Alpha
Consulting Engineers Pte Ltd

PROJECT QUALITY PLAN

PROPOSED ADDITIONS & ALTERATIONS TO THE 1ST STOREY, 2ND STOREY & ROOF OF THE EXISTING 2-STOREY SINGLE USER FACTORY ON LOT 05991C MK 13 AT 16 WOODLANDS LOOP FOR SEAGATE (SEMBAWANG PLANNING AREA)

For

SEAGATE TECHNOLOGY

Copy No.	1

Prepared By: Jasmine Tan

Authorised By: Choong Choon Guan

Date: 23 March 2022

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SECTION 1

QUALITY PLAN CONTROL AND DISTRIBUTION

1.1 List of Copy Holders

Copy No.	Copy Holder	Date of Issue
1	6301 – PQP File	23 March 2022

1.2 Revision Record

Revision	Date of Issue	Section Reference	Page(s)	Remarks
0	23 March 2022	1 to 11	29	+ 2 pages (Section 4.1 – Overall Programme)

SECTION 2

PROJECT INFORMATION

2.1 Project Description

Type of Development	Industrial – Cleanroom

Statistics of Development	
Site Area, m²	-
Nett Floor Area, m²	-
Gross Floor Area, m²	4,065m²
Covered Carpark, m²	-
No. of Covered Carpark Lots	-
No. of Apartments/Houses	-
No. of Beds (for Hospitals)	-
No. of Guestroom (for Hotels)	-
No. of Blocks / No. of Storeys	1
Green Mark Category	Minimum MEES
No. of Phases	3

2.2 Project Cost – NOT APPLICABLE

M&E Services Cost Plan (S$ x 1M)										
Services	EI	ACVI	LEI	FFAI	PSI	SPFI				
Estimate										
Awarded										

Total Project Construction Cost (S$ x1M)			
	Site Clearance	Piling Works	Main Contract
Estimate			
Awarded			

Site Clearance shall include earth work, soil improvement, service diversion and termination.

2.3 Scope of Works

2.3.1 Scope of Consultancy Services

Conceptual/Schematic Design (3rd party review)	✓
Detailed Design (3rd party review)	✓
Tender Documentation	
Tender Evaluation (3rd party review)	✓
Contract Supervision (Project management)	✓
M&E Costing	
Submissions to Authority	

(✓ where applicable)

2.3.2 Scope of M&E Services

ELECTRICAL	✓	AIR CONDITIONING	✓	SPRINKLER	✓	SANITARY	✓	SWIMMING POOL	
LIFT		MECHANICAL VENTILATION	✓	FIRE ALARM	✓	COLD WATER	✓	STEAM BOILER	
ESCALATOR		MECHANICAL SMOKE EXTRACT	✓	HOSEREEL	✓	HOT WATER		FUEL STORAGE	
PABX		COMPUTER A/C		WET RISER		TOWN GAS		COMPRESSED DRY AIR	✓
SECURITY		BST CARPARK EXH		DRY RISER		LPG GAS		PROCESS VACUUM	✓
TELELIFT		HEATING		CLEANROOM	✓	MEDICAL GAS		CONTAMINATION CONTROL VACUUM	✓
DATA COMM.		SOLVENT EXHAUST	✓	ACID EXHAUST	✓	NITROGEN	✓	AWN	✓
FLUSHFLOOR TRUNKING		RODI	✓						

(✓*where applicable*)

2.3.3 Submission to Relevant Authorities by Others

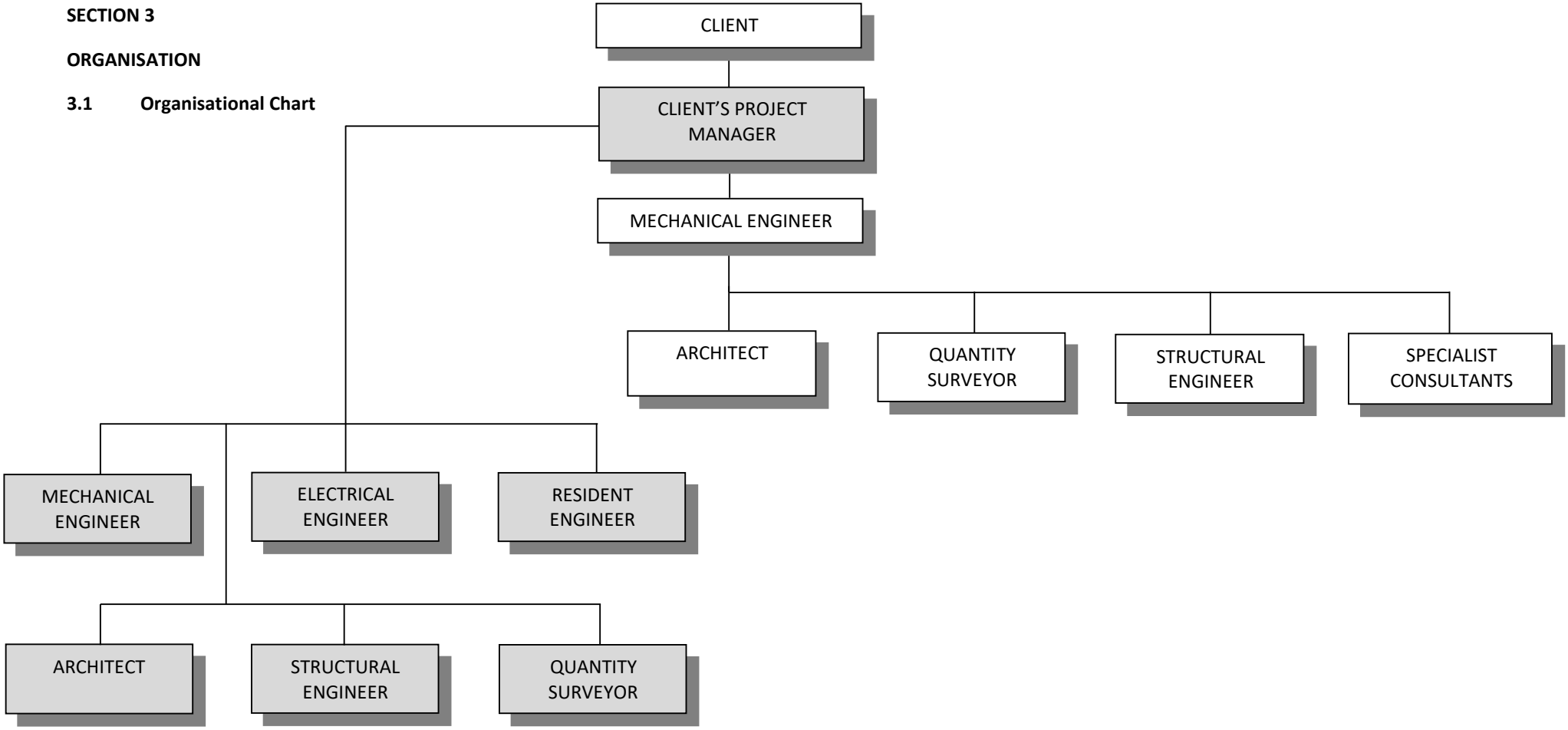
EJECTOR &DIVERTER		SUMP PUMP		FUEL OIL TANK		LIFT & ESCALATOR		PRESSURE VESSEL		HOISTS		FOAM	

(✓ where applicable)

SECTION 3

ORGANISATION

3.1 Organisational Chart



SECTION 3

ORGANISATION

3.2 ACEPL's Project Team Member

TITLE		NAME
Project Director		Choong Choon Guan (CCG)
Qualified Person	Mechanical	–
	Electrical	–
Project Manager		Choong Choon Guan (CCG)
Assistant Project Manager		Tan Qianping, Jasmine (TQP)
Project Assistant (Mech)		–
Project Assistant (Elect)		Steven Cao Yang (SCY)
Draughtsperson		Common Pool
Resident Engineer (M&E)		–
Assistant Resident Engineer (M&E)		–
Clerk-of-Work (M&E)		–

3.3 Client/Client's Representatives

Client: Seagate Technology

Address: 16 Woodlands Loop Singapore 738340

Tel: –

Fax: –

Client's Representatives:

Name of Company	Contact Person	Contact
Seagate Technology	Name: Richard Nip Position:	Tel: – Fax: – Handphone: – Email: richard.wk.nip@seagate.com
	Name: Position:	Tel: Fax: Handphone: Email:
	Name: Position:	Tel: Fax: Handphone: Email:
	Name: Position:	Tel: Fax: Handphone: Email:
	Name: Position:	Tel: Fax: Handphone: Email:

3.4 **Other Consultants** (Local)

Function/Name of Company	Contact Person	Contact
Mechanical Engineer Bescon Consulting Engineers Pte	Name: CT Yong Position: Project Director	Tel: – Fax: – Handphone: 9450 2465 Email: bescon-w1c1-2@bescon.com.sg
Architect 3HPArchitects Pte Ltd	Name: Chng Beng Guan Position: Managing Director	Tel: – Fax: – Handphone: 9630 9001 Email: 1654@3hpa.com
Quantity Surveyor AECOM Cost Consultants	Name: Chang Yen Lin Position: Executive Director	Tel: – Fax: – Handphone: 9692 1276 Email: 60665920W1C1C2@aecom.com
Structural Engineer Chong & Lee Consultants	Name: Lee Foh Sang Position: Project Director	Tel: – Fax: – Handphone: 9731 0575 Email: CL-W1C1_2@chongandlee.com
Architect (under Client PM) ID Architects Pte Ltd	Name: Abdul Jalil Kadir Mydin Position: Executive Director	Tel: – Fax: – Handphone: 9632 7179 Email: jalil@idarchitects.com.sg
Quantity Surveyor (under Client PM) Turner & Townsend Pte Ltd	Name: Loh Boon Theng Position: Director	Tel: – Fax: – Handphone: 8129 6012 Email: boontheng.loh@turntown.com
Structural Engineer (under Client PM) Rankine & Hill (Singapore) Pte Ltd	Name: Goh Teck Sin Position: Director	Tel: – Fax: – Handphone: 9757 4502 Email: goh.teck.sin@rankine-hill.com
_____	Name: Position:	Tel: Fax: Handphone: Email:
_____	Name: Position:	Tel: Fax: Handphone: Email:

3.4 Other Consultants (Overseas) – NOT APPLICABLE

Function/Name of Company	Contact Person	Contact
Architect	Name: Position:	Tel: Fax: Handphone: Email:
M&E Consultant	Name: Position:	Tel: Fax: Handphone: Email:
Quantity Surveyor	Name: Position:	Tel: Fax: Handphone: Email:
Structural Engineer	Name: Position:	Tel: Fax: Handphone: Email:
Interior Designer	Name: Position:	Tel: Fax: Handphone: Email:
Lighting Consultant	Name: Position:	Tel: Fax: Handphone: Email:
Acoustic Consultant	Name: Position:	Tel: Fax: Handphone: Email:
_____	Name: Position:	Tel: Fax: Handphone: Email:

3.5 Contractors/Sub-Contractors – NOT APPLICABLE

Function / Name of Company	Contract *	Contact Person	Contact
Main Contractor		Name: Position:	Tel: Fax: Handphone: Email:
Air Conditioning & Ventilation Installation Sub-Contractor		Name: Position:	Tel: Fax: Handphone: Email:
Plumbing & Sanitary Installation Sub-Contractor		Name: Position:	Tel: Fax: Handphone: Email:
Electrical Installation Sub-Contractor		Name: Position:	Tel: Fax: Handphone: Email:
Lift & Escalator Installation Sub-Contractor		Name: Position:	Tel: Fax: Handphone: Email:
Fire Fighting & Alarm Installation Sub-Contractor		Name: Position:	Tel: Fax: Handphone: Email:
Swimming Pool Filtration Plant Installation Sub-Contractor		Name: Position:	Tel: Fax: Handphone: Email:
Carpark System Installation Sub-Contractor		Name: Position:	Tel: Fax: Handphone: Email:
_____		Name: Position:	Tel: Fax: Handphone: Email:

** Type of Contract*
- *NSC (Nominated Sub-Contract)*
- *DSC (Domesticated Sub-Contract)*
- *DC (Direct Contract)*
- *NS (Nominated Supplier)*

3.6 Authorities – NOT APPLICABLE

Authorities/Department	Contact Person	Tel/Fax Nos./E-mail
SP PowerGrid: (a) Sub-Station		
(b) Diversion		
SP Services: (a) Customer Supply		
(b) Installation		
(c) Meter Section		
(d) Road Lighting		
TFCC: (a) SCV		
(b) SingTel		
(c) IDA		
BCA: (a) Building Plan		
(b) Green Mark		
FSSD: (a) Building Plan		
(b) M&E Plan		
PUB (Water Supply) Network Dept: (a) Water Conservation		
(b) Plumbing Plan		
(c) Diversion		
(d) NEWater		
PUB Water Reclamation (Network) Dept: (a) Building Plan/CBPU		
(b) M&E Plan		
(c) Diversion		
City Energy Pte Ltd: (a) Planning/Submission		
(b) Installation/Inspection		
PowerGas Pte Ltd (a) Diversion		
NEA (Pollution Control) (a) Planning/Submission		
(b) Inspection		

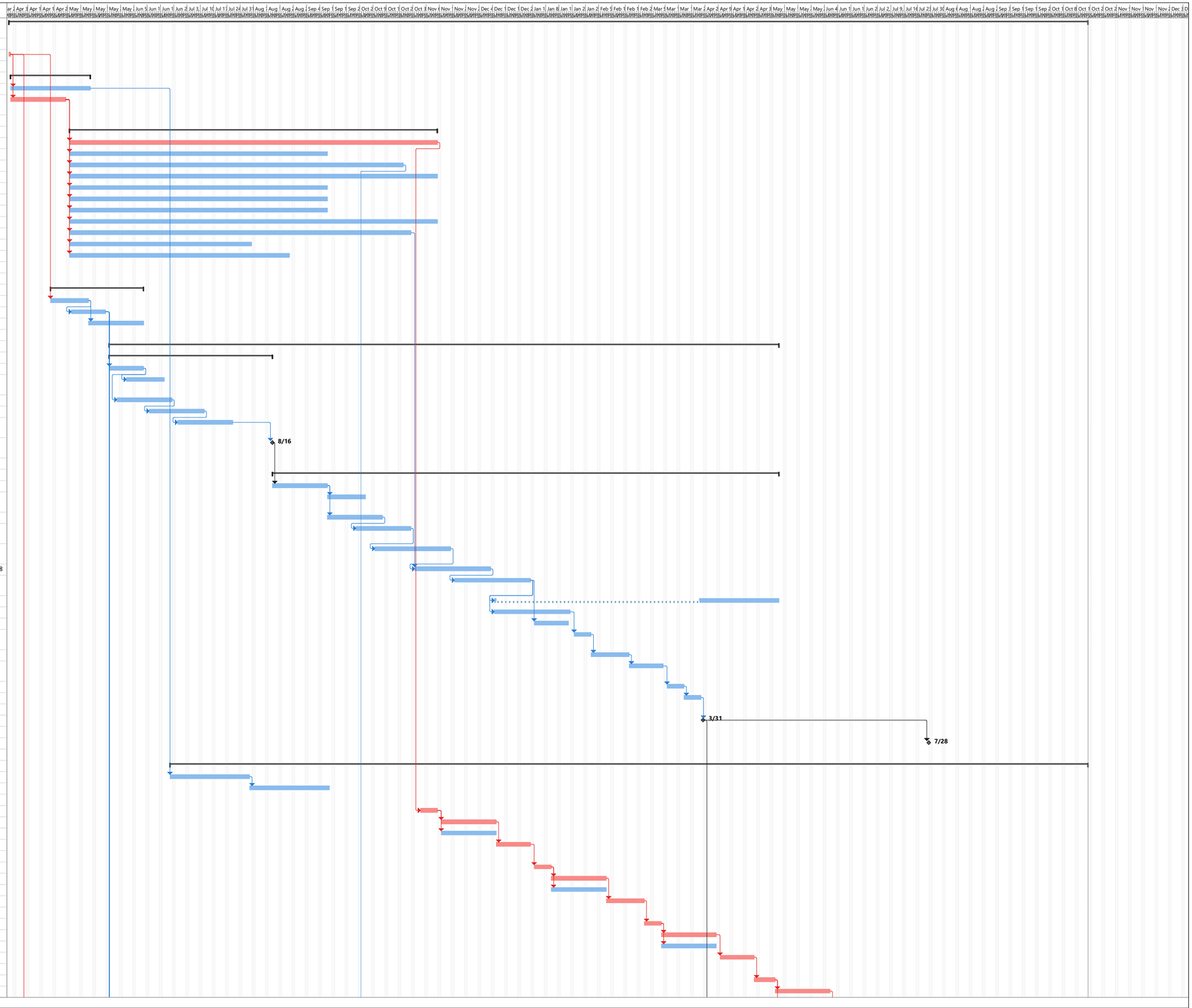
SECTION 4

PROGRAMME

4.1 Overall Programme (see Attached Master Programme)

ID	TASK NAME	MONTHS	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
1.	Preliminary Planning																									
2.	Planning Submission																									
3.	Detail Design																									
4.	BP Submission																									
5.	BP Submission (Amendments)																									
6.	Tender Period for Piling																									
7.	Tender Period for Sub-Structure																									
8.	Tender Period for Super-Structure																									
9.	Piling Period																									
10.	Sub-Structure Construction Period																									
11.	Super-Structure Construction Period																									
12.	TOP																									
13.	CSC																									

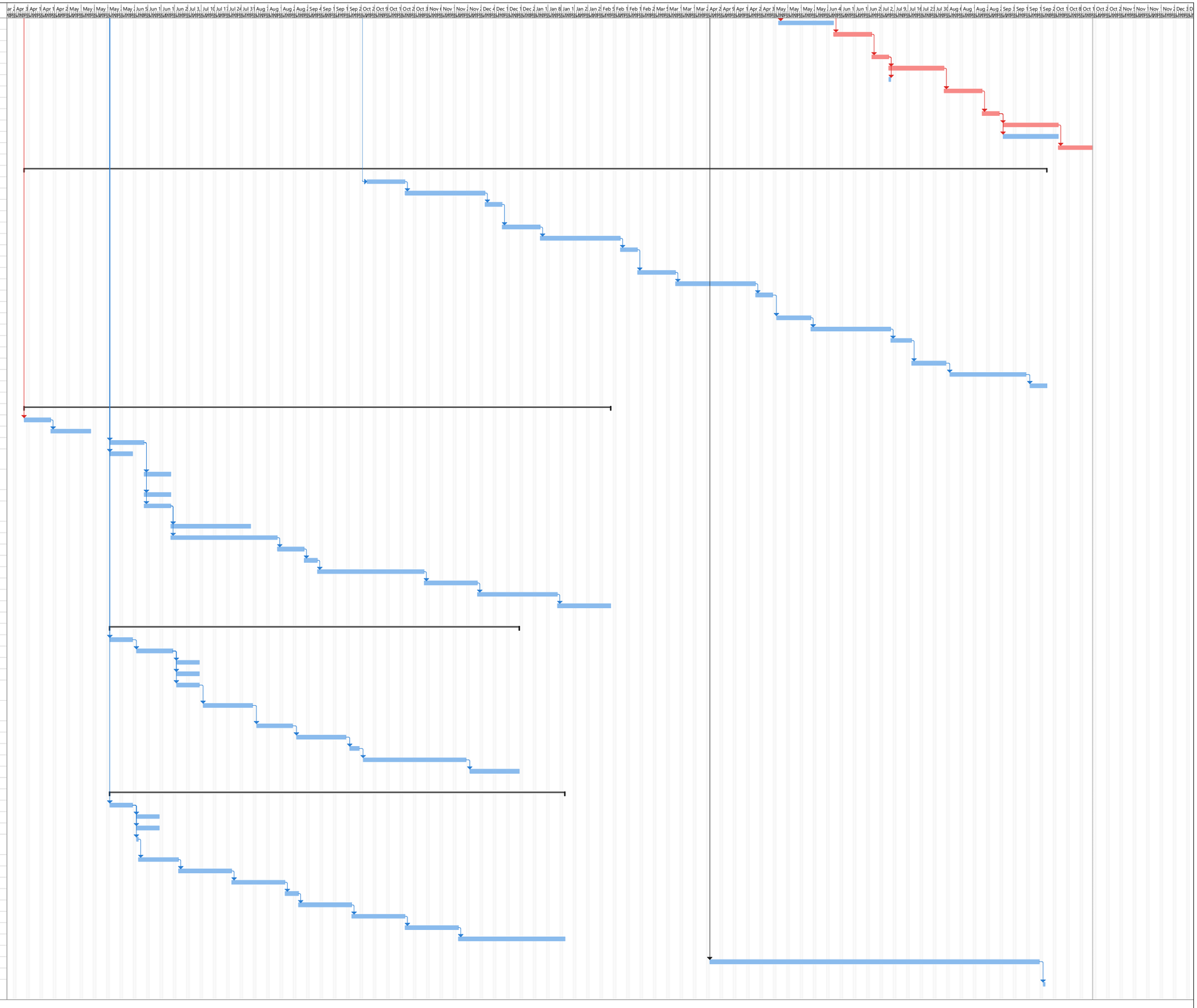
ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors
1		**Proposed Seagate W1 Cell 1 & 2 Project Schedule**	**407 days?**	**Thu 3/31/22**	**Fri 10/20/23**	
2						
3		PO Award	1 day?	Thu 3/31/22	Thu 3/31/22	
4						
5		**Design & Material/Equipment Appro**	**30 days**	**Fri 4/1/22**	**Thu 5/12/22**	
6		Drawings Submission for Approval	30 days	Fri 4/1/22	Thu 5/12/22	3
7		Material/Equipment Submission for Approval	21 days	Fri 4/1/22	Fri 4/29/22	3
8						
9		**Long Lead Item Delivery**	**140 days**	**Mon 5/2/22**	**Fri 11/11/22**	
10		Chiller	140 days	Mon 5/2/22	Fri 11/11/22	7
11		MAU	98 days	Mon 5/2/22	Wed 9/14/22	7
12		Cooling Tower	126 days	Mon 5/2/22	Mon 10/24/22	7
13		Pumps	140 days	Mon 5/2/22	Fri 11/11/22	7
14		Heat Exchanger	98 days	Mon 5/2/22	Wed 9/14/22	7
15		Dehumidifier	98 days	Mon 5/2/22	Wed 9/14/22	7
16		Dry Coil	98 days	Mon 5/2/22	Wed 9/14/22	7
17		Fans	140 days	Mon 5/2/22	Fri 11/11/22	7
18		Raised Floor	130 days	Mon 5/2/22	Fri 10/28/22	7
19		FFU	70 days	Mon 5/2/22	Fri 8/5/22	7
20		Scrubber	84 days	Mon 5/2/22	Thu 8/25/22	7
21						
22						
23		**Site Mobilisation**	**35 days**	**Fri 4/22/22**	**Thu 6/9/22**	
24		Site Office Set Up	14 days	Fri 4/22/22	Wed 5/11/22	**3FS+15 days**
25		Site Hoarding & Protection	14 days	Tue 5/3/22	Fri 5/20/22	24FS-7 days
26		Site Survey for Demolition	21 days	Thu 5/12/22	Thu 6/9/22	24
27						
28		**Cleanroom Cell 1 & Cell 2**	**253 days**	**Mon 5/23/2**	**Wed 5/10/23**	
29		**Dismantling Works**	**62 days**	**Mon 5/23/2**	**Tue 8/16/22**	
30		Dismantle of FFU & Filters	14 days	Mon 5/23/22	Thu 6/9/22	25
31		Dismantle of Existing Ceiling Grid System	14 days	Wed 6/1/22	Mon 6/20/22	30FS-7 days
32		Dismantle of Wall, Door, Window	21 days	Fri 5/27/22	Fri 6/24/22	30FS-10 days
33		Dismantle of Raise Floor	21 days	Mon 6/13/22	Mon 7/11/22	32FS-10 days
34		Dismantle & Removal of under R.F services	21 days	Tue 6/28/22	Tue 7/26/22	33FS-10 days
35		Dismantle of Above Ceiling Equipments	30 days	Wed 7/6/22	Tue 8/16/22	34FS-15 days
36						
37		**Construction**	**191 days**	**Wed 8/17/2**	**Wed 5/10/23**	
38		Floor Epoxy Painting	21 days	Wed 8/17/22	Wed 9/14/22	35
39		Installation of 2 hours Fire Rated Wall	14 days	Thu 9/15/22	Tue 10/4/22	38
40		Installation of Ceiling Support	21 days	Thu 9/15/22	Thu 10/13/22	38
41		Installation of M&E services above ceiling	21 days	Fri 9/30/22	Fri 10/28/22	40FS-10 days
42		Installation of M&E services below R.F	30 days	Mon 10/10/22	Fri 11/18/22	41FS-15 days
43		Installation of Raise Floor	30 days	Mon 10/31/2	Fri 12/9/22	42FS-15 days,18
44		Installation of Honey Comb Panel Wall, Door	30 days	Mon 11/21/22	Fri 12/30/22	43FS-15 days
45		Installaton of Ceiling Grid	31 days	Mon 12/12/2	Wed 5/10/23	44FS-15 days
46		Installation of GI Separation Wal	30 days	Mon 12/12/2	Fri 1/20/23	44FS-15 days
47		Installation of M&E inside Cleanr	14 days	Mon 1/2/23	Thu 1/19/23	44
48		Technical Wipe Down Prior FFU Installation	7 days	Mon 1/23/23	Tue 1/31/23	46
49		Installation of FFU c/w Filter	14 days	Wed 2/1/23	Mon 2/20/23	48
50		Installation of FFU server and control	14 days	Tue 2/21/23	Fri 3/10/23	49
51		Final Technical Cleaning	7 days	Mon 3/13/23	Tue 3/21/23	50
52		Cleanroom Certification	7 days	Wed 3/22/23	Thu 3/30/23	51
53						
54		**Phase 1: Cleanroom Handover**	1 day?	Fri 3/31/23	Fri 3/31/23	52
55						
56		**Phase 2: TOP Obtained**	85 days	Mon 4/3/23	Fri 7/28/23	54
57						
58		**Chillers & Pumps Replacement Work**	**346 days?**	**Fri 6/24/22**	**Fri 10/20/23**	
59		Installation of Structure Support	30 days	Fri 6/24/22	Thu 8/4/22	6FS+30 days
60		Installaton of CHW & CW Header	30 days	Fri 8/5/22	Thu 9/15/22	59
61						
62		Chiller, Pump & MCC #1 Dismantle	7 days	Thu 11/3/22	Fri 11/11/22	10FS-7 days
63		Chiller & Pump #1 Installation	21 days	Mon 11/14/2	Mon 12/12/22	62
64		MCC # 1 Hook Up	21 days	Mon 11/14/2	Mon 12/12/22	62
65		Testing & Comissioning	14 days	Tue 12/13/2	Fri 12/30/22	63
66						
67		Chiller, Pump & MCC #2 Dismantle	7 days	Mon 1/2/23	Tue 1/10/23	65
68		Chiller & Pump #2 Installation	21 days	Wed 1/11/23	Wed 2/8/23	67
69		MCC # 2 Hook Up	21 days	Wed 1/11/23	Wed 2/8/23	67
70		Testing & Comissioning	14 days	Thu 2/9/23	Tue 2/28/23	68
71						
72		Chiller, Pump & MCC #3 Dismantle	7 days	Wed 3/1/23	Thu 3/9/23	70
73		Chiller & Pump #3 Installation	21 days	Fri 3/10/23	Fri 4/7/23	72
74		MCC # 3 Hook Up	21 days	Fri 3/10/23	Fri 4/7/23	72
75		Testing & Comissioning	14 days	Mon 4/10/23	Thu 4/27/23	73
76						
77		Chiller, Pump & MCC #4 Dismantle	7 days	Fri 4/28/23	Mon 5/8/23	75
78		Chiller & Pump #4 Installation	21 days	Tue 5/9/23	Tue 6/6/23	77



Project: Proposed Seagate W1
Date: Thu 3/3/22

Task | Milestone | Project Summary | Inactive Milestone | Manual Task | Manual Summary Rollup | Start-only | External Tasks | Deadline | Critical Split | Manual Progress
Split | Summary | Inactive Task | Inactive Summary | Duration-only | Manual Summary | Finish-only | External Milestone | Critical | Progress

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors
79		MCC # 4 Hook Up	21 days	Tue 5/9/23	Tue 6/6/23	77
80		Testing & Comissioning	14 days	Wed 6/7/23	Mon 6/26/23	78
81						
82		Chiller, Pump & MCC #5 Dismantle	7 days	Tue 6/27/23	Wed 7/5/23	80
83		Chiller & Pump #5 Installation	21 days	Thu 7/6/23	Thu 8/3/23	82
84		MCC # 5 Hook Up	1 day?	Thu 7/6/23	Thu 7/6/23	82
85		Testing & Comissioning	14 days	Fri 8/4/23	Wed 8/23/23	83
86						
87		Chiller, Pump & MCC #6 Dismantle	7 days	Thu 8/24/23	Fri 9/1/23	85
88		Chiller & Pump #6 Installation	21 days	Mon 9/4/23	Mon 10/2/23	87
89		MCC # 6 Hook Up	21 days	Mon 9/4/23	Mon 10/2/23	87
90		Testing & Comissioning	14 days	Tue 10/3/23	Fri 10/20/23	88
91						
92		**Cooling Towers Replacment**	**383 days?**	**Fri 4/8/22**	**Tue 9/26/23**	
93		Cooling Tower # 1 Dismantle	14 days	Wed 10/5/22	Mon 10/24/22	12FS-14 days
94		Cooling Tower #1 Installation	30 days	Tue 10/25/22	Mon 12/5/22	93
95		Testing & Comissioning	7 days	Tue 12/6/22	Wed 12/14/22	94
96						
97		Cooling Tower # 2 Dismantle	14 days	Thu 12/15/22	Tue 1/3/23	95
98		Cooling Tower #2 Installation	30 days	Wed 1/4/23	Tue 2/14/23	97
99		Testing & Comissioning	7 days	Wed 2/15/23	Thu 2/23/23	98
100						
101		Cooling Tower # 1 Dismantle	14 days	Fri 2/24/23	Wed 3/15/23	99
102		Cooling Tower #1 Installation	30 days	Thu 3/16/23	Wed 4/26/23	101
103		Testing & Comissioning	7 days	Thu 4/27/23	Fri 5/5/23	102
104						
105		Cooling Tower # 1 Dismantle	14 days	Mon 5/8/23	Thu 5/25/23	103
106		Cooling Tower #1 Installation	30 days	Fri 5/26/23	Thu 7/6/23	105
107		Testing & Comissioning	7 days	Fri 7/7/23	Mon 7/17/23	106
108						
109		Cooling Tower # 1 Dismantle	14 days	Tue 7/18/23	Fri 8/4/23	107
110		Cooling Tower #1 Installation	30 days	Mon 8/7/23	Fri 9/15/23	109
111		Testing & Comissioning	7 days	Mon 9/18/23	Tue 9/26/23	110
112						
113		**AWN Sump Pit**	**220 days**	**Fri 4/8/22**	**Thu 2/9/23**	
114		ERSS Design development	10 days	Fri 4/8/22	Thu 4/21/22	3FS+5 days
115		BCS Submission	15 days	Fri 4/22/22	Thu 5/12/22	114
116		Hoarding & Protection	14 days	Mon 5/23/22	Thu 6/9/22	25
117		Setting ECM (Earth Control Machine)	10 days	Mon 5/23/22	Fri 6/3/22	25
118		Setting out the pile points & CBP points	10 days	Fri 6/10/22	Thu 6/23/22	116
119		Cable Detection Work	10 days	Fri 6/10/22	Thu 6/23/22	116
120		Installation of ground monitoring instruments	10 days	Fri 6/10/22	Thu 6/23/22	116
121		Piling Works to Sump Pit	30 days	Fri 6/24/22	Thu 8/4/22	120
122		CBP Works for ERSS	40 days	Fri 6/24/22	Thu 8/18/22	120
123		Excavation	10 days	Fri 8/19/22	Thu 9/1/22	122
124		Erection of Scaffold Access	5 days	Fri 9/2/22	Thu 9/8/22	123
125		RC Works to the Sump Pit Tank	40 days	Fri 9/9/22	Thu 11/3/22	124
126		Epoxy & Finishing Works	20 days	Fri 11/4/22	Thu 12/1/22	125
127		FRP Tank & Pump Installation	30 days	Fri 12/2/22	Thu 1/12/23	126
128		Roofing	20 days	Fri 1/13/23	Thu 2/9/23	127
129						
130		**Trench**	**155 days**	**Mon 5/23/22**	**Fri 12/23/22**	
131		Hoarding & Protection	10 days	Mon 5/23/22	Fri 6/3/22	25
132		Relocation of Existing Services	15 days	Mon 6/6/22	Fri 6/24/22	131
133		Setting out the Pile Points	10 days	Mon 6/27/22	Fri 7/8/22	132
134		Cable detection Works	10 days	Mon 6/27/22	Fri 7/8/22	132
135		Installation of Ground Monitoring Instruments	10 days	Mon 6/27/22	Fri 7/8/22	132
136		Control Demolition of Existing Concrete Slab	20 days	Mon 7/11/22	Fri 8/5/22	135
137		Piling works to RC trench	15 days	Mon 8/8/22	Fri 8/26/22	136
138		Excavation	20 days	Mon 8/29/22	Fri 9/23/22	137
139		Erection of Scaffold Access	5 days	Mon 9/26/22	Fri 9/30/22	138
140		RC Works to the RC trench	40 days	Mon 10/3/22	Fri 11/25/22	139
141		Epoxy & Finishing Works	20 days	Mon 11/28/22	Fri 12/23/22	140
142						
143		**Roof Extension Works**	**171 days?**	**Mon 5/23/22**	**Mon 1/16/23**	
144		Erection of Hoardings	10 days	Mon 5/23/22	Fri 6/3/22	25
145		Setting out the piles	10 days	Mon 6/6/22	Fri 6/17/22	144
146		Cable Detection Works	10 days	Mon 6/6/22	Fri 6/17/22	144
147		Installation of Ground Monitoring Works	1 day?	Mon 6/6/22	Mon 6/6/22	144
148		Relocation of Existing Services	15 days	Tue 6/7/22	Mon 6/27/22	147
149		Piling Works to Roof Extension	20 days	Tue 6/28/22	Mon 7/25/22	148
150		Excavation Works	20 days	Tue 7/26/22	Mon 8/22/22	149
151		Erection of Scaffolding Access	5 days	Tue 8/23/22	Mon 8/29/22	150
152		RC Works to the Footings & Slab	20 days	Tue 8/30/22	Mon 9/26/22	151
153		Steel Structure Works	20 days	Tue 9/27/22	Mon 10/24/22	152
154		Controlled Demolition Works	20 days	Tue 10/25/22	Mon 11/21/22	153
155		Finishes Works	40 days	Tue 11/22/22	Mon 1/16/23	154
156						
157		**Equipment Hook Up**	125 days	Mon 4/3/23	Fri 9/22/23	54
158						
159		**Phase 3: Cleanroom Certified "At Rest" and Operational**	1 day	Mon 9/25/23	Mon 9/25/23	157



Project: Proposed Seagate W1
Date: Thu 3/3/22

Task, Split, Milestone, Summary, Project Summary, Inactive Task, Inactive Milestone, Inactive Summary, Manual Task, Duration-only, Manual Summary Rollup, Manual Summary, Start-only, Finish-only, External Tasks, External Milestone, Deadline, Critical, Critical Split, Progress, Manual Progress

SECTION 4

PROGRAMME

4.2 Authority Submission Status for M&E Services – 1st Submission – NOT APPLICABLE

Service	Authority	Original Submission		Comments/Resubmission						Approval/
		Scheduled	Actual	Comment	Resubmit	Comment	Resubmit	Comment	Resubmit	Clearance
Application for Electricity Supply	SP Services Ltd									
Power Supply Substation	SP PowerGrid Ltd									
Metering Layout	SP Services Ltd									
Sanitary Installation	PUB Water Reclamation (Network) Dept									
Domestic Water Supply	PUB (Water Supply) Network Dept									
Gas Supply Installation	City Gas Pte Ltd									
Air Conditioning & Ventilation Inst.	FSSD									
Fire Fighting & Alarm Installation	FSSD									
Telephone Installation	TFCC									
Broadband Co-axial Cable System (BCS)	Starhub Cable Vision									
Fuel Storage	FSSD									
	NEA (Pollution Control)									

SECTION 4

PROGRAMME

4.3 Authority Submission Status for M&E Services (Amendments) – 2nd Submission – NOT APPLICABLE

Service	Authority	Original Submission		Comments/Resubmission						Approval/
		Scheduled	Actual	Comment	Resubmit	Comment	Resubmit	Comment	Resubmit	Clearance
Application for Electricity Supply	SP Services Ltd									
Power Supply Substation	SP PowerGrid Ltd									
Metering Layout	SP Services Ltd									
Sanitary Installation	PUB Water Reclamation (Network) Dept									
Domestic Water Supply	PUB (Water Supply) Network Dept									
Gas Supply Installation	City Gas Pte Ltd									
Air Conditioning & Ventilation Inst.	FSSD									
Fire Fighting & Alarm Installation	FSSD									
Telephone Installation	TFCC									
Broadband Co-axial Cable System (BCS)	Starhub Cable Vision									
Fuel Storage	FSSD									
	NEA (Pollution Control)									

SECTION 5

PROJECT RECORDS

5.1 List of Internal Files – NOT APPLICABLE

Standard Files

File Ref:		File Ref:	
- Owner		- Architect	
- Authorities		- Other Consultants	
- Contractors		- CC	
- CF		- PQP/QSP	

Project Files to be initiated by PM as and when required

File Ref:		File Ref:		File Ref:	

(✓*where applicable*)

SECTION 5

PROJECT RECORDS

5.2 Filing of Drawings

The following team members shall take charge of filing of drawings, stamping "SUPERSEDED" drawings, etc.

Description	Team Member
Incoming Architectural Floor Plans	Soft copy saved in 6301 Teams
Incoming Architectural Sketches/Details	
Incoming Structural Drawings	
Incoming M&E Drawings	
Other Drawings	

SECTION 6

INTERFACING

6.1 Method of Interface

Description	Method of Interface	
Client's Review & Approval	M&E Design Report	
	Pre-planned meeting at fixed intervals	✓
	Telefax, letter and telephone	✓
	Email	✓
Interface With External Design Teams	M&E Design Report	
	Pre-planned meeting at fixed intervals	✓
	Telefax, letter and telephone	✓
	Email	✓
Interface Between Internal Design Teams	Telephone	✓
	Email	✓
	Internal Project Team Meeting	✓
	Circulation of Information	✓

(✓*where applicable*)

SECTION 6

INTERFACING

6.2 Internal Design Interface – NOT APPLICABLE

Item No.	Description*	Required From	Required By	Date Required	Remarks

** Information required by INTERNAL DESIGN TEAM MEMBERS*

SECTION 6

INTERFACING

6.3 Circulation of Documents to External Parties

	Code: A - Approval Required C - For Comments I - For Information Only	Client/ Client Rep.	* Client's Project Manager	Architect	Structural Engineer	Quantity Surveyor	
1.	**Letters/Fax:**						
a.	Project Design	A	I	I	–	–	–
b.	Project Administration				–	–	–
c.	Project Cost Estimate/Contract Cost	A	I	I	–	–	–
2.	**Drawings**						
a.	Outline Design Drgs.	A	I	C	I	I	
b.	Sketch Design Drgs.	A	I	C	I	I	
c.	Final Design Drgs.	A	I	C	I	I	
d.	Shop Drawings	I	I	A	–	–	
e.	As Built Drgs.	I	I	I	–	–	
3.	**Other Document**						
a.	Specification	A	I	I	I	I	
b.	Tender Document	A	I	I	I	I	
c.	Tender Evaluation Report	A	I	I	I	I	
d.	Design Report	A	I	I	-	-	
e.	Progress Report	–	–	–	–	–	
f.	Financial Report	–	–	–	–	–	
g.	Minutes of Meeting	A	I	I	–	–	–
h.	Inspection Report	I	I	I	–	–	
i.	Testing & Comm. Report	I	I	I	–	–	
j.	O & M Manual	I	I	I	–	–	

*Note: Applicable only, if the client engaged a Project Manager.

SECTION 7

WORK AUTHORISATION

Activity \ Authorised Signatories	PD	QP	PM	AE	SS
General Correspondences with Client			√	√	
General Correspondences with Other Consultants			√	√	
M&E Cost Estimate Report	√	√	√		
M&E Design Report	√	√	√		
Check Prints		√			
Tender Drawing Approval	√	√	√		
Tender Specification Approval	√	√	√		
List of Tenderers	√	√	√		
Tender Questionnaires	√	√	√		
Tender Reports	√	√	√		
Draft Letter of Award	√	√	√		
Review of Contractor's Shop Drawing			√	√	
Review of Contractor's Technical Submittal			√	√	
Review of Contractor's Sample Submittal			√	√	
Contractor's Request for Deviation		√	√		
Progress Payment Valuation Form	√		√		
Final Account Valuation	√		√		
Draft Variation Order	√		√		
Engineer/Architect's Instruction/Direction	√		√		
Site Instruction/Direction			√		
Correspondence/Submission to Authorities	√	√			

(✓*where authorised*)

Key to abbreviations:-

PD : Project Director
QP : Qualified Person
PM : Project Manager/Assistant Project Manager
AE : Assistant Engineer
SS : ACEPL Site Staff

SECTION 8

DESIGN INPUT & METHODOLOGY

8.1 List of Client's Standards, Reference Documents or Brief – NOT APPLICABLE

ITEM	KEPT BY

8.2 List of Applicable Code of Practice and Regulations

Services	Title of Code of Practice/Standard
Electrical Wiring	SS 638: 2018
Lightning Protection System	SS 555: 2010
Emergency Voice Communication System	SS 546: 2009
Air Conditioning & Ventilation Installation	SS 553: 2016
Lift & Escalator Installation	NA
Sprinkler System	SS CP 52: 2004
Wet Riser System	NA
Automatic Fire Alarm System	SS 645: 2019
Sanitary System	Code of Practice on Sewerage & Sanitary Works
Plumbing System	SS 636: 2018
Town Gas/LPG Supply System	NA
Boiler and Steam Supply System	NA
Mechanical Smoke Control System	NA

SECTION 8

DESIGN INPUT & METHODOLOGY

8.3 List of Design Guide or Handbook Used

Carrier's Handbook of Air Conditioning System Design

ASHRAE Handbooks

Institute of Plumbing's Plumbing Services Design Guide

8.4 List of Pre-Consultation and Waiver – NOT APPLICABLE

S/N	Description	Date of Application	Date of Approval	Remarks
1	*Clause number in Code of Practice for (Services) which require clarification or waiver. Consultation Ref No. Waiver Ref. No.			
2	*Clause number in Code of Practice for (Services) which require clarification or waiver. Consultation Ref No. Waiver Ref. No.			
3	*Clause number in Code of Practice for (Services) which require clarification or waiver. Consultation Ref No. Waiver Ref. No.			

*To fill in actual information

8.5 List of Applicable Quality System Procedures

Alpha Consulting Engineers Pte Ltd's Quality Management System Procedures

Section	Title	✓ where applicable
M1	Preparation of Consultancy Offer	✓
M2	Project Commissioning and Service Agreement	✓
M3	Design Control	✓
M4	Design Change Control	
M5	Tender Process and Evaluation	✓
M6	Authority Submission	
M7	Construction Process Control	✓
M8	Testing and Commissioning	✓
S1	Document Control	✓
S2	Documentation of Quality & Environmental Management System Procedure	
S3	Documentation of Project Quality Plan	✓
S4	Specification Control	
S5	Library Control	
S6	Archive Control	
S7	Filing Control	✓
S8	Drawing Control	
S9	Administration Control	
S10	Purchasing Control	
S11	Training Control	
S12	Computer Control	
QE1	Quality & Environmental System Audit	✓
QE2	Feedback Reporting	✓
QE3	Clients Feedback	✓
QE4	Management Review	✓

8.6 List of Software Used For Design/Analysis – NOT APPLICABLE

DESCRIPTION/ PACKAGE NAME	VERSION	SUPPLIER/ SOURCE	PURPOSE	
Cophos	3.31	Zumtobel	Lighting design	
Carrier E20-II	3.21	Carrier	Programme for determination of heat load, duct size and its losses, etc.	
Gensize 2	2.1	Onan	Generator sizing	
Hyena	4.00.1	ACADS-BSG	Fire Sprinkler & Hydrant Analysis	
Dialux	4.11	Freeware	Lighting design	
Lift Traffic	7.18	Elevate	Lift traffic calculation	
Fault Level Calculation	11.11	ETAP	Calculation of fault level and voltage drop	

(✓*where applicable*)

SECTION 9

ENVIRONMENTAL CONSIDERATIONS

9.1 Sustainable Design Features/Criteria

Item	Remarks
Green Mark Criteria	MEES Efficiency
Green Design Features	

9.2 Site PPE Requirement

The necessary Personal Protective Equipment (detailed below) shall be provided by the main contractor/Company in accordance to the site EHS requirements prior to the site monitoring.

PPE	✓ where applicable
Safety Helmet	✓
Safety Shoes	✓
Eye Protection	
Ear Protection	
Safety Harness / Belt	
Others:	Cleanroom PPE

9.3 Site Emergency Preparedness

Site staff shall comply with the site emergency preparedness and response procedure, established by the main contractor/owner, which shall include the following details.

Items	✓ where applicable
Evacuation Route	✓
Emergency Exit	✓
Assembly Point	✓
Emergency Contact List / Person	✓
Alarm system / methods	✓

SECTION 9

ENVIRONMENTAL CONSIDERATIONS

9.4 Reporting of Environmental Non-conformances

When encountering environmental non-conformances, Site Staff shall be responsible to feedback to the main contractor.

9.5 List of Applicable Environmental management system Procedures

Alpha Consulting Engineers Pte Ltd's Environmental Management System Procedures

Section	Title	✓ where applicable
E1	Aspect / Impact Identification, Risk Assessment & Risk Control	✓
E2	Identifying Legal & Other Requirements	✓
E3	Objectives, Targets & Programmes	✓
E4	Communication	✓
E5	Emergency Preparedness & Response	✓
E6	Monitoring & Measurement	✓
E7	Control of Air & Noise Pollution	✓
E8	Management of Wastes	✓

SECTION 10

CLIENT'S REQUIREMENTS

10.1 List of Output Required by Client:

Item	* Remarks
M&E Design Report	NA
M&E Cost Estimate Report	NA
Pre-Qualification of Tenderers	A
Tender Documents	C
Tender Report	NA
Payment Valuation for QS	A
Certificates of Supervision for TOP/CSC	NA

* *Remarks*

A: for approval *C: for comment* *I: for Information* *Re: for record*

Other purposes and for action: please specify.

10.2 Specific Procedures Required By Client *(If applicable)*

NOT APPLICABLE

SECTION 11

LIST OF SUB-JOB

11.1 List of Sub-Job Numbers – NOT APPLICABLE

Sub Job No	Description	Allocation Details