SA Water

Date: 27 July 2018

Our Ref: SN892

[redacted]

Dear Mr [redacted]

Freedom of Information – Determination

I refer to your application pursuant to the South Australian *Freedom of Information Act, 1991* ("the Act") received by SA Water on 21 May 2018, seeking access to:

1. *Mannum WWTP Operating and Maintenance Manual.*
2. *Mannum WWTP Independent Valuation as at 1 July 2014 (referred to on page 68 of the SA Water 2016-17 Annual Report).*

SA Water has identified three documents, as listed in the attached document schedule, that fall within the scope of your request. Based on my assessment of the documents, I have determined to provide you with full access to these documents.

If you are dissatisfied with this determination, you are entitled to exercise your rights to internal review and appeal as outlined under Section 29 of the Act. To apply for an internal review you must lodge an internal review application form with SA Water within 30 days of this determination. Internal review applications can be addressed to the Principal Officer, GPO Box 1751, Adelaide SA 5001.

In accordance with the requirements of the Premier and Cabinet Circular PC045 - Disclosure Logs for Non-Personal Information Released through Freedom of Information, details of your FOI application, a copy of this notice of determination, a schedule of documents and the documents to which you have been given access, will be published on the SA Water website FOI disclosure log. A copy of PC045 can be found at http://dpc.sa.gov.au/what-we-do/services-for-government/premier-and-cabinet-circulars. Your name and contact details will not be disclosed publically.

If you have any queries in relation to the above, or if you wish to obtain a copy of the internal review application form, please contact me on telephone (08) 7424 1777 or via email at freedomofinformation@sawater.com.au.

Yours sincerely

Ben Roberts
ACCREDITED FREEDOM OF INFORMATION OFFICER

Freedom of Information application: SN892 - Mannum WWTP

1) Mannum waste water treatment plant operating & maintenance manual.
2) Mannum waste water treatment plant independent valuation as at 1 July 2014 (referred to page 68 SA Water 2016-17 Annual Report).

No	Date	Author	Document Description	Determination	Clause	Reason
1	10/05/2015	Aquenta	Valuation of metro Waste Water Treatment Plant for SA Water	Full Release		Sections of information redacted as out of scope (not related to Mannum)
2	31/05/2016	SA Water	Imhoff Tank Inspect and Operate - Mannum WWTP	Full Release		
3	17/08/2016	SA Water	Operational Duties - Mannum WWTP	Full Release		

1.

VALUATION OF THE METRO & COUNTRY

WASTE WATER

TREATMENT PLANT

ASSETS FOR SA WATER

Prepared by

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Document Register	Document ID: 14099-9920 Valuation of SA Water Metro & Country Waste Water Treatment Plants - REV D				
Rev No	**Date**	**Revision Details**	**Typist**	**Author**	**Verifier**
A	9/02/2015	DRAFT FOR CLIENT COMMENT	SL	SL	RM
B	20/02/2015	REVISED ISSUE FOR COMMENT	SL	SL	RM
C	02/03/2015	REVISED ISSUE FOR COMMENT	SL	SL	RM
D	02/04/2015	REVISED REPORT ONLY	SL	SL	RM
E	10/04/2015	REVISED REPORT ONLY	RM	RM	RM

Contents

Executive Summary

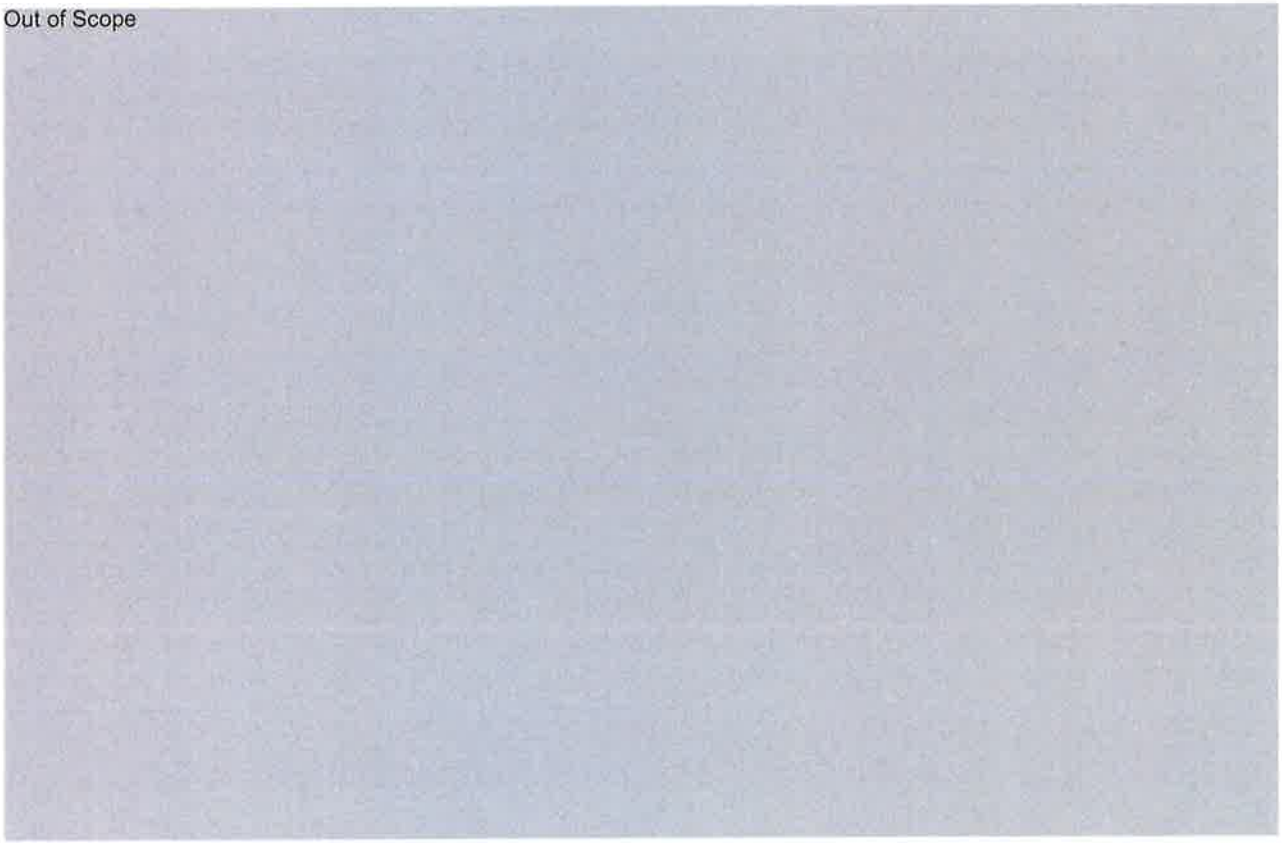
Aquenta Consulting has been engaged by SA Water to determine the lowest replacement value for all of SA Water's metropolitan and country Waste Water Treatment Plants (WWTP).

SA Water's accounting policies require that infrastructure assets be valued on a "fair value" basis which is the lower of the reproduction cost or the replacement cost, less accumulated depreciation.

A valuation date of the 1st July 2014 has been adopted.

The reproduction and replacement costs are determined on an optimised basis thereby excluding the cost of reproducing or replacing excess capacity or over-engineering of the asset, i.e. the reproduction or replacement cost of the modern equivalent asset. It has been assumed that the current arrangements of the plants are not over engineered unless the provided information provided by SA Water states that there are redundant processes.

A summary of the asset replacement values as at 1st July 2014 and the changes from the past is shown below.



The variances between the valuations on the Metropolitan plants are minimal with the exception of Aldinga and Myponga. The reduction in values in the larger metropolitan plants is reasonable and not unexpected; and due to the following reasons:

- The reduction is reflective of the revaluation being completed on a five year basis; it is recommended that in future SA Water consider more frequent external valuations subject to materiality of the anticipated valuation movements.
- There are lower construction prices due to the competitive market; and
- The availability of modern equivalent replacement materials being at a lower cost price than materials used in original construction.

The Aldinga and Myponga plants were revalued based on the drawings provided by SA Water, it is likely the previous valuations were completed utilising an alternative methodology which is not known by Aquenta; therefore Aquenta are unable to comment on the previous valuations.

PLANT	Out of Scope	VALUATION AT 01/07/2014 BY AQUENTA
COUNTRY PLANTS		
Out of Scope		
Mannum	Out of Scope	$5,322,103
Out of Scope		

The variances between the current and previous valuations were due to the approach taken to revalue the country plants, Aquenta are unable to provide comment on the previous valuations as the methodology behind these previous valuations were not provided to Aquenta. Aquenta adopted a factoring exercise over each treatment process based on a range of costs built up using elemental rates, the country plants were revalued based on the drawings provided by SA Water.

Introduction

GENERAL

Aquenta Consulting have been engaged by SA Water to determine the lowest replacement Value for all of SA Water's metropolitan Waste Water Treatment Plants (WWTP).

The assets were valued using a Depreciated Optimised Replacement Cost (DORC) method as a proxy for market value. The specific assumptions and methodology used to calculate the DORC of the tangible assets are detailed in this report.

PURPOSE OF THIS REPORT

The purpose of this report is to present the lowest replacement valuation as at 1st July 2014 of the above named assets in accordance with the scope of services set out in the agreement between Aquenta Consulting and SA Water.

This report has been prepared on behalf of and for the exclusive use of SA Water, and is subject to and issued in connection with the provisions of the agreement between Aquenta Consulting and SA Water. Aquenta Consulting accepts no liability or responsibility for, or in respect of, any use of or reliance upon this report by any third party

DATA SOURCES

In the preparation of this report, we have had access to the following principal sources of information

- Information provided by SA Water:
  - As constructed Schematic drawings of all sites;
  - Detailed drawings of some sites
  - Photographs of the individual sites
  - Final construction cost information on all recent works at the sites
  - Previous valuations

Information gathered through drawings, reports and previous site inspections has been supplemented by discussions with representatives of SA Water during the course of preparing this report.

SYSTEMS NOT INCLUDED IN THE VALUATION

The valuation does not include consideration of the following elements:

- Transformers (owned and maintained by ETSA)
- Head office or off-site assets
- SCADA
- Loose equipment
- Vehicles
- Land (excluded at SA Water direction)
- Intangibles
- Lease agreements
- Liabilities
- SA Waters Project Delivery Costs
- Assets not owned by SA Water;

Methodology

INTRODUCTION

The valuation of SA Water's WWTP assets is required to satisfy SA Water's accounting policies.

This requires the assets to be valued on a *fair value* basis. SA Department of Treasury and Finance guidelines define fair value as:

'The amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction. Fair value is measured having regard to the asset's feasible highest and best use. The best price of the asset is that price which market participants would be prepared to pay after an adequate period of marketing. When a quoted market price for the asset in an active and liquid market is not available, the best indicator of the asset's fair value is the replacement cost of the asset's remaining future economic benefits (which is the lower of its replacement cost or its reproduction cost, less accumulated depreciation, that is, it's written-down current cost).'

Aquenta Consulting has adopted the Depreciated Optimised Replacement Cost (DORC) model as a proxy for the market value. The DORC simulates the cost of replicating the functionality of the asset on an optimised basis thereby excluding the cost of replacing or reproducing excess capacity or over-engineering of the asset whilst taking into account its age and condition.

DEPRECIATED OPTIMISED REPLACEMENT COST PROCESS

Depreciation Method

Water assets are generally considered to depreciate evenly over the whole of their estimated useful lives and have zero residual value. Therefore a straight line method of calculating the depreciated value has been adopted.

Asset Useful Lives

The useful life of a depreciable asset is defined as the estimated period of time over which an asset is expected to be able to be economically used.

The assumed useful lives of the components of the WWTPs were provided by SA Water as instructed.

Modern Equivalent Asset

The valuation of the WWTPs is based on the depreciated replacement cost of the Modern Equivalent Asset (MEA), a term which also assumes that the asset would be procured by the most cost effective method.

The civil components of the WWTP assets are considered to be the modern equivalent and whilst this is not necessarily the case for the mechanical and electrical components, due to ongoing maintenance and replacement regimes it has been assumed that any difference is insignificant and has no material effect on the DORC.

ESTIMATING PROCESS

Identify the System Components within each Major Asset

Notwithstanding that SA Water class WWTPs as a "Major" asset and therefore each WWTP is recorded as a 1 line entry in SA Water's Financial Asset Register, the optimised replacement cost valuation of each asset has been prepared on a Main Component basis for each Main Process/Asset Group which has then been classified as either Mechanical, Electrical or Civil assets..

A list of these Main Process/Asset Groups and Main Components is included in Appendix A.

Establishing the Cost of Each Component

Each component of each asset was measured and quantified to the extent and accuracy allowed by the available information as appropriate to the task. Rates and lump sums based as at 1st July 2014 sourced either from suppliers, other sites, or Aquenta Consulting experience was then applied to the components to arrive at a replacement cost.

The costs include:

- An estimate of the cost for a Design and Construct (D&C) Contractor to build the assets including Preliminaries, Overheads, Margin and CITF Levy;
- The cost estimates reflect the anticipated efficient cost of construction.

Checks for Total Replacement Cost of Each Plant

The total replacement cost for each plant was benchmarked against similar current projects as a bulk check of the accuracy of the estimate.

Preliminaries, Overhead and Margin

The calculation of the replacement costs is based on a single Design and Construct contract for each asset.

The cost associated with the Contractor's preliminaries, engineering, commissioning, overheads and margins has been calculated at 18% and is included in the replacement cost's rates and lump sums.

Appendix A – Valuation Spreadsheets

Mannum

Item	Size	Description/ Make	Qty	Unit	Install Date	Useful Life	2014 Current Age	Remain. Useful Life	% Written Down	Rate $/unit	2014 Valuation: GRV $ as at 1/7/14	Accummulated Depreciation $ as at 30/6/14	30-June-2015 Annual Depreciation $ 2014/2015	Accumulated Depreciation $ 30/6/15	Written Down Value $ 30/6/15
Imhoff Tank															
Civil															
Imhoff Tank			2	No	1968	100	47	53	47%	$ 215,500	$ 431,000	$ 198,260	$ 4,310	$ 202,570	$ 228,430
Civil Subtotal											$ 431,000	$ 198,260	$ 4,310	$ 202,570	$ 228,430
Electrical															
Imhoff Tank			2	No	1968	15	47	(32)	100%	$ 6,000	$ 12,000	$ 12,000	$ -	$ 12,000	$ -
Electrical Subtotal											$ 12,000	$ 12,000	$ -	$ 12,000	$ -
Mechanical															
Imhoff Tank			2	No	1968	25	47	(22)	100%	$ 31,000	$ 62,000	$ 62,000	$ -	$ 62,000	$ -
Mechanical Subtotal											$ 62,000	$ 62,000	$ -	$ 62,000	$ -
Imhoff Tank Total											$ 505,000	$ 272,260	$ 4,310	$ 276,570	$ 228,430
Lagoons															
Civil															
Lagoons	44230m2		44,230	m2	1968	100	47	53	47%	$ 50	$ 2,211,500	$ 1,017,290	$ 22,115	$ 1,039,405	$ 1,172,095
Civil Subtotal											$ 2,211,500	$ 1,017,290	$ 22,115	$ 1,039,405	$ 1,172,095
Electrical															
Electrical Subtotal											$ -	$ -	$ -	$ -	$ -
Mechanical															
Mechanical Subtotal											$ -	$ -	$ -	$ -	$ -
Lagoons Total											$ 2,211,500	$ 1,017,290	$ 22,115	$ 1,039,405	$ 1,172,095
Sludge Scrapes															
Civil															
Sludge Scrapes			640	m2	1968	100	47	53	47%	$ 50	$ 32,000	$ 14,720	$ 320	$ 15,040	$ 16,960
Civil Subtotal											$ 32,000	$ 14,720	$ 320	$ 15,040	$ 16,960
Electrical															
Electrical Subtotal											$ -	$ -	$ -	$ -	$ -
Mechanical															
Mechanical Subtotal											$ -	$ -	$ -	$ -	$ -
Sludge Scrapes Total											$ 32,000	$ 14,720	$ 320	$ 15,040	$ 16,960

Mannum

Item	Size	Description/ Make	Qty	Unit	Install Date	Useful Life	2014 Current Age	Remain. Useful Life	% Written Down	Rate $/unit	2014 Valuation: GRV $ as at 1/7/14	Accummulated Depreciation $ as at 30/6/14	30-June-2015 Annual Depreciation $ 2014/2015	Accumulated Depreciation $ 30/6/15	Written Down Value $ 30/6/15
Effluent Pumping Station															
Civil															
Pump Station			1	item	1991	100	24	76	24%	$ 16,052	$ 16,052	$ 3,692	$ 161	$ 3,852	$ 12,200
Civil Subtotal											$ 16,052	$ 3,692	$ 161	$ 3,852	$ 12,200
Electrical															
Pump Station			1	item	1991	15	24	(9)	100%	$ 104,338	$ 104,338	$ 104,338	$ -	$ 104,338	$ -
Electrical Subtotal											$ 104,338	$ 104,338	$ -	$ 104,338	$ -
Mechanical															
Pump Station			1	item	1991	25	24	1	96%	$ 83,526	$ 83,526	$ 76,844	$ 3,341	$ 80,185	$ 3,341
Mechanical Subtotal											$ 83,526	$ 76,844	$ 3,341	$ 80,185	$ 3,341
Effluent Pumping Station Total											$ 203,916	$ 184,874	$ 3,502	$ 188,375	$ 15,541
Siteworks															
Civil															
Roads	5600m2		5,600	m2	1968	100	47	53	47%	$ 40	$ 224,000	$ 103,040	$ 2,240	$ 105,280	$ 118,720
Fencing	1300m		1,300	m2	1968	100	47	53	47%	$ 90	$ 117,000	$ 53,820	$ 1,170	$ 54,990	$ 62,010
Pipework			1	no	1968	100	47	53	47%	$ 100,000	$ 100,000	$ 46,000	$ 1,000	$ 47,000	$ 53,000
Civil Subtotal											$ 441,000	$ 202,860	$ 4,410	$ 207,270	$ 233,730
Electrical															
General Site light and power			1	item	1968	15	47	(32)	100%	$ 15,000	$ 15,000	$ 15,000	$ -	$ 15,000	$ -
PLC			1	item	1968	15	47	(32)	100%	$ 100,000	$ 75,000	$ 75,000	$ -	$ 75,000	$ -
Site Cabling			1	item	1968	15	47	(32)	100%	$ 50,000	$ 50,000	$ 50,000	$ -	$ 50,000	$ -
Site Switchboards			1	item	1968	15	47	(32)	100%	$ 100,000	$ 100,000	$ 100,000	$ -	$ 100,000	$ -
Electrical Subtotal											$ 240,000	$ 240,000	$ -	$ 240,000	$ -
Mechanical															
Mechanical Subtotal											$ -	$ -	$ -	$ -	$ -
Siteworks Total											$ 681,000	$ 442,860	$ 4,410	$ 447,270	$ 233,730
Building															
Civil															
Building	20m2		20	m2	1968	100	47	53	47%	$ 1,700	$ 34,000	$ 15,640	$ 340	$ 15,980	$ 18,020

Mannum

Item	Size	Description/ Make	Qty	Unit	Install Date	Useful Life	2014 Current Age	Remain. Useful Life	% Written Down	Rate $/unit	2014 Valuation: GRV $ as at 1/7/14	Accummulated Depreciation $ as at 30/6/14	30-June-2015 Annual Depreciation $ 2014/2015	Accumulated Depreciation $ 30/6/15	Written Down Value $ 30/6/15
Civil Subtotal											$ 34,000	$ 15,640	$ 340	$ 15,980	$ 18,020
Electrical															
Building			20	m2	1968	15	47	(32)	100%	$ 150	$ 3,000	$ 3,000	$ -	$ 3,000	$ -
Electrical Subtotal											$ 3,000	$ 3,000	$ -	$ 3,000	$ -
Mechanical															
Mechanical Subtotal											$ -	$ -	$ -	$ -	$ -
Building Total											$ 37,000	$ 18,640	$ 340	$ 18,980	$ 18,020
Raw Total											$ 3,670,416	$ 1,950,644	$ 34,997	$ 1,985,640	$ 1,684,776
Breakdown of 'Raw Total'															
Civil											$ 3,165,552	$ 1,452,462	$ 31,656	$ 1,484,117	$ 1,681,435
Electrical											$ 359,338	$ 359,338	$ -	$ 359,338	$ -
Mechanical											$ 145,526	$ 138,844	$ 3,341	$ 142,185	$ 3,341
Raw Total											$ 3,670,416	$ 1,950,644	$ 34,997	$ 1,985,640	$ 1,684,776
Breakdown of On - Costs (Overheads) : (calculated on 'Raw Total')															
Contractors Preliminaries	20%										$ 734,083	$ 390,129	$ 6,999	$ 397,128	$ 336,955
Commissioning and Testing	4%										$ 146,816.64	$ 78,026	$ 1,400	$ 79,426	$ 67,391
Contract Administration	6%										$ 220,225	$ 117,039	$ 2,100	$ 119,138	$ 101,087
Project Management	7%										$ 256,929.12	$ 136,545	$ 2,450	$ 138,995	$ 117,934
Design	8%										$ 293,633.28	$ 156,052	$ 2,800	$ 158,851	$ 134,782
Total of On-Costs											$ 1,651,687	$ 877,790	$ 15,748	$ 893,538	$ 758,149
Grand Total ('Raw' & 'On-Costs')											$ 5,322,103	$ 2,828,434	$ 50,745	$ 2,879,179	$ 2,442,925
Breakdown of Grand Totals ('Raw' & 'On-Costs') between processes															
Civil Raw Total											$ 3,165,552	$ 1,452,462	$ 31,656	$ 1,484,117	$ 1,681,435
Civil Other On-Costs											$ 1,424,498	$ 653,608	$ 14,245	$ 667,853	$ 756,646
Civil Total											$ 4,590,050	$ 2,106,070	$ 45,901	$ 2,151,970	$ 2,438,080
Electrical Raw Total											$ 359,338	$ 359,338	$ -	$ 359,338	$ -
Electrical Other On-Costs											$ 161,702	$ 161,702	$ -	$ 161,702	$ -
Electrical Total											$ 521,040	$ 521,040	$ -	$ 521,040	$ -
Mechanical Raw Total											$ 145,526	$ 138,844	$ 3,341	$ 142,185	$ 3,341
Mechanical Other On-Costs											$ 65,487	$ 62,480	$ 1,503	$ 63,983	$ 1,503
Mechanical Total											$ 211,013	$ 201,324	$ 4,845	$ 206,168	$ 4,845
GRAND TOTAL											$ 5,322,103	$ 2,828,434	$ 50,745	$ 2,879,179	$ 2,442,925

Imhoff Tank - Inspect and Operate - Mannum WWTP
SAWO-ENV-0104

Procedure statement

Purpose	This procedure is developed to provide primary treatment of incoming wastewater to maximise primary settling of suspended solids at Mannum WWTP.		
Scope	It excludes mechanical and electrical maintenance.		
Minimum Safety Requirements	 Safety Footwear	 Safety Eyewear	 Hand Protection
Key Risks	 Safety risk	 Environmental risk	
Definitions and Acronyms	**WWTP** Wastewater Treatment Plant **PPE** Personal Protective Equipment **PFD** Personal Flotation Device		
Responsible role/s	Plant Operator, Vactor Truck Operator		
Minimum Competency Required	The person performing this procedure is required to have completed the relevant competency modules or work under instruction of a competent person. Clarification may be sought by your supervisor or L&D representative.		

Steps

No.	Step Description	Responsibility	Risk
1.	**Process begins each time the site is visited for inspection** • A Maximo job will be generated when required for this task in accordance with SAWO-ENV-0104 – 'Operational Duties'. • **Before you start:** ○ Wastewater can contain pathogens and organisms, operators must avoid contact by wearing appropriate PPE as listed above. ○ This task involves some manual handling activities, please undertake this task in accordance with Hazard Management Standard HMS-010 Hazardous Manual Tasks. ○ Every precaution should be undertaken to avoid slips, trips and falls at the Mannum WWTP.	Plant Operator	
2.	**Put on the PPE and flotation device** Minimum PPE requirements include: • Safety glasses. • Gloves. **Note**: If working over the handrail a PFD must be worn.	Plant Operator	

No.	Step Description	Responsibility	Risk
3.	**Skim floating debris from centre of tank & gas vents** • Use skimmers to collect floating debris. • Indigestible objects such as plastics etc are placed in Imhoff Tank vents.	Plant Operator	
4.	**Hose off walls of centre compartment** **Note:** pay particular attention to area around the water line.	Plant Operator	
5.	**Visually inspect gas vents** • Check surface of vents for sludge accumulation. • Check for gas bubbling. • Check for accumulation of debris.	Plant Operator	
6.	**Hose down the gas vents to break up the sludge** This is only undertaken when sludge is not wasted.	Plant Operator	
7.	**Check sludge depth weekly** • Clear an area of floating sludge in the outer centre of each gas vent. • Lower the sludge plate into the gas vent until the rope become slack. • Measure the depth from the measured knots on the rope (approx 1 metre intervals) and record on the log book. • This job is performed as per a Maximo task. **Note:** if the levels are significantly different between the vents it may be necessary to agitate the higher side allowing the sludge to equalise.	Plant Operator	
8.	**Does the sludge need wasting?** • Wasting criteria ○ Waste sludge when either of the following exists: ○ There is a presence of gas bubbles rising in the centre compartment, or when the top of the sludge blanket is between 3.5 - 4.0 metres from the water surface. • Sludge Wasting ○ Isolate the flow to the Imhoff tank (one tank at a time). ○ Open the valve to the Vactor Truck. ○ Open valve to sludge chamber. ○ Run sludge to required depth. ○ Close the valve to the sludge chamber. ○ Hose out chamber. ○ Record event of sludge wasted on form SAWF-ENV-0093. **Note**: Collect sample(s) in accordance with the requirements of SAWO-ENV-0004 – 'WWTP Sampling Guide' - (as per AWQC sampling schedule)	Plant Operator / Vactor Truck Operator	
9.	**Pump off gas vent with Vactor Truck** Pump off using Vactor Truck when wasting sludge.	Plant Operator	
10.	**Turn sludge control sprinklers on (if required)** • The sprinklers may be required to be turned on if there are issues with sludge condition and build up.	Plant Operator	
11.	**Process is complete when SAWF-ENV-0093 & Works Management System job sheet are completed** Complete sludge wasting totals on form SAWF-ENV-0093 and Maximo job sheet.	Plant Operator	

Related Links

Doc ID	Title / Hyperlink
SAWO-ENV-0104	Operational Duties – Mannum WWTP
SAWF-ENV-0093	Mannum WWTP Operations Records
SAWO-ENV-0004	WWTP Sampling Guide
HMS-010	Hazardous Manual Tasks

Document Control

Chris21 Course Code	EPGA01
Approved by	Manager Environment & Water Quality Systems
Effective Date	31 May 2016
Next Review Date	1 September 2018

Version History

Version	Date	Author	Comments
1.0	08/11/00	-	Original version.
2.0	24/05/06	Manager EMS	Local review
3.0	23/05/08	Manager EMS	EMS-OMT-AR-51
4.0	29/04/11	Manager EMS	AR000406 (Task ID:796)
5.0	18/09/12	Manager EMS & RQSO	AR000466 (Task ID:1009)
6.0	11/07/14	Manager Quality Systems	AR000904 (Task ID:2125)
7.0	18/06/15	Manager Quality Systems	AR000910 (Task ID:2435)/update to reflect new organisation structure & revised hyperlinks.
8.0	14/09/15	RQSO/Operator	AR001148 (Task ID:2742)/review and update.
9.0	31/05/16	Manager Env & WQ Systems	Document format updated to BMS template.

Operational Duties - Mannum WWTP
SAWO-ENV-0105

Procedure statement

Purpose	This procedure is developed to maintain and promote optimal performance of the Mannum WWTP.		
Scope	It excludes mechanical and electrical maintenance of the plant and maintenance of the chlorine system.		
Minimum Safety Requirements	 Safety Footwear	 Safety Eyewear	 Hand Protection
Key Risks	 Safety risk	 Environmental risk	
Definitions and Acronyms	**DO** Dissolved Oxygen **WWTP** Wastewater Treatment Plant **PPE** Personal Protective Equipment **PFD** Personal Flotation Device **AWQC** Australian Water Quality Centre **LPS** Litres Per Second **ETSA** Electricity Trust of South Australia **MSDS** Material Safety Data Sheet		
Responsible role/s	Plant Operator		
Minimum Competency Required	The person performing this procedure is required to have completed the relevant competency modules or work under instruction of a competent person. Clarification may be sought by your supervisor or L&D representative.		

Steps

No.	Step Description	Risk
1.	**Process begins each time the site is visited for routine operation & inspection** • Before you start: ○ Wastewater can contain pathogens and organisms, operators must avoid contact by wearing appropriate PPE as listed above. ○ This task involves some manual handling activities; please undertake this task in accordance with Hazard Management Standard HMS-010 Hazardous Manual Tasks. ○ Every precaution should be undertaken to avoid slips, trips and falls at the Mannum WWTP.	
2.	**Is It time to sample?** • Sampling is undertaken in accordance with the AWQC run sheet using bottles supplied. • Take samples in accordance with sampling procedure SAWO-ENV-0004 – 'WWTP Sampling Guide'.	
3.	**Is there a need for a modified plant inspection?** • In the event of staff shortages a modified plant check may be required. In such cases adjust the routine visit to suit the time constraints imposed by the particular circumstance. I.e. basic checks	

No.	Step Description	Risk
	of critical plant and equipment. • Depending on available time, priority should be given to the following: o Take sewage inflow, total & river flow and reuse readings. o Visually inspect lagoons. o Visually inspect Imhoff Tanks. o Record reuse main manifold pressure. **Note:** abridged plant check recorded in site diary and form SAWF-ENV-0093.	
4.	**Inspect Imhoff Tanks in accordance with procedure SAWO-ENV-0104** Refer to procedure SAWO-ENV-0104 – 'Imhoff Tank Inspect & Operate - Mannum WWTP'.	
5.	**Inspect buildings, record flows & take monthly readings** • Inspect office & reuse pump station. o Look for physical damage and general appearance. o Sweep and mop floors regularly. o Note any abnormal conditions on the outside of the chlorination building and notify the Murray Bridge workshop. • Record the following on form SAWF-ENV-0093: o Sewage inflows (totals + LPS). o River flow (L1). o Total flow (L2). o Reuse flow reading (L2-L1). o Manifold pressure. o End of month ETSA readings.	
6.	**Check condition of the lagoons & aerator operation** • When working near the lagoon edges a PFD must be worn. Comply with Safe Work Method Statement - Working on, in or near Wastewater Lagoons. o Bank erosion. o Vegetation overgrowth. o Outlet grates. • Check the following operational parameters (based on Operator experience): o Odour. o Colour. o Algal blooms. o Presence of birds and aquatic species. o General condition of lagoons. • Check operation of the aerator in Lagoon No.1 (if operating). **Note:** • Any issues with the aerator should be raised with the Team Leader and the Workshops. • Check the lagoon levels each visit from measuring marker and record on form SAWF-ENV-0093. Notify the golf club weekly of the lagoon levels. • Lagoon 2 level is to be maintained above 0.4 metres. Advise the golf club when the level gets to 0.5 so they can manage pumping.	
7.	**Take DO, conductivity & Redox readings in Lagoons 1, 2 & 3** • Calibrate the field meter in accordance with AWQC procedure CL-039 - "Quick Reference Guide for TPS WP81 Meters". • Record calibration results of DO, Redox & conductivity on form SAWF-ENV-0053 - "Field Meter Calibration Log".	

No.	Step Description	Risk
	• Record the following on form SAWF-ENV-0093: ○ Lagoons 1 & 2 - DO, conductivity & Redox (weekly). ○ Lagoon 3 - conductivity (weekly).	
8.	**Inspect the grounds** • Inspection includes the following: ○ Vandalism. ○ Falling limbs over fences. ○ Fence condition & gates. ○ High grass. ○ Presence of stray animals/vermin. ○ Fallen trees across the road.	
9.	**Is land management required?** • Land Management activities may include: ○ Revegetation. ○ Bushfire management. ○ Vegetation clearance. ○ Weed control. • Perform land management in accordance with procedure SAWO-ENV-0006.	
10.	**Inspect the golf club irrigation pumps & reuse rising main** • Observe any signs of leaks from the reuse rising main • Record the hour runs (monthly) and flow meter reading (each visit) on form SAWF-ENV-0093. • Report any obvious faults to the Murray Bridge Workshops. Reset any faults as required. **Note:** • There are 2 pump sets, one from the effluent lagoons and the other from the river. • If reuse main pressure is less than 800 kpa check the system for possible leaks.	
11.	**Inspect & operate emergency irrigation system** • Check the following: ○ Operation of chlorine analyser while system is operating. ○ Condition functioning of sprinkler system. **Note:** • If no chlorine residual is achieved contact the Murray Bridge Workshop to investigate the fault. • Outside of this it is operated only in the case of high inflow and/or lagoon levels combined with low golf course usage. (Refer "Mannum WWTP Emergency Recycled Water Irrigation System Description"). • If reuse by the golf club is low the club will operate the emergency area irrigation scheme as required to maintain lagoon levels in conjunction with the Golf Club.	
12.	**Are there any other scheduled Works Man System activities?** • Activities may include: ○ MSDS checks. ○ Workplace Inspection Checklist (SAWL-WHS-0026). ○ Other scheduled activities. • Carry out duties as required.	
13.	**Process is complete when the WMS work orders, site diary & form SAWF-ENV-0093 are completed** • The site diary is located in the site office. • Load to electronic spreadsheet each visit.	

No.	Step Description	Risk
	Note: all entries must be dated and signed.	

Related Links

Doc ID	Title / Hyperlink
SAWO-ENV-0104	Imhoff Tank – Inspect & Operate – Mannum WWTP
SAWF-ENV-0093	Mannum WWTP Operations Records
SAWF-ENV-0053	WWTP Field Calibration Log
SAWO-ENV-0004	WWTP Sampling Guide
SAWO-ENV-0006	Land Management at WWTP
SWP 73253	Aeration Lagoon: Entry
SWMS-NW01	Safe Work Method Statement - Working on, in or near Wastewater Lagoons
HMS-010	Hazard Management Standard Hazardous Manual Tasks

Document Control

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1.0	08/11/00	Manager EMS	Initial document
2.0	24/05/06	Manager EMS	Local review
3.0	23/10/07	Manager EMS	EMS-OMT-AR-033
4.0	23/05/08	Manager EMS	EMS-OMT-051
5.0	29/04/11	Manager EMS/RQSO	EMS-OMT-021
6.0	18/09/12	Manager EMS/RQSO	AR000406 (Task ID:796)
7.0	08/07/15	Manager Quality Systems	AR000466 (Task ID:1009)
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10.0	31/05/16	Manager Env & WQ Systems	Document format updated to BMS template.
11.0	17/08/16	Manager Env & WQ Systems/QSO	AR001352 (Task ID:3256)/former Step 10 "check salt channel pump"removed from procedure.