



NEC3 Engineering & Construction Contract

**Between ESKOM HOLDINGS SOC Ltd
(Reg No. 2002/015527/30)**

**and [Insert at award stage]
(Reg No. _____)**

for Public Address System Extension

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CONTRACT No. [Insert at award stage]

Part C1: Agreements & Contract Data

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C1.1 Form of Offer & Acceptance

Offer

The Employer, identified in the Acceptance signature block, has solicited offers to enter into a contract for the procurement of:

Public Address System Extension

The tenderer, identified in the Offer signature block, has examined the documents listed in the Tender Data and addenda thereto and by submitting this Offer has accepted the Conditions of Tender.

By the representative of the tenderer, deemed to be duly authorised, signing this part of this Form of Offer and Acceptance the tenderer offers to perform all of the obligations and liabilities of the *Contractor* under the contract including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the *conditions of contract* identified in the Contract Data.

Options A B, C or D	The offered total of the Prices exclusive of VAT is	R
Option E or F	The first forecast of the total Defined Cost plus the Fee exclusive of VAT is	R
	Sub total	R
	Value Added Tax @ 15% is	R
	The offered total of the amount due inclusive of VAT is ¹	R
	(in words)	

This Offer may be accepted by the Employer by signing the Acceptance part of this Form of Offer and Acceptance and returning one copy of this document including the Schedule of Deviations (if any) to the tenderer before the end of the period of validity stated in the Tender Data, or other period as agreed, whereupon the tenderer becomes the party named as the *Contractor* in the *conditions of contract* identified in the Contract Data.

Signature(s)

Name(s) _____

Capacity _____

**For the
tenderer:**

(Insert name and address of organisation)

Name &
signature of
witness

Date

Tenderer's CIDB registration number (if applicable)

¹ This total is required by the *Employer* for budgeting purposes only. Actual amounts due will be assessed in terms of the *conditions of contract*.

Acceptance

By signing this part of this Form of Offer and Acceptance, the Employer identified below accepts the tenderer's Offer. In consideration thereof, the Employer shall pay the Contractor the amount due in accordance with the *conditions of contract* identified in the Contract Data. Acceptance of the tenderer's Offer shall form an agreement between the Employer and the tenderer upon the terms and conditions contained in this agreement and in the contract that is the subject of this agreement.

The terms of the contract, are contained in:

- Part C1 Agreements and Contract Data, (which includes this Form of Offer and Acceptance)
- Part C2 Pricing Data
- Part C3 Scope of Work: Works Information
- Part C4 Site Information

and drawings and documents (or parts thereof), which may be incorporated by reference into the above listed Parts.

Deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Returnable Schedules as well as any changes to the terms of the Offer agreed by the tenderer and the Employer during this process of offer and acceptance, are contained in the Schedule of Deviations attached to and forming part of this Form of Offer and Acceptance. No amendments to or deviations from said documents are valid unless contained in this Schedule.

The tenderer shall within two weeks of receiving a completed copy of this agreement, including the Schedule of Deviations (if any), contact the Employer's agent (whose details are given in the Contract Data) to arrange the delivery of any securities, bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the *conditions of contract* identified in the Contract Data at, or just after, the date this agreement comes into effect. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this agreement.

Notwithstanding anything contained herein, this agreement comes into effect on the date when the tenderer receives one fully completed original copy signed between them of this document, including the Schedule of Deviations (if any).

Unless the tenderer (now *Contractor*) within five working days of the date of such receipt notifies the Employer in writing of any reason why he cannot accept the contents of this agreement, this agreement shall constitute a binding contract between the Parties.

Signature(s)

Name(s)

Capacity

**for the
Employer**

.....
(Insert name and address of organisation)

Name &
signature of
witness

Date

Note: If a tenderer wishes to submit alternative tenders, use another copy of this Form of Offer and Acceptance.

Schedule of Deviations to be completed by the *Employer* prior to contract award

Note:

1. This part of the Offer & Acceptance would not be required if the contract has been developed by negotiation between the Parties and is not the result of a process of competitive tendering.
2. The extent of deviations from the tender documents issued by the Employer prior to the tender closing date is limited to those permitted in terms of the Conditions of Tender.
3. A tenderer's covering letter must not be included in the final contract document. Should any matter in such letter, which constitutes a deviation as aforesaid be the subject of agreement reached during the process of Offer and Acceptance, the outcome of such agreement shall be recorded here and the final draft of the contract documents shall be revised to incorporate the effect of it.

No.	Subject	Details
1	[•]	[•]
2	[•]	[•]
3	[•]	[•]
4	[•]	[•]
5	[•]	[•]
6	[•]	[•]
7	[•]	[•]

By the duly authorised representatives signing this Schedule of Deviations below, the Employer and the tenderer agree to and accept this Schedule of Deviations as the only deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Tender Schedules, as well as any confirmation, clarification or changes to the terms of the Offer agreed by the tenderer and the Employer during this process of Offer and Acceptance.

It is expressly agreed that no other matter whether in writing, oral communication or implied during the period between the issue of the tender documents and the receipt by the tenderer of a completed signed copy of this Form shall have any meaning or effect in the contract between the parties arising from this Agreement.

For the tenderer:

For the Employer

Signature

Name

Capacity

On behalf
of

(Insert name and address of organisation)

(Insert name and address of organisation)

Name &
signature
of witness

Date

C1.2 ECC3 Contract Data

Part one - Data provided by the *Employer*

Completion of the data in full, according to the Options chosen, is essential to create a complete contract.

Clause	Statement	Data
1	General	
	The <i>conditions of contract</i> are the core clauses and the clauses for main Option	
	dispute resolution Option and secondary Options	A: Priced contract with activity schedule W1: Dispute resolution procedure X2 Changes in the law X5: Sectional Completion X7: Delay damages X16: Retention X18: Limitation of liability Z: Additional conditions of contract
	of the NEC3 Engineering and Construction Contract, April 2013 (ECC3)	
10.1	The <i>Employer</i> is (Name):	Eskom Holdings SOC Ltd (reg no: 2002/015527/30), a state owned company incorporated in terms of the company laws of the Republic of South Africa
	Address	Registered office at Megawatt Park, Maxwell Drive, Sandton, Johannesburg
10.1	The <i>Project Manager</i> is: (Name)	
	Address	
	Tel	
	Fax	
	e-mail	
10.1	The <i>Supervisor</i> is: (Name)	N/A
	Address	
	Tel No.	

Fax No.

e-mail

11.2(13)	The <i>works</i> are	Public Address System Extension	
11.2(14)	The following matters will be included in the Risk Register	<p>The following risks are allowed for as per clause 31.2.</p> <ol style="list-style-type: none"> 1. Lapsing of the contract date whilst completion has not been achieved. 2. Construction regulation requirements delays. 3. Inability to meet contract requirements during commissioning. 4. Interfacing activities 5. Permit To Work delays or PSR authorisation with regards to Permit to Work. <p>Any other matter posing a risk to the contract will be discussed amongst the Parties for allocation and agreed upon before being inserted on the Risk Register.</p>	
11.2(15)	The <i>boundaries of the site</i> are	Areas within the borders of Hendrina Power Station.	
11.2(16)	The Site Information is in	Part 4: Site Information	
11.2(19)	The Works Information is in	Part 3: Scope of Work and all documents and drawings to which it makes reference.	
12.2	The <i>law of the contract</i> is the law of	the Republic of South Africa	
13.1	The <i>language of this contract</i> is	English	
13.3	The <i>period for reply</i> is	3 working days	
2	The Contractor's main responsibilities	Data required by this section of the core clauses is provided by the Contractor in Part 2 and terms in italics used in this section are identified elsewhere in this Contract Data.	
3	Time		
11.2(3)	The <i>completion date</i> for the whole of the <i>works</i> is	31 August 2022	
11.2(9)	The <i>key dates</i> and the <i>conditions</i> to be met are:	Condition to be met	key date
		1 Safety File Approval	TBC
		2 Testing and Commissioning of all installed areas	TBC
30.1	The <i>access dates</i> are:	Part of the Site	Date
		1 Contractor Site	1 day after safety file approval.

31.1	The <i>Contractor</i> is to submit a first programme for acceptance within	Four (4) days after the Contract Start Date.
31.2	The <i>starting date</i> is	1 _____ 2024
32.2	The <i>Contractor</i> submits revised programmes at intervals no longer than	No longer than one week. A revised programme shall be submitted on a weekly basis during the executions of the works provided there is an alteration.
35.1	The <i>Employer</i> is not willing to take over the works before the Completion Date.	Only after the Completion of the whole works as per the program.
4	Testing and Defects	
42.2	The <i>defects date</i> is	52 weeks after completion of works.
43.2	The <i>defect correction period</i> is	2 days after notification.
5	Payment	
50.1	The <i>assessment interval</i> is	On completion of activities as assessed and agreed upon on the assessment date as per task order/activity schedule
51.1	The <i>currency of this contract</i> is the	South African Rand.
51.2	The period within which payments are made is	14 working days after assessment and tax invoice submission.
51.4	The <i>interest rate</i> is	zero percent above the publicly quoted prime rate of interest (calculated on a 365 day year) charged from time to time by the Standard Bank of South Africa (as certified, in the event of any dispute, by any manager of such bank, whose appointment it shall not be necessary to prove) for amounts due in Rands
6	Compensation events	
60.1(13)	The place where weather is to be recorded is: The <i>weather measurements</i> to be recorded for each calendar month are, The <i>weather measurements</i> are supplied by The <i>weather data</i> are the records of past	Hendrina Power Station the cumulative rainfall (mm) the number of days with rainfall more than 10 mm the number of days with minimum air temperature less than 0 degrees Celsius the number of days with snow lying at 09:00 hours South African Time and these measurements: Refer to Part C4 of site information. Hendrina Power Station control room.

weather measurements for each calendar month which were recorded at:

Hendrina Power Station

and which are available from:

the South African Weather Bureau and included in Annexure A to this Contract Data provided by the *Employer*

60.1(13)	Assumed values for the ten year return <i>weather data</i> for each <i>weather measurement</i> for each calendar month are:	As stated in Annexure A to this Contract Data provided by the <i>Employer</i>.
7	Title	The <i>Contractor</i> has no title to site materials purchased by the <i>Employer</i> for the project.
8	Risks and insurance	
80.1	These are additional <i>Employer's</i> risks	As per <i>Employer's</i> Risk Assessment. The <i>Project manager</i> compiles the Risk Register and refers
9	Termination	There is no reference to Contract Data in this section of the core clauses and terms in italics used in this section are identified elsewhere in this Contract Data.
10	Data for main Option clause	
A	Priced contract with activity schedule	There is no reference to Contract Data in this Option and terms in italics are identified elsewhere in this Contract Data.
11	Data for Option W1	
W1.1	The <i>Adjudicator</i> is	Will be appointed when a dispute arises and other details to be advised in the event of a dispute.
W1.2(3)	The <i>Adjudicator nominating body</i> is:	the Chairman of ICE-SA a joint Division of the South African Institution of Civil Engineering and the London Institution of Civil Engineers. (See www.ice-sa.org.za) or its successor body.
W1.4(2)	The <i>tribunal</i> is:	arbitration.
W1.4(5)	The <i>arbitration procedure</i> is	the latest edition of Rules for the Conduct of Arbitrations published by The Association of Arbitrators (Southern Africa) or its successor body.
	The place where arbitration is to be held is	Johannesburg, South Africa
	The person or organisation who will choose an arbitrator	
	- if the Parties cannot agree a choice or	the Chairman for the time being or his nominee of the Association of Arbitrators (Southern Africa) or its successor body.
	- if the arbitration procedure does not state who selects an arbitrator, is	
12	Data for secondary Option clauses	
X2	Changes in the law	There is no reference to Contract Data in this

Option and terms in italics are identified elsewhere in this Contract Data.

X5 & X7	Sectional Completion and delay damages used together		
X7.1 X5.1	Delay damages for late Completion of the <i>sections</i> of the <i>works</i> are:	section	Description
		1	Installation and commissioning of all areas as per the works information
	The total delay damages payable by the <i>Contractor</i> does not exceed:	No limit (delays are the Employer's only remedy during construction of the works)	
X16	Retention (not used with Option F)		
X16.1	The <i>retention free amount</i> is	R0.	
	The <i>retention percentage</i> is	10%	
X18	Limitation of liability		
X18.1	The <i>Contractor's</i> liability to the <i>Employer</i> for indirect or consequential loss is limited to:	R0.0 (zero Rand)	
X18.2	For any one event, the <i>Contractor's</i> liability to the <i>Employer</i> for loss of or damage to the <i>Employer's</i> property is limited to:	the amount of the deductibles relevant to the event	
X18.3	The <i>Contractor's</i> liability for Defects due to his design which are not listed on the Defects Certificate is limited to	The greater of <ul style="list-style-type: none"> • the total of the Prices at the Contract Date and • the amounts excluded and unrecoverable from the <i>Employer's</i> assets policy for correcting the Defect (other than the resulting physical damage which is not excluded) plus the applicable deductible as at contract date. 	
X18.4	The <i>Contractor's</i> total liability to the <i>Employer</i> for all matters arising under or in connection with this contract, other than excluded matters, is limited to:	the total of the Prices other than for the additional excluded matters. The <i>Contractor's</i> total liability for the additional excluded matters is not limited. The additional excluded matters are amounts for which the <i>Contractor</i> is liable under this contract for <ul style="list-style-type: none"> • Defects due to his design which arise before the Defects Certificate is issued, • Defects due to manufacture and fabrication outside the Site, • loss of or damage to property (other than the <i>works</i>, Plant and Materials), 	

		<ul style="list-style-type: none">• death of or injury to a person and• infringement of an intellectual property right.
X18.5	The <i>end of liability date</i> is	<p>(i) 3 years after the <i>defects date</i> for latent Defects and</p> <p>(ii) the date on which the liability in question prescribes in accordance with the Prescription Act No. 68 of 1969 (as amended or in terms of any replacement legislation) for any other matter.</p> <p>A latent Defect is a Defect which would not have been discovered on reasonable inspection by the <i>Employer</i> or the <i>Supervisor</i> before the <i>defects date</i>, without requiring any inspection not ordinarily carried out by the <i>Employer</i> or the <i>Supervisor</i> during that period. If the <i>Employer</i> or the <i>Supervisor</i> do undertake any inspection over and above the reasonable inspection, this does not place a greater responsibility on the <i>Employer</i> or the <i>Supervisor</i> to have discovered the Defect.</p>
Z	The Additional conditions of contract are	Z1 to Z15 always apply.
Z1	Cession delegation and assignment	
Z1.1	The <i>Contractor</i> does not cede, delegate or assign any of its rights or obligations to any person without the written consent of the <i>Employer</i> .	
Z1.2	Notwithstanding the above, the <i>Employer</i> may on written notice to the <i>Contractor</i> cede and delegate its rights and obligations under this contract to any of its subsidiaries or any of its present divisions or operations which may be converted into separate legal entities as a result of the restructuring of the Electricity Supply Industry.	
Z2	Joint ventures	
Z2.1	If the <i>Contractor</i> constitutes a joint venture, consortium or other unincorporated grouping of two or more persons or organisations then these persons or organisations are deemed to be jointly and severally liable to the <i>Employer</i> for the performance of this contract.	
Z2.2	Unless already notified to the <i>Employer</i> , the persons or organisations notify the <i>Project Manager</i> within two weeks of the Contract Date of the key person who has the authority to bind the <i>Contractor</i> on their behalf.	
Z2.3	The <i>Contractor</i> does not alter the composition of the joint venture, consortium or other unincorporated grouping of two or more persons without the consent of the <i>Employer</i> having been given to the <i>Contractor</i> in writing.	
Z3	Change of Broad Based Black Economic Empowerment (B-BBEE) status	
Z3.1	Where a change in the <i>Contractor's</i> legal status, ownership or any other change to his business composition or business dealings results in a change to the <i>Contractor's</i> B-BBEE status, the <i>Contractor</i> notifies the <i>Employer</i> within seven days of the change.	

- Z3.2 The *Contractor* is required to submit an updated verification certificate and necessary supporting documentation confirming the change in his B-BBEE status to the *Project Manager* within thirty days of the notification or as otherwise instructed by the *Project Manager*.
- Z3.3 Where, as a result, the *Contractor's* B-BBEE status has decreased since the Contract Date the *Employer* may either re-negotiate this contract or alternatively, terminate the *Contractor's* obligation to Provide the Works.
- Z3.4 Failure by the *Contractor* to notify the *Employer* of a change in its B-BBEE status may constitute a reason for termination. If the *Employer* terminates in terms of this clause, the procedures on termination are P1, P2 and P3 as stated in clause 92, and the amount due is A1 and A3 as stated in clause 93.

Z4 Confidentiality

- Z4.1 The *Contractor* does not disclose or make any information arising from or in connection with this contract available to Others. This undertaking does not, however, apply to information which at the time of disclosure or thereafter, without default on the part of the *Contractor*, enters the public domain or to information which was already in the possession of the *Contractor* at the time of disclosure (evidenced by written records in existence at that time). Should the *Contractor* disclose information to Others in terms of clause 25.1, the *Contractor* ensures that the provisions of this clause are complied with by the recipient.
- Z4.2 If the *Contractor* is uncertain about whether any such information is confidential, it is to be regarded as such until notified otherwise by the *Project Manager*.
- Z4.3 In the event that the *Contractor* is, at any time, required by law to disclose any such information which is required to be kept confidential, the *Contractor*, to the extent permitted by law prior to disclosure, notifies the *Employer* so that an appropriate protection order and/or any other action can be taken if possible, prior to any disclosure. In the event that such protective order is not, or cannot, be obtained, then the *Contractor* may disclose that portion of the information which it is required to be disclosed by law and uses reasonable efforts to obtain assurances that confidential treatment will be afforded to the information so disclosed.
- Z4.4 The taking of images (whether photographs, video footage or otherwise) of the *works* or any portion thereof, in the course of Providing the Works and after Completion, requires the prior written consent of the *Project Manager*. All rights in and to all such images vests exclusively in the *Employer*.
- Z4.5 The *Contractor* ensures that all his subcontractors abide by the undertakings in this clause.

Z5 Waiver and estoppel: Add to core clause 12.3:

- Z5.1 Any extension, concession, waiver or relaxation of any action stated in this contract by the Parties, the *Project Manager*, the *Supervisor*, or the *Adjudicator* does not constitute a waiver of rights, and does not give rise to an estoppel unless the Parties agree otherwise and confirm such agreement in writing.

Z6 Health, safety and the environment: Add to core clause 27.4

- Z6.1 The *Contractor* undertakes to take all reasonable precautions to maintain the health and safety of persons in and about the execution of the *works*. Without limitation the *Contractor*:
- accepts that the *Employer* may appoint him as the "Principal Contractor" (as defined and provided for under the Construction Regulations 2014 (promulgated under the Occupational Health & Safety Act 85 of 1993) ("the Construction Regulations") for the Site;
 - warrants that the total of the Prices as at the Contract Date includes a sufficient amount for proper compliance with the Construction Regulations, all applicable health & safety laws

and regulations and the health and safety rules, guidelines and procedures provided for in this contract and generally for the proper maintenance of health & safety in and about the execution of *works*; and

- undertakes, in and about the execution of the *works*, to comply with the Construction Regulations and with all applicable health & safety laws and regulations and rules, guidelines and procedures otherwise provided for under this contract and ensures that his Subcontractors, employees and others under the *Contractor's* direction and control, likewise observe and comply with the foregoing.

Z6.2 The *Contractor*, in and about the execution of the *works*, complies with all applicable environmental laws and regulations and rules, guidelines and procedures otherwise provided for under this contract and ensures that his Subcontractors, employees and others under the *Contractor's* direction and control, likewise observe and comply with the foregoing.

Z7 Provision of a Tax Invoice and interest. Add to core clause 51

Z7.1 Within one week of receiving a payment certificate from the *Project Manager* in terms of core clause 51.1, the *Contractor* provides the *Employer* with a tax invoice in accordance with the *Employer's* procedures stated in the Works Information, showing the amount due for payment equal to that stated in the payment certificate.

Z7.2 If the *Contractor* does not provide a tax invoice in the form and by the time required by this contract, the time by when the *Employer* is to make a payment is extended by a period equal in time to the delayed submission of the correct tax invoice. Interest due by the *Employer* in terms of core clause 51.2 is then calculated from the delayed date by when payment is to be made.

Z7.3 The *Contractor* (if registered in South Africa in terms of the companies Act) is required to comply with the requirements of the Value Added Tax Act, no 89 of 1991 (as amended) and to include the *Employer's* VAT number 4740101508 on each invoice he submits for payment.

Z8 Notifying compensation events

Z8.1 Delete from the last sentence in core clause 61.3, "unless the *Project Manager* should have notified the event to the *Contractor* but did not".

Z9 Employer's limitation of liability

Z9.1 The *Employer's* liability to the *Contractor* for the *Contractor's* indirect or consequential loss is limited to R0.00 (zero Rand)

Z9.2 The *Contractor's* entitlement under the indemnity in 83.1 is provided for in 60.1(14) and the *Employer's* liability under the indemnity is limited.

Z10 Termination: Add to core clause 91.1, at the second main bullet point, fourth sub-bullet point, after the words "against it":

Z10.1 or had a business rescue order granted against it.

Z11 Addition to secondary Option X7 Delay damages (if applicable in this contract)

Z11.1 If the amount due for the *Contractor's* payment of delay damages reaches the limits stated in this Contract Data for Option X7 or Options X5 and X7 used together, the *Employer* may terminate the *Contractor's* obligation to Provide the Works using the same procedures and payment on termination as those applied for reasons R1 to R15 or R18 stated in the Termination Table.

Z12 Ethics

For the purposes of this Z-clause, the following definitions apply:

Affected Party means, as the context requires, any party, irrespective of whether it is the *Contractor* or a third party, such party's employees, agents, or Subcontractors or Subcontractor's employees, or any one or more of all of these parties' relatives or friends,

Coercive Action means to harm or threaten to harm, directly or indirectly, an Affected Party or the property of an Affected Party, or to otherwise influence or attempt to influence an Affected Party to act unlawfully or illegally,

Collusive Action means where two or more parties co-operate to achieve an unlawful or illegal purpose, including to influence an Affected Party to act unlawfully or illegally,

Committing Party means, as the context requires, the *Contractor*, or any member thereof in the case of a joint venture, or its employees, agents, or Subcontractor or the Subcontractor's employees,

Corrupt Action means the offering, giving, taking, or soliciting, directly or indirectly, of a good or service to unlawfully or illegally influence the actions of an Affected Party,

Fraudulent Action means any unlawfully or illegally intentional act or omission that misleads, or attempts to mislead, an Affected Party, in order to obtain a financial or other benefit or to avoid an obligation or incurring an obligation,

Obstructive Action means a Committing Party unlawfully or illegally destroying, falsifying, altering or concealing information or making false statements to materially impede an investigation into allegations of Prohibited Action, and

Prohibited Action means any one or more of a Coercive Action, Collusive Action Corrupt Action, Fraudulent Action or Obstructive Action.

Z12.1 A Committing Party may not take any Prohibited Action during the course of the procurement of this contract or in execution thereof.

Z12.2 The *Employer* may terminate the *Contractor's* obligation to Provide the Services if a Committing Party has taken such Prohibited Action and the *Contractor* did not take timely and appropriate action to prevent or remedy the situation, without limiting any other rights or remedies the *Employer* has. It is not required that the Committing Party had to have been found guilty, in court or in any other similar process, of such Prohibited Action before the *Employer* can terminate the *Contractor's* obligation to Provide the Services for this reason.

Z12.3 If the *Employer* terminates the *Contractor's* obligation to Provide the Services for this reason, the amounts due on termination are those intended in core clauses 92.1 and 92.2.

Z12.4 A Committing Party co-operates fully with any investigation pursuant to alleged Prohibited Action. Where the *Employer* does not have a contractual bond with the Committing Party, the *Contractor* ensures that the Committing Party co-operates fully with an investigation.

Z13 Insurance

Z 13.1 Replace core clause 84 with the following:

Insurance cover 84

84.1 When requested by a Party, the other Party provides certificates from his

insurer or broker stating that the insurances required by this contract are in force.

84.2 The *Contractor* provides the insurances stated in the Insurance Table A.

84.3 The insurances provide cover for events which are at the *Contractor's* risk from the *starting date* until the earlier of Completion and the date of the termination certificate.

INSURANCE TABLE A

Insurance against	Minimum amount of cover or minimum limit of indemnity
Loss of or damage to the <i>works</i> , Plant and Materials	The replacement cost where not covered by the <i>Employer's</i> insurance The <i>Employer's</i> policy deductible, as Contract Date, where covered by the <i>Employer's</i> insurance
Loss of or damage to Equipment	The replacement cost
Liability for loss of or damage to property (except the <i>works</i> , Plant and Materials and Equipment) and liability for bodily injury to or death of a person (not an employee of the <i>Contractor</i>) caused by activity in connection with this contract	<u>Loss of or damage to property</u> <u>Employer's property</u> The replacement cost where not covered by the <i>Employer's</i> insurance The <i>Employer's</i> policy deductible, as Contract Date, where covered by the <i>Employer's</i> insurance <u>Other property</u> The replacement cost <u>Bodily injury to or death of a person</u> The amount required by applicable law
Liability for death of or bodily injury to employees of the <i>Contractor</i> arising out of and in the course of their employment in connection with this contract	The amount required by the applicable law

Z 13.2

Replace core clause 87 with the following:

The *Employer* provides the insurances stated in the Insurance Table B.

INSURANCE TABLE B

Insurance against or name of policy	Minimum amount of cover or minimum limit of indemnity
Assets All Risk	Per the insurance policy document
Contract Works insurance	Per the insurance policy document
Environmental Liability	Per the insurance policy document
General and Public Liability	Per the insurance policy document

Transportation (Marine)	Per the insurance policy document
Motor Fleet and Mobile Plant	Per the insurance policy document
Terrorism	Per the insurance policy document
Cyber Liability	Per the insurance policy document
Nuclear Material Damage and Business Interruption	Per the insurance policy document
Nuclear Material Damage Terrorism	Per the insurance policy document

Z14 Nuclear Liability

- Z14.1 The *Employer* is the operator of the Koeberg Nuclear Power Station (KNPS), a nuclear installation, as designated by the National Nuclear Regulator of the Republic of South Africa, and is the holder of a nuclear licence in respect of the KNPS.
- Z14.2 The *Employer* is solely responsible for and indemnifies the *Contractor* or any other person against any and all liabilities which the *Contractor* or any person may incur arising out of or resulting from nuclear damage, as defined in Act 44 of 1999, save to the extent that any liabilities are incurred due to the unlawful intent of the *Contractor* or any other person or the presence of the *Contractor* or that person or any property of the *Contractor* or such person at or in the KNPS or on the KNPS site, without the permission of the *Employer* or of a person acting on behalf of the *Employer*.
- Z14.3 Subject to clause Z14.4 below, the *Employer* waives all rights of recourse, arising from the aforesaid, save to the extent that any claims arise or liability is incurred due or attributable to the unlawful intent of the *Contractor* or any other person, or the presence of the *Contractor* or that person or any property of the *Contractor* or such person at or in the KNPS or on the KNPS site, without the permission of the *Employer* or of a person acting on behalf of the *Employer*.
- Z14.4 The *Employer* does not waive its rights provided for in section 30 (7) of Act 44 of 1999, or any replacement section dealing with the same subject matter.
- Z14.5 The protection afforded by the provisions hereof shall be in effect until the KNPS is decommissioned.

Z15 Asbestos

For the purposes of this Z-clause, the following definitions apply:

- AAIA** means approved asbestos inspection authority.
- ACM** means asbestos containing materials.
- AL** means action level, i.e. a level of 50% of the OEL, i.e. 0.1 regulated asbestos fibres per ml of air measured over a 4 hour period. The value at which proactive actions is required in order to control asbestos exposure to prevent exceeding the OEL.
- Ambient Air** means breathable air in area of work with specific reference to breathing zone, which is defined to be a virtual area within a radius of approximately 30cm from the nose inlet.
- Compliance Monitoring** means compliance sampling used to assess whether or not the personal exposure of workers to regulated asbestos fibres is in compliance with the Standard's

requirements for safe processing, handling, storing, disposal and phase-out of asbestos and asbestos containing material, equipment and articles.

OEL means occupational exposure limit.

Parallel Measurements means measurements performed in parallel, yet separately, to existing measurements to verify validity of results.

Safe Levels means airborne asbestos exposure levels conforming to the Standard's requirements for safe processing, handling, storing, disposal and phase-out of asbestos and asbestos containing material, equipment and articles.

Standard means the *Employer's* Asbestos Standard 32-303: Requirements for Safe Processing, Handling, Storing, Disposal and Phase-out of Asbestos and Asbestos Containing Material, Equipment and Articles.

SANAS means the South African National Accreditation System.

TWA means the average exposure, within a given workplace, to airborne asbestos fibres, normalised to the baseline of a 4 hour continuous period, also applicable to short term exposures, i.e. 10-minute TWA.

Z15.1 The *Employer* ensures that the Ambient Air in the area where the *Contractor* will Provide the Services conforms to the acceptable prescribed South African standard for asbestos, as per the regulations published in GNR 155 of 10 February 2002, under the Occupational Health and Safety Act, 1993 (Act 85 of 1993) ("Asbestos Regulations"). The OEL for asbestos is 0.2 regulated asbestos fibres per millilitre of air as a 4-hour TWA, averaged over any continuous period of four hours, and the short term exposure limit of 0.6 regulated asbestos fibres per millilitre of air as a 10-minute TWA, averaged over any 10 minutes, measured in accordance with HSG248 and monitored according to HSG173 and OESSM.

Z15.2 Upon written request by the *Contractor*, the *Employer* certifies that these conditions prevail. All measurements and reporting are effected by an independent, competent, and certified occupational hygiene inspection body, i.e. a SANAS accredited and Department of Employment and Labour approved AAIA. The *Contractor* may perform Parallel Measurements and related control measures at the *Contractor's* expense. For the purposes of compliance the results generated from Parallel Measurements are evaluated only against South African statutory limits as detailed in clause Z15.1. Control measures conform to the requirements stipulated in the AAIA-approved asbestos work plan.

Z15.3 The *Employer* manages asbestos and ACM according to the Standard.

Z15.4 In the event that any asbestos is identified while Providing the Services, a risk assessment is conducted and if so required, with reference to possible exposure to an airborne concentration of above the AL for asbestos, immediate control measures are implemented and relevant air monitoring conducted in order to declare the area safe.

Z15.5 The *Contractor's* personnel are entitled to stop working and leave the contaminated area forthwith until such time that the area of concern is declared safe by either Compliance Monitoring or an AAIA approved control measure intervention, for example, per the emergency asbestos work plan, if applicable.

Z15.6 The *Contractor* continues to Provide the Services, without additional control measures presented, on presentation of Safe Levels. The contractually agreed dates to Provide the Services, including the Completion Date, are adjusted accordingly. The contractually agreed dates are extended by the notification periods required by regulations 3 and 21 of the Asbestos Regulations, 2001.

Z15.7 Any removal and disposal of asbestos, asbestos containing materials and waste, is done by a registered asbestos contractor, instructed by the *Employer* at the *Employer's* expense, and conducted in line with South African legislation.

Annexure A: One-in-ten-year-return weather data obtained from SA Weather Bureau for [weather station]

If any one of these *weather measurements* recorded within a calendar month, before the Completion Date for the whole of the *works* and at the place stated in this Contract Data is shown to be more adverse than the amount stated below then the *Contractor* may notify a compensation event.

Month	Weather measurement				
	Cumulative rainfall (mm)	Number of days with rain more than 10mm	Number of days with min air temp < 0 deg.C	Number of days with snow lying at 08:00 CAT	[Other measurements if applicable]
January	212,7	7	0	0	
February	110,9	3	0	0	
March	33,5	1	0	0	
April	12	0	0	0	
May	2,2	0	0	0	
June	7	0	0	0	
July	0	0	0	0	
August	1	0	0	0	
September	17	1	0	0	
October					
November					
December					

Only the difference between the more adverse recorded weather and the equivalent measurement given above is taken into account in assessing a compensation event.

C1.2 Contract Data

Part two - Data provided by the *Contractor*

[Instructions to the contract compiler: (delete this notes before issue to tenderers with an enquiry)

Whenever a cell is shaded in the left hand column it denotes this data is optional. If not required select and delete the whole row, otherwise insert the required Data.]

Notes to a tendering contractor:

1. Please read both the NEC3 Engineering and Construction Contract (April 2013) and the relevant parts of its Guidance Notes (ECC3-GN)² in order to understand the implications of this Data which the tenderer is required to complete. An example of the completed Data is provided on pages 156 to 158 of the ECC3 (April 2013) Guidance Notes.
2. The number of the clause which requires the data is shown in the left hand column for each statement however other clauses may also use the same data
3. Where a form field like this [] appears, data is required to be inserted relevant to the option selected. Click on the form field **once** and type in the data. Otherwise complete by hand and in ink.

Completion of the data in full, according to Options chosen, is essential to create a complete contract.

Clause	Statement	Data
10.1	The <i>Contractor</i> is (Name): Address Tel No. Fax No.	
11.2(8)	The <i>direct fee percentage</i> is The <i>subcontracted fee percentage</i> is	% %
11.2(18)	The <i>working areas</i> are the Site and	
24.1	The <i>Contractor's</i> key persons are: 1 Name: Job: Responsibilities: Qualifications: Experience: 2 Name: Job Responsibilities: Qualifications: Experience:	

² Available from Engineering Contract Strategies Tel 011 803 3008, Fax 011 803 3009 or see www.ecs.co.za

		CV's (and further key persons data including CVs) are appended to Tender Schedule entitled .
11.2(3)	The <i>completion date</i> for the whole of the <i>works</i> is	
11.2(14)	The following matters will be included in the Risk Register	
11.2(19)	The Works Information for the <i>Contractor's</i> design is in:	
31.1	The programme identified in the Contract Data is	
A	Priced contract with activity schedule	
11.2(20)	The <i>activity schedule</i> is in	(in figures) (in words), excluding VAT
11.2(30)	The tendered total of the Prices is	
	Data for Schedules of Cost Components	<i>Note "SCC" means Schedule of Cost Components starting on page 60, and "SSCC" means Shorter Schedule of Cost Components starting on page 63 of ECC3 (April 2013).</i>
A	Priced contract with activity schedule	Data for the Shorter Schedule of Cost Components

PART 2: PRICING DATA

ECC3 Option A

Document reference	Title	No of pages
C2.1	Pricing assumptions: Option A	
C2.2	The <i>activity schedule</i>	

C2.1 Pricing assumptions: Option A

How work is priced and assessed for payment

Clause 11 in NEC3 Engineering and Construction Contract, (ECC3) Option A states:

Identified and defined terms 11
11.2 (20) The Activity Schedule is the *activity schedule* unless later changed in accordance with this contract.

(27) The Price for Work Done to Date is the total of the Prices for

- each group of completed activities and
- each completed activity which is not in a group.

A completed activity is one which is without Defects which would either delay or be covered by immediately following work.

(30) The Prices are the lump sum prices for each of the activities on the Activity Schedule unless later changed in accordance with this contract.

This confirms that Option A is a lump sum form of contract where the work is broken down into activities, each of which is priced by the tendering contractor as a lump sum. Only completed activities are assessed for payment at each assessment date; no part payment is made if the activity is not completed by the assessment date.

Function of the Activity Schedule

Clause 54.1 in Option A states: "Information in the Activity Schedule is not Works Information or Site Information". This confirms that specifications and descriptions of the work or any constraints on how it is to be done are not included in the Activity Schedule but in the Works Information. This is further confirmed by Clause 20.1 which states, "The *Contractor* Provides the Works in accordance with the Works Information". Hence the *Contractor* does **not** Provide the Works in accordance with the Activity Schedule. The Activity Schedule is only a pricing document.

Link to the programme

Clause 31.4 states that "The *Contractor* provides information which shows how each activity on the Activity Schedule relates to the operations on each programme which he submits for acceptance". Ideally the tendering contractor will develop a high level programme first then resource each activity and thus arrive at the lump sum price for that activity both of which can be entered into the *activity schedule*.

Preparing the *activity schedule*

Generally it is the tendering contractor who prepares the *activity schedule* by breaking down the work described within the Works Information into suitable activities which can be well defined, shown on a programme and priced as a lump sum.

The *Employer*, in his Instructions to Tenderers or in a Tender Schedule, may have listed some items that he requires the *Contractor* to include in his *activity schedule* and be priced accordingly.

It is assumed that in preparing his *activity schedule* the *Contractor*:

- Has taken account of the guidance given in the ECC3 Guidance Notes pages 19 and 20;
- Understands the function of the Activity Schedule and how work is priced and paid for;
- Is aware of the need to link the Activity Schedule to activities shown on his programme;
- Has listed and priced activities in the *activity schedule* which are inclusive of everything necessary and incidental to Providing the Works in accordance with the Works Information, as it was at the time of tender, as well as correct any Defects not caused by an *Employer's* risk;
- Has priced work he decides not to show as a separate activity within the Prices of other listed activities in order to fulfil the obligation to complete the *works* for the tendered total of the Prices.
- Understands there is no adjustment to the lump sum Activity Schedule price if the amount, or quantity, of work within that activity later turns out to be different to that which the *Contractor* estimated at time of tender. The only basis for a change to the Prices is as a result of a compensation event.

An activity schedule could have the following format:

Item No.	Sum	Activity description	Quantity	Unit Price	Price
1		Site Establishment			
2		Safety File & Induction			
3		PPE			
4		Accommodation			
6		Transport			
7	Number	Poles (3m high x 25mm OD hollow, Galvanized Steel Pipe)	4		
8	Number	Amplifiers (Bosch, PRS 1P500)	7		
9	Number	Horn1 speakers (Bosch, LBC 3482/00)	36		
10	Number	Horn2 speakers (Bosch, LBC 3428/01)	104		
11	Number	Cabinet speakers (Bosch, 3018/01)	19		
12	m	Speaker Cable (FR120, 1.5mm ²)	6 681		
13	m	Conduit (Galvanised Steel conduit, 20mm diameter)	4 764		
14	Number	Amplifier cubicle (Amplifier cubicle)	1		
15	m	Trenching (500mm deep)	1 935		
16	m	Piping (Black Polyethylene, 20mm, (outer 24mm, inner 21mm))	1935		
17	Number	UPS	4		
18	Number	Batteries	4		

19		Provision of Drawings in Micro station Format			
20		Design Approval			
21		Labour			
22					

C2.2 the *activity schedule*

Use this page as a cover page to the *Contractor's activity schedule*.

PART 3: SCOPE OF WORK

Document reference	Title	No of pages
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C3.2	<i>Contractor</i> 's Works Information	
	Total number of pages	XX

C3.1: EMPLOYER’S WORKS INFORMATION

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1 Description of the works

1.1 Executive overview

There is a Public Address (PA) system currently installed at Hendrina Power Station. The PA system allows specific or all areas of the station to be addressed from a central location thus immediately providing useful and unfiltered information. This system is based on the Bosch Praesideo 3.5 Public Address and Voice Alarm System. This system unfortunately does not cover all the area in the station. In order to cover all feasible areas, this project intends to extend the area of coverage. All work required to extend the PA system whether mechanical, civil, and electrical or otherwise will be completed under this project. The functionality of the present system is kept the same and the only change is the addition of more areas to the area of coverage.

1.2 Employer's objectives and purpose of the works

PA systems are useful as a communication tool which provides prompt and first-hand information to people within the system's area of coverage. This makes it unlikely that people will receive critical information that has been altered or filtered. Currently, the area of coverage of the PA system at Hendrina is not comprehensive and there are areas where the announcements are not heard. This means that personnel in these areas are at risk of missing critical information in the event of an emergency. This also makes coordination of abnormal events from a central location difficult in that some of the station employees will not receive the instructions given via the PA system.

To address this deficiency, it is required that the current PA system be extended by both modifying the current system, if deemed necessary and more efficient, and installing new infrastructure which will be interfaced with the current system. The extension must conform to Eskom's PA system standard. The current system is also evaluated for conformance to Eskom's PA system standard and where shortcomings are identified necessary measures are taken to bring the system to conformance.

1.3 Interpretation and terminology

The following abbreviations are used in this Works Information:

Abbreviation	Meaning given to the abbreviation
AFC	Approved for construction
C&I	Control and Instrumentation
DCS	Distributed Control System
EE	Exciter End (Section of the generator closest to the exciter)
ESD	Electro- Static Discharge
FAT	Factory Acceptance Test
FMECA	Failure Modes, Effects & Criticality Analysis
OBL	Outside battery limits
PA	Public Address
QIP	Quality Inspection Plan
QC	Quality Controller
SE	System Engineer

2 Management and start up.

2.1 Management meetings

Regular meetings of a general nature may be convened and chaired by the *Project Manager* as follows:

Title and purpose	Approximate time & interval	Location	Attendance by:
Risk register and compensation events	As required	Venue to be communicated	<i>Engineer, Contractor, Supervisor, and Project Manager</i>
Overall contract progress and feedback	Every second week of the month	Venue to be communicated	<i>Engineer, Contractor, Supervisor, and Project Manager</i>
Site Kick-off Meeting	Once off meeting, 1st day working day after contract award	Venue to be communicated	<i>Engineer, Contractor, Supervisor, and Project Manager</i>
Risk Notification Meetings	As required	Venue to be communicated	<i>Engineer, Contractor, Supervisor, and Project Manager</i>
Contract Quality Assurance Meeting	After Contract Award, before Site Kick Off Meeting	Venue to be communicated	<i>Engineer, Contractor, Supervisor, Quality Assurance and Project Manager</i>
Inspections at Contractor's premises	After Quality Assurance Meeting at a time acceptable to <i>Employer</i> and Contractor	Contractor's Premises	<i>Engineer, Contractor, Supervisor, and Project Manager</i>
Site Safety Coordination Meeting	After Contract Placement before work commencement	Project Site	<i>Engineer, Contractor, Supervisor, Safety Risk Management and Project Manager</i>
Inspection Prior to Defects Date	After work completion before the defects date	Venue to be communicated	<i>Engineer, Contractor, Supervisor, and Project Manager</i>
Safety Health and Environmental Review Meeting	Weekly	Safety Officer's Office	<i>Principal Contractor, Contractor and sub-Contractor's competent persons as well as HPS Safety Officer</i>

Meetings of a specialist nature may be convened as specified elsewhere in this Works Information or if not so specified by persons and at times and locations to suit the Parties, the nature and the progress of the works. Records of these meetings shall be submitted to the *Project Manager* by the person convening the meeting within five days of the meeting.

All meetings shall be recorded using minutes or a register prepared and circulated by the person who convened the meeting. Such minutes or register shall not be used for the purpose of confirming actions or instructions under the contract as these shall be done separately by the person identified in the *conditions of contract* to carry out such actions or instructions.

2.2 Documentation control

At the site (Kick Off) meeting to be held, the documentation will be identified with an alpha numeric which indicates source, recipient, communication number etc.

All contractual communications will be in the form of properly compiled letters or forms attached to e-mails and not as a message in the e-mail itself.

The routing of all written communications will be between the *Project Manager* and the *Contractor* only, any agreements between the *Contractor* and any other person representing the *Employer* which has not been routed via the *Project Manager* will be null and void.

Any instructions written or verbal resulting in any changes to the duration, quality, cost of the project may only be received from the *Project Manager*.

2.3 Health and safety risk management

- The *Contractor* shall comply with the latest revision of Eskom Hendrina Power Station's Health, Safety and Environmental Specifications for Principal *Contractor*'s, HSPHO/058, requirements.
- HSPHO/078 is also a document to consider
- The *Contractor* ensures that all *Contractor* employees or appointees performing work are in suitable physical condition for the specific work that they will be performing. Alcohol consumption and the possession of intoxicating drink or substances are prohibited. The *Contractor* ensures that *Contractor* employees and appointees are sober and free of intoxicating substances.
- The *Contractor* attends the safety and health meetings which will be designated by the *Project Manager*.
- Owing to the nature of the project, the *Contractor* submits a fall protection plan.
- The *Contractor* identifies the capacity of waste and rubbish bins required for their use and requests these from the *Project Manager*.
- The *Contractor* ensures that the tools and equipment to be used in completing the Works are in sound condition and they are fit for purpose and they are not used outside of the limits of their capacity.
- The *Contractor* provides proof that tools and equipment used to complete the Works are fit for purpose upon request.
- The *Contractor* complies with the Occupational Health and Safety Act of 1993 as well as *Employer*'s safety and operating procedures.
- The *Contractor* undertakes to ensure that no *Contractor* or *sub-contractor* employees are transported on an open top vehicle without proper supports to protect the employees in the event of the vehicle overturning or colliding with another object
- The *Contractor* complies with Eskom Hendrina Power Station Hot Work Procedure HSSPM005 at all times.
- The *Contractor* complies with Eskom Hendrina Power Station Asbestos Procedure, HSPPOS/020.
- The *Contractor* complies with precipitating Safety and Health related regulations set by the *Employer* or Legislative authority.
- The *Contractor* provides induction training wherein all *Contractor* employees to be involved in completing the Project Works are familiarised with the nature and scope of the work to be completed and the risks associated with the Work. Proof of this training is made available to the *Employer* upon request.
- The *Contractor* ensures that a sufficient number of their employees are authorised as Responsible Persons, as defined in PSR document, prior to commencing with the Works.
- The *Contractor* ensures that the safety file is approved at least two weeks before work is expected to start in order to gain access to site.
- The Life Saving Rules as upheld by Hendrina Power Station are to be followed at all times with no exceptions.
- The STAR (Stop, Think, Act, Review) principles are adhered to at all times

2.4 Environmental constraints and management

The *Contractor* ensures the design and the project works do not contravene the requirements of the international standard ISO 14001:2004.

The *Contractor* familiarises themselves with the guidelines and stipulations of the following listed documents which are available on request.

- The Hendrina Power Station Environmental Policy (HSPPPIN005)
- The Identify & Update Environmental Aspects Procedure (HSPPIN024)
- The Objectives & Targets Procedure (HSPPIN026)
- The Environmental Procedure for Contractors HSPPIN/008.
- The Environmental Emergency Preparedness Procedure (HSPPIN032)
- The Prevention and Clean-up of Chemicals and Hydrocarbon Spill Procedure, HSPPON003.
- The Waste Management Procedure, HSPPIN003
- The Roles and Responsibilities Procedure, HSPPIN028
- The EMS Non-Conformance, Corrective and Preventative Action, HSPPIN034
- 32-95 Procedure for EMS?
- HSPPIN010 Water Management
- HSPHO/079 Reportable Data Integrity Indicators

Further to the abovementioned procedures

- The *Contractor* undertakes to take reasonable care to prevent harm to the Environment while completing the Works.
- The *Contractor* undertakes to make efficient use of water and electricity while completing the Works.
- The *Contractor* keeps a record of all Environmental incidents during their time on site and makes this available for inspection on request.
- All environmental incidents are reported to the *Project Manager* as soon as they occur.
- Emergency environmental occurrences are reported first to the emergency desk at 5485 and then to the *Project Manager*.
- The *Contractor* makes use of waste sorting bins to collect all waste generated during work. The *Employer* provides the bins upon request by the *Contractor*.
- The *Contractor* and *Contractor* employees attend Environmental training provided by the *Employer* and proves competency by taking a test at the end of the training.
- The *contractor* ensures that small metal filings and chips as well as plastic material from cut cables or conduits or equipment used for fixtures are collected separately and deposited in the correct bins provided by the *Employer*. These bins can be found within station perimeter and the *Contractor* takes care to locate the most convenient bin for depositing all waste.
- The *Contractor* complies to all relevant environmental legislation, as detailed in the latest version of the Hendrina Power Station Legal Register available from the *Employer's*.

2.5 Quality assurance requirements

- The *Contractor* complies with the requirements of the procedure Quality Requirements for Quality related items, HSPPA/006
- The *Contractor* compiles Quality Management/Control Plans and makes these available to the *Employer* in writing. The *Employer* influences these plans but liability for the validity and effectiveness of the plans remains with the *Contractor*.
- All Quality related data is submitted to the Documentation Centre at the end of the project.
- The *Contractor* complies with HSPPA/014 Control and Approval of Quality Control Plans (QCP) submitted by Contractors
- The *Contractor* familiarises themselves with the procedure HSPPA/013 Management of Non-Conformance.
- The *Contractor* is urged to have all Quality Control Plans approved at least two weeks before commencing with the Works to avoid delays. Work does not commence without quality assurance documentation.
- The *Contractor* and key *Contractor* employees attend training provided by the *Employer* and competence of attendees is confirmed by taking a test at the end of the training.
- The *Employer* may conduct random or scheduled inspections of the work site during work execution.

2.6 Programming constraints

- The *Contractor* uses the Microsoft Projects application for drawing up the programme.
- The programme is provided to the *Employer* in an editable version for the *Employer* to check and influence the programme.
- The programme supplied to the *Employer* clearly shows procurement, order, delivery, site establishment, installation and commissioning progress and milestones against time calendar dates for the project and issuing of as built documentation.
- The *Contractor* ensures that the programme is well defined and work is logically broken into activities which are further broken into tasks which are well defined and the required resources (staff, equipment, machinery, electrical power, tools e.t.c) are listed for each task.
- The *Contractor* ensures that the methodology of performing the work is clearly stated and sufficiently detailed to allow ease of interpretation.
- Work will occur around operational plant and this requires that execution occur in such a way as so to limit the effect of work on plant operation. This requirement will increase the number of activities involved in completing the work and this will affect the duration of certain deliverables. The programme shall be drawn to cater for the necessary work arounds of each installation area.
- Where work can be completed concurrently, e.g system programming, trenching and cabling in buildings can be done simultaneously, the work is completed concurrently.

2.7 Contractor's management, supervision and key people

The *Contractor's* provides a high level organogram of their structure.

The *Contractor* uses the NEC format of contracts with the sub-*Contractor* but is not obliged to do so.

The *Contractor*, where applicable, works in conjunction with Others and complies to requests made by Others, via the *Project Manager*, in matters relating to the Works.

The *Contractor* defines and submits to the *Employer* a clear process for the management of situations where the work done by the *Contractor* or sub-contractor(s) does not conform to the *Employer's* specification or intent.

A *Contractor* representative is appointed to regularly communicate with the *Project Manager*.

The *Contractor* provides people to act on their behalf in terms of the requirements of the Plant Safety Regulations. This includes Responsible Persons as well as Authorised Supervisors.

2.8 Invoicing and payment

Within one week of receiving a payment certificate from the *Service Manager* in terms of core clause 51.1, the *Contractor* provides the *Employer* with a tax invoice showing the amount due for payment equal to that stated in the *Service Manager's* payment certificate.

The *Contractor* shall address the tax invoice to

Eskom Holdings SOC Limited
Hendrina Power Station
Private Bag X 1003
Pullenshope
1096

and include on each invoice the following information:

- Name and address of the *Contractor* and the *Service Manager*;
- The contract number and title;
- *Contractor's* VAT registration number;
- The *Employer's* VAT registration number 4740101508;
- Description of service provided for each item invoiced based on the Price List;
- Total amount invoiced excluding VAT, the VAT and the invoiced amount including VAT;

2.9 Insurance provided by the *Employer*

The *Contractor* reads the ECC3 Core Clause 87.1 regarding insurance provided by the *Employer*. If the *Contractor* requires more information regarding the claims procedure and the terms thereof, the *Project Manager* can be contacted.

2.10 Contract change management

There are no additional requirements to those set out in ECC3 Section 6.

2.11 Provision of bonds and guarantees

N/A

2.12 Records of Defined Cost, payments & assessments of compensation events to be kept by the *Contractor*

Records of all cost components, payments made and received as part of normal work execution or compensation events are kept by the *Contractor*. These records are made available to the *Employer* on request.

2.13 Training workshops and technology transfer

In order to ensure that Hendrina personnel are able to utilise and maintain the entire PA system (old and new components), the *Contractor* arranges and provides for the following types of training.

2.13.1 Upfront Training

The *Contractor* arranges training for Hendrina personnel. Training is presented by either the OEM, Bosch Security Systems, or an OEM approved training provider. Training is presented not later than two months after work begins. This up-front training covers the following topics.

1. Bosch Praesideo 3.5 (or later) or a new PA system Public Address and Voice Alarm System
2. Overview of the Installed equipment (speakers, cabling, conduits, brackets etc). Essentially the *Contractor* gives a list and an explanation of the technology choices in detail.
3. System Drawing Familiarisation (design drawings and not the as-built drawings)

2.13.2 Engineering and Maintenance Training

This training is presented by the *Contractor* at least two weeks before completion. The topics include, amongst others.

- Basic functionality of the system
- FMECA for the system with emphasis on the most likely failure modes
- Basic Component Design (the installed equipment) training
- System Administration (Removal, addition or re-configuration of system components)
- Disaster Recovery
- Backing up of system
- Storage requirements of system components (Spares storage)
- Handling requirements of system components (ESD prevention, vibration or shock tolerance)
- System layout (physical layout)
- System Maintenance (Cleaning, Back-ups, battery changes)

2.13.3 Operating Department

This training is presented at least two weeks before any part of the system is operational. This gives enough time for familiarisation.

- System End User training
- Advanced functionality of the system
- Best practices with regards to making announcements (Voice training)
- System Health checking and fault log viewing
- Optimal use of Control and Indicating Equipment
- Response procedure to faults
- Operating (User's) manual to be supplied

3 Engineering and the *Contractor*'s design

3.1 *Employer's design*

A Public Address system is currently installed at Hendrina. This system is the Bosch Praesideo 3.5 Public Address and Voice Alarm system. It covers a significant part of the station but it does not cover all the areas within the station perimeter.

- a) The current system comprises the following:
- 5 amplifier racks that are linked via fibre cable. These racks are located in 5 buildings, viz,
 - GigaWatt Park (GWP) building
 - Probuy building
 - Switch Operating Building (SOR)
 - Outages building
 - Procurement building
- b) From each of the above buildings, amplifiers are assigned to speakers that feeds the adjacent areas (buildings, workshops and the plant)
- c) The announcements are done from either the GW Park building or at the Switch Operating building.
- d) The additional amplifiers supplying the newly installed speakers will be installed from some of these amplifier racks mentioned above.
- e) The connection between each Amplifier rack to the other Amplifier rack is via a fibre cable and eventually forming a ring.
- f) Although the amplifier was designed as to comply with the IEC standard, the current installation does not fully comply with the IEC and some of Eskom Standards. Before the final design for the PA xtension is approved, a waiver will be considered on certain aspects of the current installation.
- g) On each building mentioned above, the amplifiers are connected as shown on the following pages:

Amplifier Cubicle – SOR Building

The amplifiers on this cubicle supply sound to the following areas:

- Unit 1-5 Turbine Floor,
- Unit 6-10 Turbine Floor,
- Unit 1-5 Operator Control Room,
- Unit 6-10 Operator Control Room,
- Coal Laboratory, OSSD & Medical Centre Buildings and
- SOR building.

Amplifier Cubicle – Probuy Building

The amplifiers on this cubicle supply sound to the following areas:

- Probuy Building,
- Engineering Office Building and
- Umcebo & Outage Boardroom Building.

Amplifier Cubicle – GWP Building

The amplifiers on this cubicle supply sound to the following areas:

- Gigawatt Building,
- North Security gate Offices,
- Maintenance Training Building and
- Safety Office Building.

Amplifier Cubicle – Outages Building

The amplifiers on this cubicle supply sound to the following areas:

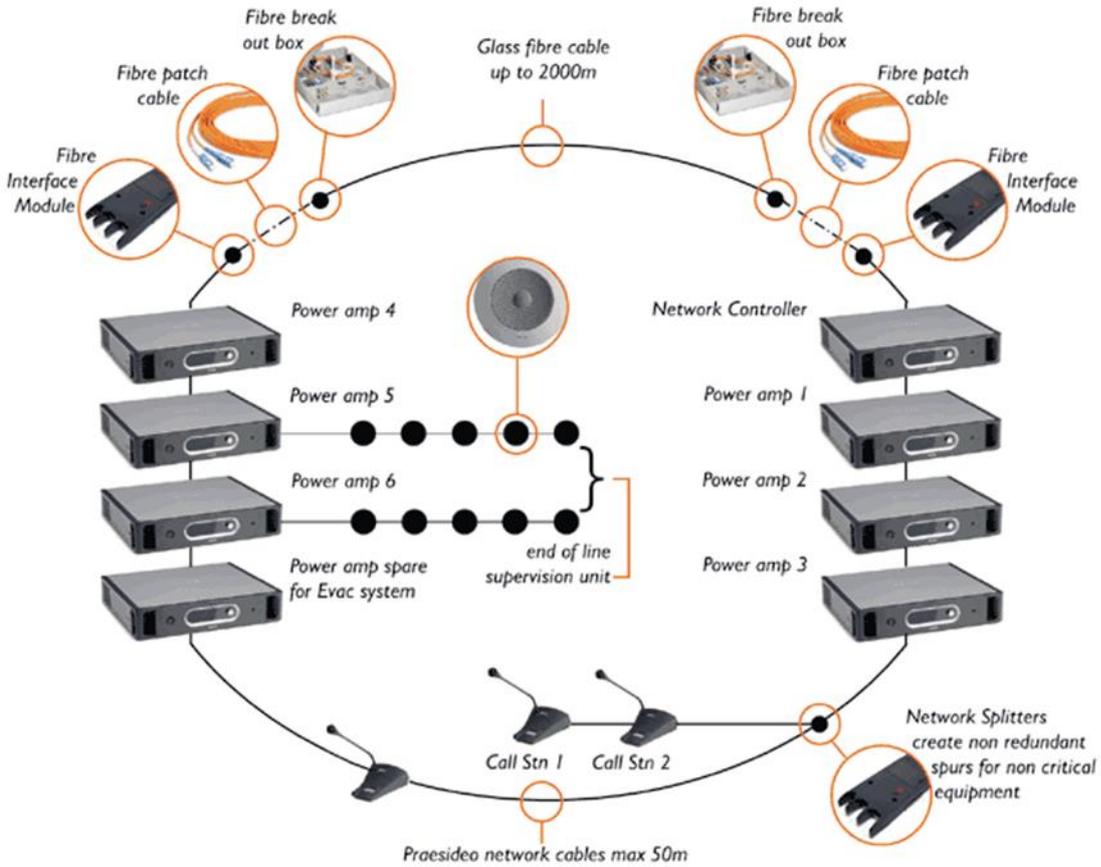
- Electrical Maintenance Department workshop
- Outages Building
- Canteen building

Amplifier Cubicle – Stores Building

The amplifiers on this cubicle supply sound to the following areas:

- MSSD workshop
- Welding & Fabrication workshop
- Stores Building
- Njabula Hall

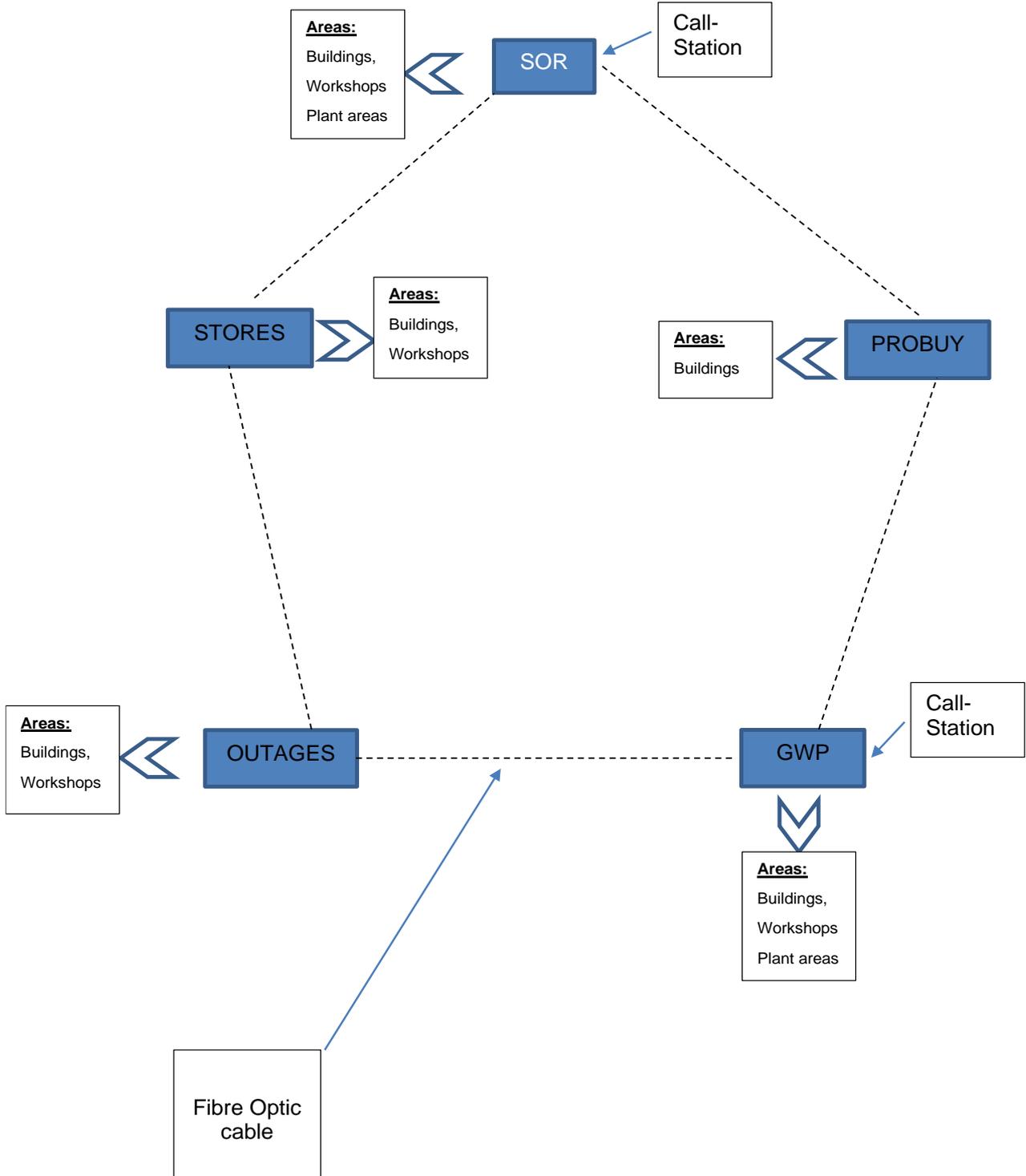
(i) General Layout 1



(ii) General Layout 2



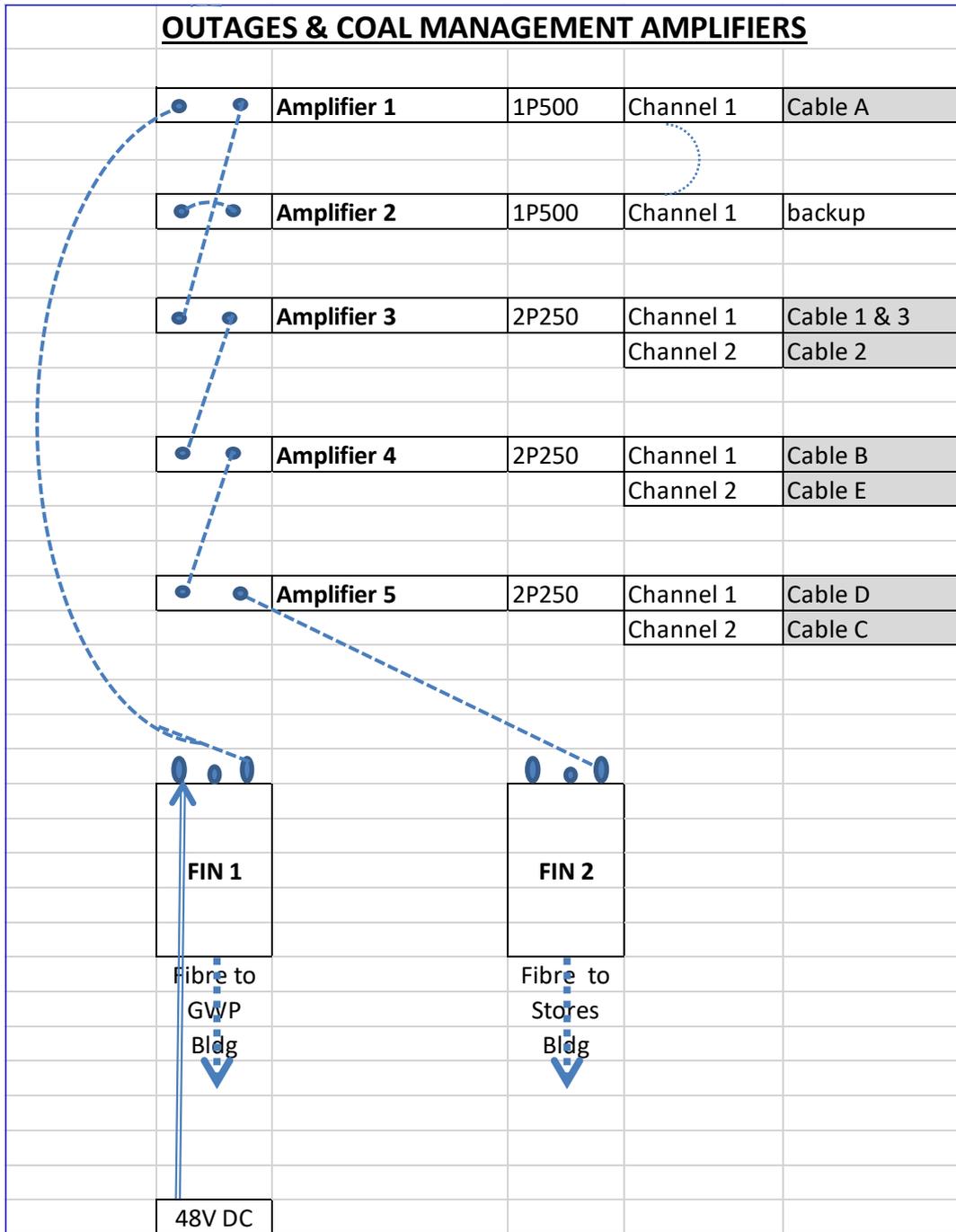
(iii) General Layout 3

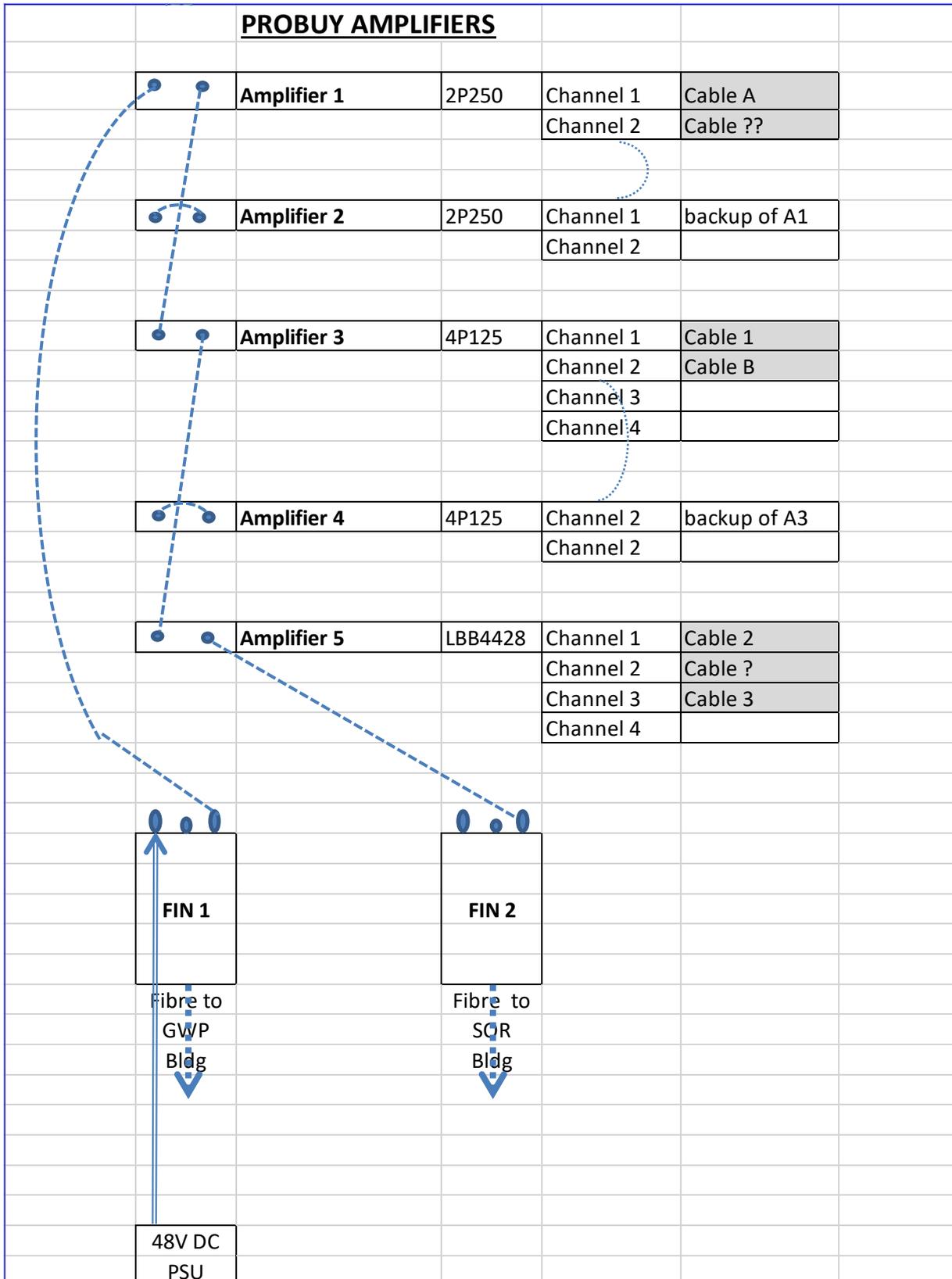


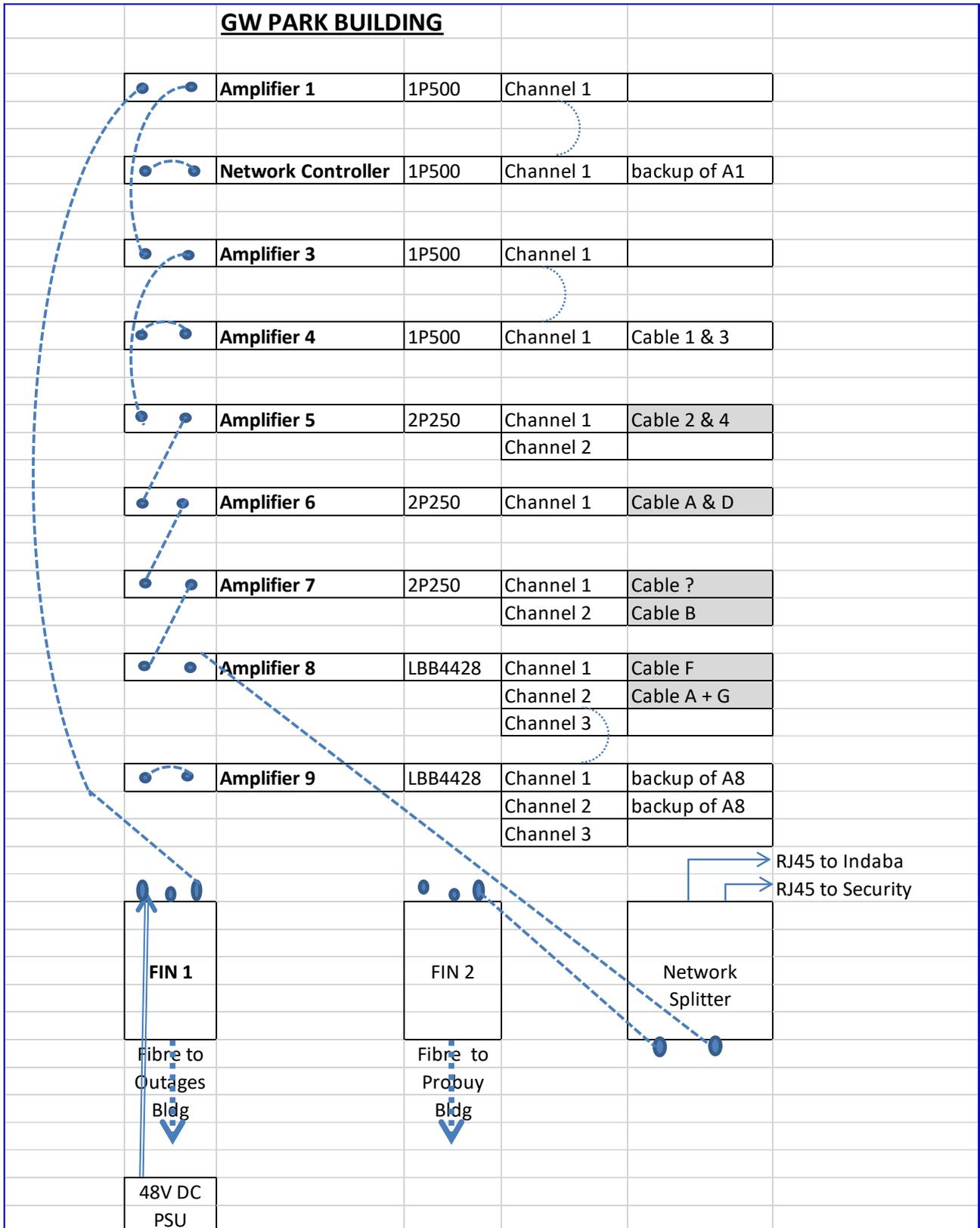
(i) Bosch Equipment Types Used

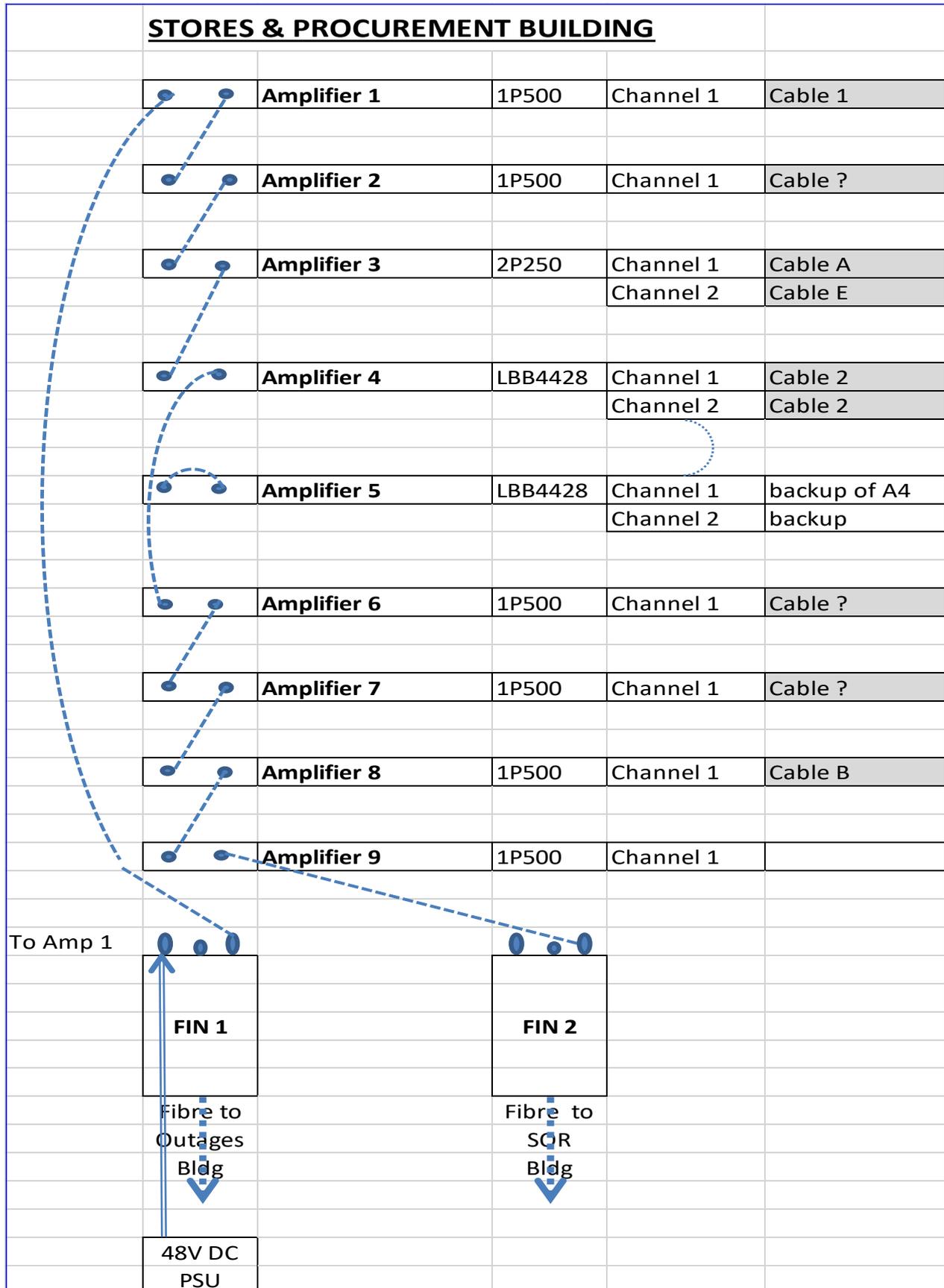
Call stations	GWP	Bosch	@ GWP
	SOR	Bosch	@SOR
PA Amplifiers:	1P500	Bosch	@ Various Amp Racks
	2P250	Bosch	@ Various Amp Racks
	LBB4428	Bosch	@ Various Amp Racks
FIN		Fibre Interface Modules	@ All Amplifier Racks
Speakers	Cabinet	Bosch 3013/01	In Buildings Plant & Workshops
	Ceiling	Bosch LC1-WMO6E8	
	Horns 1	Bosch 3428	
	Horns 2	Bosch 3482	

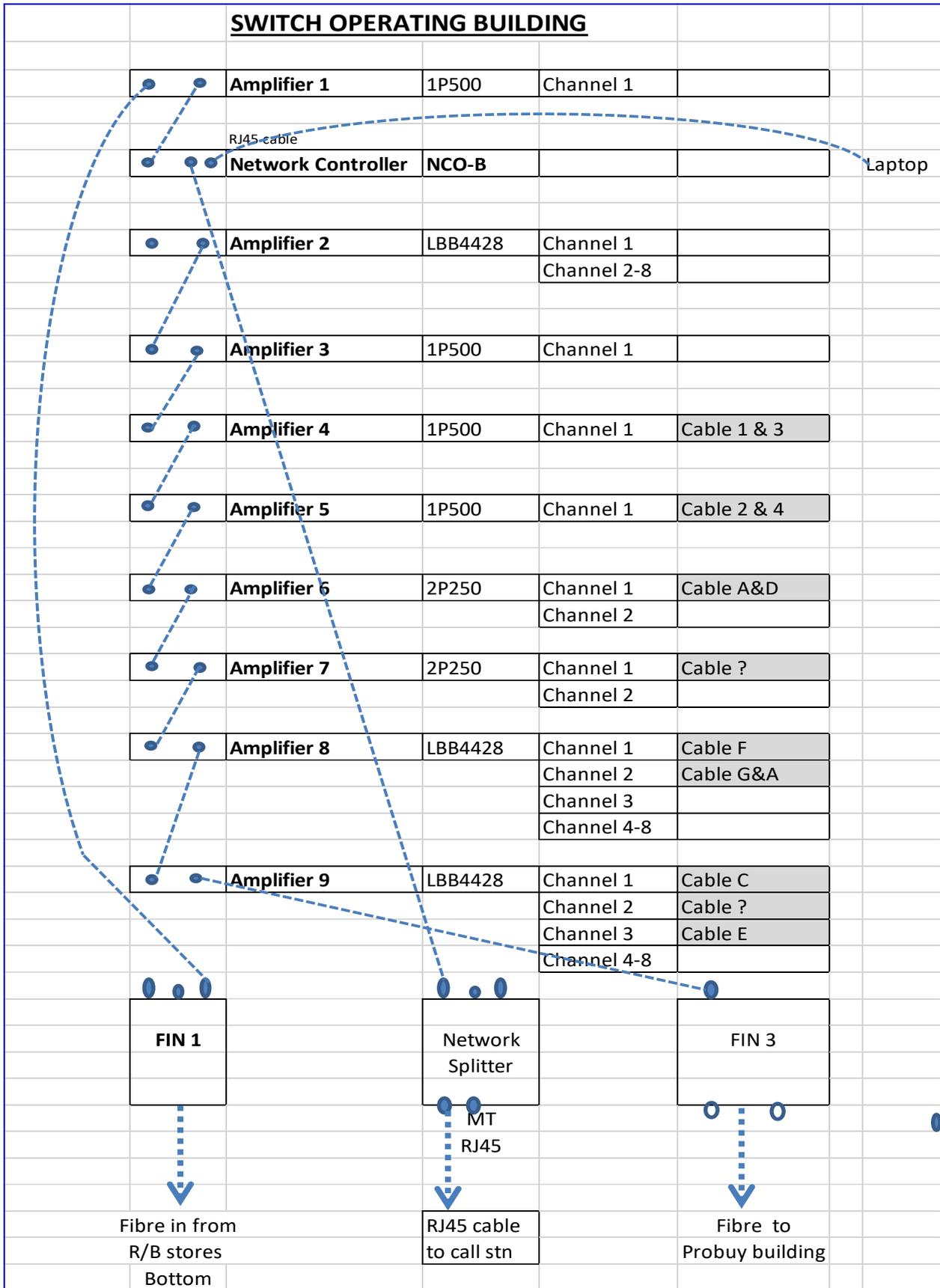
Amplifier Cubicles Connection Skematic











3.2 Parts of the works which the Contractor is to design

3.2.1 Areas for the new PA system

The Contractor supplies and installs the amplifiers and speakers to supply the following areas:

- South Gate Security Building
- South Gate Storage Facilities (x3)
- South Gate Sulzer Workshop and Offices
- South Gate Contractor Site Area
- Plant Performance Offices
- 2 x White Double Storey Park Homes (Top and Bottom)
- Roshcon Ash Workshop
- Ash Booster Pump House
- Coal Staithe (x4)
- South Under-staithe Conveyors
- North Under-staithe Conveyors
- Roshcon Coal Office
- Coal Sampling Office
- Coal Plant Control Room next to conveyor 4A
- Roshcon Coal Workshop at the Coal Stockyard
- Coal truck weighbridge and adjacent park-homes
- Tech and Ops Workshops
- Car Wash building near South security gate
- Mill Workshop next to the Engineering Offices Building
- Compressor Plant and adjacent toilets
- Turbine Hall Basement 1-10
- Units 1-10 Turbine SPO Cabins
- North & South Ash Plant Offices (Basement)
- Basement Toilets
- Turbine Floor boiler side Toilets
- Oil Burner Workshop
- Workshop between Toilets 2 and 3
- Outside plant offices in front of Boiler 5
- Station Cleaners Change Room
- Tea Room building, MMD
- Unit 6-10 SPO Shell House
- Units 1-10 Coal Bunkers
- North & South Coal Conveyor Inclines
- **Units 6-10 Control Room Offices**
- Shift Supervisor Ash Plant Office (North)
- PO Outside Plant Cabins (North and South)
- Contractor's yard next to the Canteen
- Fuel Oil Pump Houses (North and South)
- Park Home Behind Medical Centre
- ERI Offices next to the Canteen
- South Helipad
- North Assembly point

The above speakers shall be fed from some of the amplifiers that are in 5 amplifier racks in 5 buildings mentioned in 3.1 above, that is:

- o The GW Park building
- o Probuy building
- o Switch Operating Building
- o Outages building
- o Procurement building

On some of the buildings, existing amplifiers will be used to supply new speakers.

In most cases, new amplifiers must be purchased and installed on the existing amplifier racks. The new amplifiers will have to be tied to the existing audio network so that the announcements from the existing system can be sent to the new areas.

3.2.2 Cable Lengths, etc for the works

The following tables shows the areas, the estimated distances, trenching requirements and number of amplifiers for the areas where additional PA system is required for the works. Please note the following:

- Horn1 :- LBC 3482/00
- Horn2- LBC 3428/00
- Cabinet:- LBC 3018/01
- Amplifier: – PRS-1P500

1. FED FROM SOR AMPLIFIER CUBICLES

1.1 South Gate

From	To	Distance (m)	Trenching (m)	Conduit	Speakers @ destination	Mounting Poles
SOR Amplifier A	2 Parkhomes	362	-	362	4 Cabinet 2 horn1	-
2 Parkhomes	Howden Workshops	238	50	238	4 horn1	2
Howden Workshops	South Gate	100	100	-	2 horn1	2

1.2 Units 1-5 Basement

From	To	Distance (m)	Trenching (m)	Conduit (m)	Speakers @ destination	Mounting Poles
Amplifier B	Basement Midway	40	-	40	-	-
Basement Midway	Unit 1	260	-	260	1 Cabinet (toilet) 10 horn2	-
Unit 3&4 North transformer wall	North Ash Pump Cabin	80	-	80	1 Cabinet 1 horn2	-
North transformer wall	Condenser SPO Cabins (5 off)	45 x 5 = 225m	-	45 x 5 = 225m	(1 cabinet & 1 horn2) x 5	-

1.3 Unit 6-10 Basement

From	To	Distance (m)	Trenching (m)	Conduit (m)	Speakers @ destination	Mounting Poles
Amplifier C	Basement Midway	40	-	40	-	-
Basement Midway	Unit 10	260	-	260	1 Cabinet (toilet) 10 horn2	-
Unit 7&8 South transformer wall	South Ash Pump Cabin	80	80	80	1 Cabinet 1 horn2	-
South transformer wall	Condenser SPO Cabins (5 off)	45 x 5 = 225m	-	45 x 5 = 225m	(1 cabinet & 1 horn2) x 5	-

1.4 Unit 1-5 Coal Bunkers, North Incline & Turbine Floor Toilets 1-5

From	To	Distance (m)	Trenching (m)	Conduit (m)	Speakers @ destination	Mounting Poles
Amplifier D	Coal bunkers Midway	150	-	150	-	-
Coal bunkers Midway	Unit 1	200	-	200	10 horn2	-
Turbine Floor Midway (Next to U6)	U1-5 Turbine Floor Toilets	275	-	275	6 horn2	BT6, BT3, BT2, OilBrn, Babcock
Turbine Floor Midway (Next to U6)	Shift Supervisor CW Plant Offices	100	-	100	5 Cabinets	-
South wall middle	Bottom North Incline conveyors	230	-	230	5 horn2	(Incl FO Pmphse)

1.5 Unit 6-10 Coal Bunkers, South Inclines & Turbine Floor Toilets 6-10

From	To	Distance (m)	Trenching (m)	Conduit (m)	Speakers @ destination	Mounting Poles
Amplifier E	Coal bunker Midway	150	-	150	-	-
Coal bunker Midway	Unit 10 bunker	200	-	200	10 horn2	-
Turbine Floor Midway	Station Cleaner (Next to U6)	80	-	80	3 horn2	-
Station Cleaner (Next to U6)	U6-10 Turbine Floor Toilets	80	-	80	2 horn2	BT8, BT12
South wall middle	Bottom South Incline conveyors	230	-	230	5 horn2	(incl FO Pmphse)

2. FED FROM STORES AMPLIFIER CUBICLES

2.1 South Contractor's Yard

From	To	Distance (m)	Trenching (m)	Conduit (m)	Speakers @ destination	Mounting Poles/comment
Amplifier (Existing)	Stores Building Exit	100		100		-
Building Exit	Njabula Hall	150	100	50		-
Njabula Hall	Sandblasting Building	60	60		2 Horn1	(South Helipad)
Njabula Hall	Contractor's site	300 +100	300+100		12 Horn1	-

2.2 Compressors

From	To	Distance (m)	Trenching (m)	Conduit (m)	Speakers @ destination	Mounting Poles
Stores Building Amp (existing)	Compressors & Toilets	60	30	30	3 Horn1	-

3. FED FROM OUTAGES AMPLIFIER CUBICLES

3.1 Coal Under-Staithe 1, 2, 3 & 4 & Rotek Ash Workshop

From	To	Distance (m)	Trenching (m)	Conduit (m)	Speakers @ destination	Mounting Poles/comments
Amplifier AA	Building exit	25	-	-	-	-
Building exit	Pipe trench	16	16	-	-	-
Pipe trench	Incline	30	30	-	-	-
Incline	Under staithe entrance	83+4		83+4	-	-
Under staithe entrance	Staithe 1 & 3	100		100	4 horn2	-
Under staithe entrance	Staithe 2 & 4	160		160	5 horn2	Incl Toilets
Staithe 3	Rotek Ash Workshop	200	100	-	4 horn2	-

3.2 Coal Over-Staithe & Coal Workshops

From	To	Distance (m)	Trenching (m)	Conduit (m)	Speakers @ destination	Mounting Poles
Amplifier BB	Building exit	25	-	-	-	-
Building exit	Pipe trench	16	16	-	-	-
Pipe trench	Incline	30	30	-	-	-
Incline	Under staithe entrance			83+4	-	-
Under staithe entrance	Staithe 2 & 4	80+100		180	4 horn2	-
Under staithe entrance	Staithe 1 & 3	80+150		230	4 horn2	-
Staithe 3 (eo3)	Rotek – Coal Workshop	200	100	100	4 horn1	-
Roshcon Workshops	Coal truck gate	300	300	-	2 horn1	1

4. FED FROM Gigawatt Park AMPLIFIER CUBICLES

From	To	Distance (m)	Trenching (m)	Conduit	Speakers @ destination	Mounting Poles
Building exit West (existing)	Car Wash	110	110	-	2 horn1	1
Building exit North	Tech & Ops	310	310	-	4 horn1	-

5. FED FROM PROBUY AMPLIFIER CUBICLES

From	To	Distance (m)	Trenching (m)	Conduit (m)	Speakers @ destination	Mounting Poles
Engineering Offices Bldg (existing)	Mill Maintenance Workshop	20	3	10	2 horn1	-

6. FED FROM OUTAGES AMPLIFIER CUBICLES

From	To	Distance (m)	Trenching (m)	Conduit	Speakers @ destination	Mounting Poles
Canteen (existing)	ERI offices	50	50	-	2 horn1	1

7. FED FROM OUTAGES AMPLIFIER CUBICLES

From	To	Distance (m)	Trenching (m)	Conduit	Speakers @ destination	Mounting Poles
Welding & Fabrication W/S (existing)	MMD Tea room	20	20	-	1 cabinet 1 horn1	-

8. FED FROM GWP AMPLIFIER CUBICLES

From	To	Distance (m)	Trenching (m)	Conduit (m)	Speakers @ destination	Mounting Poles
Safety Island Building (existing)	North Assembly Point	110	83	11	4 horn1	-

3.2.3 Bill of Quantities

The summary of the Bill of materials as mentioned above has been summarised as shown below:

	Item	Specification	Quantity
1	Poles (number)	3m high x 25mm OD hollow, Stainless Steel Pipe	4
2	Amplifiers (number)	Bosch, PRS 1P500	7
3	Horn1 speakers (number)	Bosch, LBC 3482/00	36
4	Horn2 speakers (number)	Bosch, LBC 3428/01	104
5	Cabinet speakers	Bosch, 3018/01	19

	(number)		
6	Speaker Cable (m)	FR120, 1.5mm ²	6 681
7	Conduit (m)	Galvanised Steel conduit, 20mm diameter	4 764
8	Amplifier cubicle (number)	As in section 3.2.4 (ii)	1
9	Trenching (m)	500mm deep trench	1 935
10	Piping (m)	Black Poly-ethylene, 20mm, (outer 24mm, inner 21mm)	1 935

3.2.4 Public Address System specifications:

i. Power Supplies

The following amplifier cubicles do not have amplifier back-up power supplies.

- Probuy
- SOR
- Boiler Eng
- Stores
- GWP

Hence, the Contractor must supply and install the UPS and standby batteries to meet the following criteria:

- (a) The amplifier cubicles shall be equipped with a UPS to supply power to the cubicle amplifiers to cater for a standby period of 24 hours and for a continuous broadcast of 30 minutes at full power.
- (b) The UPS type shall be rack mounted and preferably be made by Tescom.
- (c) An additional battery bank, preferably by Tescom to be connected to the UPS to ensure that the standby time is archived as mentioned in (a) above.
- (d) The minimum life-span of the batteries shall be 5-10 years.
- (e) The system must be capable of keeping the standby batteries in an optimal condition.
- (f) The GWP building Amplifier rack UPS must also be replaced since it has been installed more than 10 years ago.

ii. Equipment Housing

If an additional housing is required, that new housing must meeting the following requirements:

- (a) All system equipment shall be housed in 600mm x 600mm floor-standing cabinets.
- (b) The housing shall be constructed of steel and be powder coated.
- (c) The housing shall include the option of castors with braking mechanisms on all wheels.
- (d) Housing shall have a smoked glass door in front and a steel access door at the rear.
- (e) Both, front and rear access doors must be lockable and be supplied with spare keys.
- (f) Housing shall have a 4-way fan tray on the inside of the roof of the housing
- (g) The height of the equipment housing shall be adequate to ensure that there is a minimum ventilation space of 1U between the components housed in it.

iii. Cabling

- (a) All fire-rated speaker equipment must comply with EN54-54 specifications.
- (b) Speakers should have ceramic terminal blocks, thermal fuses, and metal fire-dome where applicable.
- (c) Speaker cabling shall be a minimum PH120 class as per EN50200/SANS10139.
- (d) Cabling may be of the indoor and outdoor use application and must have a minimum cross-sectional core of 1.5mm.

iv. General Cabling Requirements

As a minimum, both indoor and outdoor, PH120 speaker cables shall be used.

- a) All cabling is required to be protected against mechanical damage, chemicals, dust build-up and heat as per Eskom Standard Document: 240-56227443 Requirements for Control and Power Cables for Power Stations Standard. This cable standard will also apply to Eskom Facilities other than Power Stations.
- b) Cables are required to only be terminated in instruments, junction boxes or other approved equipment.
- c) No intermediate cable joints are permitted.
- d) For the coal staithes and coal bunker areas, there will be suspended coal dust in environment. Proper sealing of speakers and junction boxes (must be IP65) shall be observed as not to cause fires from the exposed circuits.
- e) Cables are required to be routed separately from electrical power cables and crossovers that bring signal and power cables into close proximity shall be made at right angles.
- f) Where possible, existing cable racking and routes shall be re-used else new racking and conduits are provided for by the *Contractor*.
- g) On Eskom premises where specific cable numbering conventions are in force, the *Contractor* follows these conventions otherwise the *Contractor* proposes a coding system/structure for the approval of the *Employer*

3.2.5 Performing the Works

In performing the works the *Contractor* performs the following:

- a) Assesses the condition of the existing system, consults with the *Employer* regarding the faults and performs repairs as agreed upon with the *Employer*.
- b) Assesses the degree of conformance of the existing PA system to the Eskom Public Address System standard 240-64720986. All deviations are listed and an action plan for correction is drawn up. The *Contractor* then consults with the *Employer* regarding the critical deviations to correct and implements the modified plan.
- c) Acoustical analysis of the areas where the extension system will be installed. A national or international standard, approved by the *Employer*, shall be followed for this activity. The *Contractor* submits proposals for the acoustical analysis standard to the *Employer* for acceptance.

- d) Determination of the speaker specifications, layout (installation point of each speaker) and densities for the extension system. This activity is informed by the result of the acoustical analysis and aims at guaranteeing the intelligibility of voice messages at all points of the extension system over the normal range of environmental conditions experienced in these areas. The limits for speech intelligibility are stated as part of the design output.
- e) Proposal of installation points for PA system plant or materials (i.e racks, amplifiers, network equipment etc). *Employer* approves the installation points of this equipment. This does not include the installation points of the speakers.
- f) Cable selections and route determination. The speaker cabling used in the existing system is preferred for use in the extension system but where the *Contractor* can prove value in using cabling of a different specification, the *Employer* reviews and approves the new specification. The *Contractor* thoroughly familiarises themselves with each installation area prior to devising the cable routes.
- g) Design of the system extension system to comply with the Eskom PA system standard. Concessions can be discussed with the *Employer* where compliance is not achieved. The *Employer* decides whether concessions are to be approved or not.
- h) Selection or design of all equipment as per *Employer's* specification, where applicable. This equipment includes junction boxes, equipment racks & cables. The *Contractor* procures and supplies this equipment for the purpose of the project.
- i) The acquisition, delivery and installation of all equipment and materials.
- j) All trenching, digging, cable laying, cable installation, cable joining, cable joint markings.
- k) All civil work required to complete the works.
- l) All mechanical work required to complete the works.
- m) All electrical work required to complete the works. All electrical work is tested and COCs are issued before handover.
- n) All Praesideo system programming, engineering and administration during the course of the project.
- o) Provide software licensing and firmware update schedule for all the components. This makes it possible for the *Employer* to plan for system maintenance.
- p) Provision of design and as built drawings.
- q) Update relevant *Employer* drawings

3.2.6 Installation other Public Address technologies

If the PA system extension is done using a different Amplifier manufacturer other than Bosch, the following must be noted:

- a) A different amplifier (non-Bosch) must be interfaceable to the existing Bosch amplifier system. That means that all the messages from the Bosch system must be relay-able to the other system.
- b) All requirements (power supplies, etc) must be specified of the new Amplifier manufacturer
- c) Specify all specifications that the new amplifier comply to,
- d) All other relevant information about a different amplifier must be submitted with the tender like how old is it in the market, how many installations are currently using it, serviceability, etc
- e) The Contractor to submit the methodology showing how this different amplifier will be interfaced and indicate on how the new zones will be addressed.

- f) If there is no guarantee that the new amplifier system can interface with Bosch, an option to replace the Bosch PA system with a new PA amplifier and its accessories must be provided. It will be preferable if the current speakers and cabling is utilised.
- g) The Contractor must identify and repair any cable faults so that the entire PA system operates faultlessly.

3.3 Procedure for submission and acceptance of *Contractor's* design

- The *Contractor* submits an initial design (in electronic and one hard copy format) and the *Contractor* gives a presentation of the design (in Microsoft Powerpoint).
- The *Employer* analyses the design for a period of up to two weeks.
- The *Contractor* and *Employer* then hold a clarification and negotiation meeting regarding the design and the *Contractor* makes agreed upon changes to the design.
- The *Contractor* submits the final design to the *Employer*. This design reflects all of the changes that were agreed upon. This design is used for implementation.

3.4 Other requirements of the *Contractor's* design

All drawings are created and presented in the Micro-station SE software.

3.5 Use of *Contractor's* design

The *Contractor* can use elements or the entirety of the Contractor's design in future work.

3.6 Design of Equipment

- The *Contractor* supplies the equipment to be used in the project works and carries all liability for the use of such equipment. This includes common off-the-shelf equipment as well as any novel or standard equipment that the *Contractor* has designed and manufactured.
- Prior to using such equipment, the *Contractor* must obtain written approval from the *Employer*. The acceptance or rejection of the equipment does not remove Contractor's liability for ensuring quality of work is maintained.

3.7 Equipment required to be included in the works

- Personal protective equipment suitable for each activity or task shall be used. Risk assessments for the activities are used to inform the selection of the PPE.
- The *Contractor* provides all tools and equipment required to complete the works with the exception of scaffolding.

3.8 As-built drawings, operating manuals and maintenance schedules

- a) Prior to project certification of completion, the *Contractor* supplies the as-built drawings of the plant.
- b) Operating and maintenance manuals for the system are supplied prior to completion being certified.
- c) Strip down and assembly documents are supplied by the *Contractor* before project completion.
- d) Documentation which details the maintenance requirements and procedures (maintenance manuals) are supplied by the *Contractor* before project completion. Test and commissioning procedures are included in the maintenance documentation.

- e) All design drawings to be drawn up using Micro-station SE software. Since the *Employer* does not make this software available to the Contractor, it is the Contractor's responsibility to source this software. Detailed requirements for the format of the drawings (e.g title blocks) will be made available to the *Contractor* on request.
- f) All the drawings submitted by the *Contractor* to the *Employer* comply with the Eskom Drawing Standard GGS 0316 format with graphical symbols in the DIN 2481 format.
- g) Drawings comply with GSE/94/Y004.
- h) All documentation to be supplied in digital and hardcopy format with one copy in digital and four hardcopies for each document.
- i) The document FESK136, *Document Template*, is used as template for all documents to be submitted to the *Employer*.
- j) The *Contractor* is expected to update all existing plant drawings to reflect the changes made by the execution of this project. The list of drawings to be updated is given in a later section of this document. Project will not be accepted as complete before the *Employer* has received and approved the as-built drawings of the plant.
- k) As a minimum each plant system has the following drawings:
 - Layout Drawings
 - Equipment schedule
 - Cable connection diagrams
 - Termination diagrams
 - Schematic diagrams
 - Single line diagrams
 - Cable Schedule
 - Assembly Drawings
 - Isometric Drawings
- l) The *Contractor* manufactures and installs the plant labels for identification of the installed equipment and systems. The list of labels, in the KKS system, will be provided by the *Employer*. Labelling complies with the requirement of the standard HSSSPA/006 *Hendrina Power Station Label Specification*.
- m) The Works are not deemed complete if the plant labels have not been applied.

4 Procurement

4.1 People

4.1.1 Minimum requirements of people employed on the Site

The *Contractor* ensures that their personnel are competent and able to carry out the work they are appointed to execute. Certificates recognised by applicable South African accreditation bodies to prove the competence of the personnel to execute work of the nature specified in the works information are submitted by the *Contractor* prior to work commencement.

Where accreditation is not available, details of experience with similar work is submitted. List of references are also made available.

4.1.2 BBBEE and preferencing scheme

As per *Employer's* requirements.

4.1.3 SD&L (Supplier Development and Localisation)

As per SD&L Requirement

4.2 Subcontracting

4.2.1 Preferred sub-Contractors

Proven competency in the nature of work they are appointed to execute is required. The *Contractor* submits documented proof of sub-Contractors' prior experience with executing the work in question.

4.2.2 Subcontract documentation, and assessment of subcontract tenders

The *Contractor* makes use of an NEC contract between the *Contractor* and the sub-Contractors.

4.2.3 Limitations on subcontracting

There are no specific requirements.

4.2.4 Attendance on sub-Contractors

There are no specific requirements.

4.3 Plant and Materials

4.3.1 Quality

- Quality assurance documents for all materials, equipment and plant used under the contract are submitted prior to installation. Any component without quality documentation is not used in completing the Works. Components which have been purchased by the *Contractor* but do not have the required quality documentation are removed from site and replaced with identical components whose quality documentation is available. The removal happens at the Contractor's cost.
- Quality documentation must make reference to the part and serial numbers of the components, equipment, plant or materials and states what standards were used to test for the quality of the items.
- Storage and transportation conditions of all items (plant, materials, equipment e.t.c) used in the Works are provided to the *Employer* prior to these items being purchased or acquired by the Contractor.
- The *Employer* may wish to amend some of the quality requirements during the contract, the additional requirements are adhered to by the Contractor.
- The *Contractor* responds to notifications of defect within two days of receiving the notification.
- If, after completion before Defects date, any installed component exhibits a high failure rate the *Contractor* promptly removes all installed components of the same type and replaces them with new components of similar function and of the same type unless if the failures are due to inherent unsuitability of components of that type, in that case a different type is installed. This is at the Contractor's cost.
- Full specifications of all installed materials are provided by the *Contractor*.
- The *Contractor* undertakes to utilise materials and components which are of good quality. Robust and fit for purpose equipment and materials are used.
- Required system maintenance is kept to a minimum by designing the system accordingly.

4.3.2 Plant & Materials provided "free issue" by the *Employer*

The *Employer* supplies all scaffolding required for executing the project works at no cost to the Contractor. All other tools, Plant and Materials are provided by the Contractor.

4.3.3 *Contractor*'s procurement of Plant and Materials

- No special procurement requirements are specified for the Contractor
- The *Contractor* acquires all plant and materials, with the exception of those stated in the last section, for executing the project.
- Acquisition, transportation and storage of the required material are the responsibilities of the Contractor. Materials are also delivered to site by the Contractor. Storage of materials both on site and at the Contractor's premises prior to installation is the responsibility of the *Contractor*.

4.3.4 Spares and consumables

- The *Contractor* provides a comprehensive list of spares required for the system. A detailed description of each item on the list is expected including but not limited to part numbers, manufacturer and distributor, physical description, pricing and ordering information.
- Spares for the commissioning phase as well as the defects period are supplied by the Contractor.
- The availability of spares is expected over the negotiated life time of the system.

4.4 Tests and inspections before delivery

- The *Employer* inspects the materials and equipment for installation at the *Contractor's* premises before such equipment is brought on site. The outcome of these inspections do not alter in any way the *Contractor's* liability for delivering a quality system upon project completion.
- Supporting documentation (e.g certificates of compliance to standards, quality assurance documentation, calibration certificates amongst others) regarding the equipment is made available at the time of these inspections.
- Custody transfer of equipment and materials occurs at the time of installation at the *Employer's* site. Custody transfers from the *Contractor* to the *Employer*.

4.5 Marking Plant and Materials outside the Working Areas

All equipment and materials MUST be marked as follows: Hendrina Power Station, contract number

The name of the *Contractor* and the contact details of *Contractor* is indicated clearly and visibly using robust markings.

4.6 Contractor's Equipment (including temporary works).

- The *Contractor* will supply the *Employer* with a list of equipment to be used in the project works for the *Employer's* approval.

5 Construction

5.1 Temporary works, Site services & construction constraints

5.1.1 *Employer's* Site entry and security control, permits, and Site regulations

- The *Contractor* complies with the safety and health requirements before access to site is granted.
- The *Contractor* provides information to the *Employer* who arranges site access permits at Protective Services for each individual employed by the *Contractor*. This information is provided at least two weeks before work begins.
- The *Contractor* takes note that ESKOM Hendrina Power Station is a National Key Point and undertakes to comply with requirements of the National Key Point act when required to do so.
- Responsible Persons and Authorised Supervisors as explained in The Eskom Plant Safety Regulations are provided by the *Employer* ahead of starting work.

5.1.2 Restrictions to access on Site, roads, walkways and barricades

- Hendrina has a number of areas, Red Zone Areas, where any form of negligence when executing work in those areas can result in loss of production, injury and/or plant damage. These areas are marked and the *Contractor* undertakes to take reasonable effort to avoid such areas unless project specific work must occur in those areas.
- Where work must occur in the Red Zone Areas, the *Contractor* implements reasonable measures to avoid unduly interfering with *Employer's* plant.
- Colour coding of walkways and access points gives indication of areas where walking or entry is prohibited.
- *Contractor* avoids at all times the areas demarcated by any form of barricade
- *Contractor* complies with all Hendrina Power Station signage as found on site. Where ambiguous signage which affects the Works is encountered, the *Employer* is contacted to provide clarity.
- The *Contractor* implements barricading around the work area to prevent undue access.
- The speed limit on site is 40 km/h.

5.1.3 People restrictions on Site; hours of work, conduct and records

- The Life Saving rules are adhered to at all times without exception.
- A detailed daily record of the number of employees on site is kept by the *Contractor*. At any point in time, the number of *Contractor* personnel must be known to the *Contractor* and made available to the *Employer* upon request.
- The hours of work at Hendrina Power Station are between 07h00 and 16h15 Mondays to Thursdays and between 07h00 and 12h00 Fridays.
- The *Contractor* and their personnel conduct themselves appropriately with regards to speech, gesture and dress.

5.1.4 Health and safety facilities on Site

The *Employer's* medical centre can be used by the *Contractor* in case of severe emergencies. The station emergency number is 5555 for all cases of emergency including medical and security related incidents.

5.1.5 Environmental controls, fauna & flora, dealing with objects of historical interest

Refer to environmental requirements in section 2.4.

All objects found during completing of the Works are deemed as the property of the *Employer* and they are submitted to the *Employer* as soon as possible.

5.1.6 Title to materials from demolition and excavation

The *Contractor* shall have no title to any material from excavation, demolition, removal and decommissioning.

Waste generated from the taking apart of the *Employer's* assets remains the property of the *Employer*.

5.1.7 Cooperating with and obtaining acceptance of Others

- In cases where Others are performing work in the same area as The Contractor, The *Contractor* synchronises his work with that of Others to ensure safe and effective work conditions for both parties.
- There will be *Employer* personnel who will be seconded to the work area to assist with work execution.
- The names of the seconded employees must be included in the Contractor's worker's register and the Contractor's risk assessments include the *Employer's* employees.

5.1.8 Publicity and progress photographs

- The taking of photos for personal use or use for any other reason than the completion of this project is prohibited.
- The *Employer* provides cameras for taking photos. Photos to be kept by the *Contractor* are first authorised by the *Employer*.
- The *Contractor* may not take opportunity to publicise their company's services or products while on site except by branding their equipment, vehicles, dress. Engagement with people on site in a way that aims at publicising the Contractor's company is prohibited.

5.1.9 Contractor's Equipment

- The *Contractor* is responsible for keeping record of all equipment used in the execution of the project. The *Contractor* acquires, transports and delivers all equipment and keeps detailed record of the equipment brought on site and that taken off site.
- The list of equipment shall indicate ownership of the equipment.
- The equipment shall be marked with the Contractor's mark to distinguish it from other suppliers' equipment.
- The *Contractor* develops and implements a plan to store and maintain equipment in a good condition. This prevents the deterioration of equipment while on site.

5.1.10 Equipment provided by the Employer

The *Employer* will only provide scaffolding, all other equipment is provided by the Contractor.

5.1.11 Site services and facilities

The *Employer* will provide the following services for the duration of work execution.

- Electrical power will be provided free of charge from various distribution boards.
- Potable water is available freely at numerous points.
- Ablution facilities are available throughout the station for use by the Contractor.
- Fire Protection systems and equipment are available throughout the station for use by the Contractor. If the *Contractor* requires extra equipment they may acquire the equipment at their own cost.

- There is lighting available in the station but if extra lighting is required, the Contract will provide this lighting at their cost.
- Space within the station is provided to the *Contractor* by the *Employer* to set up an area for housing *Contractor* personnel and equipment if this is required and based on availability of suitable space.
- Request for any other services desired by the *Contractor* may be forwarded to the *Employer* for validation.
- The *Contractor* provides portable 380V distribution boards which have been tested by an authority to be suitable for use, if applicable.

5.1.12 Facilities provided by the Contractor

The *Contractor* supplies the following

- The *Contractor* supplies all equipment necessary to construct temporary housing (structure providing shelter) for any personnel, equipment and material involved in the project. The construction, erection as well as demolition of this shelter are the responsibility of the Contractor. All structures and housings implemented as part of the Works are demolished and removed from site after conclusion of the project.
- Office equipment, vehicles, transportation of *Contractor* and sub*Contractor* personnel and equipment as well as storage areas for all the aforementioned.
- The housing is inspected by the *Employer* to ensure that it complies with safety, health and environmental regulations. Inspections happen as per safety requirements.
- Once the Works are completed, the *Contractor* demolishes and removes all structures installed for the purpose of completing the Works.

5.1.13 Existing premises, inspection of adjoining properties and checking work of Others

Not applicable to this contract.

5.1.14 Survey control and setting out of the works

Not applicable.

5.1.15 Excavations and associated water control

The *Contractor* does excavation by hand where test results for underground pipes and cables are inconclusive.

5.1.16 Underground services, other existing services, cable and pipe trenches and covers

- Hendrina has installed numerous underground lines conveying different things. These lines convey, amongst others, electricity, water, sewerage and water of differing purity.
- The *Contractor* performs tests to determine the presence of any lines, known or unknown, where excavations or trenching is required. Care is taken to ensure that these lines do not suffer any damage as a consequence of completing the Works.
- Where damage occurs which does not have immediate impact on the usability of the line, the condition of the line is checked, by the *Contractor* together with the *Employer*, to determine whether the damage has accelerated the deterioration of the lines or services or has made it likely for the lines to become unusable in the future.
- Where the damage is noteworthy or likely to cause future problems, the *Contractor* makes the necessary repairs or replaces the lines and surrounding infrastructure which was affected by the damage.
- The Contractor is fined an amount up to 3% of contract value for each separate incident of damage to these lines.
- The locations of underground services such as fibre optic cabling, power cabling etc. are mostly undocumented.

- All proposed routes for the system shall be scanned with a penetrating radar device before such work commences.
- The equipment used for the detection of underground services shall indicate the following:
 - Material type of detected items
 - Depth of detected items
 - Alive/dead status of detected cables
- In the event that underground services are damaged due to negligent operation of scanning equipment by the Contractor or the failure to scan planned routes before the commencement of work by the Contractor, the responsibility of repair to the services will reside with the Contractor.
- Such repairs shall be effected by the Contractor with no additional cost to the Employer.
-

5.1.17 Control of noise, dust, water and waste

The *Contractor* is expected, in the interest of health and safety, to take reasonable measures to curb the emission of noise, dust, water and any form of waste.

5.1.18 Sequences of construction or installation

The *Contractor* generates the sequence of installation and work.

5.1.19 Giving notice of work to be covered up

All cabling, connections and Certificates of Compliance (CoC's) are the responsibility of the Contractor unless otherwise stated.

5.1.20 Hook ups to existing works

Where parts of the project need to hook up to existing *Employer's* works or infrastructure the *Contractor* first consults with the *Employer* before hooking up.

5.2 Completion, testing, commissioning and correction of Defects

5.2.1 Work to be done by the Completion Date

On or before the Completion Date the *Contractor* shall have done everything, without exception, required to Provide the Works.

5.2.2 Use of the works before Completion has been certified

In cases of health and safety related emergency, the *Employer* can utilise parts of the works, without taking over the works. Announcements can be made to areas where installation has happened and the system is operational but the works have not been taken over due to outstanding work or defects in the works.

5.2.3 Materials facilities and samples for tests and inspections

The *Contractor* provides all materials, facilities and samples for tests and inspections.

5.2.4 Commissioning

The *Contractor* develops the commissioning procedure and obtains *Employer* approval before finalising the procedure.

Commissioning shall happen before completion date.

Commissioning shall include testing of the system against the agreed upon standard/test protocol.

5.2.5 Start-up procedures required to put the *works* into operation

The *Contractor* is responsible for initial start-up of the system, or parts thereof, and is informed by the commissioning procedure. All quality checks are performed at start-up before the system, or parts thereof, is declared fit for purpose as per works information.

5.2.6 Take over procedures

Takeover occurs after successful commissioning of the system, or parts thereof, provided that all quality requirements are met.

5.2.7 Access given by the *Employer* for correction of Defects

The *Contractor* takes reasonable measures to limit the effect that the correction of defects may have on the PA system as a whole. To prevent a single point of failure from affecting the entire system, workarounds are implemented by the *Contractor* to prevent this from happening.

The health and safety requirements of the *Employer* are met and adhered to prior to access being granted.

5.2.8 Performance tests after Completion

The approved test standard/protocol is used to test the performance of the system.

A random sample, in each zone, of the *Employer's* employees are quizzed as to their level of satisfaction with the operation (intelligibility, loudness) of the system and a mean opinion score of 6 is the minimum expected performance level of the system.

Both the *Contractor* and the *Employer's* perform this test together at the same time.

5.2.9 Training and technology transfer

The *Contractor* provides training to *Employer's* personnel in the Operating, Maintenance and Engineering departments of the station. Eight people in engineering, twelve people in maintenance and twelve people in Operating are trained. Details of the training are given in an earlier section of this Works Information.

5.2.10 Operational maintenance after Completion

The *Contractor* makes himself available for a routine maintenance agreement after the defects date. Prior to the defects date, the *Contractor* performs all routine maintenance of the system.

6 Plant and Materials standards and workmanship

6.1 Investigation, survey and Site clearance

The *Contractor* performs the following

- Evaluate the existing PA system for compliance to the ESKOM PA system standard.
- Where deviations are noted, the *Employer* approves the deviations which may be corrected and the *Contractor* corrects the deviations.
- Repairs to the existing system.
- Analyse the areas where installation will occur to decide on the speaker density and speaker placement in order to achieve a stated level of intelligibility during stated weather conditions. A national or international standard/protocol is used for performing this analysis. The design of the new system is based on the outcome of this study.
- Use drawings of the site as well as approved test methods for identifying lines conveying water, oil, sewage and/or power lines. Tests are performed irrespective of whether drawings are available or not.

6.2 Building works

Not applicable to this contract.

6.3 Civil engineering and structural works

The contractor ensures that all trenching projects follow applicable standards to guarantee the safety of workers and the surrounding environment. From proper shoring techniques to thorough soil analysis, every aspect of trenching is carefully planned and executed to minimize risks and adhere to regulations.

6.4 Electrical & mechanical engineering works

The *Contractor* tests all applicable electrical installations for suitability to their purpose according to SANS 0142: Wiring of premises.

The *Contractor* provides certificates of compliance are issued for all installations.

6.5 Process control and IT works

- The *Contractor* sets up an interface between Hendrina LAN and the PA system for remote configuration.
- The *Contractor* works with Others to achieve this outcome.

6.6 Other

Not applicable

7.2 Annexure 1 – Drawing Standard Clause on Contracts Works Information

DRAWING STANDARD CLAUSE ON CONTRACTS WORKS INFORMATION

All stakeholders to please ensure this **clause** is added on the Contract before it is signed and all requirements are communicated to the relevant Supplier as soon as the contract is awarded, to ensure that the drawings in question are created in the correct and acceptable format, which is **Micro station 2D**.

All drawings shall be originally created in the required format which is Microstation version 7/8 SE 2D, according to the specified drawing format and standards 36-945, 36-945, 36-946 available from DO on request . No conversion from other format will be accepted. Accompanying the new drawings will be the item list with full component descriptions.

PROCESS BY PROJECT MANAGER:

Micro station Seed Files (STD TITLE BLOCKS AND FILESTHAT A SUPPLIER/CONTRACTOR MUST COMPLY WITH) are sent, on request, to the Supplier who is awarded the contract.

After PM has sent to the Supplier the drawing standard requirements (hard copy of cell library, format, drawing standard with font types, sizes, line weights, title block etc), the Supplier must ensure that all drawings are created in the required format which is Micro station version 7/8 SE 2D, according to the specified drawing format and standards 36-945, 36-945, 36-946. Accompanying the new drawings will be the item list with full component descriptions.

An Engineer to ensure that the Supplier, after creating the drawings, submits the created drawing in DGN format, via the Project Manager, to Design and Specs Department, for:

1. Verification of the application of the drawing standard and format.
2. Allocation of drawing numbers.
3. Allocation of KKS codes.

D&S often takes a day to do the above unless there are major queries on the drawing. As soon as the above is completed D&S gives the Supplier feedback via the P Manager. If there are queries the Supplier will resolve those and mail the drawings again for final verification. In the absence of queries, the Supplier will finalize the drawings and plot them for approval.

The Supplier approves/signs all blocks in the title blocks except for "KKS APP" block. They will sign these blocks:

AUTH BY: *Supplier Engineer*
CHCKD BY: *Supplier Engineer / Technician*
APPROVED BY: *Supplier Senior / Site Manager*

The drawings are approved and officially handed-over (original signed copy in the correct size & editable soft copy DGN on CD) by the Supplier, via the P Manager, to Design and Specifications Department.

As soon as the drawing is approved and officially handed-over (original signed copy & editable soft copy on CD), via the P Manager, to Design and Specifications Department. D&S will assist the Supplier with ordering of plant Labels to ensure that:

1. Label Templates are made according to the approved drawing and item list provided by the Supplier.
2. D&S will forward the Label Template to the Supplier to place order for the labels from the Label Manufacturer (D&S will provide details).
3. D&S will check the labels on delivery before handing them over to the Supplier for installation.
- 4. The Supplier is responsible for the cost and installation of the labels.**
5. After installation, D&S will do label audit to ensure that labels are installed correctly. D&S is available to advise when the installation commences to ensure that it is done right the first time.
6. Only after the installation and an audit is oke'ed, the plant will then be officially handed-over to the Employer via the Project Manager.

Should you have any queries please don't hesitate to contact either myself, Dennis or Fred, we will gladly assist.

Sincere regards, Senior Adviser - CM

C3.2 *CONTRACTOR'S* WORKS INFORMATION

This section could also be compiled as a separate file.

PART 4: SITE INFORMATION

Document reference	Title	No of pages
C4	This cover page	1
	Site Information	2
	Total number of pages	2

1 Description of the Sites and its surroundings

1.1 Hendrina Power Station

1.1.1 Road Access

Hendrina Power Station is located approximately 35km from Middelburg N4/N11 offramp along the Middelburg – Hendrina road (N11). Taking the Pullenshope turn-off, about 23 km south from N4/N11 offramp, and continue about 8km you will get to a sign Hendrina Power Station & turn left to the security gates.

1.1.2 Areas where the works will be performed

The works will be performed at a number of buildings within the station perimeter including the main plant building.

1.1.3 Weather data

Altitude (Elevation above sea level)	1636 m
Mean Annual Barometer Pressure	84,0 kPa
Maximum ambient temperature	38° C
Minimum ambient temperature	6° C
Maximum relative humidity	79%
Minimum relative humidity	10%

1.1.4 Security Access Control

Refer to Protective Services-Access Control System Procedure (HSPHO/020) available from the *Project Manager*.

1.1.5 Accommodation

The *Employer* is not be responsible or accountable for accommodation or travelling for the *Contractor* or their employees

1.1.6 Speed Limit

All vehicles are driven with due consideration for personnel and property. A maximum speed limit of 40 kilometres per hour is adhered to on the premises at all times.

1.1.7 Medical Facilities

- Minor First Aid requirements are provided by the *Contractor* . Should these prove to be inadequate, for example in the event of a major injury, the *Employer's* Medical Centre and facilities are available.
- The *Employer* is entitled however to recover the reasonable costs incurred in respect thereof from the *Contractor* /Subcontractor
- The *Employer's* Medical Services for after hours are available for major injuries and life threatening injuries.

1.2 Scrap/Rubbish Removal

- The *Contractor* to leave work areas in a clean state
- The *Contractor* will dispose rubbish into the relevant colour coded scrap bins provided at set points. A site map indicating the position of the set points will be provided when the on contract is awarded.

1.2.1 The Facilities

- The *Contractor* can use the ablution facilities and tuck shop currently on site. They must be left in a clean state

1.3 Existing buildings, structures, and plant & machinery on the Site

The works are performed inside the boundaries of Hendrina Power Station.