

ANNEX 1 (Agriculture Section)

No.	Items	Q'ty	Spec. / Notes
3	LABORATORY GLASSWARE		
3.1	Glass Burets – 50 ml standard	20	
3.2	Volumetric flasks – 5ml, 10 ml, 25 ml, 50 ml, 100 ml, 200ml, 250 ml, 500 ml, 1000ml	20 each	
3.3	Measuring Pipet – 1ml, 2ml, 5ml, 10ml, 25ml	20 each	
3.4	Pyrex Erlenmeyer Flasks – 25ml, 50ml, 125ml, 250ml, 500ml, 1000ml	20 each	
3.5	Measuring Cylinders – 10ml, 25ml, 50ml, 100ml, 250ml, 500ml, 1000ml	20 each	
3.6	Pyrex Beakers-10ml,20ml,30ml,50ml,100ml,150ml,250ml,600ml, 1litre, 2litre	20 each	
3.7	Test tubes – 16x 125mm, 18 x 150mm	20 each	
3.8	Pipet brushes	10	
3.9	Test brushes	10	
3.10	Funnels – 50mm, 65mm, 75mm, 100mm in top diameter	5 each	
3.11	Pipet fillers	5	
3.12	Lab micro spoon	10	
3.13	Micro Spatulas	10	
3.14	Glass Stirring Rods	10	
3.15	Draining Rack or Stand	5	
3.16	Rubber stoppers of different sizes to fit general glassware	1 dozen each	

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ANNEX 2 (Agriculture Section)

No.	Items	Q'ty	Spec. / Notes
4	LABORATORY CONSUMABLES		
4.1	Acetic Acid (99%)		
4.2	Aluminum Sulphate		
4.3	Aluminum wire		
4.4	Ammonium Acetate		
4.5	Ammonium Chloride		
4.6	Ammonium Ferric Sulphate		
4.7	Ammonium Fluoride		
4.8	Ammonium Molybdate		
4.9	Ammonium Oxalate Oxalic Acid		
4.10	Ammonium Sulphate (M.A.R/Aristar Quality)		
4.11	Ascorbic acid		
4.12	Barium Chloride		
4.13	Boric Acid		
4.14	Bromocresol green methyl red indicator		
4.15	Caesium Chloride		
4.16	Calcium Carbonate		
4.17	Calcium Chloride (anhydrous dry)		
4.18	Calcium Hydroxide		
4.19	Carbolic Acid		
4.20	Chloroform		
4.21	Copper Sulphate		
4.22	Diphenylcarbazone		
4.23	Disodium hydrogen Orthophosphate		
4.24	Disodium hydrogen phosphate		
4.25	Disodium nitroferic cyanide		
4.26	Ethanol 95%		
4.27	Ethanol L.R. r commercial grade 90%w/w		
4.28	Ferrous sulfate heptahydrate		
4.29	Ferrous ammonium sulfate		
4.30	Formic Acid 90%		
4.31	Hydrazine Sulphate		
4.32	Hydriodic acid sp. Gr. 1.7		
4.33	Hydriodic acid sp. Gr. 1.94		
4.34	Hydrochloric Acid		
4.35	Hypophosphorus acid 50%w/w		
4.36	Iron chips Lecc cat no 501-077		
4.37	Kjeldahl Catalyst Tablets B.D.H		
4.38	Lanthanum chloride		
4.39	Levor IV wetting agent		
4.40	Magnesium Carbonate		
4.41	Magnesium Ribbon		
4.42	McCartney Bottle		
4.43	Mercury Salt		
4.44	Methyl Red Powder		
4.45	N-1-naphthylethylenediamine dihydrochloride (NEDD)		
4.46	NaDTT		
4.47	Naigene bottle		
4.48	Nitric Acid		
4.49	NN'-dimethyl-p-phenylenediamine sulphate		

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No.	Items	Q'ty	Spec. / Notes
4.50	o-phenanthroline monohydrate		
4.51	Phosphoric Acid		
4.52	Potassium antimony tartrate		
4.53	Potassium chloride		
4.54	Potassium dichromate		
4.55	Potassium Nitrate		
4.56	Potassium sodium titrate		
4.57	Potassium dihydrogen phosphate		
4.58	Potassium dihydrogen phthalate		
4.59	Silicic Acid		
4.60	Silver Thiourea		
4.61	Sodium Acetate		
4.62	Sodium Chloride		
4.63	Sodium Citrate		
4.64	Sodium Dithionite		
4.65	Sodium Fluoride		
4.66	Sodium Hydrogen Tartrate		
4.67	Sodium Hydroxide		
4.68	Sodium hypochlorite		
4.69	Sodium Nitrate		
4.70	Sodium Nitroprusside		
4.71	Sodium Pyrophosphate		
4.72	Sodium Salicylate		
4.73	Strontium Chloride		
4.74	Sucrose		
4.75	Sulphanilamide		
4.76	Sulphuric Acid (Analytical grade)		
4.77	Sulphuric Acid 98% w/w		
4.78	Technicon AutoAnalyser		
4.79	Tetra Sodium Pyrophosphate		
4.80	Tin Metal Leco cat. No. 501-076		
4.81	Triethanolamine		
4.82	Trisodium Citrate		
4.83	Zinc Acetate		
4.84	Whatman No. 541		
4.85	Whatman No.1 filter paper		
4.86	Whatman No.40		
4.87	Whatmann No. 2		
4.88	Whitemann No. 30 Filter paper		

J. Science Section, Dept. of Science, Agriculture & Health

No.	Items	Qty	Spec. / Notes
1	Measuring Instruments / Common Use		
1.1	Balance - Electronic Balance	2	Up to about 300-500g and reading to 0.01g, LCD digital read out
1.2	Balance - Electronic Semimicro/microbalance	2	Up to about 50 g and reading to 1mg
1.3	Balance - Electronic Analytical Balance	2	Up to 5g and reading to 0.1mg
1.4	pH meter - Bench	2	Digital, Automatic temperature compensation. Range 0-14, Accuracy ± 0.01 pH + 1 digit. Power battery (for field work). Two point calibration. Environment 0-50 C
1.5	pH meter - Hand held	2	Digital, Automatic temperature compensation. Range 0-14, Accuracy ± 0.01 pH + 1 digit. Power battery (for field work). Two point calibration. Environment 0-50 C
1.6	Spare electrodes (pH)	4	2 each for the above pH meters.
1.7	pH Calibration Kit	5	
1.8	Conductivity Meter		
1.9	Digital Hygro-Thermometer	2	Range -40 to 150° C, Resolution 0.1° C
1.10	Thermometers, Mercury	10	White Backed, Range -5 to 105 C, General purpose stirring thermometers
1.11	Thermometers, Mercury	10	Yellow Backed, Range -5 to 105 C, General purpose stirring thermometers
1.12	Automatic Pipette, 1 - 10 μ l (Variable volume)	6	1 - 10 μ l, microlitre, variable volume, selection with digital indication of volume, and simple tip ejector facility
1.13	Automatic Pipette, 10 - 100 μ l (Variable volume)	6	10 - 100 μ l, Pipettes, microlitre, variable volume, selection with digital indication of volume, and simple tip ejector facility
1.14	Automatic Pipette, 100 μ l - 1000 μ l (Variable volume)	6	100 μ l - 1000 μ l, microlitre, variable volume, selection with digital indication of volume, simple tip ejector facility
1.15	Automatic Pipettes, 1ml - 5 ml (Variable volume)	6	1ml - 5 ml, Pipettes, microlitre, variable volume, selection with digital indication of volume, simple tip ejector facility
1.16	Pipette tips		Capacity: 1 - 10 μ l to 5 ml, different colours
2	Analytical Instrument / Common Use		
2.1	Spectrophotometers (2 x chemistry, 2 x Biology)	4	Compact, Wide range of operation. Microprocessor controlled, simple key-pad operation
2.2	UV-VIS Spectrophotometer	1	With standard software package & Thermal Printer & accessories, Wavelength : 200 - 1100 nm, Wave length accuracy ± 0.1 nm, repeatability ± 0.1 nm
3	Chromatography & Electrophoresis / Common Use		
3.1	Paper Chromatography	4	1 set
3.11	Chromatography paper, grade 1	100 m rolls	Width 10mm, 20mm, 30mm 40mm 50mm, 100mm
3.12	Chromatography paper, grade 1	100 m rolls	For use with chromatography tanks
3.13	Chromatography paper, grade 1	300 sheets	Slotted, for rapid multiple analysis
3.2	Thin Layer Chromatography	1	Chromatography jar, TLC plates, chromatography column, spray gun, spotting pipette, dropping pipette, indicators & aminoacids set.
3.21	Chromatography column	4-6	With delivery tube, nozzle and screw clamp
3.22	Chromatography Jar	6	Heavy borosilicate glass with lid. Height 100mm & 200 mm, diameter 100mm
3.23	Chromatography spray gun	6	For use in paper & thin layer chromatography for spraying locating agents on to chromatograms
3.3	Electrophoresis	1 set	SDS-polyacrymide, with Power supply unit & accessories
4	General Instrument / Common Use		
4.1	Bunsen Burner (Universal/general purpose)	25	Designed for wide range of gases, heavily nickel plated brass, Fitted to a steel base, Fitted with a collar air regulator
4.2	Auto Vortex Variable speed mixer	2	
4.3	Blender	2	
4.4	Homogeniser (1 x chemistry, 1 x Biology)	2	Table top, with various rods
4.5	Magnetic Stirrer / Hotplate	1	Powerful magnet, ON/OFF switch with indicator light. Max temp. 250° C., Max. Stirring speed 2000 rpm. Hotplate diameter 150 mm
4.6	Magnetic Stirrer	2	Resistant to most laboratory chemicals. Speed control dial, Maximum stirring capacity 1-1.5 L, Speed 100 - 1000 rpm
4.61	Stirrer Bars	10 each	12 mm, 25mm, 35 mm
4.7	Stirred Water baths	2	Digitally controlled thermostat, safety cut-out device, heater & temp. indicators. Temp range; 98° C, Table top
4.8	Centrifuge - Bench Top	2	General purpose centrifuge, swingout bucket, max. speed 3000 r.p.m., Safety interlock, Polyallomer tubes (approx 25cc)

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No.	Items	Q'ty	Spec. / Notes
4.9	Centrifuge - High speed & refrigerated	150	Microcomputer controlled high speed refrigerated centrifuge. Max speed 20,000 rpm, Max. force 50,000 g. Temp. control range -2 to +40, with Beckman Polyalloy tubes
4.91	Rotor and 50 ml tubes	1	6 - 16 places fixed angle rotor with cover, Speed 20,000 rpm
4.92	Rotor and 16 ml tubes	1	24 places fixed angle Rotor with cover, speed 20,000 rpm.
4.10	Distilled water/ Deionised Water Machine	2	Grade 1/2 (British Standard); good for trace elements analysis, Flow rate: 2-3 liter per hour, A conductivity meter is incorporated. With replacement cartridges.
4.11	Freeze-Dryer	1	Capacity: 4 - 6L, Temperature range: -50 to +60 C
4.12	Heating mantles, Fire Resistant	2	Flask capacity 100, 250, 500ml, Heater power: 100-200W
4.13	Incubator	2	Max. temp. 100° C, Accuracy : 0.1 ° C, LCD temp. display, Stainless steel interior, Non-to salves, Capacity 150 L
4.14	Laboratory Furnace	1	Small size, Maximum Temp. 1000 C, High efficiency insulation, Drop down door with safety switch
4.15	Oven	1	Temp range 30-200 C. Power rating 1000 W, internal capacity 30-40 L, Solvent removal
4.16	Refrigerator	2	Standard refrigerator for storage of samples (biological, Animal & plant), Capacity : 300 L
4.17	Deep Freezer (-20 °C)	1	Capacity 200-250 L, With sample containers
4.18	Microtome	1	Rotary precision microtome, Standard size
4.19	Microtome equipment	1	Set, including molds and blocks, paraffine and resin
5 Safety Equipment / Common Use			
5.1	Disposable Dust Masks	300	
5.2	Face shield	20	Protection against chemical splashes and impact
5.3	Safety Spectacles	60	Light weight, Thermally toughened 'thin glass' moulded frame with side shields
5.4	Lab. coats	60	Polyester cotton, white
5.5	Gloves, Disposable	300	medium & large
5.6	Gloves, Leather	20 pairs	General purpose medium weight glove, provide protection for the hand and forearm
5.7	Gloves, Rubber	20 pairs	General purpose medium weight glove
5.8	Laboratory First-Aid Chart (for teaching purpose)	3	Provide immediate reference to the first aid measures required in the event of an accident in the laboratory.
6 Analytical Instrument / Chemistry & Agriculture			
6.1	Flame Spectrometry	1	For Quantitative analysis. Analysis of alkali metals
6.2	Gas Chromatography	1	Quantitative chemical analysis. (e.g. To characterize a mixture of volatile fatty acids-acetic acids, butyric acid and propionic acid)
7 Dissecting tools / Biology & Agriculture			
7.1	Dissecting Instrument Set	60	
7.2	Dissecting Board	60	Wood
7.3	Scalpels with disposable blade	100	100 handles & 500 disposable blades
7.4	General Dissecting Scissors	10	
7.5	Surgical Scissors	10	
7.6	Sterile Scalpels	10	
7.7	Forceps, stainless steel	10	Blunt, Narrow tines, Sharp
7.8	Dissecting needles, box of 100	10	Straight, stainless steel
8 Microscope & Optical instruments / Biology & Agriculture			
8.1	Microscope	25	Routine microscope, with internal light source
8.2	Dissecting microscope	15	with illumination
8.3	Hand lenses	50	Convex lens, x10 magnification, Mounted in chromium/nickel plated frame
8.4	Inverted Microscope for Tissue culture	1	
8.5	Microscope, phase contrast with TV system	1	For demonstration use
8.6	Dry Cabinet for Microscopes	1-2	
9 Microbiology & Tissue Culture / Biology			
9.1	Autoclave	1	Standard type
9.2	Tissue Culture	1	1pc. X Multiwell Plates : Surface Treated Polystyrene, Sterilised. 10pcs. x 24 wells, flat-bottomed with lid, 10pcs. x 96 Wells, flat-bottomed with lid, 10pcs. x 96 Wells, round-bottomed with lid, 20 each X Containers: Polystyrene, Sterilised 250 ml with lid & 250 ml without lid
9.3	UV fluorescent tube	1 set	For sterilization

No.	Items	Qty	Spec. / Notes
9.4	UV lamp	1	Fluorescence test, with handle
9.5	Ultrasonic Disintegrator	1	For the disintegration and disruption of living cells. (VIRTIS Ultra Sonic Cell Disrupters) 25 kHz generator, LED output indicator, power supply with stainless steel work surface & titanium micro probe.
9.6	Laminar Flow Workstation	1	Small size
10	Educational Media / Biology & Agriculture		
10.1	Educational slide set - Botany	1 set	
10.2	Educational slide set - Ecology	1 set	
10.3	Educational slide set - Evolution	1 set	
10.4	Educational slide set - Zoology	1 set	
10.5	Educational video films - Animal behavior	1 set	
10.6	Educational video films - Botany	1 set	
10.7	Educational video films - Ecology	1 set	
10.8	Educational video films - Environmental Science	1 set	
10.9	Educational video films - Evolution	1 set	
10.10	Educational video films - Zoology	1 set	
10.11	Microscope Slides Sets	1 set	Introductory Botany, General Botany, Comprehensive Plant Kingdom Collection, Cell Division Plant & Animal Comparison, Plant Form and Structure
10.12	Microscope Slides Sets	1 set	Plant Cytology, Histochemistry, Cell division, Genetics, Human genetics, Histology (Epithelial Tissues, Connective Tissues)
10.13	Chart/Poster - Five kingdoms of life	1	
10.14	Chart/Poster - Plant cell structure and Animal cell structure	1	
10.15	Chart/Poster - Electrophoresis Techniques Reference	1	
10.16	Chart - Cell structure and cell division chart set	1	
10.17	Chart - Botany & Zoology Chart Series set	2	
10.18	Chart - Periodic Table and Atomic Data set	1	
10.19	Charts - Human System Charts	1 each	Brain, Heart, Vascular System, Nervous system, Muscular System, Skeleton, Spine, Eye, Lymphatic system, Respiratory system, Digestive system and Pregnancy/Birth
11	Models / Biology		
11.1	Model - DNA Molecular Model Kit	1	
11.2	Model - Organic Structure Model Set	1	
11.3	Model - Protein Synthesis	1	
11.4	Models - Plant & Animal cells, System, Organs	1 each	
12	Models / Chemistry		
12.1	Molecular Models - Sodium chloride	1	
12.2	Molecular Models - Diamond	1	
12.3	Molecular Models - Graphite	1	
12.4	Molecular Models - Scale atoms kit	2	Introductory kit & advanced kit
13	General Equipment / Common Use		
13.1	TV Monitor 29 inch	1	
13.2	VHS Video player	1	
13.3	Steel Cabinet for TV, VTR	1	
13.4	Slide Projector	1	Remote control
13.5	Movable Projector Screen	1	100/120 inch
13.6	Desktop Computer (Windows)	4	For Student use
13.7	UPS	4	
13.8	AVS	1	
13.9	Digital Camera	1	
14	Glassware / Biology & Agriculture	}	ANNEX
15	Glassware & Other / Common Use		
16	Consumables for Tissue Culture / Biology		
17	Consumables / Common Use		

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ANNEX (Science Section)

No.	Items	Q'ty	Spec. / Notes
14	Glassware / Biology & Agriculture		
15.1	Slides glass	100 packs	Plain, Thickness 1.0 mm, 100pcs/packet
15.2	Cover slips	100 packs	Square, standard size
15.3	Petri dishes (plastic)	10 packs	
15.4	Specimen Boxes	2	Clear round/rectangular
15	Glassware & Other / Common Use		
15.1	Test tubes - 10mm	250	Borosilicate glass, Resistant to thermal shock
15.2	Test tubes - 15mm	250	Borosilicate glass, Resistant to thermal shock
15.3	Test tubes - 15-25mm	250	Borosilicate glass, Resistant to thermal shock
15.4	Flask - Volumetric Stoppered - 10ml	50	Borosilicate glass, Glass/plastic stoppers
15.5	Flask - Volumetric Stoppered - 50ml	50	Borosilicate glass, Glass/plastic stoppers
15.6	Flask - Volumetric Stoppered - 100ml	50	Borosilicate glass, Glass/plastic stoppers
15.7	Flask - Volumetric Stoppered - 250ml	50	Borosilicate glass, Glass/plastic stoppers
15.8	Flask - Volumetric Stoppered - 500ml	50	Borosilicate glass, Glass/plastic stoppers
15.9	Flask - Boiling short neck - 100ml	10	Borosilicate glass, with graduations & sockets
15.10	Flask - Boiling short neck - 250ml	10	Borosilicate glass, with graduations & sockets
15.11	Flask - Boiling short neck - 500ml	10	Borosilicate glass, with graduations & sockets
15.12	Flask - Conical narrow mouth - 100ml	10	Borosilicate glass, with graduations
15.13	Flask - Conical wide mouth - 100ml	10	Borosilicate glass, with graduations
15.14	Flask - Distillation - 100ml	10	Side arm on all sizes 60° to the vertical axis
15.15	Flask - Filter - 100ml	10	Borosilicate glass
15.16	Flask - Filter - 500ml	10	Borosilicate glass
15.17	Flask - Flat bottom - 100ml	10	Pyrex/Borosilicate
15.18	Flask - Flat bottom - 500ml	10	Pyrex/Borosilicate
15.19	Flask - Round bottom - 100ml	10	Borosilicate glass
15.20	Cylinder - 25ml	20	
15.21	Cylinder - 50ml	20	
15.22	Cylinder - 100ml	20	
15.23	Cylinder - 250ml	20	
15.24	Cylinder - 500ml	20	
15.25	Cylinder - 1000ml	10	
15.26	Reagent Bottle - clear glass - 30ml	50	
15.27	Reagent Bottle - clear glass - 60ml	50	
15.28	Reagent Bottle - clear glass - 125ml	50	
15.29	Reagent Bottle - clear glass - 250ml	50	
15.30	Reagent Bottle - clear glass - 500ml	50	
15.31	Reagent Bottle - clear glass - 1000ml	30	
15.32	Beaker - 25ml	10	Pyrex/Borosilicate
15.33	Beaker - 50ml	10	Pyrex/Borosilicate
15.34	Beaker - 100ml	10	Pyrex/Borosilicate
15.35	Beaker - 400/500ml	10	Pyrex/Borosilicate
15.36	Beaker - 1000ml	6	Pyrex/Borosilicate
15.37	Beaker - 2000ml	6	Pyrex/Borosilicate
15.38	Pipette, Graduated	10 each	1, 2, 5, 10, 25 ml. For titration, Soda glass
15.39	Pipette, Pasteur	50 each	150mm & 230mm, Uncalibrated, for the transfer of fluids
15.40	Pipette, Disposable glass micro-pipette	500	Made of precision bore tubing
15.41	Pipette stand with base/support	2	Horizontal
15.42	Pipette storage/sterilising box	1	Round/telescopic box & Autoclavable
15.43	Burettes	20 each	Analytical grade, capacity 30ml & 50 ml, Non-stick stopcock
15.44	Bottle top dispenser	2	
15.45	Funnel - Buchner Polypropylene	5 each	Size 55 & 70 mm, Light weight. Top & bottom can/must be separated for easy cleaning
15.46	Funnel - Buchner Porcelain	2	

ANNEX (Science Section)

No.	Items	Q'ty	Spec. / Notes
15.47	Funnel - Filter Glass	10 each	Short stem funnels with a cone angle of 60°, Diameter 75, 100, 150 mm
15.48	Funnel - Separating, Conical type	4 each	Borosilicate glass with stopcock, Capacity 250 & 500 ml
15.49	Funnel - Separating, Cylindrical type	4 each	Borosilicate glass with stopcock, Capacity 250 & 500 ml
15.50	Mortar & Pestle	10 each	Diameter 80mm, 130mm, 160mm, 230mm
15.51	Rod, Borosilicate	36	diameter: 5-6 mm
15.52	Rod, Soda glass	36	diameter: 5-8 mm
15.53	Spatula - Rounded	12	Stainless steel, length 100 mm, width 4mm
15.54	Spatula - Flat end & spoon	12 each	Stainless steel, Length 120, 180 mm
15.55	Spatula (Chattaway's)	12	One end flat, other end bent up, polished nickel, Length 200mm
15.56	Scoops, Measuring	12 each	Length 60 mm, 200 mm
15.57	Stoppers, Cork	100	Bottom diameter 5mm to 50 mm
15.58	Stoppers, Rubber	100	Bottom diameter 5mm to 60 mm
15.59	Brush	25 each	Test tube brush, bottle brush, burette brush
15.60	Syringe, disposable	50 each	1ml, 2ml, 5ml & 10 ml
15.61	Syringe, polypropylene	25	100 ml
15.62	Desiccator, vacuum	2	Borosilicate glass
15.63	Desiccators	4	Borosilicate glass, flat bottom
15.64			
15.65	Tubing Capillary	10 meter	Borosilicate, in boxes of 10, 0.5 m length
15.66	Tubing heavy wall, rubber, red	5 meter	Bore size: 3mm, 5mm, 6mm
15.67	Tubing, Transparent	10 meter	Resistant to acids & alkalis, temp. up to 60° C Bore size: 3mm, 5mm, 6.5mm, 8 mm
15.68	Visking tubing & Clips	5 x 5 meter	A cellulose based, selectively permeable (can be used to demonstrate osmosis & dialysis/separation techniques. Diameter 6, 14 mm)
15.69	Stand		
15.691	Bases, Retort Stand	25	Steel base with tapped hole, fitted with rubber feet
15.692	Rod	25	To fit bases (above mentioned)
15.693	Clamp	30	Rubber lined
15.694	Boss	30	Cast alloys
15.695	Clamp	30	Cork lined jaws
15.70	Test tube holder	75	Spring steel wire holder
15.71	Test tube stand	25	Durable, non-corrosive both two tier & three tier rack
15.72	Storage containers	50	Small, medium & large
15.73	Sharps containers (Trash can for glass)	3	Capacity 5 litres, leakproof, puncture resistant
15.74	Trays, general	2	General trays for laboratory use
15.75	Trolley, apparatus	2	General trolley for laboratory use
15.76	Rat cage, large	6	Central food hopper with twin water bottle apertures plus water bottles & stainless steel nozzles
15.77	Stop clock	6	Timer with alarm
15.78	Stop watch	6	LCD display, Washable
16	Consumables for Tissue Culture / Biology		
16.1	Yeast extract, 1 kg	2	
16.2	Agar, 1kg	5	
16.3	Chloramphenicol, 1mg	2	
16.4	Glucose, 1 kg	3	
16.5	Malt extract, 1 kg	5	
16.6	Peptone, 1 kg	3	
16.7	Tetracycline, 1 mg	5	
17	Consumables / Common Use		

ANNEX (Science Section)

No.	Items	Qty	Spec. / Notes
17.1	Whatman cellulose filter paper	2.5 cm3 X 100 packs	Medium retention, Medium fast flow & analytical grade.
17.2	Filter paper	100 packs for each size	Diameter : 4.25cm, 5.5cm, 7cm, 9cm, 12cm, 15cm, 18cm, 24cm & 40cm. General purpose, Routine qualitative, Medium - Medium fast flow rate, No clogging Used for water analysis, Air pollution analysis
17.3	pH indicator paper, Standard Litmus test paper	50	Range 1-14, Whatman, 5-6mm wide plus colour chart Red and blue
17.4	pH indicator paper, Universal indicator test paper	24	PH range 1-11
17.5	Starch test paper	24	For iodine tests

K. Equipment for Other Lecture Theaters & Classrooms

No.	Items	Q'ty	Spec. / Notes
1	New Lecture Room (will be built in the Old Library)		Seating capacity : 50
1.1	29 inch TV Monitor	1 unit	
1.2	VHS Video player	1 unit	
1.3	CD/DVD Player	1 unit	
1.4	Steel Cabinet for the above TV,VTR,CD/DVD player	1 unit	
1.5	IOHP	1 unit	
1.6	Projector Screen	1 unit	
1.7	Extension power reel	1 unit	
2	Old Lecture Theater		Seating capacity : 100
2.1	29 inch TV Monitor	1 unit	
2.2	VHS Video player	1 unit	
2.3	Steel Cabinet for the TV & VTR	1 unit	
2.4	Projector Screen, Movable	1 unit	
2.5	Extension power reel	2 unit	
2.6	Pin Spotlight, stand type	1 set	w/color filters
2.7	Stage Spotlight, Plano-convex	4 units	
2.8	Stage Spotlight, Fresnel	9 units	
2.9	Cable Terminal Box	1 set	
2.10	Lighting Control Board	1 unit	
2.11	Lamp for Spotlight	30 units	
2.12	Audio System:		
2.121	Amplifier	1 unit	
2.122	Mixer	1 unit	
2.123	Equalizer	1 unit	
2.124	Speaker system	1 set	
2.125	Tape Recorder/Player	1 unit	
2.126	CD/DVD Player	1 unit	
3	Classrooms in the Departments		
3.1	TV System:	4 sets	1 set each for the Department of:
3.11	25/29 inch TV Monitor	1	Educational Foundation
3.12	VHS Video player	1	H.Eco., Design & Tech.
3.13	CD/DVD Player	1	Maths & Computing
3.14	Steel Cabinet for the above TV,VTR,CD/DVD player	1	Social Science & Commerce
3.15	Extension power reel	1	
3.2	Projector Screen, Movable	5 units	100 inch
3.3	White Board, Movable	5 units	
4	Life Skills Center		
4.1	Compact Stereo System (CD, Tape)	1 set	
4.2	25/29 inch TV Monitor	1 unit	
4.3	VHS Video player	1 unit	
4.4	DVD Player	1 unit	

L. Equipment for Design & Technology Section, Dept. of H.Econ, Design & Tech.

No.	Items	Q'ty	Spec. / Notes
1 METAL WORKSHOP			
1.1	Metal Lathe	2 units	Swing over the bed 535mm Bc. Spindle bore 27mm, 16 speed belt drive, Forward/Reverse switch, 560 Watt, 415V/3-Phase/50AC
1.2	Power Hacksaw	4 units	127mm stroke length, Cutting speed 120 strokes per minute, Blade length 400mm, 0.75KW 415V
1.3	Welder	2 units	40-400amps, 415V/3-Phase/50HZ
1.4	Spot Welder	1 unit	Pedestal, 10KVA
1.5	Compressor	1 unit	Direct drive, Receiver capacity 40 liters, Piston displacement 15cm, 2.2KW Motor X 240V/1-Phase
1.6	Tube Bender	1 unit	With 5 formers from 12mm to 25mm
1.7	Industrial Vacuum Cleaner	1 unit	for cleaning the machines in metalwork shop
2 WOOD WORKSHOP			
2.1	Woodworking Lathe	2 units	1000mm distance between Centers, 420mm Swing, 0.75KW TEFC Motor X 240V/1-Phase
2.2	Dust Extractor	3 units	Inlet Diameter 178mm, Max. capacity 2550cm ³ /h -1500cm ³ , Collection capacity 240 liters, 1.5KW Motor X 240V/1-Phase

M. Equipment for Home Economics Section, Dept. of H.Econ, Design & Tech.

No.	Items	Q'ty	Spec. / Notes
1 CLOTHING LABORATORY			
1.1	Electric Sewing Machine	10 units	Table top, Durable model
2 FOOD LABORATORY			
2.1	Refrigerator	1 units	450 L
2.2	Freezer	1 units	300 L, Upright
2.3	Household Electric Stove	4 units	
2.4	Household Dishwasher	1 units	
2.5	Educational Video programs	1 set	Food related disease/microorganism, Food contamination/spoilage, Food fermentation
2.6	Desktop Computer (Windows)	2 units	Common use in the Clothing & Food Laboratory
2.7	UPS	2 units	
2.8	Steam Presser	1 units	
2.9	Over Head Projector	2 units	

N. Equipment for Technical Vocational Section, Dept. of H.Econ, Design & Tech.

No.	Items	Q'ty	Spec. / Notes
1	LATHE AND MILLING MACHINES		
1.11	Measuring Instrutions- Vernier Caliper	1	
1.12	Measuring Instrutions- Micro Meter 0.25mm	1	
1.13	Measuring Instrutions- Micro Meter 25-50mm	1	
1.14	Measuring Instrutions- Micro Meter 50-75mm	1	
1.15	Measuring Instrutions- Micro Meter 75-100 mm	1	
1.2	Surface Gauge	1	
1.3	Vernier Height	1	
1.4	Dial Indicator gauge	1	
1.5	Marking out table	1	
2	PLUMBING TRADE		
2.1	Blow lamp , medium	3	
2.2	Pipe cutter, 3"	3	
2.3	Tube bender, copper/500 mm long	2	
2.4	Tiinsnips (straight)	4	
2.5	Rivet gun	3	
2.6	Silicon gun, 250mm long	3	
2.7	Tinships (right hand) 150mm long	3	
2.8	Electric Drill, 450 Amps	2	
2.9	Stillson, 150mm long	3	
2.10	Guillone, Manual 90 kg	2	
2.11	Bender, Galvanize bender	2	
2.12	Scriber (metal) 100mm long	3	
2.13	Hacksaw, 300mm long	3	
2.14	Claw Hammer, 10 pound	5	
2.15	Plunger 4", 100mm	4	
2.16	Flaring tool, 100mm	2	
2.17	Copper tube expander, siive	2	
3	CARPENTRY TRADE		
3.1	Combination Square (adjustable)	4	
3.2	Tape Measure set	4	
3.3	Claw hammer set, 10 pound	4	
3.4	Chisels set	4	
3.5	Screw Driver set	4	
3.61	Handsaw, 26 inches- Crosscut Saw (set)	4	
3.62	Handsaw, 26 inches- Tenon saw	4	
3.63	Handsaw, 26 inches- Coping saw	2	
3.64	Handsaw, 26 inches- Hacksaw	4	
3.71	Hand Planes, Medium- Smoothing plane	2	
3.72	Hand Planes, Medium- Jack plane	2	
3.73	Hand Planes, Medium- Block plane	2	

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No.	Items	Qty	Spec. / Notes
3.8	Ratchet screw drivers, 500mm long	3	
3.9	Screw driver bit set	2	
3.10	Hand Brake Drill	4	
3.11	Spiral Brace	5	
3.12	Power Drill (Portable)	1	
3.13	Battery Operated Drill (Portable)	1	
3.14	Disc Grinder (Portable)	1	
3.15	Electric Jig saw (Portable)	1	
3.161	Electric Sander - Vibrating Type	1	
3.162	Electric Sander - Belt Sander Type	1	
3.17	Electric Portable Router	1	
3.18	Sliding Bevel	4	
3.19	Marking knives	5	
3.20	Nail pincher	5	
3.21	Extension drill bet set, 200mm long	4	
3.22	Triangular file	4	
3.23	Sawset	3	
3.24	Sledge hammer	2	
3.25	Dampy level set	1	
3.26	Wrench Spanner, 200mm long	2	
3.27	Wrench Spanner, 150mm long	1	
3.28	Open end spanner set	1	
3.29	Ring spanner set	2	
3.30	Folding ruier	2	
3.31	Fix square/try square, 200mm long	2	
4	METAL FABRICATION & WELDING		
4.1	Transmil Welder	1 set	
4.2	Easy/Portable welder	1	
4.3	Power Hacksaw Mach.	1	
4.4	Metal Cutter	1	
4.5	Pipe Bender	1 set	
4.6	Electrode hot warmer	1	
4.7	Portable hand grinder	1	
4.8	Portable hand drill	1	
4.9	Steel rule	5	
5	AUTOMOTIVE ELECRICAL		
5.11	Multi Tester - Digital	2	
5.12	Multi Tester - Analog	2	
5.21	Battery Charges - Booster	1	
5.22	Battery Charges - Trickle	1	
5.3	Ammeter	1	
5.4	Voltmeter	1	
5.5	High rate discharge tester	1	

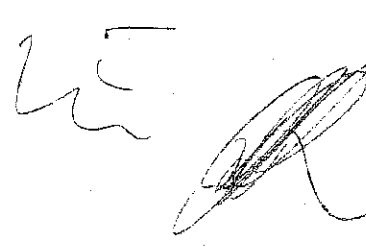

No.	Items	Q'ty	Spec. / Notes
5.61	Soldering iron - Small/Medium	1	
5.62	Soldering iron - Large	1	
5.7	Hydrometer	2	
5.8	Cadium Tester	2	
5.9	Lug Crimpler	1	
5.10	Wire cutter	1	
5.11	Electrical Tools	Various	
5.12	OHM Meter	2	
5.13	Test Bench	1	
6	MOTOR MECHANIC		
6.1	Screw Driver set	1 set	
6.2	Diagnal/side cutter plier	1	
6.3	Combination Plier	1	
6.4	Long Nose/pointer	1	
6.5	Circlip plier (internal)	1	
6.6	Circlip Plier (external)	1	
6.7	Vice Gripping plier	1	
6.8	Torque Wrench - 1/2 inch Drive	1	
6.9	Torque Wrench - 3/4 inch Drive	1	
6.10	Adjustable Wrench - 15 inch	15	
6.11	File (Meta)	1 set	
6.12	Chain Block - S.V.L 2 ton	1	
6.131	Combination Spanners - 10mm	1	
6.132	Combination Spanners - 8mm	1	
6.133	Combination Spanners - 6mm	1	
6.14	Timing light	1	
6.15	Test Light	1	
6.16	Multi-metre	2	
6.17	Air Press-Gauge (reading)	1	
6.18	Floor Jack - 2 ton jack	1	
6.19	Safety stands	4	

O. Office Equipment

No.	Items	Qty	Spec. / Notes
1 Dept. of Social Science & Commerce			
1.1	Scanner	2 units	A4 (S.Science x 1, Commerce x 1)
2 Dept. of Language & Literature			
2.1	Photocopier	1 unit	
2.2	Scanner	1 unit	
3 Life Skills Center			
3.1	Photocopier, Heavey duty	1 unit	
3.2	Desk Top Computer with 17 inch monitor	1 unit	CD-RW
3.3	Laser Printer	1 unit	
3.4	UPS	1 unit	
4 PNG Journal of Teacher Education Room			
4.1	Desk Top Computer with 17 inch monitor	1 unit	CD-RW
4.2	Laser Printer	1 unit	
4.3	Scanner	1 unit	
4.4	Digital Camera	1 unit	
4.5	UPS	1 unit	
4.6	Table & Chair for Computer	1 unit	Secretary use
4.7	Metal Cabinet	1 unit	
4.8	Fax machine	1 unit	

P. Other

No.	Items	Qty	Spec. / Notes
1	300 KVA Standy Generator	1 unit	

**MINUTES OF DISCUSSIONS
ON THE BASIC DESIGN STUDY
ON
THE PROJECT FOR IMPROVEMENT OF EDUCATIONAL EQUIPMENT
FOR THE UNIVERSITY OF GOROKA
IN PAPUA NEW GUINEA
(EXPLANATION ON DRAFT REPORT)**

In November 2003, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched a Basic Design Study Team on the Project for Improvement of Educational Equipment for the University of Goroka (hereinafter referred to as "the Project") to Papua New Guinea (hereinafter referred to as "PNG"), and through discussion, field survey, and the results of technical examination of the results in Japan, JICA prepared a draft final report of the study.

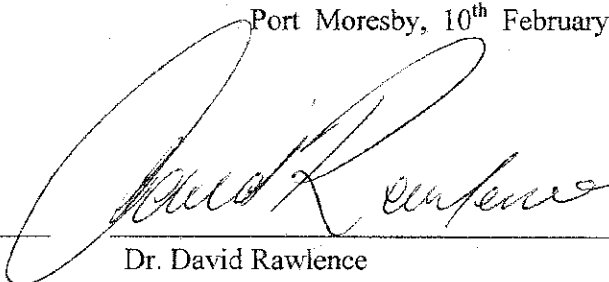
In order to explain and to consult the PNG side on the contents of the draft report, JICA sent to PNG the Draft Report Explanation Team (hereinafter referred to as "the Team") headed by Mr. Katsuro Saito, Resident Representative, JICA Papua New Guinea Office, from 4th February to 11th February 2004.

As a result of discussions, both parties confirmed the main items as described on the attached sheets.

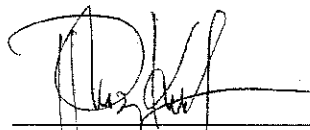
Port Moresby, 10th February 2004



Mr. Katsuro Saito
Leader
Draft Report Explanation Team
Japan International Cooperation Agency
Japan



Dr. David Rawlence
Vice Chancellor
The University of Goroka
Papua New Guinea



Mr. Karl Soper
Acting First Assistant Secretary
Aid Coordination and Management Division
Department of National Planning & Rural
Development
Papua New Guinea

ATTACHMENT

1. Components of the Draft Report

The Government of PNG has agreed and accepted in principle the components of the draft report explained by the Team.

2. Japan's Grant Aid Scheme

The PNG side has understood the Japan's Grant Aid Scheme and the necessary measures to be taken by the Government of PNG as explained by the Team and described in Annex-2 and Annex-4 of the Minutes of Discussions signed by both parties on 14th November 2003. Concerning Annex-4, however, internal transportation from the port of disembarkation to the Project site will be undertaken by the Japan side.

3. Schedule of the Study

JICA will complete the final report in accordance with the confirmed items and will send it to PNG by April 2004.

4. Other relevant issues

4-1 Components covered by the Project

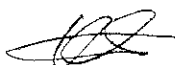
Both sides have agreed to the components covered by the Project as described in Annex-I.

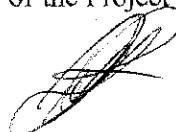
4-2 Major Site Works covered by the PNG Side

The PNG side agreed that renovation and preparation work, such as constructing and/or renovating facilities where planned equipment is to be installed, shall be done by the PNG side as per the schedule shown in Annex-II for the smooth and effective implementation of the Project. The PNG side has further agreed that, in case of delay of such works against the agreed time schedule, such part of the project component might be excluded.

4-3 Proper Use and Maintenance

- (1) The PNG side has assured to secure and allocate necessary budget and personnel for proper use and maintenance of the equipment covered by the Project, which would be indispensable for full utilization of the equipment and their lifelong use.
- (2) As to the development budget necessary for completion of all works, including those mentioned in the Annex-II, the PNG side, through the University of Goroka, has hereby assured that the necessary funds as required would be utilized.
- (3) As to the personnel for management and maintenance of the planned equipment at the University of Goroka, the PNG side has confirmed that the persons-in-charge as mentioned in Annex-III were already in service. Further, an AV specialist will be recruited in due course of time, as committed by the University of Goroka, in order to assure sustainable maintenance activities of the AV section.
- (4) The PNG side agreed that the University of Goroka has responsibility to conduct regular monitoring and evaluation of the progress of all phases of the Project such as allocation and


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use of recurrent costs including those for operation and maintenance of the equipment, recruitment of additional manpower, etc. whatever considered necessary.

- (5) The PNG side understood that the contract for services of the consultant and the supplier may be suspended in case the Japanese side declares that the security is not suitable for continuing such services by the Japanese nationals.
- (6) The PNG side has understood that the University of Goroka should be allocated with the sufficient recurring budget to cover the operating and maintenance costs of the equipment to be provided under this Project, which would cause increase of expenses by approximately 2% of the current University budget, commencing fiscal year 2005.

4-4 Soft Component Services

For sustainable and effective operation and maintenance of the equipment, the PNG side requested JICA that soft component services are included in the scope of work of the Project consultant so that the University of Goroka would be able to develop and establish its own operation and maintenance system.

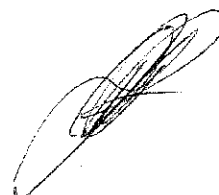
4-5 Detail Design of the Equipment

Both sides have agreed that the final decision on details of equipment would be made by the Japanese side after a final check in Japan.

4-6 Confidentiality of the Draft Report

Both sides have agreed that the draft report would be confidential, and not be disclosed to any third party.

Annex-I	Project Component
Annex-II	Schedule of Activities
Annex-III	Management and Maintenance System of UOG



Annex-I Project Component (List of Equipment)

Code No.	Description	Qty	Unit	Location
B	B. Equipment for the New Library			New Library
1.1.1	Book Stacks	40	unit	Reading Room (GF)
1.1.2	Reading Table	21	unit	Reading Room (GF)
1.1.3	Reading Chair	126	unit	Reading Room (GF)
1.2.1	Book Stacks	30	unit	Reading Room (FF)
1.2.2	Reading Table	17	unit	Reading Room (FF)
1.2.3	Reading Chair	102	unit	Reading Room (FF)
2.1	Maps Cabinet	1	unit	Reading Room (FF)
3.2	Computer	5	unit	Reading Room, Librarian's Room, Secretary Room (FF)
5.1	Multimedia Projector	1	unit	AV Lecture Room (GF)
5.2	Computer	1	unit	AV Lecture Room (GF)
5.3	VHS Video player	1	unit	AV Lecture Room (GF)
5.4	CD/DVD Player	1	unit	AV Lecture Room (GF)
5.5	Cabinet	1	unit	AV Lecture Room (GF)
5.7	Projector Screen	1	unit	AV Lecture Room (GF)
C	C. Equipment for AV Section			AV Section
3.1	Digital Video Camera with accessories	2	unit	Store (Shooting)
4.1	Computer	2	set	Store (Editing)
4.2	Software	2	set	Store (Editing)
4.3	Video Monitor	2	unit	Store (Editing)
4.4	Digital Video Recorder/player	1	unit	Store (Editing)
4.6	VHS Recorder/player	1	unit	Store (Editing)
4.8	CD/DVD player	1	unit	Store (Editing)
4.10	Portable Cassette Tape Recorder/player	1	unit	Store (Editing)
4.11	Scanner	1	unit	Store (Editing)
4.12	Laser Printer	1	unit	Store (Editing)
4.14	UPS	2	unit	Store (Editing)
4.15	Photocopier	1	unit	Store (Editing)
4.18	Steel Cabinet	1	lot	Store (Editing)
5.1	Cathode Ray Oscilloscope	1	unit	Maintenance Shop
5.2	Digital Multimeter	2	unit	Maintenance Shop
5.3	Digital LCR meter	1	unit	Maintenance Shop
5.4	Color Picture Tube Rejuvenator	1	unit	Maintenance Shop
5.5	High Wattage Soldering Station	2	unit	Maintenance Shop
5.6	Isolation Transformer	1	unit	Maintenance Shop
5.7	High Voltage Probe	1	unit	Maintenance Shop
5.8	Color TV Pattern Generator	1	unit	Maintenance Shop
5.9	L.O.P.T. Tester	1	unit	Maintenance Shop
5.10	Degaussing Wand	2	unit	Maintenance Shop
5.11	Video Service Tool Kit	2	unit	Maintenance Shop
5.13	Video Head Tester	1	unit	Maintenance Shop
5.15	Monitor Function Generator	1	unit	Maintenance Shop
5.17	Cabinet for Tool & Instruments	1	lot	Maintenance Shop
5.18	Work Bench	1	lot	Maintenance Shop
6.1	Computer	2	unit	Store (for Lending)
6.2	Multimedia Projector	2	unit	Store (for Lending)
6.4	Digital Camera	2	unit	Store (for Lending)
6.5	CD/DVD Player	2	unit	Store (for Lending)
6.8	Extension power reel	2	unit	Store (for Lending)
6.10	VHS Video player	2	unit	Store (for Lending)
6.11	Screen	2	unit	Store (for Lending)
7.1	Satellite TV Dish	1	set	Store (for Lending)
7.3	S-VHS Video Recorder/Player	1	unit	Store (for Lending)
D	D. Equipment for Printery Section			Printery Section
1	Offset press, A3 single-color	1	unit	New Printery Shop
2	Dark room camera (Graphic camera)	1	unit	New Printery Shop
3	Plate Maker (Exposure system)	1	unit	New Printery Shop
4	Electric Guillotine	1	unit	New Printery Shop
5	Electric Stapler	1	unit	New Printery Shop
6	Thermal Book Binder	1	unit	New Printery Shop
7	Paper Folder	1	unit	New Printery Shop
8	Paper Sorter	1	unit	New Printery Shop
9	Digital Stencil Duplicator	1	unit	New Printery Shop

Code No.	Description	Q'ty	Unit	Location
10	Photocopier, heavy duty	1	unit	New Printery Shop
11	Work Bench	1	lot	New Printery Shop
13	Computer	1	unit	New Printery Shop
E	E. Equipment for Language Laboratory, Dept. of Language & Linguistic			Language Lab
1	Students' Self-learning system for tutorial class	30	unit	Language Lab
6	OHP	3	unit	Language Lab
7	Projector Screen, Movable	3	unit	Language Lab
8	Cassette Tape Player, Portable	3	unit	Language Lab
G	G. Equipment for Computer Laboratories			Computer Lab
1.1	Computer with monitor	60	set	New Open Computer Lab
1.1.1	Computer for server	1	set	New Open Computer Lab
1.3	Equipment/Materials for Network system	1	lot	New Open Computer Lab
1.4	Laser Printer	2	unit	New Open Computer Lab
1.5	Scanner	1	unit	New Open Computer Lab
1.6	UPS	60	unit	New Open Computer Lab
1.9	Security system	1	set	New Open Computer Lab
5.1	UTP Cable(CAT5) Tester	1	unit	IT Room (IT Section)
5.2	Fiber Optic Cable Tester	1	unit	IT Room (IT Section)
5.3	UPS for Data servers	3	unit	IT Room (IT Section)
5.5	Switch (HUB) - 16 port	4	unit	IT Room (IT Section)
5.6	Operating System for server	1	unit	IT Room (IT Section)
H	H. Equipment for Expressive Arts Education (Music section)			Music Section
1.1	Trombone	1	unit	Music (Instruments)
1.2	Trumpet	3	unit	Music (Instruments)
1.3	Cornet	2	unit	Music (Instruments)
1.4	Alto sax	4	unit	Music (Instruments)
1.5	Tenor sax	4	unit	Music (Instruments)
1.6	Clarinet	3	unit	Music (Instruments)
1.7	Flute	4	unit	Music (Instruments)
1.8	Violin	2	unit	Music (Instruments)
1.9	Electric Guitar	1	unit	Music (Instruments)
1.10	Bass Guitar	1	unit	Music (Instruments)
1.13	Drum Kit	1	set	Music (Instruments)
1.14	Music Stand	20	unit	Music (Instruments)
1.15	Digital Piano with stand for classroom (student use)	12	unit	Music (Instruments)
1.16	Piano Seat-Padded regular	13	unit	Music (Instruments)
1.17	Digital Piano with stand- Portable type for classroom (teacher use) & live application	1	unit	Music (Instruments)
1.18	Electronic Synthesizer for live application (a)	1	unit	Music (Instruments)
1.19	Electronic Synthesizer for live application (b)	1	unit	Music (Instruments)
1.20	Power Amplifier	1	unit	Music (Instruments)
1.21	16 Channel Mixer	1	unit	Music (Instruments)
2.3	Computer for Music composition	4	unit	Music (Composition)
2.7	Laser Printer	1	unit	Music (Composition)
2.9	Compact Stereo System (CD, DVD, Tape)	1	set	Music (Composition)
2.10	UPS	4	unit	Music (Composition)
I	I. Equipment for Agriculture Education (Agriculture Section)			Agriculture Section
1.1	Analytical Lab Balance	2	unit	Agr Lab (Common)
1.2	Distilled Water/ Deionised Water Machine	1	unit	Agr Lab (Common)
1.3	Lab Drying Oven	1	unit	Agr Lab (Common)
1.4	Ammonia Distillation Apparatus	1	set	Agr Lab (Common)
1.5	Lab Incubator	1	unit	Agr Lab (Common)
1.6	Digital Lab pH Meter	2	unit	Agr Lab (Common)
1.7	Desiccators	1	lot	Agr Lab (Common)
1.8	Table top Centrifuge with Tubes	1	unit	Agr Lab (Common)
1.9	Spectrophotometer	2	unit	Agr Lab (Common)
1.10	Vacuum Pressure Pump	1	unit	Agr Lab (Common)
1.11	Mortar & Pestic	5	set	Agr Lab (Common)
1.12	Aluminum Heating Block	1	set	Agr Lab (Common)
1.15	Conductivity Meter	4	unit	Agr Lab (Common)
1.17	Mantles	1	unit	Agr Lab (Common)
1.18	Kjehidahl apparatus	1	unit	Agr Lab (Common)
1.19	Liquid Dispensers	1	set	Agr Lab (Common)
1.20	Calorimeters	5	unit	Agr Lab (Common)
1.21	Peristaltic Pump	1	unit	Agr Lab (Common)

Code No.	Description	Q'ty	Unit	Location
1.22	Lab Water Bath	1	unit	Agr Lab (Common)
1.23	Electronic Microscope	20	unit	Agr Lab (Common)
1.24	Dissecting/Stereo Microscope	10	unit	Agr Lab (Common)
1.25	Hand lenses	20	pc	Agr Lab (Common)
1.26	Electric Cork Borer	1	unit	Agr Lab (Common)
1.27	Laboratory Blender with Timer	1	unit	Agr Lab (Common)
1.28	Laboratory sample storage refrigerator	1	unit	Agr Lab (Common)
1.29	Laboratory Deep freezer for sample storage	1	unit	Agr Lab (Common)
2.1	Soil Bulk Density Corers - stainless	20	pc	Agr Lab (Soil/Plant)
2.2	Rotary Shaker	2	unit	Agr Lab (Soil/Plant)
2.3	Reciprocating shaker	2	unit	Agr Lab (Soil/Plant)
2.4	Refractometer	5	unit	Agr Lab (Soil/Plant)
2.5	Tullgren Funnel	1	pc	Agr Lab (Soil/Plant)
2.6	Salt & Hollick Soil Washing Apparatus	1	unit	Agr Lab (Soil/Plant)
2.7	Lab Bench Shakers	2	unit	Agr Lab (Soil/Plant)
2.8	pH Meter	2	unit	Agr Lab (Soil/Plant)
2.9	Ion Analyzer	1	unit	Agr Lab (Soil/Plant)
2.10	Soil Sieve Set	1	unit	Agr Lab (Soil/Plant)
2.11	Standard Test Sieve Shaker	1	unit	Agr Lab (Soil/Plant)
2.12	Water quality Analyser	2	unit	Agr Lab (Soil/Plant)
2.13	Hygrothermograph	2	unit	Agr Lab (Soil/Plant)
2.14	Thermograph	2	unit	Agr Lab (Soil/Plant)
2.15	Soil Density Hydrometer	5	unit	Agr Lab (Soil/Plant)
2.16	Soil Thermometers	10	unit	Agr Lab (Soil/Plant)
2.17	Fruit gauge	5	pc	Agr Lab (Soil/Plant)
2.18	Electronic Dendrometer	5	unit	Agr Lab (Soil/Plant)
2.19	Chlorophyll Meter	5	unit	Agr Lab (Soil/Plant)
2.20	Permeameter	5	unit	Agr Lab (Soil/Plant)
2.24	Soil Infiltrometer	5	unit	Agr Lab (Soil/Plant)
2.25	Soil Tensiometer	5	unit	Agr Lab (Soil/Plant)
2.26	Capacitance Probe	5	unit	Agr Lab (Soil/Plant)
2.27	Time Domain Reflectometry System	5	unit	Agr Lab (Soil/Plant)
2.28	Cone Penetrometer	5	unit	Agr Lab (Soil/Plant)
2.29	Pressure Extactor Set	1	set	Agr Lab (Soil/Plant)
2.30	Soil temperature and water potentiometer	5	unit	Agr Lab (Soil/Plant)
2.31	Munsell Soil Color Chart	30	unit	Agr Lab (Soil/Plant)
2.32	Wind speed anemometer	2	unit	Agr Lab (Soil/Plant)
2.33	Soil Core Sampler	5	unit	Agr Lab (Soil/Plant)
2.34	Soil Sampling auger	5	unit	Agr Lab (Soil/Plant)
2.35	Environmental Monitoring Equipment	1	unit	Agr Lab (Soil/Plant)
6.1	Tractor with PTO & Attachments	1	unit	New Model Farm
6.1.1	Trailer	1	unit	New Model Farm
6.1.2	Disc plough	1	unit	New Model Farm
6.1.3	Disc harrow	1	unit	New Model Farm
6.1.4	Mould board plough	1	unit	New Model Farm
6.1.5	Rotary disk mower	1	unit	New Model Farm
6.2	Generator Skva - diesel	1	unit	New Model Farm
6.3	Portable lawn mower	1	unit	New Model Farm
6.4	Water pump - diesel	1	unit	New Model Farm
6.10	Storage refrigerator - standard	1	unit	New Model Farm
6.11	Storage freezer - standard	1	unit	New Model Farm
6.12	Tools kit for maintenance of farm machinery	1	unit	New Model Farm
6.14	Rice milling machine	2	unit	New Model Farm
6.15	Hanging Scale	2	unit	New Model Farm
6.16	Weighing scale for animals	2	unit	New Model Farm
6.17	Hammer mill	1	unit	New Model Farm
6.18	Animal Feed mill / grinder	1	unit	New Model Farm
6.19	Feed pellete	1	unit	New Model Farm
6.20	Feeding bins	10	unit	New Model Farm
6.21	Feeding bucket	10	unit	New Model Farm
6.22	Ear tag applicator	2	unit	New Model Farm
6.23	Metal cages	5	unit	New Model Farm
6.24	Emasculator	2	unit	New Model Farm
6.25	Tape measure	2	unit	New Model Farm

Code No.	Description	Qty	Unit	Location
J	J. Science Section			Science Section
1.1	Electronic Balance	2	set	Lab (Common)
1.4	pH meter - Bench	4	unit	Lab (Common)
1.8	Conductivity Meter	1	unit	Lab (Common)
1.9	Digital Hygro-Thermometer	2	unit	Lab (Common)
1.10	Thermometer, Mercury	10	set	Lab (Common)
1.12	Automatic Pipette	6	set	Lab (Common)
2.1	Spectrophotometers	4	unit	Lab (Common)
2.2	UV-VIS Spectrophotometer	1	unit	Lab (Common)
3.1	Paper Chromatography	4	unit	Lab (Common)
3.2	Thin Layer Chromatography	1	unit	Lab (Common)
3.3	Electrophoresis apparatus	1	set	Lab (Common)
4.1	Bunsen Burner	25	unit	Lab (Common)
4.2	Auto Vortex Variable speed mixer	2	unit	Lab (Common)
4.3	Blender	2	unit	Lab (Common)
4.4	Homogeniser	2	unit	Lab (Common)
4.5	Magnetic Stirrer with Hotplate	1	set	Lab (Common)
4.7	Stirred Water bath	2	unit	Lab (Common)
4.8	Centrifuge - Bench Top	2	unit	Lab (Common)
4.9	Universal refrigerated centrifuge	1	unit	Lab (Common)
4.10	Distilled water/ Deionised Water Machine	2	unit	Lab (Common)
4.11	Freeze-Dryer	1	unit	Lab (Common)
4.12	Heating mantles, Fire Resistant	2	set	Lab (Common)
4.13	Incubator	2	unit	Lab (Common)
4.14	Laboratory Furnace	1	unit	Lab (Common)
4.15	Oven	1	unit	Lab (Common)
4.16	Refrigerator	2	unit	Lab (Common)
4.17	Deep Freezer	1	unit	Lab (Common)
4.18	Microtome	1	unit	Lab (Common)
4.19	Microtome Equipment	1	unit	Lab (Common)
5.1	Disposable Dust Mask	300	pc	Lab (Common)
5.2	Face shield	20	pc	Lab (Common)
5.3	Safety Spectacles	60	pc	Lab (Common)
5.4	Lab. Coat	60	pc	Lab (Common)
5.5	Gloves, Disposable	300	pair	Lab (Common)
5.6	Gloves, Leather	20	pair	Lab (Common)
5.7	Gloves, Rubber	20	pair	Lab (Common)
5.8	Laboratory First-Aid Chart for teaching purpose	3	pc	Lab (Common)
6.1	Flame Spectrometry	1	unit	Chem/Agr Lab
6.2	Gas Chromatography	1	unit	Chem/Agr Lab
7.1	Dissecting Instrument Set	1	set	Biology/Agr Lab
8.1	Microscope	25	unit	Biology/Agr Lab
8.2	Dissecting microscope	7	unit	Biology/Agr Lab
8.3	Hand lense	50	pc	Biology/Agr Lab
8.5	Microscope, phase contrast with TV system	1	set	Biology/Agr Lab
8.6	Dry Cabinet for Microscopes	2	unit	Biology/Agr Lab
9.1	Autoclave	1	unit	Biology Lab
9.3	UV Fluorescent tube for Room Sterilization	1	set	Biology Lab
9.4	UV lamp	1	unit	Biology Lab
9.5	Ultrasonic Distintegrator	1	unit	Biology Lab
9.6	Laminar Flow Workstation	1	unit	Biology Lab
10.1	Educational media set	1	set	Biology/Agr Lab
11.1	Teaching model set (Biology)	1	set	Biology Lab
12.1	Teaching model set (Chemistry)	1	set	Chemistry Lab
K	K. Equipment for Other Lecture Theaters & Classrooms			Lecture Rooms
1.1	TV Monitor	1	unit	New Lecture Room (Old Library)
1.2	VHS Video player	1	unit	New Lecture Room (Old Library)
1.3	CD/DVD Player	1	unit	New Lecture Room (Old Library)
1.4	Steel Cabinet for the above TV,VTR,CD/DVD player	1	unit	New Lecture Room (Old Library)
1.5	OHP	1	unit	New Lecture Room (Old Library)
1.6	Projector Screen	1	unit	New Lecture Room (Old Library)
1.7	Extension power reet	1	unit	New Lecture Room (Old Library)
1.8	Multimedia Projector	1	unit	New Lecture Room (Old Library)
1.9	Computer	1	unit	New Lecture Room (Old Library)
2.6	Pin Spotlight, Follow	3	set	Old Lecture Theater

Code No.	Description	Q'ty	Unit	Location
2.7	Stage Spotlight, Plano-convex	6	unit	Old Lecture Theater
2.8	Stage Spotlight, Fresnel	10	unit	Old Lecture Theater
2.9	Cable Terminal Box	1	set	Old Lecture Theater
2.10	Lighting Control Board	1	unit	Old Lecture Theater
2.12	Audio System	1	set	Old Lecture Theater
3.1	TV System	4	set	Classrooms (EF, HE, MC, SSC)
4.2	TV Monitor	1	unit	Life Skills Center
4.3	VHS Video player	1	unit	Life Skills Center
L	L. Equipment for Design & Technology Section			Design & Technology Section
1.1	Metal Lathe	2	unit	Metal Workshop
1.2	Power Hacksaw	4	unit	Metal Workshop
1.3	Welder	2	unit	Metal Workshop
1.4	Spot Welder	1	unit	Metal Workshop
1.5	Compressor	1	unit	Metal Workshop
1.6	Tube Bender	1	unit	Metal Workshop
1.7	Industrial Vacuum Cleaner	1	unit	Metal Workshop
2.1	Woodworking Lathe	2	unit	Wood Workshop
2.2	Dust Extractor	3	unit	Wood Workshop
M	M. Equipment for Home Economics Section			Home Economics Section
1.1	Electric Sewing Machine	10	unit	Clothing Lab
2.1	Refrigerator	1	unit	Food Lab
2.2	Freezer	1	unit	Food Lab
2.3	Household Electric Stove	4	unit	Food Lab
2.5	Educational Video programs	1	set	Food Lab
2.6	Computer	1	unit	Teachers Room (Common)
2.7	UPS	1	unit	Teachers Room (Common)
2.8	Steam Presser	1	unit	Clothing Lab
N	N. Equipment for Technical Vocational Section			Technical Vocational Section
1.1.1	Vernier Calliper	2	pc	Lathe & Milling Workshop
1.1.2	Micro Meter	2	pc	Lathe & Milling Workshop
1.2	Surface Gauge	2	unit	Lathe & Milling Workshop
1.3	Vernier Height Gauge	2	unit	Lathe & Milling Workshop
1.4	Dial Indicator gauge	2	pc	Lathe & Milling Workshop
1.5	Marking out table	2	pc	Lathe & Milling Workshop
2.1	Blow lamp, medium	3	unit	Plumbing Workshop
2.2	Pipe cutter, 3"	3	set	Plumbing Workshop
2.3	Tube bender	2	set	Plumbing Workshop
2.4	Tinsnips (straight)	4	pc	Plumbing Workshop
2.5	Rivet gun	3	pc	Plumbing Workshop
2.6	Silicon gun	3	pc	Plumbing Workshop
2.7	Tinships (right hand)	4	pc	Plumbing Workshop
2.9	Stillson	3	pc	Plumbing Workshop
2.10	Gufftone, Manual	2	unit	Plumbing Workshop
2.11	Bender, Galvanize bender	2	unit	Plumbing Workshop
2.12	Scriber (metal)	3	pc	Plumbing Workshop
2.13	Hacksaw	3	pc	Plumbing Workshop
2.14	Claw Hammer	8	pc	Plumbing Workshop
2.15	Plunger 4"	5	pc	Plumbing Workshop
2.16	Flaring tool	2	set	Plumbing Workshop
2.17	Copper tube expander	2	set	Plumbing Workshop
3.1	Combination Square (adjustable)	4	pc	Carpentry Workshop
3.2	Tape Measure set	4	set	Carpentry Workshop
3.3	Claw hammer set	4	pc	Carpentry Workshop
3.4	Chisels set	4	set	Carpentry Workshop
3.5	Screw Driver set	4	set	Carpentry Workshop
3.6.1	Handsaw, 26 inches- Saw set	4	set	Carpentry Workshop
3.7.1	Hand Plane, Medium- Smoothing plane	2	set	Carpentry Workshop
3.8	Ratchet screw driver	3	pc	Carpentry Workshop
3.9	Screw driver bit set	2	set	Carpentry Workshop
3.10	Hand Brake Drill	4	pc	Carpentry Workshop
3.11	Spiral Brace	4	pc	Carpentry Workshop
3.12	Power Drill (Portable)	3	unit	Carpentry Workshop
3.13	Battery Operated Drill (Portable)	1	unit	Carpentry Workshop
3.14	Disc Grinder (Portable)	2	unit	Carpentry Workshop
3.15	Electric Jig saw (Portable)	1	unit	Carpentry Workshop

Code No.	Description	Qty	Unit	Location
3.16.1	Electric Sander - Vibrating Type	1	unit	Carpentry Workshop
3.16.2	Electric Sander - Belt Sander Type	1	unit	Carpentry Workshop
3.17	Electric Portable Router	1	unit	Carpentry Workshop
3.18	Sliding Bevel	4	pc	Carpentry Workshop
3.19	Marking knife	4	pc	Carpentry Workshop
3.20	Nail pincher	4	pc	Carpentry Workshop
3.21	Extension drill bit set	4	set	Carpentry Workshop
3.22	Triangular file	4	set	Carpentry Workshop
3.23	Sawset	4	pc	Carpentry Workshop
3.24	Sledge hammer	2	pc	Carpentry Workshop
3.25	Dumpy level set	1	pc	Carpentry Workshop
3.26	Wrench Spanner, 200mm long	2	pc	Carpentry Workshop
3.27	Wrench Spanner, 150mm long	1	pc	Carpentry Workshop
3.28	Open end spanner set	1	set	Carpentry Workshop
3.29	Ring spanner set	2	set	Carpentry Workshop
3.30	Folding ruler	2	pc	Carpentry Workshop
3.31	Fix square/try square	2	pc	Carpentry Workshop
4.1	Welder	1	set	Metal Fab/Welding Workshop
4.2	Easy/Portable welder	1	set	Metal Fab/Welding Workshop
4.3	Power Hacksaw Machine	1	set	Metal Fab/Welding Workshop
4.4	Metal Cutter	1	set	Metal Fab/Welding Workshop
4.5	Pipe Bender	1	set	Metal Fab/Welding Workshop
4.6	Electrode hot warmer	1	set	Metal Fab/Welding Workshop
4.9	Steel rule	5	set	Metal Fab/Welding Workshop
5.1.1	Multi Tester - Digital	2	pc	Automotive (Elec) Workshop
5.1.2	Multi Tester - Analog	2	pc	Automotive (Elec) Workshop
5.2.1	Battery Charger - Booster	1	unit	Automotive (Elec) Workshop
5.2.2	Battery Charger - Trickle	1	unit	Automotive (Elec) Workshop
5.3	Ammeter	1	pc	Automotive (Elec) Workshop
5.4	Voltmeter	1	pc	Automotive (Elec) Workshop
5.5	Capacitance Meter	1	pc	Automotive (Elec) Workshop
5.6.1	Soldering iron - Small/Medium	1	set	Automotive (Elec) Workshop
5.6.2	Soldering iron - Large	1	unit	Automotive (Elec) Workshop
5.7	Hydrometer	1	set	Automotive (Elec) Workshop
5.8	Cadmium Tester	2	pc	Automotive (Elec) Workshop
5.9	Lug Crimper	1	pc	Automotive (Elec) Workshop
5.10	Wire cutter	1	pc	Automotive (Elec) Workshop
5.11	Electrical Tool	2	set	Automotive (Elec) Workshop
5.12	OHM Meter	2	pc	Automotive (Elec) Workshop
5.13	Test Bench	1	unit	Automotive (Elec) Workshop
6.1	Screw Driver set	1	set	Motor Mechanic Workshop
6.2	Diagonal/side cutter plier	1	pc	Motor Mechanic Workshop
6.3	Combination Plier	1	pc	Motor Mechanic Workshop
6.4	Long Nose/pointer	1	pc	Motor Mechanic Workshop
6.5	Circlip plier (internal)	1	set	Motor Mechanic Workshop
6.6	Circlip Plier (external)	1	set	Motor Mechanic Workshop
6.7	Vice Gripping plier	1	pc	Motor Mechanic Workshop
6.8	Torque Wrench - 1/2 inch Drive	1	pc	Motor Mechanic Workshop
6.9	Torque Wrench - 3/4 inch Drive	1	pc	Motor Mechanic Workshop
6.10	Adjustable Wrench	1	pc	Motor Mechanic Workshop
6.11	File (Meta)	1	set	Motor Mechanic Workshop
6.12	Chain Block	1	unit	Motor Mechanic Workshop
6.13.1	Combination Spanners	1	set	Motor Mechanic Workshop
6.16	Multi-metre	2	pc	Motor Mechanic Workshop
6.17	Air Pressure Gauge (reading)	1	pc	Motor Mechanic Workshop
6.18	Floor Jack	1	unit	Motor Mechanic Workshop
6.19	Safety stand	4	unit	Motor Mechanic Workshop
P.	P. Other			Common Facility
1	Standby Generator	1	unit	Generator Shed

Annex-II Schedule of Activities

No.	Identified Work/Activity	Cost in PNG Kina	Duration in Weeks	Commencement of Work	Completion	Remarks/Comments
1	Farm Development, incl. site clearing, construction of garage & tool shed, etc.	120,000	21	02/02/2004	End of June 2004	
2	Printery Set-up Relocation	60,000	8	02/02/2004	End of March 2004	
3	New Library Fit-out	80,000	12	02/02/2004	End of April 2004	
4	New Lecture Room to Old Library (100 seat)	50,000	6	Awaiting transfer to New Library		
5	New Audio Visual Store Room to Old Library	30,000	4			
6	New Science/Agriculture Lab to Old Library	90,000	12			
7	Audio Visual Workshop Relocation to Buildings & Estates	20,000	8	02/02/2004	End of March 2004	
8	Security Grills - All Buildings	50,000	8	27/01/2004	End of March 2004	
9	Renovation - Music and Multi-Purpose Facility	60,000	8	02/02/2004	End of March 2004	
10	Old Printery and Audio Visual Room Renovation to Science Lab	80,000	12	Awaiting transfer of Audio Visual and Printery		
11	Old Conference Room Renovation to Female Computer Lab	50,000	8	02/02/2004	End of March 2004	
12	Staff Recruitment for Audio Visual-related Position	60,000	-	Advertise in February	Make offer in March	
13	Language Lab Renovation	25,000	8	02/02/2004	End of March 2004	
14	Electrical Connection to New Standby Generator	250,000	12	02/02/2004	End of April 2004	Awaiting approval for design
15	Contingencies	100,000	-	-	-	
TOTAL		1,125,000				

Note: 1) Above works are identified in the VC's commitment letter to JICA Basic Design Study Team dated 10 December 2003.

2) All the above works are approved for execution as of 28/01/2004, and represent about 33% of the total cost of works from the PNG side of commitment under this project.

Annex - III Management and Maintenance System at UOG

Section/Division etc.	Management Staff*			Technical Staff**			
	Responsible Person	Job Title	Job Title	Name of Person	Qualification	Experience	
Library	N. Amarasinghe	Librarian	Chief Technician	Kal Ongugko	B. Eng. (Elect.)	> 8 years	
AV Section (AV equipment)	N. Amarasinghe	Librarian	Chief Technician	Kal Ongugko	B. Eng. (Elect.)	> 8 years	
Printery Section	N. Amarasinghe	Librarian	Chief Technician	Kal Ongugko	B. Eng. (Elect.)	> 8 years	
Lecture Theatre	Eric Kombeakali	Director Planning	Chief Technician	Kal Ongugko	B. Eng. (Elect.)	> 8 years	
Ex. Arts - Music Section	Dr. Michael Mel	Head, EARE	Music Lecturer	John Ga'a	B.A (Music); Dip. Teach.	7 years	
Agriculture Section (Farm)	Michael Kapari	Head, SAH	Farm Manager	Anson Barish	PETT; CHTE slg 2+3	5 years	
Science Section (Agriculture)	Michael Kapari	Head, SAH	Tech. Officer	Anson Barish	PETT; CHTE Slg. 2+3	5 years	
Science Section (Chemistry)	Michael Kapari	Head, SAH	Lab. Assistant	Kevin Barakove	Grade 8 with >20 years of work exp.	+20 years	
Science Section (Biology)	Michael Kapari	Head, SAH	Tech. Officer	Hubert Kui	Higher Cert. in Sci. & Tech. Gr.8	+15 years	
Design & Tech. Section (Wood)	S. Kanan (Ms)	Head, HEDT	Sen. Tutor (Nat'l)	Simeon Yossam	Dip. in Sec. Teach.; B. Ed	> 5 years	
Design & Tech. Section (Metal)	S. Kanan (Ms)	Head, HEDT	Snr. Tut. (O.Seas)	Amado Perez	B. Sc & Indust. Ed.	>20 years	
Design & Tech. (TVE)	S. Kanan (Ms)	Head, HEDT	Lecturer (O.Seas)	Edward Wanigasekera	B.Ec(Nons), PGDE, M.F.Mat., M.Ed	>25 years	
Home Eco. Section	S. Kanan (Ms)	Head, HEDT	Lab Assistant	Ms. Barbara Lahone	-Grade 10 Cert. - Basic Secretarial	8 Years	
Maths & Computing Dept.	Dr. Wilfred Kaleva	Head, MC	Lab Manager	Paul Pinjik	B. Sc (Computer Sci)	4 Years	
IT Section	Dr. Michael Mel	IT Committee Chair	IT Sup'l Technician	I. Kiskau	Dip. Comp. Sci.	-	
Social Science Section	Dr. Goru Hane-Nou	Head, SSC	Chief Technician	Kal Ongugko	As shown above	> 8 years	
Education Tech. (C&I)	Dr. James Yoko	Head, C&I	Lecturer (O.Seas)	Dr. Robert Bruce	B.A., M.Phil., Ph.D.	>20 years	

* The person responsible for security measures of the equipment in each section, division, etc. as a manager.
 ** Technical personnel responsible for operation and maintenance of the equipment.

APPENDIX-6 REFERENCES

	Title	Q'ty	Issuing Agent	Contents
1	National Higher Education Plan II, 2000-2004, Volume II	1	Office of Higher Education	Reform Plan and Action Strategy of Higher Education
2	Report of the Feasibility Study on Distance and Flexible Learning in Papua New Guinea	1	Office of Higher Education	Study and Recommendation for Distance and Flexible Learning
3	Education Statistics of Papua New Guinea 2001	1	Department of Education	Educational Statistics
4	Information Guide for Grade 12 Students of Papua New Guinea	1	The University of Goroka	Information of UOG
5	Medium Term Development Strategy 1997-2002	1	Minister for National Planning	Medium Term National Development Strategy from 1997 to 2002
6	Medium Term Development Strategy 2003-2007 (Draft)	1	Minister for National Planning	Medium Term National Development Strategy from 2003 to 2007
7	Answers of Questionnaire	1	Office of Higher Education	Answers to the questions raised by the Basic Design Study Team of JICA
8	2002 Higher Education Statistical Bulletin, Volume I	1	Office of Higher Education	Annual Statistics of Higher Education
9	PNG Higher Education Maintenance Programme	1	Office of Higher Education	Project of Maintenance of Physical Infrastructure of All Universities
10	Teaching Practice, Handbook 2003	1	The University of Goroka	Handbook of Teaching Practice
11	Audio-Visual Resources: Policy Guidelines	1	The University of Goroka	Guideline of Utilization of AV Equipment
12	Faculty of Science 2004 Handbook of Courses	1	The University of Goroka	Course Curriculum of Faculty of Science
13	Department of Science, Agriculture & Health Inventory, 2003	1	The University of Goroka	List of Existing Equipment