PROJECT QUALITY PLAN

PROPOSED UPGRADING OF PEI HWA PRESBYTERIAN PRIMARY SCHOOL

For

M/S PEI HWA PRESBYTERIAN PRIMARY SCHOOL

Copy No.	1

Prepared By: Tay Wen Chung

Authorised By: Andrew Loh

Date: 3 January 2003

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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	1259-PQP File	2 January 2002
2	Tay Wen Chung	30 September 2002

1.2 Revision Record

Revision	Date of Issue	Section Reference	Page(s)	Remarks
0	2 January 2002	1 to 10	26	1st issue of PQP
1	3 January 2003	1 to 10	26	

SECTION 2

PROJECT INFORMATION

2.1 Project Description

Type of Development	Redevelopment of School

Statistics of Development	
Site Area, m²	19,191.00 (incl. existing church, etc)
Nett Floor Area, m²	
Gross Floor Area, m²	18,065 (school only) 23,095.812 (total incl. church, substation, etc)
Covered Carpark, m²	N.A
No. of Covered Carpark Lots	N.A
No. of Apartments/Houses	N.A
No. of Beds (for Hospitals)	N.A
No. of Guestroom (for Hotels)	N.A
No. of Blocks / No. of Storeys	1 block of 5 Storey & 1 block of 7 Storey
No. of Phases	1

2.2 Project Cost

M&E Services Cost Plan (S$ x 1M)										
Services	EI	ACVI	LEI	FFAI	PSI	SPFI				
Estimate	1.6	0.86	0.2	*	0.45					
Awarded										

Total Project Construction Cost (S$ x1M)			
	Site Clearance	Piling Works	Main Contract
Estimate	0.182	0.654	12.21
Awarded	0.283	-	-

Site Clearance shall include earth work, soil improvement, service diversion and termination.

*** Included in EI cost**

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

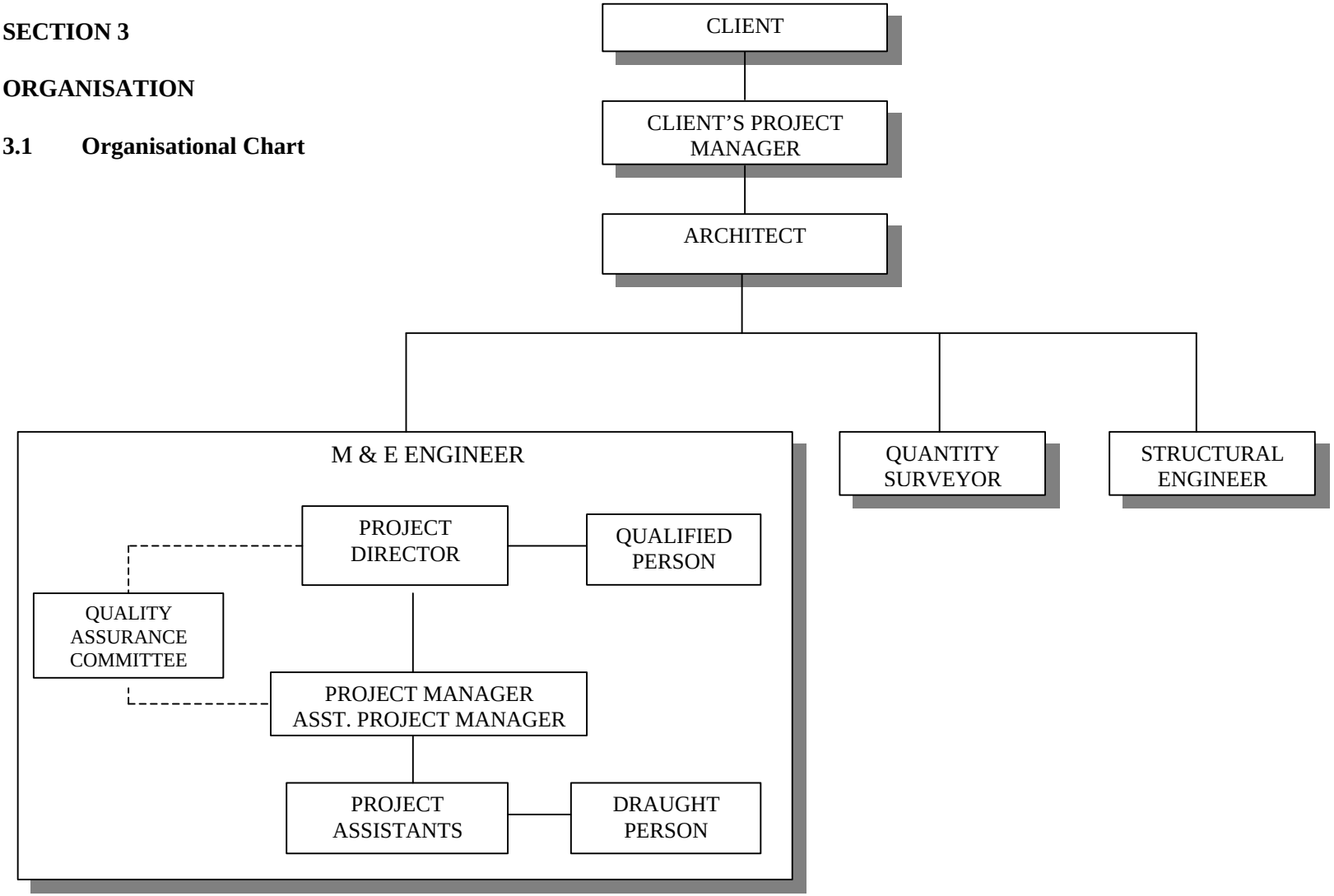
EJECTOR & DIVERTER		SUMP PUMP		FUEL OIL TANK		LIFT	✓	PRESSURE VESSEL		HOISTS		FOAM	

(✓ *where applicable*)

SECTION 3

ORGANISATION

3.1 Organisational Chart



SECTION 3

ORGANISATION

3.2 AEC's Project Team Member

TITLE		NAME
Project Director		Andrew Loh (LCT)
Qualified Person	Mechanical	Andrew Loh (LCT)
	Electrical	Tan Lai Siong (TLS)
Project Manager		Tay Wen Chung (TWC)
Assistant Project Manager		Goh Soon Huat (GSH)
Project Assistant (Mech)		Yip Yoke Fun (YYF)
Project Assistant (Elect)		Teh Yong Hui (TYH)
Draughtsperson		Common Pool
Resident Engineer (M&E)		-
Assistant Resident Engineer (M&E)		-
Clerk-of-Work (M&E)		-

3.3 Developer's/Client's Representatives

Developer:-Pei Hwa Presbyterian Primary School

Address:- 7 Pei Hwa Avenue
Singapore 597610

Temporary address:- 300 Jalan Jurong Kechil
Singapore 598668

Tel:- 6466 6787 / 6466 3797

Fax:- 6462 1944

Client's Representatives:-

Name of Firm	Contact Person	Contact
Pei Hwa Presbyterian Primary School	Name: Ms Chan Lai Peng Position: Principal	Tel: 6466 6787 / 6466 3797 Fax: 6462 1944 Pager: - Handphone: - Email: chan_lai_peng@MOE.gov.sg
Ministry of Education, School Development Office	Name: Zainal Abidin Mahmood Position: Project Manager	Tel: 6879 6923 (DID) Fax: 6776 3850 Pager: Handphone: Email: zainal_abidin_MAHMOOD@MOE.gov.sg

3.4 Other Consultants (Local)

Function / Name of Firm	Contact Person	Contact
Architect RDC Architects Pte Ltd	Name: Ms Rita Soh Position: Director	Tel: 6278 8878 Fax: 6278 7727 Pager: - Handphone: - Email: r.soh@rdca.com.sg
Quantity Surveyor OTN Building Cost Consultants Pte Ltd	Name: Mr Steve Leu Position:	Tel: 6557 0553 Fax: 6536 5065 Pager: - Handphone: - Email: steve.leu@echarris.com
Structural Engineer MWH Consultants (S) Pte Ltd	Name: Ms Jean Ho Position: Senior Engineer	Tel: 6333 1677 Fax: 6333 1622 Pager: - Handphone: - Email: jean.ho@mwhglobal.com

3.4 Other Consultants (Overseas) – Not Applicable

NOT USED

3.5 Contractors/Sub-Contractors – Not Used

Function / Name of Firm	Contract *	Contact Person	Contact
Main Contractor		Name: Position:	Tel: Fax: Pager: Handphone: Email:
Air Conditioning & Ventilation Installation Sub-Contractor	DSC	Name: Position:	Tel: Fax: Pager: Handphone: Email:
Plumbing & Sanitary Installation Sub-Contractor	DSC	Name: Position:	Tel: Fax: Pager: Handphone: Email:
Electrical Installation Sub-Contractor	DSC	Name: Position:	Tel: Fax: Pager: Handphone: Email:
Lift & Escalator Installation Sub-Contractor	DSC	Name: Position:	Tel: Fax: Pager: Handphone: Email:
Fire Fighting & Alarm Installation Sub-Contractor	DSC	Name: Position:	Tel: Fax: Pager: Handphone: Email:
_____		Name: Position:	Tel: Fax: Pager: Handphone: Email:
_____		Name: Position:	Tel: Fax: Pager: 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
PowerGrid/Power Supply:		
(a) Customer Supply	Mr Rick Lim	6823 8287/6823 8289 (T) 6823 8289 (F)
(b) Sub-Station		
(c) Installation		
(d) Meter Section		
(e) Road Lighting		
(f) Diversion		
Telecom:		
(a) Planning/Line Plant	Mr Lim Keng Tiong	6848 5613 (T)
(b) Installation		
(c) Diversion		
BCD:		
(a) Building Plan		
FSB:		
(a) Building Plan		
(b) M&E Section		
PUB (Water)		
(a) Water Conservation	Mr Wong Meng Kin	6731 3546 (T)
(b) Plumbing Plan		
(c) Diversion		
City Gas :		
(a) Planning/Submission	Mr Wong Boon Fah	6586 8852 (T)
(b) Installation/Inspection		
(c) Diversion		
ENV (Sewerage):		
(a) Building Plan		
(b) M&E Section	Mr David Lim B H	6731 9629 (T)
(c) Diversion		
ENV (Pollution Control)		
(a) Planning/Submission		
(b) Inspection		

SECTION 4

PROGRAMME

4.1 Overall Programme (Refer to attached Master Programme dated January 2003)

SECTION 4

PROGRAMME

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

Service	Authority	Original Submission		Comments/Resubmission						Approval/ Clearance
		Scheduled	Actual	Comment	Resubmit	Comment	Resubmit	Comment	Resubmit	
Application for Electricity Supply	Power Supply Pte Ltd	-	27.11.2002	13.12.2002	20.12.2002					8.1.2003
Power Supply Substation	PowerGrid Pte Ltd									
Main Single Line Diagram	Power Supply Pte Ltd	30.11.2002								
Metering Layout	PowerGrid Pte Ltd	16.12.2002								
Sanitary Installation	ENV (Sewerage)	25.11.2002								
Domestic Water Supply	PUB (Water)	25.11.2002								
Gas Supply Installation	City Gas Pte Ltd	01.11.2002								
Air Conditioning & Ventilation Inst.	Fire Safety & Shelter Bureau	25.11.2002								
Fire Fighting & Alarm Installation	Fire Safety & Shelter Bureau	28.2.2003								
Telephone Installation	Telecom (Broadband)	01.11.2002								

SECTION 4

PROGRAMME

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

NOT USED

SECTION 5

PROJECT RECORDS

5.1 List of Internal Files

Standard Files

File Ref:		File Ref:	
-CM	✓	-BD	✓
-PC	✓	-CC	✓
-AE	✓	-CF	✓
-AM	✓	-GC	
-AA	✓		
-PQP	✓		

Project Files to be initiated by PM as and when required

File Ref:		File Ref:		File Ref:	
-SM	✓	-SR		-ET	
-SC		-QM		-MT	
-AI/AD		-EC	✓	-DF	
-SQ/RFI		-MC	✓	-EOT	
-CO		-PP			

Service Files to be initiated by PM as and when required

	Service										
File Ref:	ACVI	FFAI	PSI	EI	LI	SPFP					
-G	✓	✓	✓	✓	✓						
-Q											
-VO											
-PP											
-AI											
-AD											
-CF											

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	YYF
Incoming Architectural Sketches/Details	YYF
Incoming Structural Drawings	YYF
M&E Drawings	
- Electrical Installation	TYH
- Lift & Escalator Installation	TYH
- Air Conditioning & Ventilation Installation	YYF
- Fire Fighting & Alarm Installation	YYF
- Plumbing & Sanitary Installation	YYF
Other Drawings	TWC

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	C	I	I	I	I	
b.	Project Administration	I	I	I	I	I	
c.	Project Cost Estimate/Contract Cost	A	A	I	-	C	
2.	**Drawings**						
a.	Outline Design Drgs.	C	I	C	C	-	
b.	Sketch Design Drgs.	I	I	C	C	-	
c.	Final Design Drgs.	C	I	I	I	I	
d.	Shop Drawings	I	I	C	C	-	
e.	As Built Drgs.	I	I	-	-	-	
3.	**Other Document**						
a.	Specification	I	I	I	-	I	
b.	Tender Document	I	I	I	-	I	
c.	Tender Evaluation Report	A	A	I	-	I	
d.	Design Report	A/C	I	C	-	I	
e.	Progress Report	I	I	I	-	I	
f.	Financial Report	I	I	I	-	I	
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	-	-	-	

SECTION 7

WORK AUTHORISATION

Activity \ Authorised Signatories	PD	QP	PM	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
SS : AEC Site Staff

SECTION 8

DESIGN INPUT & METHODOLOGY

8.1 List of Client's Standards, Reference Documents or Brief

ITEM	KEPT BY
"Design Handbook for Primary School", prepared by PWD Consultants School Division	LIBRARY
"Infrastructure Requirements for School" issued by Ministry of Education	LIBRARY

8.2 List of Applicable Code of Practice and Regulations

Electrical Wiring	~~BS~~	SS	IEE	~~NFPA~~	
Lightning Protection System	~~BS~~	SS			
Emergency Voice Communication System	~~BS~~	SS	~~NFPA~~		
Air Conditioning & Ventilation Installation	~~BS~~	~~AS~~	~~NFPA~~	SS	~~MS~~
Lift & Escalator Installation	~~BS~~	SS			
Sprinkler System	~~BS~~	~~SS~~	~~NFPA~~	~~AS~~	~~LPC~~
Wet Riser System/Dry Riser System	~~BS~~	SS	~~NFPA~~	~~AS~~	~~MS~~
Automatic Fire Alarm System	~~BS~~	SS	~~NFPA~~	~~AS~~	~~MS~~
Sanitary System	BS	SS	~~NFPA~~	~~AS~~	~~MS~~
Plumbing System	~~BS~~	SS	~~NFPA~~	~~AS~~	~~MS~~
Town Gas/LPG Supply System	~~BS~~	SS	~~NFPA~~	~~AS~~	
Boiler and Steam Supply System	~~ASME~~	~~BS~~	~~AS~~		
Mechanical Smoke Control System	~~BS~~	~~NFPA~~	~~AS~~		

(Delete where necessary)

SECTION 8

DESIGN INPUT & METHODOLOGY

8.3 List of Design Guide or Handbook Used

ASHRAE Handbooks

Institute of Plumbing's Plumbing Services Design Guide

8.4 List of Applicable Quality System Procedures

Alpha Engineering Consultant's Quality System Procedures

Section	Title
A1	Documentation of Quality System Procedure
A2	Documentation of Project Quality Plan
A3	Administration Control
A4	Document Control
A5	Library Control
A6	Archive Control
A7	Purchasing Control
A8	Training Control
A9	Feedback Reporting
A10	Computer Control
B1	Preparation of Consultancy Offer
B2	Project Commission and Service Agreement
B3	Design Control
B4	Design Change Control
B5	Drawing Control
B6	Specification Control
B7	Tender Process and Evaluation
C1	Construction Process Control
C2	Testing and Commissioning
D1	Quality System Audit

8.5 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 Engineering	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 Engineering	Calculation of voltage drop and fault level	✓

(✓ *where applicable*)

SECTION 9

CLIENT'S REQUIREMENTS

9.1 List of Output Required by Client:-

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

** Remarks*

A: for approval C: for comment I: for Information Re: for record

Other purposes and for action: please specify.

9.2 Specific Procedures Required By Client *(If applicable)*

SECTION 10

LIST OF SUB-JOB

10.1 List of Sub-Job Numbers – Not Applicable

NOT USED