Alpha
Consulting Engineers Pte Ltd

PROJECT QUALITY PLAN

PROPOSED CONDOMINIUM DEVELOPMENT COMPRISING 5 BLOCKS OF 15-STOREY RESIDENTIAL FLATS (361 UNITS) WITH A BASEMENT CARPARK, SWIMMING POOL AND ANCILLARY FACILITIES ON LOT 6182W (PT) MK 28 AT BEDOK RESERVOIR ROAD

For

FCL PEAK PTE LTD

Copy No.	1

Prepared By: Ang Wee Loong/Ngu Kat Lung

Authorised By: Goh Soon Huat

Date: 10 April 2013

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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	6137-PQP File	10 April 2013

1.2 Revision Record

Revision	Date of Issue	Section Reference	Page(s)	Remarks
0	10 April 2013	1 to 11	29	+1 pg (Sect 4.1 – Overall Programme)

SECTION 2

PROJECT INFORMATION

2.1 Project Description

Type of Development	Residential

Statistics of Development	
Site Area, m^2	14496.40
Nett Floor Area, m^2	35664.70
Gross Floor Area, m^2	38813.94
Covered Carpark, m^2	9787.17
No. of Covered Carpark Lots	366
No. of Apartments/Houses	361
No. of Beds (for Hospitals)	-
No. of Guestroom (for Hotels)	-
No. of Blocks / No. of Storeys	5 Blocks/15 Storeys each
Green Mark Category	Certified
No. of Phases	1

2.2 Project Cost

M&E Services Cost Plan (S$ x 1K)									
Services	EI	ACVI	LEI	FFAI	PSI	SPFI	A/C Equipment		
Estimate	-	-	-	-	-	-	-		
Awarded	6,903.50	2,337.275	1,275	694.18	4688.08	268.52	1120		

Total Project Construction Cost (S$ x1K)			
	Site Clearance	Piling Works	Main Contract
Estimate	-	-	-
Awarded	-	-	78,800

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.									
FLUSHFLOOR TRUNKING									

(✓*where applicable*)

2.3.3 Submission to Relevant Authorities by Others

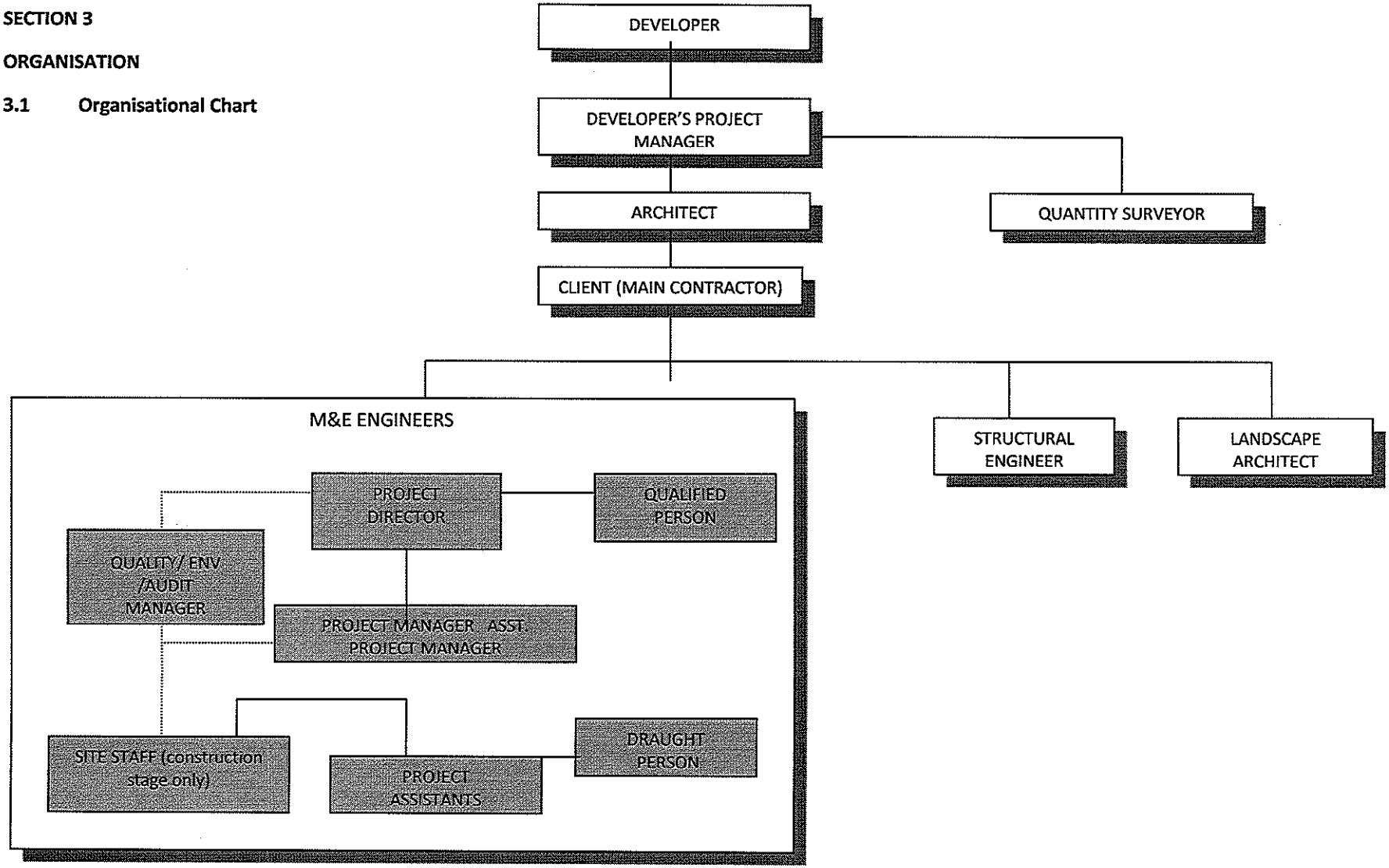
EJECTOR & DIVERTER	✓	SUMP PUMP	✓	FUEL OIL TANK		LIFT & ESCALATOR	✓	PRESSURE VESSEL		HOISTS		FOAM	

(✓*where applicable*)

SECTION 3

ORGANISATION

3.1 Organisational Chart



SECTION 3

ORGANISATION

3.2 ACEPL's Project Team Member

TITLE		NAME
Project Director		Goh Soon Huat (GSH)
Qualified Person	Mechanical	Choong Choon Guan (CCG)
	Electrical	Tan Lai Siong (TLS)
Project Manager		Ang Wee Loong (AWL)
Assistant Project Manager		Ngu Kat Lung (NKL)
Project Assistant (Mech)		Bertrand Chin (BC)
Project Assistant (Elect)		-
Draughtsperson		Common Pool
Resident Engineer (M&E)		-
Assistant Resident Engineer (M&E)		-
Clerk-of-Work (M&E)		-

3.3 Client/Client's Representatives

Client:- FCL Peak Pte Ltd

Address:- 438 Alexandra Road #21-00
Alexandra Point
Singapore 119958

Tel:- 6277 2102

Fax:- 6276 6330

Client:- Nakano Singapore Pte Ltd

Address:- 1 Coleman Street #06-02
The Adelphi
Singapore 179803

Tel: 6333 4933

Fax: 6338 8568

Client's Representatives:-

Name of Company	Contact Person	Contact
FCL Peak Pte Ltd	Name: Mr John Koh Position: Project Manager	Tel: 6277 2102 Fax: 6276 6330 Handphone: - Email: johnkoh@fraserscentrepoint.com
Nakano Singapore Pte Ltd	Name: Mr Dave Wang Position: Project Manager	Tel: 6243 6052 Fax: - Handphone: - Email: davewang@nakano.com.sg
Nakano Singapore Pte Ltd	Name: Mr Thant Syn Position: Senior Engineer	Tel: 6243 6052 Fax: - Handphone: 9182 5265 Email:thantsyn@nakano.com.sg
	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 DP Architects Pte Ltd	Name: Mr Tan Chee Yong Position: Senior Associate	Tel: 6338 3988 Fax: 6337 9989 Handphone: - Email: tancheeyong@dpa.com.sg
Quantity Surveyor Davis Langdon KPK (DLKPK)	Name: Ms Whan Ying Wei Position: Executive QS	Tel: 6508 3353 Fax: 6536 2633 Handphone: - Email: yingwei.whan@davislangdon.com
Structural Engineer DE Consultants (S) Pte Ltd	Name: Mr Kent Chan Position: Project Engineer	Tel: 6227 3900 Fax: 6227 2909 Handphone: - Email: kent.chan@de-consultants.com
Landscape Architect Ong & Ong Pte Ltd	Name: Mr Wong Chee Yuen Position: Designer	Tel: 6738 0171 Fax: 6738 3124 Handphone: - Email: wongcheeyuen@dlqdesign.com
Lighting Consultant	Name: Position:	Tel: Fax: Handphone: Email:
Acoustic Consultant	Name: Position:	Tel: Fax: Handphone: Email:
_____	Name: Position:	Tel: Fax: Handphone: Email:
_____	Name: Position:	Tel: Fax: Handphone: Email:

3.4 Other Consultants (Overseas) – NOT USED

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 Nakano Singapore Pte Ltd	D&B Contract	Name: Mr Thant Syn Position: Senior Engineer	Tel: 6339 4933 Fax: 6338 8568 Handphone: 9182 5265 Email: thantsyn@nakano.com.sg
Air Conditioning & Ventilation Installation Sub-Contractor Design Aire Engineering (S) Pte Ltd	DSC	Name: Mr Pang K Y Position: Site Manager	Tel: 6746 9615 Fax: 6747 4922 Handphone: 9003 0764 Email: project@dae.com.sg
Plumbing & Sanitary Installation Sub-Contractor WTC M&E Pte Ltd	DSC	Name: Mr Foo Chee Kheong Position: Assistant Project Manager	Tel: 6745 9733 Fax: 6745 6806 Handphone: 9757 8927 Email: wtc97@singnet.com.sg
Electrical Installation Sub-Contractor United Engineering Pte Ltd	DSC	Name: Mr Kent Chin Position: Project Engineer	Tel: 6659 5000 Fax: 6659 9587 Handphone: 9817 1134 Email: ken@uepl.com.sg
Lift & Escalator Installation Sub-Contractor Mitsubishi Elevator (Singapore) Pte Ltd	DSC	Name: Mr Kow Jit Too Position: Project Coordinator	Tel: 6842 5678 Fax: 6748 2292 Handphone: 9489 2690 Email: jt.kow@mesp.meap.com
Fire Fighting & Alarm Installation Sub-Contractor RICO Engineering Works Pte Ltd	DSC	Name: Mr Kamal Position: Project Manager	Tel: 6482 0153 Fax: 6482 0553 Handphone: - Email: mhkamal@ricoeng.com.sg
Swimming Pool Filtration Plant Installation Sub-Contractor Jardine Engineering (S) Pte Ltd	DSC	Name: Mr Don Wong Position: Assistant Project Manager	Tel: 6305 6975 Fax: 6747 6340 Handphone: 9236 8609 Email: wengfaiwong@jec.com
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

Authorities/Department	Contact Person	Tel/Fax Nos./E-mail
SP PowerGrid:		
(a) Sub-Station	Mr Francis Chang See Tong	6823 8555
(b) Diversion	Mr Umar Bin Hamzah	9423 1725
SP Services:		
(a) Customer Supply	Mr Liong Chee Wei	6823 8794
(b) Installation	Mr William Ng	9681 2882
(c) Meter Section	-	-
(d) Road Lighting	Mr Chia Chee Wah	6396 2943
TFCC:		
(a) SCV	Mr Kent Foo	9457 9500
(b) SingTel	Mr Jino Jose	9755 7263
(c) IDA	Mr Queh Ser Pheng/Mr Tan Huay San	6211 1870
BCA:		
(a) Building Plan	-	-
(b) Green Mark	-	-
FSSD:		
(a) Building Plan	-	-
(b) M&E Plan	Mr Tan Teck Chai	6848 1489
PUB (Water Supply) Network Dept:		
(a) Water Conservation	-	-
(b) Plumbing Plan	Mr Benson Ang	6731 3934
(c) Diversion	Mr Prathelpa Rajendram/Ms Hafizah Binte Abdul Karim	6731 3553/6380 9823
(d) NEWater	-	-
(e) Connection Pipe	Mr Azman Yeo	6380 9825
PUB Water Reclamation (Network) Dept:		
(a) Building Plan/CBPU	-	-
(b) M&E Plan	Mr Ashraf Pinto	6731 9527
(c) Diversion	-	-
City Gas Pte Ltd:		
(a) Planning/Submission	Mr Ivan Lim	6578 7862
(b) Installation/Inspection	Mr Lim Teck Seng	6578 7814/9007 5727
PowerGas Pte Ltd		
(a) Diversion	Mr Tan Li Hong/Mr Rosli Bin Suip	6751 8131/6751 8114
NEA (Pollution Control)		
(a) Planning/Submission	-	-
(b) Inspection	-	-

SECTION 4

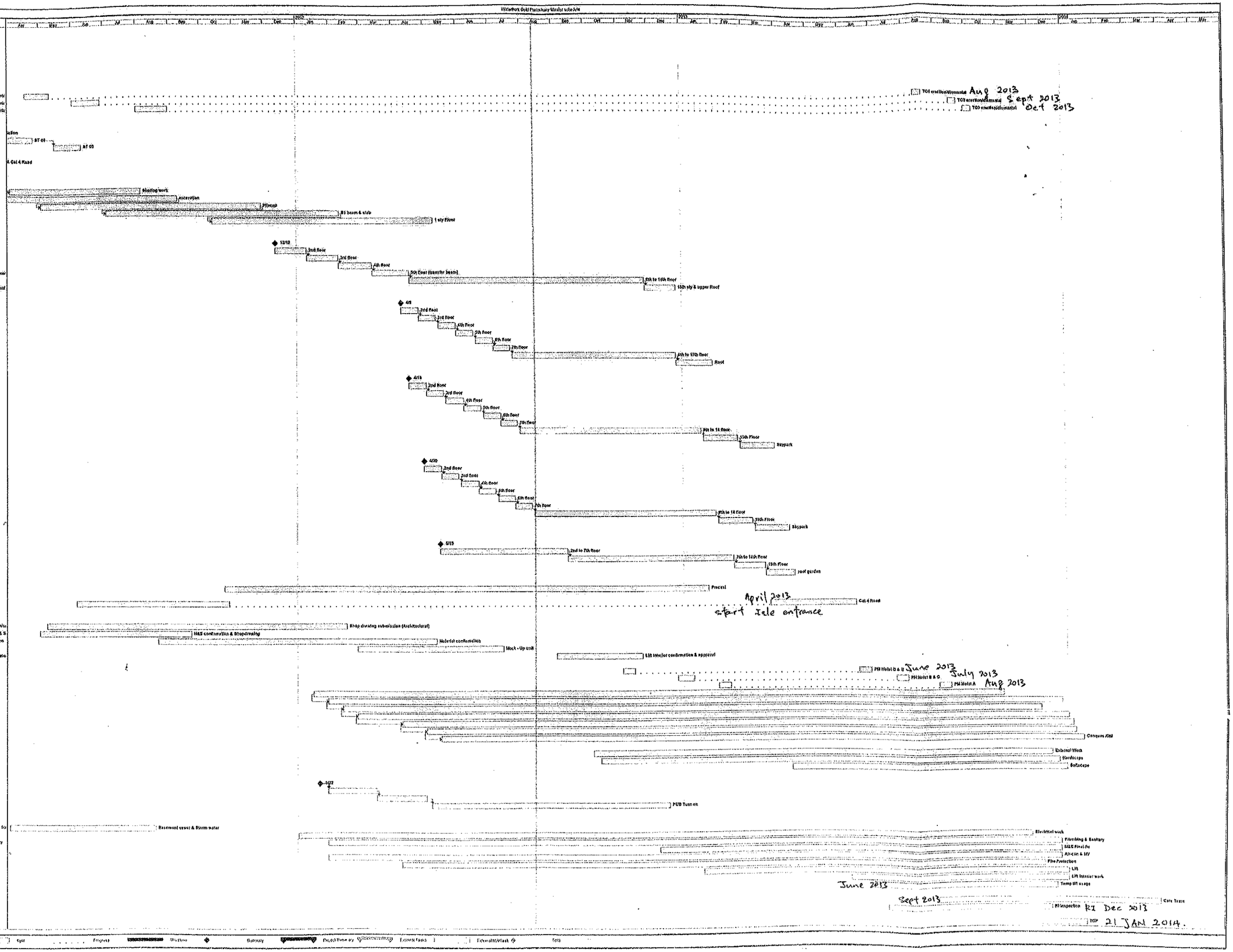
PROGRAMME

4.1 Overall Programme (Refer to attached Main Contractor 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																									

Waterfront Gold Preliminary Master schedule

ID	Task Name	Predecessors	Resource Names
1	Fri 2/25/11		site displacement
2	Wed 2/25/09		
3	Wed 2/25/09		
4	Wed 1/5/11		
5	Wed 3/2/11		
6	Sat 3/12/11		
7	Thu 8/21/08		
8	Tue 12/21/10		
9	Fri 2/24/11		1.CRANE approval
10	Tue 8/28/12		TC1 erection/dismantle
11	Mon 8/26/13		TC2 erection/dismantle
12	Mon 10/21/13		TC3 erection/dismantle
13	Fri 1/2/11		BT 02
14	Wed 2/26/11	13FS+4 days	BT 02
15	Wed 2/26/11	14	BT 02Substation
16	Mon 4/25/11	15FS+18 days	BT 04
17	Fri 5/6/11	16FS+18 days	BT 05
18	Fri 2/18/11		CC01
19	Fri 3/25/11		1.TA Col 4 Road
20	Wed 7/2/08		
21	Mon 1/10/11		
22	Mon 1/10/11		Piling Work
23	Fri 5/6/11	22SS+24 days	Shoring work
24	Fri 5/6/11		excavation
25	Mon 11/7/11	24FD+110 days	Precap
26	Fri 3/30/12	25FS+126 days	B1 beam & slab
27	Wed 8/8/12	26FS+104 days	1 sty Floor
28	Wed 7/2/08		
29	Wed 7/2/08		
30	Mon 12/12/11		
31	Tue 1/10/12		2nd floor
32	Thu 2/9/12	31	3rd floor
33	Mon 3/12/12	32	4th floor
34	Mon 4/16/12	33	5th floor (transfer beam)
35	Mon 11/26/12	34	6th to 10th floor
36	Wed 12/26/12	35	10th sty & upper Roof
37	Wed 7/2/08		
38	Mon 4/9/12		
39	Wed 4/25/12		2nd floor
40	Fri 5/11/12	39	3rd floor
41	Wed 6/20/12	40	4th floor
42	Fri 6/15/12	41	5th floor
43	Wed 7/4/12	42	6th floor
44	Fri 7/20/12	127	7th floor
150	Wed 12/26/12	44	6th to 10th floor
46	Wed 1/30/13	150	Roof
129			
130	Mon 4/16/12		
49	Wed 5/2/12		2nd floor
50	Fri 5/18/12	49	3rd floor
51	Wed 6/6/12	50	4th floor
52	Fri 6/29/12	51	5th floor
53	Wed 7/11/12	52	6th floor
132	Fri 7/27/12	133	7th floor
56	Fri 11/9/12	132	8th to 14 floor
58	Fri 2/22/13	56	15th Floor
60	Fri 3/29/13	59	Skypark
61	Tue 7/2/08		
62	Mon 4/23/12		
63	Wed 5/16/12		2nd floor
64	Fri 6/1/12	63	3rd floor
134	Wed 6/20/12	64	4th floor
66	Fri 7/6/12	135	5th floor
67	Wed 7/25/12	66	6th floor
68	Fri 8/10/12	67	7th floor
154	Fri 5/3/13	66	8th to 14 floor
70	Fri 3/8/13	154	15th Floor
71	Fri 4/12/13	70	Skypark
72			
73	Tue 5/15/12		
74	Thu 9/13/12		2nd to 7th floor
75	Mon 2/18/13	74	7th to 14th floor
76	Wed 3/20/13	75	15th Floor
77	Wed 4/17/13	76	roof garden
78	Wed 7/2/08		
79	Fri 1/25/13		Precast
80	Wed 7/2/08		
81	Fri 6/14/13		Col 4 Road
82	Wed 7/2/08		
83	Wed 7/2/08		
152	Thu 2/10/12		Shop drawing submission
154	Thu 8/2/2011		M&E confirmation & S
87	Fri 6/15/12		Material confirmation
123	Fri 7/13/12		Mock - Up unit
153	Fri 11/23/12		Lift Material confirmation
54	Wed 7/2/08		
55	Fri 6/28/13		PH Hoist C & D
56	Fri 6/7/13		PH Hoist B & C
57	Fri 5/17/13		PH Hoist A
81	Sat 1/12/13		
167	Fri 12/27/13	915SS+8 days	
65	Sat 12/7/13	1076S+12 days	
84	Thu 1/2/14	1056S+12 days	
85	Tue 1/21/14	945S+26 days	
86	Thu 1/9/14	958S+20 days	
87	Fri 1/31/14	985S+12 days	Concrete JOB
88	Wed 7/2/08		
89	Wed 12/18/13		External Work
169	Wed 12/25/13		Hardscape
101	Wed 1/1/14		Softscape
98	Wed 7/2/08		
103	Sun 1/27/12		
104	Thu 3/15/12	103	
77	Tue 5/1/12	104	
106	Wed 12/19/12	12	PUB Turn on
125	Wed 7/2/08		
126	Wed 7/2/08		
108	Fri 8/26/11		Basement sewer & Sto
110	Fri 11/29/13		Electrical work
111	Fri 12/27/13		Plumbing & Sanitary
112	Fri 12/27/13		M&E Final fix
113	Fri 12/27/13		Air con & MV
114	Wed 12/11/13		Fire Protection
115	Fri 1/3/14		Lift
116	Fri 1/3/14		Lift Interior work
64	Mon 12/23/13		Temp lift wages
85			
86	Tue 4/1/14		Core Team
110	Wed 12/18/13		PI Inspection
88	Wed 7/2/08		
121	Mon 1/20/14		TOP



Project: Auckland gold2a
Date: Mon 6/17/13

Task | Split | Progress | Milestone | Summary | Project Summary | Inactive Task | External Milestone

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	18/3/10	18/3/10	-	-	-	-	-	-	10/10/10
Power Supply Substation	SP PowerGrid Ltd	16/7/10	16/2/10	29/7/10	10/12/10	4/1/11	20/4/11	-	-	12/8/11
Metering Layout	SP Services Ltd	1/6/13	-	-	-	-	-	-	-	-
Sanitary Installation	PUB Water Reclamation (Network) Dept	17/4/12	17/4/12	-	-	-	-	-	-	19/6/12
Domestic Water Supply	PUB (Water Supply) Network Dept	14/5/12	14/5/12	8/6/12	21/7/12	-	-	-	-	22//8/12
Gas Supply Installation	City Gas Pte Ltd	17/4/12	17/4/12	5/9/12	20/9/12	-	-	-	-	15/10/12
Air Conditioning & Ventilation Inst.	FSSD	8/11/12	8/11/12	-	-	-	-	-	-	4/1/13
Fire Fighting & Alarm Installation	FSSD	1/10/12	1/10/12	-	-	-	-	-	-	22/10/12
Telephone Installation	TFCC	13/06/11	13/06/11	-	-	-	-	-	-	12/8/11
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

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	13/7/12 (re-endorsement)	13/7/12	31/7/12	10/8/12	-	-	-	-	30/8/12
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

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	Server (Soft Copy)
Incoming Architectural Sketches/Details	Server (Soft Copy)
Incoming Structural Drawings	Server (Soft Copy)
M&E Drawings	
- Electrical Installation - Lift & Escalator Installation - Air Conditioning & Ventilation Installation - Fire Fighting & Alarm Installation - Plumbing & Sanitary Installation - Swimming Pool & Filtration Installation	NKL/AWL All project drawings in soft copy to be saved in server
Other Drawings	
- Landscape/Waterscape	Server (Soft Copy)

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 USED

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	-	C	C	-	
b.	Project Administration	I		C	C	C	
c.	Project Cost Estimate/Contract Cost	A	-	I	-	C	
2.	**Drawings**						
a.	Outline Design Drgs.	-	-	-	-	-	
b.	Sketch Design Drgs.	-	-	-	-	-	
c.	Final Design Drgs.	-	-	-	-	-	
d.	Shop Drawings	C	-	A	C	-	
e.	As Built Drgs.	-	-	-	-	-	
3.	**Other Document**						
a.	Specification	-	-	-	-	-	
b.	Tender Document	-		-	-		
c.	Tender Evaluation Report	-	-	-	-	-	
d.	Design Report	-	-	-	-	-	
e.	Progress Report	-	-	-	-	-	
f.	Financial Report	-	-	-	-	-	
g.	Minutes of Meeting	-	-	-	-	-	
h.	Inspection Report	-	-	-	-	-	
i.	Testing & Comm. Report	-	-	-	-	-	
j.	O & M Manual	-	-	-	-	-	

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

ITEM	KEPT BY
Owner's Design Brief based on Do & Don't	Incoming Mail/Server (Soft Copy)

8.2 List of Applicable Code of Practice and Regulations

Services	Title of Code of Practice/Standard
Electrical Wiring	CP5:1998 COP for Electrical Installation
Lightning Protection System	CP33:1996 COP for Protection against Lightning
Emergency Voice Communication System	SS546:2009 COP for Emergency Voice Communication Systems in Building
Air Conditioning & Ventilation Installation	SS553:2009 COP for Air Conditioning and Mechanical Ventilation in Buildings
Lift & Escalator Installation	SS550: 2009 COP for Installation, Operation and Maintenance of Electric Passenger and Goods Lifts
Sprinkler System	CP52:2004 COP for Automatic Fire Sprinkler System
Dry Riser System	CP29:1998 COP for Fire Hydrant, Rising Mains and Hosereel System
Automatic Fire Alarm System	CP10:2005 COP for Installation and Servicing of Electrical Fire Alarm Systems
Sanitary System	COP for Sewerage and Sanitary Works
Plumbing System	CP48:2005 COP for Water Services
Town Gas/LPG Supply System	CP51:2004 COP for Manufactured Gas Pipe Installation
Boiler and Steam Supply System	----

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 USED

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 USED

DESCRIPTION/ PACKAGE NAME	VERSION	SUPPLIER/ SOURCE	PURPOSE	
Calculux	2.30	Philips	Lighting design	
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	
Lift Traffic	-	Alpha Consulting Engineers Pte Ltd	Lift traffic calculation	
Econdial	2.5	Merlin Gerlin	Design for low voltage network	
Hyena	4.00.1	ACADS-BSG	Fire Sprinkler & Hydrant Analysis	
Fault Level Calculation	-	Alpha Consulting Engineers Pte Ltd	Calculation of voltage drop and fault level	

(✓*where applicable*)

SECTION 9

ENVIRONMENTAL CONSIDERATIONS

9.1 Sustainable Design Features / Criteria

Item	Remarks
Green Mark criteria	Certified
Green Design Features	Energy Efficiency Index, Electrical Sub-Metering, Energy Efficient Features, Water Usage, CO Monitoring, Luminance Level, Innovation

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 – NOT USED

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 – NOT USED

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

* *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 USED

SECTION 11

LIST OF SUB-JOB

11.1 List of Sub-Job Numbers – NOT USED

Sub Job No	Description	Allocation Details