Alpha
Consulting Engineers Pte Ltd

PROJECT QUALITY PLAN

CONDOMINIUM AT 145 KILLINEY ROAD

For

UNIQUE DEVELOPMENT PTE LTD

Copy No.	1

Prepared By: Ang Wee Loong / Suren Shanmugalingam / Chua Andrew

Authorised By: Loh Fook Yuen

Date: 24 September 2014

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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	6124-PQP	24 September 2014

1.2 Revision Record

Revision	Date of Issue	Section Reference	Page(s)	Remarks
0	12 January 2011	1 to 11	28	+ 1 pg (Section 4.1 – Overall programme)
1	24 September 2014	1 to 11	29	+ 1 pg (Section 4.1 – Overall programme)

SECTION 2

PROJECT INFORMATION

2.1 Project Description

Type of Development	Residential

Statistics of Development	
Site Area, m²	3,713.50
Nett Floor Area, m²	-
Gross Floor Area, m²	11,323.99
Covered Carpark, m²	-
No. of Covered Carpark Lots	133
No. of Apartments/Houses	130
No. of Beds (for Hospitals)	-
No. of Guestroom (for Hotels)	-
No. of Blocks / No. of Storeys	2 Blocks of 10-Storey c/w 2 Basement
No. of Phases	1

2.2 Project Cost

M&E Services Cost Plan (S$ x 1M)										
Services	EI	ACVI	LEI	FFAI	PSI	SPFI				
Estimate	2.85	2.2	0.6	0.45	1.7	0.3				
Awarded	2.857	2.626	0.48	0.548	2.023	0.505				

Total Project Construction Cost (S$ x1M)			
	Site Clearance	Piling Works	Main Contract
Estimate			55 Million
Awarded			53.3 Million

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

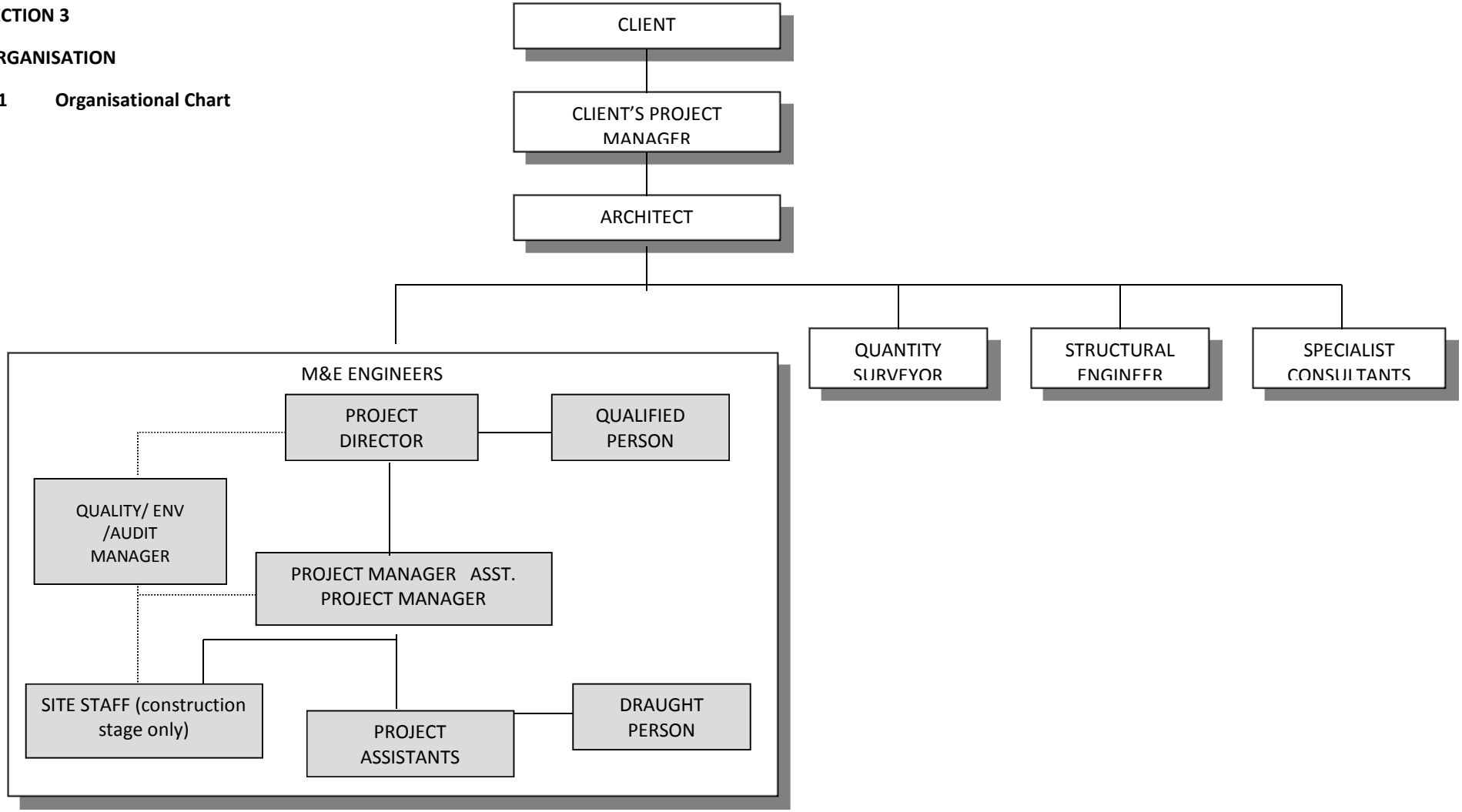
EJECTOR & DIVERTER	✓	SUMP PUMP	✓	FUEL OIL TANK		LIFT ~~& ESCALATOR~~	✓	PRESSURE VESSEL		HOISTS		FOAM	

(✓*where applicable*)

SECTION 3

ORGANISATION

3.1 Organisational Chart



SECTION 3

ORGANISATION

3.2 ACEPL's Project Team Member

TITLE		NAME
Project Director		Loh Fook Yuen (LFY)
Qualified Person	Mechanical	Choong Choon Guan (CCG)
	Electrical	Loh Fook Yuen (LFY)
Project Manager		Ang Wee Loong (AWL)
Assistant Project Manager		-
Project Assistant (Mech)		Chua Andrew (CA)
Project Assistant (Elect)		Suren Shanmugalingam (SS)
Draughtsperson		Common Pool
Resident Engineer (M&E)		-
Assistant Resident Engineer (M&E)		-
Clerk-of-Work (M&E)		-

3.3 Client/Client's Representatives

Client (Developer) :- Unique Development Pte Ltd

Address:- 60 Sembawang Road
#01-02/03/04 Hong Heng Mansions
Singapore 779088

Tel:- 6456 1188

Fax:- 6455 5478

Client's Representatives:-

Name of Company	Contact Person	Contact
Unique Development Pte Ltd	Name: Ms Janet Tan Position: General Manager	Tel: 6456 1188 Fax: 6455 5478 Handphone: - Email: janet.tan@heeton.com
Unique Development Pte Ltd	Name: Mr Richard Tham Position: Senior Project Manager	Tel: 6785 2266 Fax: 6758 2532 Handphone: - Email: richardtham@kimsengheng.com.sg
Unique Development Pte Ltd	Name: Mr Jonathan Phua Position: General Manager	Tel: 6561 1066 Fax: 6565 1738 Handphone: 8333 1991 Email: jon.phua@toeintl.com
Unique Development Pte Ltd	Name: Mr Jonathan Lee Position: Assistant Project Manager	Tel: 6456 1188 Fax: 6455 5478 Handphone: - Email: jonathan.lee@heeton.com
	Name: Position:	Tel: Fax: Handphone: Email:

3.4 **Other Consultants** (Local)

Function / Name of Company	Contact Person	Contact
Architect (Design Architect) Broadway Malyan	Name: Mr Ian Simpson Position: Director	Tel: 6415 3420 Fax: 6415 3421 Handphone: - Email: I.simpson@broadwaymalyan.com
	Name: Mr Radhie Alfha Position: Associate	Tel: 6415 3420 Fax: 6415 3421 Handphone: - Email: r.alfha@broadwaymalyan.com
Architect (Submission QP) RDC Architects Pte Ltd	Name: Mr Francis Chung Position: Senior Technical Manager	Tel: 6278 8878 Fax: 6278 7727 Handphone: - Email: chung.cl@rdca.com.sg
Quantity Surveyor Rider Levett Bucknall LLP	Name: Mr Toh Chin Heng Position: Senior Quantity Surveyor	Tel: 6339 1560 Fax: 6339 1521 / 6339 8334 Handphone: - Email: ch.toh@sg.rlb.com
Structural Engineer KTP Consultants Pte Ltd	Name: Mr Lim Sing Ann Position: Director	Tel: 6273 5622 Fax: 6273 8454 Handphone: - Email: limas@ktp.com.sg
	Name: Mr Henry Lye Yuh Dar Position: Engineer	Tel: 6273 5622 Fax: 6273 8454 Handphone: - Email: henrylye@ktp.com.sg
Interior Designer Index Design Pte Ltd	Name: Serene Tan Position: Designer	Tel: 6220 1002 Fax: 6334 7262 Handphone: Email: serene@index.com.sg
Lighting Consultant Lighbox Lighting	Name: Narucha Amnajsuwan Position: Associate	Tel: 6294 6803 Fax: 6304 0868 Handphone: Email: design@lightboxlighting.com
Acoustic Consultant	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 Kim Seng Heng Engineering Construction (Pte) Ltd	DC	Name: Mr Koh How Chin Position: Project Manager	Tel: 6733 9877 Fax: 6733 9962 Handphone: Email: chinkh@kimsengheng.com.sg
Air Conditioning & Ventilation Installation Sub-Contractor Pro-Soon Electrical Engineering Pte Ltd	DSC	Name: Mr Tan S T Position: Project Manager	Tel: 6484 6266 Fax: 6482 4512 Handphone: Email:
Plumbing & Sanitary Installation Sub-Contractor Pro-Soon Electrical Engineering Pte Ltd	DSC	Name: Mr Tan S T Position: Project Manager	Tel: 6484 6266 Fax: 6482 4512 Handphone: Email:
Electrical Installation Sub-Contractor Pro-Soon Electrical Engineering Pte Ltd	DSC	Name: Mr Tan S T Position: Project Manager	Tel: 6484 6266 Fax: 6482 4512 Handphone: Email:
Lift & ~~Escalator~~ Installation Sub-Contractor Hitachi Elevators Asia Pte Ltd	NSC	Name: Abdul Rashid Bin Karim Position: Project Manager	Tel: 6419 2289 Fax: 6561 0302 Handphone: Email: rashid.krim@hea.hitachi.com.sg
Fire Fighting & Alarm Installation Sub-Contractor Pro-Soon Electrical Engineering Pte Ltd	DSC	Name: Mr Tan S T Position: Project Manager	Tel: 6484 6266 Fax: 6482 4512 Handphone: Email:
Swimming Pool Filtration Plant Installation Sub-Contractor Waterscape System Professionals	NSC	Name: Michael Pua Position: Director	Tel: 6454 5048 Fax: Handphone: Email: michael@waterscapepro.com
Carpark System Installation Sub-Contractor		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 USED

Authorities/Department	Contact Person	Tel/Fax Nos./E-mail
SP PowerGrid:		
(a) Sub-Station	Chua Swee Hin	6279 9555/6229 9532
(b) Diversion		
SP Services:		
(a) Customer Supply		
(b) Installation		
(c) Meter Section		
(d) Road Lighting		
TFCC:		
(a) SCV	Kent Foo Tze Sern	kentfoo@starhub.com
(b) SingTel	Tan Beng Hua	bhtan@singtel.com
(c) IDA		
BCA:		
(a) Building Plan		
FSSD:		
(a) Building Plan		
(b) M&E Plan		
PUB (Water Supply) Network Dept:		
(a) Water Conservation		
(b) Plumbing Plan		
(c) Diversion		
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

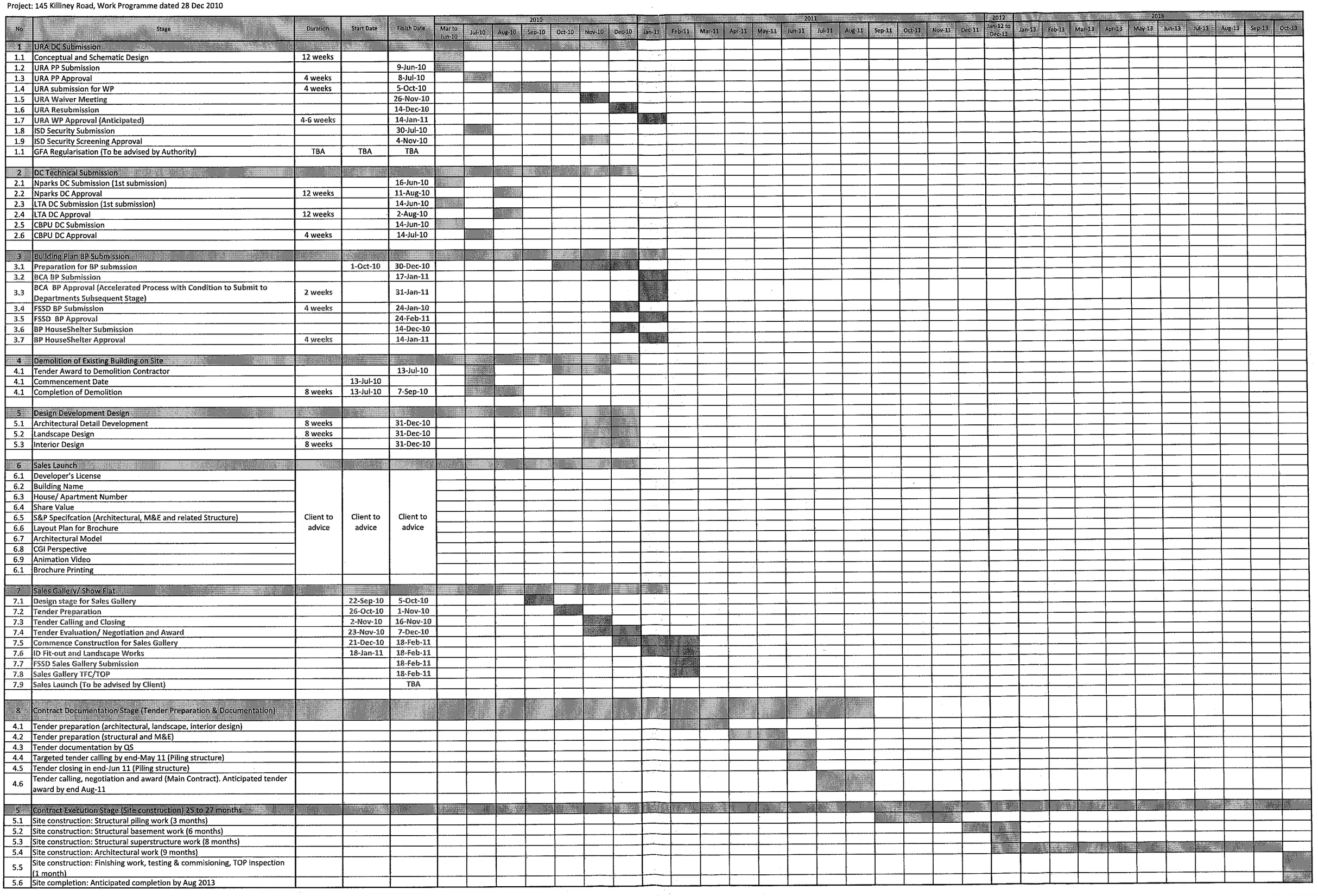
PROGRAMME

4.1 Overall Programme – Refer to attached

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: 145 Killiney Road, Work Programme dated 28 Dec 2010

No	Stage	Duration	Start Date	Finish Date
1	URA DC Submission			
1.1	Conceptual and Schematic Design	12 weeks		
1.2	URA PP Submission			9-Jun-10
1.3	URA PP Approval	4 weeks		8-Jul-10
1.4	URA submission for WP	4 weeks		5-Oct-10
1.5	URA Waiver Meeting			26-Nov-10
1.6	URA Resubmission			14-Dec-10
1.7	URA WP Approval (Anticipated)	4-6 weeks		14-Jan-11
1.8	ISD Security Submission			30-Jul-10
1.9	ISD Security Screening Approval			4-Nov-10
1.1	GFA Regularisation (To be advised by Authority)	TBA	TBA	TBA
2	DC Technical Submission			
2.1	Nparks DC Submission (1st submission)			16-Jun-10
2.2	Nparks DC Approval	12 weeks		11-Aug-10
2.3	LTA DC Submission (1st submission)			14-Jun-10
2.4	LTA DC Approval	12 weeks		2-Aug-10
2.5	CBPU DC Submission			14-Jun-10
2.6	CBPU DC Approval	4 weeks		14-Jul-10
3	Building Plan BP Submission			
3.1	Preparation for BP submssion		1-Oct-10	30-Dec-10
3.2	BCA BP Submission			17-Jan-11
3.3	BCA BP Approval (Accelerated Process with Condition to Submit to Departments Subsequent Stage)	2 weeks		31-Jan-11
3.4	FSSD BP Submission	4 weeks		24-Jan-10
3.5	FSSD BP Approval			24-Feb-11
3.6	BP HouseShelter Submission			14-Dec-10
3.7	BP HouseShelter Approval	4 weeks		14-Jan-11
4	Demolition of Existing Building on Site			
4.1	Tender Award to Demolition Contractor			13-Jul-10
4.1	Commencement Date		13-Jul-10	
4.1	Completion of Demolition	8 weeks	13-Jul-10	7-Sep-10
5	Design Development Design			
5.1	Architectural Detail Development	8 weeks		31-Dec-10
5.2	Landscape Design	8 weeks		31-Dec-10
5.3	Interior Design	8 weeks		31-Dec-10
6	Sales Launch			
6.1	Developer's License	Client to advice	Client to advice	Client to advice
6.2	Building Name			
6.3	House/ Apartment Number			
6.4	Share Value			
6.5	S&P Specifcation (Architectural, M&E and related Structure)			
6.6	Layout Plan for Brochure			
6.7	Architectural Model			
6.8	CGI Perspective			
6.9	Animation Video			
6.1	Brochure Printing			
7	Sales Gallery/ Show Flat			
7.1	Design stage for Sales Gallery		22-Sep-10	5-Oct-10
7.2	Tender Preparation		26-Oct-10	1-Nov-10
7.3	Tender Calling and Closing		2-Nov-10	16-Nov-10
7.4	Tender Evaluation/ Negotiation and Award		23-Nov-10	7-Dec-10
7.5	Commence Construction for Sales Gallery		21-Dec-10	18-Feb-11
7.6	ID Fit-out and Landscape Works		18-Jan-11	18-Feb-11
7.7	FSSD Sales Gallery Submission			18-Feb-11
7.8	Sales Gallery TFC/TOP			18-Feb-11
7.9	Sales Launch (To be advised by Client)			TBA
8	Contract Documentation Stage (Tender Preparation & Documentation)			
4.1	Tender preparation (architectural, landscape, interior design)			
4.2	Tender preparation (structural and M&E)			
4.3	Tender documentation by QS			
4.4	Targeted tender calling by end-May 11 (Piling structure)			
4.5	Tender closing in end-Jun 11 (Piling structure)			
4.6	Tender calling, negotiation and award (Main Contract). Anticipated tender award by end Aug-11			
5	Contract Execution Stage (Site construction) 25 to 27 months			
5.1	Site construction: Structural piling work (3 months)			
5.2	Site construction: Structural basement work (6 months)			
5.3	Site construction: Structural superstructure work (8 months)			
5.4	Site construction: Architectural work (9 months)			
5.5	Site construction: Finishing work, testing & commisioning, TOP inspection (1 month)			
5.6	Site completion: Anticipated completion by Aug 2013			



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	21/1/11	7/3/11		8/3/11					28/3/11
Power Supply Substation	SP PowerGrid Ltd	1/4/11	8/7/11	8/8/11	28/9/11		6/2/12			24/2/12
Metering Layout	SP Services Ltd									
Sanitary Installation	PUB Water Reclamation (Network) Dept	22/2/12	2/5/12							4/3/12
Domestic Water Supply	PUB (Water Supply) Network Dept	15/2/12	15/2/12	28/2/12	19/3/12					7/5/12
Gas Supply Installation	City Gas Pte Ltd	N.A								
Air Conditioning & Ventilation Inst.	FSSD	15/5/12	13/12/12							10/1/13
Fire Fighting & Alarm Installation	FSSD	15/6/12	11/3/13							22/3/13
Telephone Installation	TFCC	1/8/11	14/10/11							3/11/11
Broadband Co-axial Cable System (BCS)	Starhub Cable Vision									
Fuel Storage	FSSD	N.A								
	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		2/7/13							31/7/13
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:	
- 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	AWL (All project in soft copies to be saved in server)
Incoming Architectural Sketches/Details	
Incoming Structural Drawings	
M&E Drawings	
- Electrical Installation	SS
- Lift ~~& Escalator~~ Installation	SS
- Air Conditioning & Ventilation Installation	CA
- Fire Fighting & Alarm Installation	CA
- Plumbing & Sanitary Installation	AWL
- Swimming Pool & Filtration Installation	AWL
Other Drawings:	
Landscape	AWL

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

Item No.	Description*	Required From	Required By	Date Required	Remarks
1	6124 – AC Equipment Schedule (Power)	AWL/BC/KA	DD	16/2/12	
2	6124 – MV Schedule (Power)	AWL/BC/KA	DD	17/2/12	

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

ITEM	KEPT BY

8.2 List of Applicable Code of Practice and Regulations

Services	Title of Code of Practice/Standard
Electrical Wiring	CP 5
Lightning Protection System	SS 555
Emergency Voice Communication System	
Air Conditioning & Ventilation Installation	SS 553
Lift ~~& Escalator~~ Installation	SS 550
Sprinkler System	CP 52
Wet Riser System	
Automatic Fire Alarm System	CP 10
Sanitary System	CP on Sewerage & Sanitary Works
Plumbing System	CP 48
Town Gas/LPG Supply System	
Boiler and Steam Supply System	
Mechanical Smoke Control System	

(Delete where necessary)

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

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	✓
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, C
M&E Cost Estimate Report	-
Pre-Qualification of Tenderers	-
Tender Documents	-
Tender Report	-
Payment Valuation for QS	-
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