WATER SERVICES
CORPORATION

Water Services Corporation **Annual Report 2015**

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CHAIRMAN'S REPORT

William Wait

It is my pleasure to be writing this very first address in our Annual Report since being appointed Executive Chairman of the Water Services Corporation. My first thoughts were how to implement the values I believe in so that the WSC could become even better. I believe in people so in my first speech to employees I made it clear that the Corporation will focus on making them feel that they are making qualitative improvements to their lives. I am lucky to have found a team of close to a thousand hard-working employees who have a strong sense of belonging to the Corporation. My message is clear – money can buy technology, machines and buildings however it's the employees who make everything click and work together. Therefore, in 2015 the WSC focused on negotiating collective agreements with both the General Workers Union and the WSC Professionals Union.

However, the WSC is much more than employees. We are answerable to government and our consumers and as such are duty bound to provide excellent service and products. This is why 2015 was such an exciting year full of ground-breaking projects that will improve the quality of life of each and every one of us.

We are also focusing on exporting reverse osmosis, leakage management and GIS technology and experience built throughout the years. This know-how will be shared with countries in the Middle East and North Africa (MENA) region, whose citizens often go for days without water even in large cities, due to huge water-loss problems caused by their leaky water infrastructures. For this purpose we signed a cooperation agreement with the World Bank. In 2015 we visited Beirut twice on a leakage management assignment and with the full support of the World Bank, we are preparing strategies to participate in many more such initiatives which will improve the lives of millions in these regions.

The corporation has also been very active in utilising EU funding to carry out some very ambitious programmes such as the 3 new polishing plants which will provide ample quantities of high-quality "new water" to be used for agricultural and industrial use. This vision will help address problems that have been plaguing Malta's scarce water resources for decades. We have actively worked on over 100 projects with a budget of around €55 million. These will reduce our energy consumption and carbon footprint and will improve water quality and security. Another significant project will connect outlying hamlets of Baħrija and surrounding areas to the sewage

infrastructure thereby eliminating hundreds of bowser trips per annum to empty cesspits which means less traffic congestion, noise, inconvenience to residents and tons less of CO2.

Besides re-certification for ISO 9001 the WSC also managed to acquire ISO 14001 certification. This means that the WSC's environmental credentials are confirmed. We are also carefully studying new water production, meter and other technologies available in the Water Industry. So for this purpose we are working on projects with leading companies from France, Italy, Germany, Hungary and Israel to improve the quality of our products.

But our vision is not only to improve our products and services – we want to assert our place on the international stage of cutting-edge water and wastewater companies.

Whilst ending 2015 with a strong financial performance, we are actively ensuring that the corporation's debt is brought down to acceptable levels, thereby emphasising our commitment to fiscal sustainability and value-for-money.

In the near future we should start reaping the fruit of the myriad projects referred to above, which will be completed throughout 2016.

Ever conscious of our responsibility towards the Maltese public and numerous visitors to our country, in the year ahead we are determined to reach even greater achievements. But our goals are not merely technical and fiscal - we also want to be a role model of Corporate Social Responsibility and ethical behaviour.

WATER RESOURCES & STRUCTURAL PROJECTS DIRECTORATE

Dr. Inġ. Paul Micallef

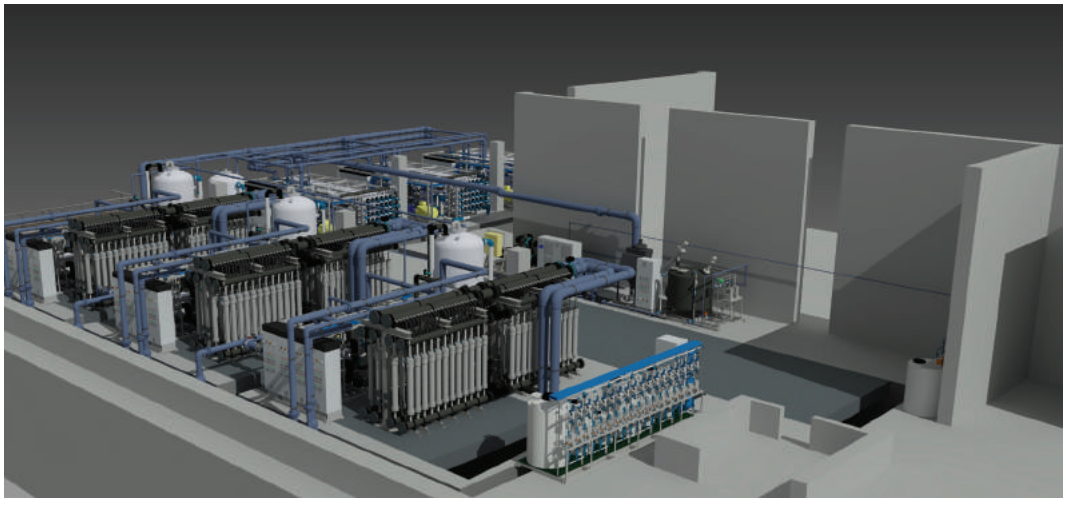
The Directorate is responsible for ground as well as reverse osmosis water production. It also administers the EU-funded projects that will upgrade and greatly improve the corporation's infrastructure.

Water Production

The main focus during 2015 was to continue the reverse osmosis plants' optimization with a view to improve work practices and increase operating efficiencies in all areas.

The period under review was characterized by the preparations to design and prepare tender specifications to upgrade four 4,500m3/day systems and two 2,400m3/day systems at the Pembroke and Lapsi reverse osmosis plants respectively.

The section was also responsible to finalise and coordinate with contractors all works in the set up of three new reclamation plants. The design and works were co-ordinated by the Production section. Two groundwater polishing plants were also designed to treat water from the Wied il-Kbir and Tal-Ħlas pumping stations.

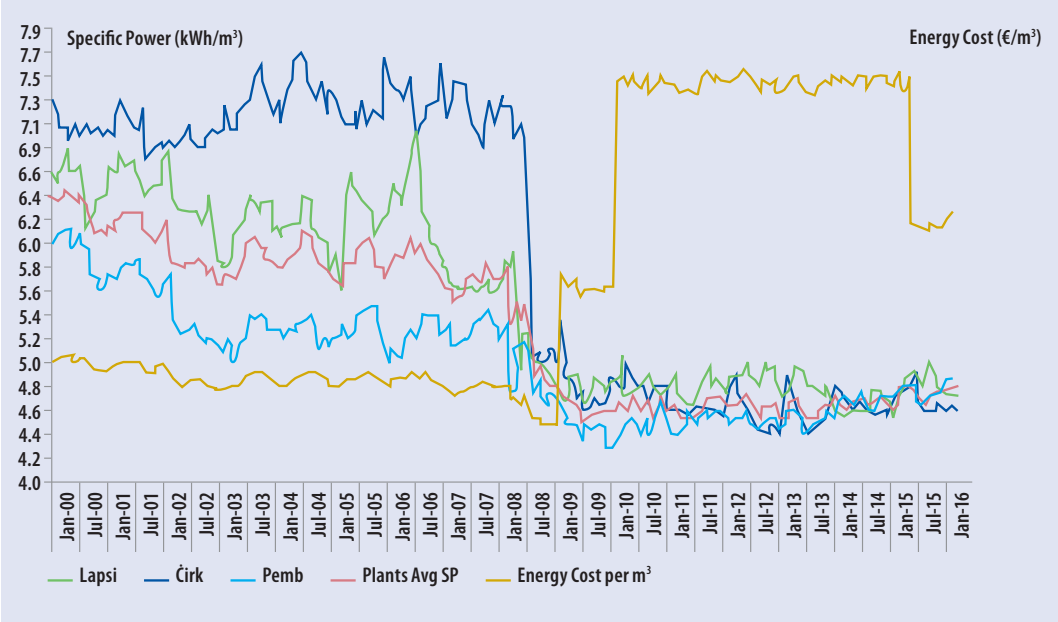


Design of the new R.O. upgrades carried out in-house

Energy Consumption

The specific power registered during the period under review was 4.76kwhr/m3. Specific power was controlled by keeping all trains operating at optimal efficiency and by managing membrane performance through periodic membrane rotations.

Specific power trend is shown in graph below:



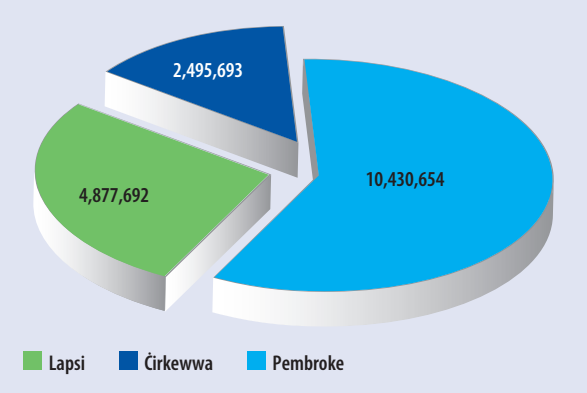
Graph 1: The increase in energy costs in July 2009 and subsequent decrease in January 2015 are due to changes in electricity tariffs. The gradual rise in energy costs during 2015 is due to the use of older less efficient reverse osmosis trains to cope with increased demand.

Water Production

Production from Desalination Plants

During 2015 the total desalinated water produced was 17,803,909 m3. The output of each plant is shown below.

	Production m^3	Percentage
Lapsi RO Plant	4,877,692	27.4
Ċirkewwa RO Plant	2,495,563	14.0
Pembroke RO Plant	10,430,654	58.6
Total Seawater Desalination	17,803,909	100.00



Desalination output 2015 in m^3

Groundwater Production

Production from Groundwater sources in Malta amounted to 11,151,834m3. This is equivalent to 38.5% of total water produced in Malta.

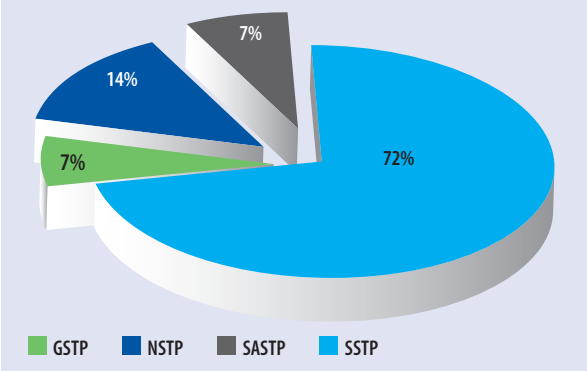
DSM Ltd

The section managed to add new customers to its clients list. During the period under review DSM Ltd. finalized a contract to supply a 125m3/day system to Ramla Bay Hotel.

Several proposals were submitted to the hospitality industry both for new systems as well as for refurbishments.

Wastewater Treatment and Reuse Unit

The amount of treated wastewater in the four plants totalled approximately 22 million m3.



Treated Wastewater 2015 in m³

These were divided as follows:

Wastewater Treatment Plants – Performance During 2015

Gozo

Around 1.66 million cubic metres of wastewater were treated and discharged through a submarine outfall at Mġarr ix-Xini, limits of Għajnsielem.

Iċ-Ċumnija

The plant treated 3.15 million cubic metres of raw sewage. The treated effluent is discharged through a coastal discharge point at iċ-Ċumnija, limits of Mellieħa.

The plant faced operational problems due to significant abnormal discharges, particularly during the summer peaks, exceeding both the plant's design as well as its spare capacity. In 2014 WSC completed the first phase of an upgrade to increase the plant's treatment capacity to partially cater for these discharges by doubling the installed aeration capacity. Phase two of the upgrade was completed in 2015 by utilizing an upstream gallery for retention to attenuate hydraulic peaks. These upgrades are allowing the plant to better cope with the organic overload conditions, coupled with a steadily increasing dry weather flow, formerly characterizing the peak summer months.

Sant Antnin

This plant treated a total of 1.51 million cubic metres of sewage of which 0.97 million cubic metres were supplied for reuse in agriculture and industry.

Ta' Barkat

The plant treated no less than 15.86 million cubic metres of wastewater. Since start-up in June 2011 the plant's treatment process has been under significant pressures from non-domestic discharges such as industrial and farmyard related waste. A number of modifications and tweaks to the primary treatment system were implemented during the 1st quarter 2012 that helped alleviate the extensive blockages and operational disruptions that were experienced on start-up.

A major bypass of the plant took place between the 21 Feb and 04 March due to successive pump failures at the Inlet pumping station and a major cleanup operation.

Although the plant was designed and specified from the onset to contain odour emissions, this was always thwarted by abnormal discharges. Therefore, successfully tackling odour-abatement has been and still is one of the WSC's top priorities.

With regards to landscaping the Corporation prepared draft tender documents for the required works and followed up on the planning process with MEPA. The permit process is planned to be concluded during the 1st quarter 2016, with construction expected to be ready by the year's end.

In 2015, the plant recovered 4.1 GWh of renewable energy from biogas accounting for 27 % of its overall energy requirements.

Over the years all plants were subjected to increasing amounts of abnormal discharges which have often seriously disrupted operations. This is resulting in impaired process performance, blockages, equipment breakdowns and major routine cleaning operations.

Package Treatment Plants

In 2011 the Water Services Corporation teamed up with the University of Malta and Architecture Projects on the NEPTUME project, which forms part of the Birgu Dock 1 rehabilitation objective. This was a joint-research project wherein the various parties tested their novel treatment processes, aiming to produce a setup which can cost-effectively treat wastewater harvested at source. An agreement was signed in December 2015 whereby the MBBR-MBR-RO plant was transferred to the Ministry of Transport & Infrastructure to provide water for the irrigation requirements in the area. The package plant can currently deliver a potential of 21 to 25 cubic metres of treated effluent per day.

PROJECTS CO-FUNDED BY THE EUROPEAN UNION

Funding Period 2014 – 2020
Preparatory work was started in 2015 to submit applications for EU funds grant agreement through this new funding period.

Funding Period 2007 – 2013
The end of 2015 was when EU co-funding for projects under period 2007 – 2013 ended. The following were the projects co- financed to a total of approximately €55 million.

OPERATIONAL PROGRAMME I – COHESION POLICY 2007-2013

USE OF HIGHLY POLISHED RECLAIMED WATER IN THE MALTESE ISLAND

EUROPEAN SOCIAL FUND
MALTA 2007-2013

Operational Programme I – Cohesion Policy 2007-2013
Investing in Competitiveness for a Better Quality of Life
Equipment part-financed by the European Union
Cohesion Fund (CF)
Co-financing rate: 85% EU Funds; 15% National Funds
Investing in your future

Project Reference: ERDF 304
Priority Axis 4 – Climate Change and Resources Efficiency

This project will provide an alternative to private groundwater abstraction. Three polishing plants are being built at the three sewage treatment plants which will polish treated effluent to very high quality standards, making it suitable for various non-potable purposes. As part of this project a pipeline was laid in Gozo to transport this polished water for both industrial and agricultural use. In Malta a micro tunnel was bored to convey polished water from Ta' Barkat to the existing irrigation water distribution system of Sant Antnin Wastewater Treatment Plant.

The total project value is circa €20.5 million.

CARBON FOOTPRINT REDUCTION PROJECT

Project Reference: ERDF 334
Priority Axis 4 – Climate Change and Resources Efficiency

The Corporation identified areas where it could directly reduce its carbon footprint. As part of this project, the trenching, pipe-laying and other works listed below are being carried out.

Ta' Bakkja Ground Water Pumping Station
To reduce frictional energy losses, Ta' Bakkja Pumping Station and the transfer pipeline from Ta' Bakkja Pumping Station to Ta' Qali Reservoir were upgraded.

Ta' Qali Reservoir
To reduce frictional energy losses, the transfer pipeline between Ta' Qali Reservoir and Naxxar Reservoir was upgraded. To increase efficiency by reducing direct pumping, a pipeline was laid from Ta' Qali Reservoir to supply the centre-eastern area of Malta by gravity

Gozo
Again, to reduce frictional energy losses, the transfer pipeline between Ħondoq Booster and Ta' Ċenċ Reservoir in Gozo was upgraded.

The total project value was circa €14.5 million.

WATER QUALITY AND SUPPLY IMPROVEMENT PROJECT

Project Reference: CF 355
Priority Axis 5 - Safeguarding the Environment

The Corporation intends to improve its operations in different sectors of its potable water supply. Elements of this project were interlinked and complimentary to each other so that they ultimately would contribute towards improving operational efficiency and provide a better service to the customer.

The measures included:

- Upgrading the existing Reverse Osmosis Plants in order to further reduce the Boron content in potable water
- New laboratory equipment for monitoring potable water quality
- Upgrading of the ground water pumping system making it more efficient
- The implementation of an Automated Meter Management System to better manage potable water use
- Upgrading of the potable water distribution network.

The total project value was circa €14.5 million.

SEWAGE SYSTEM EXTENSION AND UPGRADING PROJECT

Project Reference: CF 356
Priority Axis 5 - Safeguarding the Environment

This project consists of:

- Extension of the wastewater collection network to connect the village of Baħrija and the rural areas of Għajn Qajjet and Bieb ir-Ruwa to the main network at Rabat.
- Upgrading part of the wastewater collection system in Għeriexem and Vjal il-Ħaddiem in Rabat to cater for increased demand and environmental protection.

The total project value was circa €4.5 million.

RURAL DEVELOPMENT PROGRAMME FOR MALTA 2007 – 2013

MANAGEMENT OF GROUNDWATER AND TREATED SEWAGE EFFLUENT

Priority Axis 1 – Improving the Competitiveness of the Agricultural Sector

Treated sewage effluent would be further treated (polished) and used as an alternative water resource for agricultural use. The project also aims to address problems associated with the treatment of farm waste. Another objective is to improve the effective use of groundwater for agricultural use. Components of this project include:

- The installation of a pipeline using horizontal directional drilling to distribute the polished effluent from the North Wastewater Treatment Plant.
- Pilot Project – Farm Waste Receiving Station.
- Management of private ground water abstraction through metering.

The total project value is circa €5 million.

NETWORK INFRASTRUCTURE DIRECTORATE

Inġ. Stefan Riolo

The Directorate is responsible for all the water and wastewater infrastructure in the Maltese Islands as well as Customer Care.

Infrastructural Leakage Reduction

Continuous efforts to reduce network water leakage are still among the top Corporate priorities. Leakage levels have plunged since 1996, with 2015 registering a further significant decrease in real losses. The year under review closed at an average ILI value of 1.91, compared to 1.94. This translates into an average value of 395 cubic meters per hour of leakage compared with 407 cubic metres per hour in 2014, which was a record year. The performance to date is the best ever since 1995 and WSC can now boast a record average yearly ILI of 1.91. The strategies implemented since 2013 are reaping fruit and WSC now enjoys World Bank Institute accreditation. Leakage management is being championed by top management and very good results are being attained.

The monitoring and control mechanisms that have been put in place ensure that regions that are not doing relatively well can pinpoint the root causes and faults and rectify within reasonable timeframes to ensure that original set goals are reached.

The Corporation is also helping Beirut Water reduce their leakages under the financing program of the World Bank. Two visits were carried out to analyse and rectify the problems encountered. A new water zone was created which included pressure management with automatic control, metering and logging. The zone was hydrologically segregated from the neighbouring network and skilfully monitored for leakage. After 5 days and nights of detection and repairs, leaks were found, repaired and the zone became sustainable to the extent that residents now have a 24x7 continuous water supply. Negotiations are now underway to implement these measures throughout the rest of Beirut.

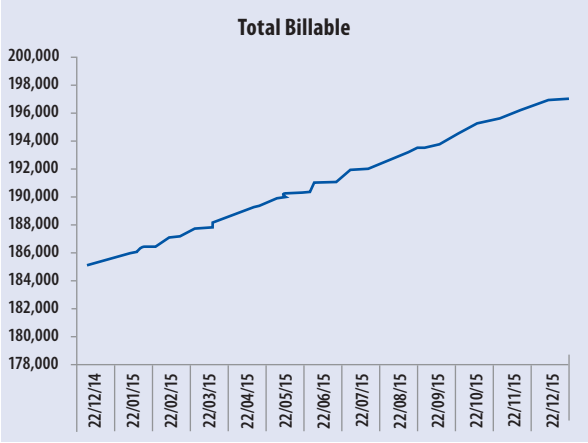
Automated Meter Management

The WSC's national Automated Meter Management program has been ongoing for the last few years and the programme's so-called massive rollout is still underway. In 2015, a total of 12,700 modules were installed, bringing the total installed to just over 224,000. New policies were implemented regarding the installation of new services, removals, meter replacements

and module installations using work orders (WOs) assigned through the PDA, to ensure that unaccounted for water due to billing anomalies is reduced as much as possible.

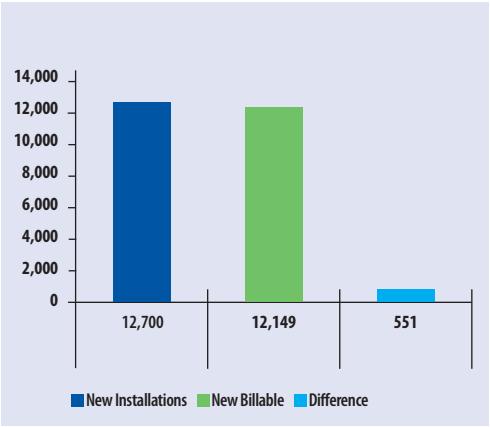
"Reachability" of these AMM modules is also a priority and a KPI that measures the success or otherwise of the project. The number of reached modules is steadily increasing after a decline in performance during 2014.

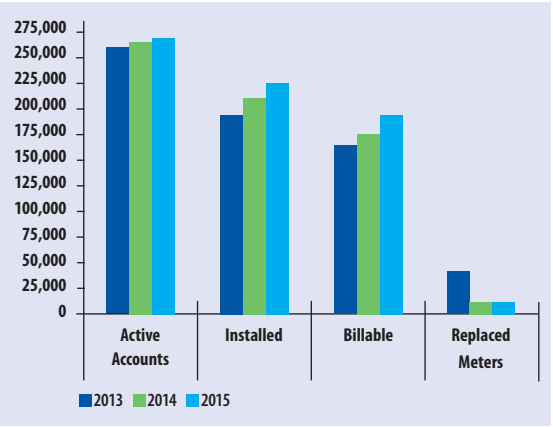
Meter Section



Graph 1: The total number of billable accounts during 2015 increased from 185,081 to 197,230 – an increase of 12,149.

During 2015 the Meter Section became better equipped to improve customers' billing by resolving issues from WSC's end in a timely manner. Part of the back office personnel are now liaising between customers and technicians in order to resolve issues such as incorrect meter/module numbers, incorrect meter readings, etc.

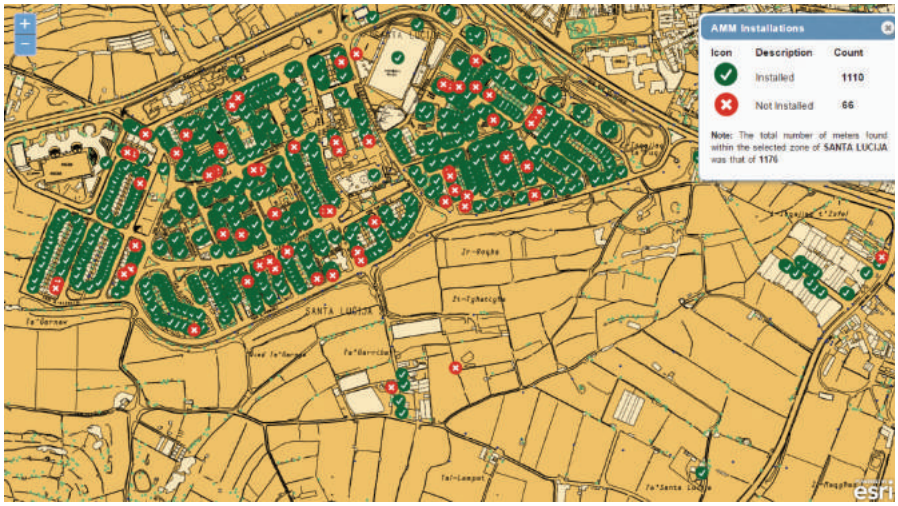




Graphs 2 & 3: Nearly all new RF Installations executed were correct throughout since there was an approximate 1:1 ratio in the increase between installations and billable accounts.

GIS Integration

During the year under review various new reports were developed along with the Strategic Information Directorate. The image below shows a typical screen shot that helps staff monitor progress and manage work in a better manner.



The aims for 2016 are to:

- Increase the actual amount of water billed.
- Replace old meters and (correct) installation of RF modules.
- Increase workforce to meet work load.

Technical Call Centre

In 2015 the technical call centre added two new agents who were trained in telephone skills and other technical matters. All the customer care team will undergo further training in the coming years.

Monthly calls topped almost 8,500. The total annual number of incoming calls was 78,020, with 61,638 being answered giving an annual average success rate of 79.68%. The call centre does not only answer calls, but also takes care of email and other reports.

INSTITUTE OF WATER TECHNOLOGY AND QUALITY DIRECTORATE

Paula Grech Bonnici

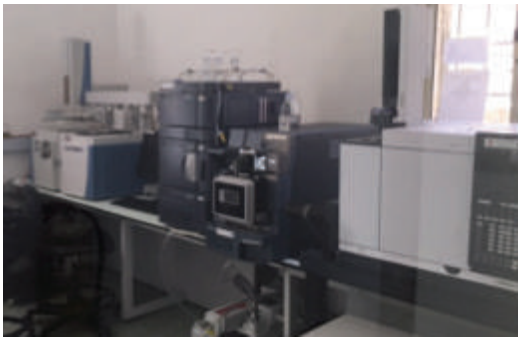
The Institute of Water Technology and Quality Directorate ensures water and wastewater quality control through its ISO17025 accredited Laboratory and the Discharge Permit Unit.

Its Management Systems Office also ensures that the Corporation's operations are in line with ISO9001 and ISO14001 principles and standards. The directorate is also striving to adopt a risk-based approach in its operations which is required for water safety planning. It also ensures that the WSC is in line with its operating licence and with all local legislation.

All corporate services ranging from training, facilities, IT systems, laboratory services to more complex engineering setups, are also offered to third parties through the IWT's Commercialisation section. The Innovation section participates in various projects to broaden horizons within the Corporation. Such projects and services are not only limited to the Maltese scenario but also explore opportunities abroad.

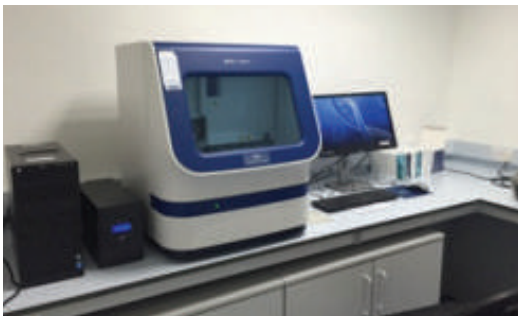
The WSC Laboratory

The Corporation boasts an ISO17025 accredited laboratory for water and wastewater analysis. It is the leading laboratory in Malta since it not only retained and expanded its scope of laboratory accreditation, but it also underwent a major upgrade to its premises as well as its analytical resources.



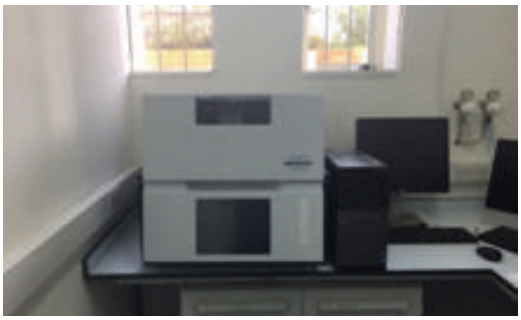
Approximately €1.5 million mostly EU funds were invested in the Water Services Corporation Laboratory during 2015. This saw a doubling in footprint, new specialised equipment, as well as greater efficiency and technical capabilities. The laboratory now handles a wide spectrum of tests in the elemental fields using equipment such as ICP-MS, XRD and XRF analyzers. In the organic fields it uses GC-MS/MS and UPLC-MS/MS equipment, while in the inorganic and microbiology fields equipment such as HPIC and TN analyzers are used.

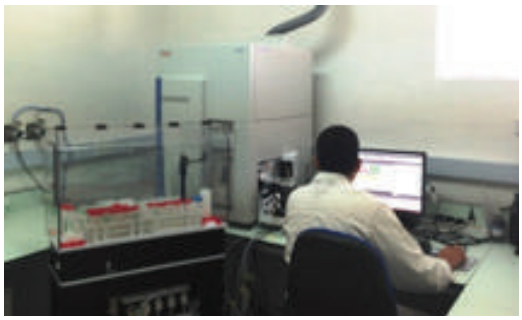
New sensory laboratories will introduce an element of subjectivity allowing the laboratory to test for acceptable taste.



The WSC laboratory will continue to strive for excellence and expertise and already possesses a large number of accredited chemical and microbiology parameters. It aims to extend its scope to several other chemical parameters following validation work on equipment methodology. The use of such equipment will continue to ensure the best quality with the shortest turnaround times for most water types, wastewater and even treated effluent to be used as New Water.

Apart from modernising the labs and purchasing new equipment, the WSC also invested heavily in staff training, both locally and abroad, on several procedures. This allowed the laboratory to retain its lead and becoming the only local one capable of testing most of the parameters in the drinking water directive.





Laboratory Accreditation

The ISO17025 quality system aims to improve the laboratory's capabilities and is thus a formal recognition of competence. During 2015 the laboratory increased its accreditation with following added methodology:

Chemical

- Metals in water matrix using I cap Q Inductively Coupled Plasma- Mass Spectrometer.
- Turbidity using HACH Lange 2100Q portable Turbidity Meter
- Ammonia using Cecil Spectrophotometer for Waters
- Nitrites using Cecil Spectrophotometer for Waters

Micro-Biology

- Total Coliforms and E. coli using the membrane filtration method
- Intestinal Enterococci using the membrane filtration method
- Enumeration of culturable micro-organisms- colony count by inoculation in a nutrient agar culture medium using pour-plate method
- Detection and Enumeration of Legionella, by centrifuge for waters with high bacterial counts and direct membrane filtration method for waters with low bacterial counts

Laboratory Monitoring Programmes

The WSC laboratory performs monitoring programmes to ensure potable water quality at all stages from production to distribution as well as to monitor the quality of treated effluent being discharged and the quality of sludge.

Table 1 shows the number of tests performed as part of the potable and wastewater monitoring programmes.

2015	Potable	Wastewater	Grand total
Total Number of samples by the WSC laboratory	8974	6581	15555
Total Number of chemical tests	49785	23447	73232
Total Number of microbiological tests	16076	429	16505
Total Number of subcontracted tests	2248	200	2448
Grand total of tests	68109	24076	92185
Total Number of ISO17025 accredited tests carried out in WSC laboratory	44226	20830	65056

Table 1

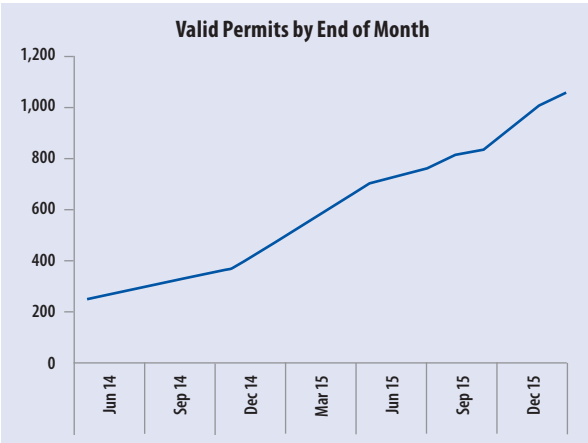
Discharge Permit Unit

The DPU monitors what enters the sewer network and enforces the discharge regulations. During 2015 the DPU expanded its operations and staff complement. A total of 4466 inspections were carried out in catering establishments, accommodation premises and industrial entities. This is a 65% increase over the previous year.

These inspections included random surprise and follow-up inspections, on-site meetings, collection of samples and investigations following reports from both internal and external sources such as MEPA, MRA, MTA, Local Councils, etc. A monthly breakdown can be seen in Table 2.

Month	Tot. no of Inspections	Total no. of Permits Issued	New Industrial Permits	New Catering Permits	Renewal Industrial Permits	Renewal Catering
Jan-15	333	65	2	27	2	34
Feb-15	298	56	1	24	3	28
Mar-15	425	71	1	36	2	32
Apr-15	449	81	0	42	0	39
May-15	412	115	1	53	9	52
Jun-15	290	81	2	29	4	46
Jul-15	336	55	1	21	10	23
Aug-15	284	77	4	24	3	46
Sep-15	291	59	6	22	10	21
Oct-15	508	126	7	58	6	55
Nov-15	535	130	3	65	8	54
Dec-15	305	125	5	47	6	67
2015 Totals	**4466**	**1041**	**33**	**448**	**63**	**497**

Table 2



Graph 1: Valid permits increases

The number of entities covered by a Public Sewer Discharge Permit also increased and during the period under review the DPU issued 1041 permits.

As shown in Graph 1, by the end of 2015, 1079 entities were covered by a valid permit - a 185% increase over the previous year. The work done by the DPU has resulted in fewer network blockages and prohibited discharges and a decrease in waste water treatment costs.

Much more still needs to be done in order to continue the DPU's expansion, both in terms of staff and equipment and also its enforcement operations. During 2016 the unit will launch its IT management system to enable clients to apply for a permit online, thereby reducing bureaucracy and offering a more user-friendly enforcement.

The WSC will also apply for EU funds to help the DPU expand the abovementioned operations.

Management Systems

During the period under review, the Management Systems Office continued assisting other sections in line with ISO 9001:2008, while preparing for the requirements of the 14001:2004 environmental management system. The Corporation maintained and improved its integrated management system which included both the ISO 9001 and ISO 14001 requirements.

ISO14001 Certification Award

In 2015 the Water Services Corporation was awarded ISO 14001 certification in conjunction with the recertification of ISO 9001. The ISO 14001 scope covers water production, auxiliary services provided by the Corporation such as HR, Project Planning and the Institute of Water Technology and Quality.

Other Improvements of the Management Systems

The above mentioned recertification audit was based on audits, interviews, observation of activities and review of documentation and records. They confirmed that the WSC conforms with the requirements of the standard. Various opportunities for continual improvement were also identified which were implemented accordingly with the aid and coordination of the Management System Office. Improvement opportunities were also identified though the 85 internal audits conducted which covered various operating, corporate and Management system processes of the Corporation.

A new portal was developed in collaboration with the Strategic Information Directorate to host the SharePoint system. This records management software was introduced to simplify document traceability and help reduce the paper use.

The Management Systems Office provided training to a number of employees. This training included familiarization of ISO 9001 and ISO 14001 standards as well as information on waste management, emergency response to spills and other environmental situations. Such training enables employees to continually maintain and improve the Corporation's operations.

Specific site audits were carried out in order to explain and discuss the requirements of ISO 14001 and how these should be satisfied equally in all locations.

The Corporation worked to obtain MEPA certification to be recognized as an internal waste carrier. An independent engineer certified 4 WSC vehicles as waste carriers which were added to the existing fleet.

Water Safety Plan

The aim of the Water Safety Plan is to ensure the safety of potable water. It consolidates the water production and distribution operations and demonstrates the Corporation's conformity with the requirements of established legal standards and other statutory requirements. The introduction of a Water Safety Plan throughout the corporation will enhance confidence in its operations and employees. Ensuring the traceability of water safety will reduce corrective actions, investigations and monitoring costs.

A risk assessment was carried out on the corporation's sources and reservoirs to identify potential physical threats and ways to minimize potential water contamination. A maintenance plan will be drawn up for works to be carried out to remedy any shortcomings.

The Management Systems Documentation of every directorate was reviewed. Process documentation was carried out in more detail than before to enhance traceability in the Water Safety Plan. The final outcome will result in an improved and more integrated management system.

Another aspect of the Water Safety Plan is training, research and development support programmes. These help develop people's skills and knowledge, commitment to the WSP approach and capacity to manage systems to deliver safe water.

REWS Reporting Requirements

The Regulator for Energy and Water Services (REWS) is responsible for the WSC, which is legally obliged to submit detailed reports of its activities to REWS on an annual basis. These include reports on Water Production, Waste water collection and treatment, payroll, assets, customer care and leakage control. Moreover the WSC is working closely with REWS on the development of Guaranteed Service Standards to improve the service being provided. Apart from this the corporation is also actively revamping its Emergency Response and Security Plan in order to better deal with emergencies and to ensure that they are tackled in a controlled and professional manner.

IWT Training Facilities

The IWT caters for internal training for WSC staff. Its fully equipped premises cater for training courses and its facilities are also offered to industry and to the general public.

Works are also currently underway to completely refurbish a Water Library.

Training Programmes

Most of the training delivered during this year was related to Health & Safety, to make employees aware of workplace hazards and to impart knowledge and skills to work in a safe environment.

Internal Courses

During the period under review 784 participants attended training courses organized by the Training & Development Section amounting to 8233 training hours as per table 3.

Course Code	Course Title	Duration of Course	No of Participants	Trainee Hours
B/IC	Induction Course	7	112	784
B/PSGL	Private Security Guard License	15	33	595
B/NHLP-SM	New Horizon Leadership Programme for Senior Mgt.	67	7	469
A/ISOF	ISO 9001 & ISO 14001 Familiarisation	7	17	119
B/NHLP-MM	New Horizon Leadership Programme for Middle Mgt.	88	10	880
	Confined Space Training:			
A/H2S	H2S	4	55	220
B/IBA	Industrial Breathing Apparatus	16	55	880
B/CS	Confined Space	16	55	880
A/AA	ATEX Awareness	4	45	180
A/FCA	Ferric Chlroide Awareness	4	41	164
A/FAC	First Aid Course	8	76	608
B/DG	Dangerous Goods	5	18	90
A/FO	Course for Forklift Operators	8	91	728
	Confined Space Training:			
A/H2S	H2S	4	25	100
B/IBA	Industrial Breathing Apparatus	16	24	384
B/CS	Confined Space	16	17	112
A/WCS	Working in Confined Space (WO)	19	27	513
B/BCH	Basic Course in Hydrology	12	9	108
B/LD	Course for Leak Detectors	10	19	190
B/SAPBIC	SAP BI Certification	80	2	160
	CPD Seminars:			
A/FA	First Aid Monthly Sessions	1½	46	69
TOTAL			784	8233

Table 3

ECDL Accreditation

The Institute of Water Technology has been accredited as a test centre for ECDL courses which are available to both WSC employees and also to the general public.

Participation in EU Initiatives and Programmes

European Cooperation in Science and Technology

COST is an inter-governmental framework for European Cooperation in Science and Technology, allowing the coordination of nationally-funded research on a European level.

The Water Services Corporation is presently participating in the Cost action - ES1307 Sewage biomarker analysis for community health assessment. The action will bring together experts from relevant disciplines interested in the application and development of using the quantitative measurement of human biomarkers in sewage to evaluate lifestyle, health and exposure at the community level.

It is also participating in COST Action ES1403 – NEREUS New and Emerging Challenges and Opportunities in Wastewater Reuse. The main objective is to develop a multi-disciplinary network to provide insight into the current challenges related to wastewater reuse practices. It specifically focuses on public health and environmental perspectives and on developing solutions for overcoming these challenges. NEREUS aims at enhancing and rendering value to wastewater reuse, thus making major contributions to the European scientific and technological excellence, wider society and economy.

EU Funding (Non-structural) Technical Visits

During 2015 a number of sponsorships to attend technical visits at European/ International Institutions specialising in Water Resources Management were offered to WSC professionals under ESF4.239 – Optimising the Institutional Capacity for Integrated Water Resources Management. This project is managed

EUROPEAN SOCIAL FUND
MALTA2007-2013

Operational Programme II – Cohesion Policy 2007-2013
Empowering People for More Jobs and a Better Quality of Life
Programme part-financed by the European Union
European Social Fund (ESF)
Co-financing rate: 85% EU Funds; 15% National Funds
Investing in your future

by the Sustainable Energy and Water Conservation Unit (SEWCU) within the Ministry for Energy and Health. These sponsorships were co-financed by the European Social Fund, Operational Programme II – Empowering People for More Jobs for a Better Quality of Life – Cohesion Policy 2007-13.

Online Courses

Online courses in Water Resources Management for Government Employees working in the wider water management sector were also offered to WSC employees through the Sustainable Energy and Water Conservation Unit. These courses were provided through and certified by UNESCO's Institute for Hydrological Education.

These online courses were held as part of the capacity building programme under ESF4.239 – Optimising the Institutional Capacity for Integrated Water Resources Management, co-financed by the European Social Fund, Operational Programme II – Empowering People for More Jobs and a Better Quality of Life – Cohesion Policy 2007-2013.

Pending EU Projects

During the year under review the WSC sought to participate in the following non-structural programmes:

1. Reduced and Sustainable Use of Water and Fertilisers in the Agro Food Chain in Gozo (Project Acronym: Goulos Acqual Life).
2. INTERREG MEDITERRANEAN (MED 2014 – 2020): Closing the Urban Water Cycle in the Mediterranean through Sustainable Utilization of Urban Wastewater. (Project Acronym: Re-Water).

The above project proposals were still awaiting approval by end 2015.

Programming of European funds for Malta: 2014 – 2020

The Corporation already has plans for further projects with a longer implementation period for which it is seeking part-financing under the 2014-2020 financing period. The WSC will also work towards identifying projects and initiatives of specific interest to the water and wastewater sectors in which it could participate.

Production of Bio-Diesel from Algae in collaboration with MIEMA and FTZ

Fondazzjoni Temi Zammit in collaboration with the Water Services Corporation and other entities, carried out an experimental project on the production of Biodiesel from marine algae.

This project was financed primarily by the European Union ENPI-CBC MED programme. Other participants were the Malta Intelligent Energy Management Agency (MIEMA) and MCAST.

Experiments have shown that it is possible to produce biodiesel from marine algae, so this experiment is trying to find ways to cultivate micro-algae that grow naturally in the sea around the Maltese Islands, helped by the favourable climate.

It comprised 6 open tanks and 6 photo-bioreactors which were used to grow the micro-algae. The experiment took stock of the single-celled organism that is found only in Il-Magħluq brackishwater area of Marsascala. The algae were fed with the treated wastewater from WSC's sewage treatment plants.

The WSC provided premises to house the experimental facility and a laboratory to carry out

biological tests. This corporate assistance fitted in with the WSC's declared aim of involving itself in Water Innovation initiatives.

In-Situ Chlorine Generation

In collaboration with the Israeli national water utility company Mekorot and collaborative technological partner CQM, the WSC is studying in-situ chlorine generation through the use of electricity. If successful this project would limit the use of chlorine gas and its storage. In 2015 various discussions were held in order to make this pilot project possible. The machine will be tested at Ta' Kandja pumping station in the first quarter of Year 2016.

It is envisaged that in-situ chlorine generation would not only enhance the safety of our personnel but improve the quality and the taste of tap water.

This is also considered to be a good step forward towards achieving ISO14000.

Participation in Fairs

In September 2015 the WSC participated in the popular Science in the City Fair in Valletta. Laboratory staff actively engaged with the public answering questions and explaining WSC's role in society

WATER QUALITY

Monitoring Potable Water

The laboratory collects, monitors and analyses samples from source to consumer points such as groundwater sources like boreholes and pumping stations, desalinated water, reservoirs in which blending operations take place prior to distribution.

The following is the total number of samples analysed in the laboratory as part of the potablewater quality control checks performed by the laboratory during 2015.

	2015	
	MALTA	GOZO
From village points (check monitoring programme)	1015	224
From random households (for audit monitoring programme)	47	7
From Reservoirs	287	95
From sources:		
Boreholes	635	407
Pumping stations	180	61
Polishing plants	-	181
RO plants	1992	-

Table 1: Number of samples analysed in the laboratory as part of the potable water quality control checks performed by the laboratory during 2015

Water Quality at Consumer Points

The Maltese Islands are divided into 11 geographically defined Water Quality Zones – 9 in Malta and 2 in Gozo - in which the water quality is more or less equal. These are reflected in table 2 below.

Water Quality Zone	Localities	Source	Region Responsibility
WQZ 1	Għadira, Marfa, Ċirkewwa, Comino	Ċirkewwa R.O. Plant	North Region
WQZ 2	Mellieħa, Xemxija, Selmun, Tunny Net, Mistra	Ċirkewwa R.O. Plant & Miżieb P/St.	North Region
WQZ 3	Magħtab, Burmarrad, Salina, Buġibba, St. Paul's Bay, Manikata, Għajn Tuffieħa, Wied il Għasel, Qawra, Naxxar, Mosta, p.o. Lija, p.o. Balzan, Iklin, Għargur, Madliena, Ibraġġ, Techno Park, St. Margerita & Fortizza Areas at Mosta, San Ġwann Ta'Żwejt	Naxxar Res. Blend	North Region
WQZ 4	Mġarr, Żebbiegħ, Wardija, Pitkali Area	Ċirkewwa R.O. Plant and Collection of Ta'Falka, Mġarr, Binġemma, Macedonia & Speranza	North Region
WQZ 5	Rabat, Dingli, Mdina, Baħrija, Kunċizzjoni, Mtaħleb, Santi	Ta'Qali Group Blend & Fiddien/ Chadwick B/Holes Collection	North Region
WQZ 6	Ta'Qali, Craft Village, Żokkrija, Żebbuġ Village, Siġġiewi, Farzina, Ħandaq, Attard, Santa Venera, p.o. Lija, p.o. Balzan, Ħamrun (excl. Rabbat Area), Valletta, Floriana, Albert Town (Excl. Wasteserv, Civil Abattoir & Marsa Open Centre), Gwardamangia, Pieta', Lower Parts of Msida, Parts of Ta'Xbiex, Parts of B'Kara, Marsa (Excl. Upper & Race Course)	Ta'Qali Group Blend	North Region & Central Region
WQZ 7	Parts of Żebbuġ (Laurenti Area incl.), Għar Lapsi, Siġġiewi (Providenza Area)	Siġġiewi B/H collection System	North Region
WQZ 8	Qrendi, Mqabba, Kirkop, Żurrieq, Safi, Gudja, Għaxaq, B'Bugia, Żejtun, Żabbar, Isla, Bormla, Birgu, Kalkara, Xgħajra, Marsaxlokk, Marsaskala, Fgura, Paola, Tarxien, Ħal-Far, Freeport, Luqa, Ħal-Farruġ, Kordin Ind. est., Qormi (excl. Ħandaq & Farżina), Drydocks, St. Vincent de Paule, Marsa Ind. Est., Ħamrun, Rabbat Area, p.o. Marsa (Upper & Race Course, Wasteserve, Civil Abattoir & Marsa Open Centre), Tar-Rabbat Area	Qrendi Res. Blend	South Region & Central Region
WQZ 9	Baħar iċ-Ċagħaq, St Andrews, Pembroke, Swieqi, Paceville, St. Julians, Sliema, Gżira, Mater Dei, University Heights, San Ġwann (excl. Ta'Żwejt), p.o. B'Kara (Ta' Paris), Swatar & Upper p.o. Msida (incl. Msida Circus & Lautier Aluminium Area), p.o. Ta'Xbiex	Pembroke R.O. Plant	Central Region
WQZ 10	Għajnsielem, Mġarr, Qala, Xagħra, Nadur, Xewkija (Lower), Victoria (Upper), Fontana	Predominantly Ċenċ 3	Gozo Region
WQZ 11	Sannat, Munxar, Xlendi, Għarb, Għasri, Kerċem, M'Forn, Victoria (Lower), San Lawrenz, Xewkija (Upper), Żebbuġ	Predominantly Ċenċ 4	Gozo Region

Table 2: The 11 geographically defined Water Quality Zones in Malta & Gozo

According to the drinking water directive, the flow passing through each zone reflects the number of samples which need to be collected for reporting purposes. However, many more samples are collected that serve as quality control samples.

The following table summarizes the percentage compliances for microbiological, mandatory and indicator parameters for 2015.

	2015
% compliance Microbiological parameters	100%
% compliance Mandatory parameters	97%
% compliance Indicator parameters	85%

Table 3: Percentage compliances for microbiological, mandatory and indicator parameters for 2015

The % failure in the mandatory parameters was due to samples analysed for boron. Boron is a non-metallic element found ubiquitously in the environment and in 0.001% of the Earth's crust. It is commonly found in rocks, soil and water especially seawater. The presence of boron in potable water could occur due to various sources. However, it should be noted that countries that use desalination to meet the rising demand for drinking water or to meet drinking water standards, the presence of boron in drinking water has become more challenging. This is because standard reverse osmosis desalination only partially removes boron and the intake seawater is generally high in this element especially in the Mediterranean basin.

WSC has concluded that the best way to reduce the boron levels to less than 1.0mg/L without causing unnecessary financial burden on the consumers, would be to periodically replace reverse osmosis membranes. This would not only reduce boron, but has an added advantage of improving the flow of the system and reducing specific power. It is planned to purchase these membranes through the EU structural funds 2007 – 2014 under the CF355 Water Quality System Improvement Project. The cost is estimated to be around 2.8 million Euros.

Ensuring Adequate Wastewater Treatment

During 2015 the laboratory analysed the 4 sewage treatment plants. This comprised the analysis of crude sewage, from different stages of the treatment process, the effluent being generated and also of the sludge being disposed.

The total number of samples analysed per wastewater treatment plant are as follows:

Gozo STP	North STP	Ta' Barkat STP	St Antnin STP
747	745	3209	724

Table 4: Total Number of samples analysed per wastewater treatment plant

Other services rendered by WSC laboratory

In addition to potable and wastewater monitoring, the laboratory also provides the services listed in Table 5 which also lists the number of samples from each category.

Category	Number of samples
Water leakage investigations	1274
Laying of new mains	204
WSC investigations or research programmes	1588 + 117 (ww)
Customer complaints	94
Wastewater samples related to Discharge Permit Unit investigations	13

Table 5: Number of samples from each category

CORPORATE SERVICES DIRECTORATE

Dr. Neville Young

The main duties and responsibilities of the Corporate Services Directorate include the overall management of finance (incl. payroll), procurement, logistics, general administration, insurance, legal, corporate security, health and safety, and TSS i.e. technical (auxiliary) support services.

Procurement

The office is primarily responsible for the overall corporate procurement and covers pre and post-contract support to other sections and units, while ensuring transparency, good corporate governance and adherence with statutory obligations. Following the GPP National Action Plan (NAP) issued in 2011, the WSC adopted more thorough compliance and adherence procedures in all calls for tenders in line with the established National Guidelines for Green Public Procurement.

The section also issued guidelines on sole-sourcing and propriety procurement to external third-parties requesting works from the Corporation, to ensure that their respective contractors were in line with procurement legislation. This was to ensure eligibility to provide services on behalf of the Corporation.

During the year under review, the section issued 166 public calls, of which 99 were call for tenders, 67 of which were quotations, for an estimated value of €28,593,540.

Logistics

The section is directly responsible for both incoming as well as outgoing materials logistics with particular attention paid to planning, thereby maximizing efficiency by concentrating on core competences.

During 2015 the section underwent major overhauls. It relocated its main stores from Kordin to Wied il-Kbir, Qormi, yet took over the management of four other sub-stores across Malta and Gozo. This was done while continuing service without any interruptions whatsoever.

The section further strengthened control and traceability on stock levels by automating the stock requisition procedure through an electronic application using SAP as its backend.

Moreover following the successful implementation of the automated stock requisition procedure, the section is preparing to augment its stock control management through real-time data transmission and replacing material codes with bar codes thereby minimizing human intervention and possible data inputting errors to a bare minimum.

Technical Support Services

The Technical (Auxiliary) Support Services section provides a wide range of services to both internal and external customers. These services range from pump repair to electrical control panels and communications (SCADA) as well as civil maintenance works. Apart from the daily support activities various other projects and activities, including EU funded projects were completed.

EU Funded Projects

TSS also completed all technical specifications for a groundwater equipment upgrade. The tenders included new submersible pumps, electrical switchgear, telemetry outstations, communications equipment and instrumentation.

Another set of technical specifications were prepared for equipment for the Wastewater pumping system at Bahrija and Sta. Katerina l/o Rabat.

Other Projects

During 2015 TSS carried out the following works:

- **Luqa Offices** – Upgrade projects of the laboratory and the Institute for Water Technology together with the upgrading of offices at the WSC Luqa Headquarters.

- **Tomna Water Booster** – The construction of a new booster at Tomna l/o Mellieha was completed. This is an on-line booster to supply Tas-Salib Reservoir from Cirkewwa RO water. This booster is due to come online by mid- 2016.

- **Electrical Switchgear** – A number of electrical upgrades were completed on switchgear at B'Bugia WWPS, M'Scala WWPS and Via Dingli Water Booster.

- **Gudja Road, Luqa WWPS** – A new WWPS at Gudja Road, Luqa was commissioned during 2015.

Corporate Security

The WSC is fully aware of the risks to its assets, the water supply and its infrastructure from theft and sabotage. Therefore during 2015, the Corporation embraced an all-hazards approach to security thereby enabling protection and increased resilience of its critical assets. It implemented numerous protective enhancements including improved control of building access, CCTV installations and security personnel training. Concurrently the Corporate Security section implemented a guard patrol system on various boreholes, pumping stations and other assets, where logs are monitored, recorded and reported, both for statistical data and also to satisfy legal requirements.

Moreover the section made significant strides in tackling possible water misuse through a specialized water theft team. In 2015 alone the section conducted 424 inspections of possible water misuse of which 26 were considered as tampering.

Health & Safety

The wellbeing of its employees, contractors and the general public remains the Corporation's key priority. The Corporation continued to strengthen its health and safety environment, which has resulted in a significant reduction both in the number of incidents and the frequency of injuries. The Corporation remains determined to build on this momentum.

During the period under review, the WSC carried out numerous training initiatives. The H&S office reviewed and updated its procedures to come in line with ISO requirements. It also conducted individual job safety analyses to identify potential hazards and ensure that employees have the right tools and personal protective equipment to do their jobs safely. Moreover, during the second half of the year, the section conducted weekly visits and reported on EU funded projects.

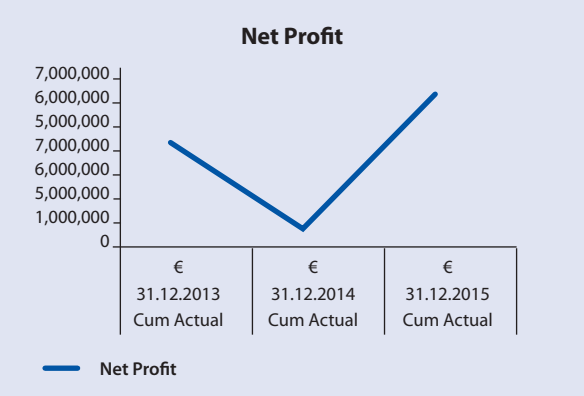
The Corporation also rebuilt and refurbished a fully-equipped first aid room enabling immediate medical care and attention when required.

Finance

The finance section is responsible for all corporate accounting, payroll and financial matters. The section provides the Board of Directors and top management with monthly management financial statements, detailed cost centre expenditure schedules, budget projections, analyses of variances of actual against budgeted expenditure. The section also compiles a number of financial reports and other statutory reports required by various stakeholders.

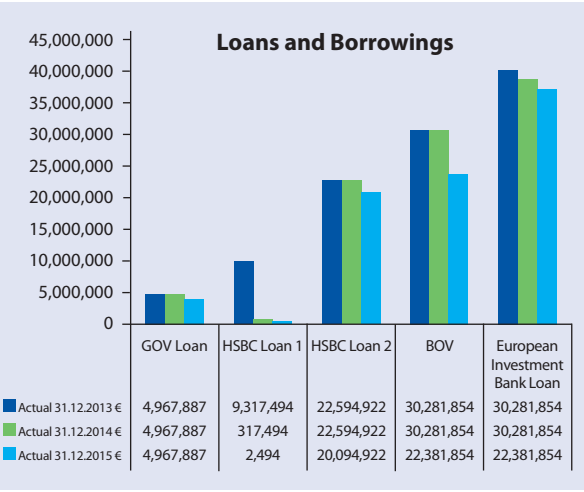
Financial highlights

Considerably good results were achieved during 2015, with particularly improved financial performance and resilience. Unaudited financial statements for the year under review show that the Corporation has, for the third consecutive year, continued to strengthen its financial position and registered a surplus for the year of > €6 million. Graph 1 shows the net profit registered by the Corporation, after interest payable, during the period 2013 – 2015.



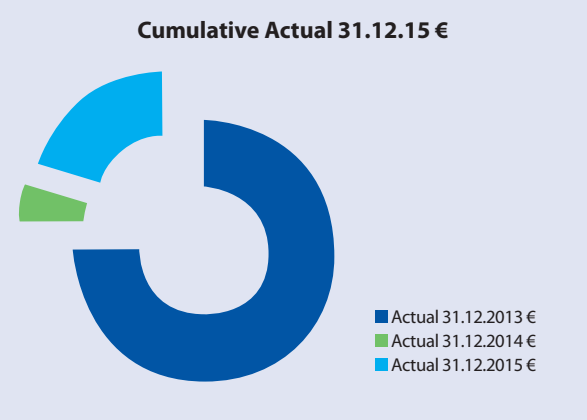
Graph 1: Net profit registered by WSC during the period 2013 - 2015.

Concurrently, the Corporation continued to focus on cost management and in so doing decreased its loan facilities by €12.65 million over the previous year while at the same time implementing the Government's mandate to reduce potable non-residential water tariff rates by five 5%. Graph 2 shows WSC's loans and borrowings during the past three years.



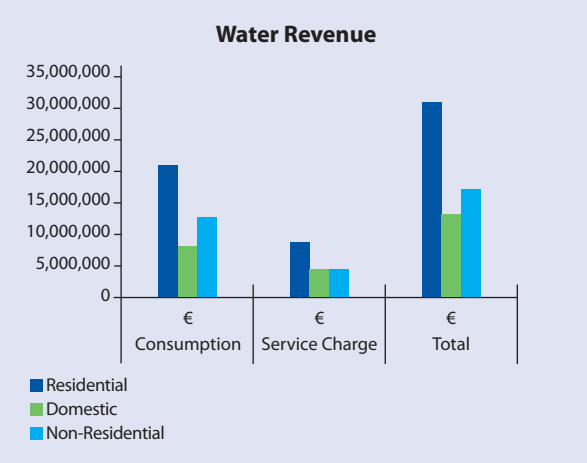
Graph 2: WSC's loans and borrowings during the period 2013 - 2015.

Revenue registered from the sale of water and related services amounted to €58.65 million and total subvention received from Government amounted to circa €15.92 million. Any deferred income amortization has not been accounted for. Turnover for the year 2015 is shown in graph 3.



Graph 3: Turnover for 2015.

Graph 4 shows a breakdown of water revenue divided between the three statutory categories. The residential sector accounts for 50% of water revenue, while the non-residential and domestic sectors account for 29% and 21% respectively.

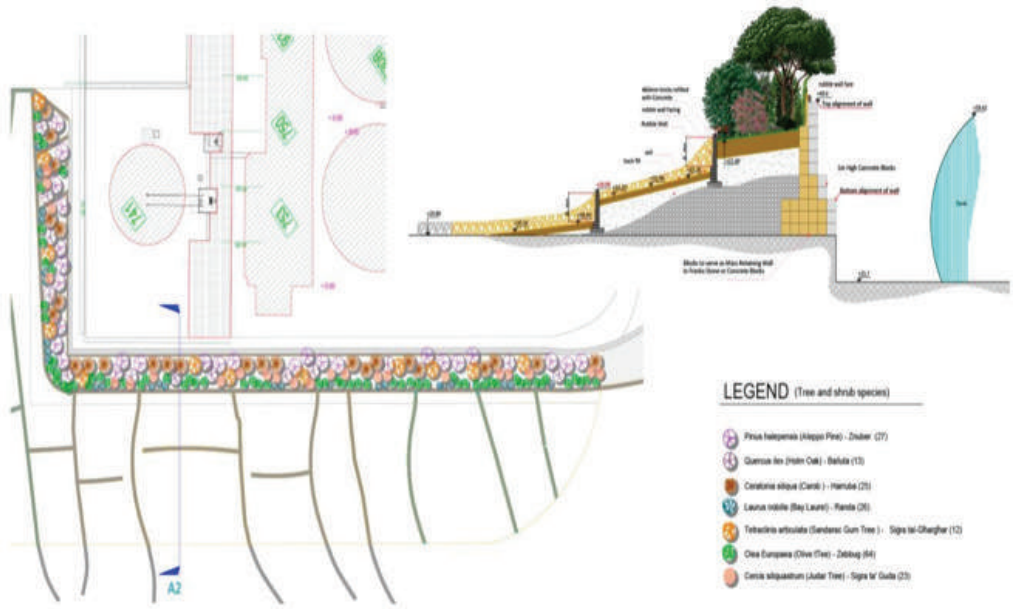


Graph 4: Sale of Water

Current data available from unaudited financial statements for year 2015 shows that the Corporation's total expenditure amounted to €79.2 million. Wages and salaries remain the main expenditure item corresponding to almost 29% of total costs. The other two main items are electricity and depreciation which together make up 44% of total costs, corresponding to 22% each. Graph 6 shows the estimated total expenditure of the WSC per main cost item.

Over the year the Corporation continued to invest heavily in capital assets to improve its infrastructure and achieve operating standards in accordance with EU requirements. It also made use of EU Funds to the tune of €51.8 million to part-finance its programmes.

Apart from this however, the Corporation also undertakes capital expenditure financed through its own cash-generation potential. Such expenditure is expected to rise in 2016 to around €20 million, mainly for the landscaping of the Ta' Barkat South Sewage Treatment Plant and for the installation of photovoltaic panels. The landscaping project which is expected to cost the Corporation €2 million, will minimize the visual impact on neighbours, reduce odours and provide a noise barrier. It will also level terraced parcels of land to enable agricultural use.



Proposed landscaping project at Ta' Barkat South Sewage Treatment Plant.

STRATEGIC INFORMATION DIRECTORATE

Brian Borg

The Directorate provides strategic guidance, procurement, delivery and support of back-office IT solutions for all WSC departments. It integrates technologies and software to increase operational efficiency.

SAP Enterprise Resource Planning (SAP ERP)

During the past two years the Strategic Information Directorate continued to take over most of the functions previously handled by IBM (Spain). The WSC SAP Team supports Supply Chain Management (SCM), Enterprise Asset Management (EAM) and Finance and Controlling (FICO). Consequently the WSC has implemented a more cost-effective solution where IBM's support has decreased considerably and is now only necessary for specialised consultancy.

Configuring SAP to cater for new business requirements such as new material storage locations, new purchasing groups and job-costing implementation for specific operations is done in-house. The WSC SAP Team also coordinates the gathering of all Corporate assets data. Since some assets are not yet recorded in SAP, an intensive effort is underway throughout the Corporation to gather data which is then processed. This is being done for job-costing related to asset maintenance and to have all the assets related data stored within SAP.

The SAP Team has already implemented plant maintenance management and costing within some sections of the Corporation, enabling them to calculate any job-related costs in a better and more concise way. All the recorded assets in SAP can be associated with work order management for job costing.

Business Intelligence (BI)

Business intelligence helps corporate executives, business managers and other end users make more informed business decisions. The Water Services Corporation's main BI activity is SAP/BI, so in-house tools were developed to cater for further corporate business activities.

BI Strategy and Achievements

During 2015 recommendations by SAP and IBM (Spain) were implemented which included a maintenance strategy on the BI platform to resolve a number of issues that were gradually undermining the platform's main objective.

During the second quarter of 2015, the Water Services Corporation took over all BI activity of ARMS Ltd., Enemalta Corporation, and the WSC. The strategy left positive results and all the targets listed below were met.

- Restore confidence in BI reporting.
- Analyse the accuracy of data.
- Maintaining "infoObjects".
- Stock-take of existing reports and users.
- Automate the "process chains".
- Reduce manual intervention as much as possible.
- Set up of a BI team to support WSC, ENE and ARMS
- Train all the team members.

Most of the effort was focused on the Data Warehouse which is integrated with fully automated "process chains" running on daily and weekly bases. The BI teams now upload 106 independent data chains in the data warehouse daily and maintenance which was previously disregarded is now scheduled on a monthly basis. All this has improved efficiency and reliability.

SAP-GIS Integration Project

Following the strategic decision to adopt Geographic Information System (GIS) technology for all WSC's systems and solutions, the GIS technology and related geographical data were upgraded. The first phase of this project included a licence agreement with the Environmental Systems Research Institute (ESRI). Their products are now benefitting the Corporation's asset management, spatial analysis, GIS related software development, GIS servers, and a platform which enables GIS data to be integrated to other systems and solutions. Another part of this phase comprised a geographic data-cleansing and transformation exercise, in order to make it compatible with the

new ESRI products and compliant with international GIS standards.

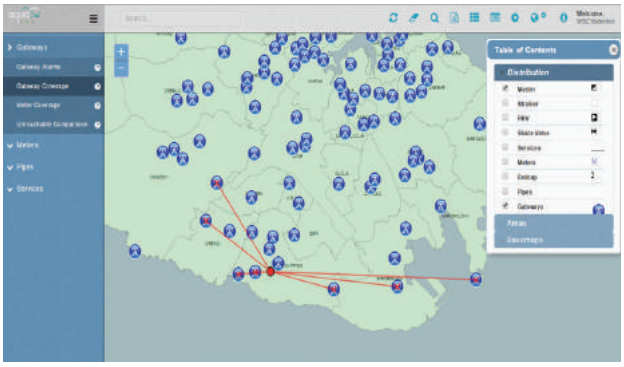
The second phase comprising internal GIS-based solution development was then started. Solutions developed during this phase cater mainly manage all automated metering system operations, water projects management, water main renewals or replacements and business intelligence. This was an important aspect of all the solutions integrating GIS with other systems mainly SAP and the Smart Metering system.

Enterprise GIS systems are integrated so that many users can manage, share, and use spatial data, and related information to address a variety of needs. These include data creation, modification, visualization, analysis, and dissemination. GIS allows strategic operators to visualize, question, analyse, and interpret data, to understand relationships, patterns, and trends. In order to fully utilize GIS enabled solutions and maximize our return on investment, a long-term strategic plan was essential.

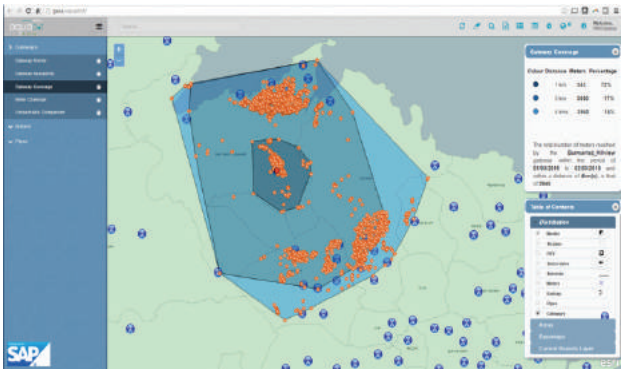
Smart Metering Management

This solution was developed specifically to integrate GIS with smart metering data and to improve daily operations. This solution is being used to monitor the radio frequency (RF) gateway to consumer meter module reachability, localization of alarms; both on RF transmitters and receivers and localization of installed RF meter transmitters.

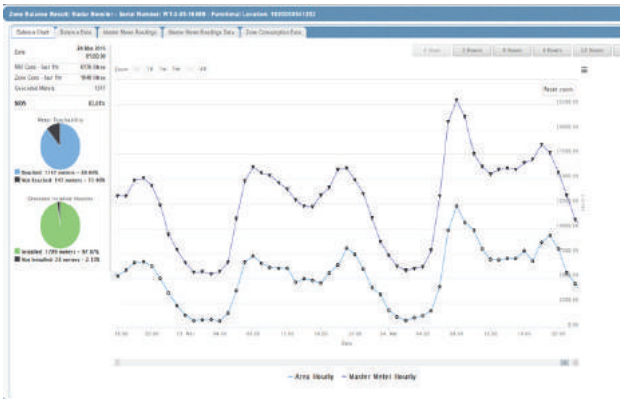
During 2015 the Corporation provided second-level support on the water Automated Metering Management (AMM) system and its related processes. This support was previously being provided by third party companies. Staff gained expertise on the system meaning that most issues are being solved internally.



Meter reachability analysis



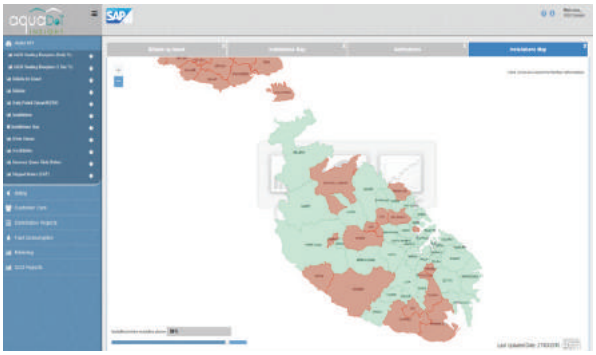
Gateway reachability analysis



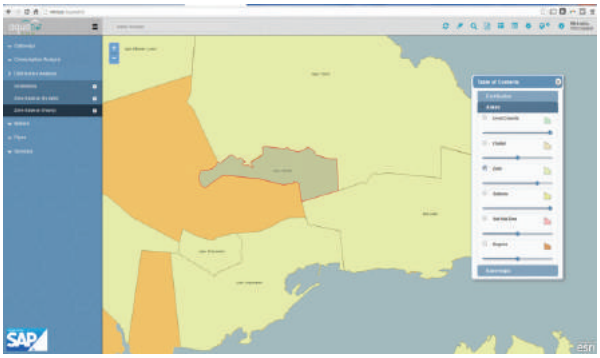
Water balance monitoring and analysis

Decision Support and Business Intelligence

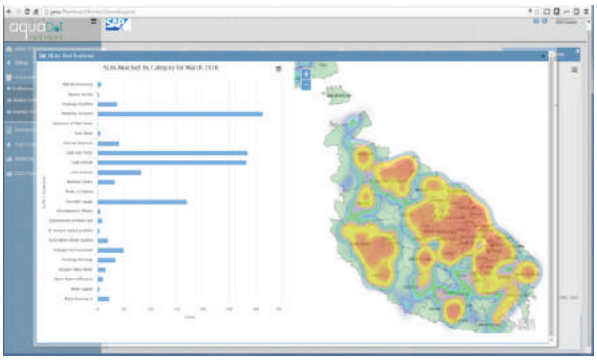
Another important decision-support and business-intelligence solution was developed internally by integrating spatial-analysis functionalities and implementing leading-edge GIS technology.



Colour indicators showing areas exceeding specified thresholds

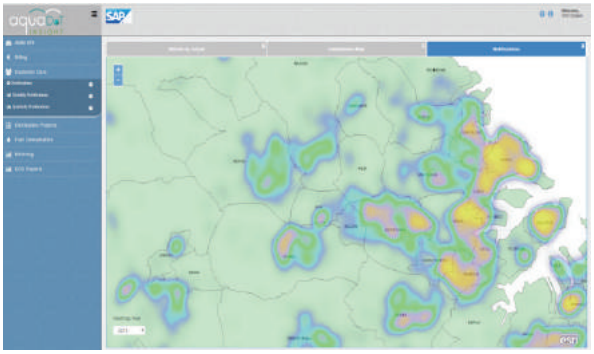


Water zone balances



Spatial analysis on customer care notifications through heat maps

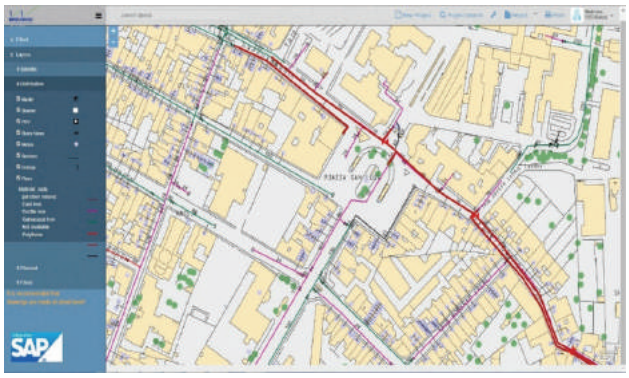
Meter consumption pattern analysis



Spatial analysis on customer care notifications through heat maps

Distribution Network Project Management

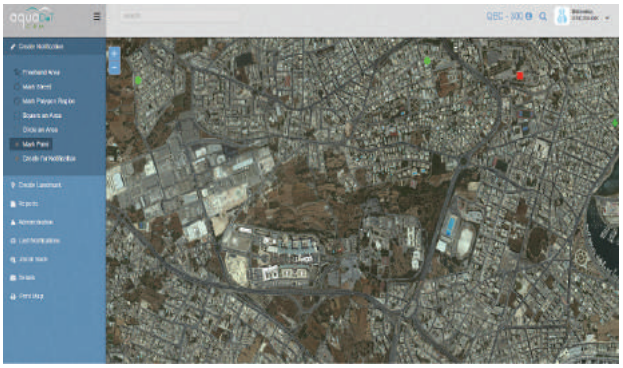
By using in-house built systems the Corporation's technical officers can start a water network related project by geo-coding the planned pipe extensions or replacements. This not only provides the required project location visuals, but also enables spatial analysis whenever required.



Geo-coding and initialisation of a planned project (in red), showing also the connectivity of the new pipe layout to the existing one

Customer Care Notifications Management

Customer reports received by the Customer Care department are pinpointed directly on a map complete with fast and accurate search facilities. This is a newly-introduced upgrade enabling reported issues (notifications) to be automatically communicated to the relevant region based on the name of the reported locality.



Customer Care notifications as shown through the GIS user interface

The system can search for streets and locations which is especially useful when reports are coming in over the phone. Switching between orthographic and street maps, enables our Customer Care personnel to confirm a reported location visually by giving visual cues and landmarks back to the reporter in the field.

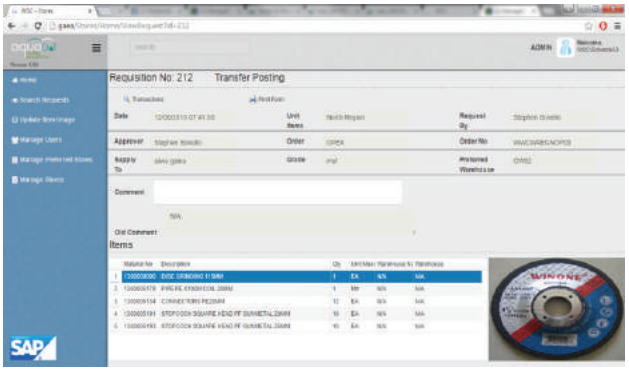
Public Website

Public website

The implemented CRM was tailored around the Customer Care department's work practices and procedures. Any response to customer requests requires sending WSC operatives on site for repairs or new installations. Clearly therefore, a GIS-based solution is preferred to the hitherto used SAP. Users physically search for locations, zoom, pan, and once located, click on the map location of the reported incident. The overall result is a much better interface between customer care and consumers and much more real-time information available to the general public.

Stores Requisition Application

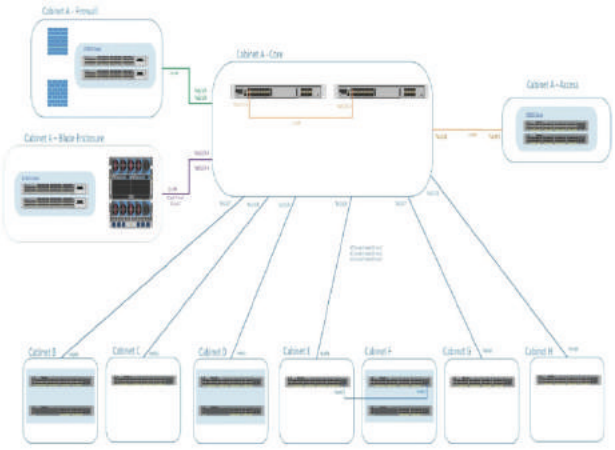
This is an in-house built application whereby users can request stock items through a simple interface. It facilitates stock-control and purchasing planning. Included in this system is a suite of useful reports used for audits.



Stock items as shown in the Stores Requisition Application

Luqa Offices Network Infrastructure

The Strategic Information Directorate upgraded the backbone network infrastructure at Luqa data centre and offices. The network devices were in use for a number of years, and reached their end-of-life expectancy in 2014.



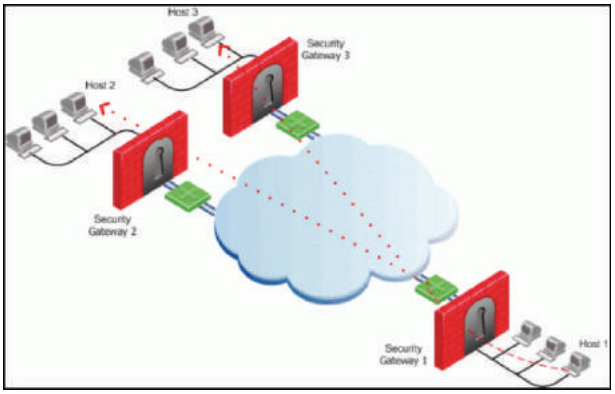
Current network infrastructure

The backbone network in the data centre, together with the up-links between the data centre core switches and the other distribution network devices across Luqa, were upgraded from a 1GB to a 10GB infrastructure. All network devices were replaced with the most recent equipment which includes dual redundant links between all critical devices in the data centre.

Security Implementation at Remote Sites

During 2015 the WSC extended the security features of the existing checkpoint enterprise firewall to secure remote offices and telemetry sites. This created secure communication tunnels between the edge firewalls at remote sites and the enterprise firewall at the WSC head office in Luqa, whilst facilitating wide area network management. The WSC can now secure internal links and encrypt all the data that travels across all media especially wireless connections.

Storage Area Network (SAN) and Backup Infrastructure



Storage Area Network infrastructure

Document Management System

This system is being implemented to consolidate documents on file servers and on various users' computers. Microsoft Sharepoint Server is being used as this caters for two main functionalities required namely, document version control and workflows. A successful implementation of this environment as a portal was applied to the SI Directorate. Two other portals were also integrated namely, one to maintain all ISO documentation, and another to manage the documentation of the IUBS project.

WSC Computer Assets Inventory

All the Corporation's IT assets (computer hardware and software) were documented in an inventory system. An additional option is being used for record keeping and inventory purposes which automatically keeps track of any changes done to both hardware and software on any single machine.

HUMAN RESOURCES

The Human Resources section is responsible for staff recruitment, training and ensuring that the Corporation is adequately equipped with the optimum number of well-trained and motivated staff to carry out its mission

During the period under review the Human Resources Department upgraded its main activities in line with the current and future HR strategic requirements. In addition to traditional people-management, payroll and attendance control, the department was also responsible for:

- Organizational and Staff-Development Services
- Policy and Workforce Planning functions
- Training Needs
- Childcare
- Performance Appraisals
- Employees Reward Scheme
- Family Friendly Measures
- Employees Assistance Schemes

In its efforts to eventually operate all its plants whilst minimizing its dependency on sub-contracting, the WSC needed to resort to external recruitment.

Over the last two years the Corporation embarked on a policy to replace retired employees with better-qualified professionals where required to meet its high level of operational needs.

Recruitment and Selection

At the end of 2015 the Corporation had 29 apprentices aiming for the relative academic requirements coupled with on-the-job training. The apprenticeship program will develop a pool of workers with accredited skills and knowledge in industrial electronics, electrical and electronics, computer engineering, electrical installations, welding and laboratory technology. Our aim is to expose our apprentices to related work experience while they complete their

formal in-class training and development and to offer a full-time job upon completion of their apprenticeship.

Summer Workers

In 2015 sixty-three students were employed as summer workers. The WSC's aim is to give student job-exposure in a modern work environment and help with duties. Students also complete an employee exit survey the results of which were very positive.

Tele-Working and Flexi-Time Family-Friendly Measures

Tele-Working is based on a voluntary agreement between the individual and the employee's supervisor. Employees can work up to 10 hours at their usual place of work and the rest from home. This measure is especially beneficial to female employees, helping them care for young children because they work minimum hours at work, whilst working the balance of their work hours at home. Employees are also provided with equipment at home where necessary.

Flexi-Time lets employees benefit from up to 15 minutes grace when they report late for work. Any lateness up to 15 minutes is compensated for after employees' finishing time. Ad hoc agreements are made with employees who wish to work on flexi-time arrangements upon request.

Personal Assistance Scheme

The WSC introduced a personal assistance scheme for employees who need social assistance from time to time. Although unable to offer a direct cure or solution to problems, the corporation refers cases to the newly set-up Employee Support Program within the Office of the Prime Minister. Others are referred to Caritas Malta and the Richmond Foundation. The HR department continues to monitor referred employees to try to find suitable solutions for problems.

Skills Cards and Skills-Matrix Training Needs Analysis

All workers assigned duties "outdoors" were provided with a skills card showing details of their skills, licenses, qualifications and immunizations. These Cards are regularly updated as required.

A training needs analysis was also carried out where operational managers and professionals prepared a skills-matrix for employees under their responsibility.

Performance Appraisals – Professionals – OM's

The Performance Appraisals of the professionals staff were all carried out and a similar system was introduced for the Operation Managers.

Child Care Centre

The centre also started to accept children of persons not employed with the Water Services Corporation. New facilities were bought to help the children's education and to encourage their abilities. Risk Assessment and safety measures were taken according WSC standards and policies. With 12 children attending every day the child care centre is now full.

Employee Reward Scheme

A reward scheme was introduced for the grades of operations managers or below, to show appreciation to employees who are high performers. The majority were awarded due to praise from consumers for exemplary efforts beyond the normal call-of-duty. One case recognised greatly increased efficiency compared with previous years. However, in one particular case an award was given to a team of employees who managed to trace an unknown leak under the Ta' Qali Millenium Stand, which was costing the WSC 55 cubic metres per hour of lost water, literally thousands of Euros per annum.

Retiring Personnel

A new initiative introduced in 2015 saw persons approaching retirement, being approached well beforehand in order to ensure that they are well prepared. Some 2 years before actual retirement, employees are briefed about their pensions, best options, rights and obligations, so that there will be no hiccups when they actually retire. Prior to this initiative retired employees sometimes found themselves administratively unprepared and having to wait several months before first disbursement of their pensions.

Immunization

Since our employees are potentially exposed to a variety of diseases, the corporation tries to give maximum protection to all employees in contact with hazardous substances such as waste water.

Rigorous checks are carried out to assure that all those that need to be immunized actually attend clinics to receive the required jab and afterwards check that employees receive their next immunization in time.

Medical

Employees are divided in two categories Waste and Potable. These undergo various medical tests according to differing duties. Employees who work in the Desalination Services and Leak Detectors are sent for an Audiogram test. Those found unfit for specific duties are advised accordingly and new alternative employment is normally found within the corporation.

Filing System – Qualifications

Qualifications files were introduced for all employees who are regularly requested to provide the HR office with copies of new qualifications and files as well as the personnel Dakar system are upgraded accordingly.

FINANCIAL STATEMENT (UNAUDITED)

As at 31st December 2015

	Notes	2015	2014
		€	€
ASSETS			
Non-current assets			
Property, plant and equipment	1	**283,547,377**	253,442,746
Investments	2	**129,659**	129,659
Amounts due from Government	4	**30,441,855**	29,334,419
		314,118,891	282,906,825
Current assets			
Inventories	3	**11,055,643**	8,303,661
Trade and other receivables	4	**27,001,216**	32,319,540
Cash at bank and in hand	5	**174,890**	2,942,069
		38,231,749	43,565,271
TOTAL ASSETS		**352,350,641**	326,472,095
EQUITY AND LIABILITIES			
Capital and Reserves			
Government contribution	6	**73,142,325**	73,142,325
Revenue reserve	6	**9,942,449**	3,865,377
Other Reserve	6	**(1,218,000)**	(1,218,000)
Total Equity		**81,866,774**	75,789,702
Non-current liabilities			
Interest bearing loans and borrowings (NCL)	7	**79,297,707**	92,764,807
Deferred Government grants (NCL)	8	**124,839,011**	108,541,286
Provisions for other liabilities and charges	9	**15,647,002**	13,949,247
		219,783,720	215,255,341
Current liabilities			
Interest bearing loans and borrowings	7	**7,510,468**	1,296,844
Government loan	11	**4,567,887**	4,967,887
Deferred Government grants	8	**6,114,139**	6,114,139
Trade and other payables	10	**32,507,655**	23,048,184
		50,700,148	35,427,054
Total Liabilities		**270,483,868**	250,682,395
TOTAL EQUITY AND LIABILITIES		**352,350,641**	326,472,095

WATER SERVICES CORPORATION

Statement of Comprehensive Income

	2015	2014
	€	€
TURNOVER		
Sale of Water	**58,645,432**	58,821,762
Other Revenue	**4,416,351**	4,549,405
Government Subsidies	**15,919,417**	13,592,079
Deferred Income Amortisation	**8,230,602**	8,676,817
	87,211,801	85,640,064
EXPENDITURE		
Wages & Salaries	**22,865,567**	22,370,183
Electricity	**17,432,061**	19,958,254
Repairs & Maintenance	**8,845,680**	9,238,348
Motor Vehicles Expenditure	**1,733,950**	1,622,918
Operations & Maintenance - ROs	**735,931**	827,195
Operations & Maintenance - STPs	**3,438,901**	3,287,250
Net Expenditure on Billing Operations	**3,875,805**	3,666,402
Depreciation (Note 1)	**16,830,905**	20,384,336
Other Recurrent Expenditure	**2,437,090**	478,070
	78,195,888	81,832,957
(Loss)/Profit from Operations	**9,015,913**	3,807,107
Interest Payable	**(2,938,842)**	(3,212,412)
Net (Loss)/Profit for the period	**6,077,071**	594,695

Notes to the Financial Statements

1. Tangible Fixed Assets

	Land & Buildings	Water Infrastructure Assets	Reverse Osmosis Plants	Sewerage Treatment Plants	Other Assets	Integrated Utilities Business Systems	Wastewater Infrastructure & Related Assets	Work in Progress	Total
	€	€	€	€	€	€	€	€	€
Cost									
As at									
1st January 2015	48,394,408	145,446,068	21,055,870	89,222,704	13,926,839	36,167,978	33,493,057	8,127,540	395,834,464
Additions	18,177	8,504,204	371,987	259,860	838,260	2,550	6,797,284	38,326,136	55,118,458
Disposals	-	(1,614,460)	-	-	-	(911,060)	-	-	(2,525,520)
Capitalisation	-	-	-	-	-	-	-	(8,182,922)	(8,182,922)
As at 31st December 2015	**48,412,585**	**152,335,811**	**21,427,858**	**89,482,563**	**14,765,099**	**35,259,468**	**40,290,340**	**38,270,755**	**440,244,480**
Depreciation									
As at 1st January 2015	9,787,183	51,103,267	15,197,135	22,601,235	10,026,260	24,858,289	8,818,348	-	142,391,718
Charge for the year	937,434	5,557,392	570,651	5,347,343	1,047,456	1,985,379	1,385,250	-	16,830,905
Released on disposal	-	(1,614,460)	-	-	-	(911,060)	-	-	(2,525,520)
As at 31st December 2015	**10,724,618**	**55,046,199**	**15,767,786**	**27,948,578**	**11,073,716**	**25,932,608**	**10,203,598**	**-**	**156,697,103**
Net Book Value									
As at 31st December 2015	**37,687,967**	**97,289,612**	**5,660,072**	**61,533,985**	**3,691,383**	**9,326,860**	**30,086,743**	**38,270,755**	**283,547,377**
As at 31st December 2014	38,607,225	94,342,800	5,858,735	66,621,469	3,900,579	11,309,689	24,674,709	8,127,540	253,442,746

WATER SERVICES CORPORATION

Notes to the Financial Statements

1. Tangible Fixed Assets (cont.)

Depreciation

Infrastructure assets are being depreciated on a systematic basis over their estimated useful life. This method shall reflect the pattern in which the assets' future economic benefits are expected to be consumed by the entity.

	WSC Funds	EU & Govt. Funds	**Total**
	€	€	**€**
Capital Infrastructure			
Balance as at 1st January 2015			
Water	3,164,624	2,714,187	**5,878,811**
Wastewater	2,003,749	244,979	**2,248,728**
	5,168,373	2,959,166	**8,127,540**
Additions			
Water	13,318,250	18,300,368	**31,618,618**
Wastewater	6,707,519	-	**6,707,519**
	20,025,769	18,300,368	**38,326,137**
Capitalisation/Adjustments			
Water	(2,387,313)	(4,328,519)	**(6,715,832)**
Wastewater	(1,467,090)	-	**(1,467,090)**
	(3,854,403)	(4,328,519)	**(8,182,922)**
Balance as at 31st December 2015			
Water	14,095,560	16,686,037	**30,781,597**
Wastewater	7,244,179	244,979	**7,489,158**
	21,339,740	16,931,016	**38,270,755**
Total Balance	**21,339,740**	**16,931,016**	**38,270,755**

2. Investments

	2015 €	2014 €
Investment in Desalination Services and Marketing Limited	**4,659**	4,659
Investment in ARMS Ltd	**125,000**	125,000
	129,659	129,659

Desalination Services Marketing Limited has its registered office at WSC, Qormi Road, Luqa. The Corporation has 99% shareholding of the subsidiary's ordinary share capital.

Automated Revenue Management Services (ARMS) Limited has its registered office at WSC Corporate Building, Qormi Road, Luqa. The Corporation jointly controls 50% shareholding of the ordinary share capital. During the year the company increased its share capital, WSC share equivalent to €100,000

3. Inventories

Inventories are made up as follows:

	2015 €	2014 €
Mains and Pipes	**4,197,196**	5,231,153
Consumable Stores	**609,656**	558,645
Stock of Meters	**2,489,794**	1,265,869
Chemicals	**184,759**	110,590
Parts	**7,671,550**	5,084,847
Provision for Obsolete Stock	**(4,097,312)**	(3,947,442)
	11,055,643	8,303,661

Notes to the Financial Statements

4. Trade and other receivables

	2015	2014
	€	€
Current		
Trade Debtors	**27,225,721**	29,280,623
Provision for impairment of trade receivables	**(9,279,400)**	(9,129,962)
Other Debtors	**1,299,863**	1,851,107
Provision for impairment of other receivables	**(672,915)**	(858,866)
Accrued Income (Note i)	**8,092,458**	10,623,664
Government Subsidy	-	-
Prepayments	**335,489**	552,975
	27,001,216	32,319,540
Non-current		
Amounts due from Government (Note ii)	**30,441,855**	29,334,419
Total trade and other receivables	**57,443,071**	61,653,959

(i) Accrued Income represents the estimate of unbilled sales value in respect of water units supplied and service charge to customers between the date of their last meter reading and the end of the accounting period. The estimation process requires certain assumptions to be made for bills not yet issued at period end in relation to units consumed during the year.

(ii) Amounts due from Government represent the Corporation's entitlement to the reimbursement of specific bank borrowings used by the Corporation for capital expenditure purposes. The amount is unsecured, interest free and the timing of its settlement will match the principal repayments of the said bank borrowings.

5. Cash and cash equivalents

	2015	2014
	€	€
Cash at bank and in hand	**174,890**	2,942,069
Bank overdrafts (Note 7)	**(7,510,468)**	(1,296,844)
	(7,335,578)	1,645,225

6. Capital and Reserves

(i) Government contribution

Government contribution amounting to €73,142,325, represents converted permanent debenture stock by virtue of amendments to the Water Services Corporation Act, passed through Act XXVII of 2007, whereby Article 35 of the Water Services Corporation Act has been deleted.

(ii) Revenue reserve
The movements for the current and comparative year in the revenue reserve are set out in the statement of changes in equity.

(iii) Other Reserve
A reserve representing the revision made to IAS 19 - Pensions Obligations. This relates to actuarial losses brought forward from year 2012 and transferred from the retained earnings reserve.

7. Interest bearing loans and borrowings (NCL)

	2015	2014
	€	€
Current		
Bank overdraft	**7,510,468**	1,296,844
Non-current		
HSBC Loan a/c 043 002369 301	**2,494**	1,317,494
HSBC Loan a/c 043 002369 300	**20,094,922**	22,594,922
BOV Loan a/c 4001763076-6	**22,381,854**	30,281,854
European Investment Bank Loan	**36,818,437**	38,570,537
	79,297,707	92,764,807

The interest rate exposure of the bank borrowings was as follows:

	2015	2014
	€	€
Total bank borrowings:		
At fixed rates	**36,818,437**	38,570,537
At floating rates	**42,479,270**	54,194,270
	79,297,707	92,764,807

The interest rate being charged by BOV and HSBC is 2.7% (0.55% plus 2.15% bank base rate) and 2.85% (0.5% plus 2.35% bank base rate) respectively.

Letters of Guarantee were issued on 30th April 2007 to HSBC and BOV by the Government in favour of Water Services Corporation, covering general banking and loan facilities amounting to €73,841,137 up to 30th April 2011.

The European Investment Bank Loans have a moratorium period of 6 years for Tranche 1 & 2 and 2 years for Tranche 3 and 4. Loans are to be paid in a period of 20 years by 2028, 2029, 2030 and 2032 having an effective rate of 4.719%, 4.526%, 3.574% and 3.076% per annum respectively. These loans are to be repaid by the Government.

Notes to the Financial Statements

Total Bank loans and borrowings

	2015 €	2014 €
Total Bank loans and borrowings	**86,808,175**	94,061,651
To be paid by Government (EIB Loan)	**36,818,437**	38,570,537
To be paid by the Corporation	**49,989,738**	55,491,114

8. Deferred Income

	2015 €	2014 €
At 1 January	**114,655,425**	119,944,824
Subsidies recognised during the year	**24,528,327**	3,387,418
Transfer to profit or loss	**(8,230,602)**	(8,676,817)
At 31 December	**130,953,150**	114,655,425

9. Provisions for other liabilities and charges

	2015 €	2014 €
Provisions for legal claims (Note i)	**4,614,315**	3,216,560
Pensions and other post-employment benefit plans (Note ii)	**11,032,687**	10,732,687
	15,647,002	13,949,247

(i)The amounts shown above comprise gross provisions in respect of legal claims brought against the Corporation. In the opinion of the Directors, after taking appropriate legal advice, the outcome of the outstanding legal claims will not give rise to any significant loss beyond the amounts provided at the end of the reporting period. It is unlikely that these claims will be settled within twelve months of the end of the reporting period.

(ii)A defined benefit plan defines an amount of pension benefit that an employee will receive on retirement. As originally provided for in the Pensions Ordinance, 1937, this amount is dependent upon an employee's final compensation upon retirement, as well as completed months of service. Furthermore, qualifying employees must have worked for Government for a minimum of 10 years, been employed by Government prior to 1979 and must have remained in service with Water Services Corporation until retirement (the vesting period), in order to be unconditionally eligible to receive a pension under the scheme.

10. Trade and other payables

	2015 €	2014 €
Current		
Trade Creditors	**11,441,910**	3,662,220
Other Creditors	**3,091,291**	2,905,161
Related Party balances - ARMS Ltd	**391,081**	285,574
Accruals	**17,583,373**	16,195,228
	32,507,655	23,048,184

11. Government loan

	2015 €	2014 €
Government Loan (unsecured and interest free)	**4,567,887**	4,967,887

Government Loan is interest free and repayable either through any surpluses generated or through a Transfer Voucher in the event that the Government subvention is still required. No loan repayments were made during the year.

WATER SERVICES
CORPORATION