE ACCESS TO BE PROVIDED FOR INSPECTION, TESTING AND MAINTENANCE.
- 7. AS BUILT DRAWINGS TO BE PRODUCED BY THE PLUMBER AND TO BE ISSUED TO THE ENGINEERING CONSULTANTS. 8. PIPE SIZES ON DRAWINGS ARE DN(NOMINAL DIAMETER) AND
- NOT EXTERNAL DIAMETER. 9. ALL SETTING OUT TO BE DONE TO ARCHITECTS DRAWINGS AND DIMENSIONS.

WHB:	WASH HAND BASIN, DN15 @ 450 AFFL	
WC:	WATER CLOSET, DN15 @ 300 AFFL	
PB:	PREP BOWL, DN15 @ 450 AFFL	
SH:	SHOWER, DN15	
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S:	SINK, DN15 @ 450 AFFL	
UR:	URINAL, DN15 @ 400 AFFL	
HT:	HOSE TAP. DN15 @ 700 AFFL	
WT:	WATER TROUGH, DN 15 @ 450 AFFL	
C.	CEVSER	

O: WP: CONVO OVEN, DN 15 COLD WATER POINT, DN 15

		0 5 10 15 20 30 50mm ORIGINAL SIZE A1	
в	23/05/2022	FOR TENDER	MM
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Rev.	Date	Description	Rev. by

Client/Employer





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Project

DE MOND NATURE RESERVE

Plan Description													
ADMIN OFFICE SANITARY PLUMBING SUPPLY GROUND FLOOR													
Designed		F	۶F		Sc	ale			1:5	50			
Drawn		Ν	1M		Da	te		MAY 2022					
Checked					Ар	prove	d						
Contract No				180)14	81							
Drawing No.	Drawing No. 1801481/M/302												
Revision		Α	В										

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Date Received

ANNEXURE 4.6

Drainage



NEW MANAGERS HOUSE

ARCHITECT	AR
Project/DWG No.	202
REVision	
Date Received	09/0

GEND: BATH O CONDENSATE DRAIN O DRINKING FOUNTAIN V DISHWASHER O FLOOR DRAIN GREASE TRAP O PREP BOWL RODDING EYE SINK H SHOWER C WATER CLOSET HB WASH HAND BASIN M WASHING MACHINE R URINAL IP SLOP HOPPER TO BELOW DN D DN VENT PIPE COMBINED SOIL & VENT PIPE WASTE PIPE SOIL & DRAIN PIPE PIPE RUN SUB-SURFACE PIPE UNDER SOFFIT / IN CEILING SPACE PIPE IN WALL / MID-LEVEL PIPE IN WALL / MID-LEVEL	PLUMBING NOTES: 1. DRAINAGE INSTALLATION TO COMPLY WITH SANS 10252. 2. ALL DETAILS, DIMENSIONS AND LEVELS TO BE CHECKED ON SITE BEFORE COMMENCEMENT OF WORK. 3. ALL FITTINGS TO BE SAME MANUFACTURER AS THE PIPES AND ALL CUTTING AND JOINTING ON SITE TO BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS. 4. PIPING AND FITTINGS TO BE CLEARED OF ALL DEBRIS AT FINAL INSPECTION AND HANDOVER OF THE PROJECT. ADEQUATE ACCESS TO BE PROVIDED FOR INSPECTION, TESTING AND MAINTENANCE. 5. AS BUILT DRAWINGS TO BE PRODUCED BY THE PLUMBER AND ISSUED TO THE ENGINEER. 6. ALL SETTING OUT TO BE DONE TO THE ARCHITECTS DRAWINGS AND DIMENSIONS.
	0 5 10 15 20 30 50mm ORIGINAL SIZE A1 0
	Consulting Consulting A FIFTH DIMENSION TO ENGINEERING Block C, Oxford Gate, 54 Oxford Street, Durbanville 7550 P 0 Box 1142, Durbanville 7551 Tet *27 21 975 1718 Fax: +27 21 975 5167 E-Mail: info@eceng.co.za Project DE MOND NATURE RESERVE
RCHITECTURE COOP 222-03-30 NEW MANAGERS HOUSE - SHEET -AD 210	Plan Description NEW MANAGERS HOUSE SANITARY DRAINAGE GROUND FLOOR Designed PF Scale 1:50 Drawn MM Date MAY 2022 Checked Approved Image: Contract No. Image: Contract No. Drawing No. 1801481/M/400 Image: Contract No. Image: Contract No. Revision A B Image: Contract No. Image: Contract No.
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GATE HOUSE

	CD DF DW FD GT PB RE S SH WC WHB WM UR SHP TB SHP TB	CONDENS DRINKING DISHWAS FLOOR DI GREASE PREP BO' RODDING SINK SHOWER WATER C WASH HA WASHING URINAL SLOP HO TO BELO' DN UP VENT PIP COMBINE WASTE P SOIL & DF PIPE RUN PIPE UNE PIPE IN W	SATE DI SATE DI SATE DI S FOUN SHER RAIN TRAP WL S EYE CLOSET ND BAS S MACH PPER W PE ED SOIL PIPE RAIN PII N SUB-S DER SOI VALL / M	SIN INE & VENT PE URFACE FFIT / IN IID-LEVE	PIPE CEILING S	PACE	2. 3. 4. 5. 6.	10252 ALL I CHEC WOR ALL F PIPE BE IN SPEC PIPIN DEBF THE PROV MAIN AS B PLUM ALL S DRAV	2. DETA CKED K. FITTII S AN I ACC CIFIC IG AN RIS A VIDEN UILT MBER WING	ILS, DIME O ON SITE D ALL CU CORDANC ATIONS. ND FITTIN T FINAL I JECT. AD D FOR IN: ANCE. DRAWING CAND ISS ING OUT S AND D	ENSIG ENSIG EBEF BE SA JTTIN CE W IGS T EQU/ SPEC GS TO BUED TO B IMEN	ONS AND L ORE COM AME MANU G AND JOI ITH THE M TO BE CLEA ECTION AN ATE ACCES CTION, TES O BE PROI TO THE EI SE DONE T SIONS.	EVELS MENCEN FACTUF NTING C ANUFAC ARED OI ID HAND SS TO B STING AN DUCED F NGINEEI O THE A	TO BE MENT C RER AS ON SITE CTUREF F ALL OOVER O E ND BY THE R. RCHITE	DF THE TO XS OF ECTS
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ARCHITECT Project/DWG No. REVision Date Received	ARCHITE 2022-03-14 - 09/05/22	CTURE COO 4 GATE HO	OP USE - S	HEET -A	D 200		Drawi	ng No. ion	E	A B COPY CLEMENT CONS ERMS OF THE C	48	1/M/4	01		



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		SOIL & DRAIN PI	PE											
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							в	Block C, C	0xford Gate, 54	4 Oxford	Street, Durt	panville 755	50	
,								Tel:	P O Box 11 +27 21 975 17 F-Mail: ir	42, Durba 718 Fax	anville 7551 +27 21 97: og co za	5 5167		
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Date Received	09/05/22							IN TERM	IS OF THE COF	PYRIGHT	ACT (ACT 98	3 OF 1978).		

ANNEXURE 4.7

Electrical



Rev

GENERAL NOTES

- 1. ELECTRICAL INSTALLATION TO COMPLY IN FULL LATEST SANS10142 STANDARDS & SPECIFICATIO
- 2. ELECTRICAL PENETRATIONS TO BE FIRE SEALED A INSTALLATION OF CABLES & AUXILLIARY SERVICE BUILDER).
- EXTRACTION FANS SUPPLIED BY MECHANICAL S 3. CONTRACTOR. ELECTRICAL SUB-CONTRACTOR CONNECT.
- CABLE TRAY / TRUNKING TO BE SUPPORTED AT IN AS SPECIFIED BY THE MANUFACTURER.
- ALL OUTLETS SHALL BE LABELLED WITH LONG-LIFE ADHESIVE LABELS. CIRCUIT NUMBER & SUPPLY D ENGRAVED ON LABEL.
- REFER TO LUMINAIRE SCHEDULE FOR LUMINAIRE SPECIFICATIONS.
- ALL DRAWINGS TO BE READ IN CONJUNCTION ARCHITECTURAL DRAWINGS & ELECTRICAL STAN SPECIFICATIONS.
- 8. IF APPLICABLE DO NOT SCALE DIMENSIONS.
- DIMENSIONS TO BE CHECKED ON SITE BY RELEVA 9 CONTRACTORS BEFORE WORK COMMENCES. DISCREPANCIES OR AMBIGUITIES ARE TO BE REP ELEMENT & TO BE CLARIFIED BY ELEMENT ONLY.
- 10. NO DRILLING, CHASING OR CUTTING OF STRUCT MEMBERS (eg COLUMNS, BEAMS, SLABS, TRUSS PERMITTED UNLESS APPROVED IN WRITING BY EL
- 11. HEIGHTS REFLECTED ARE TO CENTER LINE OF OU



	OFF THE SH	ELF C		FED FROM SDB - A 4/4C/Cu+2.5ECC DA P+N				*)A	1 x 16A RS 1 x DATA (RECESSED	a SSO Outlet @ 400 Affl	(UNLESS OTHE	RWISE SHOWN)
-	(60A,3kA)	•	- q	< SA'S (CLASS 2) ➤━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━								
20A * 40A SP & SP		*10A SP	*10A SP	COA DP TELU								
		BYPASS		×20A SP								
		↓	¥	•								
4/4C/Cu	CONDUCTOR SIZES IN mm ² EARTH CONTINUITY	1,5		2,5			•					
	CONDUCTOR IN mm ²	2007/	250/320	2,0		Architect	A	NDRE		Ξ		
		GL	L1	P1		Project/DWG	i No. 18	80/AD2	220			
P SHELF M DB	EQUIPMENT		GHTING	SSO		Revision		В				
						Date Receive	ed 24	1/04/22				
	Client				Project		Designed		LL	Scale	1:150	(A1)
6	Western Cape						Drawn		LL	Contract No.		
	FOR YOU						Date	AF	PRIL 2022		1801	1481
							Checked	I		Drawing No.		
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	COPYRIGHT IS VESTED IN EL	EMENT CONS		ENGINEERS (PTY	LTD IN TERMS OF THE COPYRIGHT ACT (ACT 98 OF 1978)					Revision	AB	

		LIGHTING SCHEDULE
TO THE DNS .	SYMBOL	DESCRIPTION
AFTER		36W/840 LED BATTEN, DIFFUSED, SURFACE
ES (BY		36W/4000 LED VAPOURPROOF, SURFACE
SUB- TO	ФА	10W LED DOWNLIGHTER, RECESSED
NTERVALS	⊕ ^A	LED DECORATIVE BULKHEAD, SURFACE
	$\mathbf{\Phi}^{B}$	DECORATIVE CEILING LUMINAIRE
E VINYL DB TO BE	€C	DECORATIVE CEILING LUMINAIRE
Ē	/E	SYMBOL DENOTES LUMINAIRE EQUIPED WITH BATTERY BACK-UP (20%/1hr)
	P	PHOTOCELL, SURFACE
NDARD	•	1x16A, 1-WAY, LIGHT SWITCH, RECESSED @ 1200mm AFFL
	•1	2x16A, 1-WAY LIGHT SWITCH, RECESSED @ 1200mm AFFL
ANT		1x16A, 1-WAY/ 1x16A, 2-WAY LIGHT SWITCH, RECESSED @ 1200mm AFFL
PORTED TO		
TIRAI		POWER SCHEDULE
SES) IS LEMENT.	Symbol	DESCRIPTION
JTLETS.		DISTRIBUTION BOARD
		AUX. DISTRIBUTION PANEL, RECESSED
		1x16A, NORMAL AND RSA COMBINATION SSO, RECESSED @ 400 AFFL (UNLESS OTHERWISE SHOWN)
-4-		2x16A, DEDICATED SSO, RECESSED @ 400 AFFL (UNLESS OTHERWISE SHOWN)
		2x16A, NORMAL AND RSA COMBINATION SSO, RECESSED @ 300mm AFFL (UNLESS OTHERWISE INDICATED)
	G	GEYSER POWER POINT & OUTLET (INCL 20A DP ISOL)
	ŧ/ŧ	SINGLE/ THREE PHASE ISOLATOR WITH RED LED FLUSH MOUNTED, RATING AS INDICATED
		2C, 2T PVC POWERSKIRTING, STANDARD GREY @ 400 AFFL (UNLESS OTHERWISE SHOWN)
		ELECTRICAL CONDUITS LINKED TO CEILING SPACE
	* A	WORKSTATION: 1 x 16A NORMAL SSO 1 x 16A RSA SSO 1 x DATA OUTLET RECESSED @ 400 A EEL (UNILESS OTHERWAYSE SHOWAN)

	GENERAL NOTES
1.	ALL DRAWINGS TO BE READ IN CONJUNCTION WITH LATESTARCHITECTURAL DRAWINGS & ELECTRICAL STANDARD SPECS.
2.	ELECTRICAL INSTALLATION TO COMPLY IN FULL TO THE LATEST SANS10142 STANDARDS & SPECIFICATIONS .
3.	ELECTRICAL PENETRATIONS TO BE FIRE SEALED AFTER INSTALLATION OF CABLES & AUXILIARY SERVICES (BY
4.	EXTRACTION FANS SUPPLIED BY MECHANICAL SUB-CONTRACTOR. ELECTRICAL SUB-CONTRACTOR TO CONNECT.
5.	FINAL GEYSER ISOLATOR & OUTLET TO BE CO-ORDINATED WITH PLUMBER.
6.	CABLE TRAY / TRUNKING TO BE SUPPORTED AT INTERVALS AS SPECIFIED BY THE MANUFACTURER.
7.	ALL OUTLETS SHALL BE LABELLED WITH LONG-LIFE VINYL ADHESIVE CIRCUIT NUMBER & SUPPLY DB TO BE ENGRAVED ON LABEL.
8.	32MMØ PVC CONDUIT LINK TO COMMS SERVICE SHAFT / AUX TRUNKING
9.	HEIGHTS REFLECTED ARE TO CENTER LINE OF OUTLETS
	De More: Neiture Reserve
	LOCALITY PLAN
1	

ARCHITECT

REVision

Rev Date

Date Received

Project/DWG No. 180/AD220

C 25/05/22 GENERAL UPDATES

B 23/05/22 GENERAL UPDATES

A 13/04/22 FOR INFORMATION

ANDREW COOKE

LL

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LL

Α

11/04/22

Description

+6,578 +6,578 P3 DB	

	DB NOTES				
1. ALLOW 2	5% SPARE SPACE FOR FUTURE CIRCUITS.				
2. THE NORMAL, EMERGENCY & UPS SECTIONS SHALL BE MECHANICALLY & ELECTRICALLY SEPERATED BY MEANS OF A FIXED DIVIDING PANEL.					
3. EXTRAC INSTALLI TO CONI	TION & SUPPLY AIR FANS SUPPLIED & ED BY OTHERS. ELECTRICAL CONTRACTOR NECT.				
4. LIGHTING CYCLE, U CONTAC CYCLE, U	3 CONTACTORS TO BE RATED FOR AC-1 DUTY JNLESS OTHERWISE SHOWN. FAN & MOTOR TORS SUPPLY TO BE RATED FOR AC-3 DUTY JNLESS OTHERWISE SHOWN.				
5. ALL DBs WITH SA	TO BE MANUFACTURED IN ACCORDANCE NS 10142, SANS 1973-1, 1973-3 & IEC60439-1.				
	LEGEND	KS			
	SWITCH DISCONNECTOR	kWh			
~×	CIRCUIT BREAKER	PC			
-lp/F	EARTH LEAKAGE UNIT (NO OVERLOAD PROTECTION)	SS			
-lp/*	EARTH LEAKAGE UNIT (WITH OVERLOAD PROTECTION)	TS			
	CONTACTOR	С			
- <u>-</u>					
	BYPASS SWITCH	E			
	BYPASS SWITCH FIREMAN SWITCH	E PM			
	BYPASS SWITCH FIREMAN SWITCH CARTRIDGE FUSES	E PM RWB			

Oxford Gate, Block C 54 Oxford Street Durbanville 7550
P O Box 1142

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MANAGER'S HOUSE: ELECTRICAL LAYOUT

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					EX	STING CAB	LE	
				Ž	⁶ 60A ♀SP+N			
		(60A,3kA)	0		2x SA'S	(CLASS 2) ┣━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━	ĉ	
			× 10A SP PC	× 10A SP		−60A DP ELU	* 30A > SP	
	ON / OFF ROTARY KEY SWITCH			מ				
	kWh-METER				20A ⊖SP	, ∼20A γSP		
	PHOTOCELL							
	REMOTE STOP/START SWITCH CONTROL			x2	x4			
	TIMESWITCH (BATTERY BACK-UP)		\checkmark	\checkmark	₩	\checkmark	\checkmark	
	CONTACTORS - No./ AC RATING	CONDUCTOR SIZES IN mm ²	1	,5	2	,5	6	
	ENERGY METER (MAX DEMAND kVA/kWh)	EARTH CONTINUITY CONDUCTOR IN mm ²	1	,5	2	,5	4	
	DIGITAL PANEL METER (V / I / PF):	WIREWAYS		200	Ø / 25Ø / 3	32Ø		
3	MODULAR LED	CIRCUIT NUMBER	GL	L1	P1 - 4	PP/HWC	PP1	
-lı	SURGE ARRESTER	EQUIPMENT	LIGHTING	LIGHTING	SSO	HWC	STOVE	
	Client / Employer							Project



LIGHTING SCHEDULE						
SYMBOL	DESCRIPTION					
	36W/840 LED BATTEN, DIFFUSED, SURFACE					
	36W/4000 LED VAPOURPROOF, SURFACE					
● A	10W LED DOWNLIGHTER, RECESSED					
₽A	LED DECORATIVE BULKHEAD, SURFACE					
₽	DECORATIVE CEILING LUMINAIRE					
	DECORATIVE CEILING LUMINAIRE					
/E	SYMBOL DENOTES LUMINAIRE EQUIPED WITH BATTERY BACK-UP (20%/1hr)					
WT	DENOTES WATER TIGHT					
P	PHOTOCELL, SURFACE					
•	1x16A, 1-WAY, LIGHT SWITCH, RECESSED @ 1200mm AFFL					
•1	2x16A, 1-WAY LIGHT SWITCH, RECESSED @ 1200mm AFFL					
•	1x16A, 1-WAY/ 1x16A, 2-WAY LIGHT SWITCH, RECESSED @ 1200mm AFFL					
	FOWER SCHEDULE					
SYMBOL	DESCRIPTION					
SYMBOL	DESCRIPTION DISTRIBUTION BOARD					
SYMBOL	DESCRIPTION DISTRIBUTION BOARD AUX. DISTRIBUTION PANEL, RECESSED					
SYMBOL	DESCRIPTION DISTRIBUTION BOARD AUX. DISTRIBUTION PANEL, RECESSED 1x16A, NORMAL AND RSA COMBINATION SSO, RECESSED @ 400 AFFL (UNLESS OTHERWISE SHOWN)					
SYMBOL	DESCRIPTION DISTRIBUTION BOARD AUX. DISTRIBUTION PANEL, RECESSED 1x16A, NORMAL AND RSA COMBINATION SSO, RECESSED @ 400 AFFL (UNLESS OTHERWISE SHOWN) 2x16A, DEDICATED SSO, RECESSED @ 400 AFFL (UNLESS OTHERWISE SHOWN)					
SYMBOL	DESCRIPTION DISTRIBUTION BOARD AUX. DISTRIBUTION PANEL, RECESSED 1x16A, NORMAL AND RSA COMBINATION SSO, RECESSED @ 400 AFFL (UNLESS OTHERWISE SHOWN) 2x16A, DEDICATED SSO, RECESSED @ 400 AFFL (UNLESS OTHERWISE SHOWN) 2x16A, NORMAL AND RSA COMBINATION SSO, RECESSED @ 300mm AFFL (UNLESS OTHERWISE INDICATED)					
SYMBOL	DESCRIPTION DISTRIBUTION BOARD AUX. DISTRIBUTION PANEL, RECESSED 1x16A, NORMAL AND RSA COMBINATION SSO, RECESSED @ 400 AFFL (UNLESS OTHERWISE SHOWN) 2x16A, DEDICATED SSO, RECESSED @ 400 AFFL (UNLESS OTHERWISE SHOWN) 2x16A, NORMAL AND RSA COMBINATION SSO, RECESSED @ 300mm AFFL (UNLESS OTHERWISE INDICATED) 100x100mm SAT/TV OUTLET BOX @ 300mm AFFL, RECESSED (UNLESS OTHERWISE SHOWN)					
	DESCRIPTION DISTRIBUTION BOARD AUX. DISTRIBUTION PANEL, RECESSED 1x16A, NORMAL AND RSA COMBINATION SSO, RECESSED @ 400 AFFL (UNLESS OTHERWISE SHOWN) 2x16A, DEDICATED SSO, RECESSED @ 400 AFFL (UNLESS OTHERWISE SHOWN) 2x16A, NORMAL AND RSA COMBINATION SSO, RECESSED @ 300mm AFFL (UNLESS OTHERWISE INDICATED) 100x100mm SAT/TV OUTLET BOX @ 300mm AFFL, RECESSED (UNLESS OTHERWISE SHOWN) GEYSER POWER POINT & OUTLET (INCL 20A DP ISOL)					
	DESCRIPTION DISTRIBUTION BOARD AUX. DISTRIBUTION PANEL, RECESSED 1x16A, NORMAL AND RSA COMBINATION SSO, RECESSED @ 400 AFFL (UNLESS OTHERWISE SHOWN) 2x16A, DEDICATED SSO, RECESSED @ 400 AFFL (UNLESS OTHERWISE SHOWN) 2x16A, NORMAL AND RSA COMBINATION SSO, RECESSED @ 300mm AFFL (UNLESS OTHERWISE INDICATED) 100x100mm SAT/TV OUTLET BOX @ 300mm AFFL, RECESSED (UNLESS OTHERWISE SHOWN) GEYSER POWER POINT & OUTLET (INCL 20A DP ISOL) SINGLE/ THREE PHASE ISOLATOR WITH RED LED FLUSH MOUNTED, RATING AS INDICATED					
	DESCRIPTION DISTRIBUTION BOARD AUX. DISTRIBUTION PANEL, RECESSED 1x16A, NORMAL AND RSA COMBINATION SSO, RECESSED @ 400 AFFL (UNLESS OTHERWISE SHOWN) 2x16A, DEDICATED SSO, RECESSED @ 400 AFFL (UNLESS OTHERWISE SHOWN) 2x16A, NORMAL AND RSA COMBINATION SSO, RECESSED @ 300mm AFFL (UNLESS OTHERWISE INDICATED) 100x100mm SAT/TV OUTLET BOX @ 300mm AFFL, RECESSED (UNLESS OTHERWISE SHOWN) GEYSER POWER POINT & OUTLET (INCL 20A DP ISOL) SINGLE/ THREE PHASE ISOLATOR WITH RED LED FLUSH MOUNTED, RATING AS INDICATED 2C, 2T PVC POWERSKIRTING, STANDARD GREY @ 400 AFFL (UNLESS OTHERWISE SHOWN)					
	DESCRIPTION DISTRIBUTION BOARD AUX. DISTRIBUTION PANEL, RECESSED 1x16A, NORMAL AND RSA COMBINATION SSO, RECESSED @ 400 AFFL (UNLESS OTHERWISE SHOWN) 2x16A, DEDICATED SSO, RECESSED @ 400 AFFL (UNLESS OTHERWISE SHOWN) 2x16A, NORMAL AND RSA COMBINATION SSO, RECESSED @ 300mm AFFL (UNLESS OTHERWISE INDICATED) 100x100mm SAT/TV OUTLET BOX @ 300mm AFFL, RECESSED (UNLESS OTHERWISE SHOWN) GEYSER POWER POINT & OUTLET (INCL 20A DP ISOL) SINGLE/ THREE PHASE ISOLATOR WITH RED LED FLUSH MOUNTED, RATING AS INDICATED 2C, 2T PVC POWERSKIRTING, STANDARD GREY @ 400 AFFL (UNLESS OTHERWISE SHOWN) ELECTRICAL CONDUITS LINKED TO CEILING SPACE					

Designed	LL	Scale 1:150 (A3)								
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Date	APRIL 2022			180	014	81				
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Approved										
		Revision	A	В	C					

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	(2300)	OL1		
	(2300) P			
				DB
1. ALLOW 25 2. THE NORM MECHANI OF A FIXEI 3. EXTRACTION BY OTHERS 4. LIGHTING CYCLE, UN CONTACT CYCLE, UN 5. ALL DBS TO	(2300) (2300)		(60A,3kA)	DB
1. ALLOW 25 2. THE NORM MECHANI OF A FIXED 3. EXTRACTION BY OTHERS 4. LIGHTING CYCLE, UN CONTACT CYCLE, UN CONTACT CYCLE, UN S. ALL DBS TO SANS 1014	(2300) CONTACTORS TO BE RATED FOR AC-1 DUTY SUPPLY AIR FANS SUPPLIED & INSTALLED CONTACTORS TO BE RATED FOR AC-1 DUTY USES OTHERWISE SHOWN. FAN & MOTOR ONTACTORS TO BE RATED FOR AC-3 DUTY USES OTHERWISE SHOWN. FAN & MOTOR ONTACTORS TO BE RATED FOR AC-3 DUTY USES OTHERWISE SHOWN. FAN & MOTOR ONTACTORS TO BE RATED FOR AC-3 DUTY USES OTHERWISE SHOWN. FAN & MOTOR ONTACTORS TO BE RATED FOR AC-3 DUTY USES OTHERWISE SHOWN. FAN & MOTOR ONTACTORS TO BE RATED FOR AC-3 DUTY USES OTHERWISE SHOWN.	OL1 DB LIGHTING	(60A,3kA)	DB *10A SP SP SSP SSP SSP SSP SSP SSP SSP SSP
1. ALLOW 25 2. THE NORM MECHANII OF A FIXED 3. EXTRACTION BY OTHERS 4. LIGHTING CYCLE, UN CONTACT CYCLE, UN 5. ALL DBS TO SANS 1014 	(2300) CONTRACTOR	OL1 DB LIGHTING KS ON / OFF ROTARY KEY SWITCH KWh KWh-METER PC PHOTOCELL SS REMOTE STOP/START SWITCH CONTROL TS TIMESWITCH (BATTERY BACK-UP)	(60A,3kA)	DB
I. ALLOW 25 I. ALLOW 25 2. THE NORM MECHANIL OF A FIXEL 3. EXTRACTION BY OTHERS 4. LIGHTING CYCLE, UN CONTACT CYCLE, UN CONTACT CYCLE, UN 5. ALL DBS TO SANS 1014 Image: Constant of the second sec	(2300) Carry Content of the second s	OL1 DB LIGHTING KS ON / OFF ROTARY KEY SWITCH KWh KWh-METER PC PHOTOCELL SS REMOTE STOP/START SWITCH SS REMOTE STOP/START SWITCH TS TIMESWITCH (BATTERY BACK-UP) C CONTACTORS - No./ AC RATING E ENERGY METER (MAX DEMAND KVA/kWh) PM DIGITAL PANEL METER (V / 11 / PF):	(60A,3kA) CONDUCTOR SIZES IN mm ² EARTH CONTINUITY CONDUCTOR IN mm ² WIREWAYS	DB

Engineers A FIFTH DIMENSION TO ENGINEERING

B 13/05/22 GENERAL UPDATES

A 12/04/22 FOR INFORMATION

Description

Date

Rev

LL

LL

Rev

Consulting

Tel: (021) 975 1718 Fax: (021) 975 5167 E-Mail: info@eceng.co.za



60A ŶSP+N

∖^{*}10A òSP

2x SA'S (CLASS 2) ╺───────────

___60A ____DP

TELU

\^{*}20A ∂SP

xЗ

2,5

2,5

PD1

DED.SSO

20Ø / 25Ø / 32Ø

P1-P3

SSO

*20A

GENERAL NOTES

- 1. ELECTRICAL INSTALLATION TO COMPLY IN FULL LATEST SANS10142 STANDARDS & SPECIFICATIO
- 2. ELECTRICAL PENETRATIONS TO BE FIRE SEALED A INSTALLATION OF CABLES & AUXILLIARY SERVICE BUILDER).
- 3. EXTRACTION FANS SUPPLIED BY MECHANICAL SU CONTRACTOR. ELECTRICAL SUB-CONTRACTOR CONNECT.
- 4. CABLE TRAY / TRUNKING TO BE SUPPORTED AT IN AS SPECIFIED BY THE MANUFACTURER.
- 5. ALL OUTLETS SHALL BE LABELLED WITH LONG-LIFE ADHESIVE LABELS. CIRCUIT NUMBER & SUPPLY D ENGRAVED ON LABEL.
- REFER TO LUMINAIRE SCHEDULE FOR LUMINAIRE 6 SPECIFICATIONS.
- ALL DRAWINGS TO BE READ IN CONJUNCTION ARCHITECTURAL DRAWINGS & ELECTRICAL STAN specifications.
- 8. IF APPLICABLE DO NOT SCALE DIMENSIONS.
- 9. DIMENSIONS TO BE CHECKED ON SITE BY RELEVA CONTRACTORS BEFORE WORK COMMENCES. DISCREPANCIES OR AMBIGUITIES ARE TO BE REP ELEMENT & TO BE CLARIFIED BY ELEMENT ONLY.
- 10. NO DRILLING, CHASING OR CUTTING OF STRUCT MEMBERS (eg COLUMNS, BEAMS, SLABS, TRUSSE PERMITTED UNLESS APPROVED IN WRITING BY EL
- 11. HEIGHTS REFLECTED ARE TO CENTER LINE OF OU





		Architect
		Project/D
		Revision
		Date Rec
Client	Project	
Western Cape Government	DE MOND NATURE RESERVE	

DE MOND NATURE RESERVE

Plan Description GUARD HOUSE : LIGHTING & POWER LAYOUT

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		LIGHTING SCHEDULE
TO THE DNS .	SYMBOL	DESCRIPTION
AFTER		36W/840 LED BATTEN, DIFFUSED, SURFACE
ES (BY		36W/4000 LED VAPOURPROOF, SURFACE
SUB- TO	ФА	10W LED DOWNLIGHTER, RECESSED
NTERVALS	⊕ ^A	LED DECORATIVE BULKHEAD, SURFACE
	€	LED PENDANT LIGHT
E VINYL DB TO BE	- Φ ^E	LED DECORATIVE BULKHEAD, SURFACE
Ē	/E	SYMBOL DENOTES LUMINAIRE EQUIPED WITH BATTERY BACK-UP (20%/1hr)
	P	PHOTOCELL, SURFACE
NDARD	•	1x16A, 1-WAY, LIGHT SWITCH, RECESSED @ 1200mm AFFL
	• 1	2x16A, 1-WAY LIGHT SWITCH, RECESSED @ 1200mm AFFL
ANT		1x16A, 1-WAY/ 1x16A, 2-WAY LIGHT SWITCH, RECESSED @ 1200mm AFFL
PORTED TO		
		POWER SCHEDULE
SES) IS LEMENT.	Symbol	DESCRIPTION
JTLETS.		DISTRIBUTION BOARD
		AUX. DISTRIBUTION PANEL, RECESSED
		1x16A, NORMAL AND RSA OUTLET COMBINATION SSO, RECESSED @ 400 AFFL (UNLESS OTHERWISE SHOWN)
		2x16A, DEDICATED SSO, RECESSED @ 400 AFFL (UNLESS OTHERWISE SHOWN)
		2x16A, NORMAL AND RSA COMBINATION SSO, RECESSED @ 300mm AFFL (UNLESS OTHERWISE INDICATED)
19	G	GEYSER POWER POINT & OUTLET (INCL 20A DP ISOL)
A CARE	±/≢	SINGLE/ THREE PHASE ISOLATOR WITH RED LED FLUSH MOUNTED, RATING AS INDICATED
		2C, 2T PVC POWERSKIRTING, STANDARD GREY @ 400 AFFL (UNLESS OTHERWISE SHOWN)
	- //-•	ELECTRICAL CONDUITS LINKED TO CEILING SPACE
	(*) A	WORKSTATION: 1 x 16A NORMAL SSO 1 x 16A RSA SSO 1 x DATA OUTLET RECESSED @ 400 AFFL (UNLESS OTHERWISE SHOWN)

rchitect		ANDREW COOKE												
oject/DWG No.		180)/AD22	20										
evision		В												
ate Received		24/(04/22											
	Desig	ned		LL	Scale 1:150 (A1)									
	Drawn Date			LL	Contract No.									
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Checked					Drawing No.									
				1801481/E/003										
	oveu			Revision		Δ	B	С	D		Γ	Τ		
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POWER LEGEND		GENERAL NOTES					
DESCRIPTION		ELECTRICAL INSTALLATION TO COMPLY IN FULL TO THE LATEST SANS10142 STANDARDS & SPECIFICATIONS . ELECTRICAL PENETRATIONS TO BE FIRE SEALED AFTER					
DISTRIBUTION BOARD							
SLEEVES		INSTALLATION OF CABLES & AUXILLIARY SERVICES (BY BUILDER).					
LV CABLE		SPECIFIED BY THE MANUFACTURER.					
600x600mm ACCESSIBLE JUNCTION BOX (UNLESS OTHERWISE INDICATED)	4.	REFER TO ARCHITECTURAL DETAILS FOR EXACT INSTALLATION DETAILS.					
POLE MOUNTED TRFR	5.	ALL DRAWINGS TO BE READ IN CONJUNCTION WITH LATEST ARCHITECTURAL DRAWINGS & ELECTRICAL STANDARD SPECIFICATIONS.					
	6.	DISCREPANCIES & AMBIGUITIES ON THIS DRAWING OR BETWEEN THIS DRAWING & OTHER ENGINEER'S & / OR ARCHITECT'S DRAWINGS ARE TO BE REPORTED TO ELEMENT & TO BE CLARIFIED BY ELEMENT ONLY.					
	7.	IF APPLICABLE DO NOT SCALE DIMENSIONS.					
	8.	DIMENSIONS TO BE CHECKED ON SITE BY RELEVANT CONTRACTORS BEFORE WORK COMMENCES.					
	9.	NO DRILLING, CHASING OR CUTTING OF STRUCTURAL MEMBERS (eg COLUMNS, BEAMS, SLABS, TRUSSES) IS PERMITTED UNLESS APPROVED IN WRITING BY ELEMENT.					

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		ARCHITECT	ANDREW COOKE								
		Project/DWG No.	. 180/AD220								
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			COPYRIGHT IS VESTED IN ELEMENT CONSULTING ENGINEERS (PTY IN TERMS OF THE COPYRIGHT ACT (ACT 98 OF 1978).								