RURAL WATER NEWS
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ZOC delineation gets go-ahead for funding

NFGWS welcomes 'important source protection initiative'

A recommendation that Rural Water Programme funding be provided towards the delineation of drinking water source catchments has been adopted by the Department of the Environment, Community & Local Government.

Responding to the case made by the NFGWS through the National Rural Water Services Committee that accurate catchment mapping is a vital first step in formulating targeted and effective source protection strategies, a 5-year programme has been agreed that will see the completion of zone of contribution (ZOC) delineation for some 290 group water schemes that have yet to complete such work.

In simple terms, this project will facilitate essential investment in the most critical element of GWS infrastructure – the source. It will inform schemes where their water is coming from and (for those with groundwater sources) the direction that their water is flowing.

It will also point to particular areas of vulnerability within a catchment so that informed decisions can be made in relation to possible protective measures and future planning.

Pilot models adopted

The ZOC delineation project is modelled on pilot projects completed through the Centre for Freshwater Studies at Dundalk Institute of Technology (surface catchments) and the Geological Survey of Ireland (groundwater catchments).

It is expected that the NFGWS and these institutions will have an ongoing role in organising the work of those professionals who will complete the delineation work.

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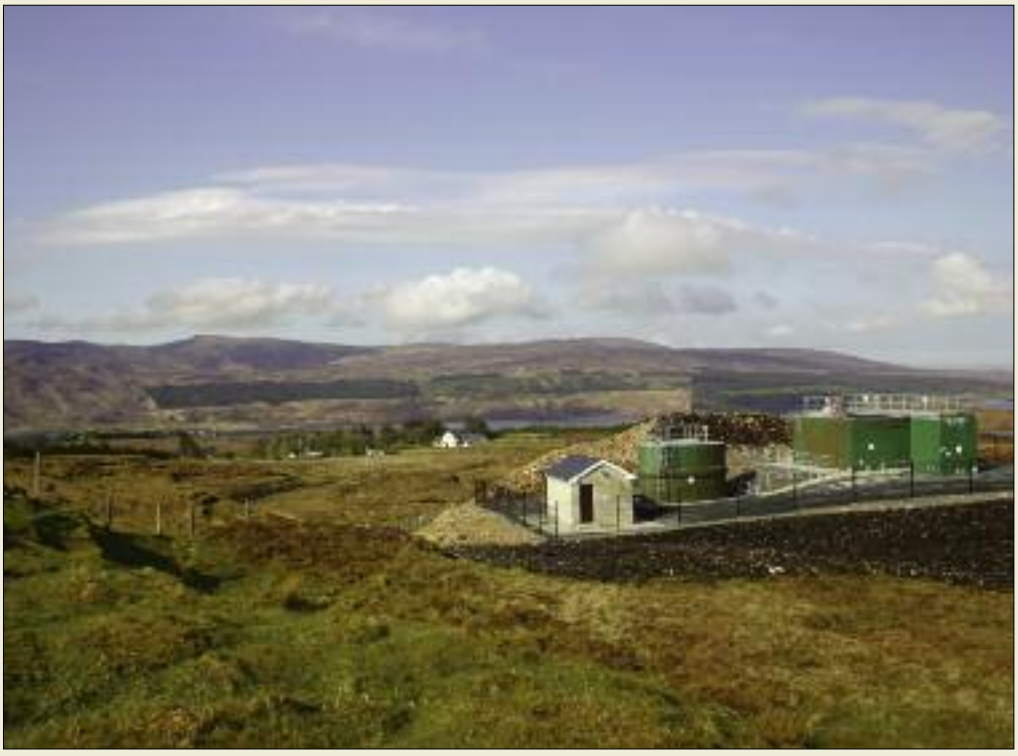

Perched in an upland area on the lower slopes of Errigal mountain, the recently-completed water treatment plant supplying Meenabool GWS in Co. Donegal includes sand filtration and chlorine disinfection. In an area of outstanding natural beauty, camouflaging has been used to ensure that the structures aren't visible from a distance.

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Comment

While there may be cynicism at the seemingly endless and costly events hosted by what might be termed a 'conferencing industry', the educational and motivational potential of conferences and seminars that are designed by practitioners for practitioners cannot be undervalued.

The recent highly successful EPA conference on water and wastewater is a case in point. This provided delegates with food for thought on a range of issues addressed by experts who were also fine speakers. Full marks to the organisers.

For group water schemes, the annual Rural Water Conference organised jointly by the Water Services Training Group and the NFGWS is poised, yet again, to deliver a programme that is both varied, interesting and informative (see page 32).

As in recent years, the Board of the Federation is subsidising the attendance of delegates from affiliated schemes.

You'd be mad to miss it!

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Leaving aside the direct criticism of Irish Water levelled by at least one councillor, the points raised at a meeting of Leitrim County Council (page 9) on the future of publicly sourced group water schemes must continue to be addressed, as any uncertainty about the future of this large sector will only encourage further negativity and fear.

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Rural Water News makes no apologies for again highlighting the excellent work being carried out by the pupils of St Brendan's National School in Kilmeena in raising community awareness about the value of water (page 6).

As Mayo County Manager, Peter Hynes has pointed out, the example being provided by this rural school could (and should) be replicated in schools across Ireland.

Since first completing the *All About Water* curriculum – in conjunction with their local group water scheme – St Brendan's school has built up an extensive partnership network to promote the simple, yet powerful, message that water is a resource worth respecting and protecting.

The success of extra-curricular environmental awareness programmes – as part of the wonderful Green Flags initiative in our primary schools – is down to having interested teachers and a supportive principal. St Brendan's has both. We warmly applaud their efforts and we recommend their example to other educationalists.

Rural Water News is published by the National Federation of Group Water Schemes. For further information, go to www.nfgws.ie or contact one of our offices: Monaghan (00-353-47-72766); Kiltimagh (00-353-94-9381802); Tuam (00-353-93-28712; Tullamore (00-353-57-9328068).

Pesticides advice note issued by EPA

Ireland's Environmental Protection agency (EPA) has issued a new advice note (no. 13) to provide guidance to Water Services Authorities (WSAs) where pesticides have been detected in drinking water and on the actions that should be taken in such an event.

While the number of drinking water supplies with pesticide exceedances has been low, there has been a worrying increase in recent years.

Through its advice note, the EPA aims to minimise the potential for entry of pesticides into water at source, through catchment protection, rather than having to remove them via treatment processes at the water treatment plant.

Indeed, conventional treatment processes used in Ireland cannot remove pesticides, so this parameter has to be dealt with by prevention.

Entry

Pesticides can enter surface or ground water bodies used as sources for drinking water supplies through direct application, run-off, spray drift, volatilisation or by seeping through the soil.

They may also enter as source point inputs from pesticide handling areas from mixing, filling, washing, spillage and leakage.

Advice note no. 13 can be accessed at www.epa.ie.

NFGWS welcomes 'important source protection initiative'

Continued from cover page

Besides ensuring that a consistent approach is adopted, this will assist those expert hydrogeologists and other professionals involved by providing them with a clear reporting framework.

Support

Grant aid at 85% up to a maximum cost of €3,000 can be drawn down by schemes towards the professional assessment and report. This means that the maximum outlay for a GWS should be €450, but those with relatively simple catchments are expected to come in at less.

As with other elements of the RWP, funding will be administered through the county councils and arrangements for draw-down are currently being finalised.

Besides any financial outlay, this will be a two-way process and schemes (assisted by NFGWS development officers) will be expected to collate as much information as possible about their source in advance of the expert arriving on site.

In the case of boreholes, for example, this will include any knowledge of when the well was drilled, who drilled it and if there is a driller's log available.

Treated water records will help in terms of physical/chemical knowledge about the source. As raw water sampling may also be necessary it is important that schemes have an appropriate sampling point available.

Chairperson seminars prove a success

86 GWS chairpersons of group water schemes took the opportunity to attend one of a series of five regional seminars organised by the NFGWS in May.

Arising out of last year's seminars for GWS managers, the seminars for chairpersons were designed to provide a forum for discussion, where those at the helm of group water schemes could share experiences and learn from one another.

Responding to an 'expressions of interest' circular, a total of 119 GWS chairpersons responded positively to the idea of participating in such seminars, with 72% indicating that they would prefer evening meetings, rather than mornings or afternoons.

Five venues were selected on a regional basis with a view to accommodating as many as possible within a reasonable distance of their home base.

NFGWS staff members attended each seminar, facilitating the discussions, note-taking during sub-group discussions and acting as spokespersons to the general group.

Roles & responsibilities

Following a brief presentation on the roles and responsibilities of the GWS board of directors and the chairperson in particular – and on the important relationship between the GWS chairperson and a manager – the overall group was broken into two discussion groups.

Each of these was asked to consider 2 of 3 scenarios and to discuss how they would propose addressing them, as chairperson.

Discussion Scenario 1

- A GWS has shown an operating loss in each of the past three years.
- Significant reserves have been built up.
- Water charges have not been increased.
- There is a reluctance on behalf of the board to take any action.

Discussion Scenario 2

- You are made aware, confidentially, that a board member has facilitated an unauthorised water connection.
- The board member is very active in the group water scheme and would generally be considered to be an important member of the board.

Discussion Scenario 3

- GWS accounts are showing an operating surplus in each of the past three years.
- However the position is distorted as the debtor figure continues to rise.
- There are significant uncollected water charges.
- There is a reluctance on behalf of the board to take any action

Plenary session

A report on the sub-groups' deliberations and findings was presented at a plenary session. A further general discussion then took place on the scenarios and on the findings of the smaller groups.

Apart from the pre-determined scenarios, attendees raised several other topics amongst themselves, all pertaining to challenges facing GWS chairpersons.

These and the overall findings of the discussions will shortly be distributed to all participants.

Important

Welcoming the provision of financial support for ZOC delineation, NFGWS chairperson and member of the NRWSC, Brendan O'Mahony described it as 'undoubtedly a very important source protection initiative' for the group water scheme sector.

Applauding the vision of the Minister and his Department in sanctioning this funding in what is a very difficult economic climate, he added that it is a 'valuable and enlightened investment', that will provide group water schemes with 'a solid basis upon which to build sensible and defensible source protection strategies'.

Above: Representatives of Kilkenny group schemes at an information meeting on the ZOC delineation project.
Right: Shay O'Loughlin and Michael McNamee of Ballykillen GWS in Offaly taking borehole measurements as part of source data gathering.
Facing page top: NFGWS and GSI personnel who met to draw up a list of group schemes for which ZOC delineation can be completed this year.
Facing page bottom: Several representatives of group schemes in North Tipperary who attended a ZOC delineation information meeting.

Kilmeena school champions community water awareness

Students from St Brendan's National School in Kilmeena, outside of Westport, County Mayo, rolled out the red carpet on 27 June for the launch of an exceptional water research and awareness project.

Run in partnership with Kilmeena GWS, Mayo Co. Co. and IRISH TV, the project has afforded the fifth and sixth class students from St Brendan's the opportunity to inform themselves and their community about water conservation and source protection in their own locality.

Get involved

More recently, *The Connaught Telegraph* newspaper came on board, putting St Brendan's forward as its entry in the ***Get Involved*** community initiative.

Supported by the Regional Newspapers Association of Ireland, this sees 51 local newspapers championing community projects in their area and vying for national honours.

The projects must demonstrate a sustainable element to them once completed. An expert panel of judges will evaluate the entries and winning projects will receive their awards from President Michael D. Higgins in September.

Guidance

Under the guidance of Seán Corrigan, manager of the local group water scheme, Pierce O'Reilly from IRISH TV and school Principal Mickey Carney, the students have conducted market research projects and have partaken in several field studies, whilst also gaining a valuable insight into marketing and media studies.

The project entitled 'What water means to us in our community' also saw several expert speakers come to the school to inform the students about water protection, conservation and treatment.

Describing the project as 'both educational and informative for the children at school, the community around the school and, indeed, for communities further afield', St Brendan's National School Principal, Mickey Carney said.

'The children are extremely excited about this project, as water impacts on their everyday lives. With the group water scheme on our doorstep, it is a very important to support and promote the importance of water in our community.'

Enthusiasm

Remarking that 'the students and entire school have shown great enthusiasm for this project from the very beginning', Seán Corrigan expressed confidence that 'their endeavours will have a major impact on the entire community'.

Mayo County Manager Peter Hynes described the school project as innovative and pioneering stating 'I think this project has the potential to be rolled out on a county and country basis', while Joanne Grehan from the Mayo County Enterprise Board said 'the project has huge implications for sustaining and nurturing local enterprise and inward investment to Kilmeena and the entire west Mayo region.

Top: Visual images, including photographs and tv presentations are being used by the pupils of St Brendan's, Kilmeena, to highlight the value of water. Bottom: 5th and 6th class pupils with some of those who have been working with them as part of their project 'What water means to us in our community'. Pics courtesy of *The Connaught Telegraph*

Septic tanks info campaign underway

An Engagement Strategy Working Group has been established to disseminate public information in relation to septic tanks.

Chaired by the Local Authorities and including membership from the DoECLG, the HSE and the EPA, this working group has recently published a series of leaflets for general distribution to owners of individual waste-water treatment systems.

These provide answers to three questions:

- Is our well at risk from your septic tank?
- What you need to know about your septic tank?
- What to expect from a septic tank inspection?

A digital version of the leaflets is available from www.protectourwater.ie.

Plan

This information campaign is part of the implementation of the National Inspection Plan 2013 for the inspection of septic tanks.

The plan uses two strands to protect public health and the environment. Through the mechanisms of citizen engagement strategies and DWWTS inspections, it aims to ensure that:

- adequate treatment of domestic waste water is in place;
- treatment systems are adequately operated and maintained;
- risks to human health and the environment are identified and managed;
- public awareness is raised;
- information is available to owners of domestic waste water treatment systems regarding their responsibilities and how to operate and maintain their systems;
- information is supplied in multiple, easy to understand formats such as leaflets, video and web-based 'frequently asked questions';
- incentives are used such as a lower probability of inspections for registered sites.

Joe Crockett (Kilkenny County Council), with Margaret Keegan and Ger O'Leary (EPA), displaying the new information leaflets on septic tanks.

Overall, the aim is to move to a situation where a majority of homeowners with domestic wastewater treatment systems know what to do to ensure that their systems are well operated and maintained and act voluntarily to achieve this.

Further information and advice for homeowners is available from your local authority website, or on the EPA's website at www.epa.ie.

Federation submission to Nitrates Programme review

In a submission that will form part of a review of the Nitrates Action Programme (NAP) taking place this year, the National Federation of Group Water Schemes has emphasised the need for more stringent protection to be provided to drinking water sources and for supports to be provided to appropriate farming practices in sensitive areas within water supply catchments.

The submission states as follows:

'As the representative body for the community-owned and community-run drinking water sector, we have a particular interest in assisting rural communities in the protection of this valuable resource.

'The points outlined are informed by our concern that the maximum protection be provided to drinking water sources and that a whole catchment approach be adopted to that end.

'The specific measures proposed are based on outcomes from the National Source Protection Pilot Project, the final report of which can be obtained on our website (www.nfgws.ie).

'The objective of all these measures is to reduce and, if possible, eliminate nutrient/microbial run-off into drinking water bodies.

Recommendations

We recommend that incentives be provided towards encouraging agricultural enterprises that are suited to particular topographic/hydrological conditions. Where a farm enterprise is of a nature or of a scale that is unsuited to those conditions and where mitigation measures are unlikely to be effective, a cost-free advisory service should be provided to the farmer to explore alternative enterprises. Positive consideration should also be given towards providing financial assistance for set-up costs associated with such alternative enterprises.

Soil sampling

We recommend that soil sampling be a prerequisite on fields within drinking water catchments on which it is intended to spread organic or inorganic fertilisers and that such soil sampling be repeated every 5 years. Given the additional financial burden that such soil sampling would make on farmers, we further recommend that it be funded under the Common Agricultural Policy (CAP) or as part of a special agri-environmental scheme.

Agri-environmental scheme

We recommend that such a special agri-environmental scheme be established (similar to REPs and the AEOS scheme), whereby funds will be provided to support best farming practice/appropriate remediation measures in drinking water sensitive areas.

This might include financial assistance towards planting of appropriate, site suitable riparian strips, erecting stock-proof fencing, providing drinkers, farmyard improvements, or generally discouraging land-spreading of organic or inorganic fertilisers in fields bounding drains, streams, rivers, lakes, or in those with karst features where any of these are part of a drinking water catchment.

Sloping fields

We recommend that special additional consideration be given to the issue of sloping fields that bound water courses within drinking water catchments. Here, construction of banks and ditches that will prevent run-off in storm conditions and will also act as nutrient sumps should be a precondition of land-spreading. Here too, a special agri-environmental scheme might provide financial aid towards constructing and maintaining these barriers to pollution.

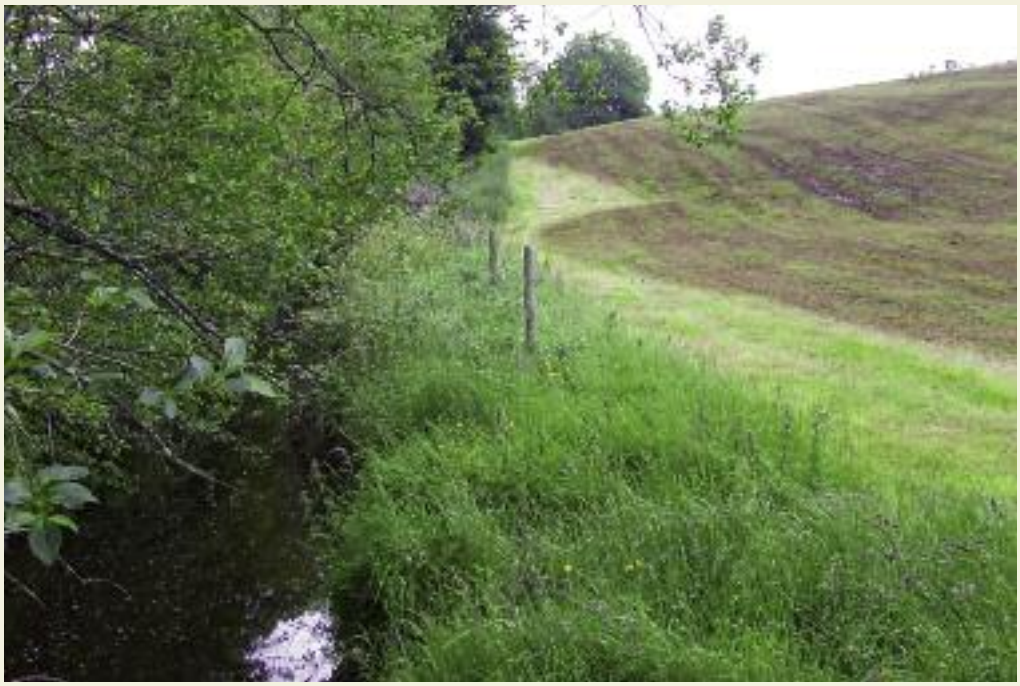
Flood plain

We recommend that there be no land-spreading on flood plains within drinking water source catchments, as the risk of run-off is especially high in such areas.

Farmers should be advised that flood plains already receive sufficient nutrients during flood events and that land-spreading in such areas is not only a high risk polluting activity but also a waste of their time and resources. Where possible, alternative land-spreading areas should be advised.

Conclusion

In conclusion, we feel that the above measures, in addition to improved co-ordination between the relevant statutory stakeholders, are essential in resolving problems of nutrification and microbial pollution of drinking water sources.



The Federation's submission to the review of the Nitrates Action Programme addresses the need for additional measures to prevent nutrient run-off into water sources intended for human consumption.

Leitrim County Council considers the future of 180 group schemes

(reprinted from *The Leitrim Observer*, 13 June)

The County's 180 group water schemes are facing an uncertain future, with major changes expected in the way they are subsidised and billed.

With new State Company Irish Water, expected to take over the running and administration of water services from County Councils, concerns have been raised about the future of Co. Leitrim's huge GWS structure.

While some have been taken over by the Council in recent years and will, as a result, fall under the remit of Irish Water when it comes to maintenance and supply, the vast majority of our GWS's are not in this situation and some, acknowledged Director of Service, John McGuinness, are already facing significant administration, debt and maintenance problems.

Mr McGuinness said that it was clear that Irish Water will not be taking over GWS's. Those not taken over by the Council but attached to the public water supply will likely be metered and billed as a single entity by Irish Water, but, there are serious concerns about the future of schemes which aren't in this position.

Charging

There is no question [but] that Irish Water will charge schemes for usage recorded through its meters – including wastage as a result of leaks – which could lead to substantial bills.

Problems could also arise where a scheme feeds into another scheme and the issue of how they will be billed needs to resolved.

Determined

Mr McGuinness told Monday's Council meeting that the Council is determined to make GWS's aware of the possible implications of the change to Irish Water: *"We have to develop a rationale to deal with this where firstly we identify which schemes wish to be taken over by the Council.*

"We then have to look at whether the schemes are in a condition where we could take them over and we will then look at their structural importance. The more structurally important schemes will be taken over first," he stressed.

"We (the Council) simply won't be in a position to take over all 180 schemes. We will be continuing to be in contact with Irish Water and the schemes, but those running schemes need to be aware that there are going to be changes."

Determined

He said that the Council also did not know if there would be grant schemes in place in future for the refurbishment of GWS's following the transfer of services to Irish Water (IW).

"This is a huge concern," he acknowledged, "some need substantial investment."

Councillors slammed Irish Water for failing to clarify the situation for GWS's: "This is about water supply, it isn't something that people can do without," said one.

See Comment on page 3

Comparison of water charges across local authorities and the GWS sector

by Jennifer Brady
(Water Technology Research Group, Trinity College Dublin)

The government proposes to introduce domestic water charges across public water supplies following the recent establishment of a new national water utility, Irish Water.

My research was to assess the difference in water charges and operation across schemes and also to compare commercial water charges with those charged by local authorities.

As local authorities charge for both water and wastewater, only the water element of the charge was used for comparison with GWS charges.

A previous study of GWS charges undertaken by Barry Deane in 2003 noted large variation in water charges and it was thought valuable to assess whether this variation has since been reduced.

The survey

In March 2011 a total of 104 group water schemes (92 privately sourced and 12 publicly sourced) across 18 counties completed a detailed five-page questionnaire incorporating questions on pricing and operation.

The survey respondents included both DBO and non-DBO schemes.

The smallest participating scheme had a total of 8 connections whilst the largest had 1,449.

Additionally, each of the 34 local authorities were contacted regarding their commercial water pricing structures.

'The average annual free domestic allowance across group schemes was 95m^3.'

Pricing

Almost 80% of the schemes surveyed incorporated one of three charging systems.

Approximately 40% had solely volumetric charging in place, whilst flat rate charges were the next most prevalent (this is partly explained by the fact that 29 of the schemes that responded were unmetered). The third was a mixture of both a standing and volumetric charge.

There was considerable variation in volumetric charges across schemes, the lowest charge being €0.22/m^3 and the highest at €2.10/m^3.

The average charge across schemes was €0.76/m^3. This is one third cheaper than the average water-only charge across local authorities at €1.17/m^3.

However, when comparing standing charges, the average standing charge for commercial entities across group schemes was higher, at €134.67 per annum, compared to €108.38 across local authorities.

A breakdown of the average, minimum and maximum connection and standing charges across each connection type on the 104 schemes surveyed is displayed in the table below.

Free domestic allowance

Of those that were metered, some 9 schemes were not providing any free allowance, while 4 were providing the maximum 227m^3 per year. The average annual free domestic allowance across group schemes was 95m^3.

Each of the 34 local authorities provides a free allowance where a domestic premises also functions as a business. The average allowed across local authorities is considerably higher than on group schemes at 190m^3 per year.

Billing and failure to pay

Regular billing can provide important feedback to customers and can assist in the detection of leaks.

Half of all local authorities bill their customers on a quarterly basis, with 35% billing twice per year.

In contrast, 75% of group water schemes bill their members on an annual basis, whilst 18% bill twice per year. Only 7 of the schemes that responded undertake quarterly billing.

Encouragingly, 87% of schemes that charge their domestic members on a volumetric basis send out a statement, even if the user has not exceeded their free allowance.

Schemes experience an average failure to pay rate of only 7%, with almost 40% stating that they do not experience difficulty in collecting water charges.

In stark contrast, an average of only 54% of water charges were collected by local authorities in 2010.

Future outlook

The survey found that schemes are expanding in size, with 68% reporting an increase in membership over the three previous years.

Furthermore, 85% of schemes wish to remain and operate into the future and with volumetric charges currently over one third lower than local authority charges, there is a clear incentive for commercial users to remain on a group water scheme.

Similar to the findings of Deane's 2003 study, there remains a strong variation in water charges within and between both the drinking water supply sectors.

'Schemes experience an average failure to pay rate of only 7%, with almost 40% stating that they do not experience difficulty in collecting water charges.'

Connection Type		House only	House & land	Land only	Commercial
Connection charges	Average	€1,689	€1,667	€1,105	€1,848
	Minimum	€300	€300	€200	€400
	Maximum	€8,000	€5,500	€3,000	€8,000
Annual standing charges	Average	€107	€136	€108	€135
	Minimum	€20	€20	€10	€20
	Maximum	€300	€350	€240	€250

GWS invited to be part of research project

A number of group water schemes in the area between Tuam and Claregalway are being invited to participate in a research project that aims to develop a practical approach to screening large volumes of water for low levels of VTEC *E.coli*.

Funded by the EPA, the research is being conducted by the Antimicrobial Resistance and Microbial Ecology (ARME) Group from the School of Medicine in NUI Galway.

Screening for VTEC

While water is routinely monitored for the presence of *E.coli*, this is generally performed using commercial systems that are based on examining a small volume (100-1,000ml) sample taken at a specific point in time.

While this method allows for high throughput and provides assurance that the water is microbiologically compliant, it may miss intermittent or low level *E.coli* contamination and provides no differentiation between various types of *E.coli* that may be of concern, such as VTEC.

ARME has developed a method that addresses these shortcomings and will potentially assist in the early identification of VTEC in Irish water supplies.

Access

Project leader, Dr Dearbháile Morris explains that her team would welcome access to several GWS sources and treated water supplies to facilitate the screening of large volumes of water.

The project team will set up the rig, consisting of a series of filters and a pump (see photograph below).

To minimise disruption to householders, treated waters can be screened out of doors, where there is an outside tap available.

The results of any analysis will be provided to the GWS.

Dr Siobhán Kavanagh of ARME monitoring the rig that has been constructed to help identify VTEC *E.coli* even at low level contamination.

TCD study shines spotlight on contamination of well sources

by **Paul Hynds**

There are estimated to be about 165,000 private wells in the Republic of Ireland, with approximately 17% of the population – 725,000 people – currently use private water wells as their primary drinking water supply.

During the period 2000-2010, EPA groundwater monitoring data indicated that 25-35% of private supplies were intermittently contaminated with *E.coli*.

Recently published figures by the Health Service Executive (HSE) report that incidence rates of a number of gastroenteric illnesses in Ireland are significantly higher than those encountered in other EU member states, and point to private rural wells as a potentially significant route of exposure.

A recent EPA-funded study by researchers in the Dept of Civil, Structural and Environmental Engineering, Trinity College Dublin, has shone a spotlight on the primary risk factors that can result in microbiological contamination of private wells in Ireland, whether owned by individuals or group water schemes.

As part of the study, a total of 262 private wells spread over six study areas were sampled for faecal contaminants during the period April 2008-November 2010.

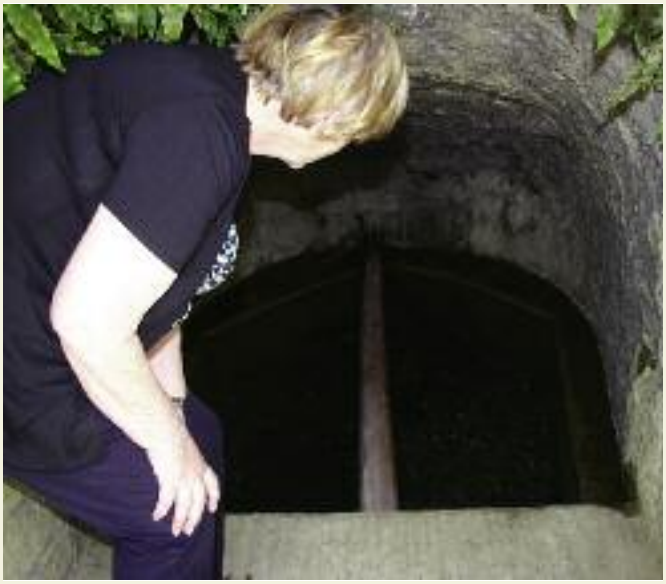
Additional data was recorded at each well and adjacent site. This included details such as:

- the local hydrogeological setting (e.g. bedrock type, subsoil thickness and permeability, aquifer importance and groundwater vulnerability category)
- well type (borehole or hand-dug well)
- construction and design (materials, well chamber presence, well depth, well-head cover presence, etc.)
- nearby contaminant sources (septic tanks, grazing animals, farmyards, landfills, surface water bodies)
- local climate (rainfall and temperature).

Results

Alarmingly, 29.6% of sampled wells tested positive for *E.coli*, indicating that some form of (human or animal) faecal material had entered the well prior to sampling.

Based upon proportions, it emerged that shallow hand-dug wells are almost three times more likely to have E. coli present than boreholes, indicating that both well depth and well design are important factors in well contamination.



Phyllis Naughton of Ballinamona GWS at a former groundwater source of drinking water for the scheme that was abandoned due to contamination.

Surprisingly, the highest levels of *E.coli* contamination (44.2%) were found in an area classified as having low groundwater vulnerability (i.e. relatively thick layers of low permeability subsoil).

This suggests that a significant pathway for contaminant entry to the well may be from surface run-off at the well-head, particularly after periods of heavy rainfall.

This problem may be exacerbated by the poor well-head conditions found at many private wells, including the absence of an appropriate well cover, or of a cemented seal between the surface lining pipe and the borehole wall (annulus).

Model

A statistical model was developed, with all collated risk factors included. The primary objective of this model was to predict the presence or absence of *E. coli* in private wells located in diverse hydrogeological settings.

The final model correctly predicted approximately 85% of *E.coli* presence/absence. The primary risk factors in this model were:

- Septic tank setback distance (m) and gradient (wells located down gradient and <50m from the septic tank were more likely to be contaminated),
- 5-day rainfall prior to sampling (increased short-term rainfall increased the likelihood of contamination),
- Wellhead design specifications (including uncovered wells with a lack of "liner clearance" above ground level and/or poorly maintained within 10 metres of the well head were more likely to be contaminated),
- Geological setting (wells located in limestone areas are at greater risk).

Conclusion

In conclusion, 'local' or 'well-specific' risk factors (such as septic tank location, wellhead design and construction, well type, localised by-pass flow in the form of direct ingress of overland flow, or rapid shallow infiltration) were identified as 'contamination mechanisms' of importance.

Indeed, such factors were found to account for up to 70% of contamination events.

Therefore, appropriate location, design, construction and maintenance of private wells are essential to reduce the contamination risks and any associated adverse health impacts on well users in Ireland.

For further details pertaining to this study and, in particular, to see the statistical modelling results mentioned in this article, readers should see the paper by Hynds, Misstear and Gill, referenced below.

Alternatively, the author may be contacted at:

hyndsp@tcd.ie.

Hynds P. D., Misstear B. D., Gill L. W. (2012) 'Development of a microbial contamination susceptibility model for private domestic groundwater sources. *Water Resources Research*. 48(12).

On the water front

by **Brian MacDonald**

A recent test on a lake source after heavy rainfall has provided striking evidence of the value of abstracting water from close to the surface in microbiologically-impacted sources.

Lyubov Bragina of the Centre for Freshwater Studies at DkIT took three samples from Milltown Lake, Co. Monaghan, filtering them to see it there were any *E.coli*/faecal coliforms present.

Apart from providing evidence that largescale contamination of water bodies will occur where there is landspreading followed by heavy rain, the tests also demonstrated the benefits of sunlight (natural UV) in improving the microbiological content of water closest to the surface and, by contrast, the poorer water quality to be found below the area of sunlight/UV penetration.

At depth 1 (immediately below the surface) there were 75 *E.coli* CFU per 100 ml and 316 CFU of faecal coliforms.

At depth 2 (84 cm below the surface) the results were similar, with 91 *E.coli*/335 faecal coliforms per 100ml.

However, at depth 3 (213 cm below the surface) 1,038 *E.coli* were detected, while the overall faecal coliforms were too numerous to count.

Apart from what this tells us about optimum abstraction levels, the real lesson is that there continues to be dreadful (and preventable) pollution of surface waters from human activities.

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There is no doubting the ambition of the national metering programme that is due to commence this month (July). As Minister Hogan said in a recent (15 May) address on the issue, 'the target of installing 27,000 meters a month for the three year project is internationally unparalleled in ambition'. He added that the project is 'similar in magnitude and ambition to the Shannon hydroelectric scheme of the 1920s.'

Anybody concerned about the dreadful waste of water in Ireland will welcome this long-overdue initiative and must trust that the quality of installation will not be sacrificed because of undue haste in its implementation.

***

The pupils of Kilmeena conducted a very interesting survey to assess local knowledge about their drinking water supply and attitudes to paying for water.

Some 210 questionnaires were returned out of approximately 400 households on the scheme. The replies suggest that the process of building public awareness will require a sustained effort and a variety of approaches.

Even on a group scheme that has enjoyed substantial publicity in local media over the past year, 30% of respondents were unaware of the benefits of water conservation and a similar percentage didn't know the source of their water supply.

On a positive note, however, 98% of respondents said that their group scheme represents value for money and that they would rather pay more for the quality water supply and excellent service they now receive than go back to the days where water cost little or nothing, but quality and service were relatively poor.

Water on the brain

reminisences of a group water scheme activist

In the second extract from his memoir outlining 44 years involvement in the rural water sector, NFGWS Vice Chairperson, Michael John Kilgannon describes some of the challenges that were overcome in getting a piped water supply to local homes.

There was no apparent source available in Ballymacward, so all discussion was futile until that problem was resolved.

Frank Furey (an engineer with Galway Co. Co.) came up with the idea of source sharing with the neighbouring Castleblakeney group scheme. There was an excellent well at Cloone in the Castleblakeney area which, he said, would be more than adequate for both sides.

I was instructed to write to the Castleblakeney organiser seeking a meeting of the two committees to discuss the matter. I didn't have long to wait for a reply. This was not very promising, but a meeting was eventually agreed and a new face appeared on the scene as organiser, a namesake of mine, Tom Kilgannon (RIP) who was Mr Castleblakeney GWS from then on. He and I worked in close harmony for many years.

A consulting engineer was sought and, at the suggestion of Michael Kitt, TD, it was agreed that the work should be given to Charlie Rabbitte, at the time working with Galway Harbour Authority.

Ground levels had to be taken, maps drawn, pipe sizes calculated, pressures established.

It took many months through 1969 to get an outline of what was now being considered a joint scheme, but it was confidently predicted that water would be flowing in 1970. Then the roof fell in.

Unbelievably, the Cloone well – supposedly such a wonderful source – went almost dry. Embarrassing wasn't the word for it.

Frank Furey was crestfallen. Both committees were perplexed; Castleblakeney had no obvious alternative source, neither did Ballymacward.

I talked to some people in the area about our dilemma. Among them was a local council roads maintenance man, Mick Brien from Woodlawn. He, too, was hoping to get water piped into his own home:

'And what about the river down near Ward's where I am taking readings for the County Council for the last 10 years?', he asked.

This was news to me. I had never heard any thing about it. Neither had Frank Furey when I went breathless to him with this news. 'I'll check it out' he said. He did and found the V notch readings on the river east of Alloon Bridge that showed a supply well in excess of the anticipated demand.

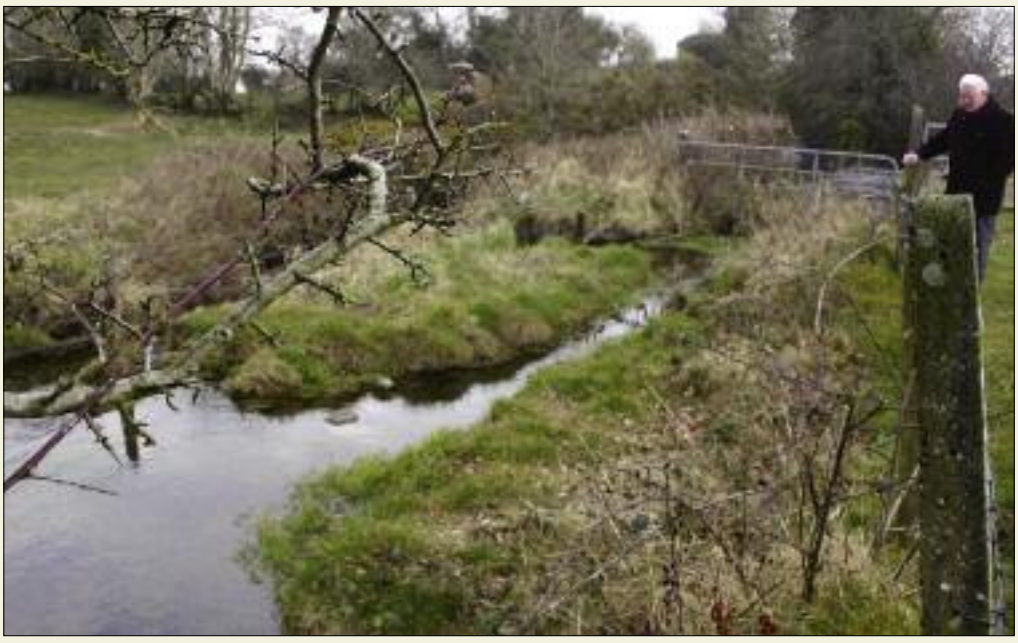
Pump house

So where was the pump house to be built? 'As near as possible to the V notch on the river', announced the engineer. So the pump house was built where it stands today on a site readily given by Paddy Joe Whyte and at no charge.

Similar generosity was shown by others; Paddy Carney of Ballymacward, Michael Kelly of Whitepark, the Dempsey family of Mount hazel, each of whom helped to make the scheme a reality.

The location of the pump house has been questioned many times since. At the time we thought ourselves lucky to have found a source capable of supplying the scheme's needs and neither the County Council nor the Department would agree to its being placed farther back up stream. It could only be put at the nearest point at which the water volume was known.

There were other practical issues also, such as having a pump house where it could be accessed and serviced. Electricity also became a big issue; Alloon had just single phase power at the time. Because of the water scheme development, the area was included in the ESB programme of 3 phase power.



Above: Michael John Kilgannon at the abstraction point from the river that would serve as a source for 40 years.
Opposite page: The old pump house on a site donated by the landowner to the scheme free-of-charge.

Finance

Of course there was the matter of money. Funding of the scheme was from three sources: (a) the local contribution of £60 per house; (b) Government Sanitary Services Grant, (c) Supplementary Grant from Galway County Council.

In addition, there was local voluntary input in terms of physical work and organisation. Local Government estimates put a value on the latter to show that the entire operation was economic.

Collecting the £60 per house, while it took some time, was eventually done.

Contractor

Getting a contractor capable of doing the job was the next issue. In consultation with Ms Danelle in Local Government, we became aware of John Hynes Group Waterworks Ltd who had done several group schemes but none in Galway.

Tom Kilgannon and I travelled to Moyne, County Tipperary, to check out a scheme done by Hynes and Co. There we met two women who almost single-handedly had completed a fine scheme. They were made of stern stuff and gave us useful advice about the contractor, advice we had reason to value as our scheme progressed.

Other journeys were to Raharney, near Mullingar to deal with the reservoir issue with Shay Murtagh, Wavin Pipes in Balbriggan, Holfeld Ltd Stillorgan, in connection with pumps, and several runs to Dublin to the Department of Local Government … most of this at our own expense. Tom and I enjoyed each other's company and regarded the job as part work and part recreation!

Pipe laying began in July, 1971 and lasted for a year. Meantime a 100,000 gallon reservoir was built with a local labour force directed by Shay Murtagh. This job was done by a Ballymacward-Castleblakeney work crew.

There was tremendous enthusiasm about the work and the new reservoir rapidly became a notable landmark.

The building of the pump house in Paddy Whyte's field on the river bank enabled the two high output pumps to be installed.

House plumbing and land water troughs were going ahead at the same time. It was a time of intensive activity. And, as always, there was the concern how would it all work out, would it be a success and would we have sufficient money to cover the cost?

Regular committee meetings were taking place. There were quite a few doubting Thomases who were sceptical. 'Wise' men spoke and they were listened to: one such contribution went as follows: Says he:

'I understand there's going to be 30 miles of pipe in this scheme (the distance of main pipe provided for in the design). Now, it's 30 miles from here to Galway and if I poured a bucket of water into a pipe here how long would it take to come out in Galway?'

Some heads nodded in agreement. And that was not the only one of such absurdities. But some listened to such chat.

We had our fair share of rows to contend with and we had our difficulties – delays in grant payments, deadlines not being met.

A contentious issue was about houses a long way from the main pipe and what was to be done about them. Later on the issue of sufficient pressure arose.

Learning

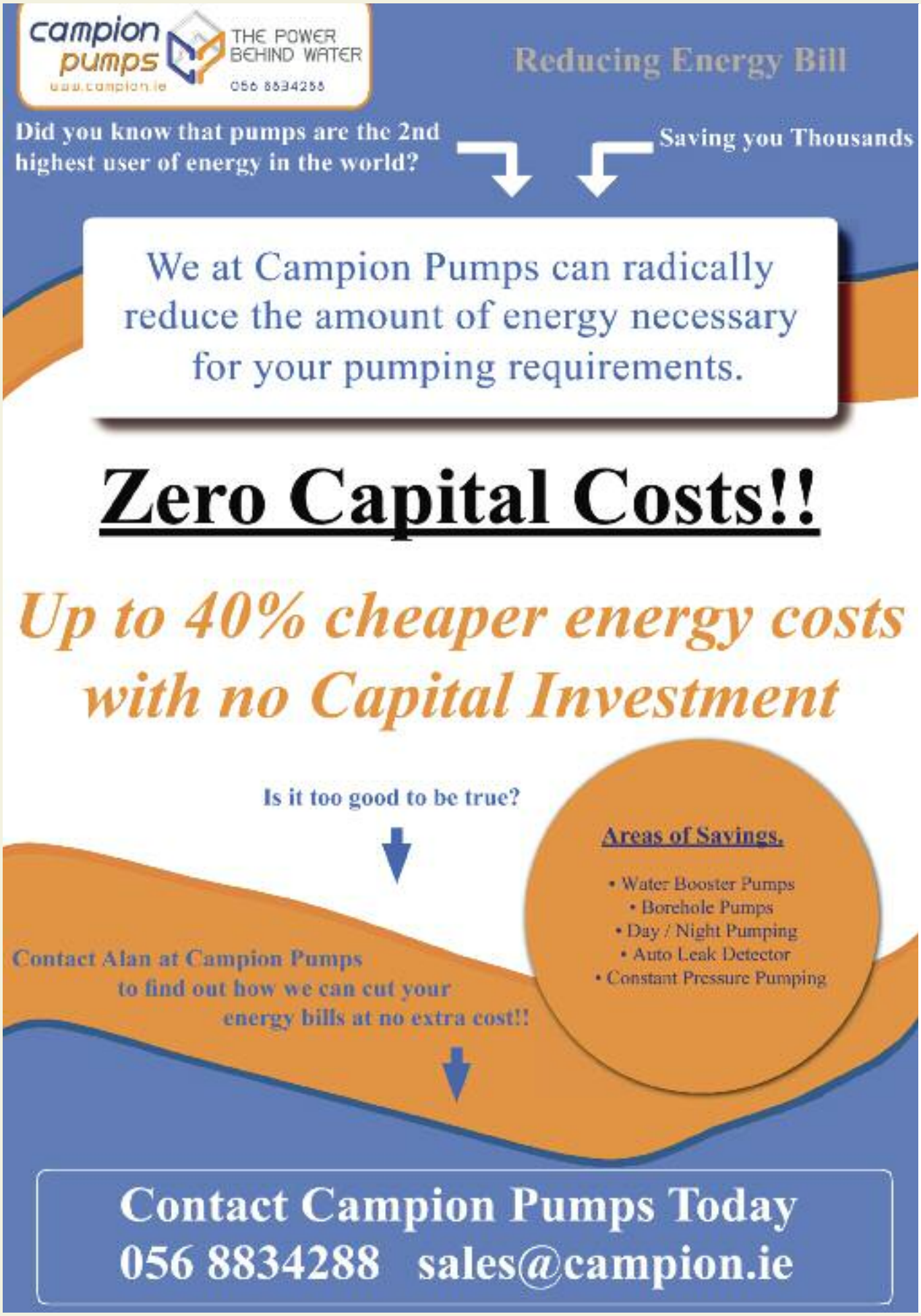
We were all on a steep learning curve as far as water hydraulics was concerned. The truly amazing fact is that despite having zero know-how in the practicalities, we all became quite well informed as the scheme progressed.

The operation of the scheme continued on seamlessly from its construction. It became an endless saga and is so to the present.

I often think I must have had water on the brain all my life, since water has been an issue with me for so many years.

Yet, the scheme did succeed and has provided water throughout the area for 40 years. Not bad for a bunch of amateurs trying their hand at a new experience.

Did we do it? Yes, we did!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What's new in the Water Industry

(mainly as contributed by our advertisers)

Finnegan Insurance

A company well known to group water schemes and to readers of this magazine, **Finnegan Insurance Brokers Ltd** is celebrating the Golden Jubilee of the establishment of its brokerage.

Finnegans began insuring group schemes in 1970 and since then has built up a client base in every county where schemes operate.

In all those years, its claims experience has been good, with just a small number relating to public liability and one or two in respect of property damage.

Over the years, Finnegan Insurance Brokers Ltd has succeeded in having premium rates reduced and the scope of cover improved.

In a statement marking its jubilee celebrations, Finnegans has reminded group schemes of the importance of having adequate insurance cover to protect their exposure to risk. This states:

'The basic cover required is Employers and Public Liability and Products Liability. These provide indemnity to officers and members against claims by third parties for personal injury or damage to property, caused by their alleged negligence.

'Indemnity to County Councils may be included free of charge.

'Many group water schemes have valuable property. It is essential that such property is insured in respect of fire, lightning, storm damage, flooding, explosion, burst pipes, theft etc.

'Insurance cover for mechanical diggers owned by group water schemes, can also be arranged.

'In more recent times, group water schemes have been advised by their National Federation to consider availing of Directors and Officers Insurance. This protects against legal actions taken against them for alleged wrongdoing in their capacity as directors or officers of a scheme.

'The employment practices section of a policy protects against claims made by an employee of a group water scheme, for whatever reason.'

Concluding the statement, Finnegan Insurance has reiterated its commitment to providing 'a fast and efficient service', adding that quotations and cover can be arranged by phone.

Patrick Briody & Sons

Ireland's specialist drilling contractors, Patrick Briody & Sons Ltd, are living up to their logo "Leading by Example" yet again, having taken delivery of a custom built "Environmental Protection System".

Manufactured by Mudslayer, USA, the unit comprises a portable mud cleaning, recycling and discharge solids management system.

The track mounted Mudslayer Limited Access M350 is set up and levelled on its own independent jacks away from the drilling rig.

Patrick Briody & Sons drilling rigs are equipped to divert all discharge groundwater & solids through one or more 6" bauer pipes from the protruding steel liner to discharge groundwater to waste.

To date the discharge of drill water was displacing fines and silt material over a wide area in which the discharged water was dumped ... to the ire of the site/land owner.

More critically, this water was entering surface water courses, with significant solids & fines content causing turbidity issues and environmental headaches to fisheries, county councils and group schemes with surface abstraction sources down gradient of the drill discharge location.

Management of discharge water is more and more the responsibility of the drilling contractor, so an answer had to be found to this problem.

The Mudslayer Limited Access M350 is the answer: water is discharged by bauer pipe from the diverter system at the top of the liner into a hydrocyclone at the top of the unit. This reduces the velocity of the discharged water/solids and allows the shale shaker principle – comprising reducing mesh screens – to filter out solids and fines/silt from the discharge water down to as little as 7 micron particles.

Flocculants can be added to the discharge water which would practically clear it of any residue.

Picture the drill site now using the Mudslayer Limited Access M350; shakers which dump all solids/fines material in a tidy heap at one end of the unit and "cleaned" discharge water at the other end that can be piped away from the drill location and disposed safely to enter the surface water course.

For further information, contact Patrick Briody & Sons Ltd, Rathangan, Co. Kildare 045 524360, or view our website at:

www.briodydrilling.com

PS This website is currently being totally overhauled, so watch this space for news of the relaunch!

Regional Reports

Connacht Region

by
Karen Carney, Paul Connolly and Joe Gallagher

Galway

DECLG funding has been approved to upgrade the existing treatment processes on three of the schemes in the second Galway DBO bundle, as follows:

Lydacan GWS treatment plant is (subject to Part 8 planning permission) to be upgraded to include coagulation, flocculation and sedimentation for enhanced contaminant removal.

Ballinabanaba GWS water treatment plant upgrade is to include slow treatment plant start-up and an automated run-to-waste system to minimise high chemical concentrations of colour, turbidity, iron and manganese during each treated water production run.

CBC GWS – will be upgraded to include additional aeration, coagulation, flocculation and sedimentation to deal with high concentrations of colour, iron, manganese and ammonia contaminants.

***

Draft proposals to upgrade Gallagh GWS treatment plant are being reviewed by the Client's Representative.

***

Glynsk Creggs GWS recently finished installing AMR on all meters and telemetry on bulk meters, as well as GPS mapping all connections. Usage is now monitored on a more regular basis, so that members get early warning of leakage.

***

Esker GWS has taken the first step in universal metering, having purchased meters for their 50 (approx.) members. These will be installed by direct labour, as all connections are located off the public roads and in private property.

***

Good progress is being made in the taking-in-charge of publicly sourced GWS, with 8 schemes having been formally taken-in-charge since March: Castlelambert GWS, Carnmore West no. 1 GWS, Cloch a' Leachta GWS, Cormacuagh GWS, Corofin Ballintubber GWS, Derrydonnell GWS, Glann GWS and Ratesh Ardour GWS.

***

Tierneevin GWS committee is making strenuous efforts to deal with periodic microbiological exceedances and (amongst other actions) has appointed a consulting engineer to devise a robust treatment and monitoring system for their water supply.

Members of Tierneevin GWS committee are addressing periodic microbiological non-compliance issues and hope to complete an upgrade shortly.

***

Carrowmore Clostoken GWS, a new publicly sourced scheme, has been connected to the Loughrea Regional Water Supply.

***

The recent appointment of Seán Corrigan as part-time manager of Leitir Uí Mealláin GWS has been welcomed by the local committee.

Mr Corrigan was appointed to assist with the development and implementation of appropriate management, administration and maintenance structures for the scheme and will hold the position for a 3 to 6-month period.

***

A recent Special General Meeting of Abbey Kylemore GWS voted to adopt the new Model Co-operative Rules.

***

Caherlea GWS – a 21-house scheme near Tuam – has recently set up as a new co-operative.

***

Some of those who attended the recent blessing cermenony at Peterswell/Castledaly GWS water treatment plant.

Upgrade works are well advanced on Kilchreest GWS. The approved works include installation of a validated duty and standby UV reactor and UVI monitor as well as a turbidity monitor and dial out alarm system.

In addition, the scheme secured funding to properly seal its borehole and to erect safety fencing on its reservoir. Repair or replacement of a continuous chlorine monitor on the network is also planned.

***

Nine schemes were represented at a meeting of the Galway DBO bundle 1 Liaison Monitoring Committee on 16 May. The next LMC meeting for DBO 1 is scheduled for 27 August.

***

DBO bundle 2 met on 9 May, with 12 schemes in attendance. The next DBO bundle 2 LMC meeting is scheduled for 8 August.

***

A blessing took place of the Peterswell Castledaly GWS treatment plant on 13 June. Julian Drapiewski of Glan Agua Ltd led those in attendance on a tour of the facility, explaining the treatment processes.

NFGWS development officer, Karen Carney complimented the committee on their hard work over the last number of years and said that the members should be proud of what they have achieved.

Leitrim:

Snag items identified by the Resident Engineer on Sliabh an Iarainn GWS have now almost all been addressed. The scheme recently met with the civil contractor, the County Council and with engineers to evaluate progress.

The GWS manager has succeeded in bringing each of the three individual GWS that formed the Sliabh an Iarainn GWS amalgamation up to a common standard. All members are now on a level charging system.

Mayo

Several meetings have taken place with Aecom (DBO operator for Mayo bundle 1) in recent months at which proposed upgrades to the treatment processes at several plants were considered.

The need for such upgrades arises from major variations in raw water quality on several sources, while issues relating to THMs and severe membrane deterioration are also being addressed.

It is hoped that firm proposals will be available within the next 4 to 6 weeks for consideration by the DECLG and by the group water schemes involved.

***

Work to address structural issues on several treatment plants in bundle 1 are nearing completion.

***

Installation of an attenuation tank to deal with the backwash from the treatment plant at Lough Carra GWS has been completed.

***

The Design Build phase of DBO bundle 2 is now almost complete, with only snagging issues to be addressed on three of the plants.

***

Secondary chlorination is being installed on a second reservoir on the PBKS scheme.

***

A raw water sampling programme is being carried out on Clew Bay GWS's old Cuilmore source on the Skerdagh river. This is to establish if lower colour values could be achieved by blending waters from the old and new sources during periods of heavy rainfall. Issues relating to elevated colour over extended periods during heavy rainfall have been highlighted by the DBO contractor.

***

The Liaison Monitoring Committee for DBO bundle 2 was held recently. The small attendance may have been related to the recent spell of fine weather.

***

A fresh water pearl mussel survey was completed recently on a section of the River Moy at a point where an existing main is due to be replaced. This is part of the interconecting pipework on Callow Lake GWS which supplies the Meelick and Bohola areas. It is hoped that this section of main can be replaced over the summer months.

***

Tender documents are being prepared for advance contract no. 5. This will include construction of an interconnecting water main between Clew Bay GWS and Buckagh Furnace GWS. Work on this should commence in early Autumn.

***

Carha GWS has been connected to a public main and is now getting water from the Ballina Regional Supply.

***

Tenders for the upgrade of Attymass GWS will be sought in the near future. This is welcome news for the people of the area.

***

An Eirgrid proposal to erect pylons in the Swinford area has caused concern amongst Killaturley GWS committee members that their spring source might be negatively impacted if the pylons are located within their zone of contribution (ZOC).

The committee raised its concerns at a recent meeting with Alan McHugh of Eirgrid and has been working closely with hydrogeologist Coran Kelly of Tobins Consulting Engineeers in actively investigating the ZOC and conducting relevant ground water testing.

Representatives of Laghta GWS, with Aecom staff and Paul Connolly of the NFGWS, pictured during a Quality Assurance site visit on 13 April. This scheme is very well managed and uses the NFGWS QA system to good effect. What was also noted during the visit to Laghta and to nearby Drummin GWS was the very high standard of maintenance on the DBO treatment plants, for which great credit is due to the Aecom staff involved.

Roscommon

A recent Rural Water Monitoring Committee meeting heard that funding has been granted by the DECLG towards upgrading work on the treatment plants in the DBO bundle to address major variations in raw water colour and turbidity following heavy rainfall.

Planning permission has been secured for the proposed upgrading works. Construction will commence shortly and is due to be completed in about 12 weeks.

***

Five schemes have secured funding for critical mains replacement:

Mid Roscommon GWS, Oran Ballintubber GWS, Corracreigh GWS, Pollacat Springs GWS and Castlestrange GWS.

***

Four publicly sourced schemes are to be taken-in-charge this year: Lowtown GWS, Baravalley Carrigheen GWS, Woodmount GWS and Culleen GWS.

***

Pollacat GWS is in the process of purchasing some ground around its source, both as a source protection measure and as a site upon which a new treatment process can be accommodated. Planning will have to be applied for in relation to this upgrade, as it involves a change to the original design.

***

At the most recent Liaison Monitoring Committee meeting, DBO service provider, Glan Agua Ltd, explained that improvement works will be completed at the Carnalasson source (on Mid Roscommon GWS) during the upgrading of the water treatment plants.

Ongoing group scheme concerns in relation to the information available on the SCADA system and, especially, from the bulk meters are to be addressed before the next LMC meeting.

***

Brusna GWS expects to carry out repair works on its leaking reservoir in the coming weeks. Serious leakage at the base of the tank has been costly in terms of water loss and excessive (and unnecessary) electricity charges from pumping.

***

Peake Mantua GWS raw water source has tested positive for Cryptosporidium.

The GWS committee wants to install a robust UV system that will be alarmed and give continuous readings.

Committee members also hope to install an effective filtration system to remove colour in advance of UV treatment, as colour can be high after heavy rainfall.

The committee is working closely with Roscommon Co. Co. on its upgrade plan.

Sligo

The County Council and group schemes in the South East DBO bundle having been working hard in recent months to have long-standing boil water notices lifted. Notices on the Corrick, Keash and Castlebaldwin schemes have now been lifted and extensive testing programmes are in place to ensure water safety.

***

Sligo secured funding under this year's Rural Water Programme allocations to install Cryptosporidium barriers in the Sligo South East bundle. It is hoped that the necessary works (mainly UV installation) will proceed soon. Similar works have already been carried out on the North West bundle.

***

At recent LMC meetings for the DBO bundles, correspondence relating to Capital Replacement arrangements and late payments of invoices by some schemes was discussed. Concerns were expressed at the tone and content of this correspondence.

Leinster Region

by Barry Deane, Jean Gibson & Joe Gallagher

Carlow

The Rural Water Monitoring Committee met in April to discuss RWP expenditure during 2012 and the budget for 2013. The county was allocated a total of €295,000 for GWS upgrade work under the 2013 RWP.

***

Ballyellen GWS has been allocated funds towards installing a nitrate removal treatment process.

***

€115,000 is being allocated to Ballinabranna GWS towards water conservation works, including installation of some telemetry on meters.

***

St Mullins Parish GWS has been allocated €150,000 to complete water conservation works that commenced last year. The committee has identified another section of critical mains for replacement.

***

Ballyloughan GWS is also considering a small upgrade to its pump house structure.

***

An incident occurred on the Ballinabranna scheme in June which resulted in the treatment plant failing to pump water to the reservoir. Members were without water for several hours, but the DBO contractor (EPS Ltd) and the scheme worked together to resolve the issue. The contractor is making arrangements to avoid such an incident occurring again.

***

Changes to the St Mullins Parish GWS treatment plant are now complete and these appear to have improved the treatment process.

Kildare

The Rural Water Monitoring Committee met in April.

South Leinster DBO bundle

A Liaison Monitoring Committee Meeting was held in June for all schemes in the South Leinster DBO bundle. Four schemes are entering year six of their contracts and there are some items of plant scheduled to be replaced. DBO service provider, EPS Ltd, will shortly write to each scheme outlining the detail of this and the schemes will be making their application for capital replacement funding to their relevant statutory authority.

€50,000 was allocated towards water conservation works in Gormanstown/Usk. The GWS is currently pumping water above the design of its treatment plant, so this funding will be a great help in bringing the unaccounted for water level down to an acceptable level.

***

€100,000 was allocated towards the taking in charge of publicly sourced schemes and the council intends progressing a number of these in 2013.

***

An additional €50,000 was allocated for new schemes and it is hoped that this money can be spent installing a new publicly sourced GWS in Lowtown, near Athy.

***

Ballyroe GWS hopes to carry out some upgrading works later this year, should funding be made available. The scheme wants to meter all connections and to replace a section of mains that has been consistently breaking due to road traffic. The scheme has appointed an engineer who is currently putting together a proposal for submission to Kildare County Council.

Kilkenny

The Rural Water Monitoring Committee met in April to plan spending of the €250,000 allocated for GWS water conservation works. There was disappointment that no funding has been provided for water quality projects in the county and the committee decided to resubmit its priorities under this heading to the Department in the hope that funding might be made available for these vital projects later in the year.

***

Final account payments will be made shortly for works completed in 2012 on Ashglen Ballydonnell GWS, Annamult Ennisnag GWS and Cuffesgrange GWS works.

***

Funding for water conservations works was allocated to Dunmore GWS, Highrath GWS, Flagmount Brennan GWS Windgap GWS, Lavistown Park GWS and Clifden GWS.

***

The allocation of €100,000 towards the takeover of schemes will allow the Newtown Ballinearla GWS No. 1 and No. 2 projects to proceed along with Bishopslough West GWS and Jerpoint Church GWS.

***

Dunmore GWS held a well-attended AGM in April. The scheme hopes to progress Phase 2 of an upgrade on its distribution mains.

***

Flagmount Brennan GWS has been allocated funds to carry out further upgrading on its network. The scheme also hopes to install a tank to improve chlorine contact time before pumping water into supply.

Having experienced some water quality issues, the committee hopes that the contact tank will help to significantly reduce risks to their supply.

***

The Disinfection and Basic Filtration training course was held in April for 7 Kilkenny schemes that were unable to attend last year's course. Participants found the course very informative and useful.

Committee members of Tubbrid GWS, County Kilkenny at their pump house.

***

There has been a slight delay in the construction of a proposed new scheme (Molassy GWS) near Callan, due to the initial tenders coming back slightly higher than anticipated. However it is hoped that this publicly sourced GWS can commence over the coming months.

***

Newtown Ballinearla no. 1 GWS held a membership meeting in May to inform members that funding has been allocated towards the publicly sourced scheme being taken in charge.

An engineer is preparing a detailed design of the necessary works and it is hoped the project can go to tender as soon as this is completed.

***

Quality Assurance (QA) site visits were completed on Clomantagh Killashulan GWS, Tubbrid Lower GWS and Parks Rathclevin GWS in May.

Laois

QA site visits were completed on the Heath GWS and Attanagh GWS in April. Both schemes have carried out upgrades on their treatment facilities over the past number of years and are operating to a very high standard.

The Heath GWS (which supplies about 320 members) has an excellent and well protected spring source, but hopes to replace the cover on its spring in the near future.

A part-time maintenance person implements most of the scheme's QA measures.

Water demand has dramatically reduced in recent years, due in large part to universal metering and charging based on usage, but also to the vigilance of the committee.

***

Attanagh GWS – which has about 40 members – requested taking in charge several years ago, but funding has not been available since then to complete the necessary works.

In the interim, the committee has been doing a great job. Two years ago a new borehole source was developed and a chlorination system installed. This is operated by the scheme. Since these upgrades there have been no quality exceedances. With increased monitoring of chlorine residual levels on the network using the NFGWS QA system, the committee intends further improving its management of the scheme.

***

Laois FGWS met in May to discuss road opening licences. This followed an earlier meeting between the NFGWS and the County Council roads section at which it was announced that policy in regard to this issue is currently under review and that the council is willing to consider input from the GWS sector.

***

A refresher QA training course for Laois group schemes was attended by 7 GWS.

Longford

The following publicly sourced schemes will secure part of this year's €290,000 RWP allocation towards taking-in-charge: Ballagh GWS, Killashee GWS, Gowlan GWS, Clonturk GWS, Lislea no. 2 GWS, Kilcurry GWS, Foynes GWS and Clonrollagh GWS.

***

Water conservation works are being progressed on Cloontaghmore GWS, Elfeet GWS, Gurteen GWS, Drumacross GWS, Glen GWS, Granardkille GWS and Clooncolligan GWS.

***

Clonmore Kilmore GWS completed upgrading works to their pump house recently, installing a continuous chlorine monitor and a duty and standby disinfection system. These works were identified during a recent QA visit carried out jointly by the NFGWS and Martin Smyth of Longford County Council.

The international Wimbex consortium was in Ireland in mid April, meeting Meath Hill GWS committee members and laying the groundwork for what promises to be an innovative metering project.

Louth

Proposed RWP works under the water conservation heading are to include:

- Completion of reservoir refurbishment works on Tullyallen GWS.
- Completion of the commissioning of the new bored well at the Sheepgrange GWS treatment plant site.
- Source protection works at Mountain Park GWS, as recommended in the Zone of Contribution (ZOC) study completed last year.
- Installation of UV treatment & improvements to treatment plant building at Grangebellew GWS.
- Works at Ballymakenny GWS, including improvements at pump house, chemical storage and provision for stand-by power.

***

The proposed new group water scheme (towards which €77,000 was allocated) is Dunanny GWS. The allocation will go towards establishing a site for borehole abstraction and for provision of treatment.

***

Drybridge/Waterunder GWS is investigating the possibility of installing universal metering on the scheme.

Their 4th borehole is now in full operation.

***

Distribution System Operation & Maintenance training was held on 25 April. There were 13 participants, representing 5 Louth schemes.

Meath

The Wimbex project (wireless automatic meter reading technology) is ongoing in Meath Hill GWS. A two day visit by project participants to the scheme was held in April. This involved meetings and site visits and was attended by consortium members and scheme representatives.

Also in attendance was the scheme contractor and Jean Gibson, NFGWS.

Development is ongoing with the technology hardware and hopefully work will begin on the ground later this summer.

***

Kiltale GWS plans to fit some new bulk meters on their distribution network this year.

Offaly

A recent meeting of the Rural Water Monitoring Committee welcomed the €250,000 allocation towards water conservation/upgrading works on group schemes and the further €100,000 secured for taking-in-charge of schemes.

The meeting also welcomed news that Offaly County Council has received 'greatly reduced' prices for compliance monitoring on group schemes. Many small schemes have had difficulty paying for testing and the new prices will make it more affordable.

On the issue of road opening licences, group schemes are encouraged to send in to the council a list of approved contractors that they propose to use. It is important that any such contractors comply with all H&S requirements when carrying out works on public roads.

***

Clareen GWS has commenced improvements at its source, including construction of a sealed structure that will prevent any surface water entering.

Clareen also plans to replace a number of air valves and to install several of meters on the pipe network.

***

Tubber GWS has been allocated funding towards replacing its existing reservoir. The old reservoir was constructed over 30 years ago through voluntary labour and has now become unsafe.

***

Boher Leamonaghan GWS will carry out water conservation works on its network with the installation of a number of bulk meters located at strategic locations around their pipe network. Usage is quite high, even though the entire system is metered and these meters are recorded regularly. The bulk meters will help pinpoint areas of water loss.

***

Aghancon GWS will carry out source protection measures this year. The scheme's spring source is located in a sloped field and, after heavy rainfall, surface water run-off can enter it, causing colour and turbidity issues. The committee proposes to create an area around the source that will capture surface water and drain it away completely from the spring.

Aghancon is also installing a number of scour valves and air valves to assist with implementation of their quality assurance system.

***

Rath GWS is installing a number of bulk meters to assist with water conservation and hopes to have these fitted with telemetry. Scheme manager, Noel Lyons recently visited a GWS in Roscommon to look at a number of makes and models and this visit has helped Rath decide on what system to purchase.

***

Leamore Leabeg GWS (publicly sourced) will lay 3km of piping as part of their taking-in-charge process. The GWS will also complete works on a site that will no longer be needed once the taking-in-charge is complete. This will be restored to its original state, as agreed with the landowner. Valves, hydrants, meters and marker posts will be installed on the new pipe.

The scheme has made significant improvements in water demand management and also quality assurance implementation over the past 2 years, due mainly to the hard work of Moira Dunne.

Improvement works are underway at the spring source supplying Clareen GWS in County Offaly.

Wexford

Knockina GWS met with the NFGWS and Wexford Co. Co. on 13 May to discuss a proposed upgrade.

The scheme subsequently held a full membership meeting and now has the backing of its members to proceed with works that will be tendered for shortly.

The upgrade will include health & safety improvements and metering of the scheme.

***

A meeting between EPS and T. J. O'Connor & Associates dealt with UV issues and aluminium exceedences on Blackstairs GWS. A number of process changes have been made and these will be monitored over the coming weeks.

***

Contract no. 5 (2km of cross country pipeline) has been completed on Blackstairs GWS and re-instatement works is due to be completed in the coming weeks.

1.7 km of critical mains replacement in the Ballywilliam area (under Contract no. 5) commenced on 10 June.

The commissioning of telemetry equipment on the Ballindoney and Poulpeasty reservoirs is ongoing.

Telemetry equipment is being installed on the scheme's reservoirs at Caim, Tempeludigan, Rathnure, Rathduff and Ballywilliam.

Fencing of the Ballindoney reservoir site is to be carried out in August.

***

Wexford's Rural Water Monitoring Committee met on 11 June to review progress.

Wicklow

Contractors have been appointed to connect Hempstown GWS to the Blessington Regional scheme. The works have now commenced and it is hoped that they will be substantially completed this year.

***

Baltyboys GWS held it AGM in April. The scheme is operating very well and daily water demand has remained at a steady level over the past 12 months.

The scheme hopes to apply for Capital Replacement Funding shortly in respect of items of plant scheduled to be replaced this year.

***

Work recently commenced on the Askinagap GWS borehole to see if raw water quality could be improved.

The scheme has been experiencing high levels of iron and manganese in their supply over the past few years.

Although the initial results following the recent works did show an improvement, there has been a slight deterioration recently.

The group water scheme intends monitoring their supply over the coming months to see if the raw water quality stablises.

Munster Region

by Joe Gallagher & Barry Deane

Clare

The LMC meeting for schemes in the DBO bundle was held in May. This heard that treated water quality on all the schemes was excellent during the last quarter. Items scheduled for replacement under the Capital Replacement Fund are due in the coming months and the process under which this will happen was discussed in detail. The relevant Department Circular on the CRF was presented and the schemes were advised to get three quotations for the works.
DBO service provider, EPS Ltd supplied the schemes with a list of all the items requiring replacement and the associated costs.
EPS explained that they are looking at pre treating the borehole on the Lissycasey GWS to assist in dealing with manganese levels in the raw water. This will be done prior to blending and should improve the quality of the final treated water supplied to the GWS.

***

Clare Rural Water Monitoring Committee met in May to agree the programme of works under the Rural water Programme 2013. Of the €520,000 total allocation towards group schemes, €100,000 is to be spent on the taking in charge of Moyglass GWS and Clonfadda GWS, while €300,000 is being allocated towards upgrading works on the following schemes: Castlecrine GWS, Spancilhill GWS, Corbally GWS, Clarefield GWS, Kilnaboy GWS, Killone GWS and Monvana GWS. A further €100,000 has been allocated to Killone GWS to make improvements to their treatment plant, while €20,000 will assist Ballygannor GWS – a small GWS in the Kilfenora area – to connect to a public main.

***

Monreagh (Tubber) GWS is in the early stages of upgrading its Galway-based pumphouse and treatment facilities. The group recently received an engineer's report recommending a staged approach to what will be a substantial infrastructural investment that will (if approved) include source improvements, installation of appropriate treatment facilities and network rehabilitation.
A members' meeting is to be held to consider the report.

Cork

Ballinguyroe & Tankardstown GWS has almost completed a universal metering project and is now considering installing an AMR system.
The scheme plans to monitor water demand for the remainder of the year to detect water leakage and to begin charging members based on metered usage from 2014.

***

A recently constructed reservoir on Aghern GWS appears to be showing signs of cracking. The scheme is currently working with the contractor to resolve the issue. This water storage tank was completed earlier this year to replace the previous tank due to it cracking!

***

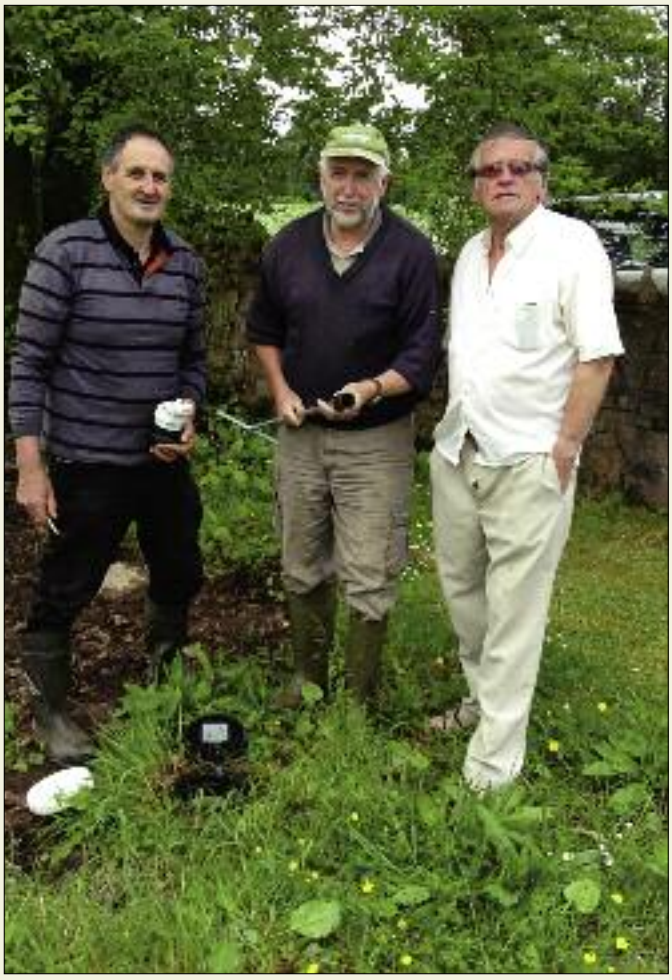
The Rural Water Monitoring committee met in June to plan expenditure of the €400,000 allocated under this year's Rual Water Programme.
€150,000 is for takeover works, €200,000 is for GWS water conservation/upgrade works and €50,000 for new schemes.
The council intends to progress taking-in-charge works on Tragumna GWS, Ballydonegan GWS, Rossmore GWS, Ballyglass GWS, Quary Hall GWS, Clonpriest GWS and Gortnagraiga GWS.
These works will hopefully allow the council to formally take a number of these schemes in charge before the end of the year.
The water conservation/ upgrades allocation will allow works to continue on Aghern GWS and Ballinguyroe & Tankardstown GWS, in addition to a significant mains upgrade on Curraghalla GWS and construction of a new rising mains and reservoir on Curraglass GWS.

***

Walterstown Group Water Scheme has been allocated some funds towards water conservation works and for the installation of a continuous chlorine monitor in its pump house.

Kerry

A Rural Water Monitoring Committee meeting in April considered capital works under the Rural Water Programme for this year.
The main portion of the €1.26 allocation – €800,000 – is for taking-in-charge projects and for works that have carried over from last year on Dawros GWS and Tuosist GWS, as well as for the completion of works on the Rossdohan, Ballintaurig and Inch Group Water Schemes.
A further €460,000 that was allocated towards water conservation/network upgrades will be spent on connecting Bonane GWS and Kells GWS to the public mains.
A sum of €13,000 is being spent on an existing commitment on Caher East GWS.
Loughar GWS and Inch Foileadown GWS have yet to submit proposals for work under the RWP.



Meter installation on Ballinguyroe & Tankardstown GWS.

Limerick

A recent Rural Water Monitoring Committee welcomed this year's increase in funding under the Rural Water Programme. A large proportion of the €758,000 allocation – €400,000 – is for the taking-in-charge (TIC) of Newtown Clarina GWS, a privately-sourced scheme. This is the last scheme in the county requiring major investment to resolve its water quality problems.

***

Knockainey GWS will complete upgrading works to its pump house to improve disinfection and monitoring with a view to securing the safety of the water supply.

***

Kilglass GWS, a small scheme on the Cork border, will also receive funding to improve their treatment process, as they are experiencing issues with water quality.

***

Croagh GWS received funding to replace some critical mains. Whereas the problematic section of pipe is laid in fields, the new section will be laid on the road verge.

***

Fine weather meant that numbers were down at the quarterly Liaison Monitoring Committee meeting held in Murroe on 4 June.

The DBO service provider, EPS Ltd informed the meeting that 4 schemes continue to demand more water than their plants are designed to cope with. On a positive note, however, one GWS had identified a major (and long-standing) leak that was losing 30 m^3 per day!!

Treated water quality across the bundle is excellent. Some schemes are taking their own raw water samples and, where requested, these are being included by EPS in their monthly status reports.

***

Following a recent SGM, Ballybricken GWS has secured agreement to take measures that will address major water loss. To this end, the committee plans to upgrade a large section of mains and to construct a reservoir with 24 hour storage.

The committee has begun collecting local contributions for these works, with a view to applying for capital funding under next year's RWP.

Design drawings for the required works have been prepared and cost estimates secured, so the members are aware of the likely final costs of the works. These will be completed in stages, if necessary.

***

Ballyduff GWS recently completed a full meter reading of their network and identified a number of connections that have excessive water demand. Indeed, 3 connections accounted for almost one third of the water used on the 40-house scheme!!

The recent AGM sanctioned an increase in the rate per cubic metre of water to encourage conservation and members with leaks are being advised to make repairs before their bills go too high.

***

Granagh GWS is disappointed not to have secured capital funding this year towards replacing c. 2.5km of critical mains. Constant repair of leaks on this section is a major expense. Hopefully their bid for funding under the 2014 RWP will succeed.

***

We extend sympathy to the members of Cappagh GWS on the recent passing of, Pádraig Feehan, a great rural water activist who was known far beyond his own parish and county.

Pádraig had a huge influence on the development of Cappagh GWS and on rural water affairs across County Limerick and he remained active until his death in April. Known for his sense of humour and generosity in giving of his time, he will be truly missed.

Sympathy is extended to Pádraig's wife and daughters.

***

Limerick group schemes are delighted that capital funding is being provided for Zone of Contribution delineation on sources and are anxious to avail of this initiative.

Tipperary

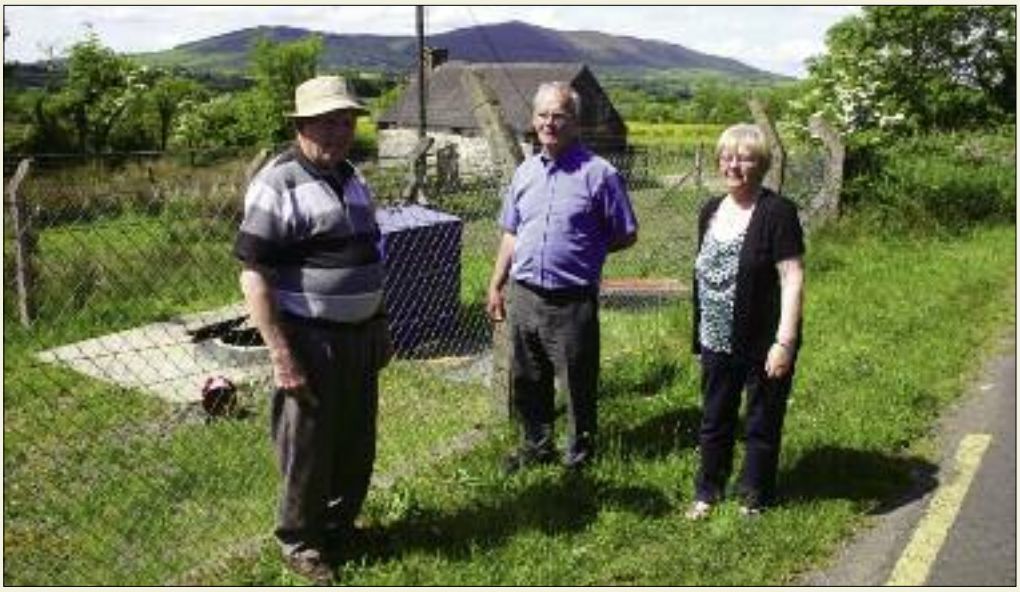
A Quality Assurance training course was held in April for Couraguneen GWS and Plunkett St. GWS, the final two schemes in the county to complete this course. Four other schemes also attended as a refresher and it is hoped that another refresher QA training course will be completed later in the year.

***

North Tipp Rural Water Monitoring Committee met in April to plan spending of the €468,000 allocated for GWS works this year under the RWP, of which €68,000 is for water quality upgrades, €200,000 for water conservation upgrades and €200,000 for taking-in-charge projects.

The water quality allocation will be spent on Ardcroney GWS (installation of a colour and turbidity alarm), Clobanna GWS (installation of a UV system) and Graigue Pouldine GWS (rehabilitation of a borehole source located in the centre of the scheme).

The water conservation funding is to be spent on Moyne GWS (which is looking at upgrading its metering system and installing some telemetry), Newhill Leigh GWS and Brittas GWS (both of which plan to replace sections of critical mains) and Barnane GWS (installation of new valves and bulk meters).



Ballinamona GWS activists, John Dawson, Liam Naughton and Phyllis Naughton look forward to having the zone of contribution to their excellent artesian borehole delineated as part of a new initiative.

The takeover funds will go towards completing the final phase of works on Drombane GWS, as well as starting two new taking-in-charge projects in Castlecranna GWS and Lisgorriff GWS, both of which hope to connect to the Nenagh Regional Scheme.

***

South Tipperary Rural Water Monitoring Committee also met in April. The Council received a total of €280,000 for GWS works including €50,000 for the remaining works to take the Toor GWS in charge and €230,000 for water conservation works. Much of the €230,000 was already committed to water conservation projects that commenced late last year on Fennor Inchorourke GWS and Kilcoran GWS. However there is still about €65,000 available for both schemes to complete phase 2 of their water conservation projects. Both schemes have been in consultation with their engineers and expect to go to tender shortly. The works will include critical mains replacement and metering.

***

Pike Knockshegowna GWS held its AGM in Ballingarry in May. The scheme has a number of leaks which the committee are currently trying to identify but this has proven difficult to date. A number of stop cocks and valves were buried following recent road works and the scheme hopes to work with the County Council to resolve these issues shortly.

***

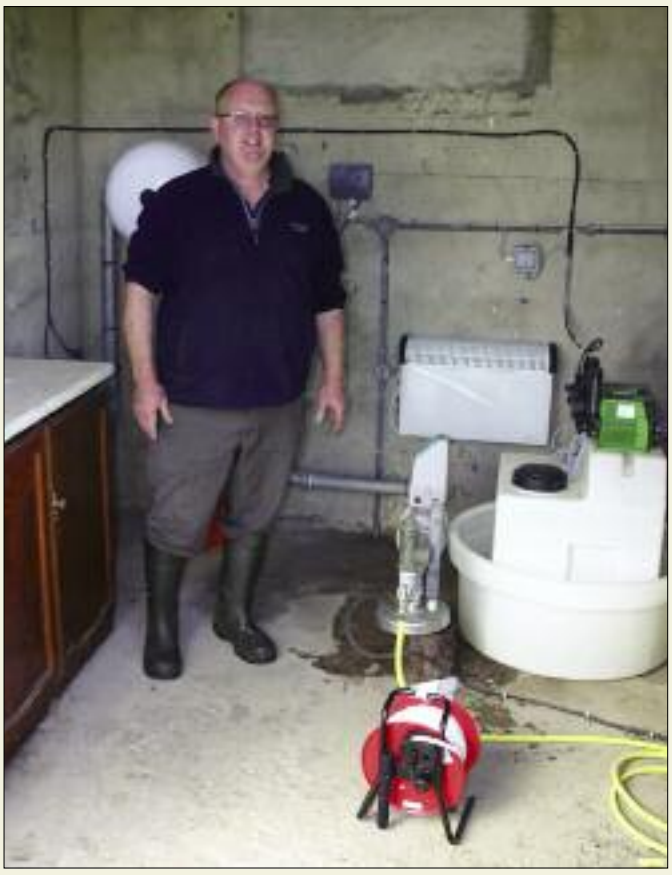
Seven schemes in the Thurles area and six near Lough Derg are hoping to have Zones of Contribution (ZOC) for their sources delineated this year. The schemes involved are currently working with the NFGWS to complete site survey sheets so that when professional hydrogeologists are appointed through the Geological Survey of Ireland a lot of ground work will already have been completed. Information meetings were held on 29 and 30 May with most of the schemes involved.

***

Rahealty GWS held its AGM in June. Members heard that the scheme's pumphouse was struck by lightning in 2012 and that approximately €13,000 of damage was done. Unfortunately the contents were under-insured, so the majority of the replacement costs had to be carried by the scheme. The members were largely unaware of what had happened, as the water supply was back within a matter of a few hours. This was down to the fact that Rahealty has an excellent back-up source (their orginal borehole) and a second pump house, complete with UV disinfection and chlorination. As soon as they became aware of the problem caused by the lightning, the back-up was brought into operation.
Rahealty changed over to a charging system based on usage from the 1st of January this year, having notified their members of this in 2012.
Since the change over, daily demand on the 140 house scheme has reduced by 100m^3 per day and further reductions are expected when the bills are issued in July.

Waterford

A Quality Assurance training course was held in Clonea in May. This was attended by Moonminane GWS, Ballydurn GWS and Carrigarea GWS.
All three schemes found the training course beneficial and some of the schemes are now considering upgrading proposals to submit to Waterford Co. Co. Moonminane is considering works to its treatment facilities and Carrigarea is looking at the possibility of developing a new source.



John Fogarty of Ash Hill GWS, one of 9 schemes in the Thurles area that has been collating source date in advance of ZOC delineation.

Ulster Region

by Jean Gibson & Brian MacDonald

Cavan

With a Rural Water Programme allocation of €500,000 under water conservation measures, the following works are planned this year:

- Network rehabilitation works at Erne Valley GWS, Glangevlin GWS and Clifferna GWS.
- Installation of additional bulk metering & loggers at Drumkeery GWS, Bunnoe GWS, Kildallon GWS, Dernakesh GWS, Mountain lodge GWS, Kill GWS, Corlough GWS, Crosserlough GWS and Dhuish GWS.
- Renovation of an existing reservoir at Farmoyle/ Barraghy GWS.

***

There are capital replacement items due this year on a number of the Cavan DBO schemes. Meetings were held recently with schemes in the West Cavan bundle to go through the details of the Capital Replacement funding explanatory memorandum.

***

Quality Assurance visits were carried out recently on Dernakesh GWS, Lavagh/Ballyheelan GWS, Erne Valley GWS, Poles GWS, Bunnoe GWS, Doobally GWS, Billis/Lavey GWS and CMM GWS.

QA implementation is going well on these schemes, with only minor recommendations being made.

QA visits to the remaining schemes in the county will take place over the coming months.

***

Distribution System Operation & Maintenance training was held in Templeport on 23 April and was attended by 12 participants representing 8 schemes. Most Cavan schemes have now completed this course.

***

Safe Pass training for group schemes took place on 30 May on an outreach from the WSTG centre in Stranorlar. It was attended by 11 participants from 8 Cavan schemes.

Donegal

Meenabool GWS new water treatment plant (see cover page) is in full operation, although some problems with the chlorine dosing system require attention. The scheme has welcomed expert assistance from Éamonn McCabe of Bunn GWS on this issue.

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Toraí is the next target for substantial upgrading. On 17 May, Adrian O'Donnell of (Donegal Co. Co.) and Brian MacDonald (NFGWS) carried out a joint assessment of what is needed to provide a consistent quality drinking water supply for the island community. They toured the scheme with recently-appointed caretaker, Pádraig Ó Duibhir.

Townawilly GWS has a strong record in terms of quality assurance management and is constantly aiming to improve its performance.

Castlerahan, Mountnugent, Munterconnacht (CMM)

building a model of good management

CMM (publicly sourced) GWS has opened an office for the scheme in Market St., Ballyjamesduff. The manager and secretary are based there two days per week, while the scheme's caretaker uses it as his base.

This has increased efficiency, as staff, files etc. are all at the one location. Scheme members are also pleased to have a set place they are free to call to with payments, queries etc.

CMM staff recently completed training in Water Sampling & Water Quality, Health & Safety at roadworks, Safe Pass and Occupational First Aid.

Following this, an extensive flushing programme for the distribution system was drawn up and implemented.

Most consumers are on a text alert system now. This is invaluable for keeping members informed of interruptions due to flushing, bursts etc.

All consumer meters were read recently and the opportunity was taken to note any problems/defects.

As a follow-up, defective meters, as well as damaged surrounds on water meters and damaged marker posts are currently being replaced.

***

In its continuing efforts to ensure a quality drinking water supply to its members and to deal with a periodic THM issue, Townawilly GWS has installed an activated carbon system after its 10 micron and 1 micron filtration processes.

The scheme, which is actively implementing Quality assurance procedures, plans to replace the intake pipe from its lake source and has been in discussions with Donegal County Council in relation to installing a new water storage tank.

GWS participants at a recent Safe Pass training course delivered on an outreach basis by staff from the Water Services Training Group centre at Stranorlar. The trainer is on the extreme left of the picture.

Monaghan

Having received a rural water allocation for group water schemes totalling €150,000, works in the county will include:

- Installation of bulk meters on Magheracloone GWS and Doohamlet GWS,
- Provision of additional sluice valves on Drumgole GWS and also two chlorine analysers on the scheme's distribution network.
- Providing duty and standby chlorine dosing pumps and associated monitoring equipment for the groundwater supply on Tydavnet GWS.
- Installing online process quality monitoring instruments for ph, turbidity and chlorine on foot of the audit of the treatment plant on Glaslough/Tyholland GWS.
- Reservoir refurbishment works at Churchill & Oram GWS.

As a follow on to the preliminary source protection assessment completed on Aughnashalvey GWS source, Kilcorran Lake, the scheme is planning to install fencing around the lake in consultation with the relevant farmers.

***

A number of capital replacement items are due on Monaghan DBO schemes.

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Water loss on the Corduff/Corracharra GWS treated water rising main has still to be resolved. The scheme is in consultation with the DBO operator and hopes to replace the main this year.

***

Digital mapping of the network is ongoing on Drumgole GWS and is expected to be completed in the coming months.

The scheme recently relocated 800 metres of 5" mains from the field to the road. The old pipe had been losing a lot of water.

***

Stranooden GWS recently invited seven local primary schools to tour the treatment plant and over 150 pupils ranging from 3rd to 6th class visited the plant over the last number of weeks.

The tours were conducted by scheme manager, Michael McPhillips, and caretaker Conor Brannigan and included an explanation of the treatment processes.

The plant laboratory and GWS office were also included in the tour as was a demonstration of the practical application of bulk meter telemetry on the distribution network.

The tours were very well organised and were undoubtedly of benefit to the children who showed great interest.

Many of the schools hope to complete the "All About Water" curriculum booklet in the near future.

***

Safe Pass training was organised in Monaghan on 17 April on an outreach basis from the WSTG centre in Stranorlar.

There were 19 participants from 8 group schemes, of which 7 are Monaghan based and 1 from Cavan.

Pupils from Rockcorry NS (top) and Drumacruttin NS (bottom) were amongst 150 pupils to tour Stranooden GWS treatment plant recently.

12th Annual Rural Water Services Conference

Embracing reform without comprising on quality

Wednesday 11th September, 2013

Hodson Bay Hotel, Athlone, Co. Roscommon

Programme

9.00 a.m. – 10.00 a.m.	Registration – Tea/Coffee
First Session	Chairperson: Gerry Galvin, *Principal Adviser*, DECLG/*Leas Cathaoirleach*, WSTG
10.00 a.m. – 10.15 a.m.	Welcome & Introduction: Tom Barry, *Cathaoirleach*, WSTG
10.15 a.m. – 10.45 a.m.	Opening address Minister/Minister of State, Department of the Environment, Community and Local Government
10.45 a.m. – 11.10 a.m.	The Rural Water Sector in the context of the Water Sector Reform Programme Barry Ryan, *Principal Officer*, Water Services Section, DECLG
11.15 a.m. – 11.40 a.m.	Protecting our groundwater supplies at the point of abstraction David Ball, Independent hydrogeologist
11.40 a.m. – 12.05 p.m.	Coping with algal blooms on our surface water sources Dr Eleanor Jennings, Centre for Fresh Water Studies, Dundalk Institute of Technology
12.05 p.m. – 12.30 p.m.	Questions and Answers
12.30 p.m. – 2.00 p.m.	Lunch
Second Session	Chairperson: Brendan O'Mahony, *Chairperson*, NFGWS
2.00 p.m. – 2.20 p.m.	Changing attitudes to water usage and conservation Jennifer Brady, *Water Technology Research Group*, Trinity College Dublin
2.20 p.m. – 2.40 p.m.	Health and Safety Authority's BeSmart tool for GWS safety statements Kay Baxter, Health & Safety Authority
2.40 p.m. – 3.00 p.m.	Managing a publicly sourced group water scheme Pat O'Looney, *Manager*, Loughrea Rural Group Water Scheme
3.00 p.m. – 3.15 p.m.	Questions and Answers
3.15 p.m. – 3.45 p.m.	Tea/Coffee
Final Session	Chairperson: Frank Dawson, *County Manager*, Roscommon County Council
3.45 p.m. – 4.10 p.m.	Maintaining a Quality Rural Water Service in an evolving environment NFGWS speaker
4.10 p.m. – 4.30 p.m.	Water Framework Directive – implementation update and Food Harvest 2020 challenges Micheál Ó Cinnéide, *Director*, Office of Environmental Assessment, EPA
4.30 p.m. – 4.40 p.m.	Questions and Answers
4.40 p.m. – 5.00 p.m.	Closing Address Gerry Galvin, *Principal Adviser,* DECLG/*Leas Cathaoirleach,* WSTG

To book for this year's Rural Water Conference, contact Julie Brannigan at NFGWS, 24 Old Cross Square, Monaghan.
Tel: 047 72766 **Email:** julie@nfgws.ie