PROJECT QUALITY PLAN

PROPOSED REDEVELOPMENT FOR PEI CHUN PUBLIC SCHOOL

For

MINISTRY OF EDUCATION

Copy No.	2

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Authorised By: TAN L S

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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	PQP File	1 July 2000
2	Choo C N	1 July 2000

1.2 Revision Record

Revision	Date of Issue	Section Reference	Page(s)	Remarks
1	17 October 2000	S1.1 – S1.2, S2.2, S3.2- S3.3, S3.5 – S3.6, S4.1 – S4.2, S5.1 – S5.2, S6.2, S8.1	14	

SECTION 2

PROJECT INFORMATION

2.1 Project Description

Type of Development	School

Statistics of Development	
Site Area, m²	1.8 ha
Nett Floor Area, m²	
Gross Floor Area, m²	17,734.64 m²
Covered Carpark, m²	Nil
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 6-Storey (new), 1 block of 5-Storey (new) & 1 block 3-Storey (A&A)
No. of Phases	Two

2.2 Project Cost

M&E Services Cost Plan (S$ x 1M)										
Services	EI	ACVI	LEI	FFAI	PSI	SPFI				
Estimate	0.8	0.65	Nil	*	0.9	Nil				
Awarded	2	0.65	Nil	*	0.462	Nil				

Total Project Construction Cost (S$ x1M)			
	Site Clearance	Piling Works	Main Contract
Estimate	0.220	1.220	10.737
Awarded	0.0766	0.973	10.380

Site Clearance shall include demolition and service diversion (excluding public utility services diversion).

*Included in EI & PSI 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

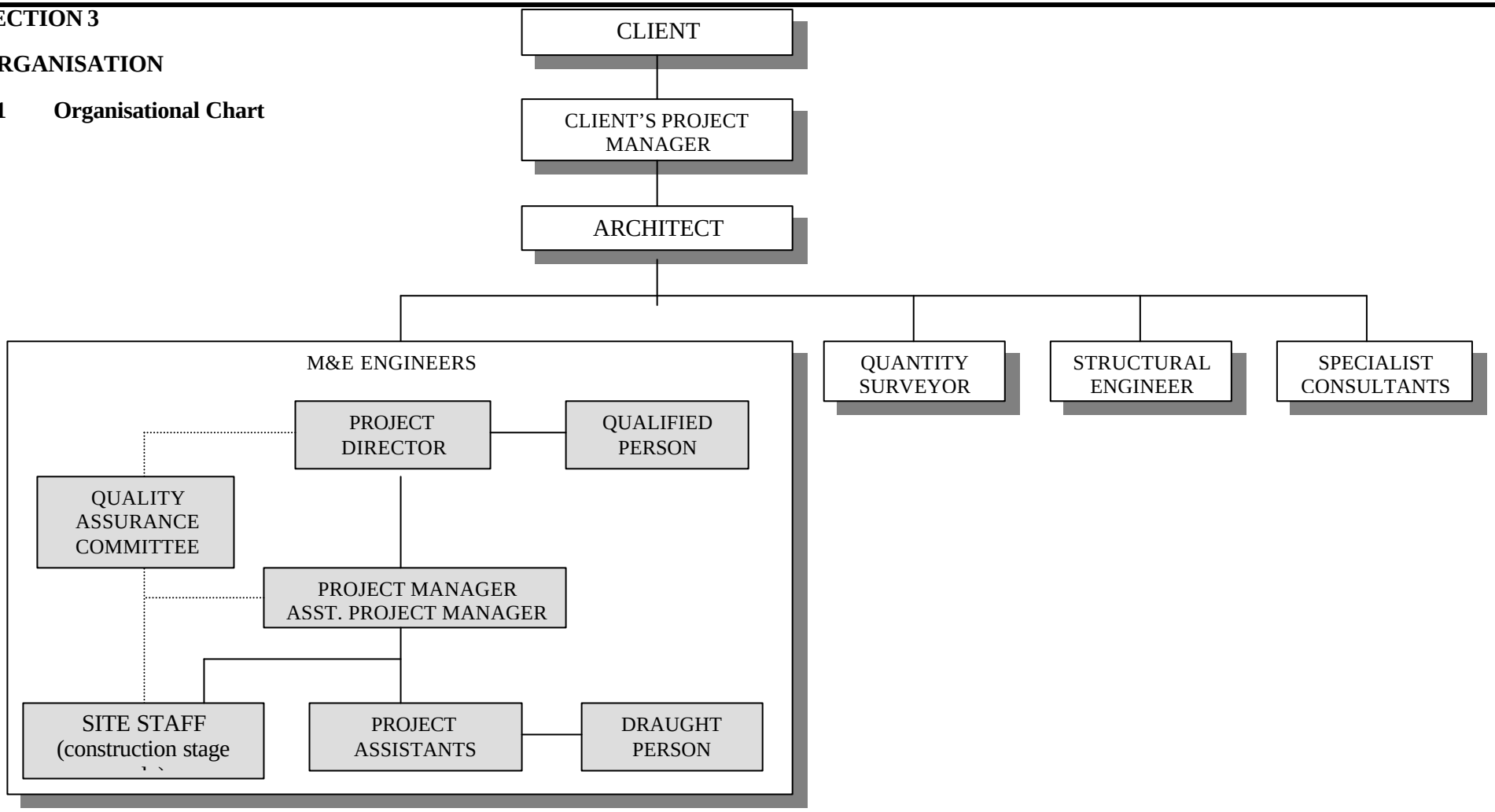
EJECTOR & DIVERTER		SUMP PUMP		FUEL OIL TANK		LIFT & ESCALATOR		PRESSURE VESSEL		HOISTS		FOAM	

(✓ *where applicable*)

SECTION 3

ORGANISATION

3.1 Organisational Chart



SECTION 3

ORGANISATION

3.2 AEC's Project Team Member

TITLE		NAME
Project Director		Tan L S
Qualified Person	Mechanical	Andrew Loh
	Electrical	Tan L S
Project Manager		Fok Y C
Assistant Project Manager		Lloyd Wong
Project Assistant (Mech)		
Project Assistant (Elect)		John Gui C S
Draughtsperson		Common Pool
Resident Engineer (M&E)		
Assistant Resident Engineer (M&E)		
Clerk-of-Work (M&E)		

3.3 Client/Client's Representatives

Client:- Ministry of Education
School Development Office

Address:- 2 Leng Kee Road
#03-09 Thye Hong Centre
Singapore 159086

Tel:- 471 9575

Fax:- 474 1025

Client's Representatives:-

Name of Firm	Contact Person	Contact
Pei Chun Public School	Name: Mr Chen Keng Juan Position: Principal	Tel: 353 9454 Fax: 353 8418 Pager: Handphone: Email:
Ministry of Education	Name: Mrs Wong-Chok Siew Ling Position: School Building Project Officer	Tel: 872 1110 Fax: 776 3850 Pager: Handphone: Email: CHOK-Siew-Ling@MOE.GOV.SG
	Name: Position:	Tel: Fax: Pager: Handphone: Email:
	Name: Position:	Tel: Fax: Pager: Handphone: Email:
	Name: Position:	Tel: Fax: Pager: Handphone: Email:

3.4 Other Consultants (Local)

Function / Name of Firm	Contact Person	Contact
Architect DP Architects Pte Ltd	Name: Jeremy Tan Position: Senior Associate	Tel: 338 3988 Fax: 337 9989 Pager: Handphone: Email:
Quantity Surveyor Fsinn & Andrew	Name: Janice Yin Position: Senior Q S	Tel: 272 1110 Fax: 272 0749 Pager: Handphone: Email:
Structural Engineer SPECS Consultants Pte Ltd	Name: Rudy Gunawan Position: Manager (Engineering)	Tel: 273 7755 Fax: 276 3363 Pager: Handphone: Email: rudyg@hq.psa.com.sg
Interior Designer Nil	Name: Position:	Tel: Fax: Pager: Handphone: Email:
Lighting Consultant Nil	Name: Position:	Tel: Fax: Pager: Handphone: Email:
Acoustic Consultant Nil	Name: Position:	Tel: Fax: Pager: Handphone: Email:
_____	Name: Position:	Tel: Fax: Pager: Handphone: Email:
_____	Name: Position:	Tel: Fax: Pager: Handphone: Email:

3.4 Other Consultants (Overseas)

NOT USED

3.5 Contractors/Sub-Contractors

Function / Name of Firm	Contract *	Contact Person	Contact
Main Contractor To be appointed	DC	Name: Position:	Tel: Fax: Pager: Handphone: Email:
Air Conditioning & Ventilation Installation Sub-Contractor To be appointed	DSC	Name: Position:	Tel: Fax: Pager: Handphone: Email:
Plumbing & Sanitary Installation Sub-Contractor To be appointed	DSC	Name: Position:	Tel: Fax: Pager: Handphone: Email:
Electrical Installation Sub-Contractor To be appointed	DSC	Name: Position:	Tel: Fax: Pager: Handphone: Email:
Lift & Escalator Installation Sub-Contractor To be appointed	NSC	Name: Position:	Tel: Fax: Pager: Handphone: Email:
Fire Fighting & Alarm Installation Sub-Contractor Nil		Name: Position:	Tel: Fax: Pager: Handphone: Email:
Swimming Pool Filtration Plant Installation Sub-Contractor Nil		Name: Position:	Tel: Fax: Pager: Handphone: Email:
Carpark System Installation Sub-Contractor Nil		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	Tan Chong Poh	831 8551 / 831 8564
(b) Sub-Station	Francis Chang See Tang	823 8555
(c) Installation	Loh Park Woon	277 7063 / 277 7044
(d) Meter Section		
(e) Road Lighting	Teo Hui Choon	
(f) Diversion		
Telecom:		
(a) Planning/Line Plant	Lim Kwee Peng	848 5705 / 9300 3276 (Pg)
(b) Installation		
(c) Diversion		
BCD:		
(a) Building Plan		
FSB:		
(a) Building Plan		
(b) M&E Section		
PUB (Water)		
(a) Water Conservation		
(b) Plumbing Plan	Mr Hsieh Jing	731 3569
(c) Diversion		
PowerGas:		
(a) Planning/Submission	Mr Wong Bon Fah	831 8682
(b) Installation/Inspection		
(c) Diversion		
ENV (Sewerage):		
(a) Building Plan		
(b) M&E Section		
(c) Diversion		
ENV (Pollution Control)		
(a) Planning/Submission		
(b) Inspection		

SECTION 4

PROGRAMME

4.1 Overall Programme

See Attached (2 pages)

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		5/8/99							
Power Supply Substation	PowerGrid Pte Ltd	11/99								
Main Single Line Diagram	Power Supply Pte Ltd	12/99								
Consumer Switchroom Layout	PowerGrid Pte Ltd	N.A.								
Metering Layout	PowerGrid Pte Ltd	12/99								
Sanitary Installation	ENV (Sewerage)	12/99								
Domestic Water Supply	PUB (Water)	12/99								
Gas Supply Installation	PowerGas Pte Ltd	12/99								
Air Conditioning & Ventilation Inst.	Fire Safety Bureau	2/00								
Fire Fighting & Alarm Installation	Fire Safety Bureau	2/00								
Telephone Installation	Telecom (Broadband)									
	Telecom (TDCS)									
	Telecom (Domestic Operation)									
Fuel Storage	Fire Safety Bureau									
	Pollution Control Department									

SECTION 4

PROGRAMME

4.2 Authority Submission Status for M&E Services

See Attached (1 Page)

SECTION 5

PROJECT RECORDS

5.1 List of Internal Files

Standard Files

File Ref:		File Ref:	
-CM	✓	-VO	✓
-PC	✓	-BD	✓
-AE	✓	-CC	✓
-AM	✓	-Q	✓
-AA	✓	-GC	✓
-PQP	✓	-AI	✓

Project Files to be initiated by PM as and when required

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

Service Files to be initiated by PM as and when required

	Service										
File Ref:	ACVI	FFAI	PSI	EI	LI	SPFP	FG				
-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	John Gui C S
Incoming Architectural Sketches/Details	John Gui C S / File
Incoming Structural Drawings	John Gui C S
M&E Drawings	
- Electrical Installation	John Gui C S
- Lift & Escalator Installation	N.A.
- Air Conditioning & Ventilation Installation	Lloyd Wong
- Fire Fighting & Alarm Installation	Lloyd Wong
- Plumbing & Sanitary Installation	Lloyd Wong
- Swimming Pool & Filtration Installation	N.A.
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

Item No.	Description*	Required From	Required By	Date Required	Remarks
1.	A/C Electrical Load	STH	GCS	1 April 2000	
2.	Manual Fire Alarm Design	STH	GCS	1 April 2000	

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

SECTION 8

DESIGN INPUT & METHODOLOGY

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

ITEM	KEPT BY
Infrastructure Requirements For School Rev 3.0	GCS
Design Handbook For Primary School	GCS
Particular Specification Electrical Work For Visioncare	GCS

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			
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

Carrier's Handbook of Air Conditioning System Design

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
A4	Document Control
A6	Archive Control
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	A/C
M&E Cost Estimate Report	A/C
Pre-Qualification of Tenderers	A
Tender Documents	C
Tender Report	A
Payment Valuation for QS	I
Certificates of Supervision for TOP/CSC	C

** 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 USED