

Section E - IRRIGATION BILL OF QUANTITIES

ITEM	DESCRIPTION	CONSULTANT QTY UNIT	CONTRACTOR QTY UNIT	MATERIAL RATE	INSTALLED RATE	COMBINED RATE	TOTAL
------	-------------	------------------------	------------------------	------------------	-------------------	------------------	-------

1 IRRIGATION BILL OF QUANTITIES - PREAMBLE

1.01 **IMPORTANT NOTES REGARDING THIS BILL OF QUANTITIES**

* THE CONSULTANT'S QUANTITIES MUST NOT BE USED FOR QUOTATIONS OR PURCHASING. THEY ARE INCLUDED FOR CROSS REFERENCING AND BUDGETS ONLY.

* IT IS THE PURCHASER'S RESPONSIBILITY TO ALLOW FOR SUFFICIENT MATERIALS REGARDLESS OF THE ITEMS OR QUANTITIES MENTIONED.

* REFERENCE MUST BE MADE TO THE SPECIFICATIONS, DRAWINGS AND CONTRACT DOCUMENTS FOR COMPLETE INFORMATION. THIS BILL OF QUANTITIES IS NOT A COMPLETE DESCRIPTION OF WHAT IS REQUIRED.

* THERE ARE MANY ITEMS NOT SPECIFICALLY MENTIONED IN THIS BILL OF QUANTITIES THAT MUST BE PROVIDED: FILTER DISCHARGE PIPE, TRANSFORMERS/REGULATORS/SURGE PROTECTION, LATERAL FITTINGS, SLEEVES, PRIMER, SOLVENT CEMENT, LUBRICANT FOR RUBBER RING JOINTED PIPE, THREAD SEAL, STABILISERS FOR QUICK COUPLING VALVES, CONCRETE FOR THRUST BLOCKS, NUTS, BOLTS, WASHERS, ETC.

1.02 A digital version of this bill is available from the irrigation designer by emailing:
design@hydrogold.com.au

1.03 Nominal PVC pipe diameters refer to Internal Diameter.
Nominal HDPE pipe diameters refer to Outside Diameter.
If a substitution is allowed, the equivalent internal diameter pipe must be used.
Eg. 63 mm HDPE pipe must be substituted for 50 mm PVC pipe.

1.04 DESCRIPTION. Both metric and imperial descriptions are provided.

1.05 CONSULTANT QUANTITY is the consultant's estimate for the design as drawn. This is a 2 dimensional take-off (does not take account of contours) with no allowance included for wastage, shrinkage, minor on-site alterations or manufacturers' shipping quantities.

1.06 CONSULTANT UNIT is the unit that the consultant's estimate is based on. Estimates appear in both metric (which takes precedence if there is any conflict) and imperial units.

1.07 CONTRACTOR QUANTITY is the contractor's estimate.

1.08 CONTRACTOR UNIT is the unit that the contractor is basing their quantity on.

1.09 MATERIAL RATE is the cost of the materials. Used as a base to assess payment of materials delivered to site (if applicable).

1.10 INSTALL RATE is the cost of the installation.

1.11 COMBINED RATE is the MATERIAL RATE plus INSTALL RATE.

1.12 TOTAL is the CONTRACTOR QUANTITY multiplied by the COMBINED RATE.

1.13 Any arithmetic errors will be resolved in favour of the Employer.

ITEM	DESCRIPTION	CONSULTANT QTY UNIT	CONTRACTOR QTY UNIT	MATERIAL RATE	INSTALLED RATE	COMBINED RATE	TOTAL
2	IRRIGATION PUMP STATION - To supply, install and commission pump station and all ancillaries.						
2.01	Intake screen, intake line, wet well & pump station slab	1 item	1 item				
	Intake screen - Refer to sketch 614-A4	Metric	Imperial				
	Intake Line Size (Minimum Internal Diameter)	800 mm	31 inches				
	Intake Line Flow	200 L/s	3,175 USGPM				
	Intake Line Velocity	0.4 m/s	1.3 ft/s				
2.02	Irrigation pump station (Variable Frequency Drive)	1 item	1 item				
	The pump station will be a skid mounted pump station manufactured by a well established manufacturer (Watertomics or Rain Bird) with local service and backup. Note: Supply Voltage and Frequency must be confirmed with Employer before the order is placed.						
	TENTATIVE PUMP COLUMN LENGTH - Must be confirmed with Employer before order is placed.	10.1 m	33.1 ft				
	VERTICAL TURBINE MAIN PUMPS (All equal capacity)						
	Number of Main Pumps	6 No	6 No				
	Combined Flow of the Main Pumps (without jockey)	200 L/s	3,175 USGPM				
	Effective Total Dynamic Head of Pump Station, not including frictional losses in suction pipe, pump, discharge head or manifold.	111.5 metres	159 PSI				
	Maximum Lift to Pump discharge	9.5 metres	31.2 ft				
	Pressure at Pump Discharge (at Lowest Water Level)	102.0 metres	145 PSI				
	Nominal Rotation Speed to be less than	1,800 RPM	1,800 RPM				
	JOCKEY PUMP (Submersible or Turbine) - Nominal Flow	8 L/s	127 USGPM				
2.03	Filter and fittings	1 item	1 item				
	The filter will be carbon steel body, automatic self flushing 300 micron (60 mesh) screen filters sized to suit the nominated total flow rate of the pump station. The filter is to have a maximum 3 m (30 kPa or 4 PSI) pressure loss across it. It will be pressure rated to at least the maximum discharge pressure of the pump station. The pump station will operate at full flow during the backflushing.						
2.04	Fertigation System including tanks & ancillaries	1 item	1 item				
	The injection rate will be proportional to the flow through the pump station discharge line. Pressure based injection units are not acceptable						
		Metric	Imperial				
	No of Mixing Tanks	1 no	1 No				
	No of Storage Tanks	2 no	2 No				
	No of injection heads	3 no	3 No				
	Injection rate of each head (1 pump per head)	113 l/Hr	30 US Gal/Hr				
2.05	Hot-dip galvanised steel pipe (Z-Leg) & transition fittings to PVC mainline (refer to sketch No 601-A4)	1 item	1 item				

ITEM	DESCRIPTION	CONSULTANT QTY UNIT	CONTRACTOR QTY UNIT	MATERIAL RATE	INSTALLED RATE	COMBINED RATE	TOTAL																						
3	TRANSFER PUMP STATIONS Nos 1 & 2 To supply, install and commission mounting slab, pump station, pipeline with fittings & air valves, spillway, electrical cabinet and all ancillaries.																												
3.01	Transfer Pump Station	2 item	2 item																										
<table border="1"> <thead> <tr> <th colspan="4">SUBMERSIBLE PUMPS (for each Pump Station)</th> </tr> </thead> <tbody> <tr> <td>Number of Main Pump Units Flygt Bibo 251.011 232.LT or equivalent</td> <td>1</td> <td>No</td> <td>1</td> <td>No</td> </tr> <tr> <td>Combined Duty of all Pump Units</td> <td>69</td> <td>L/s</td> <td>1,095</td> <td>USGPM</td> </tr> <tr> <td>Effective Total Dynamic Head of Pump Station, <u>not</u> including frictional losses in suction pipe, pump, discharge head or manifold.</td> <td>6</td> <td>metres</td> <td>9</td> <td>PSI</td> </tr> <tr> <td>Nominal Rotation Speed</td> <td>2,900</td> <td>RPM</td> <td>2,900</td> <td>RPM</td> </tr> </tbody> </table>		SUBMERSIBLE PUMPS (for each Pump Station)				Number of Main Pump Units Flygt Bibo 251.011 232.LT or equivalent	1	No	1	No	Combined Duty of all Pump Units	69	L/s	1,095	USGPM	Effective Total Dynamic Head of Pump Station, <u>not</u> including frictional losses in suction pipe, pump, discharge head or manifold.	6	metres	9	PSI	Nominal Rotation Speed	2,900	RPM	2,900	RPM				
SUBMERSIBLE PUMPS (for each Pump Station)																													
Number of Main Pump Units Flygt Bibo 251.011 232.LT or equivalent	1	No	1	No																									
Combined Duty of all Pump Units	69	L/s	1,095	USGPM																									
Effective Total Dynamic Head of Pump Station, <u>not</u> including frictional losses in suction pipe, pump, discharge head or manifold.	6	metres	9	PSI																									
Nominal Rotation Speed	2,900	RPM	2,900	RPM																									
3.02	200 mm (Internal Diameter) HDPE pipe and fittings	80 m																											
	8" (Internal Diameter) HDPE pipe and fittings	262 ft																											
3.03	Common Spillway (Refer to Specifications)	1 item	item																										
4	TRANSFER PUMP STATION No 3 To supply, install and commission mounting slab, pump station, pipeline with fittings & air valves, spillway, electrical cabinet and all ancillaries.																												
4.01	Transfer Pump Station	1 item	1 item																										
<table border="1"> <thead> <tr> <th colspan="4">SUBMERSIBLE PUMPS</th> </tr> </thead> <tbody> <tr> <td>Number of Main Pump Units Flygt Bibo 2125.181 231.MT or equivalent</td> <td>1</td> <td>No</td> <td>1</td> <td>No</td> </tr> <tr> <td>Combined Duty of all Pump Units</td> <td>20</td> <td>L/s</td> <td>317</td> <td>USGPM</td> </tr> <tr> <td>Effective Total Dynamic Head of Pump Station, <u>not</u> including frictional losses in suction pipe, pump, discharge head or manifold.</td> <td>20</td> <td>metres</td> <td>28</td> <td>PSI</td> </tr> <tr> <td>Nominal Rotation Speed</td> <td>2,900</td> <td>RPM</td> <td>2,900</td> <td>RPM</td> </tr> </tbody> </table>		SUBMERSIBLE PUMPS				Number of Main Pump Units Flygt Bibo 2125.181 231.MT or equivalent	1	No	1	No	Combined Duty of all Pump Units	20	L/s	317	USGPM	Effective Total Dynamic Head of Pump Station, <u>not</u> including frictional losses in suction pipe, pump, discharge head or manifold.	20	metres	28	PSI	Nominal Rotation Speed	2,900	RPM	2,900	RPM				
SUBMERSIBLE PUMPS																													
Number of Main Pump Units Flygt Bibo 2125.181 231.MT or equivalent	1	No	1	No																									
Combined Duty of all Pump Units	20	L/s	317	USGPM																									
Effective Total Dynamic Head of Pump Station, <u>not</u> including frictional losses in suction pipe, pump, discharge head or manifold.	20	metres	28	PSI																									
Nominal Rotation Speed	2,900	RPM	2,900	RPM																									
4.02	150 mm (Internal Diameter) HDPE pipe and fittings	120 m																											
	6" (Internal Diameter) HDPE pipe and fittings	394 ft																											
4.03	Spillway (Refer to Specifications)	1 item	item																										

ITEM DESCRIPTION	CONSULTANT QTY UNIT	CONTRACTOR QTY UNIT	MATERIAL RATE	INSTALLED RATE	COMBINED RATE	TOTAL
------------------	------------------------	------------------------	------------------	-------------------	------------------	-------

5 **BOOSTER PUMP STATION No 1**
 (Identical Performance to Booster Pump Station No 2)
 To supply and install booster pump complete with isolation valves, check valve, pressure relief valve, pump pit, cover and bypass line.

	Metric	Imperial
uPVC Mainline Size	150 mm	6 inches
Pump Pad Elevation	80 m	262 ft
Upstream Pressure	690 kPa	100 PSI
Downstream Pressure	913 kPa	132 PSI
2 pieces Flanged Adaptor	150 mm	6 inches
2 pieces Flanged Reducer from 150 mm (6 inches) to	100 mm	4 inches
2 pieces Isolation Valve	100 mm	4 inches
In Line Booster Pump	1 Item	1 Item
Flow	26 L/s	413 USGPM
Effective Total Dynamic Head of Pump Station (Boost Pressure), <u>not</u> including frictional losses in pump or manifolds.	22.7 m	32 PSI
Check Valve	100 mm	4 inches
100 mm (4 inch) Flanged tee with branch of	75 mm	3 inches
Pressure Relief Valve	75 mm	3 inches
Diameter of Discharge Line	100 mm	4 inches
Crack Pressure	1,013 kPa	147 PSI

5.01 Bypass Line including check and gate valves 1 item _____ item

5.02 Electrical cabinet and fittings 1 item _____ item

5.03 Pump pit, cover and accessories 1 item _____ item

ITEM	DESCRIPTION	CONSULTANT QTY UNIT	CONTRACTOR QTY UNIT	MATERIAL RATE	INSTALLED RATE	COMBINED RATE	TOTAL
------	-------------	------------------------	------------------------	------------------	-------------------	------------------	-------

6 BOOSTER PUMP STATION No 2
 (Identical Performance to Booster Pump Station No 1)
 To supply and install booster pump complete with isolation valves, check valve, pressure relief valve, pump pit, cover and bypass line.

	Metric	Imperial
uPVC Mainline Size	150 mm	6 inches
Pump Pad Elevation	80 m	262 ft
Upstream Pressure	708 kPa	103 PSI
Downstream Pressure	931 kPa	135 PSI
2 pieces Flanged Adaptor	150 mm	6 inches
2 pieces Flanged Reducer from 150 mm (6 inches) to	100 mm	4 inches
2 pieces Isolation Valve	100 mm	4 inches
In Line Booster Pump	1 Item	1 Item
Flow	26 L/s	413 USGPM
Effective Total Dynamic Head of Pump Station (Boost Pressure), <u>not</u> including frictional losses in pump or manifolds.	22.7 m	32 PSI
Check Valve	100 mm	4 inches
100 mm (4 inch) Flanged tee with branch of	75 mm	3 inches
Pressure Relief Valve	75 mm	3 inches
Diameter of Discharge Line	100 mm	4 inches
Crack Pressure	1,031 kPa	150 PSI

6.01 Bypass Line including check and gate valves 1 item _____ item

6.02 Electrical cabinet and fittings 1 item _____ item

6.03 Pump pit, cover and accessories 1 item _____ item

ITEM	DESCRIPTION	CONSULTANT QTY UNIT	CONTRACTOR QTY UNIT	MATERIAL RATE	INSTALLED RATE	COMBINED RATE	TOTAL
7	IRRIGATION MAINLINE PIPEWORK - To supply, install, pressure test, compact, etc.						
	The unplasticised Poly Vinyl Chloride (uPVC) pipe is to be:						
	a) Rubber Ring Jointed (RRJ) supplied in nominal 6 m (19.5 feet) lengths						
	b) Pressure rated to a minimum of 12 Bar (176 PSI) and conforming to one of the following standards:						
	ASTM 2241 Class 200, BS3505 Class D, AS1477 PN 12						
7.01	300 mm mainline pipe	2,608 m					
	12" mainline pipe	8,554 ft					
7.02	250 mm mainline pipe	1,148 m					
	10" mainline pipe	3,765 ft					
7.03	200 mm mainline pipe	3,882 m					
	8" mainline pipe	12,733 ft					
7.04	150 mm mainline pipe	4,680 m					
	6" mainline pipe	15,350 ft					
7.05	100 mm mainline pipe	2,018 m					
	4" mainline pipe	6,619 ft					
	Special Higher Pressure rating pipe for Holes 14 and 16 (see Drawing)						
7.06	150 mm mainline pipe British Class F or PN 16	325 m					
	6" mainline pipe US Class 315	1,066 ft					

ITEM	DESCRIPTION	CONSULTANT QTY UNIT	CONTRACTOR QTY UNIT	MATERIAL RATE	INSTALLED RATE	COMBINED RATE	TOTAL
8	IRRIGATION MAINLINE FITTINGS To supply and install Rubber Ring Jointed ductile/cast iron fittings including thrust blocks, etc.						
	<p style="text-align: center;">Branch ----- Inlet Outlet</p>						
	TEES ARE SPECIFIED: INLET * OUTLET * BRANCH						
	300 mm (12") FITTINGS						
8.01	300 * 300 * 300 mm tee 12" * 12" * 12" tee	6 item	_____ item	_____	_____	_____	_____
8.02	300 * 300 * 250 mm tee 12" * 12" * 10" tee	1 item	_____ item	_____	_____	_____	_____
8.03	300 * 300 * 200 mm tee 12" * 12" * 8" tee	1 item	_____ item	_____	_____	_____	_____
8.03	300 * 300 * 150 mm tee 12" * 12" * 6" tee	1 item	_____ item	_____	_____	_____	_____
8.04	300 mm * 90 degree bend 12" * 90 degree bend	1 item	_____ item	_____	_____	_____	_____
8.05	300 mm * 45 degree bend 12" * 45 degree bend	19 item	_____ item	_____	_____	_____	_____
8.06	300 mm * 22.5 degree bend 12" * 22.5 degree bend	14 item	_____ item	_____	_____	_____	_____
8.07	300 * 250 mm SEB reducer 12" * 10" SEB reducer	5 item	_____ item	_____	_____	_____	_____

ITEM	DESCRIPTION	CONSULTANT QTY UNIT	CONTRACTOR QTY UNIT	MATERIAL RATE	INSTALLED RATE	COMBINED RATE	TOTAL
250 mm (10") FITTINGS							
8.08	250 * 250 * 250 mm tee 10" * 10" * 10" tee	1 item	_____ item	_____	_____	_____	_____
8.09	250 * 250 * 200 mm tee 10" * 10" * 8" tee	3 item	_____ item	_____	_____	_____	_____
8.10	250 * 250 * 150 mm tee 10" * 10" * 6" tee	1 item	_____ item	_____	_____	_____	_____
8.11	250 mm * 90 degree bend 10" * 90 degree bend	1 item	_____ item	_____	_____	_____	_____
8.12	250 mm * 45 degree bend 10" * 45 degree bend	4 item	_____ item	_____	_____	_____	_____
8.13	250 mm * 22.5 degree bend 10" * 22.5 degree bend	7 item	_____ item	_____	_____	_____	_____
8.14	250 * 200 mm SEB reducer 10" * 8" SEB reducer	7 item	_____ item	_____	_____	_____	_____
200 mm (8") FITTINGS							
8.15	200 * 200 * 200 mm tee 8" * 8" * 8" tee	4 item	_____ item	_____	_____	_____	_____
8.16	200 * 200 * 150 mm tee 8" * 8" * 6" tee	3 item	_____ item	_____	_____	_____	_____
8.17	200 mm * 90 degree bend 8" * 90 degree bend	3 item	_____ item	_____	_____	_____	_____
8.18	200 mm * 45 degree bend 8" * 45 degree bend	20 item	_____ item	_____	_____	_____	_____
8.19	200 mm * 22.5 degree bend 8" * 22.5 degree bend	33 item	_____ item	_____	_____	_____	_____
8.20	200 * 150 mm SEB reducer 8" * 6" SEB reducer	7 item	_____ item	_____	_____	_____	_____

ITEM	DESCRIPTION	CONSULTANT QTY UNIT	CONTRACTOR QTY UNIT	MATERIAL RATE	INSTALLED RATE	COMBINED RATE	TOTAL
150 mm (6") FITTINGS							
8.21	150 * 150 * 150 mm tee 6" * 6" * 6" tee	5 item	_____ item	_____	_____	_____	_____
8.22	150 * 150 * 100 mm tee 6" * 6" * 4" tee	2 item	_____ item	_____	_____	_____	_____
8.23	150 mm * 90 degree bend 6" * 90 degree bend	8 item	_____ item	_____	_____	_____	_____
8.24	150 mm * 45 degree bend 6" * 45 degree bend	27 item	_____ item	_____	_____	_____	_____
8.25	150 mm * 22.5 degree bend 6" * 22.5 degree bend	32 item	_____ item	_____	_____	_____	_____
8.26	150 * 100 mm SEB reducer 6" * 4" SEB reducer	6 item	_____ item	_____	_____	_____	_____
8.27	150 mm end cap 6" end cap	1 item	_____ item	_____	_____	_____	_____
100 mm (4") FITTINGS							
8.28	100 * 100 * 100 mm tee 4" * 4" * 4" tee	2 item	_____ item	_____	_____	_____	_____
8.29	100 mm * 90 degree bend 4" * 90 degree bend	3 item	_____ item	_____	_____	_____	_____
8.30	100 mm * 45 degree bend 4" * 45 degree bend	8 item	_____ item	_____	_____	_____	_____
8.31	100 mm * 22.5 degree bend 4" * 22.5 degree bend	16 item	_____ item	_____	_____	_____	_____
8.32	100 mm end cap 4" end cap	9 item	_____ item	_____	_____	_____	_____

ITEM	DESCRIPTION	CONSULTANT QTY UNIT	CONTRACTOR QTY UNIT	MATERIAL RATE	INSTALLED RATE	COMBINED RATE	TOTAL
9	IRRIGATION MAINLINE ISOLATION VALVES To supply and install bell-mouthed, cast iron gate valves including thrust blocks, etc. They will be of quality Cast Iron construction with Stainless Steel non-rising spindle and bronze trim, manufactured to British Standard BS4504. These valves will be rated to a working pressure of 1400 kPa (200 PSI).						
9.01	300 mm cast iron gate valve 12" cast iron gate valve	12 item	_____ item	_____	_____	_____	_____
9.02	250 mm cast iron gate valve 10" cast iron gate valve	6 item	_____ item	_____	_____	_____	_____
9.02	200 mm cast iron gate valve 8" cast iron gate valve	12 item	_____ item	_____	_____	_____	_____
9.03	150 mm cast iron gate valve 6" cast iron gate valve	17 item	_____ item	_____	_____	_____	_____
9.04	100 mm cast iron gate valve 4" cast iron gate valve	2 item	_____ item	_____	_____	_____	_____
9.05	50 mm square drive nut to replace valve handle 2" square drive nut to replace valve handle	49 item	_____ item	_____	_____	_____	_____
9.06	Carson 910 valve box	49 item	_____ item	_____	_____	_____	_____
10	IRRIGATION MAINLINE CHECK VALVE To supply and install slow acting check valve including thrust blocks, etc. They will be of quality Cast Iron construction. This valve will be rated to a minimum working pressure of 1600 kPa (230 PSI).						
10.01	150 mm cast iron check valve 6" cast iron check valve	1 item	_____ item	_____	_____	_____	_____

ITEM	DESCRIPTION	CONSULTANT QTY UNIT	CONTRACTOR QTY UNIT	MATERIAL RATE	INSTALLED RATE	COMBINED RATE	TOTAL
11	IRRIGATION MAINLINE CROSSINGS NOTE: Number of crossings are shown in parenthesis () & combined length of all crossings is given. Road Crossings - To supply and install (complete with transition fittings) one of the following: * HDPE PN 16 butt welded pipe of equal or larger internal diameter (Preferred) * Mainline to be sleeved with Class D (or Class 200) PVC pipe (sized to suit the mainline bell end) * Unsleeved cement lined ductile iron pipe of equal or larger internal diameter						
11.01	250 mm mainline road crossing (2) 10" mainline road crossing (2)	30 m 98 ft					
	Bridge Crossings - To supply and install Schedule 40 hot dip galvanised steel pipe (of equivalent <u>internal</u> diameter to the PVC mainline) with flanged fittings for bridge crossings including air valves, all transition fittings and thrust blocks. Air valves will be the same as those fitted to the underground mainline with an isolation gate valve (refer to gate valve for mainline take offs for specifications) and a brass blow off elbow.						
11.02	300 mm mainline bridge crossing (3) 12" mainline bridge crossing (3)	68 m 223 ft					
11.03	250 mm mainline bridge crossing (1) 10" mainline bridge crossing (1)	25 m 82 ft					
11.04	150 mm mainline bridge crossing (7) 6" mainline bridge crossing (7)	163 m 535 ft					
11.05	100 mm mainline bridge crossing (1) 4" mainline bridge crossing (1)	20 m 66 ft					
11.06	50 mm threaded boss welded to pipe for air valve 2" threaded boss welded to pipe for air valve	12 item	_____ item				
11.07	50 mm bronze gate valve 2" bronze gate valve	12 item	_____ item				
11.08	50 mm brass TBE nipple 2" brass TBE nipple	12 item	_____ item				
11.09	50 mm combination air valve 2" combination air valve	12 item	_____ item				
11.10	Brass Blow-Off Elbow Crossings Under Waterways - To install 45 degree bends (4 pieces) complete with thrust blocks to facilitate laying of the mainline pipe under the bottom of Waterways. Refer to specifications and sketch No 274-A4.	12 item	_____ item				
11.11	200 mm mainline crossing under waterway (1) 8" mainline crossing under waterway (1)	25 m 82 ft					

ITEM	DESCRIPTION	CONSULTANT QTY UNIT	CONTRACTOR QTY UNIT	MATERIAL RATE	INSTALLED RATE	COMBINED RATE	TOTAL
12	IRRIGATION MAINLINE TAPPING INCLUDING ISOLATION VALVE To supply and install mainline tappings for lateral take offs including VIH lateral lines, RCVs, QCVs attached to mainline, air valve assemblies on underground mainline, etc. Tapping Saddles are to be of Stainless Steel, Cast/Ductile Iron or Bronze (Zinc free) construction. HDPE and plastic saddles are not acceptable. The brand and model must be approved by the Employer prior to placement of purchase order. Stainless steel bolts and nuts will be installed. Isolation valves will be Nibco T-113-K or approved equivalent (not Hammond). They will be of quality Bronze (Zinc free) construction. The handle will be a cross. They will be rated to a working pressure of 1400 kPa (200 PSI).						
12.01	300 * 50 mm tapping saddle 12" * 2" tapping saddle	88 item	_____ item	_____	_____	_____	_____
12.02	250 * 50 mm tapping saddle 10" * 2" tapping saddle	40 item	_____ item	_____	_____	_____	_____
12.03	200 * 50 mm tapping saddle 8" * 2" tapping saddle	121 item	_____ item	_____	_____	_____	_____
12.04	150 * 50 mm tapping saddle 6" * 2" tapping saddle	153 item	_____ item	_____	_____	_____	_____
12.05	100 * 50 mm tapping saddle 4" * 2" tapping saddle	64 item	_____ item	_____	_____	_____	_____
12.06	50 * 300 mm schedule 80 TOE nipple 2" * 12" schedule 80 TOE nipple	466 item	_____ item	_____	_____	_____	_____
12.07	50 mm schedule 80 elbow 2" schedule 80 slip * slip ell	466 item	_____ item	_____	_____	_____	_____
12.08	50 * 150 mm schedule 80 TOE nipple 2" * 6" schedule 80 TOE nipple	466 item	_____ item	_____	_____	_____	_____
12.09	50 mm bronze gate valve 2" bronze gate valve	466 item	_____ item	_____	_____	_____	_____
12.10	50 * 150 mm schedule 80 TOE nipple 2" * 6" schedule 80 TOE nipple	466 item	_____ item	_____	_____	_____	_____

ITEM	DESCRIPTION	CONSULTANT QTY UNIT	CONTRACTOR QTY UNIT	MATERIAL RATE	INSTALLED RATE	COMBINED RATE	TOTAL
13	AIR VALVES ON BURIED IRRIGATION MAINLINE	22 item	_____ item	_____	_____	_____	_____
	To supply and install assemblies to underground PVC pipe. Air valves will be 50 mm (2 inch) Crispin model C20 Combination Air Release Valve or approved equivalent. Air valves will release large volumes of air upon filling of the pipe, allow air to enter when the pipe is drained and release accumulated air while the system is pressurised.						
13.01	50 mm schedule 80 elbow 2" schedule 80 slip * slip ell	22 item	_____ item				
13.02	50 * 150 mm schedule 80 TOE nipple 2" * 6" schedule 80 TOE nipple	22 item	_____ item				
13.03	50 mm combination air valve 2" combination air valve	22 item	_____ item				
13.04	Brass Blow-Off Elbow	22 item	_____ item				
13.05	1419 valve box	22 item	_____ item				
14	LATERAL-TAPPED QUICK COUPLING VALVES	375 item	_____ item	_____	_____	_____	_____
	These will be Rain Bird 5RC (1 inch) brass quick coupling valves attached to swing joint riser. Risers are to be Lasco or Dura Schedule 80 swing joint risers with O ring sealing for the threaded joints or an approved equivalent . To supply and install assemblies including:						
14.01	25 * 300 mm schedule 80 articulated riser 1" * 12" schedule 80 swing joint riser	375 item	_____ item				
14.02	25 mm QCV 1" QCV	375 item	_____ item				
14.03	910 valve box	375 item	_____ item				
15	LATERAL TAKE OFFS - VIH	444 item	_____ item	_____	_____	_____	_____
	To supply and install assemblies including:						
15.01	50 * 50 mm coupling 2" * 2" coupling slip * slip	444 item	_____ item				
15.02	Carson 910 valve box	444 item	_____ item				

ITEM	DESCRIPTION	CONSULTANT QTY UNIT	CONTRACTOR QTY UNIT	MATERIAL RATE	INSTALLED RATE	COMBINED RATE	TOTAL														
16	PVC LATERAL PIPEWORK & FITTINGS To supply and install pipes including fittings, compaction, etc. The uPVC (unplasticised PolyVinylChloride) pipe is to be: a) Solvent Weld Jointed supplied in 6 m (19.5 feet) lengths b) Pressure rated to a minimum of 12 Bar (176 PSI) and conforming to one of the following standards: ASTM 2241 Class 200, BS3505 Class D, AS1477 Class 12 uPVC lateral pipe fittings are to be ASTM schedule 40, BS3505 Class F or AS1477 Class 18																				
16.01	50 mm lateral PVC pipe including fittings	45,620 m																			
	2" lateral PVC pipe including fittings	149,634 ft																			
17	SPRINKLERS To supply & install sprinkler assemblies including Lasco or Dura (or approved equivalent) Schedule 80 swing joint risers with O ring sealing for the threaded joints. Thread to match sprinkler base.																				
17.01	Type 1 Sprinkler - Full Circle VIH - 30 m Spacing	6 item																			
	<table border="1"> <thead> <tr> <th>Rain Bird 900E, 60 Nozzle</th> <th>Metric</th> <th>Imperial</th> </tr> </thead> <tbody> <tr> <td>Pressure</td> <td>550 kPa</td> <td>80 PSI</td> </tr> <tr> <td>Flow</td> <td>2.92 L/s</td> <td>46.3 USGPM</td> </tr> <tr> <td>Throw</td> <td>27.7 m</td> <td>90.9 ft</td> </tr> <tr> <td>Riser Pipe Diameter (thread to match sprinkler base)</td> <td>40 mm</td> <td>1.50 inches</td> </tr> </tbody> </table>	Rain Bird 900E, 60 Nozzle	Metric	Imperial	Pressure	550 kPa	80 PSI	Flow	2.92 L/s	46.3 USGPM	Throw	27.7 m	90.9 ft	Riser Pipe Diameter (thread to match sprinkler base)	40 mm	1.50 inches					
Rain Bird 900E, 60 Nozzle	Metric	Imperial																			
Pressure	550 kPa	80 PSI																			
Flow	2.92 L/s	46.3 USGPM																			
Throw	27.7 m	90.9 ft																			
Riser Pipe Diameter (thread to match sprinkler base)	40 mm	1.50 inches																			
17.02	Type 2 Sprinkler - Part Circle VIH - 30 m Spacing	0 item																			
	<table border="1"> <thead> <tr> <th>Rain Bird 950E, 28 Nozzle</th> <th>Metric</th> <th>Imperial</th> </tr> </thead> <tbody> <tr> <td>Pressure</td> <td>550 kPa</td> <td>80 PSI</td> </tr> <tr> <td>Flow</td> <td>2.98 L/s</td> <td>47.3 USGPM</td> </tr> <tr> <td>Throw</td> <td>26.2 m</td> <td>85.9 ft</td> </tr> <tr> <td>Riser Pipe Diameter (thread to match sprinkler base)</td> <td>40 mm</td> <td>1.50 inches</td> </tr> </tbody> </table>	Rain Bird 950E, 28 Nozzle	Metric	Imperial	Pressure	550 kPa	80 PSI	Flow	2.98 L/s	47.3 USGPM	Throw	26.2 m	85.9 ft	Riser Pipe Diameter (thread to match sprinkler base)	40 mm	1.50 inches					
Rain Bird 950E, 28 Nozzle	Metric	Imperial																			
Pressure	550 kPa	80 PSI																			
Flow	2.98 L/s	47.3 USGPM																			
Throw	26.2 m	85.9 ft																			
Riser Pipe Diameter (thread to match sprinkler base)	40 mm	1.50 inches																			
17.03	Type 3 Sprinkler - Full Circle VIH - 24 m Spacing	141 item																			
	<table border="1"> <thead> <tr> <th>Rain Bird 900E, 48 Nozzle</th> <th>Metric</th> <th>Imperial</th> </tr> </thead> <tbody> <tr> <td>Pressure</td> <td>550 kPa</td> <td>80 PSI</td> </tr> <tr> <td>Flow</td> <td>2.14 L/s</td> <td>34.0 USGPM</td> </tr> <tr> <td>Throw</td> <td>22.8 m</td> <td>74.8 ft</td> </tr> <tr> <td>Riser Pipe Diameter (thread to match sprinkler base)</td> <td>40 mm</td> <td>1.50 inches</td> </tr> </tbody> </table>	Rain Bird 900E, 48 Nozzle	Metric	Imperial	Pressure	550 kPa	80 PSI	Flow	2.14 L/s	34.0 USGPM	Throw	22.8 m	74.8 ft	Riser Pipe Diameter (thread to match sprinkler base)	40 mm	1.50 inches					
Rain Bird 900E, 48 Nozzle	Metric	Imperial																			
Pressure	550 kPa	80 PSI																			
Flow	2.14 L/s	34.0 USGPM																			
Throw	22.8 m	74.8 ft																			
Riser Pipe Diameter (thread to match sprinkler base)	40 mm	1.50 inches																			
17.04	Type 4 Sprinkler - Part Circle VIH - 24 m Spacing	56 item																			
	<table border="1"> <thead> <tr> <th>Rain Bird 950E, 20 Nozzle</th> <th>Metric</th> <th>Imperial</th> </tr> </thead> <tbody> <tr> <td>Pressure</td> <td>550 kPa</td> <td>80 PSI</td> </tr> <tr> <td>Flow</td> <td>1.70 L/s</td> <td>27.0 USGPM</td> </tr> <tr> <td>Throw</td> <td>23.2 m</td> <td>76.1 ft</td> </tr> <tr> <td>Riser Pipe Diameter (thread to match sprinkler base)</td> <td>40 mm</td> <td>1.50 inches</td> </tr> </tbody> </table>	Rain Bird 950E, 20 Nozzle	Metric	Imperial	Pressure	550 kPa	80 PSI	Flow	1.70 L/s	27.0 USGPM	Throw	23.2 m	76.1 ft	Riser Pipe Diameter (thread to match sprinkler base)	40 mm	1.50 inches					
Rain Bird 950E, 20 Nozzle	Metric	Imperial																			
Pressure	550 kPa	80 PSI																			
Flow	1.70 L/s	27.0 USGPM																			
Throw	23.2 m	76.1 ft																			
Riser Pipe Diameter (thread to match sprinkler base)	40 mm	1.50 inches																			

ITEM DESCRIPTION	CONSULTANT QTY UNIT	CONTRACTOR QTY UNIT	MATERIAL RATE	INSTALLED RATE	COMBINED RATE	TOTAL																																			
17.05 Type 5 Sprinkler - Full Circle VIH - 21 m Spacing	2,026 item	_____ item	_____	_____	_____	_____																																			
<table border="1"> <thead> <tr> <th>Rain Bird 705E, 18 Nozzle</th> <th>Metric</th> <th>Imperial</th> <th></th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>Pressure</td> <td>550 kPa</td> <td>80 PSI</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Flow</td> <td>1.41 L/s</td> <td>22.4 USGPM</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Throw</td> <td>19.8 m</td> <td>64.9 ft</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Riser Pipe Diameter</td> <td>32 mm</td> <td>1.25 inches</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>							Rain Bird 705E, 18 Nozzle	Metric	Imperial					Pressure	550 kPa	80 PSI					Flow	1.41 L/s	22.4 USGPM					Throw	19.8 m	64.9 ft					Riser Pipe Diameter	32 mm	1.25 inches				
Rain Bird 705E, 18 Nozzle	Metric	Imperial																																							
Pressure	550 kPa	80 PSI																																							
Flow	1.41 L/s	22.4 USGPM																																							
Throw	19.8 m	64.9 ft																																							
Riser Pipe Diameter	32 mm	1.25 inches																																							
17.06 Type 6 Sprinkler - Part Circle VIH - 21 m Spacing	250 item	_____ item	_____	_____	_____	_____																																			
<table border="1"> <thead> <tr> <th>Rain Bird 755E, 18 Nozzle</th> <th>Metric</th> <th>Imperial</th> <th></th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>Pressure</td> <td>550 kPa</td> <td>80 PSI</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Flow</td> <td>1.35 L/s</td> <td>21.4 USGPM</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Throw</td> <td>19.8 m</td> <td>64.9 ft</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Riser Pipe Diameter (thread to match sprinkler base)</td> <td>32 mm</td> <td>1.25 inches</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>							Rain Bird 755E, 18 Nozzle	Metric	Imperial					Pressure	550 kPa	80 PSI					Flow	1.35 L/s	21.4 USGPM					Throw	19.8 m	64.9 ft					Riser Pipe Diameter (thread to match sprinkler base)	32 mm	1.25 inches				
Rain Bird 755E, 18 Nozzle	Metric	Imperial																																							
Pressure	550 kPa	80 PSI																																							
Flow	1.35 L/s	21.4 USGPM																																							
Throw	19.8 m	64.9 ft																																							
Riser Pipe Diameter (thread to match sprinkler base)	32 mm	1.25 inches																																							
NOTE: Thread on Riser must match Sprinkler Base																																									
17.07 40 * 300 mm schedule 80 articulated riser 1.5" * 12" schedule 80 swing joint riser	203 item	_____ item																																							
17.08 32 * 300 mm schedule 80 articulated riser 1.25" * 12" schedule 80 swing joint riser	2,276 item	_____ item																																							
17.09 3M DBY wire splice joiner for VIH Sprinklers	4,958 item	_____ item																																							

ITEM	DESCRIPTION	CONSULTANT QTY UNIT	CONTRACTOR QTY UNIT	MATERIAL RATE	INSTALLED RATE	COMBINED RATE	TOTAL
18	IRRIGATION CONTROL SYSTEM - Supply, install and commission: Software and firmware to be latest available at time of ordering.						
18.01	Master computer, software and interface unit to field. Rain Bird - Cirrus	1 item	_____ item	_____	_____	_____	_____
18.02	Weather Station - Supply and install: The weather station will be as per manufacturer's recommendations to interface with the Master Computer including any software required. Parameters to be measured include Rainfall, Temperature, Relative Humidity, Wind Speed, Wind Direction & Solar Radiation.	1 item	_____ item	_____	_____	_____	_____
18.03	Beldon cable from central controller to weather station DECODER SATELLITES - Supply and install: Satellites will be 220/240 V Rain Bird Par+ES Decoder Satellites with plastic pedestals.	500 m 1,640 ft	_____ _____	_____	_____	_____	_____
18.04	72 station satellite	5 item	_____ item	_____	_____	_____	_____
18.05	64 station satellite	12 item	_____ item	_____	_____	_____	_____
18.06	56 station satellite	7 item	_____ item	_____	_____	_____	_____
18.07	48 station satellite	3 item	_____ item	_____	_____	_____	_____
18.08	Rain Bird FD-102 Decoders	61 item	_____ item	_____	_____	_____	_____
18.09	Rain Bird FD-202 Decoders	598 item	_____ item	_____	_____	_____	_____
18.10	Rain Bird FD-401 Decoders	10 item	_____ item	_____	_____	_____	_____
18.11	Rain Bird FD-601 Decoders	56 item	_____ item	_____	_____	_____	_____
18.12	Rain Bird LSP-1 Surge Arrestors	88 item	_____ item	_____	_____	_____	_____
18.13	Copper clad earth stakes with exo-thermic welded joints (Cadweld or approved equivalent). The rods will have a solid steel core and be 16 mm (0.625 inches) diameter and 2.5 m (8 feet) long with a 250 micron (0.010") copper cladding. No valve boxes required.	235 item	_____ item	_____	_____	_____	_____
18.14	10 sq mm bare copper wire #6 bare copper wire	14,661 m 48,088 ft	_____ _____	_____	_____	_____	_____

ITEM	DESCRIPTION	CONSULTANT QTY UNIT	CONTRACTOR QTY UNIT	MATERIAL RATE	INSTALLED RATE	COMBINED RATE	TOTAL
RAIN BIRD COMMUNICATION CABLE							
To supply & install cable approved by the manufacturer of the irrigation control system.							
Communication Cable for all paths from Central Controller to Satellites to be Red.							
Communication Cable from Satellites to VIH Sprinklers to be Blue.							
18.15	2.5 sq mm Rain Bird approved comm. cable - Red	11,338 m					
	#14 Rain Bird approved comm. cable - Red	37,189 ft					
18.16	2.5 sq mm Rain Bird approved comm. cable - Blue	14,661 m					
	#14 Rain Bird approved comm. cable - Blue	48,088 ft					
240 VOLT CABLE							
To supply and install high voltage cables from the power source to the field satellites using direct bury cables and protection etc. The cable will consist of a three core, active and neutral with earth, PVC sheath, steel wire armoured 600/1000 V cable (to BS6346)							
18.17	16 sq mm armoured cable	1,725 m					
	#4 armoured cable	5,658 ft					
18.18	10 sq mm armoured cable	1,960 m					
	#6 armoured cable	6,429 ft					
18.19	6 sq mm armoured cable	1,753 m					
	#8 armoured cable	5,750 ft					
18.20	2.5 sq mm armoured cable	3,946 m					
	#12 armoured cable	12,943 ft					
24 VOLT SOLENOID VALVE CABLE - From Satellites to VIH sprinklers.							
To supply and install low voltage cables. Cables will be supplied on drums with a minimum length of 500 m (1500 feet) and will be one of:							
a) Paige P7079D-Rev 7 single strand soft annealed copper with Polyethylene insulation (Preferred)							
b) Paige P7001D-Rev 1 single strand soft annealed copper with PVC insulation.							
c) PVC sheathed, double insulated cable, manufactured to British Standard BS6346 and suitable for direct burial.							
18.21	1.5 sq mm active control cable (Red)	111,555 m					
	#14 active control cable (Red)	365,900 ft					
18.22	1.5 sq mm common control cable (White)	111,555 m					
	#14 common control cable (White)	365,900 ft					

ITEM	DESCRIPTION	CONSULTANT QTY UNIT	CONTRACTOR QTY UNIT	MATERIAL RATE	INSTALLED RATE	COMBINED RATE	TOTAL
19	SPARE PARTS & TOOLS To supply the following for handover to the Employer (separate from installation) All parts are to conform to specifications previously stated in Bill of Quantities						
19.01	PUMP STATION	1 set	_____ set	_____	_____	_____	_____
19.02	Packing gland material for each pump station	1 item					
19.03	Full set of fuses for each pump station	1 item					
19.04	PIPE	1 set	_____ set	_____	_____	_____	_____
19.05	300 mm mainline pipe 12" mainline pipe	4 length					
19.06	250 mm mainline pipe 10" mainline pipe	4 length					
19.07	200 mm mainline pipe 8" mainline pipe	4 length					
19.08	150 mm mainline pipe 6" mainline pipe	6 length					
19.09	100 mm mainline pipe 4" mainline pipe	6 length					
19.10	50 mm lateral pipe 2" lateral pipe	200 length					

ITEM	DESCRIPTION	CONSULTANT QTY UNIT	CONTRACTOR QTY UNIT	MATERIAL RATE	INSTALLED RATE	COMBINED RATE	TOTAL
19.11	MAINLINE TAKE OFFS	1 set	_____ set	_____	_____	_____	_____
19.12	300 * 50 mm tapping saddle 12" * 2" tapping saddle	4 item					
19.13	250 * 50 mm tapping saddle 10" * 2" tapping saddle	3 item					
19.14	200 * 50 mm tapping saddle 8" * 2" tapping saddle	5 item					
19.15	150 * 50 mm tapping saddle 6" * 2" tapping saddle	5 item					
19.16	100 * 50 mm tapping saddle 4" * 2" tapping saddle	3 item					
19.17	50 * 300 mm schedule 80 TOE nipple 2" * 12" schedule 80 TOE nipple	20 item					
19.18	50 mm bronze gate valve 2" bronze gate valve	20 item					
19.19	50 * 150 mm class F TOE nipple 2" * 6" schedule 40 TOE nipple	20 item					
19.20	1419 valve box	5 item					
19.21	910 valve box	15 item					
19.22	LATERAL FITTINGS	1 set	_____ set	_____	_____	_____	_____
19.23	50 mm class F PVC 90 degree elbow 2" schedule 40 PVC 90 degree slip * slip ell	100 item					
19.24	50 mm class F PVC 45 degree elbow 2" schedule 40 PVC 45 degree slip * slip ell	100 item					
19.25	50 mm class F PVC tee 2" schedule 40 PVC slip * slip * slip tee	50 item					

ITEM	DESCRIPTION	CONSULTANT QTY UNIT	CONTRACTOR QTY UNIT	MATERIAL RATE	INSTALLED RATE	COMBINED RATE	TOTAL
19.26	SPRINKLER TAKE OFFS	1 set	_____ set	_____	_____	_____	_____
19.27	Type 1 Sprinkler	2 item					
19.28	Type 2 Sprinkler	0 item					
19.29	Type 3 Sprinkler	10 item					
19.30	Type 4 Sprinkler	10 item					
19.31	Type 5 Sprinkler	50 item					
19.32	Type 6 Sprinkler	50 item					
19.33	50 * 40 mm class F PVC tee 2" * 1.5" schedule 40 PVC slip * slip * slip tee	50 item					
19.34	50 * 40 mm class F PVC elbow 2" * 1.5" schedule 40 PVC slip * slip ell	50 item					
19.35	40 * 300 mm schedule 80 articulated riser 1.5" * 12" schedule 80 swing joint riser	50 item					
19.36	50 * 32 mm class F PVC tee 2" * 1.25" schedule 40 PVC slip * slip * slip tee	50 item					
19.37	50 * 32 mm class F PVC tee 2" * 1.25" schedule 40 PVC slip * slip * slip tee	50 item					
19.38	50 * 32 mm class F PVC elbow 2" * 1.25" schedule 40 PVC slip * slip ell	50 item					
19.39	32 * 300 mm schedule 80 articulated riser 1.25" * 12" schedule 80 swing joint riser	50 item					
19.40	3M DBY wire splice joiner	200 item					
19.41	QUICK COUPLING VALVES QCV keys will be Rain Bird 55K-1 25 mm (1 inch) brass quick coupler keys with swivel hose elbows.	1 set	_____ set	_____	_____	_____	_____
19.42	25 mm QCV valve 1" QCV valve	20 item					
19.43	25 mm QCV key with 25 mm swivel elbow 1" QCV key with 1" swivel ell	20 item					
19.44	Adapter to fit QCV to Type 5 sprinkler	4 item					

ITEM	DESCRIPTION	CONSULTANT QTY UNIT	CONTRACTOR QTY UNIT	MATERIAL RATE	INSTALLED RATE	COMBINED RATE	TOTAL
19.45	CONTROL SYSTEM	1 set	_____ set	_____	_____	_____	_____
19.46	Communication cable	1,000 m					
	Communication cable	3,280 ft					
19.47	72 station decoder satellite	1 item					
19.48	TOOLS	1 set	_____ set	_____	_____	_____	_____
19.49	1 m long isolation valve handles	3 item					
	3 foot long isolation valve handles						
19.50	Set of sprinkler tools (for all models of sprinklers)	3 set					
19.51	Sprinkler key	15 item					
19.52	Wire tracer	1 item					
19.53	Electronic pulser	1 item					
19.54	REPAIR COUPLINGS	1 set	_____ set	_____	_____	_____	_____
19.55	300 mm gibault joint	2 item					
	12" cast iron repair coupling						
19.56	250 mm gibault joint	2 item					
	10" cast iron repair coupling						
19.57	200 mm gibault joint	2 item					
	8" cast iron repair coupling						
19.58	150 mm gibault joint	4 item					
	6" cast iron repair coupling						
19.59	100 mm gibault joint	5 item					
	4" cast iron repair coupling						
19.60	50 mm compression coupling	30 item					
	2" PVC repair coupling						

ITEM	DESCRIPTION	CONSULTANT QTY UNIT	CONTRACTOR QTY UNIT	MATERIAL RATE	INSTALLED RATE	COMBINED RATE	TOTAL
20	CONTRACTOR'S ITEMS The Contractor may, at their discretion, add specific items in this section. However, it remains the Contractor's responsibility to allow for sufficient materials regardless of the items or quantities mentioned in this Bill of Quantities. To supply and install the following items not mentioned elsewhere in the Bill of Quantities.						
20.01	Documentation including As Built Drawings	1 item	_____ item	_____	_____	_____	_____
20.02	Lubricant for RRJ Pipe _____	1 item	_____ item	_____	_____	_____	_____
20.03	Primer _____	1 item	_____ item	_____	_____	_____	_____
20.04	Solvent Cement _____	1 item	_____ item	_____	_____	_____	_____
20.05	Thread Seal _____	1 item	_____ item	_____	_____	_____	_____
20.06	Pipe Sleeves _____	1 item	_____ item	_____	_____	_____	_____
20.07	Sand for Bedding _____	1 item	_____ item	_____	_____	_____	_____
20.08	Hard Digging _____	1 item	_____ item	_____	_____	_____	_____
20.09	_____		_____	_____	_____	_____	_____
20.10	_____		_____	_____	_____	_____	_____
20.11	_____		_____	_____	_____	_____	_____
20.12	_____		_____	_____	_____	_____	_____
20.13	_____		_____	_____	_____	_____	_____
20.14	_____		_____	_____	_____	_____	_____
20.15	_____		_____	_____	_____	_____	_____
20.16	_____		_____	_____	_____	_____	_____
20.17	_____		_____	_____	_____	_____	_____
20.18	_____		_____	_____	_____	_____	_____
20.19	_____		_____	_____	_____	_____	_____
20.20	_____		_____	_____	_____	_____	_____
20.21	_____		_____	_____	_____	_____	_____
20.22	_____		_____	_____	_____	_____	_____

ITEM DESCRIPTION	CONSULTANT QTY UNIT	CONTRACTOR QTY UNIT	MATERIAL RATE	INSTALLED RATE	COMBINED RATE	TOTAL
COLLECTION FOR IRRIGATION BILL OF QUANTITIES						
SUB TOTAL FROM PAGE 1	(Preamble - Nothing to include in Grand Total)					
SUB TOTAL FROM PAGE 2	_____					
SUB TOTAL FROM PAGE 3	_____					
SUB TOTAL FROM PAGE 4	_____					
SUB TOTAL FROM PAGE 5	_____					
SUB TOTAL FROM PAGE 6	_____					
SUB TOTAL FROM PAGE 7	_____					
SUB TOTAL FROM PAGE 8	_____					
SUB TOTAL FROM PAGE 9	_____					
SUB TOTAL FROM PAGE 10	_____					
SUB TOTAL FROM PAGE 11	_____					
SUB TOTAL FROM PAGE 12	_____					
SUB TOTAL FROM PAGE 13	_____					
SUB TOTAL FROM PAGE 14	_____					
SUB TOTAL FROM PAGE 15	_____					
SUB TOTAL FROM PAGE 16	_____					
SUB TOTAL FROM PAGE 17	_____					
SUB TOTAL FROM PAGE 18	_____					
SUB TOTAL FROM PAGE 19	_____					
SUB TOTAL FROM PAGE 20	_____					
SUB TOTAL FROM PAGE 21	_____					
SUB TOTAL FROM PAGE 22	_____					
GRAND TOTAL	_____					

Amount in words: _____

Currency: _____

Company: _____

Authorised Signature: _____ Date _____

Name: _____ Position _____

Company Stamp/Chop/Seal