Alpha
Consulting Engineers Pte Ltd

PROJECT QUALITY PLAN

Sin Orchid Project

For

Google Singapore

Copy No.	1

Prepared By: Goh Soon Huat/Jasmine Tan

Authorised By: Choong Choon Guan

Date: 11 January 2021

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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	6277-PQP	11 January 2021

1.2 Revision Record

Revision	Date of Issue	Section Reference	Page(s)	Remarks
0	10 May 2019	1 to 11	29	+ 5 pages (Section 4.1 – Overall Programme)
1	20 November 2019	1 to 11	29	+ 2 pages (Section 4.1 – Overall Programme)
2	11 January 2021	1 to 11	29	+ 2 pages (Section 4.1 – Overall Programme)

SECTION 2

PROJECT INFORMATION

2.1 Project Description

Type of Development	Commercial – Office

Statistics of Development	
Site Area, m²	31,729
Nett Floor Area, m²	-
Gross Floor Area, m²	31,729
Covered Carpark, m²	-
No. of Covered Carpark Lots	NA
No. of Apartments/Houses	NA
No. of Beds (for Hospitals)	NA
No. of Guestroom (for Hotels)	NA
No. of Blocks / No. of Storeys	1 Block/8-Storey
Green Mark Category	Leeds Gold
No. of Phases	1

2.2 Project Cost

M&E Services Cost Plan (S$ x 1M)										
Services	EI	ACVI	LEI	FFAI	PSI					
Estimate	-	-	-	-	-					
Awarded	6	14	1.304	2	2.2					

Total Project Construction Cost (S$ x1M)			
	Site Clearance	Piling Works	Main Contract
Estimate	-	-	-
Awarded	-	-	80.3

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	✓
Detailed Design	✓
Tender Documentation	✓
Tender Evaluation	✓
Contract Supervision	✓
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	✓		
SECURITY	✓	BST CARPARK EXH		DRY RISER	✓	LPG GAS			
TELELIFT		HEATING				MEDICAL GAS			
DATA COMM.						WASTEWATER TREATMENT			
FLUSHFLOOR TRUNKING									

(✓*where applicable*)

2.3.3 Submission to Relevant Authorities by Others

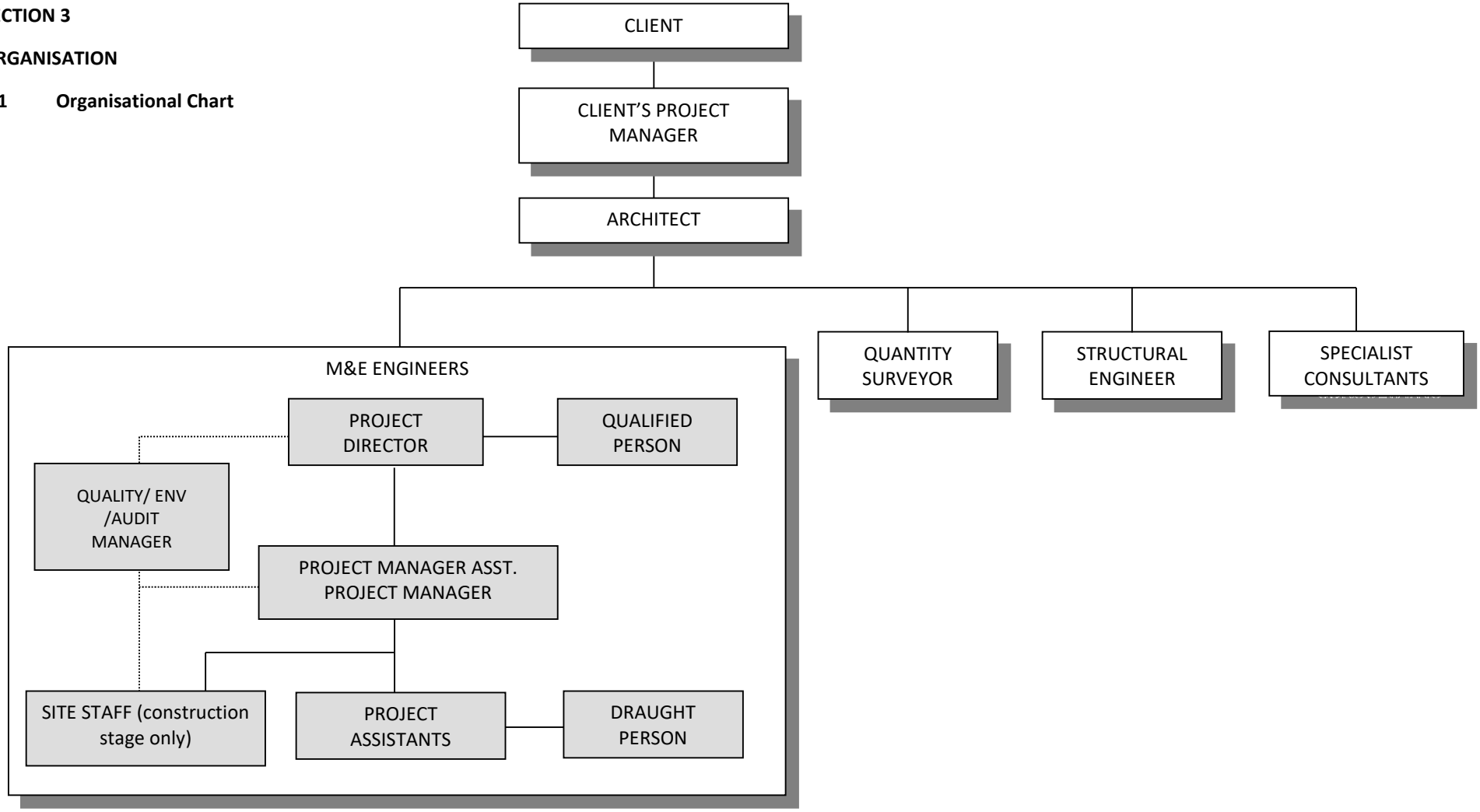
EJECTOR & DIVERTER		SUMP PUMP		FUEL OIL TANK		LIFT & ESCALATOR	✓	PRESSURE VESSEL		HOISTS		FOAM	

(✓*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	Choong Choon Guan (CCG)
	Electrical	Loh Fook Yuen (LFY)
Project Manager		Goh Soon Huat (GSH)
Assistant Project Manager		Tan Qianping, Jasmine (TQP)
Project Assistant (Mech)		Gordon Ang (AWG)
Project Assistant (Elect)		Shunski Ong (OWR)
Draughtsperson		Common Pool
Resident Engineer (M&E)		-
Assistant Resident Engineer (M&E)		-
Clerk-of-Work (M&E)		-

3.3 Client/Client's Representatives

Client: Google Singapore

Address: 70 Pasir Panjang Road #03-71
Singapore 117371

Tel: 6521 8000

Fax: -

Client's Representatives:-

Name of Company	Contact Person	Contact
CBRE Singapore	Name: Mr Chris Broadhurst Position: Associate Director	Tel: 6224 8181 Fax: - Handphone: 9057 9576 Email: cbre-orchid@google.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
Architect Space Design Architects	Name: Selvanayagam Nadarajah Position: Principal	Tel: 6438 8772 Fax: - Handphone: 9626 1575 Email: amanda.stanaway@woodsbagot.com
Quantity Surveyor WT Partnership (S) Pte Ltd	Name: Mr Daniel Malacchini Position: Director	Tel: 6235 2760 Fax: - Handphone: 9646 2858 Email: 10256googleorchid@wtpartnership.com.sg
Structural Engineer Aurecon Singapore (Pte) Ltd	Name: Mr Ngu Wang Chung Position: Principal Structural Engineer	Tel: 6256 6188 Fax: - Handphone: 9180 4458 Email: wangchung.ngu@aurecongroup.com
Interior Designer Woods Bagot Singapore	Name: Ms Amanda Stanaway Position: Principal	Tel: 6800 0900 Fax: - Handphone: +61 2 9249 2570 Email: amanda.stanaway@woodsbagot.com
Lighting Consultant Light Collab LLP	Name: Ms Toh Yah Li Position: Director	Tel: 6635 7511 Fax: - Handphone: Email: yahli@lightcollab.com
ESD Consultant Mott Macdonald Pte Ltd	Name: Ben Moo Position: Project Director	Tel: - Fax: - Handphone: 9004 4280 Email: ben.moo@mottmac.com
Food Consultant Foodservice Consultants Singapore Pte Ltd	Name: Mr Kuek Wei Jun Position: Director	Tel: 6377 6040 Fax: - Handphone: 9879 5627 Email: weijun.kuek@fscs.sg
Digital Building Consultant Arup Singapore Pte Ltd	Name: Mr Kin Puan Wong Position: ICT consultant	Tel: 6411 2384 Fax: - Handphone: Email: kin-puan.wong@arup.com
Acoustic Consultant Mott Macdonald Pte Ltd	Name: Ben Moo Position: Project Director	Tel: - Fax: - Handphone: 9004 4280 Email: ben.moo@mottmac.com

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

Function / Name of Company	Contract *	Contact Person	Contact
Main Contractor Kenyon Pte Ltd	-	Name: Leon Ooi Position: Project Director	Tel: Fax: Handphone: 9734 6609 Email: leon_ooi@kenyon.com.sg
Air Conditioning & Ventilation Installation Sub-Contractor Kenyon Pte Ltd	DSC	Name: KC Lee Position: M&E Manager	Tel: Fax: Handphone: 9752 7155 Email: kclee@kenyon.com.sg
Plumbing & Sanitary Installation Sub-Contractor Vispon Engineering Pte Ltd	DSC	Name: Nagatajan Position: M&E Manager	Tel: Fax: Handphone: 9697 1453 Email:
Electrical Installation Sub-Contractor Kenyon Pte Ltd	DSC	Name: KC Lee Position: M&E Manager	Tel: Fax: Handphone: 9752 7155 Email: kclee@kenyon.com.sg
Lift & Escalator Installation Sub-Contractor	NSC	Name: Ervin Goh Position: Project Manager	Tel: Fax: Handphone: 9386 9192 Email: Ervin.goh@schindler.com
Fire Fighting & Alarm Installation Sub-Contractor Rico Engineering Works Pte Ltd	DSC	Name: Clement Position: Project Director	Tel: Fax: Handphone: 9046 6363 Email: clement@ricoeng.com.sg
		Name: Position:	Tel Fax: Handphone: Email:
		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

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) StarHub		
(b) SingTel		
(c) Netlink Trust		
BCA:		
(a) Building Plan		
(b) Green Mark		
FSSD:		
(a) Building Plan		
(b) M&E Plan	Nancy Ang (ACMV)/ Lim Hock Seng (FFAI)	6848 1729/ 6848 1441
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	Nur Sakinah	6571 4080/ nur_sakinah_azman@pub.gov.sg
(c) Diversion		
City Gas Pte Ltd:		
(a) Planning/Submission	Kamarulzaman	kamarulzaman@citygas.com.sg
(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)

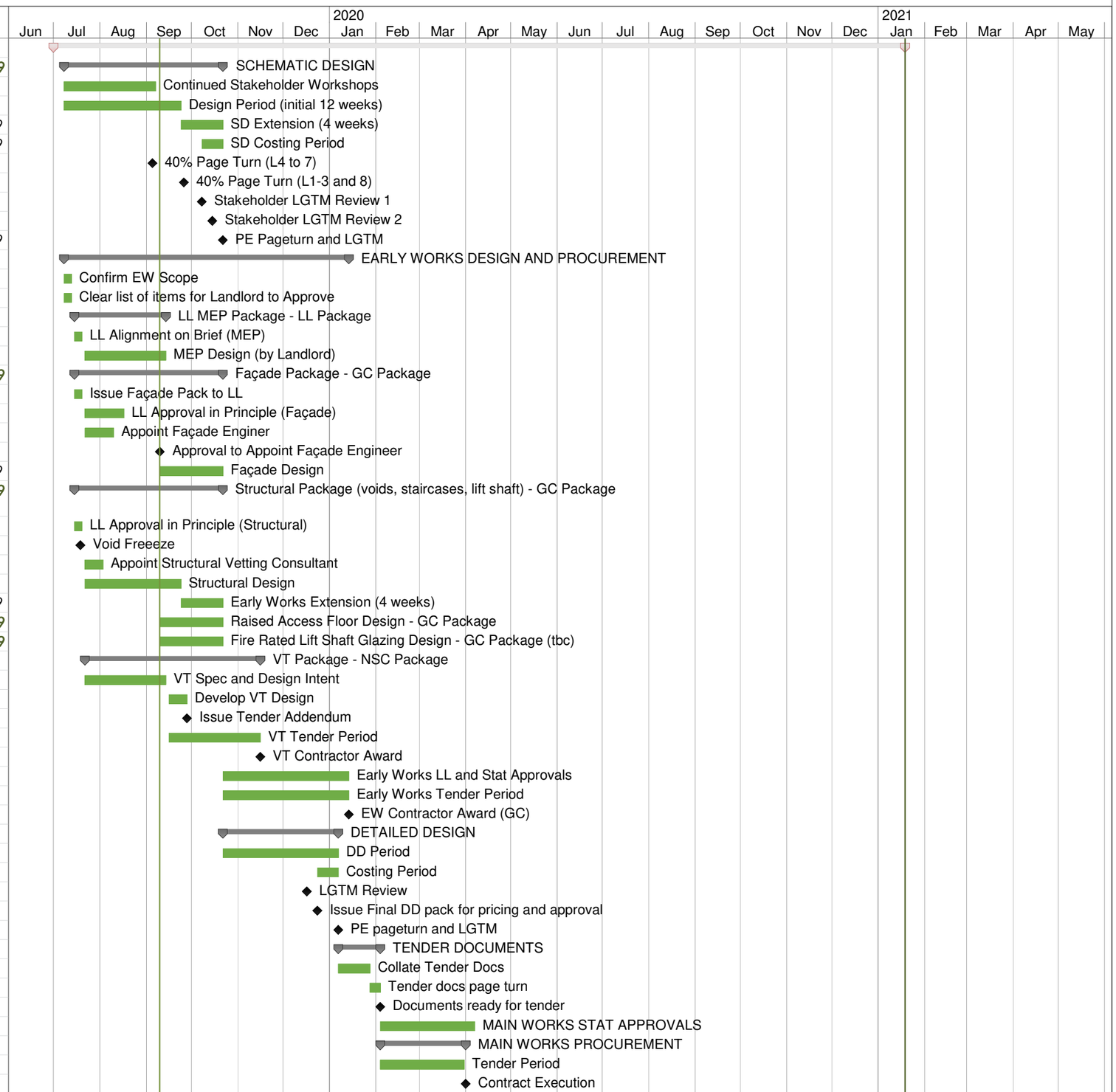
ID	TASK NAME	MONTHS	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
1.	Preliminary Planning																									
2.	Planning Submission																									
3.	Detail Design																									
4.	BP Submission																									
5.	BP Submission (Amendments)																									
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																									

Project: SG-SIN-ATP NEW GOGO OFFICE
Client: Google
Revision: V3.2
Date: Tue 10/9/19

Google Singapore - ATP Project
Version 3.2

CBRE

ID	Task Name	Duration	Start	Finish
0	ATP Master Programme 3.2	406 days	Mon 1/7/19	Mon 18/1/21
1	**1 SCHEMATIC DESIGN**	**76 days**	**Mon 8/7/19**	**Mon 21/10/19**
2	1.1 Continued Stakeholder Workshops	9 wks	Mon 8/7/19	Fri 6/9/19
3	1.2 Design Period (initial 12 weeks)	11.2 wks	Mon 8/7/19	Mon 23/9/19
4	1.3 SD Extension (4 weeks)	4 wks	Tue 24/9/19	Mon 21/10/19
5	1.4 SD Costing Period	2 wks	Tue 8/10/19	Mon 21/10/19
6	1.5 40% Page Turn (L4 to 7)	0 days	Thu 5/9/19	Thu 5/9/19
7	1.6 40% Page Turn (L1-3 and 8)	0 days	Wed 25/9/19	Wed 25/9/19
8	1.7 Stakeholder LGTM Review 1	0 days	Tue 8/10/19	Tue 8/10/19
9	1.8 Stakeholder LGTM Review 2	0 days	Tue 15/10/19	Tue 15/10/19
10	1.9 PE Pageturn and LGTM	0 days	Mon 21/10/19	Mon 21/10/19
11	**2 EARLY WORKS DESIGN AND PROCUREMENT**	**136 days**	**Mon 8/7/19**	**Mon 13/1/20**
12	2.1 Confirm EW Scope	5 days	Mon 8/7/19	Fri 12/7/19
13	2.2 Clear list of items for Landlord to Approve	5 days	Mon 8/7/19	Fri 12/7/19
14	**2.3 LL MEP Package - LL Package**	**45 days**	**Mon 15/7/19**	**Fri 13/9/19**
15	2.3.1 LL Alignment on Brief (MEP)	5 days	Mon 15/7/19	Fri 19/7/19
16	2.3.2 MEP Design (by Landlord)	8 wks	Mon 22/7/19	Fri 13/9/19
17	**2.4 Façade Package - GC Package**	**71 days**	**Mon 15/7/19**	**Mon 21/10/19**
18	2.4.1 Issue Façade Pack to LL	5 days	Mon 15/7/19	Fri 19/7/19
19	2.4.2 LL Approval in Principle (Façade)	4 wks	Mon 22/7/19	Fri 16/8/19
20	2.4.3 Appoint Façade Enginer	3 wks	Mon 22/7/19	Fri 9/8/19
21	2.4.4 Approval to Appoint Façade Engineer	0 days	Tue 10/9/19	Tue 10/9/19
22	2.4.5 Façade Design	6 wks	Tue 10/9/19	Mon 21/10/19
23	**2.5 Structural Package (voids, staircases, lift shaft) - GC Package**	**71 days**	**Mon 15/7/19**	**Mon 21/10/19**
24	2.5.1 LL Approval in Principle (Structural)	5 days	Mon 15/7/19	Fri 19/7/19
25	2.5.2 Void Freeeze	0 days	Fri 19/7/19	Fri 19/7/19
26	2.5.3 Appoint Structural Vetting Consultant	2 wks	Mon 22/7/19	Fri 2/8/19
27	2.5.4 Structural Design	9.2 wks	Mon 22/7/19	Mon 23/9/19
28	2.5.5 Early Works Extension (4 weeks)	4 wks	Tue 24/9/19	Mon 21/10/19
29	**2.6 Raised Access Floor Design - GC Package**	**6 wks**	**Tue 10/9/19**	**Mon 21/10/19**
30	**2.7 Fire Rated Lift Shaft Glazing Design - GC P**	**6 wks**	**Tue 10/9/19**	**Mon 21/10/19**
31	**2.8 VT Package - NSC Package**	**85 days**	**Mon 22/7/19**	**Fri 15/11/19**
32	2.8.1 VT Spec and Design Intent	8 wks	Mon 22/7/19	Fri 13/9/19
33	2.8.2 Develop VT Design	2 wks	Mon 16/9/19	Fri 27/9/19
34	2.8.3 Issue Tender Addendum	0 days	Fri 27/9/19	Fri 27/9/19
35	2.8.4 VT Tender Period	9 wks	Mon 16/9/19	Fri 15/11/19
36	2.8.5 VT Contractor Award	0 days	Fri 15/11/19	Fri 15/11/19
37	2.9 Early Works LL and Stat Approvals	12 wks	Tue 22/10/19	Mon 13/1/20
38	2.10 Early Works Tender Period	12 wks	Tue 22/10/19	Mon 13/1/20
39	2.11 EW Contractor Award (GC)	0 days	Mon 13/1/20	Mon 13/1/20
40	**3 DETAILED DESIGN**	**55 days**	**Tue 22/10/19**	**Mon 6/1/20**
41	3.1 DD Period	11 wks	Tue 22/10/19	Mon 6/1/20
42	3.2 Costing Period	2 wks	Tue 24/12/19	Mon 6/1/20
43	3.3 LGTM Review	0 days	Tue 17/12/19	Tue 17/12/19
44	3.4 Issue Final DD pack for pricing and approval	0 days	Tue 24/12/19	Tue 24/12/19
45	3.5 PE pageturn and LGTM	0 days	Mon 6/1/20	Mon 6/1/20
46	**4 TENDER DOCUMENTS**	**20 days**	**Tue 7/1/20**	**Mon 3/2/20**
47	4.1 Collate Tender Docs	3 wks	Tue 7/1/20	Mon 27/1/20
48	4.2 Tender docs page turn	1 wk	Tue 28/1/20	Mon 3/2/20
49	4.3 Documents ready for tender	0 days	Mon 3/2/20	Mon 3/2/20
50	**5 MAIN WORKS STAT APPROVALS**	**9 wks**	**Tue 4/2/20**	**Mon 6/4/20**
51	**6 MAIN WORKS PROCUREMENT**	**41 days**	**Tue 4/2/20**	**Tue 31/3/20**
52	6.1 Tender Period	8 wks	Tue 4/2/20	Mon 30/3/20
53	6.2 Contract Execution	0 days	Tue 31/3/20	Tue 31/3/20

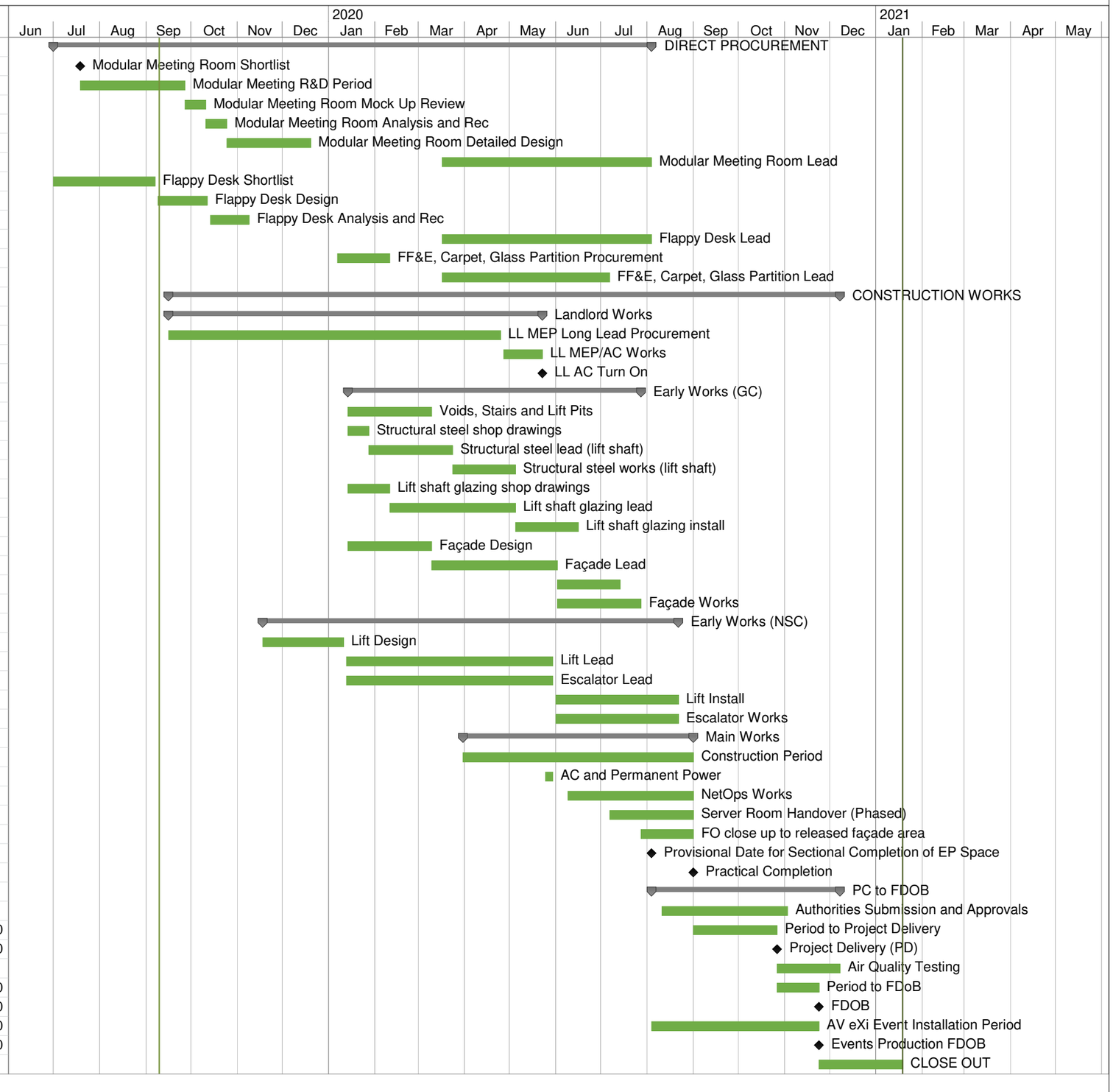


Project: SG-SIN-ATP NEW GOGO OFFICE
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Google Singapore - ATP Project
Version 3.2

CBRE

ID	Task Name	Duration	Start	Finish
54	**7 DIRECT PROCUREMENT**	**286 days**	**Mon 1/7/19**	**Tue 4/8/20**
55	7.1 Modular Meeting Room Shortlist	0 wks	Fri 19/7/19	Fri 19/7/19
56	7.2 Modular Meeting R&D Period	10 wks	Fri 19/7/19	Thu 26/9/19
57	7.3 Modular Meeting Room Mock Up Review	2 wks	Fri 27/9/19	Thu 10/10/19
58	7.4 Modular Meeting Room Analysis and Rec	2 wks	Fri 11/10/19	Thu 24/10/19
59	7.5 Modular Meeting Room Detailed Design	8 wks	Fri 25/10/19	Thu 19/12/19
60	7.6 Modular Meeting Room Lead	20 wks	Tue 17/3/20	Tue 4/8/20
61	7.7 Flappy Desk Shortlist	10 wks	Mon 1/7/19	Fri 6/9/19
62	7.8 Flappy Desk Design	5 wks	Mon 9/9/19	Fri 11/10/19
63	7.9 Flappy Desk Analysis and Rec	4 wks	Mon 14/10/19	Fri 8/11/19
64	7.10 Flappy Desk Lead	20 wks	Tue 17/3/20	Tue 4/8/20
65	7.11 FF&E, Carpet, Glass Partition Procurement	5 wks	Tue 7/1/20	Mon 10/2/20
66	7.12 FF&E, Carpet, Glass Partition Lead	16 wks	Tue 17/3/20	Tue 7/7/20
67	**8 CONSTRUCTION WORKS**	**321 days**	**Mon 16/9/19**	**Mon 7/12/20**
68	**8.1 Landlord Works**	**180 days**	**Mon 16/9/19**	**Fri 22/5/20**
69	8.1.1 LL MEP Long Lead Procurement	32 wks	Mon 16/9/19	Fri 24/4/20
70	8.1.2 LL MEP/AC Works	4 wks	Mon 27/4/20	Fri 22/5/20
71	8.1.3 LL AC Turn On	0 days	Fri 22/5/20	Fri 22/5/20
72	**8.2 Early Works (GC)**	**140 days**	**Tue 14/1/20**	**Mon 27/7/20**
73	8.2.1 Voids, Stairs and Lift Pits	8 wks	Tue 14/1/20	Mon 9/3/20
74	8.2.2 Structural steel shop drawings	2 wks	Tue 14/1/20	Mon 27/1/20
75	8.2.3 Structural steel lead (lift shaft)	8 wks	Tue 28/1/20	Mon 23/3/20
76	8.2.4 Structural steel works (lift shaft)	6 wks	Tue 24/3/20	Mon 4/5/20
77	8.2.5 Lift shaft glazing shop drawings	4 wks	Tue 14/1/20	Mon 10/2/20
78	8.2.6 Lift shaft glazing lead	12 wks	Tue 11/2/20	Mon 4/5/20
79	8.2.7 Lift shaft glazing install	6 wks	Tue 5/5/20	Mon 15/6/20
80	8.2.8 Façade Design	8 wks	Tue 14/1/20	Mon 9/3/20
81	8.2.9 Façade Lead	12 wks	Tue 10/3/20	Mon 1/6/20
82	8.2.10 Façade BCA Approvals	6 wks	Tue 2/6/20	Mon 13/7/20
83	8.2.11 Façade Works	8 wks	Tue 2/6/20	Mon 27/7/20
84	**8.3 Early Works (NSC)**	**200 days**	**Mon 18/11/19**	**Fri 21/8/20**
85	8.3.1 Lift Design	8 wks	Mon 18/11/19	Fri 10/1/20
86	8.3.2 Lift Lead	5 mons	Mon 13/1/20	Fri 29/5/20
87	8.3.3 Escalator Lead	5 mons	Mon 13/1/20	Fri 29/5/20
88	8.3.4 Lift Install	12 wks	Mon 1/6/20	Fri 21/8/20
89	8.3.5 Escalator Works	12 wks	Mon 1/6/20	Fri 21/8/20
90	**8.4 Main Works**	**110 days**	**Tue 31/3/20**	**Mon 31/8/20**
91	8.4.1 Construction Period	22 wks	Tue 31/3/20	Mon 31/8/20
92	8.4.2 AC and Permanent Power	1 wk	Mon 25/5/20	Fri 29/5/20
93	8.4.3 NetOps Works	12 wks	Tue 9/6/20	Mon 31/8/20
94	8.4.4 Server Room Handover (Phased)	8 wks	Tue 7/7/20	Mon 31/8/20
95	8.4.5 FO close up to released façade area	5 wks	Tue 28/7/20	Mon 31/8/20
96	8.4.6 Provisional Date for Sectional Completic	0 days	Tue 4/8/20	Tue 4/8/20
97	8.4.7 Practical Completion	0 days	Mon 31/8/20	Mon 31/8/20
98	**8.5 PC to FDOB**	**90 days**	**Tue 4/8/20**	**Mon 7/12/20**
99	8.5.1 Authorities Submission and Approvals	60 days	Tue 11/8/20	Mon 2/11/20
100	8.5.2 Period to Project Delivery	8 wks	Tue 1/9/20	Mon 26/10/20
101	8.5.3 Project Delivery (PD)	0 days	Mon 26/10/20	Mon 26/10/20
102	8.5.4 Air Quality Testing	6 wks	Tue 27/10/20	Mon 7/12/20
103	8.5.5 Period to FDoB	4 wks	Tue 27/10/20	Mon 23/11/20
104	8.5.6 FDOB	0 days	Mon 23/11/20	Mon 23/11/20
105	8.5.7 AV eXi Event Installation Period	16 wks	Tue 4/8/20	Mon 23/11/20
106	8.5.8 Events Production FDOB	0 days	Mon 23/11/20	Mon 23/11/20
107	**9 CLOSE OUT**	**8 wks**	**Tue 24/11/20**	**Mon 18/1/21**



SECTION 4

PROGRAMME

4.2 Authority Submission Status for M&E Services – 1st Submission

Service	Authority	Original Submission		Comments/Resubmission						Approval/
		Scheduled	Actual	Comment	Resubmit	Comment	Resubmit	Comment	Resubmit	Clearance
Application for Electricity Supply	SP Services Ltd									
Sanitary Installation	PUB Water Reclamation (Network) Dept	30/7/20	23/7/20							27/7/20
Domestic Water Supply	PUB (Water Supply) Network Dept									
Gas Supply Installation	City Gas Pte Ltd	30/3/20	24/3/20	25/3/20	13/4/20	16/6/20	6/7/20	29/7/20	6/8/20	29/8/20
Air Conditioning & Ventilation Inst.	FSSD	30/1/20	9/1/20							15/1/20
Fire Fighting & Alarm Installation	FSSD	30/1/20	9/1/20							15/1/20
Emergency Voice Communication	FSSD	30/1/20	9/1/20							20/1/20
Air Conditioning & Ventilation Inst. (L4)	FSSD	30/4/20	22/4/20							11/5/20
Fire Fighting & Alarm Installation (L4)	FSSD	30/5/20	26/5/20							10/6/20
Emergency Voice Communication (L4)	FSSD	30/6/20	30/6/20							23/6/20
Air Conditioning & Ventilation Inst. (L6)	FSSD	30/6/20	22/4/20							4/5/20
Fire Fighting & Alarm Installation (L6)	FSSD	30/5/20	26/5/20							11/6/20
Emergency Voice Communication (L6)	FSSD	30/5/20	5/6/20							25/6/20
Air Conditioning & Ventilation Inst. (L7)	FSSD	30/4/20	22/4/20							11/5/20
Fire Fighting & Alarm Installation (L7)	FSSD	30/5/20	26/5/20							9/6/20
Emergency Voice Communication (L7)	FSSD	30/5/20	5/6/20							1/7/20

SECTION 4

PROGRAMME

4.3 Authority Submission Status for M&E Services (Amendments) – 2nd Submission

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									
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	30/4/20	22/4/20							11/5/20
Fire Fighting & Alarm Installation	FSSD	30/5/20	26/5/20							9/6/20
Emergency Voice Communication	FSSD	30/5/20	4/6/20							24/6/20
Air Conditioning & Ventilation Inst. (L4)	FSSD									
Fire Fighting & Alarm Installation (L4)	FSSD									
Emergency Voice Communication (L4)	FSSD									
Fire Fighting & Alarm Installation (L6)	FSSD									
Emergency Voice Communication (L6)	FSSD									
Air Conditioning & Ventilation Inst. (L7)	FSSD									
Fire Fighting & Alarm Installation (L7)	FSSD									
Emergency Voice Communication (L7)	FSSD									

SECTION 5

PROJECT RECORDS

5.1 List of Internal Files

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:	
- EC/MC					

(✓*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 server
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	-	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
Telecommunication Facilities	Code of Info-Communication Facilities for Buildings
Air Conditioning & Ventilation Installation	SS 553 : 2016
Lift & Escalator Installation	SS 550 : 2009
Sprinkler System	SS CP 52 : 2004
Wet Riser System	NA
Automatic Fire Alarm System	SS CP 10 : 2005
Sanitary System	Code of Practice on Sewerage & Sanitary Works
Plumbing System	SS CP 48 : 2005
Town Gas/LPG Supply System	SS 608 : 2015
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	PUB COPPSW code stipulated floor trap depth not to exceed 600mm. Consultation Ref No. PUB-SEW-PCWVSW	27/11/19	16/12/2019	No objection for affected units to be more than 600mm
2	PUB COPPSW code stipulated soil waste pipes not allowed above commercial unit. Consultation is for soil waste pipe along corridor within a commercial unit Consultation Ref No. PUB-SEW-PCWVSW	27/11/19	16/12/2019	No objection for soil waste pipe routed above common corridor of commercial unit
3	PUB COPPSW code stipulated pipes serving food establishment need to be at least 250mm. Consultation is to clarify if is required for central kitchen of an office. Consultation Ref No. PUB-SEW-PCWVSW	7/2/20	24/2/20	PUB rejected the proposed 150mm kitchen waste pipe as the central kitchen has large cooking activity, therefore a minimum 250mm pipe to be provided.

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	
S13	Non-Conformity and Corrective Action Procedures	✓
S14	Quality & Environmental System Audit	✓
S15	Feedback Reporting	✓
S16	Clients Feedback	✓
S17	Management Review	✓
S18	Risk Identification, Assessment & Control	✓

8.6 List of Software Used For Design/Analysis

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	Leeds Gold
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:	-

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

** 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