ANEWR

The EIA Ordinance Register Office
Environmental Protection Department
27th floor, Southorn Centre
130 Hennessy Road
Wanchai
Hong Kong

Your reference:

Our reference: HKDSD201/50/105500

Date: 14 January 2019

BY HAND

Dear Sirs

Agreement No. SP 01/2015
Environmental Monitoring and Audit for Advance Works for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A
Monthly EM&A Report for December 2018

On behalf of Drainage Services Department, we are pleased to submit herewith three hard copies and two electronic copies of the captioned report in accordance with Condition 3.4 of the Further Environmental Permit No. FEP-02-474/2013.

Should you have any queries, please do not hesitate to contact the undersigned or our Ms Hazel Chan on 2618 2831.

Yours faithfully
ANEWR CONSULTING LIMITED

Adi Lee
Independent Environmental Checker

LYMA/LHHN/CYYH/lhmh

Encl.

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Drainage Services Department

Advance Works for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A

Monthly EM&A Report

(December 2018)

Verified by : Mr. Adi Lee

Position : Independent Environmental Checker

Date : 14 Jan 2019

Drainage Services Department

Advance Works for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A

Monthly EM&A Report

(December 2018)

Certified by	:	Dr. Priscilla Choy
Position	:	Environmental Team Leader of Contract No. DE/2014/01
Date	:	14 Jan. 2019

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Appendix A Monthly EM&A Report for Contract No. DE/2014/01

1. EXECUTIVE SUMMARY

This is the Monthly EM&A Report for the Project which summarises the EM&A works undertaken by the Contractor's ET of Contract No. DE/2014/01 under FEP No. FEP-02/474/2013 in December 2018 (the reporting period).

1.1 Summary of Major Construction Works taken in the Reporting Period

1.1.1 In the reporting period, the major construction works being undertaken by the respective Contractors under the Project are summarized in the below table.

Works Contract	Contract Title	Major Construction Works
DC/2013/09	Advance Works for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A and Sewerage Works at Ping Che Road	The major construction works under Contract No. DC/2013/09 has been certified as substantially completed by DSD.
DE/2014/01	Provision of Electrical and Mechanical Facilities for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A – Advance Works and Ng Chow South Road Sewage Pumping Station	• Installation of Building Services at MBR Facilities Building • Installation of Air Blowers and associated accessories at 1/F, MBR Facilities Building. • Installation of MBR Pre-treatment Screen Facilities. • Installation of ancillary aeration blowers and associated accessories beside Bioreactor No.1 (BR1). • Installation of pipework in Bioreactor No.1 (BR1). • Installation of permeate pipes at G/F, MBR facilities Building. • Installation in Membrane Filtration Tanks. • Installation in LV Switchroom No.3. • Installation of deodorising system at G/F, MBR Facilities Building. • Installation of chemical dosing system in Chemical Rooms.

1.2 Environmental Monitoring and Audit Activities

1.2.1 The environmental monitoring activities under the EM&A programme are summarized in the below table. No Action and Limit Level exceedance of air quality and construction noise monitoring was recorded during the reporting period.

Environmental Issue	Environmental Monitoring Parameters / Inspection	Occasions	Action Level Exceedance	Limit Level Exceedance
Air Quality	1-hour TSP	36	0	0
	24-hour TSP	12	0	0
Construction Noise	$L_{Aeq(30min)}$ Daytime	10	0	0

1.3 Environmental Complaint

1.3.1 No environmental complaint, notification of summons or successful prosecutions were received during the reporting period. It is summarized in the below table.

Works Contract	Environmental Complaints	Notification of Summons	Successful Prosecutions	Status / Follow-up Actions
DC/2013/09	0	0	0	N/A
DE/2014/01	0	0	0	N/A

1.4 Site Inspection

1.4.1 Joint site inspections to evaluate the site environmental performance by the RE, the ET and the Contractor were carried out on the following dates during the reporting period.

Contract No. DC/2013/09: No site inspection was carried out in the reporting period
Contract No. DE/2014/01: 6, 13, 21 and 27 December 2018

1.4.2 IEC conducted site audit on 13 December 2018. No environmental non-compliance was identified in the reporting period.

1.5 Reporting Changes

1.5.1 The EM&A Programme of Contract No. DC/2013/09 was handed over to the ET of Contract No. DE/2014/01 since August 2018. Thus, the Monthly EM&A Report starting from September 2018 onwards will present the EM&A works undertaken by the ET of Contract No. DE/2014/01.

1.6 Future Key Issues

1.6.1 Key issues to be considered in the next reporting period for the Project are as follow:

Works Contract	Major Construction Works	Potential Pollution Issues	Mitigation Measures
DC/2013/09	The construction works have been certified as substantially completed by DSD.	N/A	N/A
DE/2014/01	• Installation of Building Services at MBR Facilities Building. • Mechanical Installation of Air Blowers and associated accessories at 1/F, MBR Facilities Building. • Mechanical Installation of MBR Pre-treatment Screen Facilities. • Mechanical Installation in Bioreactor No.1 (BR1). • Installation of pipework in Bioreactor No.1 (BR1) • Installation in Membrane Filtration Tanks • Installation of chemical dosing system in Chemical Rooms.	• Leakage from chemicals containers • Waste accumulation on site	• Waste should be stored and disposed properly to avoid accumulation and leakage • Accumulated waste to be recycled on-site whenever possible

2. INTRODUCTION

2.1 Background

2.1.1 The existing Shek Wu Hui Sewage Treatment Works (SWHSTW) is operated and maintained by the Drainage Services Department (DSD). It provides secondary level treatment to sewage collected from Sheung Shui, Fanling and adjacent areas, with design capacity of 93,000m^3/day at ADWF.

2.1.2 To cope with the latest population growth and new developments in the catchment, further expansion of SWHSTW is planned to be carried out in three phases, namely Phases 1A, 1B and 2. Further Expansion Phase 1A is to cope with the forecast increase in sewage flow from local developments and extension of village sewerage in Sheung Shui, Fanling and adjacent areas. The scope of the Phase 1A Project comprises the followings:

(a) the construction of proposed treatment facilities to increase the treatment capacity of SWHSTW by at least 40,000m^3/day with tertiary treatment level, with suitable allowance to cater for a further increase of treatment capacity by 20,000m^3/day in Phase 1B; and
(b) modification/upgrading of the existing facilities of SWHSTW.

2.1.3 To cope with the projected sewage flow buildup and meet the tight implementation programme, Advance Works for SWHSTW Further Expansion Phase 1A (hereinafter referred as "the Project") are proposed to be carried out between 2015 and 2018. The Phase 1A Advance Works comprise a civil works contract and an Electrical & Mechanical (E&M) works contract. The civil works Contract No. DC/2013/09 "Advance Works for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A and Sewerage Works at Ping Che Road" is supervised by the Sewerage Projects Division (SPD) of DSD. The E&M works Contract No. DE/2014/01 "Provision of Electrical and Mechanical Facilities for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A – Advance Works and Ng Chow South Road Sewage Pumping Station" is supervised by the Electrical & Mechanical Projects Division (E&MPD) of DSD.

2.1.4 The scope of Phase 1A Advance Works comprises the followings:

(a) the conversion of one existing bioreactor (BR1) and two existing final sedimentation tanks (FST1 and FST2) into one membrane bioreactor; and
(b) the ancillary works.

2.1.5 This Project is a part of designated project under item F.2 of Part 1, Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance. The EIA for the further expansion of SWHSTW Phases 1A, 1B and 2 is covered under the EIA Report of NENT NDAs (Register No. AEIAR-175-2013).

2.1.6 An Environment Permit (EP) No. EP-474/2013 for the further expansion of SWHSTW Phases 1A, 1B and 2 was issued by EPD to CEDD on 21 November 2013. On 23 January 2014, Further Environmental Permit (FEP) No. FEP-01/474/2013 was issued by EPD to DSD for the further expansion of SWHSTW Phase 1A works. On 15 February 2018, FEP No. FEP-02/474/2013 was issued by EPD to DSD covering the upgrading works of SWHSTW Phases 1A, 1B and 2.

2.1.7 With the issue of FEP No. FEP-02/474/2013, DSD has surrendered FEP No. FEP-01/474/2013 on 15 August 2018 which covering Phase 1A works only.

2.2 Project Programme

Two construction works contracts of the Project, i.e. civil works and E&M works, were commenced in October 2015 and October 2017 respectively. The major construction works under Contract No. DC/2013/09 has been certified as substantially completed by DSD and the remaining work is completed by the end of July 2018. The works of Contract No. DE/2014/01 is completed in early 2019 tentatively. ***Table 2.1*** summarises the information of the awarded Works Contracts.

Table 2.1 Summary of Awarded Works Contracts

Works Contract	Description	Construction Start Date	Contractor	Environmental Team
DC/2013/09	Advance Works for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A and Sewerage Works at Ping Che Road	October 2015	Tsun Yip Waterworks Construction Co Ltd (Tsun Yip)	Action-United Environmental Services & Consulting (AUES)
DE/2014/01	Provision of Electrical and Mechanical Facilities for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A – Advance Works and Ng Chow South Road Sewage Pumping Station	October 2017	Jardine Engineering Corporation Limited (JEC)	Cinotech Consultants Limited (Cinotech)

2.3 Purpose of the Report

2.3.1 The Environmental Monitoring and Audit (EM&A) programme for Contract No. DC/2013/09 and No. DE/2014/01 commenced in October 2015 and October 2017 respectively. This is the Monthly EM&A Report for the Project which summarises the EM&A works undertaken by the Contractor's ET of Contract No. DE/2014/01 in December 2018 (the reporting period).

2.4 Project Organization

Organization structure and contact details of relevant parties with respect to on-site environmental management are shown in ***Table 2.2*** below.

Table 2.2 Key Project Contacts

Works Contract	Organization	Role	Name	Tel No.
DC/2013/09	DSD	Resident Engineer	Ms. Konica Cheung	2594 7463
	ANewR Consulting Limited	Independent Environmental Checker	Mr. Adi Lee	2618 2836
	Tsun Yip	Site Agent	Mr. Ken Wong	9161 9627
		Environmental Officer	Mr. M. T. Ho	9507 9634
	AUES	Environmental Team Leader	Mr. T. W. Tam	2959 6059
DE/2014/01	DSD	Resident Engineer	Mr. Fong Mo	2594 7329
	ANewR Consulting Limited	Independent Environmental Checker	Mr. Adi Lee	2618 2836
	JEC	Project Manager	Mr. Kim Hung Lau	2947 1125
		Environmental Officer	Mr. George Ng	2947 1125
	Cinotech	Environmental Team Leader	Dr. Priscilla Choy	2151 2089

3. ENVIRONMENTAL MONITORING AND AUDIT

3.1 The Project has been divided into two construction works contracts which are covered by EP No. EP-474/2013 and FEP No. FEP-02/474/2013. As per the EP Conditions, EM&A Report for Works Contract No. DE/2014/01 prepared by the Contractor's ET is provided in ***Appendix A***.

3.2 The EM&A Report provides details of the project information, EM&A requirements, impact monitoring and audit results for the corresponding Contracts.

3.3 A summary of the major construction activities undertaken by the respective Contractors of various Works Contracts during the reporting period are presented in ***Table 3.1***.

Table 3.1 Summary of Major Construction Activities in the Reporting Period

Works Contract	Contract Title	Major Construction Works
DC/2013/09	Advance Works for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A and Sewerage Works at Ping Che Road	The major construction works under Contract No. DC/2013/09 has been certified as substantially completed by DSD.
DE/2014/01	Provision of Electrical and Mechanical Facilities for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A – Advance Works and Ng Chow South Road Sewage Pumping Station	• Installation of Building Services at MBR Facilities Building • Installation of Air Blowers and associated accessories at 1/F, MBR Facilities Building. • Installation of MBR Pre-treatment Screen Facilities. • Installation of ancillary aeration blowers and associated accessories beside Bioreactor No.1 (BR1). • Installation of pipework in Bioreactor No.1 (BR1). • Installation of permeate pipes at G/F, MBR facilities Building. • Installation in Membrane Filtration Tanks. • Installation in LV Switchroom No.3. • Installation of deodorising system at G/F, MBR Facilities Building. • Installation of chemical dosing system in Chemical Rooms.

3.4 As the major construction works under Contract No. DC/2013/09 has been certified as substantially completed by DSD and the remaining work is completed by the end of July 2018, air quality and construction noise monitoring have been handed over to the ET of Contract No. DE/2014/01.

3.5 Impact monitoring for air quality and construction noise were conducted in accordance with the Updated EM&A Manual in the reporting period. The monitoring results conducted by the ET of Contract No. DE/2014/01 for this reporting month are summarised in ***Tables 3.2*** to ***3.4***. Details of the monitoring requirements, locations, equipment, methodology and QA/QC procedures are presented in the Monthly EM&A Report of Contract No. DE/2014/01 as provided in ***Appendix A***.

3.6 No Action and Limit Level exceedance of air quality and construction noise monitoring was recorded during the reporting period.

Table 3.2 Summary of 1-Hour TSP Monitoring Results in the Reporting Period

Monitoring Station ID	Location	TSP Concentration (mg/m^3)	Action Level (mg/m^3)	Limit Level (mg/m3)	Exceedance due to the Project Construction (Yes/No)
AM1	No. 31 Wai Loi Tsuen	61.9 – 192.0	286	500	No
AM2	Fu Tei Au	63.1 – 205.7	276	500	No

Note:
(1) The environmental monitoring works of the Project were conducted by the Environmental Team of Contract No. DE/2014/01 in accordance with the Updated EM&A Manual.

Table 3.3 Summary of 24-Hour TSP Monitoring Results in the Reporting Period

Monitoring Station ID	Location	TSP Concentration (mg/m^3)	Action Level (mg/m^3)	Limit Level (mg/m3)	Exceedance due to the Project Construction (Yes/No)
AM1a	SWHSTW site boundary	41.2 – 76.8	147	260	No
AM2a	RE's Site Office	35.3 – 91.0	155	260	No

Note:
(1) The environmental monitoring works of the Project were conducted by the Environmental Team of Contract No. DE/2014/01 in accordance with the Updated EM&A Manual.

Table 3.4 Summary of Construction Noise Monitoring Results in the Reporting Period

Monitoring Station ID	Location	Noise Level (LAeq,30mins, dB(A))	Action Level (dB(A))	Limit Level (dB(A))	Exceedance due to the Project Construction (Yes/No)
NM1	No. 31 Wai Loi Tsuen	56.7 – 63.6	When one documented complaint is received	75	No
NM2	Fu Tei Au	56.1 – 62.1		75	No

Note:
(1) The environmental monitoring works of the Project were conducted by the Environmental Team of Contract No. DE/2014/01 in accordance with the Updated EM&A Manual.

3.7 No environmental complaint, notification of summons or successful prosecutions were received during the reporting period. Log for environmental complaints, notification of summons and successful prosecutions are provided in ***Table 3.5***.

3.8 Regular site inspections were conducted by the Contractor's ET on a weekly basis to check the implementation of environmental pollution control and mitigation measures for the Project. No non-compliance was identified in the reporting period. The site inspection for Contract No. DC/2013/09 was ceased upon received EPD's reply letter on 24 August 2018. Joint site inspections for Contract No. DE/2014/01 were carried out on 6, 13, 21 and 27 December 2018 during the reporting period. In addition, IEC conducted site audit on 13 December 2018. No environmental non-compliance was identified in the reporting period.

Table 3.5 Log for Environmental Complaints, Notification of Summons and Successful Prosecutions for the Reporting Month

Works Contract	Environmental Complaints	Notification of Summons	Successful Prosecutions
DC/2013/09	0	0	0
DE/2014/01	0	0	0

4. WASTE MANAGEMENT

4.1 Waste management was carried out by on-site Environmental Officer or an Environmental Supervisor of the Contractor from time to time.

4.2 The quantities of waste for disposal in this Reporting Period are summarized in ***Tables 4.1*** and ***4.2*** and the Monthly Summary Waste Flow Table of Contract No. DE/2014/01 is presented in the EM&A Report as provided in ***Appendix A***. Whenever possible, materials were reused on-site as far as practicable.

Table 4.1 Summary of Quantities of Inert C&D Materials and C&D Wastes for Contract No. DC/2013/09

Type of Waste	Quantity			Disposal Location
	Prior Months	Reporting Month	Cumulated	
Total C&D Materials (Inert) (in '000m^3)	24.00	0	24.00	--
Hard Rock and Large Broken Concrete (Inert) (in '000m^3)	2.26	0	2.26	--
Reused in this Project (Inert) (in '000m^3)	3.67	0	3.67	--
Reused in other Projects (Inert) (in '000m^3)	2.23	0	2.23	--
Disposal as Public Fill (Inert) (in '000m^3)	15.93	0	15.93	--
Metals (in '000kg)	142.00	0	142.00	--
Paper / Cardboard Packing (in '000kg)	0.07	0	0.07	--
Plastics (in '000kg)	0	0	0	--
Chemical Wastes (in '000kg)	0	0	0	--
General Refuses (in '000m^3)	1.19	0	1.19	--

Table 4.2 Summary of Quantities of Inert C&D Materials and C&D Wastes for Contract No. DE/2014/01

Type of Waste	Quantity			Disposal Location
	Prior Months	Reporting Month	Cumulated	
Total C&D Materials (Inert) (in '000m^3)	0	0	0	--
Hard Rock and Large Broken Concrete (Inert) (in '000m^3)	0	0	0	--
Reused in this Project (Inert) (in '000m^3)	0	0	0	--
Reused in other Projects (Inert) (in '000m^3)	0	0	0	--
Disposal as Public Fill (Inert) (in '000m^3)	0	0	0	--
Metals (in '000kg)	0	0	0	--
Paper / Cardboard Packing (in '000kg)	0.057	0.032	0.089	Lau Choi Kee Papers Co.Ltd.
Plastics (in '000kg)	0	0	0	--
Chemical Wastes (in '000kg)	0	0	0	--
General Refuses (in tonne)	48.59	7.2	55.79	NENT

5. IMPLEMENTATION STATUS ON THE ENVIRONMENTAL PROTECTION REQUIREMENTS

5.1 The Contractor has implemented all mitigation measures and requirements as stated in the EIA Reports, EM&A Manuals, EP No. EP-474/2013 and FEP No. FEP-02/474/2013. Summary of the relevant permits, licenses, and/or notifications on environmental protection for this Project in this reporting period are summarised in ***Tables 5.1*** and ***5.2***.

Table 5.1 Summary of Environmental Licenses and Permits for Contract No. DC/2013/09

Item	Valid License/Permit	License/Permit Number
1	Further Environmental Permit	FEP-02/474/2013 (Valid from 15 February 2018)
2	Air Pollution Control (Construction Dust) Regulation	N/A
3	Chemical Waste Producer Registration	WPN5213-624-T3148-04
4	Water Pollution Control Ordinance	WT00022503-2015
5	Billing Account for Disposal of Construction Waste	Account Number: 7022898

Table 5.2 Summary of Environmental Licenses and Permits for Contract No. DE/2014/01

Item	Valid License/Permit	License/Permit Number
1	Further Environmental Permit	FEP-02/474/2013 (Valid from 15 February 2018)
2	Chemical Waste Producer Registration	WPN5213-624-T3685-01
3	Billing Account for Disposal of Construction Waste	Account Number: 7024165

6. CONCLUSION AND RECOMMENDATION

6.1 Conclusion

6.1.1 This is the Monthly EM&A Report for the Project which summarises the EM&A works undertaken by the Contractor's ET of Contract No. DE/2014/01 in December 2018 (the reporting period).

6.1.2 The EM&A Programme of Contract No. DC/2013/09 was handed over to the ET of Contract No. DE/2014/01 since August 2018. Thus, the Monthly EM&A Report starting from September 2018 onwards will present the EM&A works undertaken by the ET of Contract No. DE/2014/01.

6.1.3 No Action and Limit Level exceedance of 1-hour and 24-hour TSP monitoring was recorded during the reporting period.

6.1.4 No Action and Limit Level exceedance of construction noise monitoring was recorded during the reporting period.

6.1.5 Joint site inspections to evaluate the site environmental performance by the RE, the ET and the Contractors were carried out on the following dates during the reporting period.

Contract No. DC/2013/09: No site inspection was carried out in the reporting period
Contract No. DE/2014/01: 6, 13, 21 and 27 December 2018

6.1.6 IEC conducted site audit on 13 December 2018. No environmental non-compliance was identified in the reporting period.

6.1.7 No documented complaint, notification of summons or successful prosecution was received during the reporting period.

6.2 Recommendation

6.2.1 The following recommendations were made for future reporting periods:

Air Quality
- To regularly maintain the machinery and vehicles on site;
- To follow up any exceedance caused by the construction works;
- Non-Road Mobile Machinery (NRMM) labels must be demonstrated on the registered equipment for inspection.

Noise
- To inspect the noise source inside the site;
- To follow up any exceedance caused by the construction works;
- To space out noisy equipment and position the equipment as far away as possible from sensitive receivers;
- To provide temporary noise barriers for operations of noisy equipment near the noise sensitive receivers in an appropriate location.
- To provide adequate lubricant on mechanical equipment to reduce frictional noise; and
- To well maintain the mechanical equipment/ machineries to avoid abnormal noise nuisance.

Water Quality

- To identify any discharge of wastewater from the construction site;
- To avoid blockage of U channel and drainage system by sediment;
- To avoid water accumulation on site and carry out larviciding against mosquito breeding for stagnant water when mosquito larvae are observed; and
- To avoid spoilage of run-off from construction site to public area.
- The discharge quality must meet the requirements specified in the discharge license.

Waste/Chemical Management

- To provide proper rubbish bins / skips for waste collection;
- To check for any accumulation of wasted materials or rubbish on site;
- To provide proper storage area or drip trays for oil and chemical containers on site;
- To avoid any discharge or accidental spillage of chemical waste or oil directly from the equipment;
- To avoid improper handling or storage of oil drum on site.

APPENDIX A

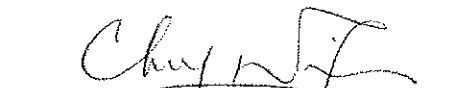
MONTHLY EM&A REPORT FOR CONTRACT NO. DE/2014/01

Jardine Engineering Corporation, Limited

Contract No. DE/2014/01
Provision of Electrical and Mechanical Facilities for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A – Advance Works and Ng Chow South Road Sewage Pumping Station

Monthly Environmental Monitoring and Audit Report December 2018

(Version 1.0)

Certified By 

(Environmental Team Leader)

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

CINOTECH accepts no responsibility for changes made to this report by third parties

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ABBREVIATION AND ACRONYM

AL Levels	Action and Limit Levels
DSD	Drainage Services Department
E / ER	Engineer/Engineer's Representative
EIA	Environmental Impact Assessment
EM&A	Environmental Monitoring and Audit
EMIS	Environmental Mitigation Implementation Schedule
EP	Environmental Permit
EPD	Environmental Protection Department
ET	Environmental Team
HVS	High Volume Sampler
IEC	Independent Environmental Checker
RE	Resident Engineer
RH	Relative Humidity
QA/QC	Quality Assurance / Quality Control
SLM	Sound Level Meter
WMP	Waste Management Plan
SWHSTW	Shek Wu Hui Sewage Treatment Works

EXECUTIVE SUMMARY

Introduction

1. This is the 15th Monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for DSD Contract No. DE/2014/01 "Provision of Electrical and Mechanical Facilities for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A – Advance Works and Ng Chow South Road Sewage Pumping Station" (The Project) which documents the key information of EM&A and environmental monitoring works undertaken by other Contract at the Shek Wu Hui Sewage Treatment Works under Phase 1A with Environmental Permit (Permit No. FEP-02/474/2013).

2. The site activities undertaken in the reporting month included:

- Installation of Building Services at MBR Facilities Building
- Installation of Air Blowers and associated accessories at 1/F, MBR Facilities Building.
- Installation of MBR Pre-treatment Screen Facilities.
- Installation of ancillary aeration blowers and associated accessories beside Bioreactor No.1 (BR1).
- Installation of pipework in Bioreactor No.1 (BR1).
- Installation of permeate pipes at G/F, MBR facilities Building.
- Installation in Membrane Filtration Tanks.
- Installation in LV Switchroom No.3.
- Installation of deodorising system at G/F, MBR Facilities Building.
- Installation of chemical dosing system in Chemical Rooms.

Environmental Monitoring Works

3. From August 2018 onward, the environmental monitoring works of the Project were conducted by the ET of Contract No. DE/2014/01, which took over all the monitoring stations from Contract No. DC/2013/09 under the same FEP. The impact monitoring methodology conducted by DE/2014/01 will follow the requirements of the Updated EM&A Manual for Shek Wu Hui Sewage Treatment Works.

4. Site audits were conducted once per week. The implementation of the environmental mitigation measures, Event Action Plans and environmental complaint handling procedures were also checked.

5. Summary of the non-compliance of the reporting month is tabulated in **Table I**.

Table I Summary Table for Non-compliance (Exceedances) Recorded in the Reporting Month

Monitored By	Monitoring Station	Parameter	No. of Exceedance		No. of Exceedance Due to the Project		Action Taken
			Action Level	Limit Level	Action Level	Limit Level	
DE/2014/01	AM1	1-hr TSP	0	0	0	0	N/A
	AM1a	24-hr TSP	0	0	0	0	N/A
	AM2	1-hr TSP	0	0	0	0	N/A
	AM2a	24-hr TSP	0	0	0	0	N/A
	NM1	Noise	0	0	0	0	N/A
	NM2		0	0	0	0	N/A

1-hour TSP Monitoring

6. All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

24-hour TSP Monitoring

7. All 24-hour TSP monitoring at the monitoring station of AM1a and AM2a was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Construction Noise

8. All construction noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Environmental Licenses and Permits

9. Licenses/Permits granted to Shek Wu Hui Sewage Treatment Works - Further Expansion Phase 1A include the Environmental Permit (EP no. FEP-02/474/2013); Registered as a Chemical Waste Producer and Billing account for Disposal of Construction Waste for the Project.

Environmental Mitigation Implementation Schedule

10. According to the Updated EM&A Manual, air quality, noise and waste management would be the key environmental issues and mitigation measures shall be implemented during the construction phase. Details of the implementation of mitigation measures are provided in the **Appendix J**.

Key Information in the Reporting Month

11. Summary of key information in the reporting month is tabulated in Table II

Table II Summary Table for Key Information in the Reporting Month

Event	Event Details		Action Taken	Status	Remark
	Number	Nature			
Complaint received	0	---	N/A	N/A	---
Reporting Changes	---	---	---	---	---
Notifications of any summons & prosecutions received	0	---	N/A	N/A	---

Site Inspection Conducted by Government Department

12. No site inspection for Contract DE/2014/01 was conducted by Government Department in the reporting month.

Summary of Complaints, Prosecutions, Reporting Changes and Notification of Summons

13. No environmental complaint was received during the reporting period. No prosecution, reporting changes and notification of summons were received or reported since the commencement of the Project.

14. There were no environmental complaint received since the commencement of the Project. The Complaint Log is presented in **Appendix K**.

Future Key Issues

15. Key issues to be considered in the coming month for the Contract include:

- Leakage from chemicals containers.
- Waste accumulation on site.

1. INTRODUCTION

Background

1.1 The Project 'Provision of Electrical and Mechanical Facilities for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A – Advance Works and Ng Chow South Road Sewage Pumping Station' under Contract No: DE/2014/01 mainly comprises the Design, manufacture, supply, delivery, installation, inspection, testing and commissioning of E&M installations for the Advance Works in the SWHSTW. The general location plan of the Project is shown in **Figure 1**.

1.2 The Project is under North East New Territories New Development Areas and is part of the designated project with Register No. : AEIAR-175/2013. The current works under the Project and other Contracts at SWHSTW are covered by the Environmental Permit (Permit No. FEP-02/474/2013), which was issued on 15th February 2018 by the Environmental Protection Department (hereinafter called EPD) to the Drainage Services Department (hereinafter called the DSD) as the Permit Holder.

1.3 The environmental monitoring works on air quality and noise were covered by the ET of Contract DE/2014/01 for the Project.

1.4 The Jardine Engineering Corporation, Limited was commissioned by the DSD to undertake the construction of the Contract No. DE/2014/01 "Provision of Electrical and Mechanical Facilities for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A – Advance Works and Ng Chow South Road Sewage Pumping Station".

1.5 The site activities undertaken in the reporting month included:

- Installation of Building Services at MBR Facilities Building
- Installation of Air Blowers and associated accessories at 1/F, MBR Facilities Building.
- Installation of MBR Pre-treatment Screen Facilities.
- Installation of ancillary aeration blowers and associated accessories beside Bioreactor No.1 (BR1).
- Installation of pipework in Bioreactor No.1 (BR1).
- Installation of permeate pipes at G/F, MBR facilities Building.
- Installation in Membrane Filtration Tanks.
- Installation in LV Switchroom No.3.
- Installation of deodorising system at G/F, MBR Facilities Building.
- Installation of chemical dosing system in Chemical Rooms

1.6 Cinotech Consultants Limited was commissioned and appointed by The Jardine Engineering Corporation Limited as the Environmental Team (ET) of Contract No. DE/2014/01 under Condition 2.1 of the FEP. The Environmental Monitoring and Audit (EM&A) works were conducted and reported during the reporting month according to the Updated EM&A Manual of this designated project.

1.7 This is the monthly EM&A report summarizing the EM&A works conducted for the Project in December 2018.

Project Organizations

1.8 The contacts of the Project are shown in **Table 1.1** and the Project Organization Chart is shown in **Figure 4**.

Table 1.1 Key Project Contacts

Party	Role	Name	Position	Phone No.
Drainage Service Department	Resident Site Engineer	Mr. Fong Mo	Resident Engineer	2594 7329
Cinotech	Environmental Team	Dr. Priscilla Choy	ET Leader	2151 2089
ANewR	Independent Environmental Checker	Mr. Adi Lee	Independent Environmental Checker	2618 2836
The Jardine Engineering Corporation, Limited	Contractor	Mr. Kim Hung Lau	Project Manager	2947 1125
		Mr. George Ng	Environmental Officer	2947 1125

Summary of EM&A Requirements

1.9 The EM&A programme requires construction phase monitoring for air quality and construction noise, landscape and visual and environmental site audit. The EM&A requirements for each parameter are described in the following sections, including:

- All monitoring parameters;
- Action and Limit levels for all environmental parameters;
- Event Action Plans;
- Environmental mitigation measures, as recommended in the project EIA study final report; and
- Environmental requirements in contract documents.

1.10 The advice on the implementation status of environmental protection and pollution control/mitigation measures is summarized in **Section 4** of this report.

1.11 This report presents the monitoring results, observations, locations, equipment, period, for required monitoring parameter namely air quality, noise and audit works conducted for the Project during this reporting month.

2. AIR QUALITY

Monitoring Requirements

2.1 1-hour and 24-hour TSP monitoring were conducted to monitor the air quality. **Appendix A** shows the established Action/Limit Levels for the environmental monitoring works.

Monitoring Locations

2.2 Four designated monitoring stations, AM1, AM1a, AM2 and AM2a were selected for impact dust monitoring for the Project. **Table 2.1** describes the air quality monitoring locations and **Figure 2** indicated their positions in relation to the site boundary.

Table 2.1 Locations for Air Quality Monitoring

Monitoring Station	Monitored by	Location of Measurement
AM1	DE/2014/01	No. 31 Wai Loi Tsuen
AM2		Fu Tei Au
AM1a		SWHSTW site boundary
AM2a		RE's Site Office

Monitoring Parameters, Frequency and Duration

2.3 **Table 2.2** summarizes the monitoring parameters and frequencies of impact dust monitoring for the whole construction period. The air quality monitoring schedule for the reporting period is shown in **Appendix B**.

Table 2.2 Impact Dust Monitoring Parameters, Frequency and Duration

Monitoring Station	Parameter	Period	Frequency
AM1	1-hour TSP	0700-1900 hrs	three times every 6 days
AM2			
AM1a	24-hour TSP	0000-2400 hrs	once every 6 days
AM2a			

Monitoring Equipment

2.4 **Table 2.3** summarizes the equipment used in the impact air quality monitoring programme. The high volume sampler for 24-hour TSP monitoring at AM1 has been relocated to the alterative monitoring station of AM1a. The copies of their calibration certificates is shown in **Appendix C**.

Table 2.3 Summary of Monitoring Equipment

Equipment	Model and Make
HVS	Tisch Model no. TE-5170
Handheld Particle Counter	Hal Technology Model no. Hal-HPC301 / Hal-HPC300 SIBATA Model no. LD-3B
Calibrator	Tisch Model TE-5025A

Monitoring Methodology and QA/QC Procedure

2.5 The monitoring methodology and QA/QC procedures for impact air quality monitoring are presented as follow:

2.6 The general weather conditions (i.e. sunny, cloudy or rainy) were recorded by the field staff's observation on the monitoring day. The wind data is adopted from the website of Hong Kong Observatory (Ta Kwu Ling weather stations).

1 Hour TSP Monitoring Procedures with Laser Dust Monitor

2.7 The measuring procedures of the 1-hour dust meters were in accordance with the Manufacturer's Instruction Manual as follows:

- The 1-hour dust meter is placed at least 1.3 meters above ground.
- Set POWER to "ON" and make sure that the battery level will not flash or in low level.
- Allow the instrument to stand for about 3 minutes and then the cap of the air sampling inlet will be released.
- Push the knob at MEASURE position.
- Set time/mode setting to [BG] by pushing the time setting switch. Then, start the background measurement by pushing the start/stop switch once. It will take 6 sec. to complete the background measurement.
- Push the time setting switch to change the time setting display to [MANUAL] at the bottom left of the liquid crystal display. Finally, push the start/stop switch to stop the measuring after 1 hour sampling.
- Information such as sampling date, time, count value and site condition will be recorded during the monitoring period.

Maintenance/Calibration

2.8 The following maintenance/calibration was required for the direct dust meters:

- Check the meter at a 3-month interval and calibrate the meter at a 1-year interval throughout all stages of the air quality monitoring.

24 Hours TSP Monitoring with High Volume Sampler

Instrumentation

2.9 High Volume Sampler (HVS) completed with appropriate sampling inlets was employed for air quality monitoring. Each sampler comprised of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complies with that

required by USEPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50).

2.10 The following guidelines were adopted during the installation of HVS:

- Sufficient support was provided to secure the samplers against gusty wind.
- No two samplers were placed less than 2 meters apart.
- The distance between the sampler and an obstacle, such as buildings, was at least twice the height that the obstacle protrudes above the sampler.
- A minimum of 2 meters of separation from walls, parapets and penthouses was required for rooftop samples.
- A minimum of 2 meters separation from any supporting structure, measured horizontally was required.
- No furnaces or incineration flues were nearby.
- Airflow around the sampler was unrestricted.
- The samplers were more than 20 meters from the drip line.
- Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring.

Filer Preparation

2.11 Fiberglass filters, which have a collection efficiency of larger than 99% of particles of 0.3 μm in diameter, were used. A HOKLAS accredited laboratory, Wellab Ltd., was responsible for the preparation of 24-hr conditioned and pre-weighed filter papers for Cinotech's monitoring team.

2.12 All filters, which were prepared by Wellab Ltd., were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25 °C and not variable by more than ±3 °C; the relative humidity (RH) was < 50% and not variable by more than ±5%. A convenient working RH was 40%. Wellab Ltd. has a comprehensive quality assurance and quality control programme.

Operating/Analytical Procedures

2.13 Operating/analytical procedures for the air quality monitoring were highlighted as follows.

- Prior to the commencement of the dust sampling, the flow rate of the HVS was properly set (between 1.1 m3/min. and 1.4 m3/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50.
- The power supply was checked to ensure the sampler worked properly.
- On sampling, the sampler was operated for 5 minutes to establish thermal equilibrium before placing any filter media at the designated air quality monitoring station.
- The filter holding frame was then removed by loosening the four nuts and carefully a weighted and conditioned filter was centered with the stamped number upwards, on a supporting screen.
- The filter was aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter. Then the filter holding frame was tightened to the filter holder with swing bolts. The applied pressure should be sufficient to avoid air leakage at the edges.

- The shelter lid was closed and secured with the aluminum strip.
- The timer was then programmed. Information was recorded on the record sheet, which included the starting time, the weather condition and the filter number (the initial weight of the filter paper can be found out by using the filter number).
- After sampling, the filter was removed and sent to the Wellab Ltd. for weighing. The elapsed time was also recorded.
- Before weighing, all filters were equilibrated in a conditioning environment for 24 hours. The conditioning environment temperature should be between 25°C and 30°C and not vary by more than ±3°C; the relative humidity (RH) should be < 50% and not vary by more than ±5%. A convenient working RH is 40%. Weighing results were returned to Cinotech for further analysis of TSP concentrations collected by each filter.

Maintenance and Calibration

2.14 The high volume motors and their accessories will be properly maintained. Appropriate maintenance such as routine motor brushes replacement and electrical wiring checking were made to ensure that the equipment and necessary power supply are in good working condition.

2.15 All HVSs are calibrated (five point calibration) using TE-5025A Calibration Kit prior to the commencement of the impact monitoring. The five-point calibration would be carried out every two months

Results and Observations

2.16 **Table 2.4** summarizes the monitoring results at AM1, AM1a, AM2 and AM2a in the reporting month.

Table 2.4 Summary of 1-hour and 24-hour TSP Monitoring Result in the Reporting Period

Air Quality Monitoring Station	Average µg/m³	Range µg/m³	Action Level µg/m³	Limit Level µg/m³
1 hour TSP				
AM1	117.6	61.9 – 192.0	286	500
AM2	120.9	63.1 – 205.7	276	
24 hours TSP				
AM1a	59.3	41.2 – 76.8	147	260
AM2a	63.1	35.3 – 91.0	155	

2.17 The monitoring data and graphical presentations for 1-hour and 24-hour TSP monitoring results are shown in **Appendix D**.

2.18 All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded. Summary of exceedance is presented in **Appendix F.**

2.19 The monitoring works for 1-hour and 24-hour TSP monitoring were conducted as scheduled in the reporting month.

2.20 Action/Limit Level exceedance was not recorded during the reporting period. Summary of exceedance is presented in **Appendix F.**

2.21 According to field observations during site inspection, identifiable dust emission sources near the monitoring stations were vehicles movement on Chuk Wan Street.

3. NOISE

Monitoring Requirements

3.1 Two noise monitoring station, namely NM1 and NM2 were designated in the Updated EM&A Manual for impact monitoring. **Appendix A** shows the established Action and Limit Levels for the environmental monitoring works.

Monitoring Locations

3.2 Noise monitoring was conducted at the designated monitoring stations as listed in **Table 3.1** and **Figure 3** indicated their positions in relation to the site boundary

Table 3.1 Location of Noise Monitoring Stations

Monitoring Station	Monitored By	Location of Measurement
NM1	DE/2014/01	No. 31 Wai Loi Tsuen
NM2		Fu Tei Au

Monitoring Parameters, Frequency and Duration

3.3 **Table 3.2** summarizes the monitoring parameters, frequency and total duration of monitoring.

Table 3.2 Noise Monitoring Parameters, Frequency and Duration

Monitoring Stations	Parameter	Period	Frequency
NM1	L_{10}(30 min.) dB(A) L_{90}(30 min.) dB(A) L_{eq}(30 min.) dB(A)	0700-1900 hrs on normal weekdays	Once per week
NM2			

Monitoring Equipment

3.4 **Table 3.3** summarizes the noise quality monitoring equipment and **Appendix C** shows the copies of calibration certificates for the equipment used during the reporting period.

Table 3.3 Noise Monitoring Equipment

Equipment	Model
Integrating Sound Level Meter	SVANTEK, Model no: SVAN 957 BSWA, Model no: BSWA 801
Calibrator	SVANTEK, Model no: SV 30A
Anemometer	SMART SENSOR AR836

Monitoring Methodology and QA/QC Procedures

3.5 The monitoring methodology and QA/QC procedure are presented as follow:

3.6 General weather conditions (i.e. sunny, cloudy or rainy) were recorded by field observation during equipment checking.

Field Monitoring

3.7 The monitoring procedures are as follows:

- The Sound Level Meter was set on a tripod at a height of 1.2 m above the ground. All monitoring stations were conducted at a distance of 1 m away from the exterior of the building façade.
- The battery condition was checked to ensure good functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:

  - Frequency weighting : A
  - Time weighting : Fast
  - Measurement time : 30 minutes

- Noise monitoring was carried out 30 minutes during on the monitoring days. Monitoring data was recorded and stored automatically within the sound level meter system. At the end of the monitoring period, noise levels in term of L_{eq}, L_{90} and L_{10} were recorded.
- All the monitoring data within the sound level meter system was downloaded through the computer software, and all these data was checked and reviewed within the computer.
- Since no wind or gusts shall exceed 5m/s or 10m/s respectively during the noise monitoring, a portable anemometer was used to check the wind speed at the monitoring stations. Weather conditions such as fog and rain were avoided during the monitoring.

Maintenance and Calibration

3.8 Maintenance and Calibration procedures were as follows:

- The microphone head of the sound level meter and calibrator were cleaned with a soft cloth at quarterly intervals.
- Prior to and after noise measurement, the meter was calibrated using the calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement is more than 1.0 dB, the measurement was considered invalid and repeat of noise measurement was required after re-calibration or repair of the equipment.
- The sound level meter and calibrator were checked and calibrated at yearly intervals.

Results and Observations

3.9 **Table 3.4** summarizes the noise monitoring results in the reporting period.

Table 3.4 Summary the Noise Monitoring Results in Reporting Period

0700-1900 hrs. during weekdays		
Noise Monitoring Station	Range, dB(A), L_{eq}(30 min.)	Limit Level, dB(A)
NM1	56.7 – 63.6	75.0
NM2	56.1 – 62.1	75.0

3.10 The monitoring results and graphical presentations can be referred to **Appendix E**.

3.11 No Action/Limit Level exceedance was recorded in the reporting month. Summary of exceedance is presented in **Appendix F**.

3.12 The major noise source identified at the designated noise monitoring stations was vehicles movement on Chuk Wan Street.

4. ENVIRONMENTAL AUDIT

Site Audits

4.1 Site audits were carried out on a weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site. The summaries of site audits are attached in **Appendix G**.

4.2 Site audits were conducted on 6, 13, 21 and 27 December 2018 by ET after the commencement of construction works for the Contract. A joint site audit with the representative of IEC was carried out on 13 December 2018. The details of observations during site audit can refer to **Table 4.1**.

Implementation Status of Environmental Mitigation Measures

4.3 Details of the implementation of mitigation measures are provided in the **Appendix J.**

4.4 During the weekly environmental site inspections in the reporting period, no non-conformance was identified. The observations of the site audit for the Projects are summarized in **Table 4.1.**

Table 4.1 Observations of Site Audit

Parameters	Date	Ref. No	Observations	Follow Up Action
Water Quality	N/A	N/A	--	--
Air Quality	N/A	N/A	--	--
Noise	N/A	N/A	--	--
Waste/Chemical Management	N/A	N/A	--	--
Permit/ Licenses	N/A	N/A	--	--

Review of Environmental Monitoring Procedures

4.5 The monitoring works conducted by Contract No. DE/2014/01 were reviewed at a regular basis to ensure the monitoring procedures were carried out properly.

Status of Environmental Licensing and Permitting

4.6 All permits/licenses obtained for the Contract DE/2014/01 are summarized in **Table 4.2**.

Table 4.2 Summary of Environmental Licensing and Permit Status

Permit No.	Valid Period		Details	Status
	From	To		
Environmental Permit				
FEP-02/474/2013	15/2/2018	N/A	The FEP was approved on 15/2/2018	Valid
Registered Chemical Waste Producer				
WPN5213-624-T3685-01	3/7/2017	N/A	The application was approved on 3/7/2017	Valid

Permit No.	Valid Period		Details	Status
	From	To		
Billing Account for Disposal of Construction Waste				
A/C No.7024165	4/2/2016	N/A	The application was approved on 4/2/2016	Valid

Status of Waste Management

4.7 The amount of wastes generated by the activities of the Project in the reporting month is shown in **Appendix H** and **Table 4.3.**

Table 4.3 Quantities of Waste Generated from the Reporting Month

Type of waste		Quantity	Disposal Location
C&D Materials (inert)		0 m^3	-
C&D Materials (non-inert)	**General Refuse**	*7.2 tonne*	NENT
	Chemical Waste	0 *kg*	-
	Paper/ cardboard	*32 kg*	-
	Plastics	0 *kg*	-
	Metals	0 *kg*	-

Implementation Status of Event Action Plans

4.8 The Event Action Plans for air quality and noise are presented in **Appendix I.**

1-hr TSP

4.9 No Action/Limit Level exceedance was recorded.

24-hr TSP

4.10 No Action/Limit Level exceedance was recorded.

Construction Noise

4.11 No Action/Limit Level exceedance was recorded.

Landscape and Visual

4.12 No non-compliance was recorded.

Site Inspection Conducted by Government Department

4.13 No site inspection for Contract DE/2014/01 was conducted by Government Department in the reporting month.

Summary of Complaints, Prosecutions, Reporting Changes and Notification of Summons

4.14 No environmental complaint, prosecution, reporting changes and notification of summons were received or reported since the commencement of the Project. There were no environmental complaint received since the commencement of the Project. The Complaint Log is presented in **Appendix K.**

5. FUTURE KEY ISSUES

Key Issues for the Coming Month

5.1 Key issues to be considered in the coming month for the Contract include:

Table 5.1 Future Key Issue for the next Reporting Month

Major Construction Works	Potential Pollution Issues	Mitigation Measures
• Installation of Building Services at MBR Facilities Building. • Mechanical Installation of Air Blowers and associated accessories at 1/F, MBR Facilities Building. • Mechanical Installation of MBR Pre-treatment Screen Facilities. • Mechanical Installation in Bioreactor No.1 (BR1). • Installation of pipework in Bioreactor No.1 (BR1) • Installation in Membrane Filtration Tanks • Installation of chemical dosing system in Chemical Rooms.	• Leakage from chemicals containers. • Waste accumulation on site.	• Waste should be stored and disposed properly to avoid accumulation and leakage. • Accumulated waste to be recycled on-site whenever possible.

Monitoring Schedule for the Next Reporting Period

5.2 The tentative environmental monitoring schedules for the next reporting month are shown in **Appendix B**.

Construction Program for the Next Reporting Period

5.3 The tentative construction program is provided in **Appendix L.**

6. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

6.1 Environmental monitoring and audit works were performed in the reporting month for the Project. The results were checked and reviewed by the ET of Contract DE/2014/01.

1-hour TSP Monitoring

6.2 The monitoring works for the Project were covered by the ET of Contract DE/2014/01. All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

24-hour TSP Monitoring

6.3 The monitoring works for the Project were covered by the ET of Contract DE/2014/01. No Action/Limit Level exceedance was recorded during the 24-hour TSP monitoring.

6.4 The 24-hour TSP monitoring was conducted as scheduled in the reporting month.

Construction Noise Monitoring

6.5 The monitoring works for the Project were covered by the ET of Contract DE/2014/01. All Construction Noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Environmental Audit

6.6 Weekly environmental site audits were conducted by the ET of Contract No. DE/2014/01 at the site area during the reporting month. No non-compliance was recorded.

Complaint, notification of summons and Prosecution

6.7 No environmental complaint was received in the reporting month

6.8 No notification of summons and prosecution were received in the reporting month.

Recommendations for Future Reporting Months:

6.9 The following recommendations were made for future reporting months:

Air Quality

- To regularly maintain the machinery and vehicles on site;
- To follow up any exceedance caused by the construction works;
- Non-Road Mobile Machinery (NRMM) labels must be demonstrated on the registered equipment for inspection.

Noise

- To inspect the noise source inside the site;
- To follow up any exceedance caused by the construction works;

- To space out noisy equipment and position the equipment as far away as possible from sensitive receivers;
- To provide temporary noise barriers for operations of noisy equipment near the noise sensitive receivers in an appropriate location.
- To provide adequate lubricant on mechanical equipment to reduce frictional noise; and
- To well maintain the mechanical equipment/ machineries to avoid abnormal noise nuisance.

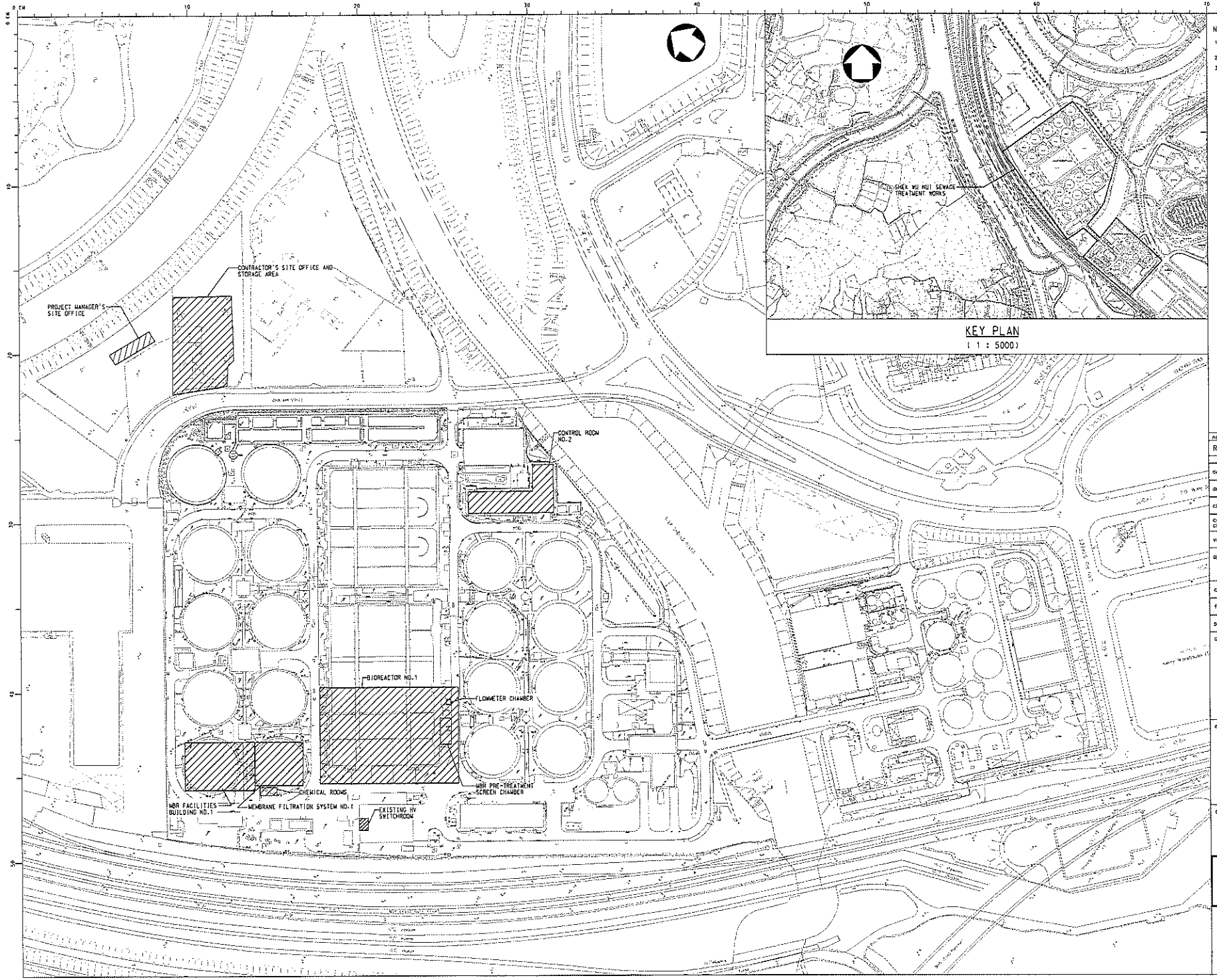
Water Quality

- To identify any discharge of wastewater from the construction site;
- To avoid blockage of U channel and drainage system by sediment;
- To avoid water accumulation on site and carry out larviciding against mosquito breeding for stagnant water when mosquito larvae are observed; and
- To avoid spoilage of run-off from construction site to public area.
- The discharge quality must meet the requirements specified in the discharge licence.

Waste/Chemical Management

- To provide proper rubbish bins / skips for waste collection;
- To check for any accumulation of wasted materials or rubbish on site;
- To provide proper storage area or drip trays for oil and chemical containers on site;
- To avoid any discharge or accidental spillage of chemical waste or oil directly from the equipment;
- To avoid improper handling or storage of oil drum on site.

FIGURES



KEY PLAN
(1 : 5000)

NOTES :

1. GENERAL NOTES REFER TO DRAWING NO. DEM1619/M01 UNLESS OTHERWISE SPECIFIED.
2. LEGEND REFER TO DRAWING NO. DEM1619/MM4.
3. CONTRACT COMPUTER FACILITIES AND FURNITURE FOR PROJECT MANAGER'S SITE OFFICE SHALL BE PROVIDED BY THE E&M CONTRACTOR.

WORKING AREA OF ADVANCE WORKS

no.	date	description	name	initial
REVISION				

	name	date
designed	Y Y WONG	22 APR 2015
drawn	C Y CHEUNG	22 APR 2015
checked	C S CHOI	22 APR 2015
counter checked	Y L CHAN	22 APR 2015
vetted	W C FUNG	22 APR 2015

approved

RICKY LI, CE/E&MP — 23 APR 2015 Date

contract no. DE/2014/01

file no.

project no. 44060S AND 50330R

contract

PROVISION OF ELECTRICAL AND MECHANICAL FACILITIES FOR SHEK WU HUI SEWAGE TREATMENT WORKS - FURTHER EXPANSION PHASE 1A - ADVANCE WORKS AND NG CHOW SOUTH ROAD SEWAGE PUMPING STATION

drawing title

KEY PLAN AND LOCATION PLAN

drawing no. DEM1619/M02

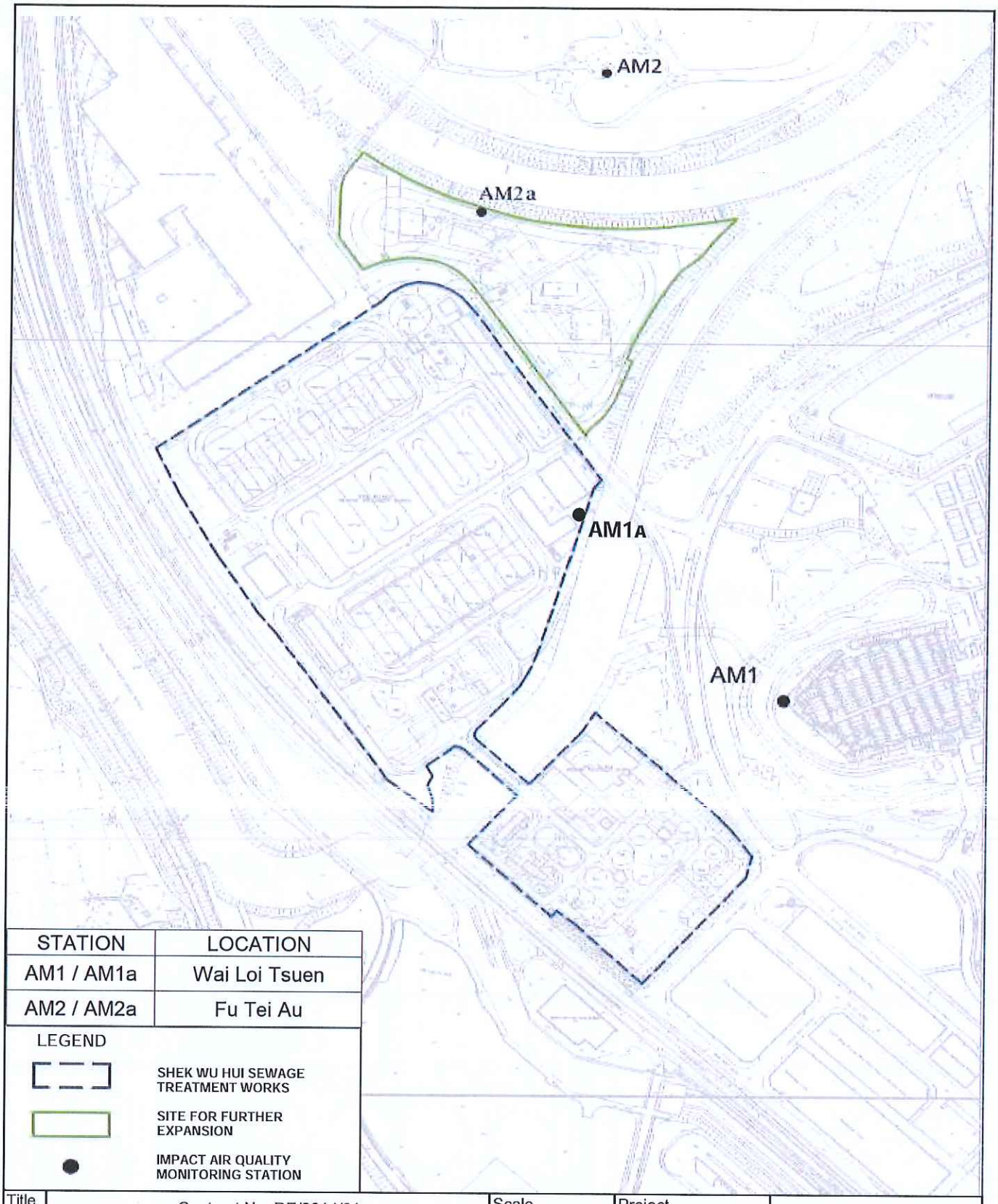
scale 1 : 1000 OR AS SHOWN

office

ELECTRICAL AND MECHANICAL PROJECTS DIVISION

DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION

A1 PAPER SIZE

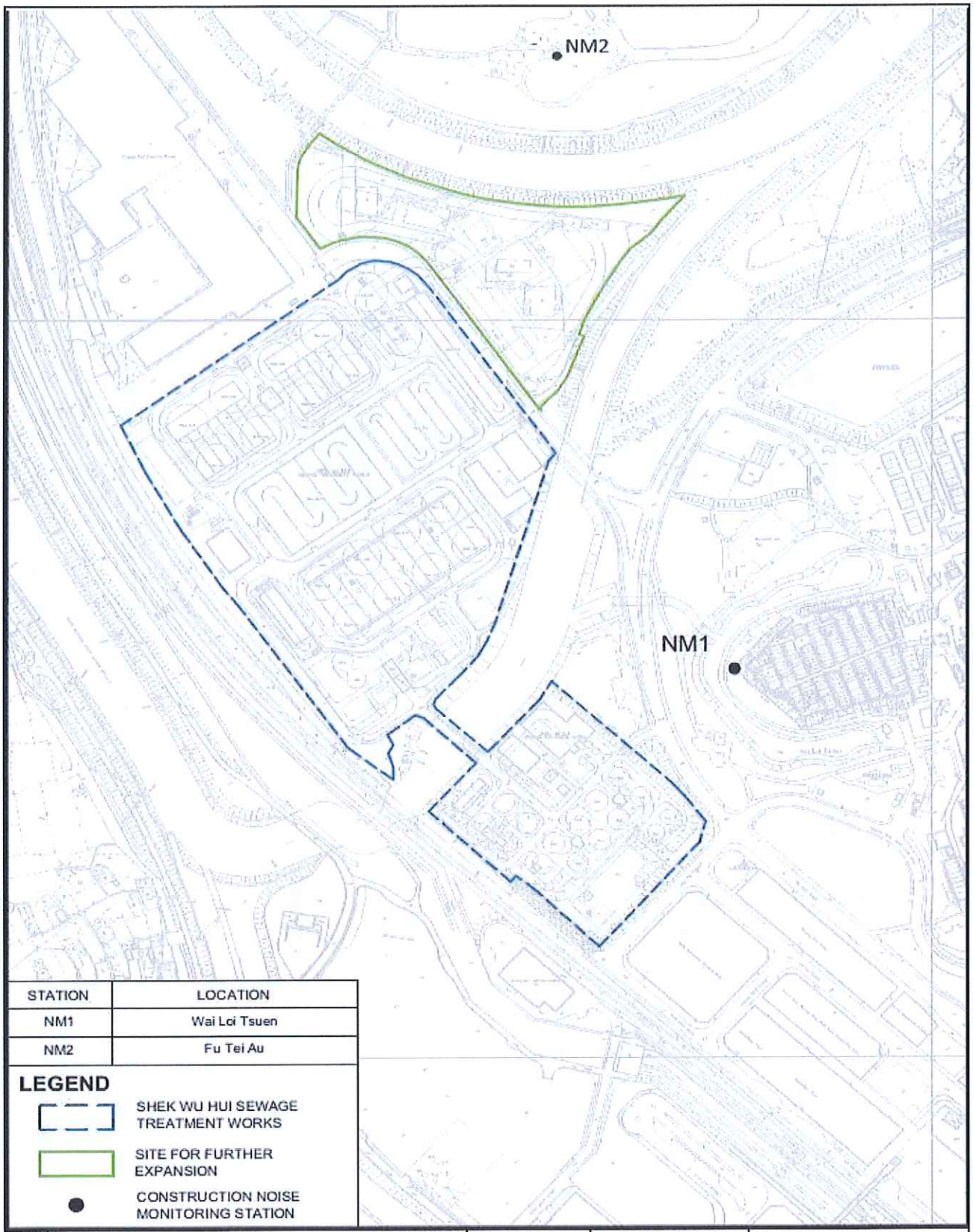


STATION	LOCATION
AM1 / AM1a	Wai Loi Tsuen
AM2 / AM2a	Fu Tei Au

LEGEND

- SHEK WU HUI SEWAGE TREATMENT WORKS
- SITE FOR FURTHER EXPANSION
- IMPACT AIR QUALITY MONITORING STATION

Title	Contract No. DE/2014/01 Provision of Electrical and Mechanical Facilities for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A – Advance Works and Ng Chow South Road Sewage Pumping Station	Scale: N.T.S	Project No.: MA16002	CINOTECH
	Locations of Impact Air Quality Monitoring Stations	Date: Aug-18	Figures: 2	

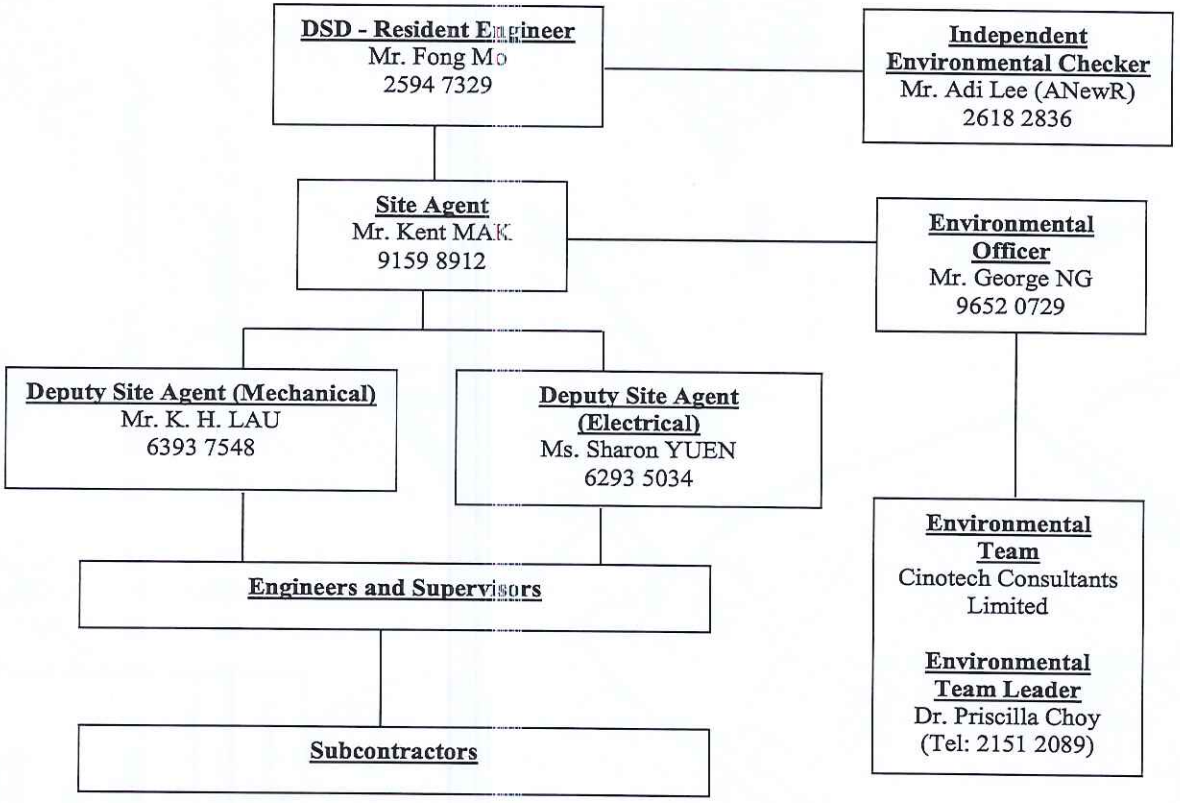


STATION	LOCATION
NM1	Wai Lei Tsuen
NM2	Fu Tei Au

LEGEND

- SHEK WU HUI SEWAGE TREATMENT WORKS
- SITE FOR FURTHER EXPANSION
- CONSTRUCTION NOISE MONITORING STATION

Title	Contract No. DE/2014/01 Provision of Electrical and Mechanical Facilities for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A – Advance Works and Ng Chow South Road Sewage Pumping Station	Scale: N.T.S	Project No.: MA16002	CINOTECH
	Locations of Impact Noise Monitoring Stations	Date: Oct-17	Figures: 3	



Title		Scale	Project No.
	Contract No. DE/2014/01 Provision of Electrical and Mechanical Facilities for Shek Wu Hui Sewage Treatment Works – Further Expansion Phase 1A – Advance Works and Ng Chow South Road Sewage Pumping Station Project Organization Chart	N.T.S	MA16002
		Version v.1	Figure 4

CINOTECH

APPENDIX A
ACTION AND LIMIT LEVELS FOR AIR QUALITY AND NOISE QUALITY

Appendix A Action and Limit Levels

Table A-1 Action and Limit Levels for 1-Hour TSP and 24-Hour TSP

Monitoring Stations	Action Level ($\mu g/m^3$)		Limit Level ($\mu g/m^3$)	
	1-hour	24-hour	1-hour	24-hour
AM1	286	N/A	500	N/A
AM1a	N/A	147	N/A	260
AM2	276	N/A	500	N/A
AM2a	N/A	155	N/A	260

Table A-2 Action and Limit Level for Construction Noise

Monitoring Stations	Time Period	Action Level	Limit Level in dB(A)
NM1	0700-1900 hours on normal weekdays	When one documented complaint is received	>75*
NM2			

Note: (*) Reduces to 70 dB(A) for schools and 65 dB(A) during the school examination periods.

APPENDIX B
ENVIRONMENTAL MONITORING SCHEDULES

Contract No. DE/2014/01
Provision of Electrical and Mechanical Facilities
for Shek Wu Hui Sewage Treatment Works
Impact Air and Noise Monitoring Schedule for December 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1-Dec
2-Dec	3-Dec	4-Dec	5-Dec	6-Dec	7-Dec	8-Dec
		24 hr TSP	1 hr TSP X3 Noise			
9-Dec	10-Dec	11-Dec	12-Dec	13-Dec	14-Dec	15-Dec
	24 hr TSP	1 hr TSP X3 Noise			24 hr TSP	
16-Dec	17-Dec	18-Dec	19-Dec	20-Dec	21-Dec	22-Dec
	1 hr TSP X3			24 hr TSP	1 hr TSP X3 Noise	
23-Dec	24-Dec	25-Dec	26-Dec	27-Dec	28-Dec	29-Dec
	24 hr TSP			1 hr TSP X3 Noise	24 hr TSP	
30-Dec	31-Dec					
	1 hr TSP X3 Noise					

Air Quality Monitoring Station

AM1 - No. 31 Wai Loi Tsuen (1hr)
AM2 - Fu Tei Au (1hr)
AM2a - RE's Site Office (24hr)
AM1a - SWHSTW site boundary (24hr)

Noise Monitoring Station

NM1 - No. 31 Wai Loi Tsuen
NM2 - Fu Tei Au

Contract No. DE/2014/01
Provision of Electrical and Mechanical Facilities
for Shek Wu Hui Sewage Treatment Works
Tentative Impact Air and Noise Monitoring Schedule for January 2019

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1-Jan	2-Jan	3-Jan	4-Jan	5-Jan
				24 hr TSP	1 hr TSP X3	
6-Jan	7-Jan	8-Jan	9-Jan	10-Jan	11-Jan	12-Jan
			24 hr TSP	1 hr TSP X3 Noise		
13-Jan	14-Jan	15-Jan	16-Jan	17-Jan	18-Jan	19-Jan
		24 hr TSP	1 hr TSP X3 Noise			
20-Jan	21-Jan	22-Jan	23-Jan	24-Jan	25-Jan	26-Jan
	24 hr TSP	1 hr TSP X3 Noise			24 hr TSP	
27-Jan	28-Jan	29-Jan	30-Jan	31-Jan		
	1 hr TSP X3 Noise			24 hr TSP		

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

Air Quality Monitoring Statio

AM1 - No. 31 Wai Loi Tsuen (1hr)
AM2 - Fu Tei Au (1hr)
AM2a - RE's Site Office (24hr)
AM1a - SWHSTW site boundary (24hr)

Noise Monitoring Statio

NM1 - No. 31 Wai Loi Tsuen
NM2 - Fu Tei Au

APPENDIX C
COPIES OF CALIBRATION CERTIFICATES

WELLAB LIMITED
Rms 1214, 1502, 1516, 1701 & 1716,
Technology Park, 18 On Lai Street,
Shatin, N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

ATTN: **Mr. W. K. Tang**

Test Report No.:	29957A
Date of Issue:	2018-10-29
Date Received:	2018-10-27
Date Tested:	2018-10-27
Date Completed:	2018-10-29
Next Due Date:	2018-12-28
Page:	1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: SIBATA
Model No.	: LD-3B
Serial No.	: 2Y6194
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 578 CPM
Equipment No.	: SA-01-02

Test Conditions:

Room Temperatre	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	0.0031

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

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Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	30523A
Date of Issue:	2018-12-16
Date Received:	2018-12-14
Date Tested:	2018-12-14
Date Completed:	2018-12-16
Next Due Date:	2019-02-15

ATTN: **Mr. W. K. Tang** Page: 1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Handheld Particle Counter
Manufacturer	: Hal Technology
Model No.	: Hal-HPC300
Serial No.	: 3020409
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 5 minutes
Equipment No.	: A-26-02

Test Conditions:

Room Temperatre	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.126

****

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Laboratory Manager

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

ATTN: **Mr. W. K. Tang**

Test Report No.:	29953
Date of Issue:	2018-10-15
Date Received:	2018-10-12
Date Tested:	2018-10-12
Date Completed:	2018-10-15
Next Due Date:	2018-12-14
Page:	1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Handheld Particle Counter
Manufacturer	: Hal Technology
Model No.	: Hal-HPC301
Serial No.	: 3011701012
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 5 minutes
Equipment No.	: A-27-07

Test Conditions:

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.148

****

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

ATTN: **Mr. W. K. Tang**

Test Report No.:	30523
Date of Issue:	2018-12-16
Date Received:	2018-12-14
Date Tested:	2018-12-14
Date Completed:	2018-12-16
Next Due Date:	2019-02-15
Page:	1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Handheld Particle Counter
Manufacturer	: Hal Technology
Model No.	: Hal-HPC301
Serial No.	: 3011701012
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 5 minutes
Equipment No.	: A-27-07

Test Conditions:

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.066

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Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

ATTN: **Mr. W.K. Tang**

Test Report No.:	30294
Date of Issue:	2018-11-24
Date Received:	2018-11-23
Date Tested:	2018-11-23
Date Completed:	2018-11-24
Next Due Date:	2019-11-23
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 23851
Equipment No.	: N-08-12

Test conditions:

Room Temperatre	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

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Laboratory Manager

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

ATTN: **Mr. W.K. Tang**

Test Report No.:	C/N/171215A
Date of Issue:	2017-12-18
Date Received:	2017-12-15
Date Tested:	2017-12-15
Date Completed:	2017-12-18
Next Due Date:	2018-12-17
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: Sound & Vibration Analyser
Manufacturer	: BSWA
Model No.	: BSWA 801
Serial No.	: 35921
Equipment No.	: N-13-02

Test conditions:

Room Temperatre	: 20 degree Celsius
Relative Humidity	: 64%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

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Patrick Tse
PATRICK TSE
Laboratory Manager

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

ATTN: **Mr. W.K. Tang**

Test Report No.:	30524A
Date of Issue:	2018-12-17
Date Received:	2018-12-15
Date Tested:	2018-12-15
Date Completed:	2018-12-17
Next Due Date:	2019-12-16
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: Sound & Vibration Analyser
Manufacturer	: BSWA
Model No.	: BSWA 801
Serial No.	: 35921
Equipment No.	: N-13-02

Test conditions:

Room Temperatre	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

ATTN: **Mr. W.K. Tang**

Test Report No.:	30524C
Date of Issue:	2018-12-17
Date Received:	2018-12-15
Date Tested:	2018-12-15
Date Completed:	2018-12-17
Next Due Date:	2019-12-16
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: Sound & Vibration Analyser
Manufacturer	: BSWA
Model No.	: BSWA 801
Serial No.	: 35927
Equipment No.	: N-13-03

Test conditions:

Room Temperatre	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

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Laboratory Manager

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	29816
Date of Issue:	2018-09-29
Date Received:	2018-09-28
Date Tested:	2018-09-28
Date Completed:	2018-09-29
Next Due Date:	2019-09-28

ATTN: **Mr. W.K. Tang**

Page: 1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24803
Equipment No.	: N-09-03

Test conditions:

Room Temperatre	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

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For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

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Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

ATTN: **Mr. W.K. Tang**

Test Report No.:	29817
Date of Issue:	2018-09-29
Date Received:	2018-09-28
Date Tested:	2018-09-28
Date Completed:	2018-09-29
Next Due Date:	2019-09-28
Page:	1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24780
Equipment No.	: N-09-05

Test conditions:

Room Temperatre	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:
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Laboratory Manager

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High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA16002/70/0003

Station: AM1a - SWHSTW site boundary Operator: HM

Date: 23-Nov-18 Next Due Date: 22-Jan-19

Equipment No.: A-01-70 Serial No. 3216

Ambient Condition			
Temperature, Ta (K)	295.9	Pressure, Pa (mmHg)	766.9

Orifice Transfer Standard Information					
Serial No.	2896	Slope, mc	0.0585	Intercept, bc	-0.00045
Last Calibration Date:	13-Feb-18	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	13-Feb-19	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	11.7	3.45	58.92	6.9	2.65
2	9.8	3.16	53.93	5.8	2.43
3	7.6	2.78	47.49	4.6	2.16
4	5.1	2.28	38.90	3.4	1.86
5	3.3	1.83	31.30	2.4	1.56

By Linear Regression of Y on X

Slope , mw = 0.0389 **Intercept, bw =** 0.3391

Correlation coefficient* = 0.9993

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 3.98

Remarks:

Conducted by: LEE MAN HEI Signature: Lei Date: 23/11/2018

Checked by: WK Tang Signature: Kwoi Date: 23/11/2018

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA16002/45/0003

Station: AM2a - RE's Site Office Operator: HM

Date: 23-Nov-18 Next Due Date: 22-Jan-19

Equipment No.: A-01-45 Serial No. 1309

Ambient Condition			
Temperature, Ta (K)	296.2	Pressure, Pa (mmHg)	766.5

Orifice Transfer Standard Information					
Serial No.	2896	Slope, mc	0.0585	Intercept, bc	-0.00045
Last Calibration Date:	13-Feb-18	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	13-Feb-19	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	12.6	3.58	61.10	7.1	2.68
2	10.5	3.26	55.78	5.8	2.43
3	7.6	2.78	47.45	4.6	2.16
4	5.5	2.36	40.37	3.3	1.83
5	3.4	1.86	31.74	2.4	1.56

By Linear Regression of Y on X

Slope , mw = 0.0382 **Intercept, bw =** 0.3259

Correlation coefficient* = 0.9976

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.82**

Remarks:

Conducted by: LEE MAN HEI Signature: hei Date: 23/11/2018

Checked by: WK Tang Signature: Kwai Date: 23/11/2018

TISCH Environmental

RECALIBRATION DUE DATE:
February 13, 2019

Certificate of Calibration

Calibration Certification Information				
Cal. Date:	February 13, 2018	Rootsmeter S/N: 438320	Ta: 293	°K
Operator:	Jim Tisch		Pa: 763.3	mm Hg
Calibration Model #:	TE-5025A	Calibrator S/N: **2896**		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4670	3.2	2.00
2	3	4	1	1.0380	6.4	4.00
3	5	6	1	0.9220	8.0	5.00
4	7	8	1	0.8840	8.8	5.50
5	9	10	1	0.7250	12.8	8.00

Data Tabulation					
Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H\left(Ta/Pa\right)}$ (y-axis)
1.0172	0.6934	1.4293	0.9958	0.6788	0.8762
1.0129	0.9758	2.0213	0.9916	0.9553	1.2392
1.0107	1.0962	2.2599	0.9895	1.0732	1.3854
1.0097	1.1422	2.3702	0.9885	1.1182	1.4530
1.0043	1.3853	2.8586	0.9832	1.3562	1.7524
QSTD	**m=**	**2.06726**	**QA**	**m=**	**1.29448**
	b=	**-0.00045**		**b=**	**-0.00028**
	r=	**0.99992**		**r=**	**0.99992**

Calculations			
Vstd=	ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta)	**Va=**	ΔVol((Pa-ΔP)/Pa)
Qstd=	Vstd/ΔTime	**Qa=**	Va/ΔTime
For subsequent flow rate calculations:			
Qstd=	$1/m\left(\left(\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}\right)-b\right)$	**Qa=**	$1/m\left(\left(\sqrt{\Delta H\left(Ta/Pa\right)}\right)-b\right)$

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg
Key	
ΔH: calibrator manometer reading (in H2O)	
ΔP: rootsmeter manometer reading (mm Hg)	
Ta: actual absolute temperature (°K)	
Pa: actual barometric pressure (mm Hg)	
b: intercept	
m: slope	

RECALIBRATION

US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere, 9.2.17, page 30

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APPENDIX D
1-HOUR AND 24-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATION

Appendix D - 1-hour TSP Monitoring Results

Location AM1 - No.31 Wai Loi Tsuen			
Date	Time	Weather	Particulate Concentration ($\mu g/m^3$)
5-Dec-18	13:00	Cloudy	187.4
5-Dec-18	14:00	Cloudy	177.4
5-Dec-18	15:00	Cloudy	192.0
11-Dec-18	9:00	Sunny	133.3
11-Dec-18	10:00	Sunny	111.6
11-Dec-18	11:00	Sunny	114.6
17-Dec-18	13:00	Sunny	125.6
17-Dec-18	14:00	Sunny	143.6
17-Dec-18	15:00	Sunny	134.4
21-Dec-18	9:00	Sunny	67.6
21-Dec-18	10:00	Sunny	65.3
21-Dec-18	11:00	Sunny	61.9
27-Dec-18	9:00	Sunny	107.3
27-Dec-18	10:00	Sunny	101.3
27-Dec-18	11:00	Sunny	98.5
31-Dec-18	9:00	Sunny	102.8
31-Dec-18	10:00	Sunny	93.2
31-Dec-18	11:00	Sunny	98.5
		Minimum	61.9
		Maximum	192.0
		Average	117.6

Location AM2 - Fu Tei Au			
Date	Time	Weather	Particulate Concentration (µg/m3)
5-Dec-18	9:00	Cloudy	169.3
5-Dec-18	10:00	Cloudy	185.2
5-Dec-18	11:00	Cloudy	186.7
11-Dec-18	13:00	Sunny	102.7
11-Dec-18	14:00	Sunny	108.6
11-Dec-18	15:00	Sunny	117.2
17-Dec-18	9:00	Sunny	192.7
17-Dec-18	10:00	Sunny	205.7
17-Dec-18	11:00	Sunny	181.2
21-Dec-18	13:00	Sunny	66.4
21-Dec-18	14:00	Sunny	64.2
21-Dec-18	15:00	Sunny	63.1
27-Dec-18	13:00	Sunny	87.9
27-Dec-18	14:00	Sunny	93.2
27-Dec-18	15:00	Sunny	91.3
31-Dec-18	13:00	Sunny	82.8
31-Dec-18	14:00	Sunny	84.6
31-Dec-18	15:00	Sunny	92.7
		Minimum	63.1
		Maximum	205.7
		Average	120.9

Appendix D- 24-hour TSP Monitoring Results

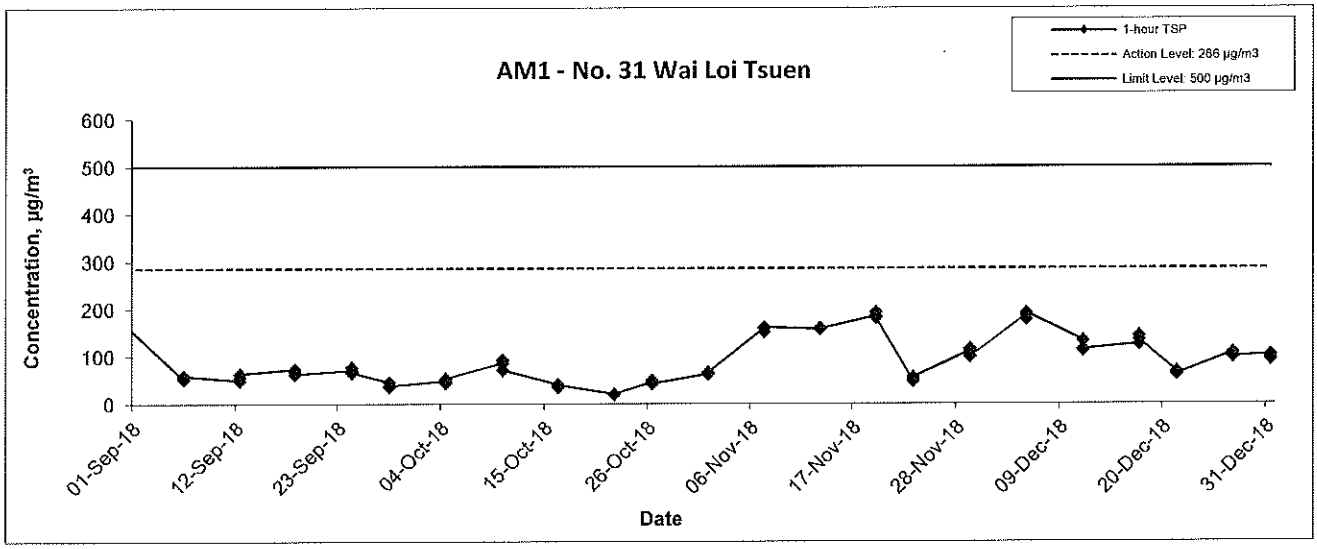
AM1a - SWHSTW site boundary

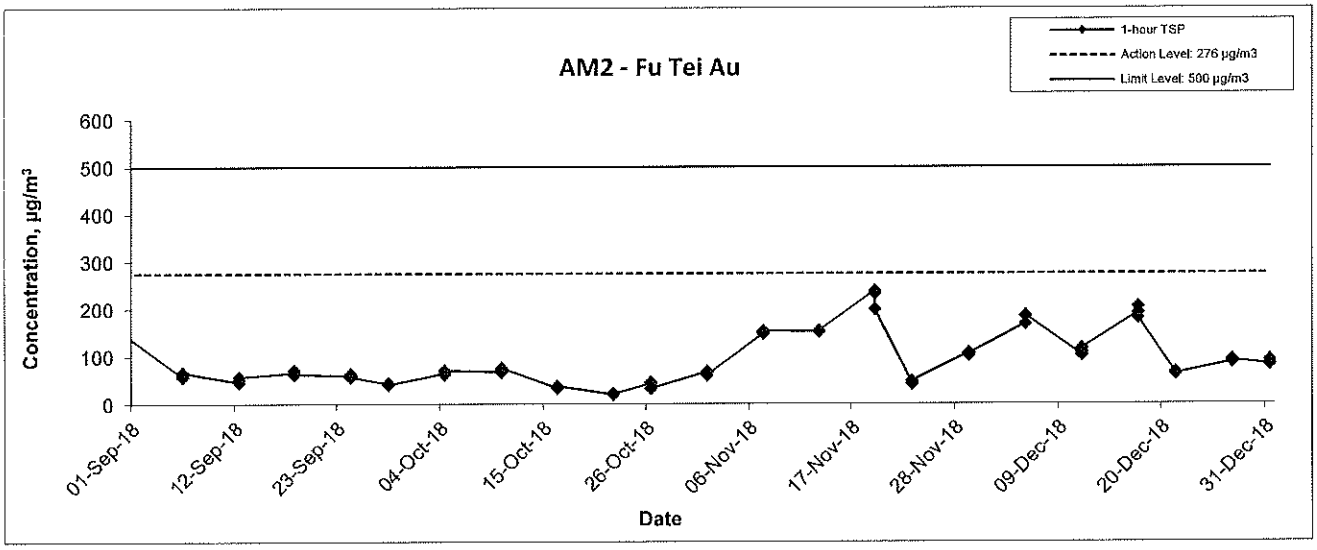
Sampling Date	Start Time	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. ($\mu g/m^3$)
					Initial	Final		Initial	Final		Initial	Final			
4-Dec-18	9:00	Cloudy	295.3	765.9	2.9645	3.0380	0.0735	16464.6	16488.6	24.0	1.24	1.24	1.24	1785.2	41.2
10-Dec-18	9:00	Cloudy	285.1	769.2	3.2240	3.3245	0.1005	16488.6	16512.6	24.0	1.27	1.27	1.27	1826.0	55.0
14-Dec-18	9:00	Sunny	285.9	773.4	3.2163	3.3568	0.1405	16512.6	16536.6	24.0	1.27	1.27	1.27	1828.8	76.8
20-Dec-18	9:00	Cloudy	293.9	765.8	3.6419	3.7656	0.1237	16536.6	16560.6	24.0	1.24	1.24	1.24	1789.9	69.1
24-Dec-18	9:00	Cloudy	288.0	767.6	3.6412	3.7276	0.0864	16560.6	16584.6	24.0	1.26	1.26	1.26	1813.3	47.6
28-Dec-18	9:00	Cloudy	288.7	770.5	3.6044	3.7227	0.1183	16584.6	16608.6	24.0	1.24	1.24	1.24	1788.1	66.2
														Min	41.2
														Max	76.8
														Average	59.3

AM2a - RE's Site Office

Sampling Date	Start Time	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. ($\mu g/m^3$)
					Initial	Final		Initial	Final		Initial	Final			
4-Dec-18	9:00	Cloudy	295.5	766.3	2.9833	3.0714	0.0881	7477.2	7501.2	24.0	1.25	1.25	1.25	1797.2	49.0
10-Dec-18	9:00	Cloudy	285.4	769.0	3.6083	3.6731	0.0648	7501.2	7525.2	24.0	1.28	1.28	1.28	1838.3	35.3
14-Dec-18	9:00	Sunny	286.1	773.5	3.2455	3.4132	0.1677	7525.2	7549.2	24.0	1.28	1.28	1.28	1842.0	91.0
20-Dec-18	9:00	Cloudy	293.8	765.3	3.2103	3.3377	0.1274	7549.2	7573.2	24.0	1.25	1.25	1.25	1802.0	70.7
24-Dec-18	9:00	Cloudy	287.7	767.2	3.6326	3.7093	0.0767	7573.2	7597.2	24.0	1.27	1.27	1.27	1827.1	42.0
28-Dec-18	9:00	Cloudy	288.6	770.2	3.3703	3.5320	0.1617	7597.2	7621.2	24.0	1.24	1.24	1.24	1779.6	90.9
														Min	35.3
														Max	91.0
														Average	63.1

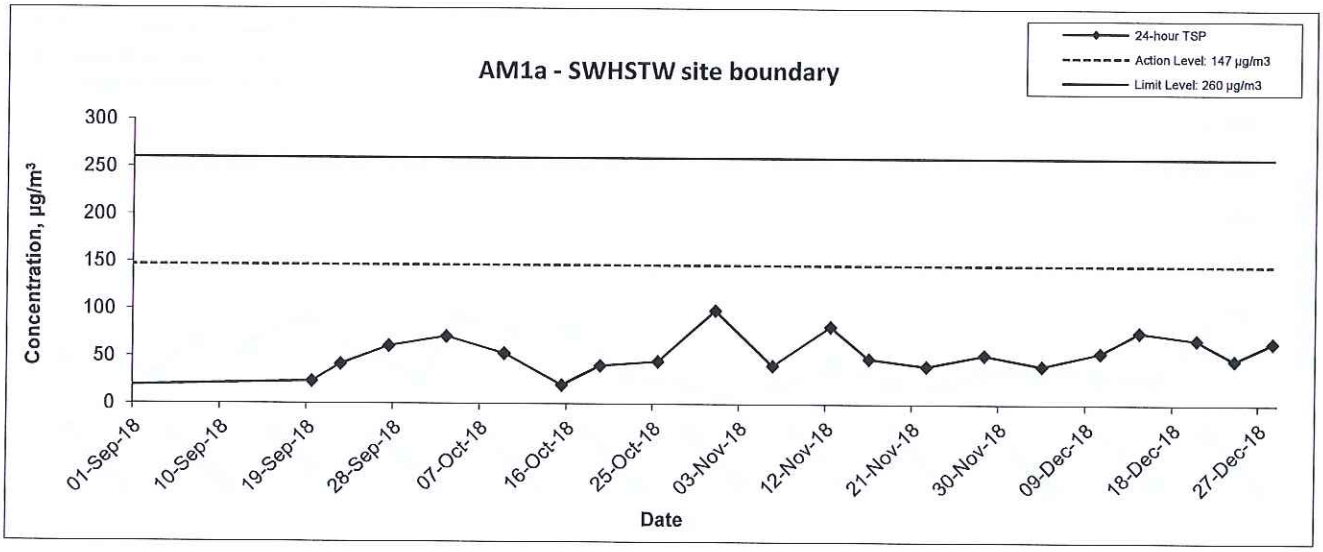
1-hr TSP Concentration Levels

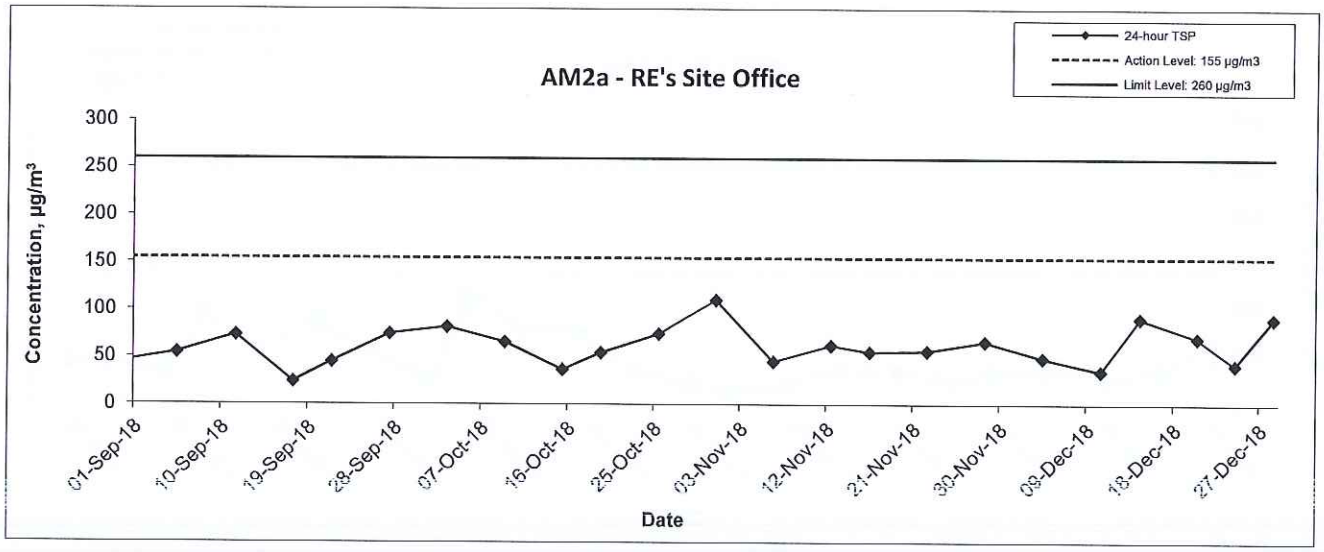




Title: Contract No. DE/2014/01 Provision of Electrical and Mechanical and Facilities for Shek Wu Hui Sewage Treatment Works Graphical Presentation of 1-hour TSP Monitoring Results	Scale: N.T.S Date: Dec-18	Project No.: MA16002 Appendix: D	CINOTECH

24-hr TSP Concentration Levels





Title	Scale	Project No.	
Contract No. DE/2014/01 Provision of Electrical and Mechanical and Facilities for Shek Wu Hui Sewage Treatment Works Graphical Presentation of 24-hour TSP Monitoring Results	N.T.S	MA16002	CINOTECH
	Date: Dec-18	Appendix: D	

APPENDIX E
NOISE MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

Appendix E - Noise Monitoring Results

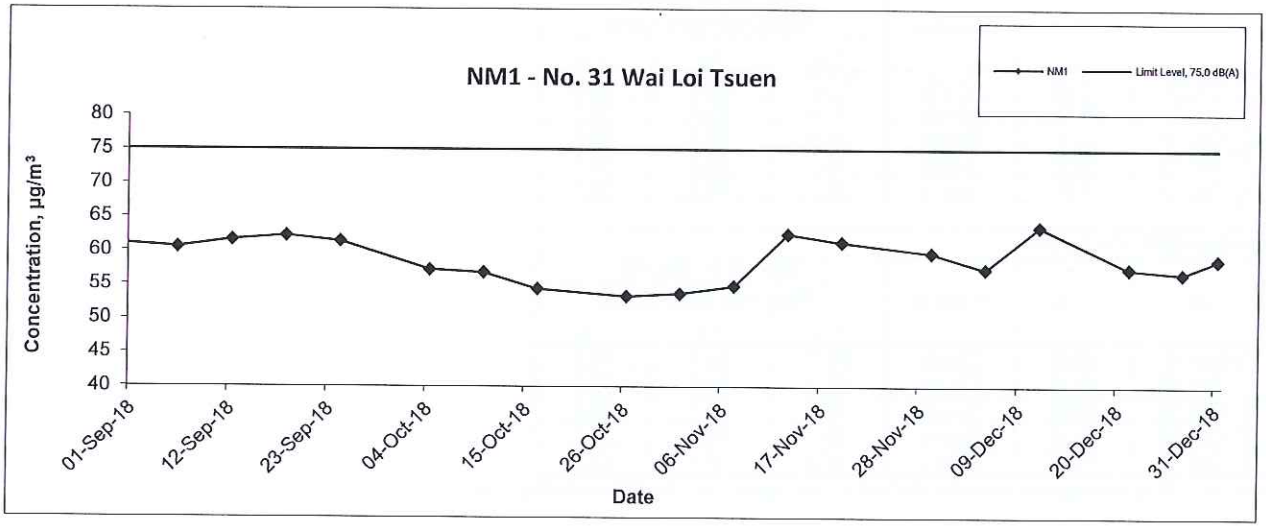
(0700-1900 hrs on Normal Weekdays)

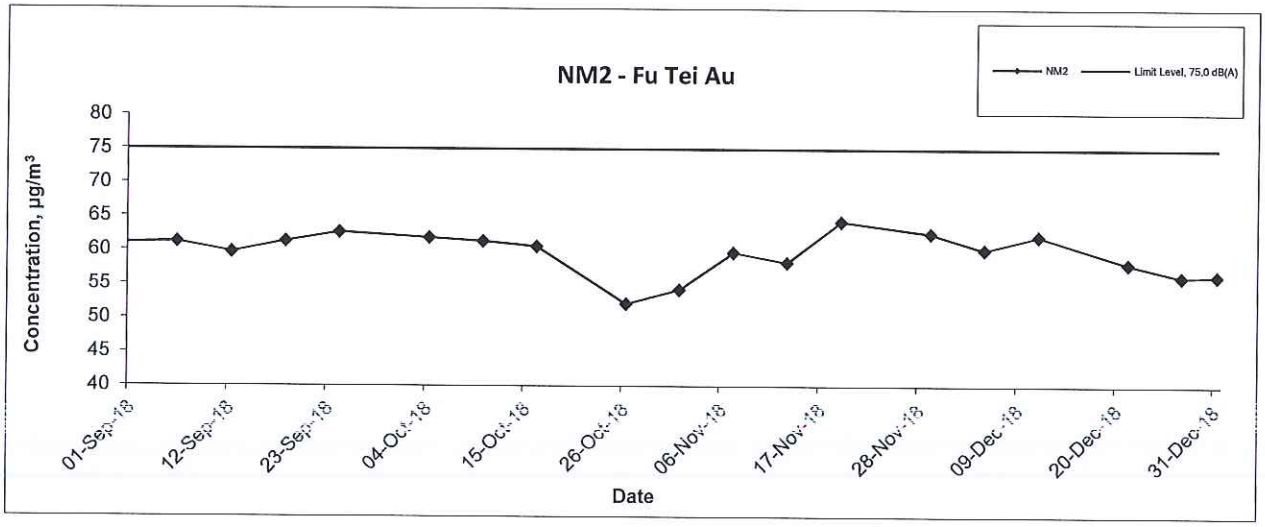
Location NM1 - No.31 Wai Loi Tsuen					
Date	Time	Weather	Unit: dB (A) (30-min) Measured Noise Level		
			L_{eq}	L_{10}	L_{90}
5-Dec-18	14:30	Cloudy	57.3*	57.2	50.3
11-Dec-18	9:15	Cloudy	63.6	65.8	59.7
21-Dec-18	9:15	Sunny	57.4	60.4	46.3
27-Dec-18	9:00	Sunny	56.7	59.5	53.5
31-Dec-18	9:00	Sunny	58.7	60.2	52.3

Location NM2 - Fu Tei Au					
Date	Time	Weather	Unit: dB (A) (30-min) Measured Noise Level		
			L_{eq}	L_{10}	L_{90}
5-Dec-18	13:00	Cloudy	60.1*	54.4	46.5
11-Dec-18	13:15	Cloudy	62.1	64.0	56.7
21-Dec-18	14:00	Sunny	58.0	61.7	46.3
27-Dec-18	13:15	Sunny	56.1	57.8	48.9
31-Dec-18	13:15	Sunny	56.3	59.1	50.0

Remark(*): Dog barking was recorded that led to Leq higher than the corresponding L10.

Noise Levels





Title	Scale	Project No.	
Contract No. DE/2014/01 Provision of Electrical and Mechanical and Facilities for Shek Wu Hui Sewage Treatment Works Graphical Presentation of Noise Monitoring Results	N.T.S	MA16002	CINOTECH
	Date: Dec-18	Appendix: E	

APPENDIX F
SUMMARY OF EXCEEDANCE

APPENDIX F – SUMMARY OF EXCEEDANCE

Reporting Month: December 2018

a) Exceedance Report for 1-hr TSP (NIL)

b) Exceedance Report for 24-hr TSP (NIL)

c) Exceedance Report for Construction Noise (NIL)

APPENDIX G
SITE AUDIT SUMMARY

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	181206
Date	06 December 2018 (Thursday)
Time	09:30-11:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
	Part C - Water Quality • No environmental deficiency was identified during the site inspection. ***Part D - Air Quality*** • No environmental deficiency was identified during the site inspection. ***Part E – Construction Noise Impact*** • No environmental deficiency was identified during the site inspection. ***Part F – Waste / Chemical Management*** • No environmental deficiency was identified during the site inspection. ***Part G - Permit / Licenses*** • No environmental deficiency was identified during the site inspection. ***Others / Remarks*** • Follow-up on previous audit session, no major environmental deficiency was observed.	

	Name	Signature	Date
Recorded by	Jonathan Lee		10 December 2018
Checked by	Dr. Priscilla Choy		10 December 2018

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	181213
Date	13 December 2018 (Thursday)
Time	09:30-11:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
	Part C - Water Quality • No environmental deficiency was identified during the site inspection. ***Part D - Air Quality*** • No environmental deficiency was identified during the site inspection. ***Part E – Construction Noise Impact*** • No environmental deficiency was identified during the site inspection. ***Part F – Waste / Chemical Management*** • No environmental deficiency was identified during the site inspection. ***Part G - Permit / Licenses*** • No environmental deficiency was identified during the site inspection. ***Others / Remarks*** • Follow-up on previous audit session, no major environmental deficiency was observed.	

	Name	Signature	Date
Recorded by	Victor Wong		13 December 2018
Checked by	Dr. Priscilla Choy		13 December 2018

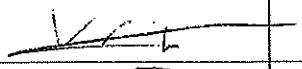
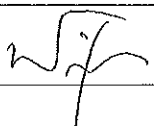
Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	181221
Date	21 December 2018 (Friday)
Time	16:00-17:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
	Part C - Water Quality • No environmental deficiency was identified during the site inspection. *Part D - Air Quality* • No environmental deficiency was identified during the site inspection. *Part E – Construction Noise Impact* • No environmental deficiency was identified during the site inspection. *Part F – Waste / Chemical Management* • No environmental deficiency was identified during the site inspection. *Part G - Permit / Licenses* • No environmental deficiency was identified during the site inspection. *Others / Remarks* • Follow-up on previous audit session, no major environmental deficiency was observed.	

	Name	Signature	Date
Recorded by	Victor Wong		21 December 2018
Checked by	Dr. Priscilla Choy		21 December 2018

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	181227
Date	27 December 2018 (Thursday)
Time	16:00-17:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
	Part C - Water Quality • No environmental deficiency was identified during the site inspection. *Part D - Air Quality* • No environmental deficiency was identified during the site inspection. *Part E – Construction Noise Impact* • No environmental deficiency was identified during the site inspection. *Part F – Waste / Chemical Management* • No environmental deficiency was identified during the site inspection. *Part G - Permit / Licenses* • No environmental deficiency was identified during the site inspection. *Others / Remarks* • Follow-up on previous audit session, no major environmental deficiency was observed.	

	Name	Signature	Date
Recorded by	Jonathan Lee		31 December 2018
Checked by	Dr. Priscilla Choy		31 December 2018

APPENDIX H
SUMMARY OF AMOUNT OF WASTE GENERATED

Name of Department: Drainage Services Department

Contract No. : DE/2014/01

Monthly Summary Waste Flow Table for 2018

Month	Annual Quantities of Inert C&D Materials Generated Monthly						Annual Quantities of C&D Materials Generated Monthly				
	Total Quantity Generated	Hard Rock & Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemicals Waste	Others, e.g. general refuse
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 kg)
Jan	0	0	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0	0	1.00
Mar	0	0	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0	0	7.16
May	0	0	0	0	0	0	0	0	0	0	5.31
Jun	0	0	0	0	0	0	0	0	0	0	8.24
Sub-total	0	0	0	0	0	0	0	0	0	0	21.71
Jul	0	0	0	0	0	0	0	0	0	0	4.63
Aug	0	0	0	0	0	0	0	0.022	0	0	2.98
Sep	0	0	0	0	0	0	0	0.026	0	0	6.01
Oct	0	0	0	0	0	0	0	0.009	0	0	7.96
Nov	0	0	0	0	0	0	0	0	0	0	5.30
Dec	0	0	0	0	0	0	0	0.032	0	0	7.20
Total	0	0	0	0	0	0	0	0.089	0	0	55.79

Forecast of Total Quantities of C&D Materials to be Generated from the Contractor										
Total Quantity Generated	Hard Rock & Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemicals Waste	Others, e.g. general refuse
(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 kg)
0	0	0	0	0	0	0	1	0.5	0.5	70

Notes: (1) The performance targets are given in PS Clause 6.21.8(14).
(2) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.

The Contractor shall also submit the latest forecast of the total amount of C&D materials expected to be generated from the Works, together with a breakdown of the nature where the total amount of C&D materials expected to be generated from the Works is equal to or exceeding 50,000 m^3. (PS Clause 6.21.7(4)(b) refers).

APPENDIX I
EVENT ACTION PLANS

APPENDIX I – Event / Action Plans

Table I-1 Event / Action Plan For Air Quality

EVENT	ACTION			
	ET	**IEC**	**ER**	**CONTRACTOR**
ACTION LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
2. Exceedance for two or more consecutive samples	1. Identify source; 2. Inform IEC and ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and ER; 8. If exceedance stops, cease additional monitoring	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of exceedance writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented	1. Submit proposals for remedial actions to IEC within three working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
LIMIT LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform Contractor ,IEC, ER, and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate
2. Exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues,	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by

EVENT	ACTION			
	ET	**IEC**	**ER**	**CONTRACTOR**
	taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring		consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	the ER until the exceedance is abated

Table I-2 Event / Action Plan For Construction Noise

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level being exceeded	1. Notify IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5. Increase monitoring frequency to check mitigation effectiveness	1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented.	1. Submit noise mitigation proposals to IEC; 2. Implement noise mitigation proposals.
Limit Level being exceeded	1. Identify source; 2. Inform IEC, ER, EPD and Contractor; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

APPENDIX J
ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE (EMIS)

APPENDIX J IMPLEMENTATION SCHEDULE OF ENVIRONMENTAL MITIGATION MEASURES (EMIS)

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures	Who to implement the measures?	Location of the measure	When to implement the measures?	Requirements / Relevant Legislations
A	**Air Quality**					
S2.4.1.3	Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: • Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading; • Any dusty material remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; • A stockpile of dusty material should not be extended beyond the pedestrian barriers, fencing or traffic cones; • The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle; • Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; • The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials; • Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously; • Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet; • Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding; • Any skip hoist for material transport should be totally enclosed by impervious sheeting; • Every stock of more than 20 bags of cement or dry pulverized fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides; • Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the	To minimize the dust impact	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	Air Pollution Control Ordinance (APCO) and Air Pollution Control (Construction Dust) Regulation

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures	Who to implement the measures?	Location of the measure	When to implement the measures?	Requirements / Relevant Legislations
	material filling line and no overfilling is allowed; • Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system.					
B	**Noise**					
S3.4.1.1	Use of movable barrier, enclosure, acoustic mat and quiet plant. Use of wooden frames barrier with a small-cantilevered upper portion of superficial density not less than 14kg/m² on a skid footing with 25mm thick internal sound absorptive lining.	To minimize construction noise impact arising from the Project at the affected noise sensitive receivers (NSRs)	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	EIAO-TM,
S3.4.1.2	Good Site Practice: • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program. • Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program. • Mobile plant, if any, should be sited as far away from NSRs as possible. • Machines and plant (such as trucks) that may be in intermittent use should be shut down between works periods or should be throttled down to a minimum. • Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs. • Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work Sites	Construction period of Advance Works and Main Works of Phase 1A	EIAO-TM, NCO
C	**Ecological Impact**					
S4.2.1.2	Avoid unnecessary lighting.	Minimize mortality impacts on birds.	Design/ Contractor/ Plant Operator	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	EIAO-TM
S4.2.1.3	Good construction site practice to minimise dust generation should be followed on all construction sites. Measures to avoid, minimise and mitigate impacts on air quality are detailed in this schedule	Minimize dust generation from construction sites.	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	EIAO-TM

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures	Who to implement the measures?	Location of the measure	When to implement the measures?	Requirements / Relevant Legislations
S4.2.1.4	The following measures to avoid, minimise and mitigate impact on water quality during construction phase shall be implemented • Temporary sewerage and drainage to be designed and installed to collect wastewater and prevent it from entering water bodies; • Proper locations well away from nearby water bodies should be used for temporary storage of materials (i.e. equipment, filling materials, chemicals and fuel) and temporary stockpiles of construction debris and spoil, and these should be identified before commencement of works; • To prevent muddy water entering nearby water bodies, work sites close to nearby water bodies should be isolated, using such items as sandbags or silt curtains with lead edge at bottom and properly supported props. Other protective measures should also be taken to ensure that no pollution or siltation occurs to the water gathering grounds of the work sites; • Construction debris and spoil should be covered and/or properly disposed of as soon as possible to avoid these being washed into nearby water bodies; • Proper locations for discharge outlets of temporary wastewater treatment facilities well away from sensitive receivers should be identified; • Adequate lateral support should be erected where necessary in order to prevent soil/mud from slipping into water bodies; • Site boundaries should be clearly marked and any works beyond the boundary strictly prohibited; • Regular water monitoring and site audit should be carried out at adequate points along any watercourses where construction works are underway upstream within their catchments and also on the Ng Tung, Sheung Yue and Shek Sheung Rivers. If the monitoring and audit results show that pollution occurs, adequate measures including temporarily cessation of works should be considered; • Excavation profiles should be properly designed and executed with attention to the relevant requirements for environment, health and safety; • Where soil to be excavated is situated beneath the groundwater table, it may be necessary to lower the groundwater table by installing well points or similar means; • Stockpiling sites should be lined with impermeable sheeting and bunded. Stockpiles should be properly covered by impermeable sheeting to reduce dust emission during dry season or contaminated run-off during rainy season. Watering should be avoided on stockpiles of contaminated soil to minimize contaminated runoff and construction materials should be properly covered and located away from nearby	Avoid, minimise and mitigate impact on water quality	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	EIAO-TM

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures	Who to implement the measures?	Location of the measure	When to implement the measures?	Requirements / Relevant Legislations
	water bodies; and • Supply of suitable clean backfill material after excavation, if required. • Vehicles containing any excavated materials should be suitably covered to limit potential dust emissions or contaminated run-off, and truck bodies and tailgates should be sealed to prevent discharge during transport or during wet season; • Speed control for the trucks carrying contaminated materials should be enforced; • Vehicle wheel washing facilities at construction sites' exit points should be established and used, where necessary; and • Other measures as detailed in this schedule.					
D	**Water Quality Impact**					
S5.2.2.1	Construction Site Runoff Practices and measures provided in the Practice Note for Professional Persons on Construction Site Drainage, (PROPECC PN1/94) should be followed where applicable.	Control construction runoff	Contractors	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	EIAO-TM, WPCO, EIAO
S5.2.2.2–S5.2.2.3	Sewage from Workforce • Portable chemical toilets and sewage holding tanks should be provided for handling the construction sewage generated by the workforce. A licensed Contractor should be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance. • Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment during the construction phase of the Project. Regular environmental audit on construction site should be conducted in order to provide an effective control of any malpractices and achieve continual improvement of environmental performance on site. It is anticipated that sewage generation during the construction phase of the Project would not cause water quality impact after undertaking all required measures	Handling of site sewage	Contractors	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	EIAO-TM, WPCO, EIAO
E	**Waste Management**					
S6.2.2.1	Good Site Practices and Waste Reduction Measures: • Nomination of an approved person, such as a site manager, to be responsible for the implementation of good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site; • Training of site personnel in site cleanliness, appropriate waste management procedures and concepts of waste reduction, reuse and recycling;	Minimize waste Generation during construction	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	Waste Disposal Ordinance (WDO)

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures	Who to implement the measures?	Location of the measure	When to implement the measures?	Requirements / Relevant Legislations
	• Provision of sufficient waste disposal points and regular collection for disposal; • Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; • An Environmental Management Plan (EMP) should be prepared by the contractor and submitted to the Engineer for approval.					
S6.2.3.1	Waste Reduction Measures: • Segregate and store different types of waste in different containers, skip or stockpiles to enhance reuse or recycling of materials and their proper disposal; • Proper storage and site practices to minimize the potential for damage and contamination of construction materials; • Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste; • Sort out demolition debris and excavated materials from demolition works to recover reusable/recyclable portions (i.e. soil, broken concrete, metal etc.); and • Provide training to workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling.	Reduce waste generation	Contractor	Work Sites	Prior to the commencement of construction of Advance Works and Main Works of Phase 1A	WDO
S6.2.4.1 - S6.2.4.2	Storage, Collection and Transportation of Waste Should any temporary storage or stockpiling of waste is required, recommendations to minimize the impacts include: • Waste, such as soil, should be handled and stored well to ensure secure containment, thus minimizing the potential of pollution; • Stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away; and • Different locations should be designated to stockpile each material to enhance reuse. • Remove waste in timely manner; • Employ the trucks with cover or enclosed containers for waste transportation; • Obtain relevant waste disposal permits from the appropriate authorities; and • Disposal of waste should be done at licensed waste disposal facilities.	Minimize waste impacts arising from waste storage	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	WDO
S6.2.5.3	C&D Material from Buildings Demolition and New Building Construction • The Contractor should recycle as much as possible of the C&DM on-site. Public fill and C&DM waste should be segregated and stored in	Minimize waste impacts from building demolition and new	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	Land (Miscellaneous Provisions) Ordinance, WDO,

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures	Who to implement the measures?	Location of the measure	When to implement the measures?	Requirements / Relevant Legislations
	different containers or skips to enhance reuse or recycling of materials and their proper disposal. For example, concrete and masonry can be crushed and used as fill, and steel reinforcing bar can be used by scrap steel mills. Different areas of the work sites should be designated for such segregation and storage. • The use of wooden hoardings shall not be allowed. An alternative material, such as metal, aluminium or alloy etc, could be used. • Government has developed a charging policy for the disposal of waste to landfill at present. It will provide additional incentive to reduce the volume of generated waste and ensure proper segregation to allow reuse of the inert material on site when implemented. • In order to minimize the impacts of the demolition works, the generated wastes must be cleared as quickly as possible after demolition. Therefore, the demolition and clearance works should be undertaken simultaneously. • To facilitate proper segregation of inert and non-inert C&D material arising from demolition works, selective demolition method should be adopted.	building construction				ETWB TCW No. 19/2005
S6.2.5.4	Chemical Waste • If chemical wastes are produced at the construction site, the Contractors should register with EPD as chemical waste producers. • Chemical wastes should be stored in appropriate containers and collected by a licensed chemical waste contractor. Chemical wastes (e.g. spent lubricant oil) should be recycled at an appropriate facility as far as possible, while the chemical waste that cannot be recycled should be disposed of at either the Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation	Control the chemical waste and ensure proper storage, handling and disposal	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	Waste Disposal (Chemical Waste General) Regulation, Code of Practice on the Packaging, Labelling and Storage of Chemical Waste
S6.2.5.5	General Refuse • General refuse should be stored in enclosed bins separately from construction and chemical wastes. • Recycling bins should also be placed to encourage recycling. • Preferably enclosed and covered areas should be provided for general refuse collection and routine cleaning for these areas should also be implemented to keep areas clean. • A reputable waste collector should be employed to remove general refuse on a daily basis.	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	Work Sites	Construction phase of Advance Works and Main Works of Phase 1A	Waste Disposal (Chemical Waste General) Regulation, Code of Practice on the Packaging, Labelling and Storage of Chemical Waste

APPENDIX K
COMPLAINT LOG

APPENDIX K – COMPLAINT LOG

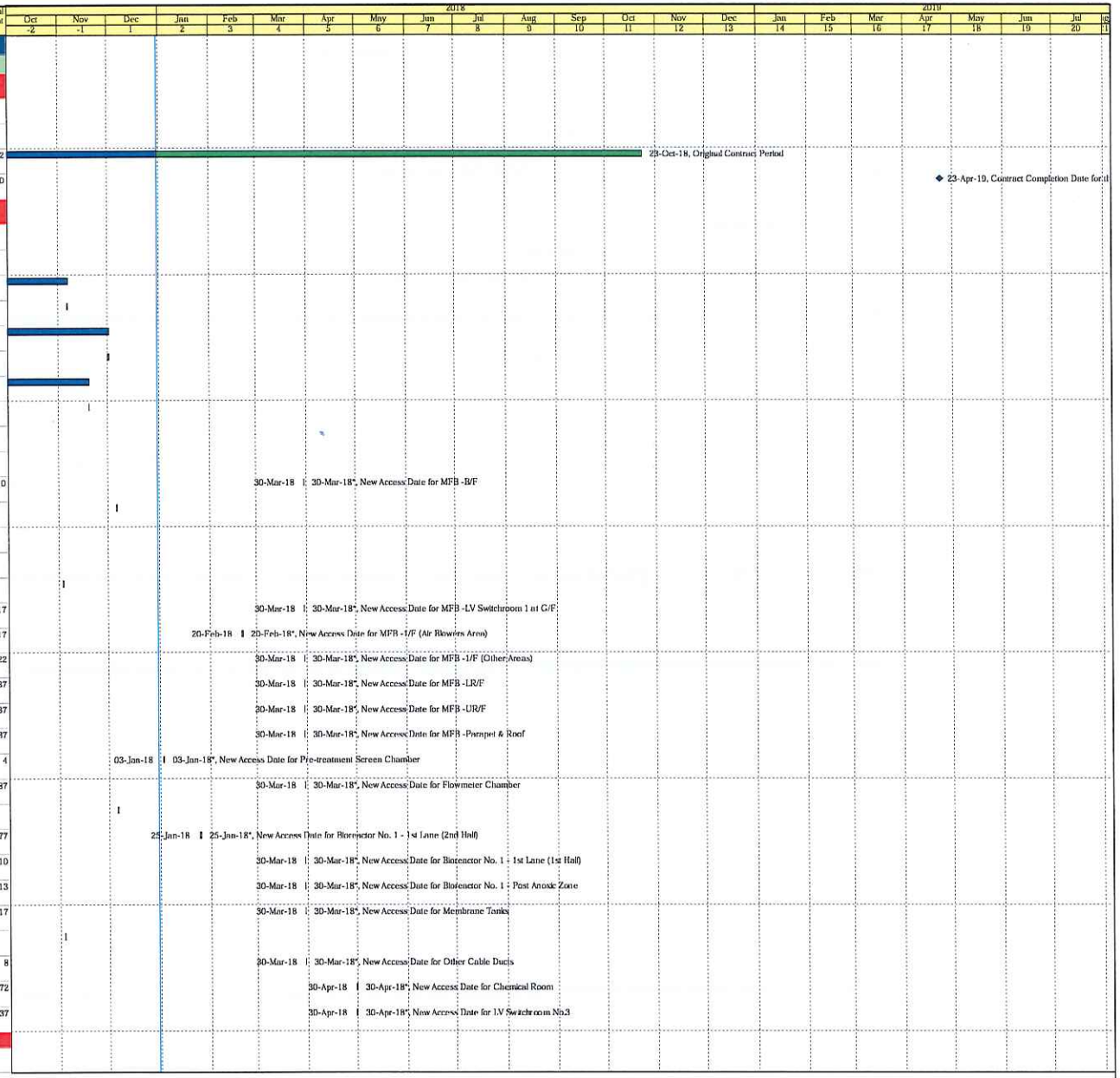
Reporting Month: December 2018

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Remarks: No environmental complaint was received in the reporting month.

APPENDIX L
CONSTRUCTION PROGRAMME

Activity ID	Activity Name	Remaining Duration	Start	Finish	Total Float
Shek Wu Hui STW - Master Programme DE/2014/01					
Contract Data					
Starting Date & Completion Date					
AS000010	Contract Date (LOA)	0	28-Dec-15 A		
AS000020	Contract Starting Date	0	30-Dec-15 A		
AS000110	Original Contract Period	297	30-Dec-15 A	23-Oct-18	182
AS000220	Contract Completion Date for the whole of the Works	0		23-Apr-19	0
Access Date					
AS001010	PM's Site Office and Contractor's Site Office and Storage Area, (within 120 days)	0	30-Dec-15 A	27-Apr-16 A	
AS001012	Planned Access Date for PM's Site Office and Contractor's Site Office and Storage Area	0	27-Apr-16 A	27-Apr-16 A	
AS001020	Flowmeter Chamber, MBR Pre-treatment Screen Chamber and its vicinity, (within 560 days)	0	30-Dec-15 A	06-Nov-17 A	
AS001022	Planned Access Date for Flowmeter Chamber, MBR Pre-treatment Screen Chamber and its vicinity	0	06-Nov-17 A	06-Nov-17 A	
AS001030	Bioreactor no.1 (BR1) and its vicinity, (within 560 days)	0	30-Dec-15 A	01-Dec-17 A	
AS001032	Planned Access Date for Bioreactor no.1 (BR1) and its vicinity	0	01-Dec-17 A	01-Dec-17 A	
AS001040	MBR Facilities Building, Membrane Filtration System No.1 (MFS1) and its vicinity, (within 505 days)	0	30-Dec-15 A	19-Nov-17 A	
AS001042	Planned Access Date for MBR Facilities Building, Membrane Filtration System No.1 (MFS1) and its vicinity	0	19-Nov-17 A	19-Nov-17 A	
AS001050	Ng Chow South Road Sewage Pumping Station - (within 158 days)	0	30-Dec-15 A	04-Jun-16 A	
AS001052	Planned Access Date for Ng Chow South Road Sewage Pumping Station	0	04-Jun-16 A	04-Jun-16 A	
AS001100	New Access Date for MFB -B/F	1	30-Mar-18	30-Mar-18*	0
AS001120	New Access Date for MFB -G/F	0	06-Dec-17 A	06-Dec-17 A	
AS001150	New Access Date for MFB -CLP Rm C	0	29-Sep-17 A	29-Sep-17 A	
AS001160	New Access Date for MFB -CLP Rm D	0	26-Sep-17 A	26-Sep-17 A	
AS001170g	New Access Date for MFB -11kV Switchroom	0	03-Nov-17 A	03-Nov-17 A	
AS001175g	New Access Date for MFB -LV Switchroom 1 at G/F	1	30-Mar-18	30-Mar-18*	17
AS001180	New Access Date for MFB -1/F (Air Blowers Area)	1	20-Feb-18	20-Feb-18*	17
AS001180g	New Access Date for MFB -1/F (Other Areas)	1	30-Mar-18	30-Mar-18*	22
AS001200	New Access Date for MFB -LR/F	1	30-Mar-18	30-Mar-18*	237
AS001220	New Access Date for MFB -UR/F	1	30-Mar-18	30-Mar-18*	237
AS001240	New Access Date for MFB -Parapet & Roof	1	30-Mar-18	30-Mar-18*	237
AS001300	New Access Date for Pre-treatment Screen Chamber	1	03-Jan-18	03-Jan-18*	4
AS001320	New Access Date for Flowmeter Chamber	1	30-Mar-18	30-Mar-18*	87
AS001340	New Access Date for Bioreactor No. 1 - 2nd Lane	0	06-Dec-17 A	06-Dec-17 A	
AS001342	New Access Date for Bioreactor No. 1 - 1st Lane (2nd Half)	1	25-Jan-18	25-Jan-18*	77
AS001342g	New Access Date for Bioreactor No. 1 - 1st Lane (1st Half)	1	30-Mar-18	30-Mar-18*	10
AS001344	New Access Date for Bioreactor No. 1 - Post Anoxic Zone	1	30-Mar-18	30-Mar-18*	13
AS001360	New Access Date for Membrane Tanks	1	30-Mar-18	30-Mar-18*	17
AS001380	Availability of CLP Cable Ducts	0	03-Nov-17 A	03-Nov-17 A	
AS001400	New Access Date for Other Cable Ducts	1	30-Mar-18	30-Mar-18*	8
AS001420	New Access Date for Chemical Room	1	30-Apr-18	30-Apr-18*	72
AS001440	New Access Date for LV Switchroom No.3	1	30-Apr-18	30-Apr-18*	37
Key Dates					
AS002010	Completion of NCSRPSP E&M Works including testing and commissioning	0	30-Dec-15 A	28-Jul-17 A	



JEC

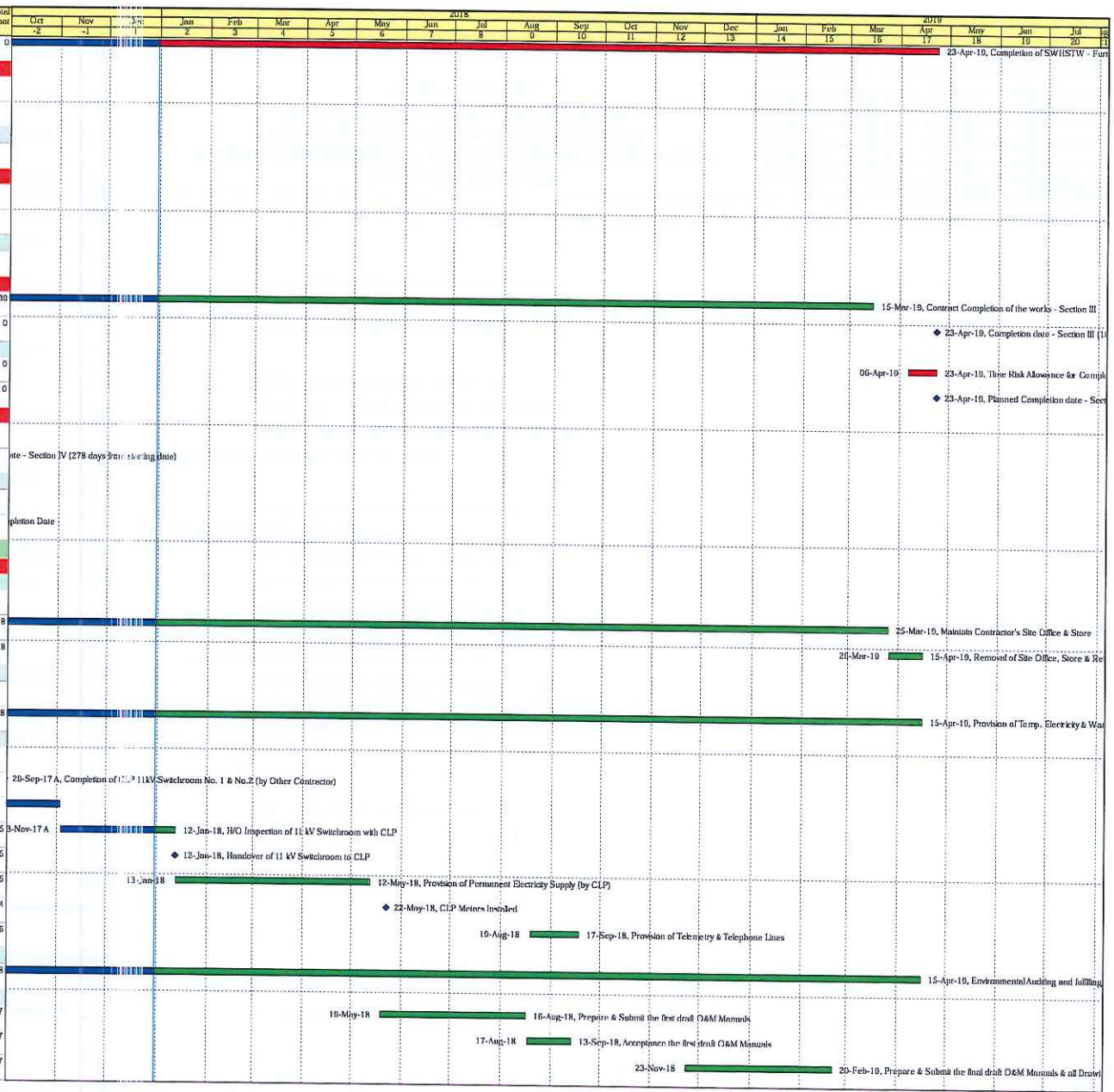
File Name: DE/2014/01G3
Layout: DE1401 (Rev. G) - WBS
TASK filter: All Activities

Remaining Work
Critical Activity
Milestone
Actual Progress

Contract No. DE/2014/01
Provision of E&M Facilities for Shek Wu Hui Sewage Treatment Works Further Expansion Phase 1A - Advance Works and Ng Chow South Road Sewage Pumping Station
Master Programme

Date	Revision	Checked	Approved
08-Jan-16	Rev. 0	KH Lau	KM
22-Jun-17	Rev. D	KH Lau	KM
12-Jul-17	Rev. E	KH Lau	KM
17-Oct-17	Rev. F	KH Lau	KM
27-Mar-18	Rev. G	KH Lau	KM

Activity ID	Activity Name	Remaining Duration	Start	Finish	Total Float
AS002020	Completion of SWHSTW - Further Expansion Phase 1A - Advance Works E&M Works including T&C, process commissioning	380	30-Dec-15 A	23-Apr-19	0
Section I					
AS200010	Contract Completion of the works - Section I	0	30-Dec-15 A	23-Sep-16 A	
AS200020	Completion date - Section I (272 days from starting date)	0		23-Sep-16 A	
Time Risk Allowance and Planned Completion					
AS200040	Planned Completion date - Section I	0		23-Sep-16 A	
Section II					
AS300010	Contract Completion of the works - Section II	0	30-Dec-15 A	18-Mar-16 A	
AS300020	Completion date - Section II (80 days from starting date)	0		18-Mar-16 A	
Time Risk Allowance and Planned Completion					
AS300040	Planned Completion date - Section II	0		18-Mar-16 A	
Section III					
AS400010	Contract Completion of the works - Section III	440	30-Dec-15 A	15-Mar-19	39
AS400020	Completion date - Section III (1020 days from starting date)	0		23-Apr-19	0
Time Risk Allowance and Planned Completion					
AS400030	Time Risk Allowance for Completion of Function Test of Section III (4% of installation duration, 463-469 days)	18	06-Apr-19	23-Apr-19	0
AS400040	Planned Completion date - Section III	0		23-Apr-19	0
Section IV					
AS500010	Contract Completion of the works - Section IV	0	30-Dec-15 A	28-Jul-17 A	
AS500020	Completion date - Section IV (278 days from starting date)	0		28-Jul-17 A	
Time Risk Allowance and Planned Completion					
AS500030	Time Risk Allowance for Section IV (4% of installation duration, 120 days)	0	22-Jun-17 A	28-Jul-17 A	
AS500040	Planned Completion Date	0		28-Jul-17 A	
Activity Schedule No.1 - Preliminaries					
1.01 - Preliminaries					
Contractor's Site Office Construction					
AS101010	Construction of Contractor's Site Office & Store	0	22-Jul-16 A	23-Sep-16 A	
AS101012	Maintain Contractor's Site Office & Store	450	27-Oct-16 A	25-Mar-19	8
AS101014	Removal of Site Office, Store & Relevant Facilities	21	26-Mar-19	15-Apr-19	8
Site Facilities					
AS101030	Set up Temp. Electricity Supply, Water Supply	0	18-Aug-16 A	23-Sep-16 A	
AS101032	Provision of Temp. Electricity & Water Supply for execution for the Contract	471	27-Oct-16 A	15-Apr-19	8
Permanent Utilities Services					
AS101040	Applications to the Public Utilities for Provision of Services	0	29-Jan-16 A	23-Sep-16 A	
AS101041	Completion of CLP 11kV Switchroom No. 1 & No.2 (by Other Contractor)	0		20-Sep-17 A	
AS101042	BS Works for CLP 11 kV Switchroom No.1 & No. 2	0	30-Sep-17 A	02-Nov-17 A	
AS101042g	H/O Inspection of 11 kV Switchroom with CLP	13	03-Nov-17 A	12-Jan-18	75
AS101043	Handover of 11 kV Switchroom to CLP	0		12-Jan-18	75
AS101045	Provision of Permanent Electricity Supply (by CLP)	120	13-Jan-18	12-May-18	75
AS101045n	CLP Meters Installed	0		22-May-18	84
AS101046	Provision of Telemetry & Telephone Lines	30	19-Aug-18	17-Sep-18	36
Provide all necessary labour, tools, materials, equipment and supervision					
AS101050	Environmental Auditing and fulfilling the Environmental Permit	471	29-Jan-16 A	15-Apr-19	8
O&M Manuals and As-Built Drawings					
AS101061	Prepare & Submit the first draft O&M Manuals	90	18-May-18	16-Aug-18	87
AS101062	Acceptance the first draft O&M Manuals	28	17-Aug-18	13-Sep-18	87
AS101071	Prepare & Submit the final draft O&M Manuals & all Drawings	90	23-Nov-18	20-Feb-19	17



JEC

File Name: DE/2014/01G3
Layout: DE1401 (Rev. G) - WBS
TASK filter: All Activities

Remaining Work
Critical Activity
Milestone
Actual Progress

Contract No. DE/2014/01
Provision of E&M Facilities for Shek Wu Hui Sewage Treatment Works
Further Expansion Phase 1A - Advance Works and
Ng Chow South Road Sewage Pumping Station
Master Programme

Date	Revision	Checked	Approved
08-Jan-16	Rev. 0	KH Lau	KM
22-Jun-17	Rev. D	KH Lau	KM
12-Jul-17	Rev. E	KH Lau	KM
17-Oct-17	Rev. F	KH Lau	KM
27-Mar-18	Rev. G	KH Lau	KM

Activity ID	Activity Name	Remaining Duration	Start	Finish	Total Float
AS101072	Acceptance the final draft O&M Manuals & all Drawings	28	21-Feb-19	20-Mar-19	34
Training to Employer's Staff on the O&M of the Plant					
AS101080	Provide Training for the Employer's Staff	45	21-Feb-19	06-Apr-19	17
PM's Site Office					
AS101090	Provide E&M equipment & Office Stationary for the use of Project Manager and Supervisors	471	29-Mar-16 A	15-Apr-19	8
AS101100	Provide clerical support to the Project Manager's site office	471	28-Apr-16 A	15-Apr-19	8
Site Progress					
AS101100	Provide all necessary photographs, video clips and accessories	471	07-Jun-16 A	15-Apr-19	8
Contract Vehicle					
AS101110	Provision of one contract vehicle service (Electric Vehicle) during the normal working hours	0	30-Dec-15 A	28-Jan-16 A	
AS101120	Provide Contract Vehicle Service; one (Petrol-Electricity) & one (Electric) during the normal working hours	0	30-Dec-15 A	28-Jan-16 A	
AS101130	Provide O&M of the Contract Cars; Driving Services; Mobile Phone Services (normal working hours)	471	29-Jan-16 A	15-Apr-19	8
AS101140	Provide O&M of the Electric Contract Cars; Driving Services (outside normal working hours)	471	29-Jan-16 A	15-Apr-19	8
AS101150	Provide O&M of the Petrol-Electricity Contract Cars; Driving Services (outside normal working hours)	471	29-Jan-16 A	15-Apr-19	8
Uniform					
AS101170	Uniform for Site Personnel and self-employed workers	471	29-Jan-16 A	15-Apr-19	8
Independent Checking Engineer					
AS101180	Provision of Independent Certified Engineer in accordance with the Specification	471	29-Jan-16 A	15-Apr-19	8
Automated External Defibrillator (AED)					
AS101190	Provide Automated External Defibrillator (AED) and associated accessories	0	18-Nov-16 A	12-Dec-16 A	
AS101192	Provide Training for Qualified on-site personnels for the use of AED	0	13-Dec-16 A	22-Dec-16 A	
Site Management Plan for Trip Ticket System					
AS102010	Complete site management plan for trip ticket system	0	30-Dec-15 A	13-Mar-16 A	
AS102020	Implementation of site management plan for trip ticket system	471	14-Mar-16 A	15-Apr-19	8
Site Cleaning and Tidiness					
AS103010	(i) Site and works area in Shek Wu Hui Sewage Treatment Works - Daily	471	26-Sep-17 A	19-Apr-19	4
AS103020	(ii) Site and works area in Ng Chow Nam Road Sewage Pumping Station - Daily	0	05-Jun-16 A	27-Sep-16 A	
AS103030	(i) Site and works area in Shek Wu Hui Sewage Treatment Works - Weekly	471	26-Sep-17 A	19-Apr-19	4
AS103040	(ii) Site and works area in Ng Chow Nam Road Sewage Pumping Station - Weekly	0	05-Jun-16 A	27-Sep-16 A	
Subocontractor Management Plan					
AS104010	Complete sub-contractor management plan	0	30-Dec-15 A	27-Feb-16 A	
AS104020	Quarterly updating of sub-contractor management plan	471	29-May-16 A	15-Apr-19	8
Waste Management Plan					
AS105010	Complete waste management plan	0	30-Dec-15 A	28-Mar-16 A	
AS105020	Review and updating of waste management plan	471	29-Mar-16 A	15-Apr-19	8
Safety Scheme					
AS106010	Complete Safety Plan	0	30-Dec-15 A	27-Feb-16 A	
AS106030	Update Safety Plan	471	29-Feb-16 A	19-Apr-19	4
AS106050	Provide Safety Officer	471	28-Apr-16 A	15-Apr-19	8
AS106070	Attend Site Safety and Environment Management Committee	471	28-Apr-16 A	15-Apr-19	8
AS106080	Attend Site Safety and Environment Committee	471	28-Apr-16 A	15-Apr-19	8
AS106090	Arrange and attend weekly safety walk	471	28-Apr-16 A	15-Apr-19	8
AS106100	Arrange and attend weekly environmental walk	471	28-Apr-16 A	15-Apr-19	8
AS106110	Provide safety and environment training - (i) 1 day course (for first attendance)	471	28-Apr-16 A	15-Apr-19	8
AS106120	Provide safety and environment training - (ii) 0.5 day revalidation course	471	28-Apr-16 A	15-Apr-19	8
AS106130	Provide safety and environment training - site specific induction training	471	28-Apr-16 A	15-Apr-19	8

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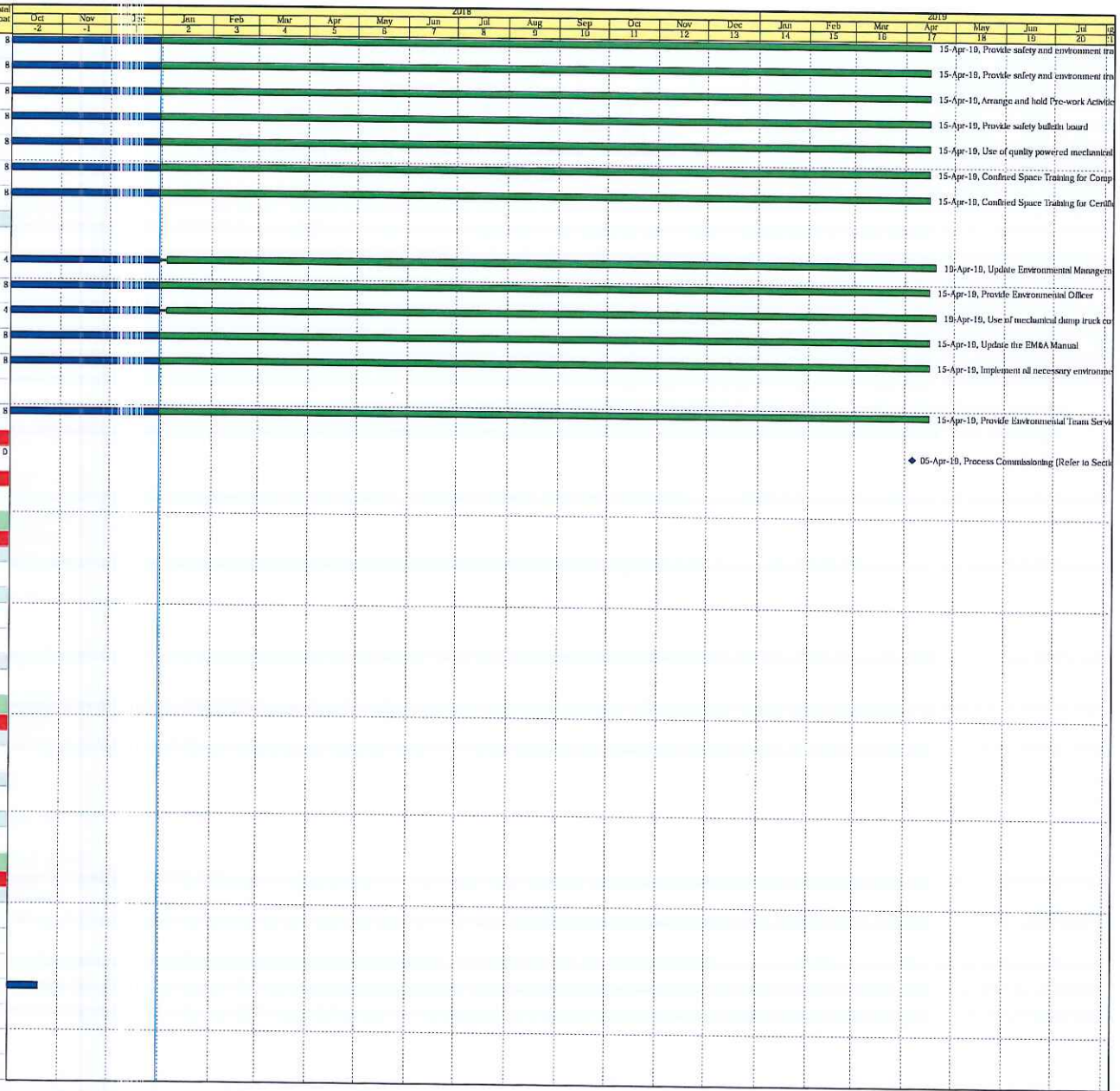
Activity ID	Activity Name	Remaining Duration	Start	Finish	Total Float
AS106140	Provide safety and environment training - toolbox talks	471	28-Apr-16 A	15-Apr-19	8
AS106150	Provide safety and environment training:Participate in safety promotional campaign as instructed by the Engineer	471	28-Apr-16 A	15-Apr-19	8
AS107010	Arrange and hold Pre-work Activities of Site Safety Cycle	471	28-Apr-16 A	15-Apr-19	8
AS107020	Provide safety bulletin board	471	28-Apr-16 A	15-Apr-19	8
AS107030	Use of quality powered mechanical equipment	471	28-Apr-16 A	15-Apr-19	8
AS108010	Confined Space Training for Competent Persons to competent persons	471	28-Apr-16 A	15-Apr-19	8
AS108020	Confined Space Training for Certified Workers to certified workers	471	28-Apr-16 A	15-Apr-19	8
Environmental Scheme					
AS106020	Complete Environmental Management Plan	0	30-Dec-15 A	27-Feb-16 A	
AS106040	Update Environmental Management Plan	471	29-Feb-16 A	19-Apr-19	4
AS108060	Provide Environmental Officer	471	29-Jan-16 A	15-Apr-19	8
AS108010	Use of mechanical dump truck covers	471	29-Feb-16 A	19-Apr-19	4
AS111010	Update the EM&A Manual	471	28-Feb-16 A	15-Apr-19	8
AS111020	Implement all necessary environmental impact mitigation measures	471	28-Feb-16 A	15-Apr-19	8
AS111030	Employ Environmental Team	0	30-Dec-15 A	27-Apr-16 A	
AS111032	Provide Environmental Team Services	471	28-Apr-16 A	15-Apr-19	8
1.12 - Process Commissioning					
AS112000	Process Commissioning (Refer to Section III)	0		05-Apr-19	0
Procurement Procurement Programme					
AS003000	Prepare & Submit Procurement Programme	0	30-Dec-15 A	27-Feb-16 A	
Section I of Works					
Activity Schedule No.2					
1 - Design Calculation of Plant and Materials					
AS201100	Complete Design Calculation of Plant & Material (Refer to P&M Submission Schedule for details)	0	30-Dec-15 A	23-Sep-16 A	
2 - Civil Requirment Drawings for the Plant					
AS202100	Complete Civil Requirment Drawings for Flowmeter Chamber, Pre-treatment Screen, MF Tanks & MFB (BA)	0	30-Dec-15 A	28-Mar-16 A	
AS202200	Complete Other Civil Requirment Drawings (Refer to Dwgs Submission Schedule for details)	0	30-Dec-15 A	23-Sep-16 A	
3 - Detailed Design and Plant Layout Drawings					
AS203100	Complete Detailed Design and Plant Layout Drawings (Refer to Dwgs Submission Schedule for details)	0	29-Mar-16 A	23-Sep-16 A	
Section II of Works					
Activity Schedule No. 3					
1 - Design Calculation of Plant and Material					
AS301100	Complete Design Calculation of Plant & Material (Refer to P&M Submission Schedule for details)	0	30-Dec-15 A	18-Mar-16 A	
2 - Civil Requirment Drawings for the Plant					
AS302100	Complete Civil Requirment Drawings (Refer to Dwgs Submission Schedule for details)	0	30-Dec-15 A	18-Mar-16 A	
3 - Detailed Design and Plant Layout Drawings					
AS303100	Complete Detailed Design and Plant Layout Drawings (Refer to Dwgs Submission Schedule for details)	0	30-Dec-15 A	18-Mar-16 A	
Section III of Works					
Plant & Material Procurement					
Tender and Award of Suppliers - Mechanical - MBR1					
AS400100	Procurement of BR Feedpumps & Associated Equipment	0	28-May-16 A	23-Sep-16 A	
AS400110	Procurement of MBR Pre-treatment Screen	0	29-Mar-16 A	21-Jun-16 A	
AS400120	Procurement of Wash compactors, bagging system	0	28-May-16 A	25-Aug-16 A	
AS400120a	Procurement of screenings skips	0	30-Sep-16 A	19-Oct-17 A	
AS400130	Procurement of Associated ductworks, pipeworks and valves	0	30-Sep-16 A	20-Sep-17 A	
AS400140	Procurement of Mist system, FRP klosk and drain pumping system	0	30-Sep-16 A	05-Sep-17 A	
AS400150	Procurement of Ancillary aeration system	0	27-Jun-16 A	22-Sep-16 A	



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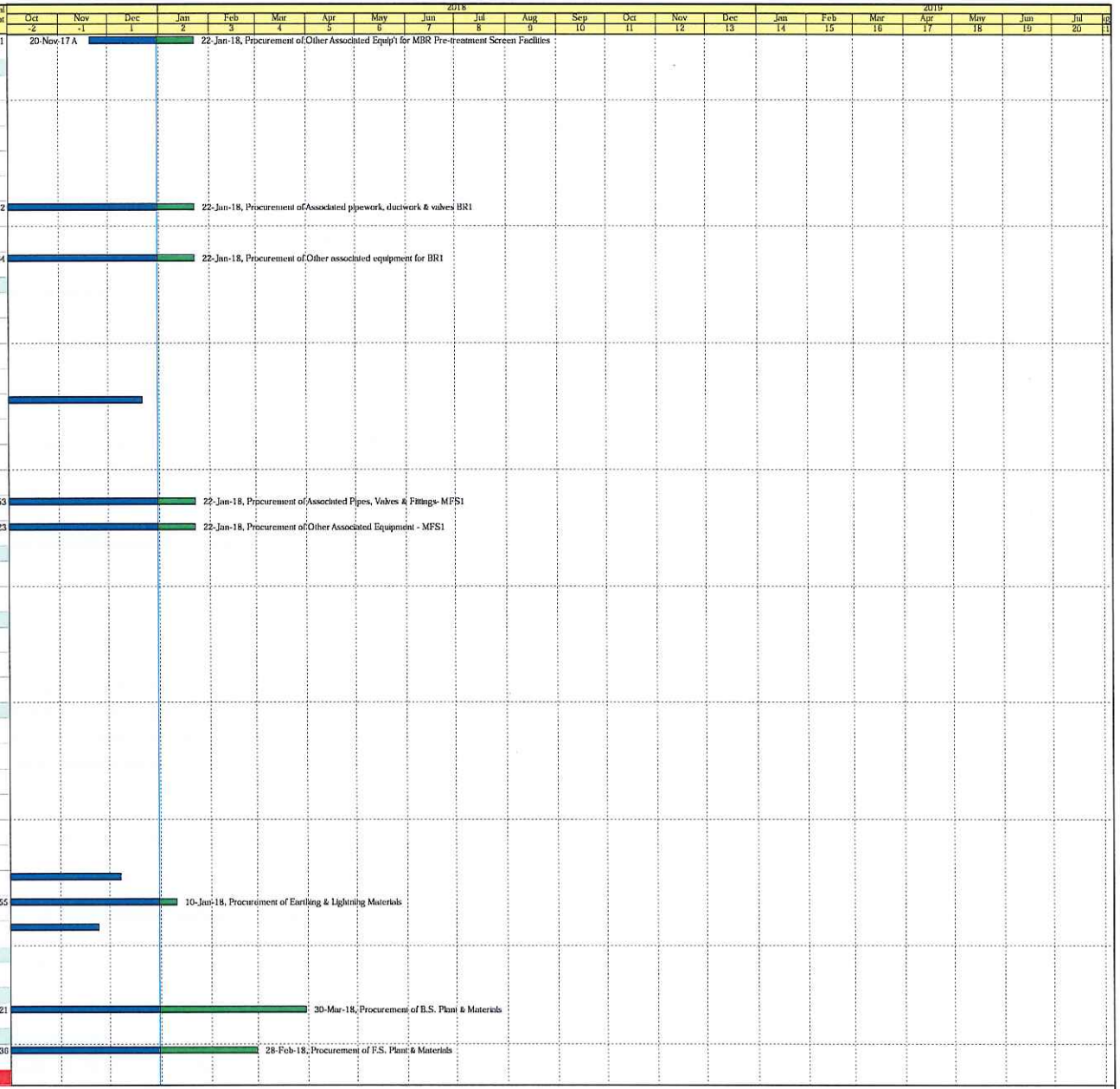
Activity ID	Activity Name	Remaining Duration	Start	Finish	Total Float
AS400160	Procurement of Other Associated Equip't for MBR Pre-treatment Screen Facilities	23	20-Nov-17 A	22-Jan-18	91
Tender and Award of Suppliers - Mechanical - BR1					
AS400200	Procurement of Aeration Blowers	0	27-Jun-16 A	24-Aug-16 A	
AS400210	Procurement of Submersible Mixers	0	28-May-16 A	22-Sep-16 A	
AS400220	Procurement of Mixed Liquor Return pumps	0	28-May-16 A	22-Sep-16 A	
AS400230	Procurement of Surplus Activated Sludge Pumps	0	28-May-16 A	22-Sep-16 A	
AS400240	Procurement of Air Diffusion System	0	29-Mar-16 A	01-Jun-16 A	
AS400250	Procurement of Associated pipework, ductwork & valves BR1	23	30-Sep-16 A	22-Jan-18	62
AS400260	Procurement of Foam control system and wash water spraying system	0	27-Jun-16 A	22-Sep-16 A	
AS400270	Procurement of Other associated equipment for BR1	23	30-Sep-16 A	22-Jan-18	64
Tender and Award of Suppliers - Mechanical - MFS1					
AS400300	Procurement of Membrane Modules - MFS1	0	14-Mar-16 A	29-Apr-16 A	
AS400310	Procurement of Permeate Pumps - MFS1	0	12-Jun-16 A	23-Sep-16 A	
AS400320	Procurement of RAS / Backwash Pumps - MFS1	0	12-Jun-16 A	23-Sep-16 A	
AS400330	Procurement of Air Scouring Blowers - MFS1	0	13-May-16 A	24-Aug-16 A	
AS400340	Procurement of Air Compressor - MFS1	0	14-Mar-16 A	21-Dec-17 A	
AS400350	Procurement of Chemical Dosing System	0	30-Sep-16 A	29-Jun-17 A	
AS400360	Procurement of Permeate Drain Pumps, Drain Pumps for MFS1 & Cleaning drain pumps	0	30-Sep-16 A	05-Sep-17 A	
AS400370	Procurement of Wash Water Pumping System	0	03-Jul-17 A	05-Sep-17 A	
AS400380	Procurement of Associated Pipes, Valves & Fittings- MFS1	23	09-Jan-17 A	22-Jan-18	53
AS400390	Procurement of Other Associated Equipment - MFS1	23	09-Jan-17 A	22-Jan-18	23
Tender and Award of Suppliers - Mechanical - Flowmeter Chamber					
AS400400	Procurement of Flowmeters	0	28-May-16 A	22-Sep-16 A	
AS400410	Procurement of Flange Adaptors & Other Associated Equipment	0	27-Oct-16 A	20-Sep-17 A	
Tender and Award of Suppliers - Penstocks, Lifting Appliance & Deorderisation System					
AS400500	Procurement of Stoplogs	0	30-Sep-16 A	15-Feb-17 A	
AS400510	Procurement of Penstocks	0	30-Sep-16 A	15-Feb-17 A	
AS400520	Procurement of Deodorisers System	0	24-Feb-17 A	26-Jul-17 A	
Tender and Award of Suppliers - Electrical Main & Sub-main					
AS400600	Procurement of 11kV HV Switchboard	0	28-Apr-16 A	21-Sep-16 A	
AS400610	Procurement of 3.3kV HV Switchboard	0	28-Apr-16 A	21-Sep-16 A	
AS400620	Procurement of Transformer	0	28-Apr-16 A	21-Sep-16 A	
AS400630	Procurement of L.V. Switchboard	0	28-Apr-16 A	22-Sep-16 A	
AS400640	Procurement of Variable Speed Drive	0	30-Sep-16 A	02-Mar-17 A	
AS400650	Procurement of Starter for Motor, Screen & Mixer etc.	0	22-Aug-16 A	22-Sep-16 A	
AS400660	Procurement of Power Supply Cables	0	30-Sep-16 A	07-Dec-17 A	
AS400670	Procurement of Earthing & Lightning Materials	11	26-Nov-16 A	10-Jan-18	55
AS400680	Procurement of Cable Tray & Trunking etc.	0	26-Nov-16 A	24-Nov-17 A	
Tender and Award of Suppliers - Monitoring and Control System					
AS400700	Procurement of Monitoring & Control System	0	26-Nov-16 A	18-Jul-17 A	
Tender and Award of Suppliers - Building Services					
AS400720	Procurement of B.S. Plant & Materials	90	26-Nov-16 A	30-Mar-18	21
Tender and Award of Suppliers - Fire Services					
AS400740	Procurement of F.S. Plant & Materials	60	26-Nov-16 A	28-Feb-18	30
Subcontracting Process					



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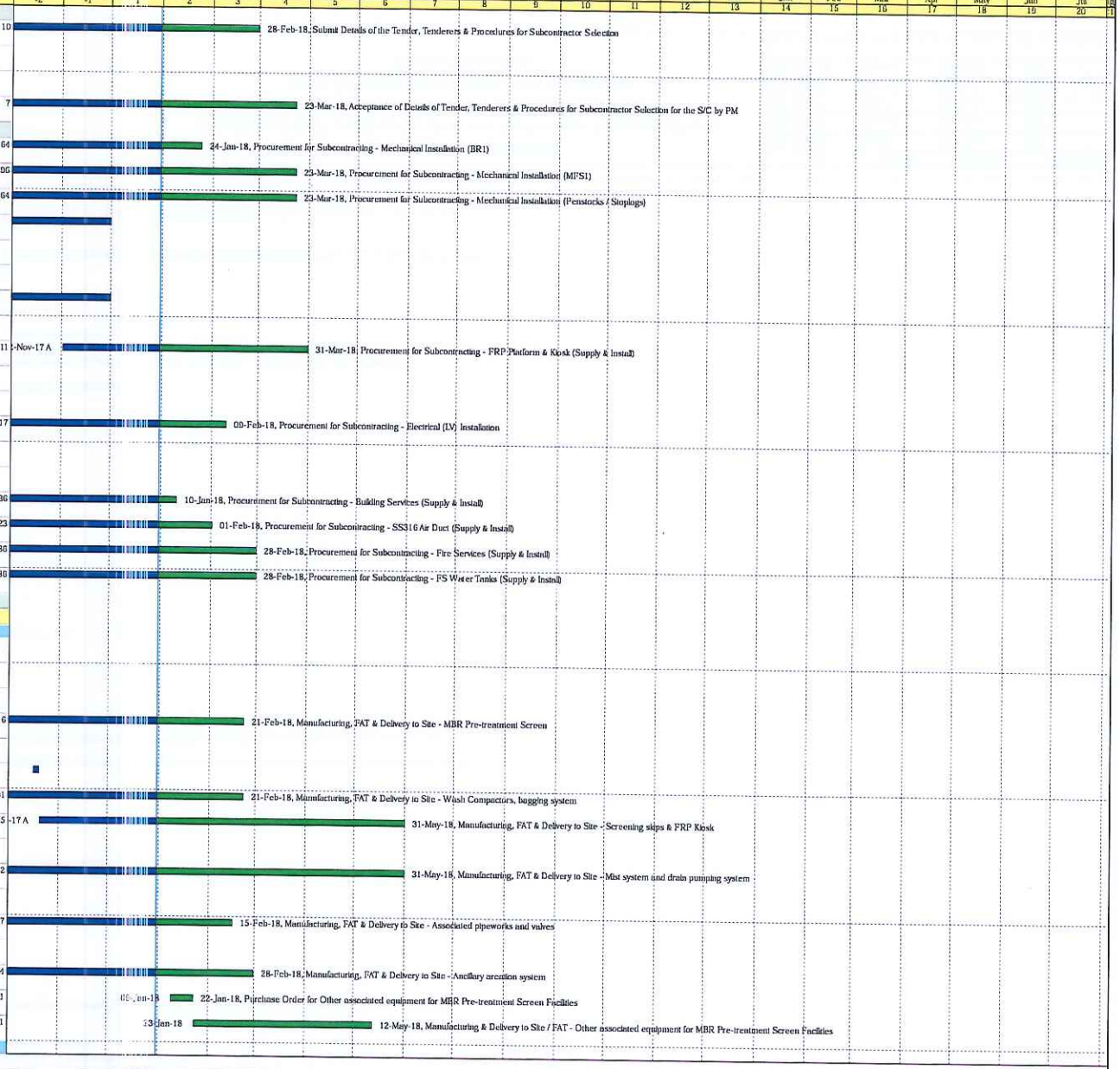
Activity ID	Activity Name	Remaining Duration	Start	Finish	Total Float
Subcontracting Prodedure and Acceptance					
AS400800	Submit Details of the Tender, Tenderers & Procedures for Subcontractor Selection	60	30-Dec-15 A	28-Feb-18	10
AS400810	Comment on Details of the Tender, Tenderers & Procedures for Subcontractor Selection	0	31-Aug-16 A	31-Aug-16 A	
AS400820	Resubmit Details of the Tender, Tenderers & Procedures for Subcontractor Selection	0	31-Aug-16 A	31-Aug-16 A	
AS400830	Acceptance of Details of Tender, Tenderers & Procedures for Subcontractor Selection for the S/C by PM	83	20-Sep-16 A	23-Mar-18	7
Tender and Award of Subontractors					
AS300850	Procurement for Subcontracting - Mechanical Installation (BR1)	25	14-Mar-17 A	24-Jan-18	64
AS300800	Procurement for Subcontracting - Mechanical Installation (MPS1)	83	01-Aug-17 A	23-Mar-18	306
AS300870	Procurement for Subcontracting - Mechanical Installation (Penstocks / Stoplogs)	83	14-Mar-17 A	23-Mar-18	64
AS300880	Procurement for Subcontracting - Mechanical Installation (Flowmeter Chamber)	0	14-Mar-17 A	30-Nov-17 A	
AS300890	Procurement for Subcontracting - Mechanical Installation (DO System -Supply & Install)	0	28-Feb-17 A	20-Jul-17 A	
AS300900	Procurement for Subcontracting - Mechanical Installation (NCSRSPS)	0	25-May-16 A	12-Sep-16 A	
AS400840	Procurement for Subcontracting - Mechanical Installation (MBR Pre-treatment Screen Chamber)	0	21-Mar-17 A	30-Nov-17 A	
AS400910	Procurement for Subcontracting - FRP Cover (Supply & Install)	0	28-Feb-17 A	08-May-17 A	
AS400920	Procurement for Subcontracting - FRP Platform & Kiosk (Supply & Install)	91	02-Nov-17 A	31-Mar-18	11
AS400930	Procurement for Subcontracting - Lifting Appliances (Supply & Install)	0	25-Oct-16 A	10-Jan-17 A	
AS400940	Procurement for Subcontracting - Electrical (HV) Installation	0	20-Oct-16 A	01-Sep-17 A	
AS400950	Procurement for Subcontracting - Electrical (LV) Installation	41	19-Nov-16 A	09-Feb-18	117
AS400960	Procurement for Subcontracting - PQEM System (Supply & Install)	0	08-May-17 A	18-Jul-17 A	
AS400970	Procurement for Subcontracting - SCADA / PLC System (Supply & Install)	0	30-Sep-16 A	18-Jul-17 A	
AS400980	Procurement for Subcontracting - Building Services (Supply & Install)	11	10-Feb-17 A	10-Jan-18	36
AS400982	Procurement for Subcontracting - SS316 Air Duct (Supply & Install)	33	10-Feb-17 A	01-Feb-18	123
AS400990	Procurement for Subcontracting - Fire Services (Supply & Install)	60	10-Feb-17 A	28-Feb-18	36
AS400992	Procurement for Subcontracting - FS Water Tanks (Supply & Install)	60	10-Feb-17 A	28-Feb-18	36
Activity Schedule No. 4					
4.1 Works for MBR Pre-treatment Screen Chamber					
Manufacturing, FAT and Delivery					
AS401010	Purchase Order for BR Feedpumps & Associated Equipment	0	06-Sep-16 A	23-Sep-16 A	
AS401012	Manufacturing, FAT & Delivery to Site - BR Feedpumps & Associated Equipment	0	14-Oct-16 A	18-Jul-17 A	
AS401030	Purchase Order for MBR Pre-treatment Screen	0	01-Jun-16 A	21-Jun-16 A	
AS401032	Manufacturing, FAT & Delivery to Site - MBR Pre-treatment Screen	53	06-Jul-16 A	21-Feb-18	16
AS401050	Purchase Order for Wash Compactors, bagging system	0	23-May-16 A	21-Jun-16 A	
AS401050a	Purchase Order for Screening skips & FRP Kiosk	0	16-Oct-17 A	19-Oct-17 A	
AS401052	Manufacturing, FAT & Delivery to Site - Wash Compactors, bagging system	53	31-Aug-16 A	21-Feb-18	91
AS401052a	Manufacturing, FAT & Delivery to Site - Screening skips & FRP Kiosk	152	20-Oct-17 A	31-May-18	55
AS401070	Purchase Order for Mist system and drain pumping system	0	14-Aug-17 A	05-Sep-17 A	
AS401072	Manufacturing, FAT & Delivery to Site - Mist system and drain pumping system	152	06-Sep-17 A	31-May-18	22
AS401080	Purchase Order for Associated pipeworks and valves	0	18-Sep-17 A	20-Sep-17 A	
AS401082	Manufacturing, FAT & Delivery to Site - Associated pipeworks and valves	47	21-Sep-17 A	15-Feb-18	7
AS401110	Purchase Order for Ancillary aeration system	0	13-Sep-16 A	22-Sep-16 A	
AS401112	Manufacturing, FAT & Delivery to Site - Ancillary aeration system	60	05-May-17 A	28-Feb-18	114
AS401130	Purchase Order for Other associated equipment for MBR Pre-treatment Screen Facilities	14	09-Jan-18	22-Jan-18	91
AS401132	Manufacturing & Delivery to Site / FAT - Other associated equipment for MBR Pre-treatment Screen Facilities	110	23-Jan-18	12-May-18	91
Install, T&C for Pre-treatment Screen Chamber (incl. Provision for Health & Safety Requirements)					



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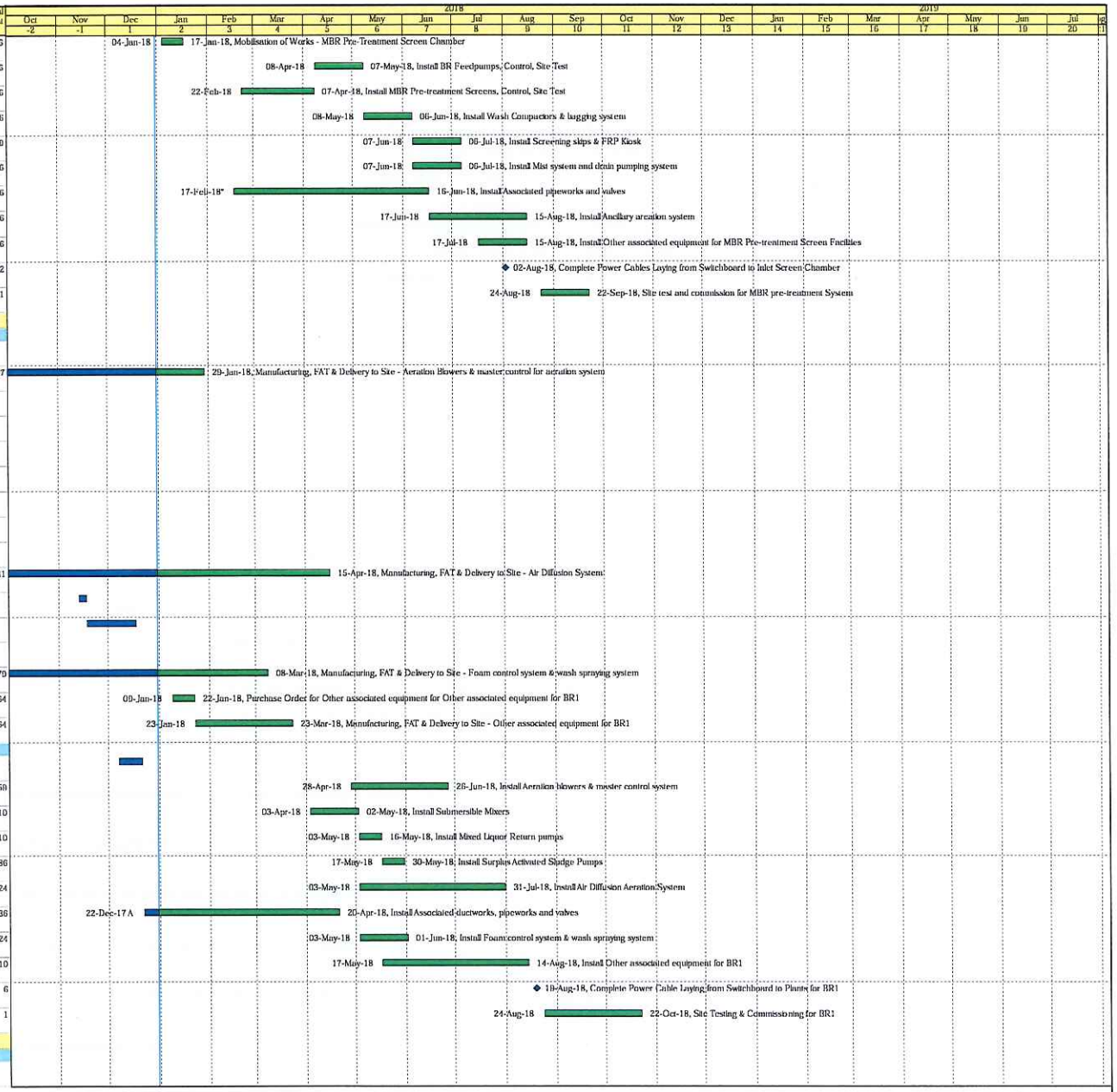
Activity ID	Activity Name	Remaining Duration	Start	Finish	Total Float
AS401002	Mobilisation of Works - MBR Pre-Treatment Screen Chamber	14	04-Jan-18	17-Jan-18	36
AS401020	Install BR Feedpumps, Control, Site Test	30	08-Apr-18	07-May-18	16
AS401040	Install MBR Pre-treatment Screens, Control, Site Test	45	22-Feb-18	07-Apr-18	16
AS401060	Install Wash Compactors & bagging system	30	08-May-18	06-Jun-18	16
AS401060a	Install Screening skips & FRP Kiosk	30	07-Jun-18	06-Jul-18	40
AS401080	Install Mist system and drain pumping system	30	07-Jun-18	06-Jul-18	16
AS401100	Install Associated pipeworks and valves	120	17-Feb-18*	16-Jun-18	6
AS401120	Install Ancillary areation system	60	17-Jun-18	15-Aug-18	6
AS401140	Install Other associated equipment for MBR Pre-treatment Screen Facilities	30	17-Jul-18	15-Aug-18	6
AS401800	Complete Power Cables Laying from Switchboard to Inlet Screen Chamber	0		02-Aug-18	22
AS401900	Site test and commission for MBR pre-treatment System	30	24-Aug-18	22-Sep-18	1
4.2 Works for Bioreactor No. 1 (BR1)					
Manufacturing, FAT and Delivery					
AS402010	Purchase Order for Aeration Blowers & master control for aeration system	0	18-Aug-16 A	24-Aug-16 A	
AS402012	Manufacturing, FAT & Delivery to Site - Aeration Blowers & master control for aeration system	30	04-Jul-16 A	29-Jan-18	147
AS402030	Purchase Order for Submersible Mixers	0	06-Sep-16 A	22-Sep-16 A	
AS402032	Manufacturing, FAT & Delivery to Site - Submersible Mixers	0	14-Oct-16 A	22-Sep-17 A	
AS402050	Purchase Order for Mixed Liquor Return pumps	0	06-Sep-16 A	22-Sep-16 A	
AS402052	Manufacturing, FAT & Delivery to Site - Mixed Liquor Return pumps	0	14-Oct-16 A	06-Jul-17 A	
AS402070	Purchase Order for Surplus Activated Sludge Pumps	0	06-Sep-16 A	23-Sep-16 A	
AS402072	Manufacturing, FAT & Delivery to Site - Surplus Activated Sludge Pumps	0	14-Oct-16 A	26-Sep-17 A	
AS402090	Purchase Order for Air Diffusion System	0	02-May-16 A	01-Jun-16 A	
AS402092	Manufacturing, FAT & Delivery to Site - Air Diffusion System	106	31-Mar-17 A	15-Apr-18	41
AS402110	Purchase Order for Associated ductworks, pipeworks and valves	0	13-Nov-17 A	17-Nov-17 A	
AS402112	Manufacturing, FAT & Delivery to Site - Associated ductworks, pipeworks and valves	0	18-Nov-17 A	18-Dec-17 A	
AS402130	Purchase Order for Foam control system & wash spraying system	0	13-Sep-16 A	22-Sep-16 A	
AS402132	Manufacturing, FAT & Delivery to Site - Foam control system & wash spraying system	68	14-Oct-16 A	08-Mar-18	79
AS402150	Purchase Order for Other associated equipment for Other associated equipment for BR1	14	09-Jan-18	22-Jan-18	64
AS402152	Manufacturing, FAT & Delivery to Site - Other associated equipment for BR1	60	23-Jan-18	23-Mar-18	64
Install, T&C for BR1 (incl. Provision for Health & Safety Requirements)					
AS402002	Mobilisation of Works - BR1	0	07-Dec-17 A	21-Dec-17 A	
AS402020	Install Aeration blowers & master control system	60	28-Apr-18	26-Jun-18	50
AS402040	Install Submersible Mixers	30	03-Apr-18	02-May-18	10
AS402060	Install Mixed Liquor Return pumps	14	03-May-18	16-May-18	10
AS402080	Install Surplus Activated Sludge Pumps	14	17-May-18	30-May-18	86
AS402100	Install Air Diffusion Aeration System	90	03-May-18	31-Jul-18	24
AS402120	Install Associated ductworks, pipeworks and valves	111	22-Dec-17 A	20-Apr-18	36
AS402140	Install Foam control system & wash spraying system	30	03-May-18	01-Jun-18	24
AS402160	Install Other associated equipment for BR1	90	17-May-18	14-Aug-18	10
AS402800	Complete Power Cable Laying from Switchboard to Plants for BR1	0		10-Aug-18	6
AS402900	Site Testing & Commissioning for BR1	60	24-Aug-18	22-Oct-18	1
4.3 Works for Membrane Filtration System (MFS1)					
Manufacturing, FAT and Delivery					
AS403010	Purchase Order for Membrane Modules	0	18-Apr-16 A	20-Apr-16 A	



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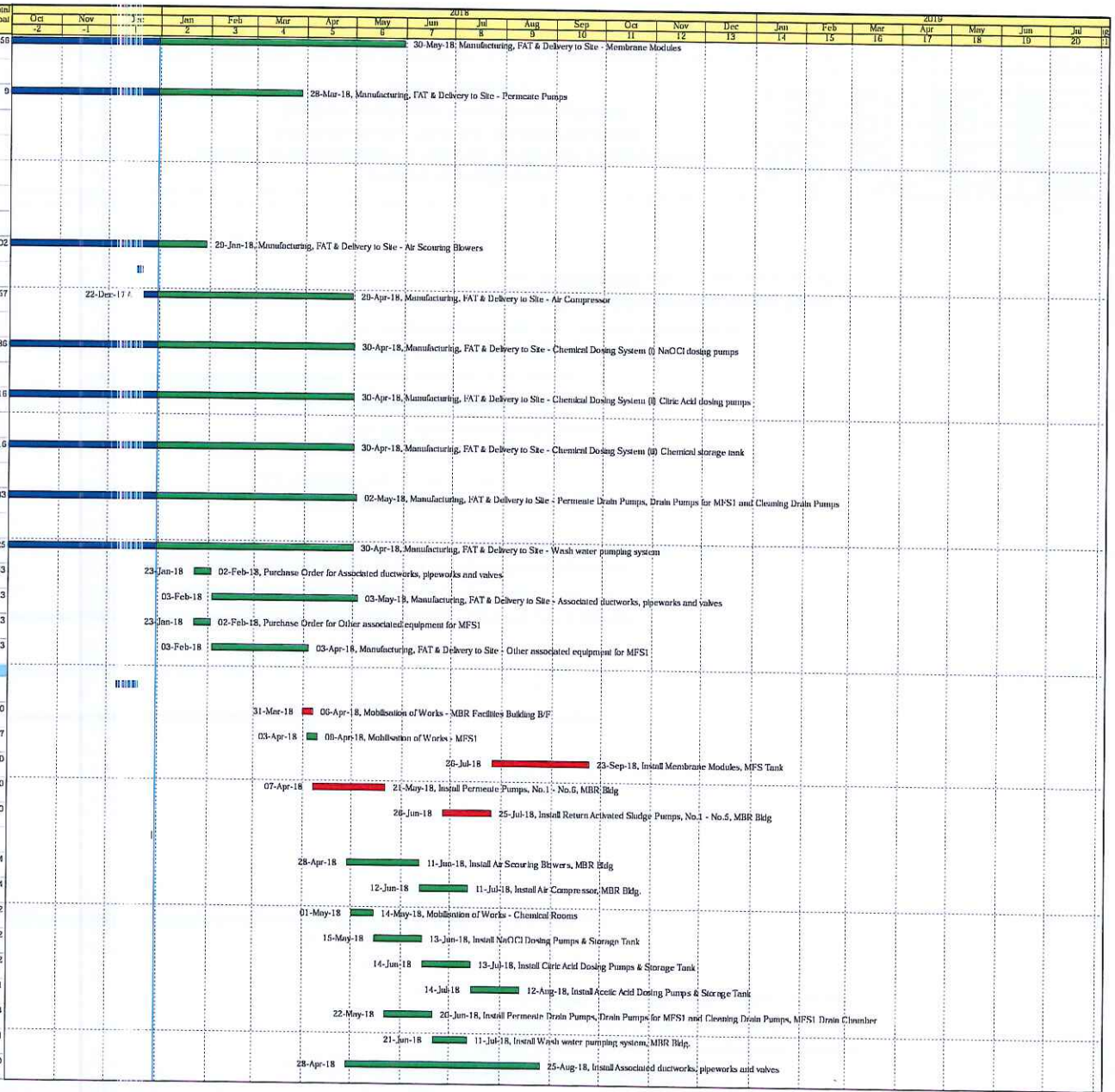
AS403012	Manufacturing, FAT & Delivery to Site - Membrane Modules	151	28-Mar-18 A	30-May-18	58
AS403030	Purchase Order for Permeate Pumps	0	13-Sep-16 A	23-Sep-16 A	
AS403032	Manufacturing, FAT & Delivery to Site - Permeate Pumps	88	07-Oct-16 A	28-Mar-18	9
AS403050	Purchase Order for Return Activated Sludge Pumps	0	13-Sep-16 A	23-Sep-16 A	
AS403052	Manufacturing, FAT & Delivery to Site - Return Activated Sludge Pumps	0	07-Oct-16 A	06-Sep-17 A	
AS403070	Purchase Order for Backwash Pumps (Item Deleted)	0	31-Aug-16 A	31-Aug-16 A	
AS403072	Manufacturing, FAT & Delivery to Site - Backwash Pumps (Item Deleted)	0	31-Aug-16 A	31-Aug-16 A	
AS403090	Purchase Order for Air Scouring Blowers	0	15-Aug-16 A	24-Aug-16 A	
AS403092	Manufacturing, FAT & Delivery to Site - Air Scouring Blowers	30	11-Apr-16 A	29-Jan-18	102
AS403110	Purchase Order for Air Compressor	0	18-Dec-17 A	21-Dec-17 A	
AS403112	Manufacturing, FAT & Delivery to Site - Air Compressor	120	22-Dec-17 A	20-Apr-18	57
AS403130	Purchase Order for Chemical Dosing System (i) NaOCl dosing pumps	0	05-Jun-17 A	29-Jun-17 A	
AS403132	Manufacturing, FAT & Delivery to Site - Chemical Dosing System (i) NaOCl dosing pumps	121	30-Jun-17 A	30-Apr-18	86
AS403150	Purchase Order for Chemical Dosing System (ii) Citric Acid dosing pumps	0	05-Jun-17 A	29-Jun-17 A	
AS403152	Manufacturing, FAT & Delivery to Site - Chemical Dosing System (ii) Citric Acid dosing pumps	121	30-Jun-17 A	30-Apr-18	116
AS403170	Purchase Order for Chemical Dosing System (iii) Chemical storage tank	0	06-Feb-17 A	28-Feb-17 A	
AS403172	Manufacturing, FAT & Delivery to Site - Chemical Dosing System (iii) Chemical storage tank	121	01-Mar-17 A	30-Apr-18	116
AS403190	Purchase Order for Permeate Drain Pumps, Drain Pumps for MFS1 and Cleaning Drain Pumps	0	28-Aug-17 A	05-Sep-17 A	
AS403192	Manufacturing, FAT & Delivery to Site - Permeate Drain Pumps, Drain Pumps for MFS1 and Cleaning Drain Pumps	123	06-Sep-17 A	02-May-18	83
AS403210	Purchase Order for Wash water pumping system	0	28-Aug-17 A	05-Sep-17 A	
AS403212	Manufacturing, FAT & Delivery to Site - Wash water pumping system	121	06-Sep-17 A	30-Apr-18	125
AS403230	Purchase Order for Associated ductworks, pipeworks and valves	11	23-Jan-18	02-Feb-18	53
AS403232	Manufacturing, FAT & Delivery to Site - Associated ductworks, pipeworks and valves	90	03-Feb-18	03-May-18	53
AS403250	Purchase Order for Other associated equipment for MFS1	11	23-Jan-18	02-Feb-18	23
AS403252	Manufacturing, FAT & Delivery to Site - Other associated equipment for MFS1	60	03-Feb-18	03-Apr-18	23
Install, T&C for MFS1 (incl. Provision for Health & Safety Requirements)					
AS403002	Mobilisation of Works - MBR Facilities Building G/F	0	07-Dec-17 A	20-Dec-17 A	
AS403002a	Mobilisation of Works - MBR Facilities Building B/F	7	31-Mar-18	06-Apr-18	0
AS403004	Mobilisation of Works - MFS1	7	03-Apr-18	08-Apr-18	17
AS403020	Install Membrane Modules, MFS Tank	60	26-Jul-18	23-Sep-18	0
AS403040	Install Permeate Pumps, No.1 - No.6, MBR Bldg	45	07-Apr-18	21-May-18	0
AS403060	Install Return Activated Sludge Pumps, No.1 - No.5, MBR Bldg	30	26-Jun-18	25-Jul-18	0
AS403080	Install Backwash Pumps -MBR Bldg (Not required)	0	30-Dec-17 A	30-Dec-17 A	
AS403100	Install Air Scouring Blowers, MBR Bldg	45	28-Apr-18	11-Jun-18	14
AS403120	Install Air Compressor, MBR Bldg.	30	12-Jun-18	11-Jul-18	14
AS403140	Mobilisation of Works - Chemical Rooms	14	01-May-18	14-May-18	72
AS403142	Install NaOCl Dosing Pumps & Storage Tank	30	15-May-18	13-Jun-18	72
AS403160	Install Citric Acid Dosing Pumps & Storage Tank	30	14-Jun-18	13-Jul-18	72
AS403180	Install Acetic Acid Dosing Pumps & Storage Tank	30	14-Jul-18	12-Aug-18	81
AS403200	Install Permeate Drain Pumps, Drain Pumps for MFS1 and Cleaning Drain Pumps, MFS1 Drain Chamber	30	22-May-18	20-Jun-18	74
AS403220	Install Wash water pumping system, MBR Bldg.	21	21-Jun-18	11-Jul-18	74
AS403240	Install Associated ductworks, pipeworks and valves	120	28-Apr-18	25-Aug-18	20



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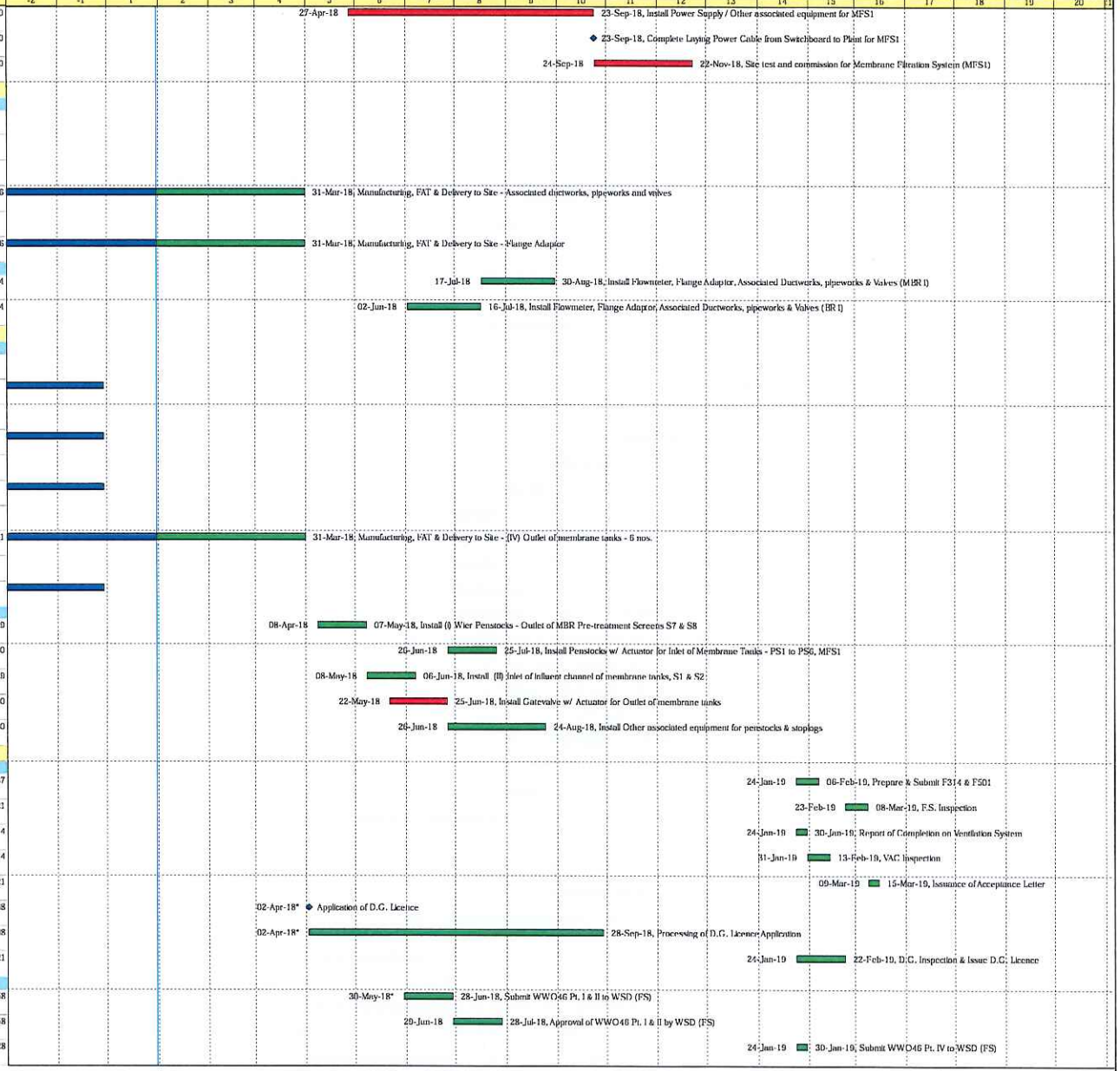
27-Mar-18	Rev. G	KH Lau	KM

Activity ID	Activity Name	Remaining Duration	Start	Finish	Total Float
AS403280	Install Power Supply / Other associated equipment for MFS1	150	27-Apr-18	23-Sep-18	0
AS403800	Complete Laying Power Cable from Switchboard to Plant for MFS1	0		23-Sep-18	0
AS403900	Site test and commission for Membrane Filtration System (MFS1)	60	24-Sep-18	22-Nov-18	0
4.4 Works for Flowmeter Chamber					
Manufacturing, FAT and Delivery					
AS404010	Purchase Order for Flowmeter	0	28-Aug-16 A	22-Sep-16 A	
AS404012	Manufacturing, FAT & Delivery to Site - Flowmeter	0	04-Oct-16 A	21-Aug-17 A	
AS404030	Purchase Order for Associated ductworks, pipeworks and valves	0	18-Sep-17 A	20-Sep-17 A	
AS404032	Manufacturing, FAT & Delivery to Site - Associated ductworks, pipeworks and valves	91	21-Sep-17 A	31-Mar-18	86
AS404050	Purchase Order for Flange Adaptor	0	18-Sep-17 A	18-Sep-17 A	
AS404052	Manufacturing, FAT & Delivery to Site - Flange Adaptor	91	21-Sep-17 A	31-Mar-18	86
Install, T&C for Flowmeter Chamber (incl. Provision for Health & Safety Requirements)					
AS404020	Install Flowmeter, Flange Adaptor, Associated Ductworks, pipeworks & Valves (MBR1)	45	17-Jul-18	30-Aug-18	24
AS404040	Install Flowmeter, Flange Adaptor, Associated Ductworks, pipeworks & Valves (BR1)	45	02-Jun-18	16-Jul-18	24
4.5 Works for Penstocks, Actuators and Stoplogs					
Manufacturing, FAT and Delivery					
AS405010	Purchase Order for (I) Wier Penstocks - Outlet of MBR Pre-treatment Screens S7 & S8	0	08-Feb-17 A	15-Feb-17 A	
AS405012	Manufacturing, FAT & Delivery to Site - (I) Wier Penstocks - Outlet of MBR Pre-treatment Screens S7 & S8	0	16-Feb-17 A	28-Nov-17 A	
AS405030	Purchase Order for (II) Inlet of influent channel of membrane tanks, S1 & S2	0	08-Feb-17 A	15-Feb-17 A	
AS405032	Manufacturing, FAT & Delivery to Site - (II) Inlet of influent channel of membrane tanks, S1 & S2	0	16-Feb-17 A	28-Nov-17 A	
AS405050	Purchase Order for (III) Inlet of membrane tanks PS1 - PS6	0	09-Feb-17 A	15-Feb-17 A	
AS405052	Customs Manufacturing, FAT & Delivery to Site - (III) Inlet of membrane tanks PS1 - PS6	0	16-Feb-17 A	28-Nov-17 A	
AS405070	Purchase Order for (IV) Outlet of membrane tanks Gate Valves	0	26-Jun-17 A	07-Jul-17 A	
AS405072	Manufacturing, FAT & Delivery to Site - (IV) Outlet of membrane tanks - 6 nos.	91	08-Jul-17 A	31-Mar-18	51
AS405090	Purchase Order for Other associated equipment for penstocks & stoplogs	0	09-Feb-17 A	15-Feb-17 A	
AS405092	Manufacturing, FAT & Delivery to Site - Other associated equipment for penstocks & stoplogs	0	16-Feb-17 A	28-Nov-17 A	
Install, T&C for Penstocks, Actuators & Stoplogs (incl. Provision for Health & Safety Requirements)					
AS405020	Install (I) Wier Penstocks - Outlet of MBR Pre-treatment Screens S7 & S8	30	08-Apr-18	07-May-18	40
AS405040	Install Penstocks w/ Actuator for Inlet of Membrane Tanks - PS1 to PS6, MFS1	30	26-Jun-18	25-Jul-18	30
AS405060	Install (II) Inlet of influent channel of membrane tanks, S1 & S2	30	08-May-18	06-Jun-18	40
AS405080	Install Gatevalve w/ Actuator for Outlet of membrane tanks	35	22-May-18	25-Jun-18	0
AS405100	Install Other associated equipment for penstocks & stoplogs	60	26-Jun-18	24-Aug-18	30
4.6 Works for Building Services and Fire Services					
Statutory Submission / Inspection (FSD)					
AS406500	Prepare & Submit F314 & F501	14	24-Jan-19	06-Feb-19	37
AS406510	F.S. Inspection	14	23-Feb-19	08-Mar-19	21
AS406520	Report of Completion on Ventilation System	7	24-Jan-19	30-Jan-19	44
AS406530	VAC Inspection	14	31-Jan-19	13-Feb-19	44
AS406540	Issuance of Acceptance Letter	7	09-Mar-19	15-Mar-19	21
AS406550	Application of D.G. Licence	0	02-Apr-18*		138
AS406560	Processing of D.G. Licence Application	180	02-Apr-18*	28-Sep-18	138
AS406570	D.G. Inspection & Issue D.G. Licence	30	24-Jan-19	22-Feb-19	21
Statutory Submission / Inspection (WSD)					
AS406600	Submit WWO46 Pt. I & II to WSD (FS)	30	30-May-18*	28-Jun-18	158
AS406610	Approval of WWO46 Pt. I & II by WSD (FS)	30	29-Jun-18	28-Jul-18	158
AS406620	Submit WWO46 Pt. IV to WSD (FS)	7	24-Jan-19	30-Jan-19	28



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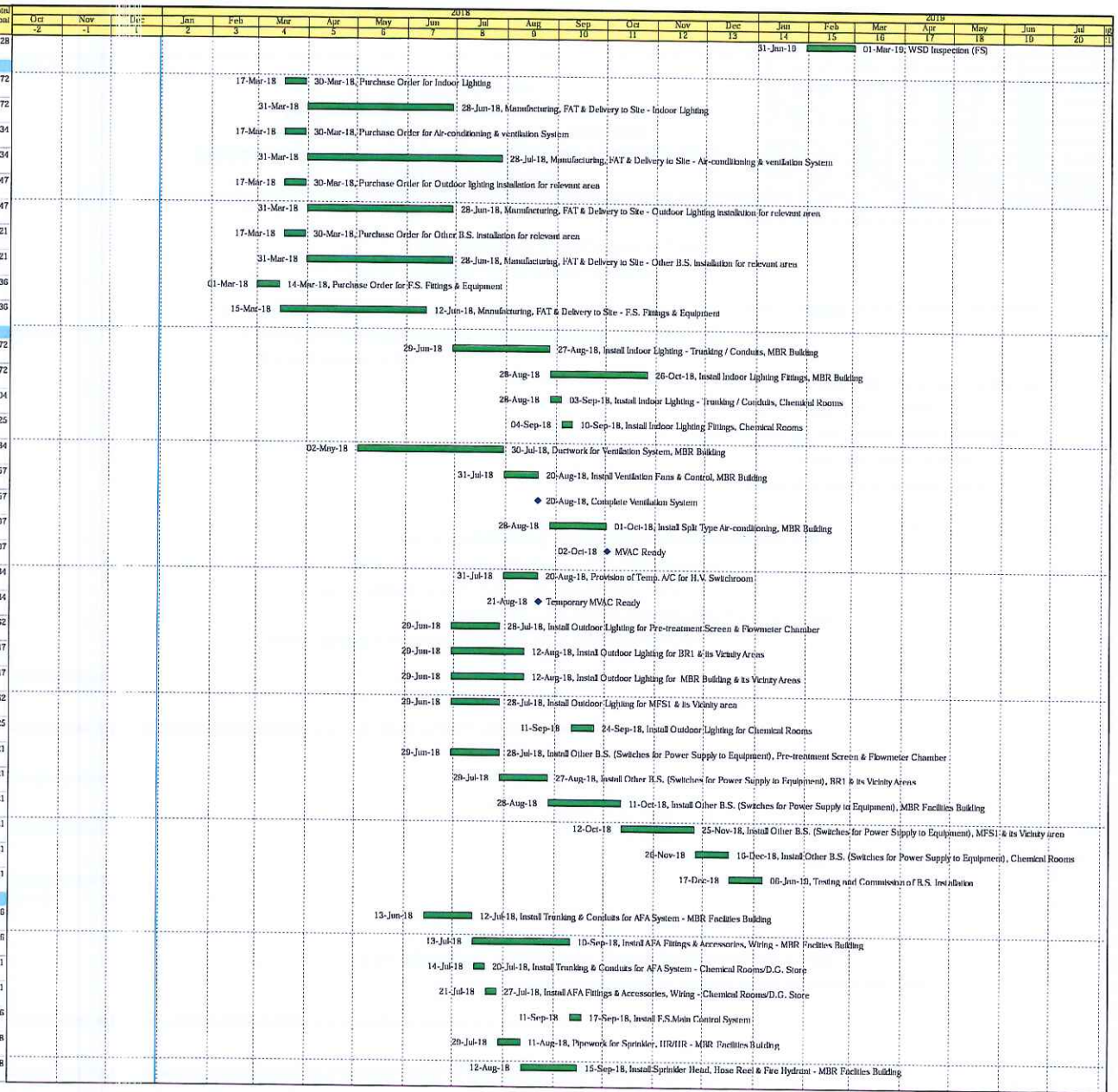
Activity ID	Activity Name	Remaining Duration	Start	Finish	Total Float
AS406630	WSD Inspection (FS)	30	31-Jan-19	01-Mar-19	28
Manufacturing, FAT and Delivery					
AS406010	Purchase Order for Indoor Lighting	14	17-Mar-18	30-Mar-18	72
AS406012	Manufacturing, FAT & Delivery to Site - Indoor Lighting	90	31-Mar-18	28-Jun-18	72
AS406030	Purchase Order for Air-conditioning & ventilation System	14	17-Mar-18	30-Mar-18	34
AS406032	Manufacturing, FAT & Delivery to Site - Air-conditioning & ventilation System	120	31-Mar-18	28-Jul-18	34
AS406050	Purchase Order for Outdoor lighting installation for relevant area	14	17-Mar-18	30-Mar-18	147
AS406052	Manufacturing, FAT & Delivery to Site - Outdoor Lighting installation for relevant area	90	31-Mar-18	28-Jun-18	147
AS406070	Purchase Order for Other B.S. installation for relevant area	14	17-Mar-18	30-Mar-18	21
AS406072	Manufacturing, FAT & Delivery to Site - Other B.S. installation for relevant area	90	31-Mar-18	28-Jun-18	21
AS406090	Purchase Order for F.S. Fittings & Equipment	14	01-Mar-18	14-Mar-18	36
AS406092	Manufacturing, FAT & Delivery to Site - F.S. Fittings & Equipment	90	15-Mar-18	12-Jun-18	36
Install, T&C for Building Services (incl. Provision for Health & Safety Requirements)					
AS406020	Install Indoor Lighting - Trunking / Conduits, MBR Building	60	29-Jun-18	27-Aug-18	72
AS406022	Install Indoor Lighting Fittings, MBR Building	60	28-Aug-18	26-Oct-18	72
AS406024	Install Indoor Lighting - Trunking / Conduits, Chemical Rooms	7	28-Aug-18	03-Sep-18	104
AS406026	Install Indoor Lighting Fittings, Chemical Rooms	7	04-Sep-18	10-Sep-18	125
AS406040	Ductwork for Ventilation System, MBR Building	90	02-May-18	30-Jul-18	34
AS406041	Install Ventilation Fans & Control, MBR Building	21	31-Jul-18	20-Aug-18	57
AS406042	Complete Ventilation System	0		20-Aug-18	57
AS406043	Install Split Type Air-conditioning, MBR Building	35	28-Aug-18	01-Oct-18	97
AS406044	MVAC Ready	0	02-Oct-18		97
AS406045	Provision of Temp. A/C for H.V. Switchroom	21	31-Jul-18	20-Aug-18	34
AS406046	Temporary MVAC Ready	0	21-Aug-18		34
AS406060	Install Outdoor Lighting for Pre-treatment Screen & Flowmeter Chamber	30	29-Jun-18	28-Jul-18	162
AS406061	Install Outdoor Lighting for BR1 & its Vicinity Areas	45	29-Jun-18	12-Aug-18	147
AS406062	Install Outdoor Lighting for MBR Building & its Vicinity Areas	45	29-Jun-18	12-Aug-18	147
AS406063	Install Outdoor Lighting for MFS1 & its Vicinity area	30	29-Jun-18	28-Jul-18	162
AS406064	Install Outdoor Lighting for Chemical Rooms	14	11-Sep-18	24-Sep-18	125
AS406080	Install Other B.S. (Switches for Power Supply to Equipment), Pre-treatment Screen & Flowmeter Chamber	30	29-Jun-18	28-Jul-18	21
AS406081	Install Other B.S. (Switches for Power Supply to Equipment), BR1 & its Vicinity Areas	30	29-Jul-18	27-Aug-18	21
AS406082	Install Other B.S. (Switches for Power Supply to Equipment), MBR Facilities Building	45	28-Aug-18	11-Oct-18	21
AS406083	Install Other B.S. (Switches for Power Supply to Equipment), MFS1 & its Vicinity area	45	12-Oct-18	25-Nov-18	21
AS406084	Install Other B.S. (Switches for Power Supply to Equipment), Chemical Rooms	21	26-Nov-18	16-Dec-18	21
AS406800	Testing and Commission of B.S. Installation	21	17-Dec-18	06-Jan-19	21
Install, T&C for Fire Services (incl. Provision for Health & Safety Requirements)					
AS406101	Install Trunking & Conduits for AFA System - MBR Facilities Building	30	13-Jun-18	12-Jul-18	36
AS406102	Install AFA Fittings & Accessories, Wiring - MBR Facilities Building	60	13-Jul-18	10-Sep-18	36
AS406104	Install Trunking & Conduits for AFA System - Chemical Rooms/D.G. Store	7	14-Jul-18	20-Jul-18	81
AS406106	Install AFA Fittings & Accessories, Wiring - Chemical Rooms/D.G. Store	7	21-Jul-18	27-Jul-18	81
AS406108	Install F.S.Main Control System	7	11-Sep-18	17-Sep-18	36
AS406180	Pipework for Sprinkler, HR/HR - MBR Facilities Building	14	20-Jul-18	11-Aug-18	158
AS406182	Install Sprinkler Head, Hose Reel & Fire Hydrant - MBR Facilities Building	35	12-Aug-18	15-Sep-18	158



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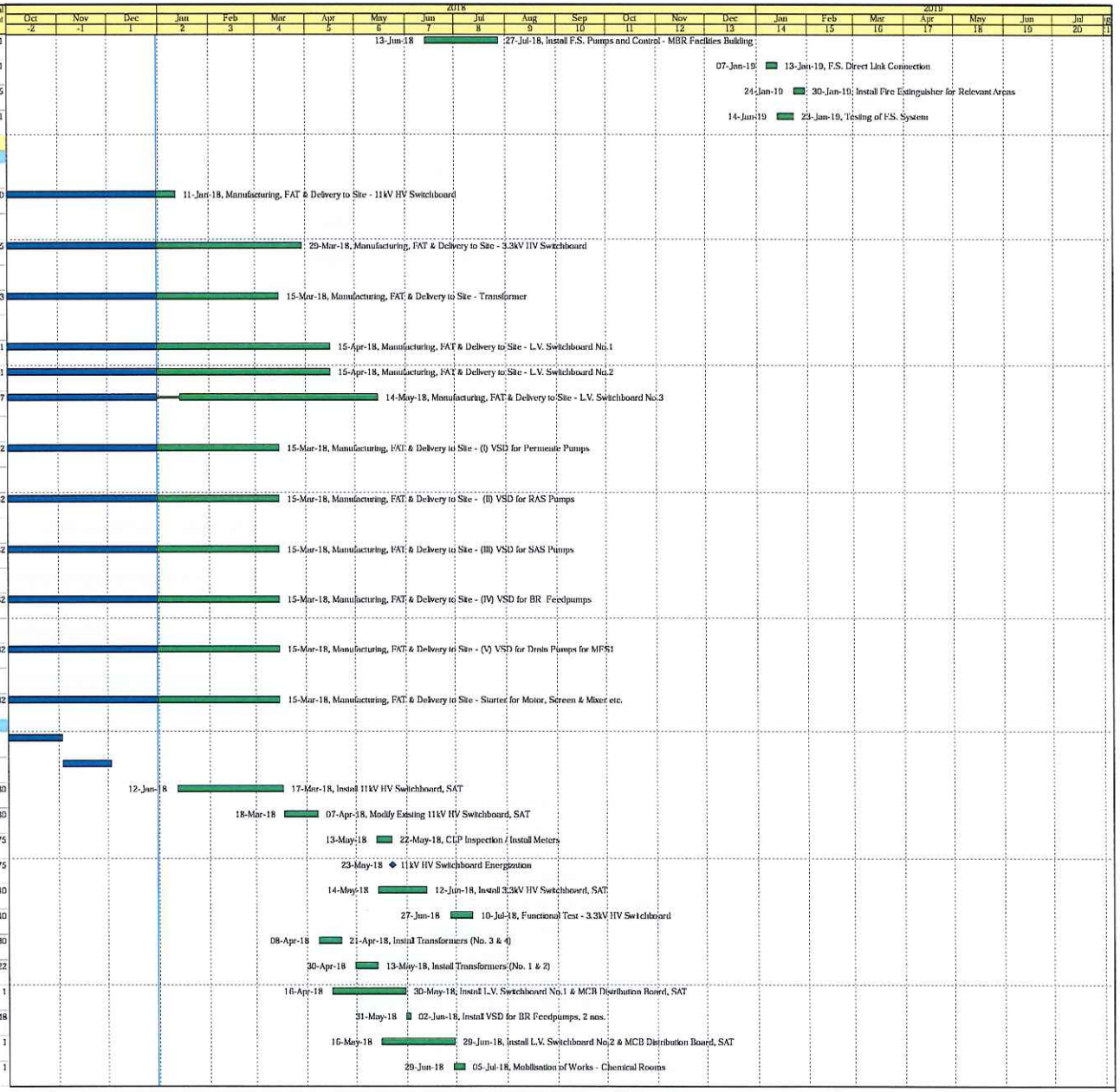
27-Mar-18	Rev. G	KH Lau	KM

Activity ID	Activity Name	Remaining Duration	Start	Finish	Total Float
AS406184	Install F.S. Pumps and Control - MBR Facilities Building	45	13-Jun-18	27-Jul-18	81
AS406240	F.S. Direct Link Connection	7	07-Jan-19	13-Jan-19	21
AS406260	Install Fire Extinguisher for Relevant Areas	7	24-Jan-19	30-Jan-19	05
AS406900	Testing of F.S. System	10	14-Jan-19	23-Jan-19	21
4.7 HV Switchgear, Transformer, LV Switchgear, LV Control Gear etc..					
Manufacturing, FAT and Delivery					
AS407010	Purchase Order for 11kV HV Switchboard	0	12-Sep-16 A	21-Sep-16 A	
AS407012	Manufacturing, FAT & Delivery to Site - 11kV HV Switchboard	12	07-Oct-16 A	11-Jan-18	30
AS407030	Purchase Order for 3.3kV HV Switchboard	0	12-Sep-16 A	21-Sep-16 A	
AS407032	Manufacturing, FAT & Delivery to Site - 3.3kV HV Switchboard	89	07-Oct-16 A	29-Mar-18	85
AS407050	Purchase Order for Transformer	0	13-Sep-16 A	21-Sep-16 A	
AS407052	Manufacturing, FAT & Delivery to Site - Transformer	75	07-Oct-16 A	15-Mar-18	53
AS407070	Purchase Order for L.V. Switchboard	0	13-Sep-16 A	22-Sep-16 A	
AS407072	Manufacturing, FAT & Delivery to Site - L.V. Switchboard No.1	106	30-Sep-16 A	15-Apr-18	1
AS407074	Manufacturing, FAT & Delivery to Site - L.V. Switchboard No.2	106	30-Sep-16 A	15-Apr-18	31
AS407076	Manufacturing, FAT & Delivery to Site - L.V. Switchboard No.3	121	30-Sep-16 A	14-May-18	37
AS407090	Purchase Order for (I) VSD for Permeate Pumps	0	03-Mar-17 A	16-Mar-17 A	
AS407092	Manufacturing, FAT & Delivery to Site - (I) VSD for Permeate Pumps	75	17-Mar-17 A	15-Mar-18	32
AS407110	Purchase Order for (II) VSD for RAS Pumps	0	03-Mar-17 A	16-Mar-17 A	
AS407112	Manufacturing, FAT & Delivery to Site - (II) VSD for RAS Pumps	75	17-Mar-17 A	15-Mar-18	32
AS407130	Purchase Order for (III) VSD for SAS Pumps	0	03-Mar-17 A	16-Mar-17 A	
AS407132	Manufacturing, FAT & Delivery to Site - (III) VSD for SAS Pumps	75	17-Mar-17 A	15-Mar-18	32
AS407150	Purchase Order for (IV) VSD for BR Feedpumps	0	03-Mar-17 A	16-Mar-17 A	
AS407152	Manufacturing, FAT & Delivery to Site - (IV) VSD for BR Feedpumps	75	17-Mar-17 A	15-Mar-18	32
AS407170	Purchase Order for (V) VSD for Drain Pumps for MFS1	0	03-Mar-17 A	16-Mar-17 A	
AS407172	Manufacturing, FAT & Delivery to Site - (V) VSD for Drain Pumps for MFS1	75	17-Mar-17 A	15-Mar-18	32
AS407190	Purchase Order for Starter for Motor, Screen & Mixer etc.	0	13-Sep-16 A	22-Sep-16 A	
AS407192	Manufacturing, FAT & Delivery to Site - Starter for Motor, Screen & Mixer etc.	75	30-Sep-16 A	15-Mar-18	32
Install, T&C for MBR Facilities Building (incl. Provision for Health & Safety Requirements)					
AS407001	Mobilisation & Preparation Works - MBR Facilities Building CLP Rm C & D	0	30-Sep-17 A	02-Nov-17 A	
AS407002	Mobilisation of Works - MBR Facilities Building	0	03-Nov-17 A	02-Dec-17 A	
AS407020	Install 11kV HV Switchboard, SAT	65	12-Jan-18	17-Mar-18	30
AS407022	Modify Existing 11kV HV Switchboard, SAT	21	18-Mar-18	07-Apr-18	30
AS407024	CLP Inspection / Install Meters	10	13-May-18	22-May-18	75
AS407026	11kV HV Switchboard Energization	0	23-May-18		75
AS407040	Install 3.3kV HV Switchboard, SAT	30	14-May-18	12-Jun-18	40
AS407042	Functional Test - 3.3kV HV Switchboard	14	27-Jun-18	10-Jul-18	40
AS407060	Install Transformers (No. 3 & 4)	14	08-Apr-18	21-Apr-18	30
AS407062	Install Transformers (No. 1 & 2)	14	30-Apr-18	13-May-18	22
AS407080	Install L.V. Switchboard No.1 & MCB Distribution Board, SAT	45	16-Apr-18	30-May-18	1
AS407081	Install VSD for BR Feedpumps, 2 nos.	3	31-May-18	02-Jun-18	48
AS407082	Install L.V. Switchboard No.2 & MCB Distribution Board, SAT	45	16-May-18	29-Jun-18	1
AS407083	Mobilisation of Works - Chemical Rooms	7	29-Jun-18	05-Jul-18	1



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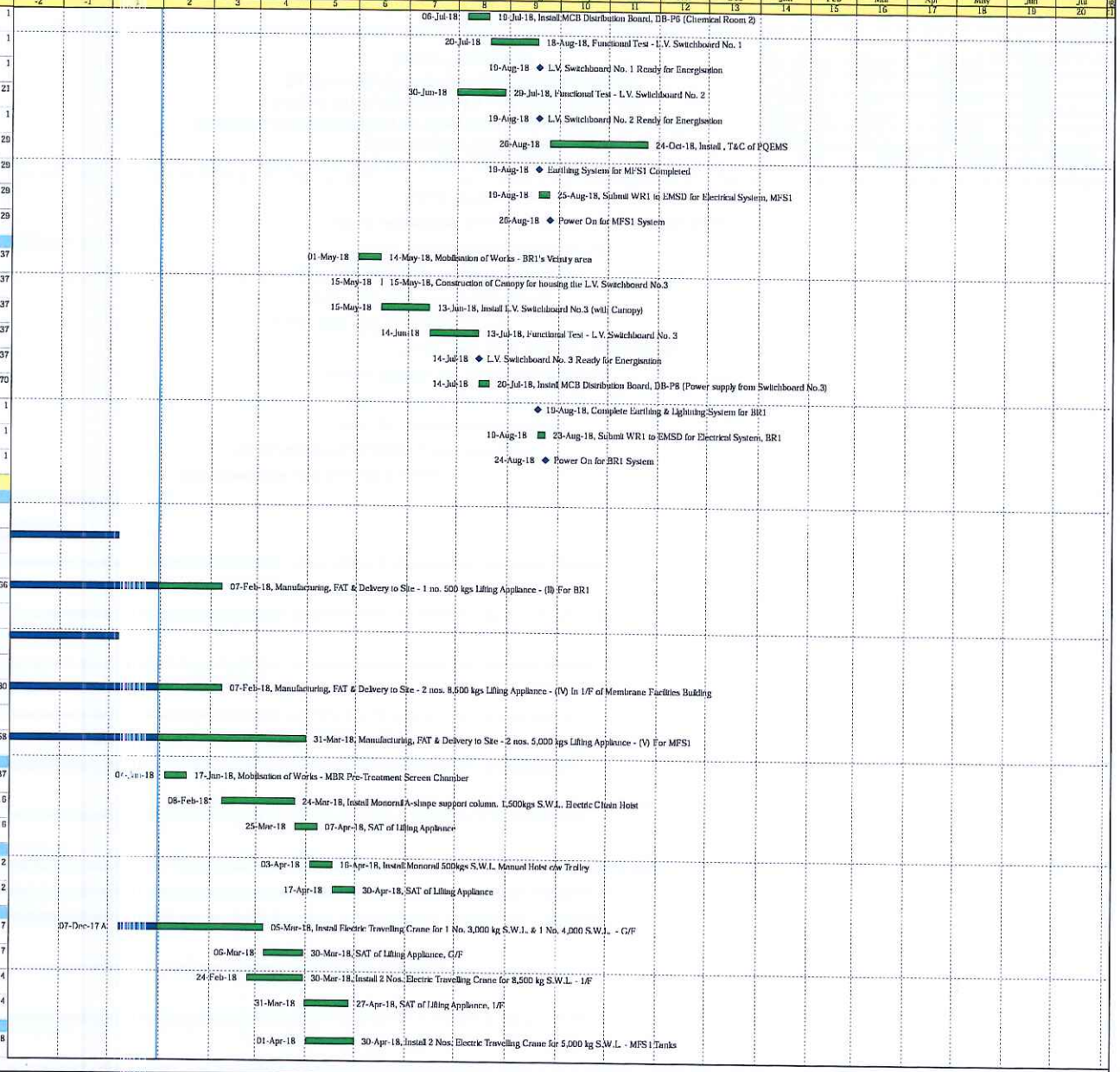
Activity ID	Activity Name	Remaining Duration	Start	Finish	Total Float
AS407084	Install MCB Distribution Board, DB-P6 (Chemical Room 2)	14	06-Jul-18	19-Jul-18	1
AS407085	Functional Test - L.V. Switchboard No. 1	30	20-Jul-18	18-Aug-18	1
AS407086	L.V. Switchboard No. 1 Ready for Energisation	0	19-Aug-18		1
AS407087	Functional Test - L.V. Switchboard No. 2	30	30-Jun-18	29-Jul-18	21
AS407088	L.V. Switchboard No. 2 Ready for Energisation	0	19-Aug-18		1
AS407500	Install , T&C of PQEMS	60	26-Aug-18	24-Oct-18	29
AS407600	Earthing System for MFS1 Completed	0	19-Aug-18		29
AS407620	Submit WR1 to EMSD for Electrical System, MFS1	7	19-Aug-18	25-Aug-18	29
AS407640	Power On for MFS1 System	0	26-Aug-18		29
	Install, T&C for BR1's Vicinity Area (incl. Provision for Health & Safety Requirements)				
AS407003	Mobilisation of Works - BR1's Vicinity area	14	01-May-18	14-May-18	37
AS407004	Construction of Canopy for housing the L.V. Switchboard No.3	0	15-May-18	15-May-18	37
AS407089a	Install L.V. Switchboard No.3 (with Canopy)	30	15-May-18	13-Jun-18	37
AS407089b	Functional Test - L.V. Switchboard No. 3	30	14-Jun-18	13-Jul-18	37
AS407089c	L.V. Switchboard No. 3 Ready for Energisation	0	14-Jul-18		37
AS407089d	Install MCB Distribution Board, DB-P8 (Power supply from Switchboard No.3)	7	14-Jul-18	20-Jul-18	170
AS407700	Complete Earthing & Lightning System for BR1	0		19-Aug-18	1
AS407720	Submit WR1 to EMSD for Electrical System, BR1	5	19-Aug-18	23-Aug-18	1
AS407740	Power On for BR1 System	0	24-Aug-18		1
	4.8 Lifting Appliance				
	Manufacturing, FAT and Delivery				
AS408010	Purchase Order for 1 no. 1,500 kgs Lifting Appliance - (I) For Pre-treatment Screen Chamber	0	08-Feb-17 A	14-Feb-17 A	
AS408012	Manufacturing, FAT & Delivery to Site - 1 no. 1,500 kgs Lifting Appliance - (I) For Pre-treatment Screen Chamber	0	15-Feb-17 A	06-Dec-17 A	
AS408030	Purchase Order for 1 no. 500 kgs Lifting Appliance - (II) For BR1	0	08-Feb-17 A	14-Feb-17 A	
AS408032	Manufacturing, FAT & Delivery to Site - 1 no. 500 kgs Lifting Appliance - (II) For BR1	39	15-Feb-17 A	07-Feb-18	66
AS408050	Purchase Order for 1 no. 3,000 kgs & 1 no. 4,000 kgs Lifting Appliance - (III) In G/F of Membrane Facilities Building	0	08-Feb-17 A	14-Feb-17 A	
AS408052	Manufacturing, FAT & Delivery to Site - 1 no. 3,000 kgs & 1 no. 4,000 kgs Lifting Appliance - (III) In G/F of MF Bldg.	0	15-Feb-17 A	06-Dec-17 A	
AS408070	Purchase Order for 2 nos. 8,500 kgs Lifting Appliance - (IV) In 1/F of Membrane Facilities Building	0	08-Feb-17 A	14-Feb-17 A	
AS408072	Manufacturing, FAT & Delivery to Site - 2 nos. 8,500 kgs Lifting Appliance - (IV) In 1/F of Membrane Facilities Building	30	15-Feb-17 A	07-Feb-18	30
AS408090	Purchase Order for 2 nos. 5,000 kgs Lifting Appliance - (V) For MFS1	0	08-Feb-17 A	14-Feb-17 A	
AS408092	Manufacturing, FAT & Delivery to Site - 2 nos. 5,000 kgs Lifting Appliance - (V) For MFS1	91	15-Feb-17 A	31-Mar-18	58
	Install, T&C for Pre-Treatment Screen Chamber (incl. Provision for Health & Safety Requirements)				
AS408020	Mobilisation of Works - MBR Pre-Treatment Screen Chamber	14	04-Jan-18	17-Jan-18	37
AS408022	Install Monorail A-shape support column. 1,500kgs S.W.L. Electric Chain Hoist	45	08-Feb-18*	24-Mar-18	16
AS408024	SAT of Lifting Appliance	14	25-Mar-18	07-Apr-18	16
	Install, T&C for Bioreactor No.1 (BR1) (incl. Provision for Health & Safety Requirements)				
AS408040	Install Monorail 500kgs S.W.L. Manual Hoist c/w Trolley	14	03-Apr-18	16-Apr-18	12
AS408042	SAT of Lifting Appliance	14	17-Apr-18	30-Apr-18	12
	Install, T&C for MBR Facilities Building (incl. Provision for Health & Safety Requirements)				
AS408060	Install Electric Travelling Crane for 1 No. 3,000 kg S.W.L. & 1 No. 4,000 S.W.L. - G/F	65	07-Dec-17 A	05-Mar-18	7
AS408062	SAT of Lifting Appliance, G/F	25	06-Mar-18	30-Mar-18	7
AS408080	Install 2 Nos. Electric Travelling Crane for 8,500 kg S.W.L. - 1/F	35	24-Feb-18	30-Mar-18	14
AS408082	SAT of Lifting Appliance, 1/F	28	31-Mar-18	27-Apr-18	14
	Install, T&C for MFS1 (incl. Provision for Health & Safety Requirements)				
AS408101	Install 2 Nos. Electric Travelling Crane for 5,000 kg S.W.L. - MFS1 Tanks	30	01-Apr-18	30-Apr-18	58



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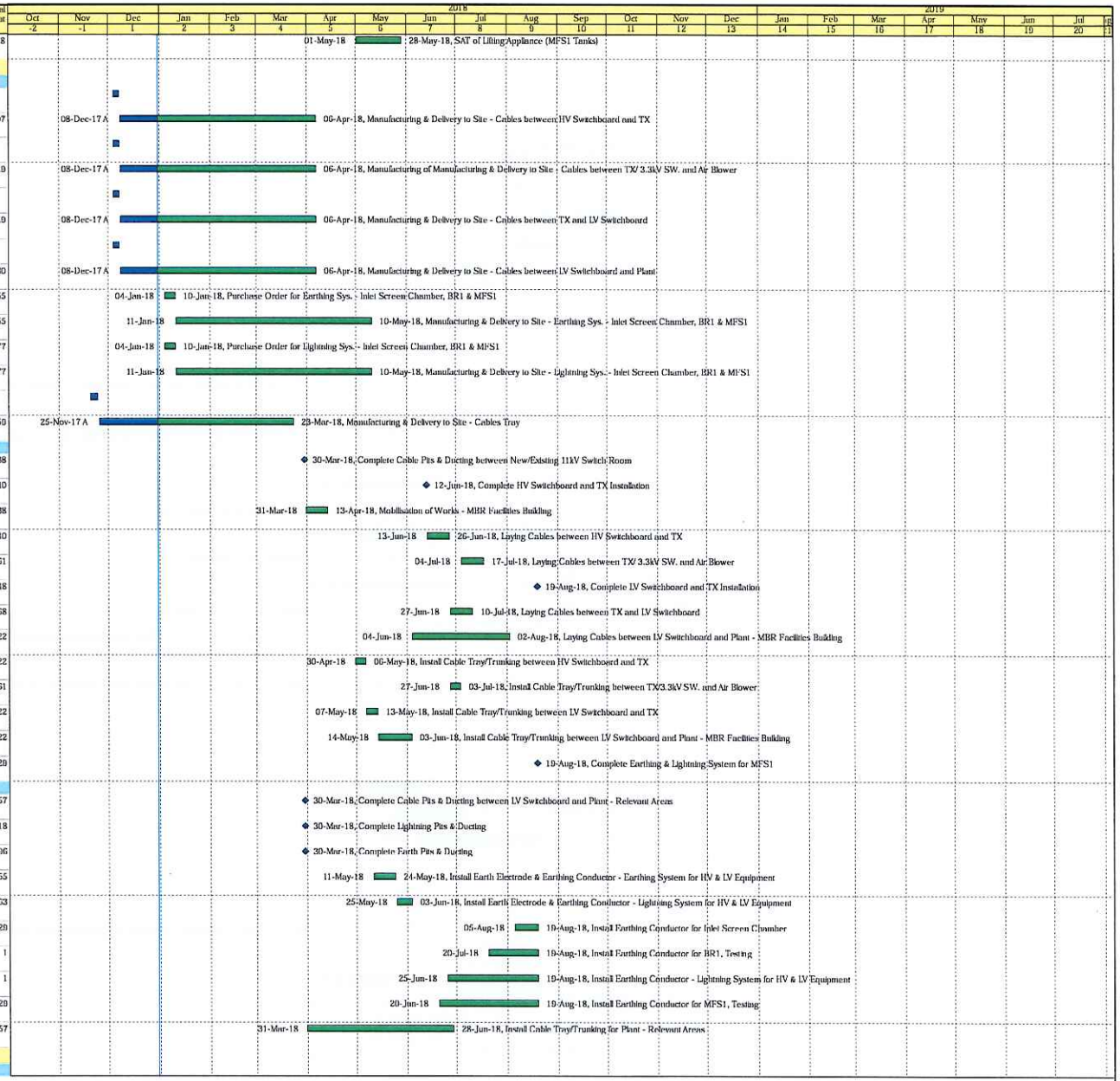
Activity ID	Activity Name	Remaining Duration	Start	Finish	Total Float
AS408102	SAT of Lifting Appliance (MFS1 Tanks)	28	01-May-18	28-May-18	58
4.9 Cabling, Earthing and Lightning Protection System					
Manufacturing, FAT and Delivery					
AS409010	Purchase Order for Cables between HV Switchboard and TX	0	04-Dec-17 A	07-Dec-17 A	
AS409012	Manufacturing & Delivery to Site - Cables between HV Switchboard and TX	97	08-Dec-17 A	06-Apr-18	107
AS409014	Purchase Order for Cables between TX/ 3.3kV SW. and Air Blower	0	04-Dec-17 A	07-Dec-17 A	
AS409016	Manufacturing of Manufacturing & Delivery to Site - Cables between TX/ 3.3kV SW. and Air Blower	97	08-Dec-17 A	06-Apr-18	149
AS409030	Purchase Order for Cables between TX and LV Switchboard	0	04-Dec-17 A	07-Dec-17 A	
AS409032	Manufacturing & Delivery to Site - Cables between TX and LV Switchboard	97	08-Dec-17 A	06-Apr-18	149
AS409050	Purchase Order for Cables between LV Switchboard and Plant	0	04-Dec-17 A	07-Dec-17 A	
AS409052	Manufacturing & Delivery to Site - Cables between LV Switchboard and Plant	97	08-Dec-17 A	06-Apr-18	80
AS409070	Purchase Order for Earthing Sys. - Inlet Screen Chamber, BR1 & MFS1	7	04-Jan-18	10-Jan-18	55
AS409072	Manufacturing & Delivery to Site - Earthing Sys. - Inlet Screen Chamber, BR1 & MFS1	120	11-Jan-18	10-May-18	55
AS409090	Purchase Order for Lightning Sys. - Inlet Screen Chamber, BR1 & MFS1	7	04-Jan-18	10-Jan-18	77
AS409092	Manufacturing & Delivery to Site - Lightning Sys. - Inlet Screen Chamber, BR1 & MFS1	120	11-Jan-18	10-May-18	77
AS409110	Purchase Order for Cables Tray	0	20-Nov-17 A	24-Nov-17 A	
AS409112	Manufacturing & Delivery to Site - Cables Tray	83	25-Nov-17 A	23-Mar-18	50
Install, T&C for MBR Facilities Building (incl. Provision for Health & Safety Requirements)					
AS409001	Complete Cable Pits & Ducting between New/Existing 11kV Switch Room	0		30-Mar-18	38
AS409002	Complete HV Switchboard and TX Installation	0		12-Jun-18	40
AS409003	Mobilisation of Works - MBR Facilities Building	14	31-Mar-18	13-Apr-18	38
AS409020	Laying Cables between HV Switchboard and TX	14	13-Jun-18	26-Jun-18	40
AS409022	Laying Cables between TX/ 3.3kV SW. and Air Blower	14	04-Jul-18	17-Jul-18	61
AS409039	Complete LV Switchboard and TX Installation	0		19-Aug-18	248
AS409040	Laying Cables between TX and LV Switchboard	14	27-Jun-18	10-Jul-18	68
AS409060	Laying Cables between LV Switchboard and Plant - MBR Facilities Building	60	04-Jun-18	02-Aug-18	22
AS409121	Install Cable Tray/Trunking between HV Switchboard and TX	7	30-Apr-18	06-May-18	22
AS409122	Install Cable Tray/Trunking between TX/3.3kV SW. and Air Blower	7	27-Jun-18	03-Jul-18	61
AS409123	Install Cable Tray/Trunking between LV Switchboard and TX	7	07-May-18	13-May-18	22
AS409124	Install Cable Tray/Trunking between LV Switchboard and Plant - MBR Facilities Building	21	14-May-18	03-Jun-18	22
AS409090	Complete Earthing & Lightning System for MFS1	0		19-Aug-18	29
Install, T&C for Plant's Vicinity Areas (incl. Provision for Health & Safety Requirements)					
AS409006	Complete Cable Pits & Ducting between LV Switchboard and Plant - Relevant Areas	0		30-Mar-18	57
AS409007	Complete Lightning Pits & Ducting	0		30-Mar-18	118
AS409080	Complete Earth Pits & Ducting	0		30-Mar-18	86
AS409081	Install Earth Electrode & Earthing Conductor - Earthing System for HV & LV Equipment	14	11-May-18	24-May-18	55
AS409082	Install Earth Electrode & Earthing Conductor - Lightning System for HV & LV Equipment	10	25-May-18	03-Jun-18	63
AS409083	Install Earthing Conductor for Inlet Screen Chamber	14	05-Aug-18	19-Aug-18	29
AS409084	Install Earthing Conductor for BR1, Testing	30	20-Jul-18	19-Aug-18	1
AS409085	Install Earthing Conductor - Lightning System for HV & LV Equipment	55	25-Jun-18	19-Aug-18	1
AS409086	Install Earthing Conductor for MFS1, Testing	60	20-Jun-18	19-Aug-18	29
AS409125	Install Cable Tray/Trunking for Plant - Relevant Areas	90	31-Mar-18	28-Jun-18	57
4.10 Deodorising System					
Manufacturing, FAT and Delivery					



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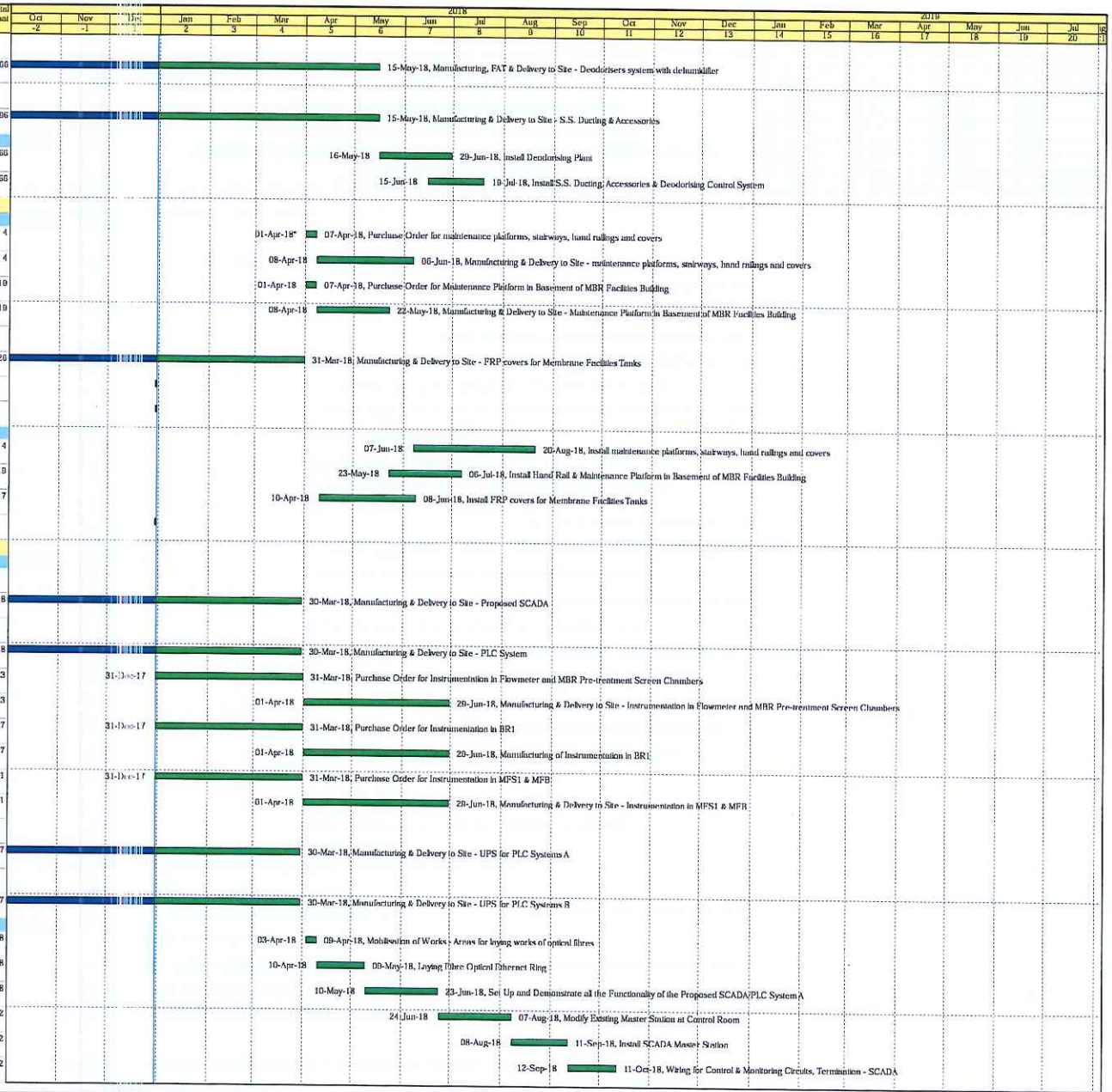
AS410010	Purchase Order for Deodorisers system with dehumkiller	0	10-Jul-17 A	26-Jul-17 A	
AS410012	Manufacturing, FAT & Delivery to Site - Deodorisers system with dehumkiller	130	27-Jul-17 A	15-May-18	66
AS410030	Purchase Order for S.S. Ducting & Accessories	0	24-Jul-17 A	26-Jul-17 A	
AS410032	Manufacturing & Delivery to Site - S.S. Ducting & Accessories	136	27-Jul-17 A	15-May-18	96
Install, T&C for MBR Facilities Building (incl. Provision for Health & Safety Requirements)					
AS410020	Install Deodorising Plant	45	16-May-18	29-Jun-18	66
AS410040	Install S.S. Ducting, Accessories & Deodorising Control System	35	15-Jun-18	19-Jul-18	66
4.11 Maintenance Platform & Covers					
Manufacturing, FAT and Delivery					
AS411010	Purchase Order for maintenance platforms, stairways, hand railings and covers	7	01-Apr-18*	07-Apr-18	4
AS411012	Manufacturing & Delivery to Site - maintenance platforms, stairways, hand railings and covers	80	08-Apr-18	06-Jun-18	4
AS411030	Purchase Order for Maintenance Platform in Basement of MBR Facilities Building	7	01-Apr-18	07-Apr-18	19
AS411032	Manufacturing & Delivery to Site - Maintenance Platform in Basement of MBR Facilities Building	45	08-Apr-18	22-May-18	19
AS411050	Purchase Order for FRP covers for Membrane Facilities Tanks	0	02-May-17 A	08-May-17 A	
AS411052	Manufacturing & Delivery to Site - FRP covers for Membrane Facilities Tanks	91	09-May-17 A	31-Mar-18	26
AS411070	Purchase Order for Steel Cover for Air Blower Opening on 1/F of MBR Bldg. (Not required)	0	30-Dec-17 A	30-Dec-17 A	
AS411072	Manufacturing & Delivery to Site - Steel Cover for Air Blower Opening on 1/F of MBR Bldg. (Not required)	0	30-Dec-17 A	30-Dec-17 A	
Install, T&C for Maintenance Platform & Covers (incl. Provision for Health & Safety Requirements)					
AS411020	Install maintenance platforms, stairways, hand railings and covers	75	07-Jun-18	20-Aug-18	4
AS411040	Install Hand Rail & Maintenance Platform in Basement of MBR Facilities Building	45	23-May-18	06-Jul-18	19
AS411060	Install FRP covers for Membrane Facilities Tanks	60	10-Apr-18	08-Jun-18	17
AS411080	Install Steel Cover for Air Blower Opening on 1/F of MBR Bldg. (Not required)	0	30-Dec-17 A	30-Dec-17 A	
4.12 SCADA					
Manufacturing, FAT and Delivery					
AS412010	Purchase Order for Proposed SCADA	0	03-Jul-17 A	18-Jul-17 A	
AS412012	Manufacturing & Delivery to Site - Proposed SCADA	90	19-Jul-17 A	30-Mar-18	48
AS412030	Purchase Order for PLC System	0	10-Jul-17 A	18-Jul-17 A	
AS412032	Manufacturing & Delivery to Site - PLC System	90	19-Jul-17 A	30-Mar-18	48
AS412050	Purchase Order for Instrumentation in Flowmeter and MBR Pre-treatment Screen Chambers	91	31-Dec-17	31-Mar-18	23
AS412052	Manufacturing & Delivery to Site - Instrumentation in Flowmeter and MBR Pre-treatment Screen Chambers	90	01-Apr-18	29-Jun-18	23
AS412070	Purchase Order for Instrumentation in BR1	91	31-Dec-17	31-Mar-18	37
AS412072	Manufacturing of Instrumentation in BR1	90	01-Apr-18	29-Jun-18	37
AS412090	Purchase Order for Instrumentation in MFS1 & MFB	91	31-Dec-17	31-Mar-18	51
AS412092	Manufacturing & Delivery to Site - Instrumentation in MFS1 & MFB	90	01-Apr-18	29-Jun-18	51
AS412110	Purchase Order UPS for PLC Systems A	0	03-Jul-17 A	18-Jul-17 A	
AS412112	Manufacturing & Delivery to Site - UPS for PLC Systems A	90	19-Jul-17 A	30-Mar-18	177
AS412130	Purchase Order UPS for PLC Systems B	0	03-Jul-17 A	18-Jul-17 A	
AS412132	Manufacturing & Delivery to Site - UPS for PLC Systems B	90	19-Jul-17 A	30-Mar-18	177
Install, T&C for SCADA (incl. Provision for Health & Safety Requirements)					
AS412001	Mobilisation of Works - Areas for laying works of optical fibres	7	03-Apr-18	09-Apr-18	8
AS412020	Laying Fibre Optical Ethernet Ring	30	10-Apr-18	09-May-18	8
AS412021	Set Up and Demonstrate all the Functionality of the Proposed SCADA/PLC System A	45	10-May-18	23-Jun-18	8
AS412022	Modify Existing Master Station at Control Room	45	24-Jun-18	07-Aug-18	12
AS412023	Install SCADA Master Station	35	08-Aug-18	11-Sep-18	12
AS412024	Wiring for Control & Monitoring Circuits, Termination - SCADA	30	12-Sep-18	11-Oct-18	12



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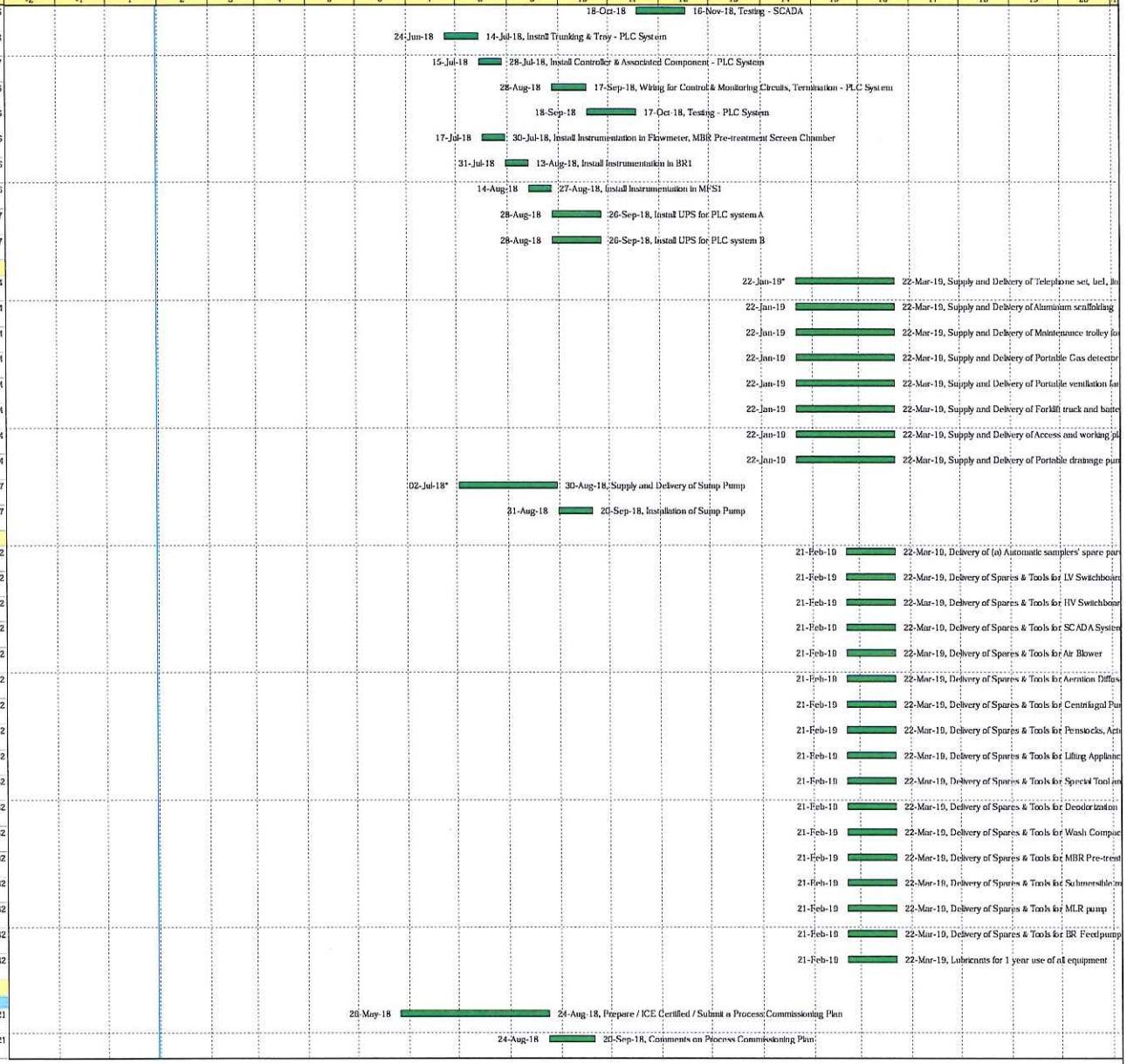
Activity ID	Activity Name	Remaining Duration	Start	Finish	Total Float
AS412025	Testing - SCADA	30	18-Oct-18	16-Nov-18	6
AS412040	Install Trunking & Tray - PLC System	21	24-Jun-18	14-Jul-18	8
AS412042	Install Controller & Associated Component - PLC System	14	15-Jul-18	28-Jul-18	57
AS412044	Wiring for Control & Monitoring Circuits, Termination - PLC System	21	28-Aug-18	17-Sep-18	6
AS412046	Testing - PLC System	30	18-Sep-18	17-Oct-18	6
AS412060	Install Instrumentation in Flowmeter, MBR Pre-treatment Screen Chamber	14	17-Jul-18	30-Jul-18	6
AS412080	Install Instrumentation in BR1	14	31-Jul-18	13-Aug-18	6
AS412100	Install Instrumentation in MFS1	14	14-Aug-18	27-Aug-18	6
AS412120	Install UPS for PLC system A	30	28-Aug-18	26-Sep-18	27
AS412140	Install UPS for PLC system B	30	28-Aug-18	26-Sep-18	27
4.13 Supply & Delivery of Miscellaneous Equipment					
AS413010	Supply and Delivery of Telephone set, bell, line and accessories	60	22-Jan-19*	22-Mar-19	14
AS413020	Supply and Delivery of Aluminum scaffolding	60	22-Jan-19	22-Mar-19	14
AS413030	Supply and Delivery of Maintenance trolley for Air Circuit Breaker	60	22-Jan-19	22-Mar-19	14
AS413040	Supply and Delivery of Portable Gas detector	60	22-Jan-19	22-Mar-19	14
AS413050	Supply and Delivery of Portable ventilation fan	60	22-Jan-19	22-Mar-19	14
AS413060	Supply and Delivery of Forklift truck and battery charger	60	22-Jan-19	22-Mar-19	14
AS413070	Supply and Delivery of Access and working platforms	60	22-Jan-19	22-Mar-19	14
AS413080	Supply and Delivery of Portable drainage pump	60	22-Jan-19	22-Mar-19	14
AS413090	Supply and Delivery of Sump Pump	60	02-Jul-18*	30-Aug-18	197
AS413100	Installation of Sump Pump	21	31-Aug-18	20-Sep-18	197
4.14 Supply & Delivery of Spares & Tools					
AS414010	Delivery of (a) Automatic samplers' spare parts & (b) Sight glasses for MFS	30	21-Feb-19	22-Mar-19	32
AS414020	Delivery of Spares & Tools for LV Switchboard, Control Panels and SCADA System	30	21-Feb-19	22-Mar-19	32
AS414030	Delivery of Spares & Tools for HV Switchboard (including capacitor correction units)	30	21-Feb-19	22-Mar-19	32
AS414040	Delivery of Spares & Tools for SCADA System, PLC system and Instrumentation	30	21-Feb-19	22-Mar-19	32
AS414050	Delivery of Spares & Tools for Air Blower	30	21-Feb-19	22-Mar-19	32
AS414060	Delivery of Spares & Tools for Aeration Diffuser	30	21-Feb-19	22-Mar-19	32
AS414070	Delivery of Spares & Tools for Centrifugal Pump	30	21-Feb-19	22-Mar-19	32
AS414080	Delivery of Spares & Tools for Penstocks, Actuator and Valve	30	21-Feb-19	22-Mar-19	32
AS414090	Delivery of Spares & Tools for Lifting Appliances	30	21-Feb-19	22-Mar-19	32
AS414100	Delivery of Spares & Tools for Special Tool and mensuring equipment	30	21-Feb-19	22-Mar-19	32
AS414110	Delivery of Spares & Tools for Deodorization Unit	30	21-Feb-19	22-Mar-19	32
AS414120	Delivery of Spares & Tools for Wash Compactor	30	21-Feb-19	22-Mar-19	32
AS414130	Delivery of Spares & Tools for MBR Pre-treatment Screens	30	21-Feb-19	22-Mar-19	32
AS414140	Delivery of Spares & Tools for Submersible mixer	30	21-Feb-19	22-Mar-19	32
AS414150	Delivery of Spares & Tools for MLR pump	30	21-Feb-19	22-Mar-19	32
AS414160	Delivery of Spares & Tools for BR Feedpump	30	21-Feb-19	22-Mar-19	32
AS414170	Lubricants for 1 year use of all equipment	30	21-Feb-19	22-Mar-19	32
Process Commissioning					
Commissioning Plan & Procedure					
AS112010	Prepare / ICE Certified / Submit a Process Commissioning Plan	90	26-May-18	24-Aug-18	21
AS112012	Comments on Process Commissioning Plan	28	24-Aug-18	20-Sep-18	21



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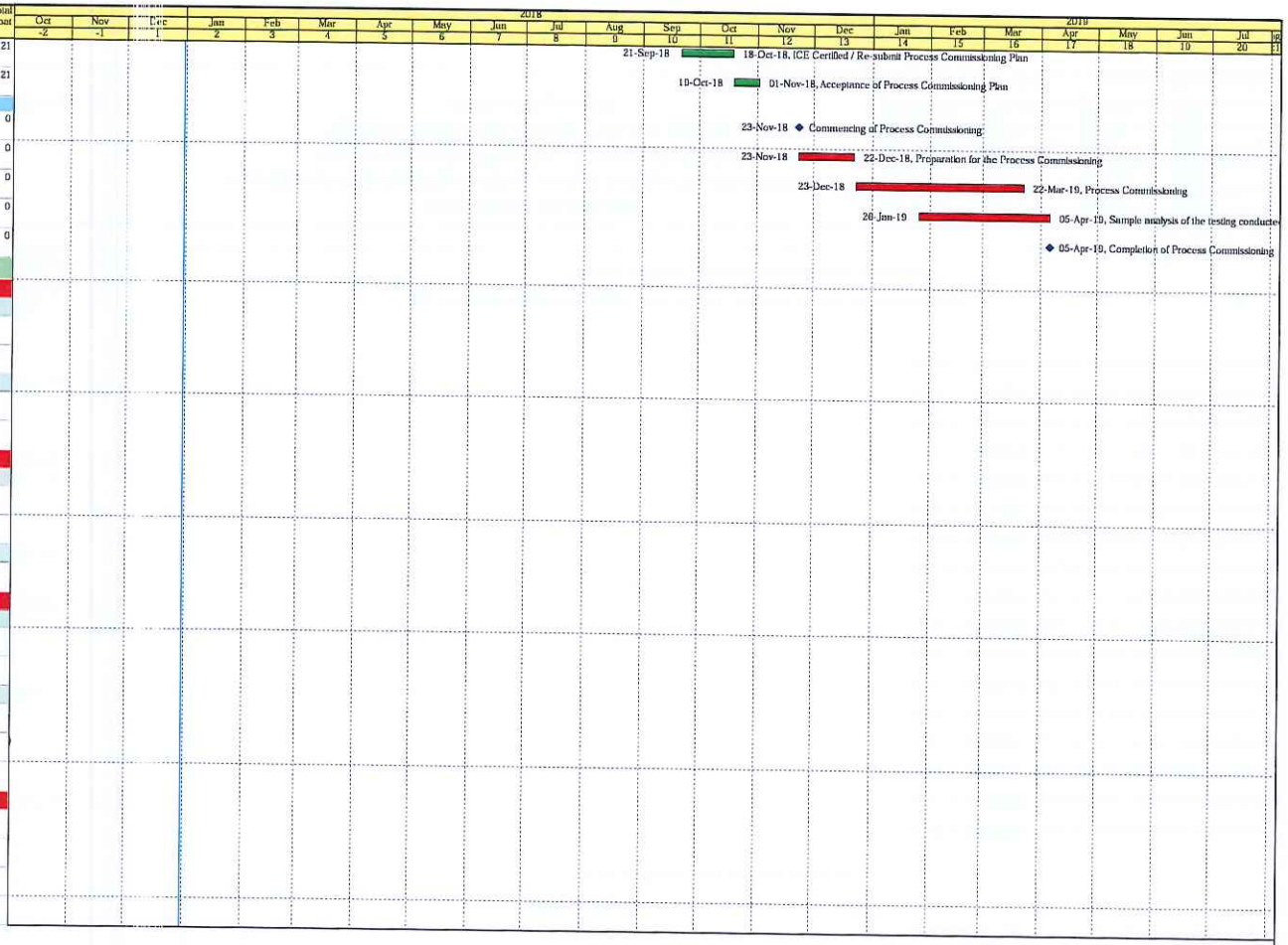
Activity ID	Activity Name	Remaining Duration	Start	Finish	Total Float
AS112014	ICE Certified / Re-submit Process Commissioning Plan	28	21-Sep-18	18-Oct-18	21
AS112016	Acceptance of Process Commissioning Plan	14	19-Oct-18	01-Nov-18	21
Commissioning Process Period					
AS112020	Commencing of Process Commissioning	0	23-Nov-18		0
AS112022	Preparation for the Process Commissioning	30	23-Nov-18	22-Dec-18	0
AS112024	Process Commissioning	90	23-Dec-18	22-Mar-19	0
AS112030	Sample analysis of the testing conducted for process commissioning by an Independent Lab. (HOKLAS)	70	26-Jan-19	05-Apr-19	0
AS112040	Completion of Process Commissioning	0		05-Apr-19	0
Section IV of Works					
Valve with Electric Actuators					
Manufacturing, FAT and Delivery					
AS501100	Procument of Valves with electric actuators	0	13-Feb-16 A	28-Apr-16 A	
AS501120	Manufacturing & Delivery / FAT of Valve with electric actuators	0	29-Mar-16 A	09-Sep-16 A	
Install, T&C for Valve with Electric Actuators (incl. Provision for Health & Safety Requirements)					
AS502100	Mobilisation and Enabling Works for NCSRSPS	0	31-Aug-16 A	08-Sep-16 A	
AS502120	Install Valves with Electric Actuators	0	10-Sep-16 A	23-Sep-16 A	
Modification of Control System					
Manufacturing, FAT and Delivery					
AS503100	Procument of Control System	0	19-Mar-16 A	01-Jun-16 A	
AS503120	Manufacturing, FAT & Delivery of Control System	0	02-Jun-16 A	22-Sep-16 A	
Install, T&C for Control System (incl. Provision for Health & Safety Requirements)					
AS504100	Modification of Existing Pump Control System	0	17-Mar-17 A	11-May-17 A	
Associated Pipework and Fittings					
Manufacturing, FAT and Delivery					
AS505100	Procument of Associated Pipework and Fittings	0	28-Feb-16 A	01-Jun-16 A	
AS505120	Manufacturing, FAT & Delivery of Associated Pipework and Fittings	0	29-Mar-16 A	09-Sep-16 A	
Install, T&C for Associated Pipework & Fittings (incl. Provision for Health & Safety Requirements)					
AS506100	Install Associated Pipework and Fittings	0	10-Sep-16 A	23-Sep-16 A	
AS506200a	Available of New Rising Main to Hung Leng SPS (By Others)	0		11-Apr-17 A	
AS506220a	Pipe connection to New Rising Main to Hung Leng SPS	0	01-Mar-17 A	27-Mar-17 A	
Commissioning of the Pumping System					
AS513100	Site Tests / Functional Test for level control and sensing equipment	0	12-Apr-17 A	11-May-17 A	
AS513110a	Further Coordination with DSD for Carrying Out Commissioning Test	0	12-May-17 A	05-Jun-17 A	
AS513120	Commission of the Pumping System	0	06-Jun-17 A	08-Jun-17 A	
AS513120a	Upload PLC Programme for Modified Pump Control System	0	28-Jul-17 A	28-Jul-17 A	



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