	<b>Scope of Work</b>	<b>Camden Power Station</b>
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Title: **Manufacture, Supply, and Delivery  
of Spare Parts for Pulverized Fuel  
(PF)Burners**

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Compiled by	Supported by	Functional Responsibility	Authorized by
 V Vilakazi System Engineer	p.p  P Mthombeni Boiler Engineering Manager	 D Nyathikazi Boiler Maintenance Manager	 p.p M Mathabatha Engineering Manager
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## **1. Introduction**

Camden Power Station has encountered excessive wear failures with the recently installed Low NOx burners, which has led to compromised unit availability and reliability. Operational experience at the plant has pinpointed three specific areas requiring attention: the pulverized fuel (PF) inlet scroll, the core air sleeve, and the PF tube, all of which are susceptible to wear and erosion.

The initial units installed are particularly vulnerable to failures in the PF inlet scroll due to the presence of older, unmodified scrolls. This scope aims to address identified deficiencies by procuring new PF Scrolls and Core Air II Tubes, ensuring that units are equipped with modified PF inlet scrolls and core air II tubes.

It is important to note that the installed LOW NOx Burners feature a unique design and are not readily available off the shelf. To ensure sufficient spares availability for the units, this scope encompasses the supply of all PF burner spares.

In summary, this scope entails the manufacturing, supply, and delivery of spare parts for Pulverized Fuel (PF) Burners.

## **2. Supporting Clauses**

### **2.1 Scope**

#### **2.1.1 Purpose**

This scope entails the manufacture, supply, and delivery of spare parts for Pulverized Fuel (PF) Burners.

#### **2.1.2 Applicability**

- Boiler Engineering.
- Boiler Maintenance.
- Procurement.
- Prospective contractor.

#### **2.1.3 Effective date**

Authorisation date.

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## **2.2 Normative/Informative References**

### **2.2.1 Normative**

- 240-83797789 Specification for Fuel Oils Coal Fired Boilers Standard
- ISO 9001 – Quality Management Systems
- OHS Act - Occupational Health and Safety Act and Regulations (Act No.85 of 1993)
- 240-105453648 – Fossil Fuel Firing Regulations Standard
- NFPA 85 – Boiler and combustion systems hazard code.
- Pressure Equipment Regulations (PER 2009).
- The Eskom burner manufacturing specification (240-106027729).
- 0.36/20539 - PF Pipe wear protection
- 0.36/20540 - Secondary air flange
- 0.36/20542 - PF assembly

### **2.2.2 Informative**

N/A

## **2.3 Controlled disclosure**

**Controlled Disclosure:** Controlled Disclosure to external parties (either enforced by law, or discretionary).

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## **2.4 Abbreviations**

<b>Abbreviation</b>	<b>Explanation</b>
BMS	Burner Management System
C&I	Control and Instrumentation
CPS	Camden Power Station
FFFR	Fossil Fuel Firing Regulations
GO	General Overhaul
MGO	Mini General Overhaul
NOx	Nitrogen Oxides
PF	Pulverized Fuel
PSR	Plant Safety Regulations
SOW	Scope of Work
NDE	Non-Destructive Examining

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## **2.5 Roles and Responsibilities**

- Boiler Engineering - Is responsible to draw up the scope and technical evaluation criteria for the contract to **Manufacture, Supply, and Delivery of Spare Parts for Pulverized Fuel (PF) Burners**
- Boiler Maintenance - Is responsible for establishing the spares contract as per the terms set - out in the scope of work.
- Procurement - Is responsible to ensure that the procurement process is properly followed in setting-up and awarding the tender.

## **2.6 Process for Monitoring**

The procurement process ensures that the tender is set-up according to the terms given in the SOW.

## **2.7 Related/Supporting Documents**

N/A

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### 3. Scope of Work

#### 3.1 Objectives and Purpose of the Works

The objective of this scope is to Manufacture, Supply, and Delivery of Spare Parts for Pulverized Fuel (PF) Burners as listed below.

	Item no	Description	Detailed description	Material no:	Quantity
1	a	Core air tube assembly (Nozzle 1)	Core air tube assembly (Nozzle 1) - Air swirl: Right, PF Deflectors: Right. (See attached manufacturing drawing on Appendix 1)	738347	20
	b	Core air tube assembly (Nozzle 2)	Core air tube assembly (Nozzle 1) - Air swirl: Left, PF Deflectors: Left. (See attached manufacturing drawing on Appendix 1)	738348	20
	c	Core air tube assembly (Nozzle 3)	Core air tube assembly (Nozzle 1) - Air swirl: Right, PF Deflectors: Left. (See attached manufacturing drawing on Appendix 1)	738349	20
	d	Core air tube assembly (Nozzle 4)	Core air tube assembly (Nozzle 1) - Air swirl: left, PF Deflectors: Right. (See attached manufacturing drawing on Appendix 1)	738341	20
2	a	Core Air II - Detail Air, left swirl (Nozzle tip)	See attached manufacturing drawing on Appendix 1	None	10
	b	Core Air II - Detail Air, Right swirl (Nozzle Tip)	See attached manufacturing drawing on Appendix 1	None	10
	c	Core Air II - Detail PF, left swirl (PF deflectors)	See attached manufacturing drawing on Appendix 1	None	10

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	<b>d</b>	<b>Core Air II - Detail PF, Right swirl (PF deflectors)</b>	See attached manufacturing drawing on Appendix 1	None	10
<b>3</b>	<b>a</b>	<b>Secondary air tube assembly clockwise</b>	See attached manufacturing drawing on Appendix 1	None	20
	<b>b</b>	<b>Secondary air tube assembly anti-clockwise</b>	See attached manufacturing drawing on Appendix 1	None	20
<b>4</b>	<b>a</b>	<b>PF Tube Assembly clockwise</b>	See attached manufacturing drawing on Appendix 1	None	40
	<b>b</b>	<b>PF Tube Assembly anti clockwise</b>	See attached manufacturing drawing on Appendix 1	None	40
<b>5</b>	<b>a</b>	<b>PF Burner tip clockwise</b>	See attached manufacturing drawing on Appendix 1	None	20
	<b>b</b>	<b>PF Burner tip anti - clockwise</b>	See attached manufacturing drawing on Appendix 1	None	20
<b>6</b>	<b>a</b>	<b>PF Scroll assembly LEFT SWIRL</b>	See attached manufacturing drawing on Appendix 1	36578	40
	<b>b</b>	<b>PF Scroll assembly RIGHT SWIRL</b>	See attached manufacturing drawing on Appendix 1	36579	40
<b>7</b>	<b>a</b>	<b>Secondary air front flange</b>	See attached manufacturing drawing on Appendix 1	none	10
<b>8</b>	<b>b</b>	<b>Secondary air movable Cylinder</b>	See attached manufacturing drawing on Appendix 1	none	10

*Table 1: List of new spares to be supplied by winning bidder.*

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### **3.2 Contractor's design**

- (1) The contractor uses the supplied manufacturing drawings and write a detailed method statement that may include the following:
  - a. Bending schedule
  - b. Welding details and requirements
  - c. Manufacturing sequence
  - d. Manufacturing tolerances and surface finishes. The Eskom burner manufacturing specification (240-106027729) shall be always complied with.
  - e. Bill of quantities.
  - f. Material layout and quantities
  - g. Detailed weld matrix inclusive of but not limited to welding procedures, welding consumables to be used during manufacturing, post weld heat treatment if required, NDE requirements.
- (2) Detailed tiling design and layout, taking special note and care of the interfacing section between the tile and weld overlay material and the bonding agent to be used.
- (3) Safety and quality requirements.

All designs conform to the Eskom specific stated standard Eskom "Burner Manufacturing Standard," document number 240-106027729 or where not stated to an accepted international EN standard. The Contractor accepts full liability for all work executed under this contract.

#### **3.2.1 Special activities – program**

- (1) The *Contractor* supplies a detailed project plan before each manufacturing.
- (2) The program details the manufacturing activities with key dates for the following.
  - a. completion of manufacturing work
  - b. material order and delivery
  - c. completion of manufacturing of each spare
  - d. delivery to site

#### **3.2.2 Special activities – Tiling**

- (1) Where tiling is required, the spares must be tiled with 12mm thick interlocking ceramic tiles manufactured from 96% alumina oxide.
- (2) The tiles are bonded to the tube with a suitable bonding material that can safely withstand the operating conditions (temperature of 330°C).
- (3) The tile interfacing with the weld overlay tapers off such that there is no step change in inside diameter.
- (4) The open area between the last tile and the weld overlay is kept as small as

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reasonably possible and is properly filled with a suitable wear resistant epoxy or grout material which can safely withstand the operating conditions (temperature of 330 °C).

### 3.2.3 Excluded activities:

Not applicable

### 3.3 Boundaries

The scope is for the Manufacturing and supply of PF Burners spares.

## 4. Acceptance

This document has been seen and accepted by:

Name	Designation	Signatures
Lettie Botha	Chief Engineer/Specialist	

## 5. Revisions

Date	Rev.	Compiler	Remarks
23 May 2022	1	V Vilakazi	Original Issue
03 April 2024	2	V Vilakazi	Additional items added. and manufacturing drawings attached.

## 6. Development Team

The following people participated in the development of this document:

- Velaphi Vilakazi
- Nkosinathi Khumalo

## 7. Acknowledgements

N/A

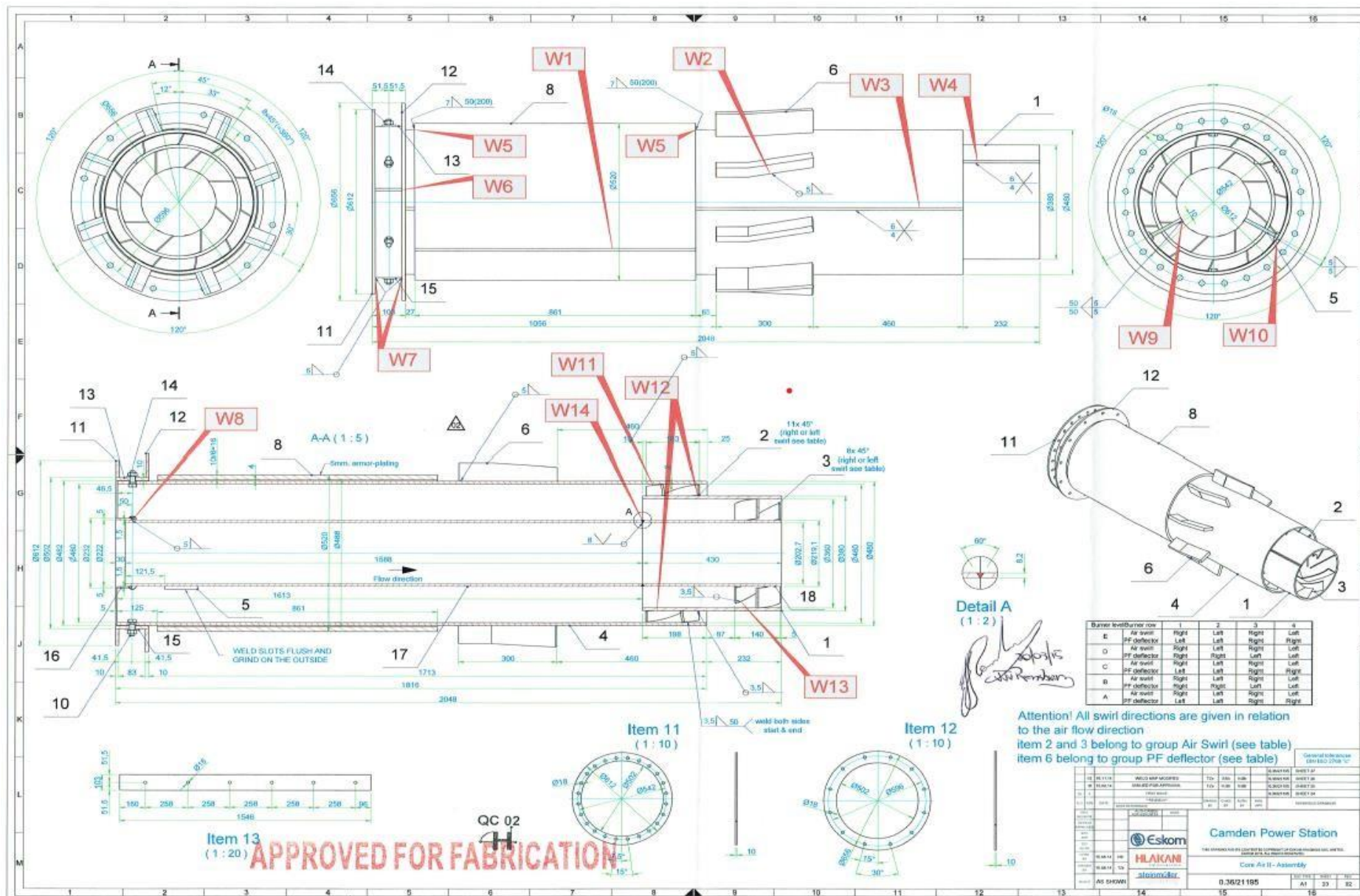
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## 8. APPENDIX 1: MANUFACTURING DRAWINGS

### 8.1 Core air tube assembly (Nozzle)



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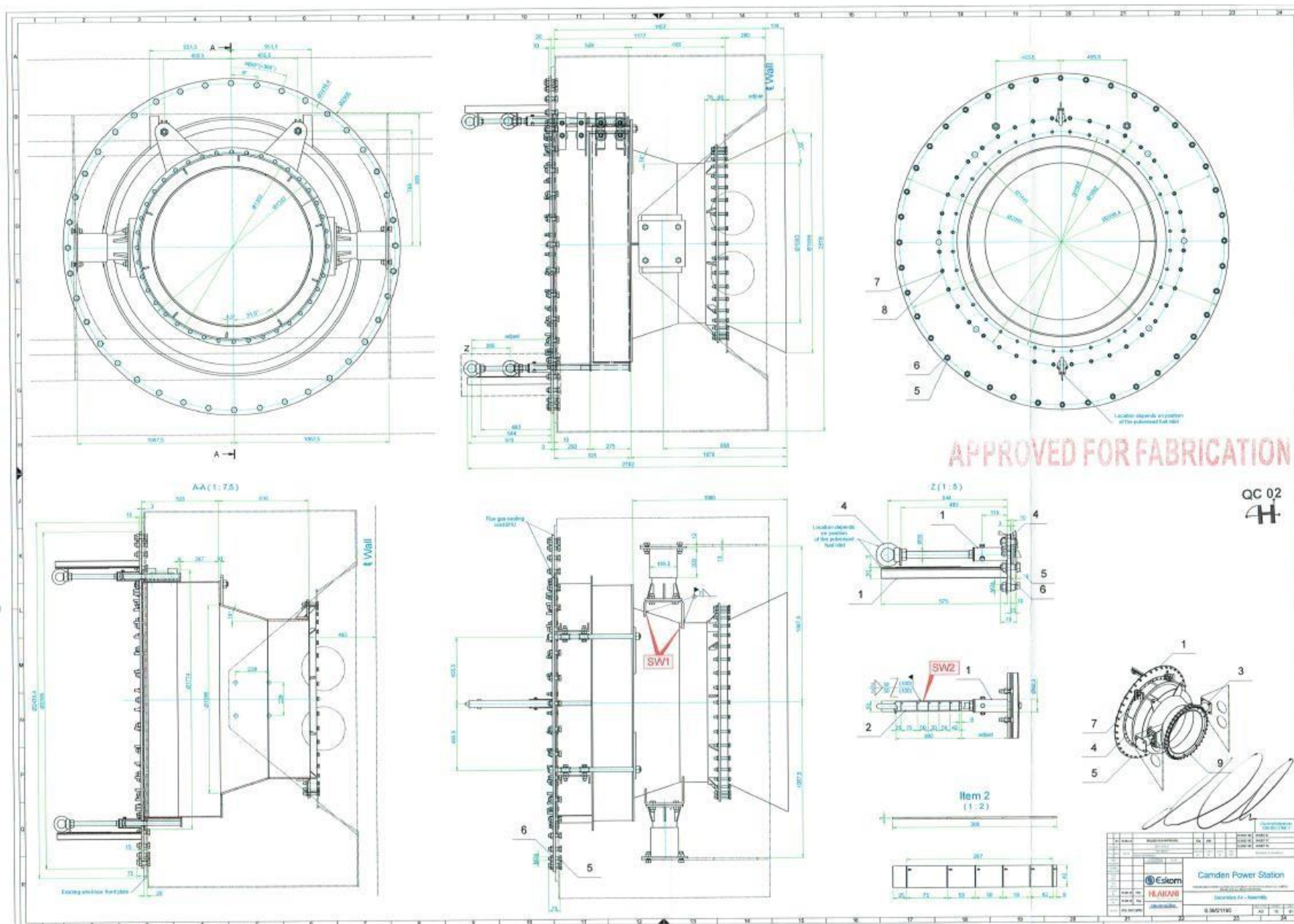
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### 8.3 Secondary Air Tube Assembly



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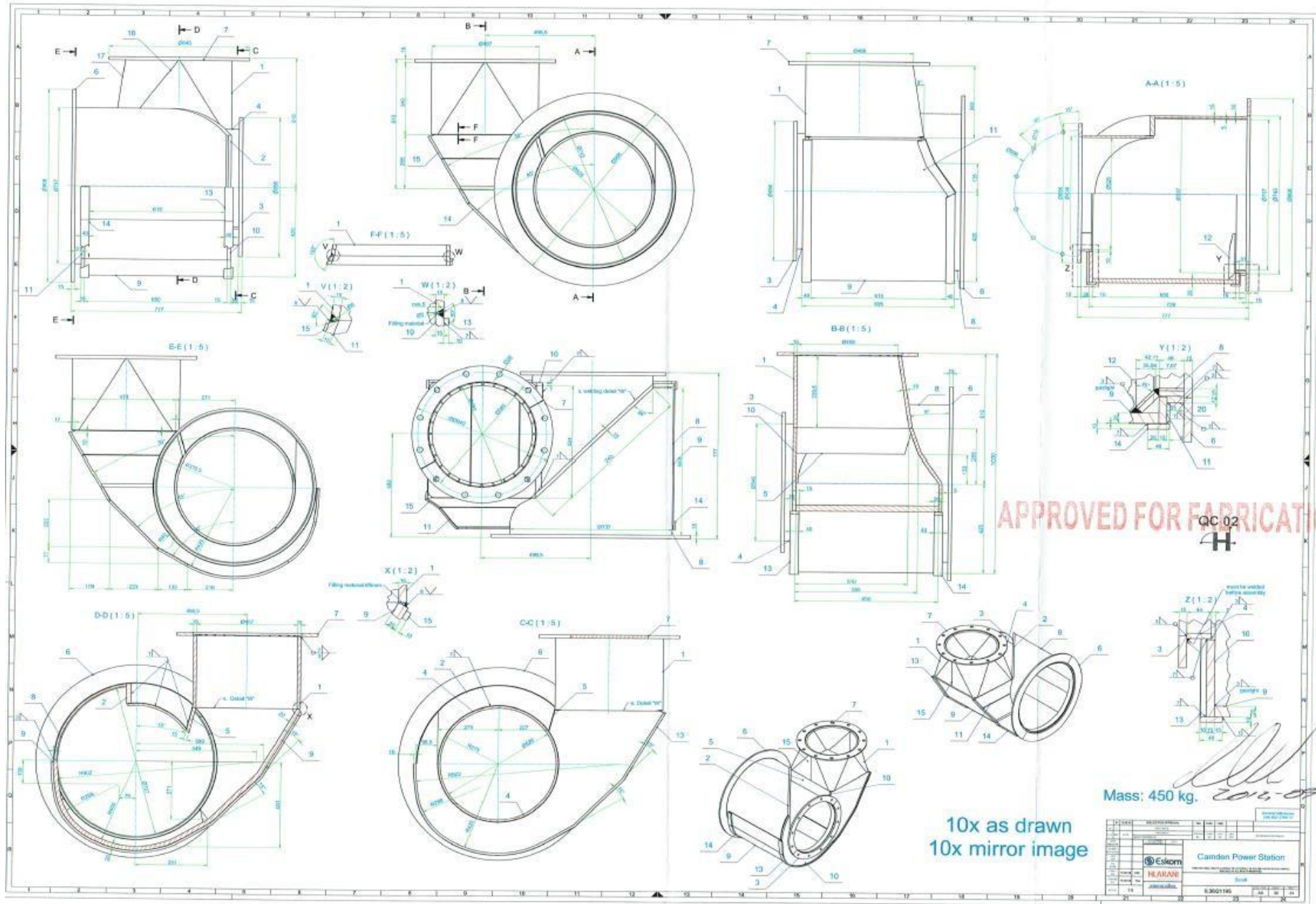


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## 8.6. PF Burner Scroll



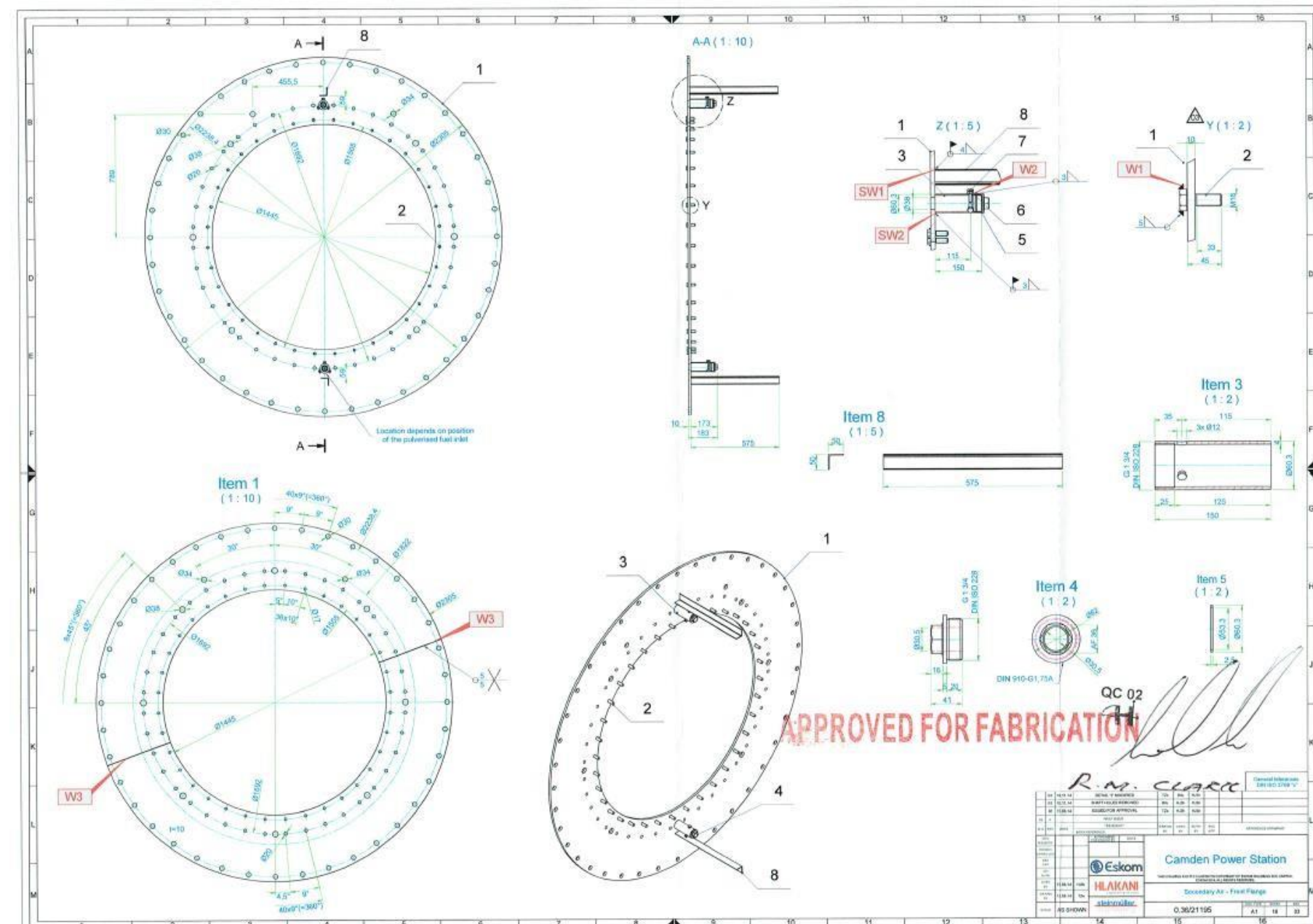
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### 8.7. Secondary air front flange

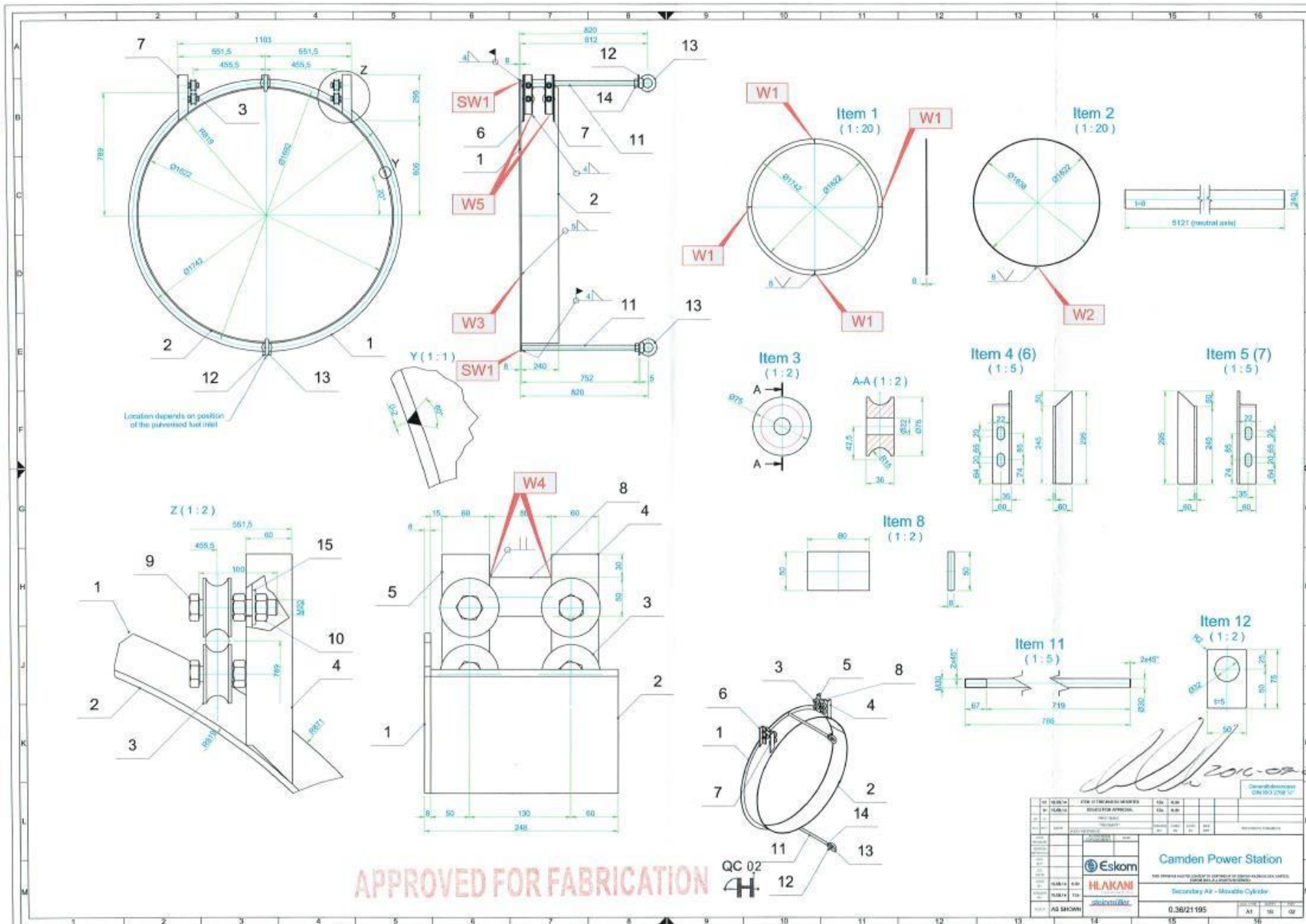


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## 8.8. Secondary air movable Cylinder



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