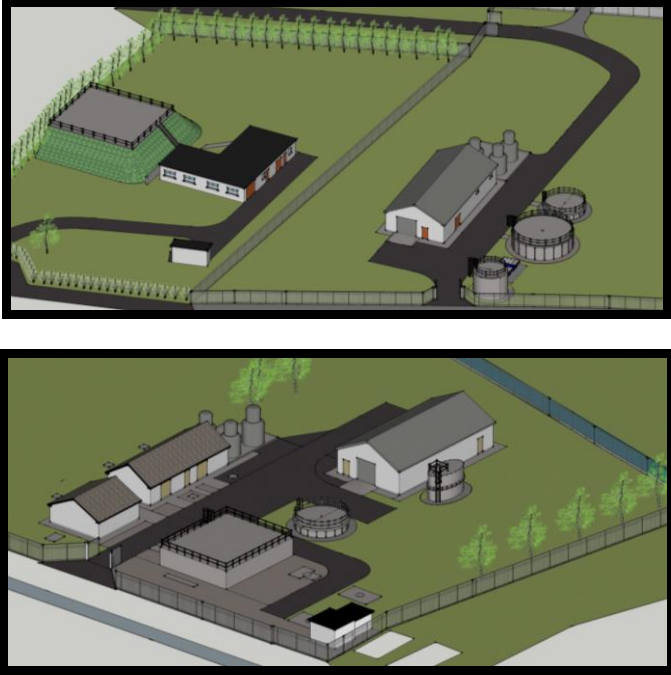
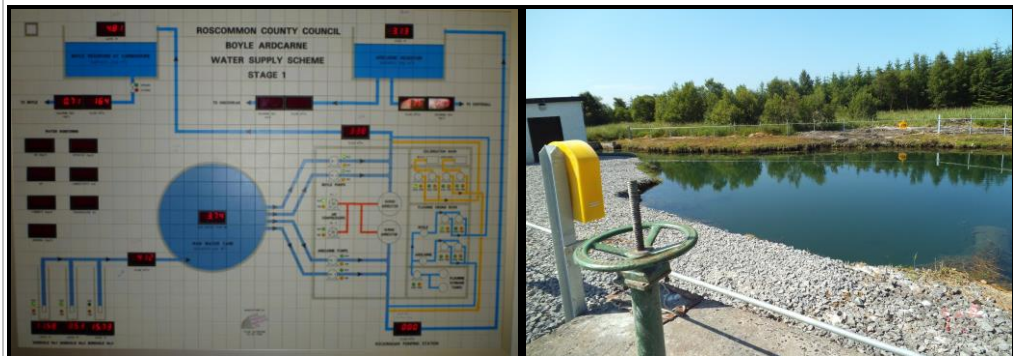


APPENDIX B2: CERTIFICATE OF SATISFACTORY EXECUTION –WORKS ONLY

ACTIVITY <i>(Title of Applicant Activity)</i>	Contractor Entry: Works Contractor, PSCS, Designer and PSDP		
SITE Construction contract: <i>(Title & brief description)</i>	<p>Four Roscommon Regional Water Supply Scheme DBO Contract</p> <p>The Four Roscommon RWSS DBO Contract involves the design, construction and operation and maintenance of 5 No. Water Treatment Plants ranging in size from 61m³/hr to 318m³/hr. The Contract includes a 20 year Operation and Maintenance period for the 5 No. WTPs.</p> <div style="text-align: center;">  </div> <p>The Contract included 5 No. Water Treatment Plant within Four Regional Water Supply Schemes, as follows:</p> <ul style="list-style-type: none"> • South Roscommon Regional Water Supply Scheme (SRRWSS) – Lisbrock and Killéglan WTPs. • Roscommon Central Regional Water Supply Scheme (RCRWSS) – Ballinagard WTP. • Boyle Ardcarne Regional Water Supply Scheme (BARWSS) – Rockingham WTP. • Arigna Regional Water Supply Scheme (ARWSS) – Ballyfarnon WTP. 		
Site location:	Roscommon, various locations		
Proportion of Project undertaken by the Applicant	100%	Tender entity (<i>Sole trader/ Joint Venture</i>):	Private Limited Company
VALUE Construction contract value at award stage including cost of services where applicable:	DB €10,600,000 O&M €17,820,000	Construction contract value at completion (including cost of services where applicable):	Ongoing
GENERAL INFO Role of Company in delivery of Service:	<p><u>Scope of Works</u></p> <p>The general scope of works and objective of the Contract is outlined as follows:</p>		

- Development of the production wells/springs including chambers, pumps, rising mains to the WTP and associated telemetry.
- The development of Hughestown wellfield including the production wells & chambers, control building and pump house.
- The provision of five Water Treatment Plants and associated water pumping facilities in four out of five WTPs.
- To provide appropriate barriers to Cryptosporidium in accordance with the EPA 'Water Treatment Manual: Disinfection', published in November 2011; and to reduce the risk of Cryptosporidium to low risk level in accordance with the EPA Cryptosporidium Risk Assessment Methodology.
- The treatment and disposal of any sludge and wastes generated.
- The provision of a booster pumping station at Rockhill (ARWSS).
- Instrumentation and telemetry, metering and sampling equipment.
- Review and upgrading of existing infrastructure.
- To design & build water level instrumentation, outlet bulk meter and outlet sampling on the distribution outlet from the existing Reservoirs.
- The interim operation and maintenance of these facilities during DB Phase.
- Operation and maintenance of existing and new facilities for a 20 year O&M period.
- Operation and maintenance of some rising mains, constructed by others, for the 20 years operation and maintenance period.



Process Design

The Four Roscommon RWSS DBO Contract consists of the construction of 5 No. Water Treatment plants, with a variety of different raw water sources including boreholes and springs. Each water treatment plant is designed to meet the requirements of SI 244 of European Communities (Drinking Water) (No.2) Regulations 2014. A tabular summary is provided below describing the raw water source, the raw water design parameters and selected water treatment process.

1. Lisbrock WSS 4,000m³/d, 182m³/hr (Spring & Boreholes)

<u>Raw Water Parameters</u>	<u>Selected Water Treatment Process</u>
Colour : 4.54 Hazen Turbidity : 1.17 NTU pH : 7.25 TOC : 2.11 mg/l	<ul style="list-style-type: none"> - Raw water abstraction & source protection - Raw water mixing and chemical conditioning - Contact coagulation in absorption clarifier - Rapid gravity filtration - UV disinfection unit - Liquid sludge transported to Killeglan Hub Plant and/or Treatment of sludge to approx. 18% D.S. and disposal of Sludge Cake.

2. Killeglan WSS 7,000m³/d, 318m³/hr (Spring & Boreholes)

<u>Raw Water Parameters</u>	<u>Selected Water Treatment Process</u>
Colour : 17.15 Hazen Turbidity : 0.76 NTU pH : 7.22 TOC : 4.57 mg/l	<ul style="list-style-type: none"> - Raw water abstraction & source protection, including covering of existing spring source - Raw water mixing and chemical conditioning - Slow and Fast mixing in flocculation tanks - Dissolved Air Flootation (DAF)

	<ul style="list-style-type: none"> - Rapid gravity filtration - UV disinfection unit - Storage of Liquid Sludge from other plants - Treatment of sludge to approx. 18% D.S. and disposal of Sludge Cake. 	
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3. Ballinagard WSS 5,200m³/d, 236m³/hr (Spring & Boreholes)

<u>Raw Water Parameters</u> Colour : 7.29 Hazen Turbidity : 1.28 NTU pH : 7.22 TOC : 2.42 mg/l	<u>Selected Water Treatment Process</u> <ul style="list-style-type: none"> - Raw water abstraction & source protection, including covering of existing spring source - Raw water mixing and chemical conditioning - Contact coagulation in absorption clarifier - Rapid gravity filtration - UV disinfection unit - Liquid sludge transported to Killeglan Hub Plant and/or Treatment of sludge to approx. 18% D.S. and disposal of Sludge Cake. 	
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4. Ballyfarnon WSS 1,350m³/d, 61m³/hr (Borehole)

<u>Raw Water Parameters</u> Colour : 4.35 Hazen Turbidity : 1.80 NTU pH : 7.59 TOC : 1.23 mg/l	<u>Selected Water Treatment Process</u> <ul style="list-style-type: none"> - Raw water abstraction and chemical conditioning - 2 stage filtration consisting of multimedia filters and GAC filters to deal with the elevated organics - UV disinfection unit - Liquid sludge transported to Killeglan Hub Plant and/or Treatment of sludge to approx. 18% D.S. and disposal of Sludge Cake. 	
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5. Rockingham WSS 5,000m³/d, 227m³/hr (Spring & Boreholes)

<u>Raw Water Parameters</u> Colour : 15.02 Hazen Turbidity : 1.50 NTU pH : 7.18 TOC : 3.75 mg/l	<u>Selected Water Treatment Process</u> <ul style="list-style-type: none"> - Raw water abstraction & source protection - Raw water mixing and chemical conditioning - Contact coagulation in absorption clarifier - Rapid gravity filtration - UV disinfection unit - Liquid sludge transported to Killeglan Hub Plant and/or Treatment of sludge to approx. 18% D.S. and disposal of Sludge Cake. 	
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Glan Agua Ltd. has previously completed the emergency works contract for Roscommon Central Regional Water Supply Scheme (RCRWSS) – Ballinagard WTP. This was a separate contract for the provision of a temporary plant to treat the water. This shows the ability of Glan Agua Ltd to complete a WTP under tight time restrictions to treat water to the drinking water standards required.





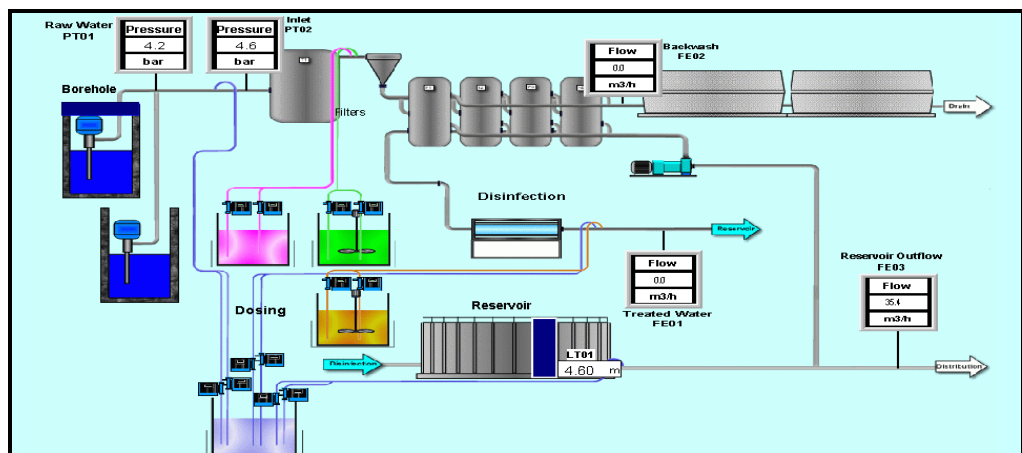
Operation and Maintenance

The design demand for each of the water treatment plants ranges from 61m³/hr to 318.0 m³/hr. Glan Agua Ltd also undertake the operation and maintenance of the 5 plants with a combined consumption of 22,550m³/day. There is a Senior Operations Manager and 2no Operations Technicians employed on the project, which provides for a fast and efficient response time and high quality delivery of service. Glan Agua Ltd also have employed a Lab Technician for carrying out in-house testing of raw and treated water. External water testing is carried out as per the Employers Requirements.

The Operation and Maintenance of the contract is controlled via a central SCADA hub centre. The SCADA system is able to remotely acquire display and store data from all 5 water treatment plants sites. The information is available to Glan Agua Ltd at the hub centre, Killeglan WSS, and also on our central server in Head Office in Ballinasloe, Co Galway to allow for monitoring and reporting of the water supply schemes.

The Lab Technician and the O&M Manager monthly report on the lab results and the SCADA trends and this is submitted to the Local Authority.

The SCADA server in Glan Agua Ltd head office that also acquires all the data, is stored and backed up every night at 12midnight. The SCADA Computer is a Windows XP Professional (NT compatible) operating software and the SCADA operating software is Rockwell Site Edition.



Example of Images and Functionality of the SCADA System

	Today	Yesterday	2 days ago	3 days ago	4 days ago	5 days ago	6 days ago	Weekly	
Treated Water Flow	726	821	675	802	726	742	719	5211	m3
Reservoir Flow	796	774	758	771	744	714	731	5236	m3
Backwash Flow	0	0	0	0	0	0	0	0	m3
Main kWh	33	33	32	31	30	42	47	245	hr
Source kWh	0	0	0	0	0	0	0	0	hr

	Today		Yesterday		Maximum & Minimum				2 days ago		3 days ago		4 days ago		5 days ago		6 days ago		
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	
Raw Water Turbidity	0.57	0.00	0.43	0.00	8.08	0.00	0.56	0.00	0.56	0.00	0.56	0.00	1.44	0.00	1.44	0.00	1.44	0.00	NTU
TW Turbidity	0.97	0.00	0.97	0.00	5.00	0.00	0.80	0.00	0.73	0.00	0.92	0.00	0.92	0.00	0.92	0.00	0.92	0.00	NTU
Raw Water Colour	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	Haz
TW Colour	4.46	0.00	4.03	0.00	50.00	0.00	50.00	0.00	50.00	0.00	50.00	0.00	11.84	0.00	10.60	0.00	10.60	0.00	Haz
TW pH	6.24	0.00	6.23	0.00	9.34	0.00	6.31	0.00	6.31	0.00	6.44	0.00	6.44	0.00	6.44	0.00	6.44	0.00	
Chlorine Residual TW	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00	1.31	0.00	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00	mg/l
Chlorine Residual Res	0.35	0.21	0.32	0.22	0.35	0.10	0.35	0.16	0.28	0.17	2.00	0.03	2.00	0.03	2.00	0.03	2.00	0.03	mg/l

Example of Information and Trends Produced by the SCADA System

The SCADA performs scan cycles every 0-10 minutes. On analogue signals (flow, pressure, colour, turbidity) digital signals such as alarms are instantaneous. e.g if pump trips out and an alarm is generated at the WTP MCC that signal is sent immediately to the SCADA system and directly to operator. Similarly, Colour, pH, Turbidity Chlorine from Raw and treated water and are also monitored and trended on SCADA. The alarms are set up to contact the operator in charge via SMS to alert them of any issue arising, to which the operator immediately responds if necessary.

Glan Agua Ltd has a fleet of maintenance vehicles on the road equipped with all the tools necessary to deal with Water Treatment Plant issues, which offers additional support where necessary.



Health & Safety Apects of the Contract

- Entry into Confined Space
- Excavations
- Structural Stability
- Lifting Operations / Cranes
- Road Works
- Traffic Management
- Scaffolding
- Underground Services
- Overhead Cables
- Working at Heights
- Piling
- Vibration, Noise and Dust
- Working with hazardous materials / live sewers

Environmental Aspects and Impacts of the Contract

All sites had to be developed through construction of a water treatment plant building,

	<p>pipework and source protection. A preliminary environmental and archaeological assessment was completed pre-tender stage, which formed part of the tender documentation. An Environmental Method Statement and Impacts and Aspects had to be completed for each site and submitted to the Employers Representative for Approval.</p>		
<p>Name & address of Contracting Authority responsible for the project:</p>	<p>Roscommon County Council, Court House, Roscommon</p>		
<p>Contracting Authority contact name:</p>	<p>Kieran Madden</p>	<p>Phone no.:</p>	<p>090 6632500</p>
<p>OTHER INFORMATION Provider of Civil Design : Glan Agua Provider of Civil and Building Construction: Glan Agua Provider of Mechanical, Electrical & Process Design and Installation: Glan Agua Project Supervisor (Construction Stage): Glan Agua</p>			
<p>CONTRACTORS NAME:</p>	<p>Glan Agua Ltd.</p>		