Alpha
Consulting Engineers Pte Ltd

PROJECT QUALITY PLAN

PROPOSED REPLACEMENT OF MECHANICAL AND ELECTRICAL EQUIPMENT AT 450/452 ALEXANDRA ROAD

For

UE DEVELOPMENT (ALEXANDRA) PTE LTD

Copy No.	1

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Authorised By: Goh Soon Huat

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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	6226-PQP File	

1.2 Revision Record

Revision	Date of Issue	Section Reference	Page(s)	Remarks
0		1 to 11	26	+2 page (Section 4 – Overall Programme)

SECTION 2

PROJECT INFORMATION

2.1 Project Description (information is not available)

Type of Development	Office

Statistics of Development	
Site Area, m²	-
Nett Floor Area, m²	-
Gross Floor Area, m²	-
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	-
Green Mark Category	-
No. of Phases	-

2.2 Project Cost

M&E Services Cost Plan (S$ x 1M)										
Services	EI	ACMV	LEI	FFAI	PSI	SPFI				
Estimate	-	-	-	-	-	-				
Awarded	0.4	2.43	-	0.17	-	-				

Total Project Construction Cost (S$ x1M)			
	Site Clearance	Piling Works	Total Contract
Estimate	-	-	3.0
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	
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

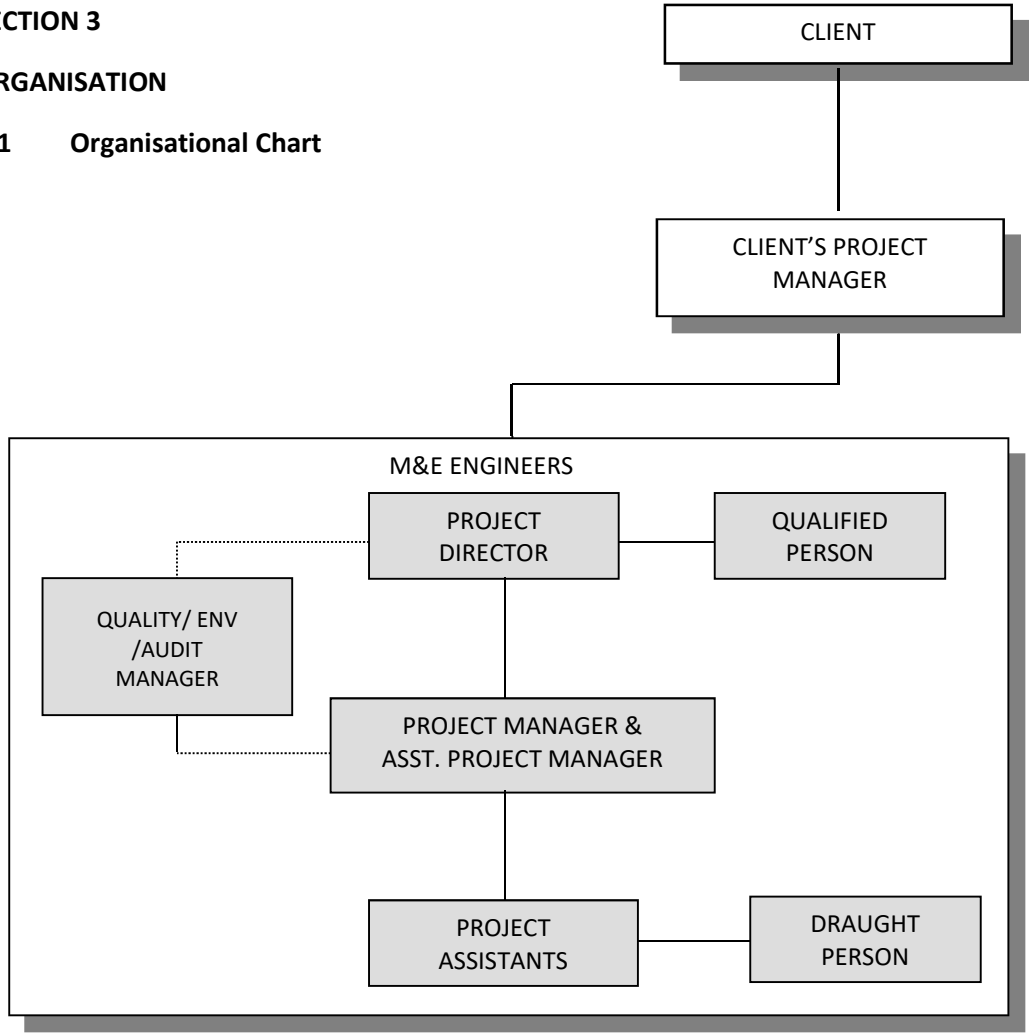
EJECTOR & DIVERTER		SUMP PUMP		FUEL OIL TANK		LIFT & ESCALATOR		PRESSURE VESSEL		HOISTS		FOAM	

(✓*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	-
	Electrical	-
Project Manager		Chong Lai Meng (CLM)
Assistant Project Manager		-
Project Assistant (Mech)		-
Project Assistant (Elect)		-
Draughtsperson		-
Resident Engineer (M&E)		-
Assistant Resident Engineer (M&E)		-
Clerk-of-Work (M&E)		-

3.3 Client/Client's Representatives

Client: UE Development (Alexandra) Pte Ltd

Address: 12 Ang Mo Kio Street 64 #03A-13 UE Bizhub CENTRAL Singapore 569088

Tel: +65-68188000
Fax: +65-68188077

Client's Representatives:-

Name of Company	Contact Person	Contact
UE Development (Alexandra) Pte Ltd	Alex Chiau	T: 68808777 alex.chiau@uel.sg
UE Development (Alexandra) Pte Ltd	Kenny Lai Choot Boon	T: 68808787 Mobile: 93277889 kenny.lai@uel.sg

3.4 Other Consultants – NOT APPLICABLE

3.5 Contractors/Sub-Contractors

Function / Name of Company	Contract *	Contact Person	Contact
UG M&E Pte Ltd	DC	Mr Teng Kheng Hee	tengkhenghee@ugme.sg Mobile: 97518859

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 Gas 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 – REFER TO THE ATTACHED PROGRAM

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																									

UG M&E Pte Ltd

Project: HP Building Alexandra

MASTER PROGRAMME FOR REPLACEMENT OF M&E EQUIPMENT **15.8.16**

S/no	Activities	Start	End	Remarks
1	letter of Award	7/20/2016		
2	Contract Period	7/25/2016	3/24/2017	
3	**Equipment Lead Time**	9/1/2016	1/31/2017	
4	AHUs	9/1/2016	11/30/2016	
5	Chiller	9/1/2016	1/15/2017	
6	CRAC Unit	9/1/2016	12/1/2016	
7	Chilled Water Pump	9/1/2016	1/15/2017	
8	Fire Pump	9/1/2016	1/1/2017	
9	Genset	9/5/2016	12/5/2016	
10	Capacity Band	9/9/2016	10/30/2016	
11	**Equipment, Material and Method Statement Submission**	8/15/2016	9/30/2016	
12	Chiller and AHU	8/15/2016	9/19/2016	Chiller resubmit
13	CRAC Unit	8/29/2016	9/19/2016	
14	Chilled Water Pump	8/29/2016	9/19/2016	
15	Fire Pump and Battery	8/15/2016	9/19/2016	
16	Genset and Capacity Band	8/22/2016	9/26/2016	
17	Auto Tube Cleaning	8/29/2016	9/9/2016	
18	**Site Pre-Condition Survey and testing of existing system**	9/5/2016	12/30/2016	
19	Chiller, Pumps, CRAC and AHU	9/13/2016	10/16/2016	
20	Fire Pump	12/1/2016	12/15/2016	
21	Genset	9/13/2016	10/30/2016	
22	BAS System	9/13/2016	11/30/2016	
23	**Equipment Delivery to Site**	11/1/2016	1/24/2017	
24	Chiller	1/16/2017	1/24/2017	
25	AHU	11/1/2016	11/30/2016	
26	CRAC Unit	12/2/2016	12/9/2016	
27	Chilled Water Pump	1/16/2017	1/24/2017	
28	Fire Pump	1/6/2017	1/14/2017	

UG M&E Pte Ltd

Project: HP Building Alexandra

MASTER PROGRAMME FOR REPLACEMENT OF M&E EQUIPMENT **15.8.16**

S/no	Activities	Start	End	Jul-16				Aug-16				Sep-16				Oct-16				Nov-16				Dec-16				Jan-17				Feb-17				Mar-17				Remarks
				WEEK																																				
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	
29	Genset and Capacitor Bank	11/3/2016	12/8/2016																																					
30	Auto Tube Cleaning	1/16/2017	1/24/2016																																					
31	**Installation Work and T&C**	11/1/2016	2/13/2017																																					
32	Chiller and AutoTube	12/19/2016	1/26/2017																																					
33	AHU	11/1/2016	12/10/2016																																					
34	CRAC Unit	11/21/2016	12/12/2016																																					
35	Chilled Water Pump	1/16/2017	1/22/2017																																					
36	Fire Pump	1/8/2017	1/24/2017																																					
37	Genset (One set at a time) and Capacitor Bank	11/5/2016	1/15/2017																																					
38	BAS (Progressively)	11/1/2016	2/13/2017																																					
39	Chiller Overhaul	11/22/2016	12/23/2016																																					
40	Handling over of Equipment	2/21/2017	2/27/2017																																					

SECTION 4

PROGRAMME

4.2 Authority Submission Status for M&E Services – 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) – 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

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	-
Incoming Architectural Sketches/Details	-
Incoming Structural Drawings	-
M&E Drawings	
- Electrical Installation	GSH
- Lift & Escalator Installation	-
- Air Conditioning & Ventilation Installation	CLM
- Fire Fighting & Alarm Installation	CLM
- Plumbing & Sanitary Installation	-
- Swimming Pool & Filtration Installation	-
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	A	C	I	I	
b.	Project Administration	A	A	C	I	I	
c.	Project Cost Estimate/Contract Cost	A	A	-	-	I	
2.	**Drawings**						
a.	Outline Design Drgs.	C	C	C	I	I	
b.	Sketch Design Drgs.	C	C	C	I	I	
c.	Final Design Drgs.	A	A	C	I	I	
d.	Shop Drawings	I	I	I	I	-	
e.	As Built Drgs.	I	I	I	I	-	
3.	**Other Document**						
a.	Specification	C	C	I	I	I	
b.	Tender Document	A	A	I	I	I	
c.	Tender Evaluation Report	A	A	I	I	I	
d.	Design Report	A	A	I	-	-	
e.	Progress Report	A	A	I	I	I	
f.	Financial Report	A	A	I	I	C	
g.	Minutes of Meeting	I	I	I	I	I	
h.	Inspection Report	I	I	I	-	-	
i.	Testing & Comm. Report	I	I	I	-	-	
j.	O & M Manual	I	I	I	-	-	

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	Singapore Standard CP 5:1998 Code Of Practice For Electrical Installations
Air Conditioning & Ventilation Installation	Singapore Standard CP 553:2009 Code Of Practice For Air Conditioning And Mechanical Ventilation in Buildings
Sprinkler System	Singapore Standard CP 52:2004 Code Of Practice For Automatic Fire Sprinkler 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 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	

(✓*where applicable*)

SECTION 9

ENVIRONMENTAL CONSIDERATIONS

9.1 Sustainable Design Features / Criteria

Item	Remarks
Green Mark criteria	-
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	A
Tender Documents	A
Tender Report	A
Payment Valuation for QS	A
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 APPLICABLE

SECTION 11

LIST OF SUB-JOB

11.1 List of Sub-Job Numbers – NOT APPLICABLE

Sub Job No	Description	Allocation Details