Alpha
Consulting Engineers Pte Ltd

PROJECT QUALITY PLAN

TOMLINSON HEIGHTS

For

YARRA INVESTMENTS PTE LTD

Copy No.	1

Prepared By: Yip Yoke Fun

Authorised By: Loh Fook Yuen

Date: 7 November 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	6138-PQP	7 November 2013

1.2 Revision Record

Revision	Date of Issue	Section Reference	Page(s)	Remarks
0	7 May 2012	1 to 11	28	+7 pages (Section 4.1 – Overall Programme) +1 pg (Section 9.1 - Sustainable Design Features)
1	6 March 2013	1 to 11	29	+7 pages (Section 4.1 – Overall Programme) +1 pg (Section 9.1 - Sustainable Design Features)
2	7 November 2013	1 to 11	29	+7 pages (Section 4.1 – Overall Programme) +1 pg (Section 9.1 - Sustainable Design Features)

SECTION 2

PROJECT INFORMATION

2.1 Project Description

Type of Development	

Statistics of Development	
Site Area, m²	7143.20
Nett Floor Area, m²	-
Gross Floor Area, m²	22000
Covered Carpark, m²	4700
No. of Covered Carpark Lots	105
No. of Apartments/Houses	70
No. of Beds (for Hospitals)	-
No. of Guestroom (for Hotels)	-
No. of Blocks / No. of Storeys	1 Block 36 Storey with Basement
Green Mark Category	Platinum
No. of Phases	-

2.2 Project Cost

M&E Services Cost Plan (S$ x 1M)										
Services	EI	ACVI	LEI	FFAI	PSI	SPFI				
Estimate	-	-	-	-	-	-				
Awarded	4.825	5.259	1.8	0.658	2.327	0.807				

Total Project Construction Cost (S$ x1M)			
	Site Clearance	Piling Works	Main Contract
Estimate			
Awarded		Included	100.695

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 by Others

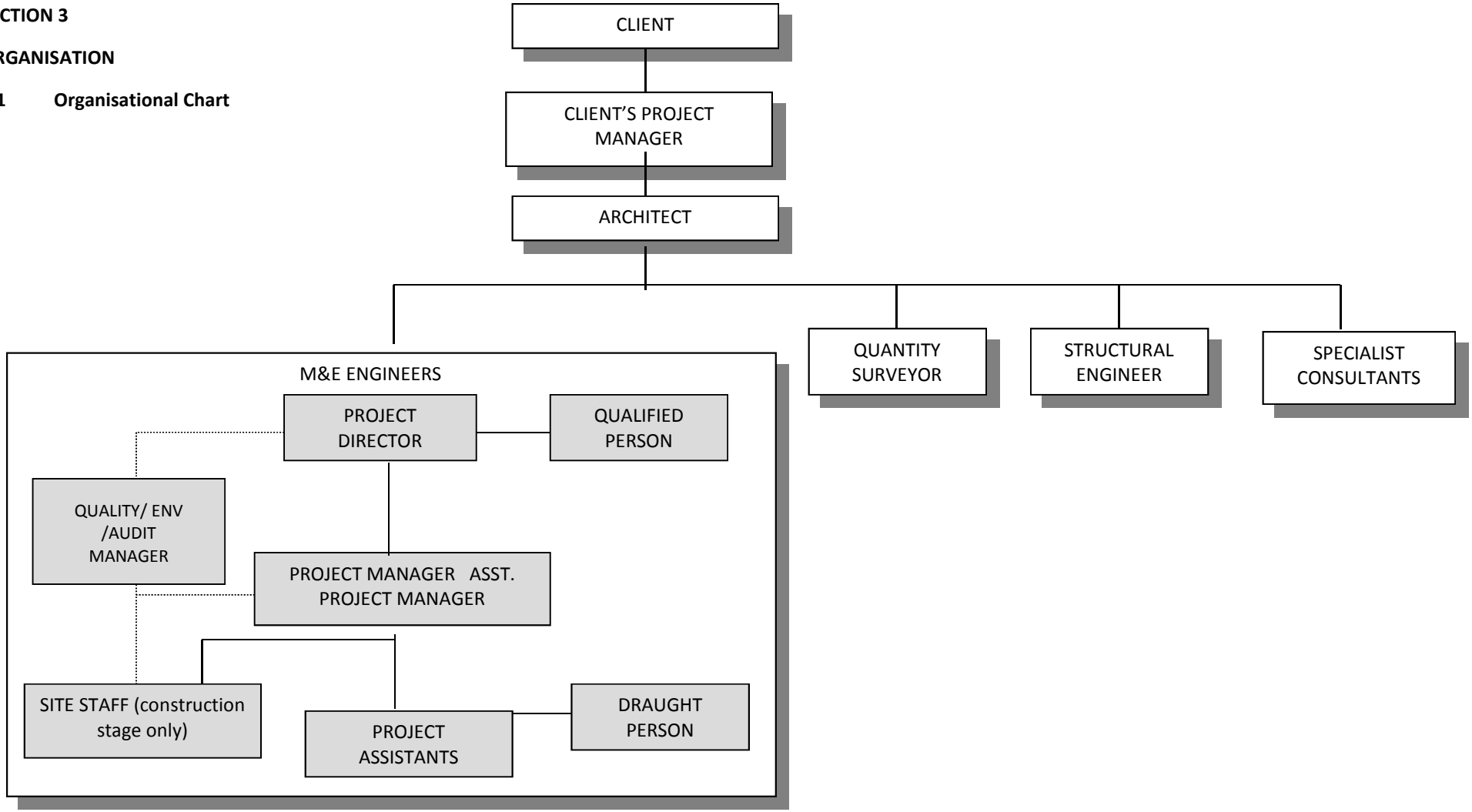
EJECTOR & DIVERTER		SUMP PUMP	✓	FUEL OIL TANK		LIFT & ESCALATOR	✓	PRESSURE VESSEL		HOISTS		FOAM	

(✓*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		Yip Yoke Fun (YYF)
Assistant Project Manager		Lim Chai Hoon (LCY)
Project Assistant (Mech)		
Project Assistant (Elect)		Goh Xiang Fei (GXF)
Draughtsperson		Common Pool
Resident Engineer (M&E)		
Assistant Resident Engineer (M&E)		
Clerk-of-Work (M&E)		Ng Hock Soon

3.3 Client/Client's Representatives

Client:- (Developer)	Yarra Investment Pte Ltd	Client:- (Main Contractor)	Chang Hua Contractors Pte Ltd
Address:-	50 Cuscaden Road #07-01 HPL House Singapore 249724	Address:-	180 Paya Lebar Road #09-06 Yi Guang Building Singapore 409032
Tel:-	6734 5250	Tel:	6296 3250
Fax:-	6734 1773	Fax:	6296 4273

Client's Representatives:-

Name of Company	Contact Person	Contact
Yarra Investment Pte Ltd	Name: Mr Ray Yow Position: Director	Tel: 6731 4965 Fax: 6737 3912 Handphone: Email: ry@hotelprop.com.sg
Chang Hua Construction Pte Ltd	Name: Mr Png Koon Guan Position: Senior Project Manager	Tel: 6838 7296 Fax: 6732 9197 Handphone: 9696 9878 Email: kgpng@changhua.com.sg
	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 A61 Pte Ltd	Name: Mr Michael Go Position: Architect	Tel: 6737 5977 Fax: 6732 5439 Handphone: - Email: mikego@a61.com.sg
Quantity Surveyor KPK Quantity Surveyor (S) Pte Ltd	Name: Mr Woon Wee Chiang Position: Senior Quantity Suveryor	Tel: 6536 3303 Fax: 6536 2633 Handphone: - Email: beverlymai1746kpk@kpkqs.com.sg
Structural Engineer KTP Consultants Pte Ltd	Name: Ms Joanne Chaw Position: Associate Director	Tel: 6273 5622 Fax: 6273 8454 Handphone: - Email: joannechaw@ktp.com.sg
Interior Designer Design Basis Pte Ltd	Name: Mr Tay Hiang Liang Position: Director	Tel: 6734 1633 Fax: 6736 0986 Handphone: - Email:dbasis@pacific.net.sg
Lighting Consultant Fabulux Pte Ltd	Name: Mr Johnny Chua Position: Director	Tel: 6295 2881 Fax: 6291 1792 Handphone: - Email: Johnny@fabuluxlightingdesign.com
Acoustic Consultant Acoustic & Environment Solutions Pte Ltd	Name: Dr Kenny Yap Position: Principal Consultant	Tel: 6776 2212 Fax: 6776 2770 Handphone: 9816 7075 Email: kenny@aes-aes.com
Landscape Consultant Cicada Pte Ltd	Name: Ms Mandy Ngo Position: Landscape Architect	Tel: 6334 7776 Fax: 6334 7187 Handphone: - Email: 157tomlinson@cicada.com.sg
QA/QC (Structural Engineer) HCE Engineers Pte Ltd	Name: Mr Dennis Ong Position: Managing Director	Tel: 6337 5555 Fax: 6337 2649 Handphone: 9674 9855 Email: dennisong@hce.com.sg
QA/QC (M&E Engineer) Squire Mech Pte Ltd	Name: Mr Lim Jit Dong Position: Director	Tel: 6419 8789 Fax: 6354 3321 Handphone: 9238 8360 Email: limjitdong@squiremech.com

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 Chang Hua Construction Pte Ltd		Name: Mr Png Koon Guan Position: Senior Project Manager	Tel: 6838 7296 Fax: 6732 9197 Handphone: 9696 9878 Email: kgpng@changhua.com.sg
Air Conditioning & Ventilation Installation Sub-Contractor Airelated Services Pte Ltd	DSC	Name: Mr Ong Hock Chuan Position: Senior Project Manager	Tel: 6482 8883 Fax: 6482 5233 Handphone: 9753 5743 Email: onghc@airelated.com.sg
Plumbing & Sanitary Installation Sub-Contractor Markpoint Engineering Pte Ltd	DSC	Name: Mr S.Gopinathan Position: Senior Project Manager	Tel: 6456 8012 Fax: 6454 8012 Handphone: 8168 5772 Email: sgopinathan69@gmail.com
Electrical Installation Sub-Contractor Yong Sheng Electrical Engineering Pte Ltd	DSC	Name: Mr Kelvin Loi Position: Project Manager	Tel: 6252 5484 Fax: 6251 7747 Handphone: 9451 8776 Email: bmloi@signet.com.sg
Lift & Escalator Installation Sub-Contractor Mitsubishi Elevator (S) Pte Ltd	DSC	Name: Mr Kow Jit Too Position: Project Manager	Tel: 6338 1100 Fax: 6338 6685 Handphone: 9489 2690 Email: jt.kow@mcsp.meap.com
Fire Fighting & Alarm Installation Sub-Contractor Maxx Engineering Pte Ltd	DSC	Name: Mr Lim Chun Leong Position: Manager	Tel: 6487 5044 Fax: 6487 5833 Handphone: 9764 4727 Email: chunleong@maxx.com.sg
Swimming Pool Filtration Plant Installation Sub-Contractor Venus Enterprises Pte Ltd	DSC	Name: Mr Noel Choo Position: General Manager	Tel: 6272 9185 Fax: 6272 1091 Handphone: 9672 4420 Email: noelchoo@venus.com.sg
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

Authorities/Department	Contact Person	Tel/Fax Nos./E-mail
SP PowerGrid:		
(a) Sub-Station	Mr Chin Yoke Fah	6823 8556
(b) Diversion		
SP Services:		
(a) Customer Supply	Ms Michelle Yip	6671 7194
(b) Installation	Mr Tan Ban Leong	6309 2611
(c) Meter Section		
(d) Road Lighting		
TFCC:		
(a) SCV	Ms Jane Peh	6825 6366
(b) SingTel	Mr Tan Beng Hua	9735 3182
(c) IDA	Mr Francis Goh	6825 6429
BCA:		
(a) Building Plan		
(b) Green Mark		
FSSD:		
(a) Building Plan		
(b) M&E Plan	Ms Ang Ai Hua Nancy	6848 1464
PUB (Water Supply) Network Dept:		
(a) Water Conservation		
(b) Plumbing Plan	Ms NazilahSapuan	67313598/67313023
(c) Diversion		
(d) NEWater		
PUB Water Reclamation (Network)Dept:		
(a) Building Plan/CBPU		
(b) M&E Plan	Mr Abdul Razak Bin Abdul Majid	6731 9527
(c) Diversion		
City Gas Pte Ltd:		
(a) Planning/Submission	Mr Liew Khee Boon	6578 7603
(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

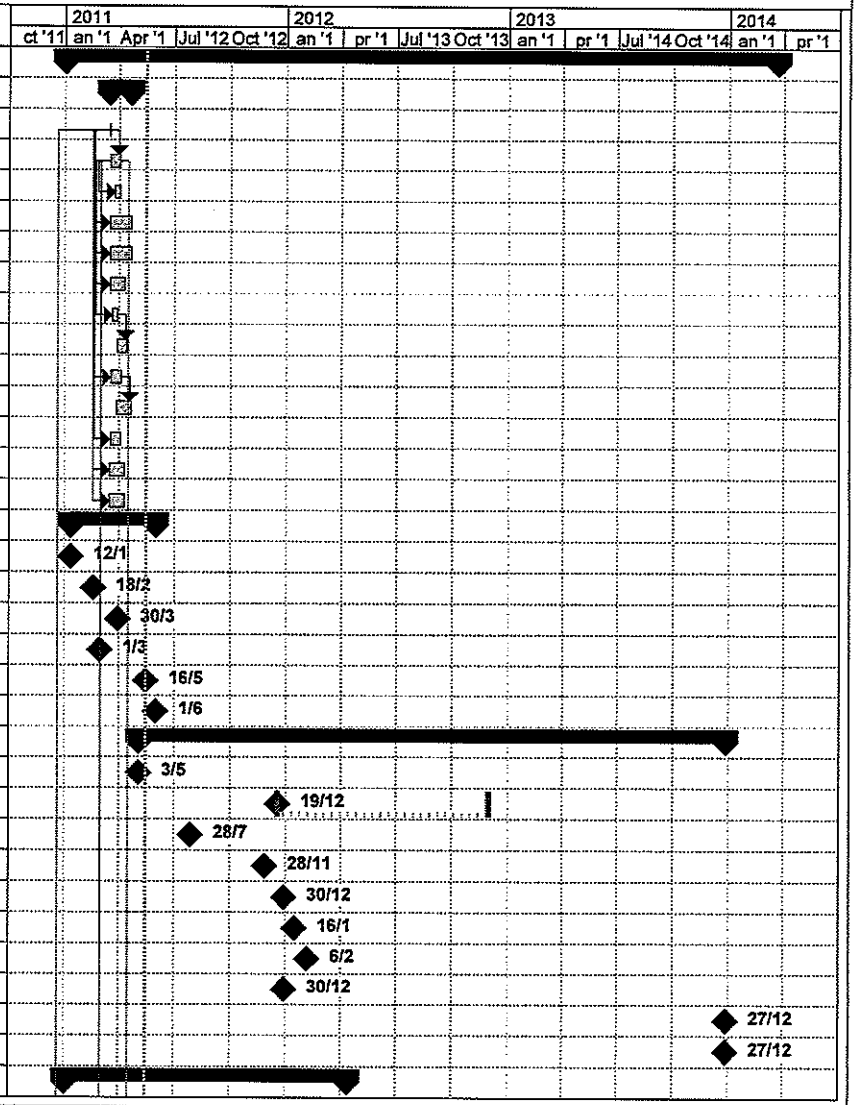
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1.	Preliminary Planning																									
2.	Planning Submission																									
3.	Detail Design																									
4.	BP Submission																									
5.	BP Submission (Amendments)																									
6.	Tender Period 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																									

REVISION: C
DATE: 14/05/11

CHANG HUA CONSTRUCTION PTE LTD
TOMLINSON HEIGHTS
CONSTRUCTION PROGRAMME

PREPARED BY: PNG KOON GUAN

ID	Task Name	Duration	Start	Finish
1	**CONSTRUCTION PROGRAMME**	**1009 days**	**Mon 3/1/11**	**Sat 22/3/14**
2	**PRELIMINARIES**	**31 days**	**Wed 16/3/11**	**Wed 20/4/11**
3	Take-over Site	1 day	Wed 16/3/11	Wed 16/3/11
4	Mobilisation	14 days	Thu 17/3/11	Fri 1/4/11
5	Finalise Master Programme	7 days	Fri 25/3/11	Fri 1/4/11
6	Site Offices	30 days	Thu 17/3/11	Wed 20/4/11
7	Toilet Facilities	30 days	Thu 17/3/11	Wed 20/4/11
8	Storage Area	21 days	Thu 17/3/11	Sat 9/4/11
9	Design & Submission Earth Control Measure	7 days	Mon 21/3/11	Mon 28/3/11
10	Obtain approval from PUB (Drainage)	14 days	Tue 29/3/11	Wed 13/4/11
11	Installation Earth Control Measure & Vehicle washing bay	14 days	Sat 19/3/11	Mon 4/4/11
12	Setting Out and Earthworks	21 days	Mon 28/3/11	Wed 20/4/11
13	Precomputation Survey	14 days	Fri 18/3/11	Sat 2/4/11
14	Pre-Conditons Survey	21 days	Wed 16/3/11	Fri 8/4/11
15	Detection of Underground Services	21 days	Wed 16/3/11	Fri 8/4/11
16	**AUTHORITY SUBMISSION AND APPROVAL MILESTONE**	**121 days**	**Wed 12/1/11**	**Wed 1/6/11**
17	Factory Registration	0 days	Wed 12/1/11	Wed 12/1/11
18	Permit to Commence Works (Piling / Building Works)	0 days	Fri 18/2/11	Fri 18/2/11
19	Piling Plans	0 days	Wed 30/3/11	Wed 30/3/11
20	ERSS	0 days	Tue 1/3/11	Tue 1/3/11
21	Sub-Structure Plans	0 days	Mon 16/5/11	Mon 16/5/11
22	Superstructure Plans	0 days	Wed 1/6/11	Wed 1/6/11
23	**M&E AUTHORITY SUBMISSION**	**831 days**	**Tue 3/5/11**	**Fri 27/12/13**
24	PG (ESS)	0 days	Tue 3/5/11	Tue 3/5/11
25	PG Application for Supply	0 days	Mon 19/12/11	Fri 30/11/12
26	IDA – TFCC /SCV	0 days	Thu 28/7/11	Thu 28/7/11
27	CBPU (sanitary)	0 days	Mon 28/11/11	Mon 28/11/11
28	PUB - Water	0 days	Fri 30/12/11	Fri 30/12/11
29	City Gas	0 days	Mon 16/1/12	Mon 16/1/12
30	FSSD – Fire Protection	0 days	Mon 6/2/12	Mon 6/2/12
31	FSSD – ACMV	0 days	Fri 30/12/11	Fri 30/12/11
32	CBPU (Ejector)	0 days	Fri 27/12/13	Fri 27/12/13
33	FSSD (Ductless Car Park MV)	0 days	Fri 27/12/13	Fri 27/12/13
34	**CONFIRMATION OF NOMINATED & DOMESTIC CONTRACTS**	**400 days**	**Mon 3/1/11**	**Wed 11/4/12**



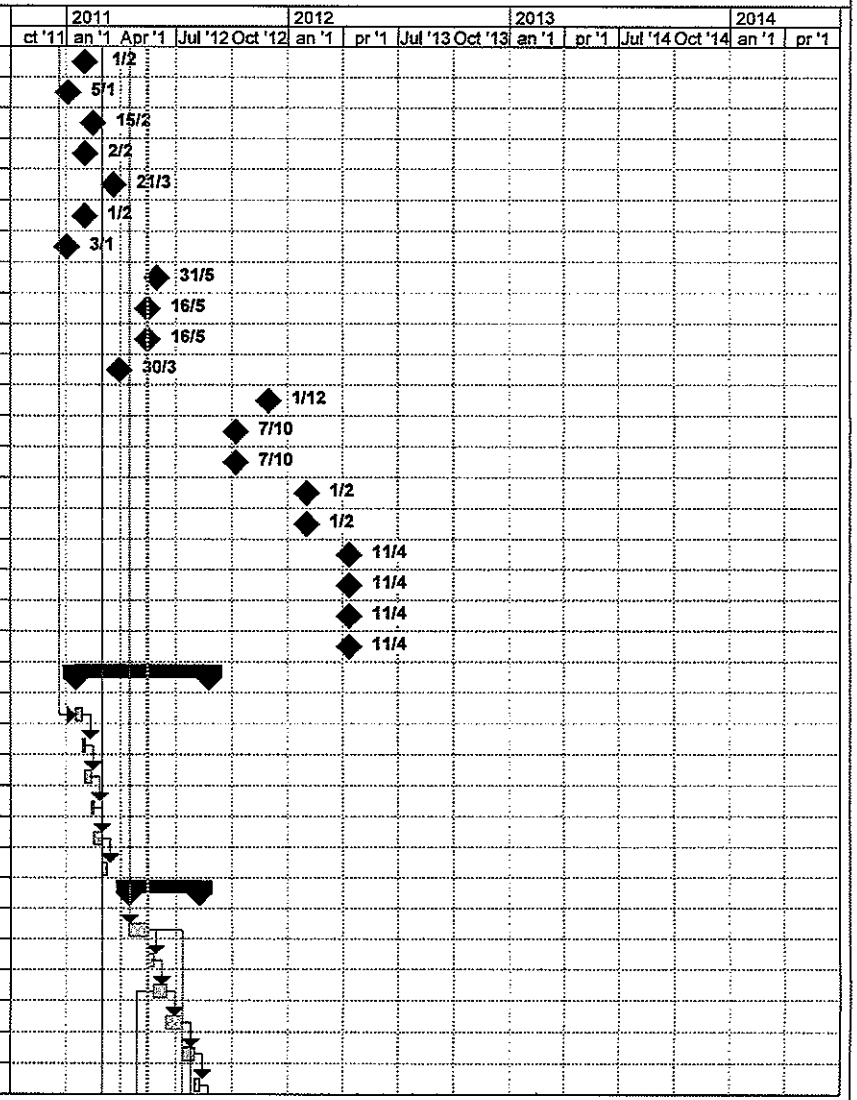
DATE OF COMMENCEMENT
23/3/2011
DATE OF COMPLETION 23/3/2014

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DATE: 14/05/11

CHANG HUA CONSTRUCTION PTE LTD
TOMLINSON HEIGHTS
CONSTRUCTION PROGRAMME

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ID	Task Name	Duration	Start	Finish
35	Aircon & Mech Ventilation System (Airelated)	0 days	Tue 1/2/11	Tue 1/2/11
36	Sanitary & Plumbing (Markpoint)	0 days	Wed 5/1/11	Wed 5/1/11
37	Electrical Installation (Yong Sheng)	0 days	Tue 15/2/11	Tue 15/2/11
38	Fire Protection Installation (Maxx)	0 days	Wed 2/2/11	Wed 2/2/11
39	Vertical Transportation Installation (Mitsubishi)	0 days	Mon 21/3/11	Mon 21/3/11
40	Swimming Pool & Water Feature Equipment (venus)	0 days	Tue 1/2/11	Tue 1/2/11
41	Aluminium & Glazing works (Kao Lee)	0 days	Mon 3/1/11	Mon 3/1/11
42	Built-In Wardrobes	0 days	Tue 31/5/11	Tue 31/5/11
43	Kitchen Cabinets	0 days	Mon 16/5/11	Mon 16/5/11
44	Sanitary wares, fittings & Accessories	0 days	Mon 16/5/11	Mon 16/5/11
45	Kitchen Appliances (Miele)	0 days	Wed 30/3/11	Wed 30/3/11
46	Ironmongery	0 days	Thu 1/12/11	Thu 1/12/11
47	Internal & External Light Fittings	0 days	Fri 7/10/11	Fri 7/10/11
48	Softscape Works	0 days	Fri 7/10/11	Fri 7/10/11
49	Signage	0 days	Wed 1/2/12	Wed 1/2/12
50	Guard House Management Office/ Changing Rm/ Gym/ Function Rm Fitting-Out W	0 days	Wed 1/2/12	Wed 1/2/12
51	Playground Equipment	0 days	Wed 11/4/12	Wed 11/4/12
52	Auto-Sliding Entrance Gate	0 days	Wed 11/4/12	Wed 11/4/12
53	External Furniture/ Portable BBQ/ Daybed	0 days	Wed 11/4/12	Wed 11/4/12
54	Artwork/ Sculptures/ Decorative Elements	0 days	Wed 11/4/12	Wed 11/4/12
55	**PILING WORKS**	**190 days**	**Mon 17/1/11**	**Wed 24/8/11**
56	Mobilization of Plant & Equipment	10 days	Mon 17/1/11	Thu 27/1/11
57	Installation of UTP	3 days	Fri 28/1/11	Mon 31/1/11
58	Curing For Preparation of UTP	10 days	Tue 1/2/11	Fri 11/2/11
59	Erection of Kentledge & Concrete Blocks	3 days	Sat 12/2/11	Tue 15/2/11
60	Ultimate Load Test	11 days	Wed 16/2/11	Mon 28/2/11
61	Submission of Load Test Report	7 days	Tue 1/3/11	Tue 8/3/11
62	**Bored Pile Installation**	**100 days**	**Fri 15/4/11**	**Mon 8/8/11**
63	Zone 5 (54 Piles)	27 days	Fri 15/4/11	Sat 14/5/11
64	Zone 6 (9 Piles)	8 days	Mon 16/5/11	Tue 24/5/11
65	Zone 3 (25 Piles)	18 days	Wed 25/5/11	Tue 14/6/11
66	Zone 2 (42 Piles)	23 days	Wed 15/6/11	Mon 11/7/11
67	Zone 4 (32 Piles)	17 days	Tue 12/7/11	Sat 30/7/11
68	Zone 1 (9 Piles)	7 days	Mon 1/8/11	Mon 8/8/11



DATE OF COMMENCEMENT
23/3/2011
DATE OF COMPLETION 23/3/2014

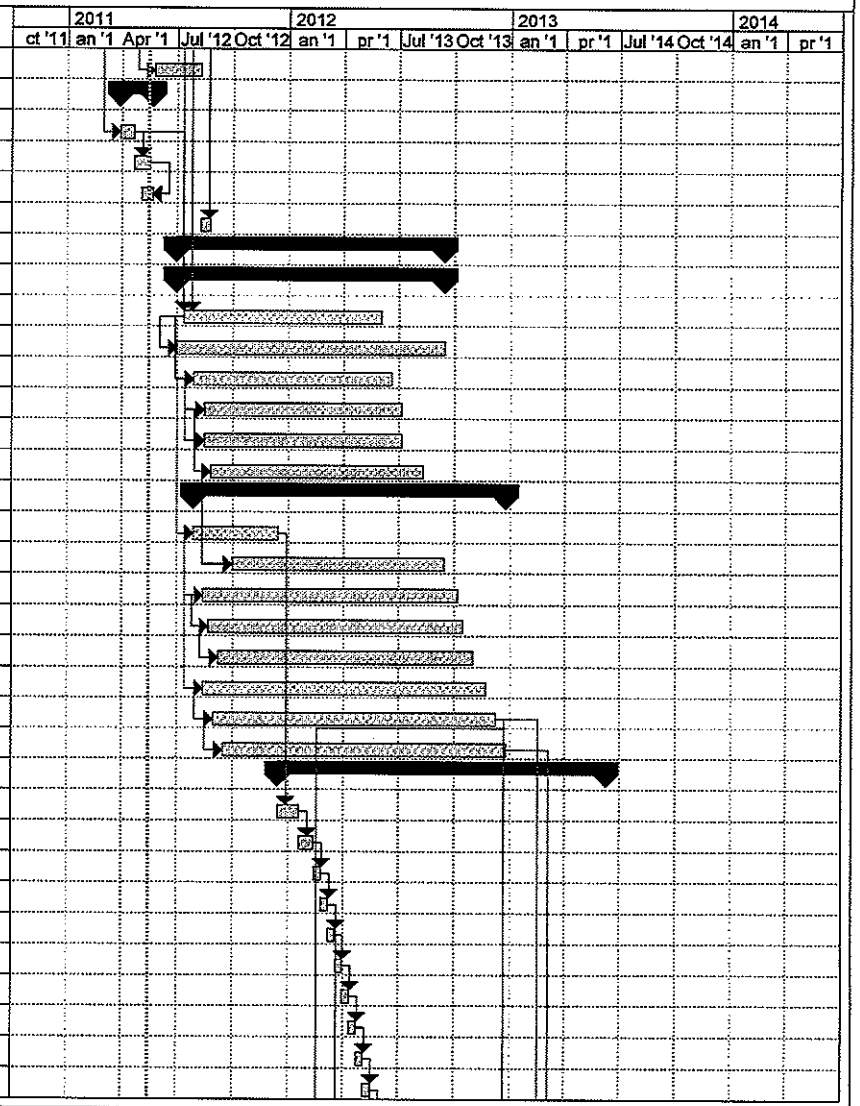
Chang Hua Construction Pte Ltd
180 Paya Lebar Road, #09-06, Yi Guang Building
Singapore 409032

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DATE: 14/05/11

CHANG HUA CONSTRUCTION PTE LTD
TOMLINSON HEIGHTS
CONSTRUCTION PROGRAMME

PREPARED BY: PNG KOON GUAN

ID	Task Name	Duration	Start	Finish
69	***Working Load Test***	65 days	Wed 25/5/11	Mon 8/8/11
70	**Installation of Contiguous Bored Pile Earth Retaining Wall**	**48 days**	**Tue 29/3/11**	**Sat 21/5/11**
71	Elevation 3 (74 Piles)	20 days	Tue 29/3/11	Wed 20/4/11
72	Elevation 2 (83 Piles)	23 days	Thu 21/4/11	Mon 16/5/11
73	Elevation 1 (65 Piles)	17 days	Tue 3/5/11	Sat 21/5/11
74	***Demobilization of Plant & Equipment***	14 days	Tue 9/8/11	Wed 24/8/11
75	**SUB STRUCTURE WORKS**	**380 days**	**Thu 30/6/11**	**Fri 14/9/12**
76	**PILE FOUNDATION / BASEMENT SLAB**	**380 days**	**Thu 30/6/11**	**Fri 14/9/12**
77	Excavation	280 days	Tue 12/7/11	Fri 1/6/12
78	Instrumentation Monitoring	380 days	Thu 30/6/11	Fri 14/9/12
79	Pile Cut-Off / E.C.C.	280 days	Thu 28/7/11	Mon 18/6/12
80	Drainage Lines	280 days	Mon 15/8/11	Thu 5/7/12
81	Termite Treament	280 days	Mon 15/8/11	Thu 5/7/12
82	R.C. Basement Slab	300 days	Fri 26/8/11	Thu 9/8/12
83	**RC ENVIRONMENTAL DECK / POOLS**	**442 days**	**Thu 28/7/11**	**Mon 24/12/12**
84	Main Building Wall / Column / Lift Core Walls / Staircase	120 days	Thu 28/7/11	Wed 14/12/11
85	Basement Wall / Column / Sump Pit / Staircase	300 days	Fri 30/9/11	Thu 13/9/12
86	Termite Treatment	360 days	Sat 13/8/11	Fri 5/10/12
87	Waterproofing / Additive	360 days	Mon 22/8/11	Sat 13/10/12
88	Backfilling	360 days	Wed 7/9/11	Tue 30/10/12
89	Concealed M&E Services	400 days	Sat 13/8/11	Wed 21/11/12
90	RC Environmental Deck & Pools & Planter	400 days	Tue 30/8/11	Fri 7/12/12
91	Changing Room / Feature Wall	400 days	Thu 15/9/11	Mon 24/12/12
92	**SUPER-STRUCTURAL WORKS**	**465 days**	**Thu 15/12/11**	**Sat 8/6/13**
93	1st to 2nd storey Column / Lift Core Wall / Stairs / Transfer Beam	30 days	Thu 15/12/11	Wed 18/1/12
94	2nd Storey Slab	21 days	Thu 19/1/12	Sat 11/2/12
95	3rd Storey Slab	10 days	Mon 13/2/12	Thu 23/2/12
96	4th Storey Slab	10 days	Fri 24/2/12	Tue 6/3/12
97	5th Storey Slab	10 days	Wed 7/3/12	Sat 17/3/12
98	6th Storey Slab	10 days	Mon 19/3/12	Thu 29/3/12
99	7th Storey Slab	10 days	Fri 30/3/12	Tue 10/4/12
100	8th Storey Slab	10 days	Wed 11/4/12	Sat 21/4/12
101	9th Storey Slab	10 days	Mon 23/4/12	Thu 3/5/12
102	10th Storey Slab	10 days	Fri 4/5/12	Tue 15/5/12



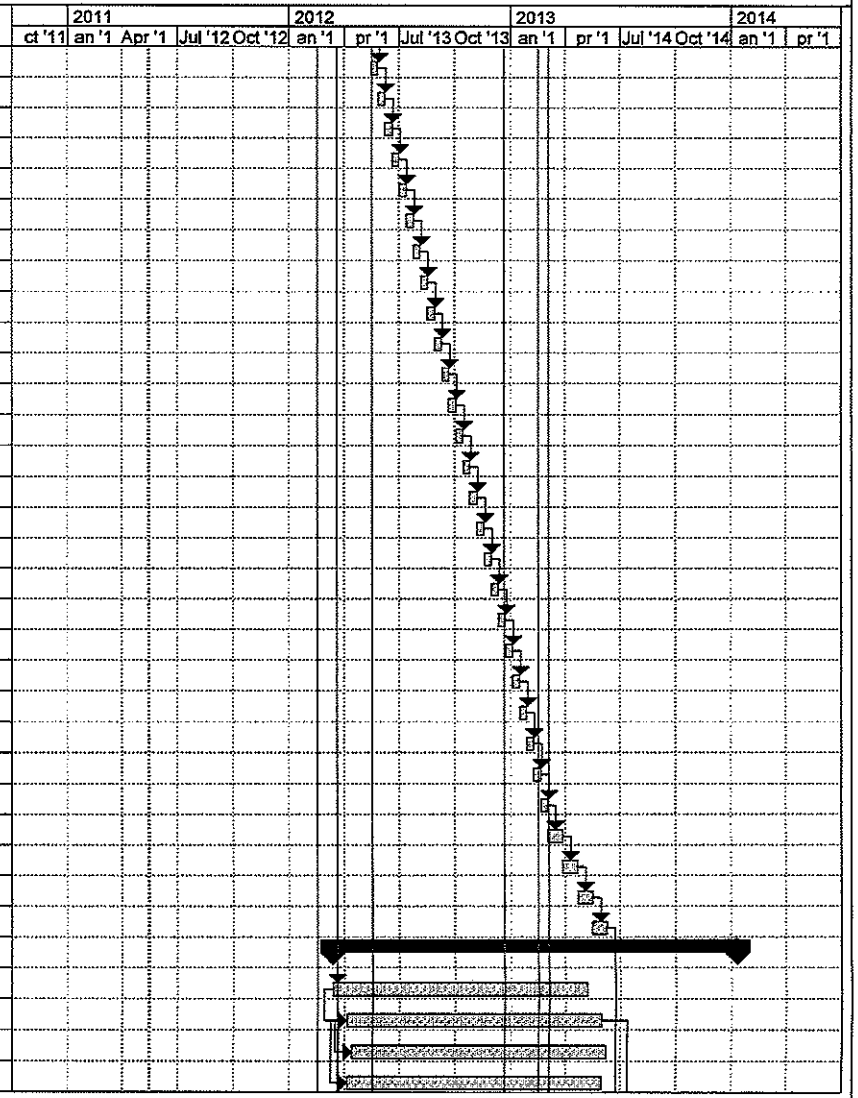
DATE OF COMMENCEMENT
23/3/2011
DATE OF COMPLETION 23/3/2014

REVISION: C
DATE: 14/05/11

CHANG HUA CONSTRUCTION PTE LTD
TOMLINSON HEIGHTS
CONSTRUCTION PROGRAMME

PREPARED BY: PNG KOON GUAN

ID	Task Name	Duration	Start	Finish
103	11th storey Slab	10 days	Wed 16/5/12	Sat 26/5/12
104	12th Storey Slab	10 days	Mon 28/5/12	Thu 7/6/12
105	13th storey Slab	10 days	Fri 8/6/12	Tue 19/6/12
106	14th Storey Slab	10 days	Wed 20/6/12	Sat 30/6/12
107	15th Storey Slab	10 days	Mon 2/7/12	Thu 12/7/12
108	16th Storey Slab	10 days	Fri 13/7/12	Tue 24/7/12
109	17th Storey Slab	10 days	Wed 25/7/12	Sat 4/8/12
110	18th Storey Slab	10 days	Mon 6/8/12	Thu 16/8/12
111	19th Storey Slab	10 days	Fri 17/8/12	Tue 28/8/12
112	20th Storey Slab	10 days	Wed 29/8/12	Sat 8/9/12
113	21st Storey Slab	10 days	Mon 10/9/12	Thu 20/9/12
114	22nd Storey Slab	10 days	Fri 21/9/12	Tue 2/10/12
115	23rd Storey Slab	10 days	Wed 3/10/12	Sat 13/10/12
116	24th Storey Slab	10 days	Mon 15/10/12	Thu 25/10/12
117	25th Storey Slab	10 days	Fri 26/10/12	Tue 6/11/12
118	26th Storey Slab	10 days	Wed 7/11/12	Sat 17/11/12
119	27th Storey Slab	10 days	Mon 19/11/12	Thu 29/11/12
120	28th Storey Slab	10 days	Fri 30/11/12	Tue 11/12/12
121	29th Storey Slab	10 days	Wed 12/12/12	Sat 22/12/12
122	30th Storey Slab	10 days	Mon 24/12/12	Thu 3/1/13
123	31st Storey Slab	10 days	Fri 4/1/13	Tue 15/1/13
124	32nd Storey Slab	10 days	Wed 16/1/13	Sat 26/1/13
125	33rd Storey Slab	10 days	Mon 28/1/13	Thu 7/2/13
126	34th Storey Slab	10 days	Fri 8/2/13	Tue 19/2/13
127	35th Storey Slab	10 days	Wed 20/2/13	Sat 2/3/13
128	36th Storey Slab (Penthouse)	21 days	Mon 4/3/13	Wed 27/3/13
129	Roof 1 (Roof Terrace)	21 days	Thu 28/3/13	Sat 20/4/13
130	Roof 2 (Lift Motor Room)	21 days	Mon 22/4/13	Wed 15/5/13
131	Roof 3 (RC Wall/ Roof Over Lift Motor Room)	21 days	Thu 16/5/13	Sat 8/6/13
132	**ARCHITECTURAL WORKS**	**574 days**	**Tue 13/3/12**	**Fri 10/1/14**
133	Ceiling Finishes	360 days	Tue 13/3/12	Mon 6/5/13
134	Brickworks / Dry Wall	360 days	Thu 5/4/12	Wed 29/5/13
135	Sub Timber Door Frame	360 days	Fri 13/4/12	Thu 6/6/13
136	Shower Screen Channel Embeded	360 days	Thu 5/4/12	Wed 29/5/13



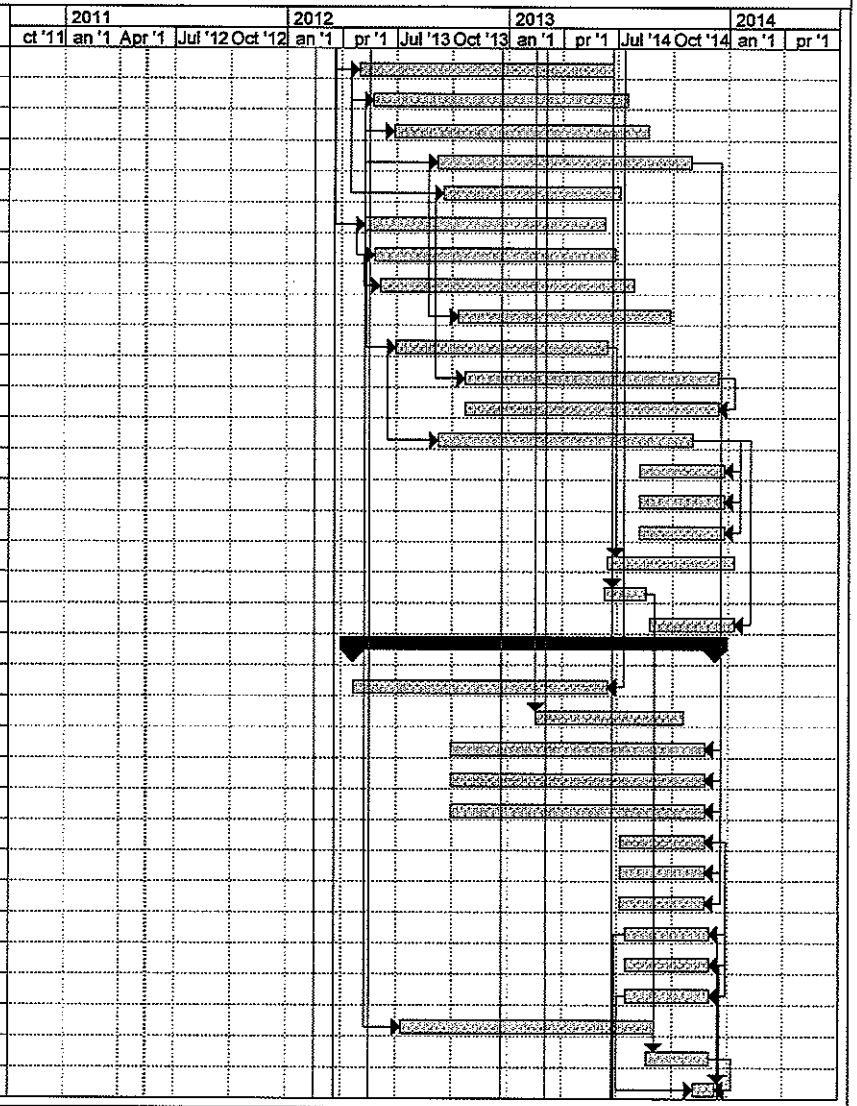
DATE OF COMMENCEMENT
23/3/2011
DATE OF COMPLETION 23/3/2014

REVISION: C
DATE: 14/05/11

CHANG HUA CONSTRUCTION PTE LTD
TOMLINSON HEIGHTS
CONSTRUCTION PROGRAMME

PREPARED BY: PNG KOON GUAN

ID	Task Name	Duration	Start	Finish
137	Aluminium Works	360 days	Mon 30/4/12	Sat 22/6/13
138	Plastering (Internal)	360 days	Wed 23/5/12	Tue 16/7/13
139	Suspended Ceiling Works	360 days	Wed 27/6/12	Tue 20/8/13
140	Internal Painting - Sealer/1st Coat	360 days	Thu 6/9/12	Wed 30/10/13
141	Plastering (External)	250 days	Mon 17/9/12	Thu 4/7/13
142	Waterproof	340 days	Thu 10/5/12	Mon 10/6/13
143	Screeding	340 days	Sat 26/5/12	Wed 26/6/13
144	Tiling & Stone Finishes	360 days	Mon 4/6/12	Sat 27/7/13
145	Glazing	300 days	Thu 11/10/12	Wed 25/9/13
146	Timber Flooring	300 days	Sat 30/6/12	Fri 14/6/13
147	Aluminium Cladding	360 days	Mon 22/10/12	Sat 14/12/13
148	Security Screening	360 days	Mon 22/10/12	Sat 14/12/13
149	Kitchen Cabinet / Wardrobes	360 days	Sat 8/9/12	Fri 1/11/13
150	Door Frame/Door Panel	120 days	Wed 7/8/13	Tue 24/12/13
151	Shower Screen Glass	120 days	Wed 7/8/13	Tue 24/12/13
152	Steam Room	120 days	Wed 7/8/13	Tue 24/12/13
153	Internal Painting - 2nd Coat/Final Coat	180 days	Sat 15/6/13	Fri 10/1/14
154	Lift Motor Room Finishes	60 days	Mon 10/6/13	Sat 17/8/13
155	Kitchen Applicances	120 days	Sat 24/8/13	Fri 10/1/14
156	**M&E SERVICES**	**512 days**	**Sat 21/4/12**	**Mon 9/12/13**
157	Concealed Services (1st fix)	360 days	Sat 21/4/12	Fri 14/6/13
158	Neumatic Waste Collection System	210 days	Sat 16/2/13	Fri 18/10/13
159	Electrical (2nd Fix, wall)	360 days	Sat 29/9/12	Fri 22/11/13
160	Plumbing & Sanitary (2nd fix, wall)	360 days	Sat 29/9/12	Fri 22/11/13
161	Air-conditioning (2nd fix, wall)	360 days	Sat 29/9/12	Fri 22/11/13
162	Electrical (3rd fix, ceiling)	120 days	Sat 6/7/13	Fri 22/11/13
163	Plumbing & Sanitary (3rd fix ceiling)	120 days	Sat 6/7/13	Fri 22/11/13
164	Air-conditioning (3rd fix, ceiling)	120 days	Sat 6/7/13	Fri 22/11/13
165	Electrical (Final fix)	120 days	Mon 15/7/13	Sat 30/11/13
166	Sanitary wares, Fittings & Accessories (Final fix)	120 days	Mon 15/7/13	Sat 30/11/13
167	Air-conditioning (Final fix)	120 days	Mon 15/7/13	Sat 30/11/13
168	Fire Protection System	360 days	Mon 9/7/12	Sat 31/8/13
169	Vertical Transportation System	90 days	Mon 19/8/13	Sat 30/11/13
170	Testing & Commissioning (Lift Electrical Air-conditioning Plumbing & Sanitary/Gas)	30 days	Tue 5/11/13	Mon 9/12/13



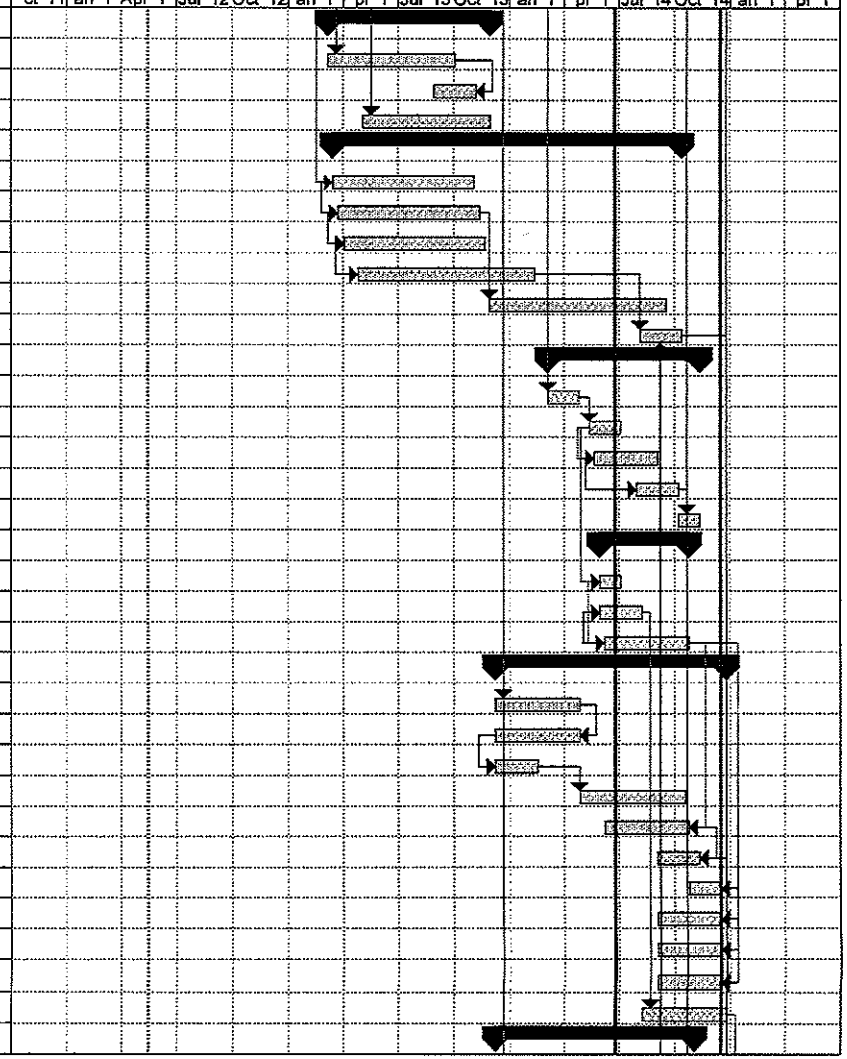
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TOMLINSON HEIGHTS
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ID	Task Name	Duration	Start	Finish
171	**MOCK-UP UNITS & SHOW UNITS**	**230 days**	**Wed 7/3/12**	**Thu 29/11/12**
172	Mock-Up Apartment Unit Type A & B	180 days	Wed 7/3/12	Tue 2/10/12
173	Mock-Up Lift Lobbies at Unit Type A & B	60 days	Wed 29/8/12	Tue 6/11/12
174	Show Apartment Unit Type A & B	180 days	Fri 4/5/12	Thu 29/11/12
175	**ARCHITECTURAL WORKS - BASEMENT**	**495 days**	**Thu 15/3/12**	**Sat 12/10/13**
176	Ceiling Finishes	200 days	Thu 15/3/12	Fri 2/11/12
177	Wall / Column Finishes	200 days	Sat 24/3/12	Mon 12/11/12
178	Painting Works	200 days	Tue 3/4/12	Wed 21/11/12
179	M&E Ceiling Services	250 days	Thu 26/4/12	Mon 11/2/13
180	Lobby Finishes	250 days	Thu 29/11/12	Mon 16/9/13
181	Testing & Commissioning	60 days	Mon 5/8/13	Sat 12/10/13
182	**SWIMMING POOL & WATER FEATURE**	**216 days**	**Tue 5/3/13**	**Mon 11/11/13**
183	Waterponding Test to Swimming Pool	45 days	Tue 5/3/13	Thu 25/4/13
184	Waterproof / Screed	45 days	Mon 13/5/13	Wed 3/7/13
185	Finishes	90 days	Tue 21/5/13	Mon 2/9/13
186	M&E Installation Works	60 days	Tue 30/7/13	Mon 7/10/13
187	Testing & Commissioning	30 days	Tue 8/10/13	Mon 11/11/13
188	**GATHERING PLATFORM**	**127 days**	**Thu 30/5/13**	**Thu 24/10/13**
189	Waterproof / Screed	30 days	Thu 30/5/13	Wed 3/7/13
190	M&E Works	60 days	Thu 30/5/13	Wed 7/8/13
191	Finishes	120 days	Fri 7/6/13	Thu 24/10/13
192	**EXTERNAL WORKS**	**328 days**	**Sat 8/12/12**	**Wed 25/12/13**
193	Drains	120 days	Sat 8/12/12	Fri 26/4/13
194	Entrance Culvert	120 days	Sat 8/12/12	Fri 26/4/13
195	M&E Services (Underground)	60 days	Sat 8/12/12	Fri 15/2/13
196	Boundary Walls	150 days	Sat 27/4/13	Fri 18/10/13
197	Finishes for Drive Way/ Fire Engine Access/ Drop-Off Point	120 days	Fri 7/6/13	Thu 24/10/13
198	Finishes for Footpaths/ Ramps/ Step Lawn	60 days	Tue 3/9/13	Mon 11/11/13
199	Playground	45 days	Fri 25/10/13	Mon 16/12/13
200	BBQ Area/ Tea House Pavilion/ Light Box Pavilion	90 days	Tue 3/9/13	Mon 16/12/13
201	Timber Deck	90 days	Tue 3/9/13	Mon 16/12/13
202	Changing Room	90 days	Tue 3/9/13	Mon 16/12/13
203	Softscape Works	120 days	Thu 8/8/13	Wed 25/12/13
204	**STRUCTURE WORKS (BALANCED WORKS)**	**282 days**	**Sat 8/12/12**	**Fri 1/11/13**



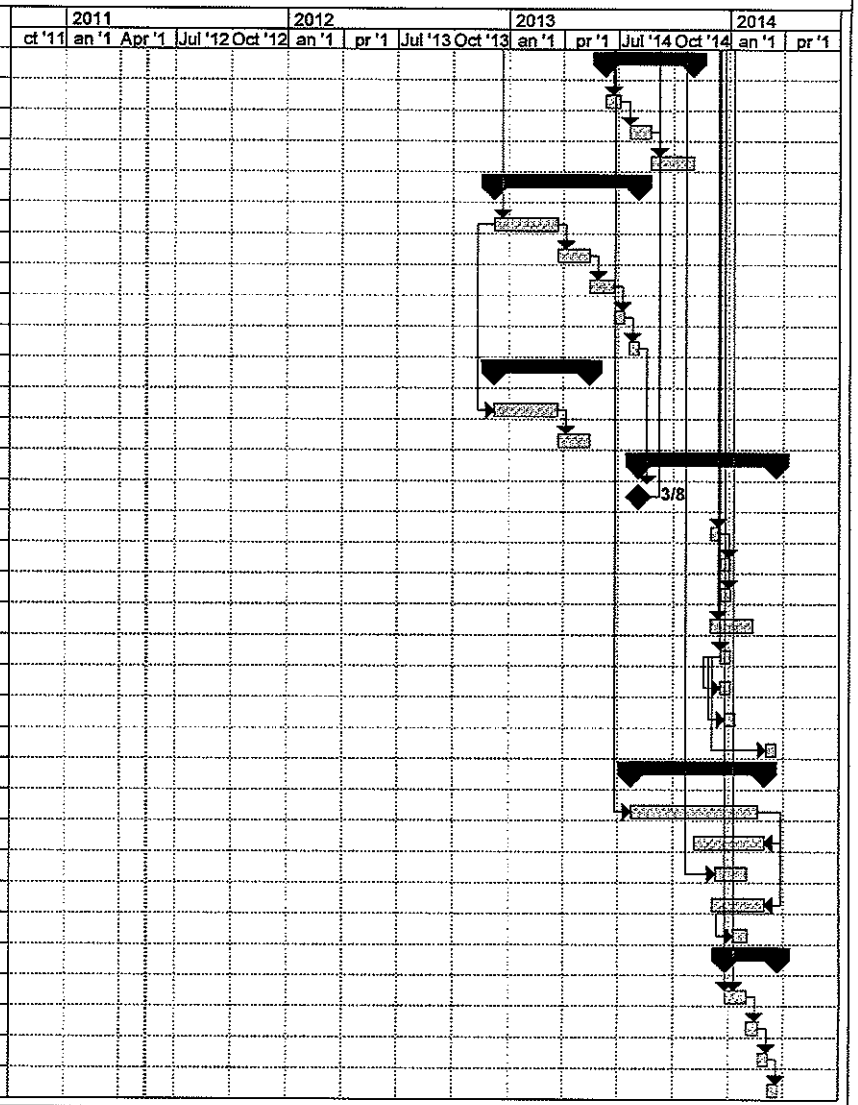
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CHANG HUA CONSTRUCTION PTE LTD
TOMLINSON HEIGHTS
CONSTRUCTION PROGRAMME

PREPARED BY: PNG KOON GUAN

ID	Task Name	Duration	Start	Finish
205	**GUARD HOUSE**	**125 days**	**Mon 10/6/13**	**Fri 1/11/13**
206	Structure	21 days	Mon 10/6/13	Wed 3/7/13
207	Finishes	30 days	Sat 20/7/13	Fri 23/8/13
208	M&E Works	60 days	Sat 24/8/13	Fri 1/11/13
209	**SUB-STATION**	**205 days**	**Sat 8/12/12**	**Sat 3/8/13**
210	Structure	90 days	Sat 8/12/12	Fri 22/3/13
211	Finishes	45 days	Sat 23/3/13	Tue 14/5/13
212	M&E Works	35 days	Wed 15/5/13	Mon 24/6/13
213	Testing & Commissioning	14 days	Tue 25/6/13	Wed 10/7/13
214	Powergrid Turn-On (Substation)	14 days	Fri 19/7/13	Sat 3/8/13
215	**BIN CENTRE**	**135 days**	**Sat 8/12/12**	**Tue 14/5/13**
216	Structure	90 days	Sat 8/12/12	Fri 22/3/13
217	Finishes	45 days	Sat 23/3/13	Tue 14/5/13
218	**PRE TOP INSPECTION**	**195 days**	**Sat 3/8/13**	**Wed 19/3/14**
219	Power Turn On to Main Switch Board	0 days	Sat 3/8/13	Sat 3/8/13
220	Testing of Apartment Unit by SP Services	14 days	Mon 2/12/13	Tue 17/12/13
221	Apartment Electrical Sub-Meter Installation	14 days	Wed 18/12/13	Thu 2/1/14
222	Obtain Certificate for Broadband Readiness	14 days	Wed 18/12/13	Thu 2/1/14
223	Testing of ACMV System for Apartment Units	60 days	Mon 2/12/13	Sat 8/2/14
224	Water Turn On Inspection	14 days	Wed 18/12/13	Thu 2/1/14
225	Apartment Water Sub-meter installation	14 days	Wed 18/12/13	Thu 2/1/14
226	Sanitary Inspection	14 days	Thu 26/12/13	Fri 10/1/14
227	City Gas Inspection & Installation of Sub-Meter	14 days	Tue 4/3/14	Wed 19/3/14
228	**OTHER WORKS**	**190 days**	**Tue 23/7/13**	**Fri 28/2/14**
229	BCA QM Inspection	180 days	Tue 23/7/13	Mon 17/2/14
230	Employer's Rep Unit Inspection	100 days	Tue 5/11/13	Fri 28/2/14
231	Draft As Built Submission to Authorities	45 days	Tue 10/12/13	Thu 30/1/14
232	Quality Assurance /Handing Over Apartment Units	75 days	Wed 4/12/13	Fri 28/2/14
233	Final As Built Submission after Practical Completion	21 days	Wed 8/1/14	Fri 31/1/14
234	**TOP**	**75 days**	**Thu 26/12/13**	**Sat 22/3/14**
235	Pre-Inspection by Consultants	30 days	Thu 26/12/13	Wed 29/1/14
236	RI Inspection	17 days	Thu 30/1/14	Tue 18/2/14
237	BCA Inspection	14 days	Wed 19/2/14	Thu 6/3/14
238	Obtain TOP	14 days	Fri 7/3/14	Sat 22/3/14



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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									
Power Supply Substation	SP PowerGrid Ltd	3/5/11	3/3/11	30/3/11	27/5/11					24/6/11
Metering Layout	SP Services Ltd									
Sanitary Installation	PUB Water Reclamation (Network) Dept	27/10/11	20/1/12							30/1/12
Domestic Water Supply	PUB (Water Supply) Network Dept	29/6/12	16/11/12	28/12/12	20/2/13	18/3/13	21/3/13			9/4/13
Gas Supply Installation	City Gas Pte Ltd	31/5/12	21/5/12	4/6/12	11/6/12	15/6/12	19/6/12	22/6/12	25/6/12	11/7/12
Air Conditioning & Ventilation Inst.	FSSD	31/7/12	5/8/13							16/8/13
Fire Fighting & Alarm Installation	FSSD	31/8/12								
Telephone Installation	TFCC	28/7/11	14/12/11							30/12/11
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 - NOT USED

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:	
MC/EC	✓				

(✓ *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	Yip Yoke Fun (YYF)
Incoming Architectural Sketches/Details	Yip Yoke Fun (YYF)
Incoming Structural Drawings	Yip Yoke Fun (YYF)
M&E Drawings	
- Electrical Installation	Goh Xiang Fei (GXF)
- Lift & Escalator Installation	Goh Xiang Fei (GXF)
- Air Conditioning & Ventilation Installation	Yip Yoke Fun (YYF)
- Fire Fighting & Alarm Installation	Yip Yoke Fun (YYF)
- Plumbing & Sanitary Installation	Yip Yoke Fun (YYF)
- Swimming Pool & Filtration Installation	Yip Yoke Fun (YYF)
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 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	A	A	C	I	
b.	Project Administration	-	-	-	-	-	
c.	Project Cost Estimate/Contract Cost	-	-	-	-	-	
2.	**Drawings**						
a.	Outline Design Drgs.	-	-	-	-	-	
b.	Sketch Design Drgs.	-	-	-	-	-	
c.	Final Design Drgs.	A	A	A	C	-	
d.	Shop Drawings	-	-	A/C	C	-	
e.	As Built Drgs.	I	I	I	I	-	
3.	**Other Document**						
a.	Specification	-	-	-	-	-	
b.	Tender Document	-	-	-	-	-	
c.	Tender Evaluation Report	-	-	-	-	-	
d.	Design Report	-	-	-	-	-	
e.	Progress Report	I	I	I	I	-	
f.	Financial Report	-	-	-	-	-	
g.	Minutes of Meeting	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 USED

ITEM	KEPT BY

8.2 List of Applicable Code of Practice and Regulations

Services	Title of Code of Practice/Standard
Electrical Wiring	SS CP5
Lightning Protection System	SS CP33
Emergency Voice Communication System	NA
Air Conditioning & Ventilation Installation	SS 553
Lift & Escalator Installation	SS 550, SS209 & SS CP5
Sprinkler System	CP 52
Wet Riser System	CP 29
Automatic Fire Alarm System	CP 10
Sanitary System	Code of Practice on Sewerage & Sanitary Works
Plumbing System	CP 48
Town Gas/LPG Supply System	CP 51
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

S/N	Description	Date of Application	Date of Approval	Remarks
1	To permit the max. zone ht. of the WR system measured from the lowest to highest WR landing valve to exceed the max. 120m stated in CP 29 : 1998 clause 2.2.1.2a.			
	Consultation Ref No. CON/C0006585/10	20/9/10	1/10/10	-
	Waiver Ref. No. WVR/03682/11	18/10/11	25/11/11	-
2	To waive the requirement for fie rating of gas pipes routing through the fire fighting, lift lobbies from 1st to 36thstorey that do not have cross ventilation.			
	Consultation Ref No. CON/C00898/12	14/2/12	16/2/12	-
	Waiver Ref. No.WVR/01080/12	24/3/12	12/4/12	-

*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	
Lift Traffic	7.18	Peters Research Ltd	Lift traffic calculation	✓

(✓*where applicable*)

SECTION 9

ENVIRONMENTAL CONSIDERATIONS

9.1 Sustainable Design Features / Criteria

Item	Remarks
Green Mark criteria	Platinum
Green Design Features	Refer to attached

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	✓

LIST OF GREEN FEATURES

List of green features
• T5 light fittings are used in basement car park • Motion sensors are used in private foyer of all apartment units • Clothes drying facilities is used in all apartment units. • Natural ventilation to units and common areas • Inverter and environmentally friendly air conditioner split units with 4 NEA 'ticks' green label is used in all apartment units • Variable frequency variable voltage (VVVF) drive lifts. The lights and fans in the lifts will be switched off after a predetermined time delay when there are no hall calls. • Basement car-park is provided with 2.5% openings as natural ventilation intake • CO sensor is used at basement car-park to control ductless exhaust system
• 1 tick for water efficient fittings • Collection of rainwater for irrigation system • Gas heater is used in all apartment units • Private sub-meter to common usage
• Green Concrete for footpath, kerbs, drains, wheel stopper • Recycled timber deck • Water proof membrane to toilets • Building users guide • Provision of bicycles parking for 5% of dwelling units.
Design for Other green features • Pneumatic waste collection system • Siphonic rainwater system • Eco pond • ECO-plug is used in all apartment units

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	-
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 - NOT USED

11.1 List of Sub-Job Numbers

Sub Job No	Description	Allocation Details