

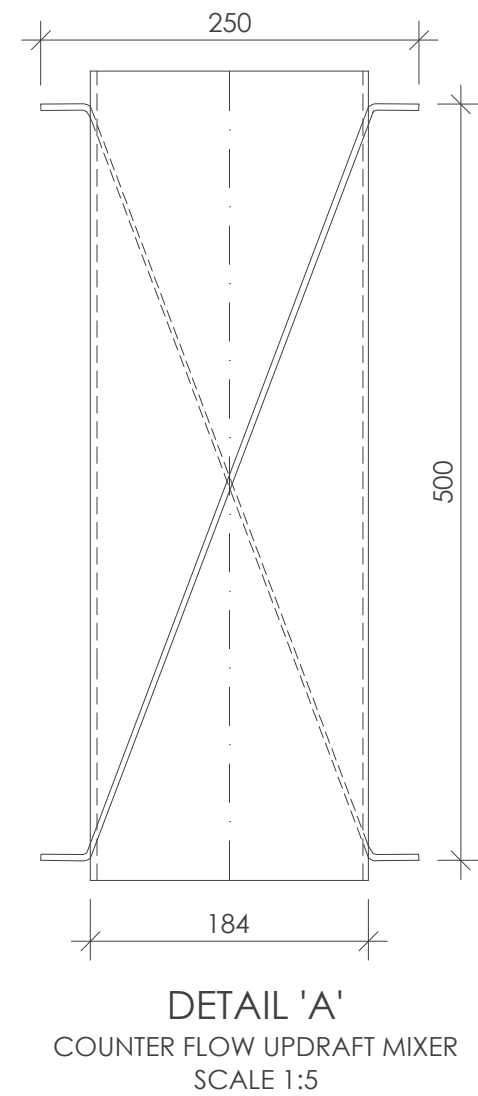
LOW SPEED MIXER	
MIXING ENERGY TRANSFERRED TO MLSS: 5w/m³	
SPECIFICATION	DESCRIPTION & DIMENSIONS (mm)
GEARBOX	TRIPLE REDUCTION HELICAL GEAR SPEED REDUCER
MOTOR IP RATING	55
MOTOR EFFICIENCY	≥ 95 %
MOTOR POSITION	MOTOR TO STAND AND RUN DIRECT ON LINE
DRIVE SERVICE FACTOR	3
OUTPUT SPEED (rpm)	28
IMPELLER TIP SPEED (m/s)	2.5
MIX DEL PUMPING ACTION (m³/min)	82
PEDESTAL	RAISED MIXER MOUNTING PEDESTAL
PEDESTAL MATERIAL	MILD STEEL
BODY MATERIAL	ALL WETTED PARTS 304 SS

MIXER SPECS			
ZONE	DIRECTION OF ROTATION	VOLUME (m³)	POWER (kW)
ANAEROBIC 1		132	0,7
ANAEROBIC 2		132	0,7
ANOXIC 1		281	1,4
ANOXIC 2		281	1,4
ANOXIC 3		281	1,4
ANOXIC 4		281	1,4

INFORMATION REQUIRED FROM MANUFACTURER PRIOR TO ENGINEER'S APPROVAL	
SPECIFICATION	DESCRIPTIONS & DIMENSIONS (mm)
TYPE	TBA
MOTOR TYPE	TBA
GEARBOX TYPE	TBA
WEIGHT OF UNIT	TBA
IMPELLER DIAMETER	TBA
SHAFT DIAMETER	TBA

FUNCTIONAL DETAIL

MECHANICAL MIXERS IN BNRAS (BIOLOGICAL NUTRIENT REMOVAL ACTIVATED SLUDGE) SYSTEMS SERVE A DUAL PURPOSE: THEY MAINTAIN MIXED LIQUID SUSPENDED SOLIDS IN SUSPENSION AND FACILITATE MASS TRANSFER BETWEEN BACTERIA AND DISSOLVED SUBSTRATE MOLECULES. UTILIZING AXIAL FLOW MIXERS MOUNTED ON A VERTICAL SHAFT, THESE SYSTEMS PROPEL LIQUID TOWARDS THE REACTOR FLOOR, GENERATING HORIZONTAL CIRCULAR MOTION AND REINTRODUCING UPPER LAYERS TO THE LOWER DEPTHS. HOWEVER, EXCESSIVE MIXING CAN RISK INTRODUCING AIR INTO THE SLUDGE MASS, PARTICULARLY IN UN-AERATED ZONES, LEADING TO UNDESIRABLE EFFECTS SUCH AS VORTEX FORMATION. TO MITIGATE THIS, THE MIXER'S MOTOR CONTROL SYSTEM PERIODICALLY SHUTS OFF, ALLOWING THE SLUDGE TO SETTLE BEFORE RESUSPENSION. IT ALSO INCORPORATES DAILY REVERSE ROTATION TO DISLODGE ANY DEBRIS FROM THE IMPELLER BLADES. ADDITIONALLY, THE DESIGN INCLUDES A COUNTER FLOW MECHANISM ALONG THE MIXER SHAFT TO CREATE A GENTLE UPWARD FLOW, WHICH HELPS DISRUPT VORTEX FORMATION, COMPLEMENTED BY A STATIC BAFFLE THAT REDIRECT FLOW AGAINST THE VORTEX, ENHANCING OVERALL MIXING EFFICIENCY AND STABILITY.



NOTES:

LOCAL MUNICIPALITY: MAP

SPONSOR & REGULATOR: DWS



ISSUED FOR TENDER

0

50

100 MILLIMETRES ON ORIGINAL DRAWING

A

BEFORE CONTRACT COMMENCES

A

AFTER CONSTRUCTION CONTRACT HAS COMMENCED

Nr.	DATE	AMENDMENTS

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CLIENT / IMPLEMENTING AGENT



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PROJECT

TSHIAME WWTW REFURBISHMENT

DRAWING DESCRIPTION



LOW SPEED MIXER INSTALLATION DETAILS

DRAWING NO.

10909001-6005

REVISION

T1

DESIGNED:	AK	CHECKED:	ECSA PR No: 20130658	
DRAWN:	EMT	SCALE:	AS SHOWN	A1
APPROVED:	ECSA PR No: 20130658		INCEPTION DATE:	SEPT'24
FILE PATH:	SHAREPOINT / BLOEMFONTEIN - 10909001 TSHIAME WWTW / 04 DOC PROC / 04 DRAW			

**VIRTUAL**
CONSULTING ENGINEERS

ISSUED FOR TENDER