

**Jane Davidson AC/AM**

**Y Gweinidog dros yr Amgylchedd, Cynaliadwyedd a Thai  
Minister for Environment, Sustainability and Housing**



Llywodraeth Cynulliad Cymru  
Welsh Assembly Government

Eich cyf/Your ref PET-03-238-241  
Ein cyf/Our ref JD/06003/09

2 OCT 2009

Val Lloyd AM  
Petitions Committee  
National Assembly for Wales  
Cardiff Bay  
Cardiff  
CF99 1NA

Handwritten signature and date: 20 October 2009

20 October 2009

Dear Val,

Thank you for your letter of 2 October 2009 regarding two petitions the Petitions Committee considered at its meeting on 22 September 2009, namely; P-03-238 Pollution of the Burry Inlet and Carmarthen Bay and P-03-241 'Save our Sewers' Llanelli.

The Committee agreed to ask for my assistance in its consideration of these petitions by requesting information relating to;

***The agencies that are responsible for the sewerage system in Llanelli.***

In Llanelli and the surrounding area, I can confirm that the water company, Dŵr Cymru Welsh Water is responsible for the sewerage system and the Environment Agency has an obligation in ensuring water company discharges are compliant with European Council Directives to protect the environment.

***The level of responsibility that the Welsh Assembly Government has for preventing the pollution of the Burry Inlet and Carmarthen Bay.***

The Assembly Government is responsible for the implementation of a number of key European obligations relating to the prevention of pollution or protection of water quality which are relevant in this area. These include the Shellfish Waters Directive, the Urban Wastewater Treatment Directive and the Water Framework Directive.

The Environment Strategy for Wales and its Action Plan were launched in May 2006, and sets out the Welsh Assembly Government's vision for the environment over the next 20 years. The vision is of a Welsh environment that is clean, healthy, biologically diverse and valued by the people of Wales. Its outcomes will contribute to addressing climate change, promoting sustainable development, and improving our social and economic wellbeing.

On the 31 March 2009, I launched the Welsh Assembly Government's Strategic Policy Position Statement on Water which builds on this commitment by setting out my core principles which are ensuring access to safe drinking water, maintaining water and sewerage services at an affordable price and compliance with statutory obligations that

drive all round water quality. As our Environmental Regulators the Environment Agency pursue these commitments on behalf of the Welsh Assembly Government.

***The actions that the Welsh Assembly Government is taking to prevent the pollution of the Burry Inlet and Carmarthen Bay and to improve the sewerage system in Llanelli.***

The Welsh Assembly Government is closely monitoring the situation in the Burry Inlet and Llanelli area and is in discussion with the Environment Agency, Dŵr Cymru Welsh Water and other interested parties with regards to waste water discharges, the impact of proposed developments in the Llanelli area on sewer capacity, cockle mortalities in the Burry Inlet and water quality in the Lougher Estuary.

As part of the commitment outlined in the Environment Strategy for Wales and my Strategic Policy Position Statement on Water, I can confirm that I along with Elin Jones, Minister for Rural Affairs have asked the Environment Agency as the competent authority to lead an investigation into increased cockle mortalities with the Burry Inlet and Carmarthen Bay. The role of Welsh Assembly Government officials will be monitoring the programme and checking the progress of the investigation.

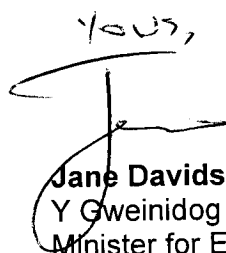
I can confirm that my officials will receive bi-monthly reports from the investigation team to monitor progress on the investigation and they have specifically reviewed the work packages that make up the overall programme that was agreed by the investigation team.

The Assembly Government has made it clear that it expects the regulator, the Environment Agency, to ensure that all regulations are being complied with and to investigate where problems appear to be occurring.

Finally, the Committee asked for details of the implications for the Welsh Assembly Government if breaches in EU law occur as a consequence of the sewerage spills. In particular, the Committee has asked whether any penalty imposed on the UK Government as a result of infraction proceedings would be passed on to the Welsh Assembly Government.

The position is set out in the Concordat on the Co-ordination of European Union Policy Issues which is annexed to the Memorandum of Understanding drawn up between the UK Government and the devolved Governments in 2001. Paragraph 4.25 of the Concordat states that to the extent that financial costs and penalties imposed on the UK arise from a failure of implementation or enforcement by a devolved administration on a matter falling within its responsibility, responsibility for meeting these will be borne by the devolved administration.

In summary, I want all the bodies in the area to work together to find a way forward which respects the shared responsibility to protect the environment and meet our obligations under various European Directives. I hope this explains the position; I will continue to monitor the situation very closely but in the meantime, please do not hesitate to contact me if you have any further queries.

Yours,  


**Jane Davidson AM**

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Llywodraeth Cynulliad Cymru  
Welsh Assembly Government

Eich cyf/Your ref P-03-238/241  
Ein cyf/Our ref JD/06385/09

Val Lloyd  
National Assembly for Wales  
Cardiff Bay  
Cardiff  
CF991NA

14<sup>th</sup> December 2009

Dear Val,

**PETITIONS P-03-238 POLLUTION OF THE BURRY INLET AND P-03-241 SAVE OUR SEWERS – LLANELLI STAR**

Thank you for your letter of 16 November 2009 regarding Petitions; P-03-238 Pollution of the Burry Inlet and Carmarthen Bay, and P-03-241 'Save our Sewers' Llanelli, which were considered at the Petitions Committee meeting on 10 November 2009.

Following my earlier letter to you dated 20 October 2009, the Committee agreed to seek further clarity on specific actions that I have taken to address the issues at the Burry Inlet and in Llanelli.

This letter provides an overview of the actions undertaken at Burry Inlet and Llanelli, which I hope the committee will find useful in considering the two petitions.

**Actions at Burry Inlet**

In relation to sewers in Llanelli, there has been substantial investment over the last decade by Dwr Cymru Welsh Water (DCWW) to improve sewage treatment provision, including full treatment for sewage from the north shore of the Burry Inlet at a new treatment works at Bynea. This work was required to meet the requirements of EU Directives covering Urban Wastewater Treatment and Bathing Waters. The treatment works at Bynea provides full biological treatment, nitrogen removal and disinfection of sewage flows, compared to the former, much more basic treatment. The discharge from Gowerton Wastewater Treatment Works (WWTW), which also discharges into the estuary, is provided with a similar, improved high level treatment process.

Further improvements are planned by DCWW through a scheme (costing around £10 million) to provide additional capacity and storage of storm sewage at

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Northumberland Pumping Station and for disinfection of overflows that occur at Northumberland and Llanelli STW. This scheme should be completed during spring 2010.

Action is also being taken by the Llanelli Technical Flood Group. This group is tasked with investigating flood risk from all sources in Llanelli with the objective of identifying current flood risk problems and identifying options to resolve those problems. Its remit includes work to progress the removal of surface water from the combined surface water and sewerage collecting system serving the area. The group consists of representatives from the Environment Agency Wales (Chair), Carmarthenshire County Council and DCWW.

Following Ofwat's final determination of water company business plans, DCWW has included Llanelli as one of eight sites for its Surface Water Reduction Strategy. The aim of this project is to reduce surface waters contribution to the sewerage network, thereby reducing the frequency and quantity of storm discharges to the Burry Inlet.

### **Investigation of Cockle Mortality**

As I have advised previously as part of the commitment to maintaining and improving water quality as outlined in the Environment Strategy for Wales and my Strategic Policy Position Statement on Water, I and Elin Jones, Minister for Rural Affairs have asked the Environment Agency to lead an investigation into increased cockle mortalities with the Burry Inlet and Carmarthen Bay. The investigation is supported by a research group of academic institutes and a working group consisting of interested parties such as representatives of the hand gathering cocklers. Welsh Assembly Government officials are closely monitoring the programme and checking the progress of the investigation on a regular basis

It is important to fully understand the reasons for the raised cockle mortality in the Burry Inlet. There are many theories including water quality, but there have also been suggestions that increases in water and air temperature, change in sediment depth, parasites, blue green algae, density of cockles, lack of food and genetic similarities of the cockle populations may be causing the problems.

The investigation began this spring and expected to last two years, before the cause(s) is identified and solutions are proposed. I can confirm the Environment Agency is investigating all possible causes of the cockle mortality including impacts of pollution from sewage and both Elin Jones and I have given additional financial support to the investigation.

A timetable recently sent to my officials by the Environment Agency indicates that the research group, consisting of the Institute of Estuarine Coastal Studies,(IECS) (University of Hull), Bangor and Swansea Universities and other partners are planning to meet on the 10<sup>th</sup> December to discuss and collate their various results. Welsh Assembly Government policy officials hope to arrange a meeting in early January with the Environment Agency Wales in advance of a working group meeting planned for February 2010. Officials are advised by the Environment Agency that an interim report will present the latest results of the investigation to the Welsh Assembly Government in early January.

You may also be interested in a report commissioned by DCWW look at nutrients and water quality in the Burry Inlet. This report 'Loughor Estuary – Water Quality and Nutrient assessment' has shown no adverse impact on the receiving water body. The report is available from officials in the water branch, please contact Sarah Melkevik on 029 2082 3192.

I hope this further clarifies the position; but in the meantime, please do not hesitate to contact me if you have any further queries.

Yours,

A handwritten signature in black ink that reads "Jane Davidson". The signature is written in a cursive style with a large, looped initial 'J'.

**Jane Davidson AM**

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Minister for Environment, Sustainability and Housing

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Welsh Assembly Government

Eich cyf/Your ref P-03-238/241  
Ein cyf/Our ref JD/00300/10

Christine Chapman  
Chair, Petitions Committee  
National Assembly for Wales  
Cardiff Bay  
Cardiff  
CF991NA

28 February 2010

*Dear Christine,*

**PETITIONS P-03-238 POLLUTION OF THE BURRY INLET AND P-03-241 SAVE OUR SEWERS – LLANELLI STAR**

Thank you for your letter of 2 February 2010 requesting further information on the key findings of the interim report on cockle mortality, and on the Dwr Cymru Welsh Water scheme to supply additional capacity and storm sewage in the area.

As part of the ongoing investigation at Burry Inlet led by the Environment Agency Wales at the request of the Welsh Ministers, Professor Mike Elliott of Hull University is co-ordinating the research programme for the cockle mortality investigation. The draft interim report will be circulated to the cockle working group in advance of their meeting on 19 March 2010, when they will have the opportunity to discuss the preliminary findings with Professor Elliott. The interim report will then be the subject of wider public consultation with all the interested parties and stakeholders. When I receive a copy of the interim report I will write to the committee outlining its key findings.

The Dwr Cymru Welsh Water scheme to reduce discharges into the Burry Inlet should be completed by 31 March 2010. This scheme will allow greater storage of storm water including sewage and the reduction of screened storm sewage discharges from Northumberland pumping station and Llanelli waste water treatment works storm tanks under high flow conditions. The scheme also introduces ultra violet disinfection of the settled storm runoff to reduce the bacteria present in the discharged wastewater. The Environment Agency Wales has analysed trials of ultra violet disinfection on wastewater at both Cog Moors wastewater treatment works (Barry) and at Llanelli and is satisfied that the bacteriological load is reduced through UV disinfection.

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In addition Dwr Cymru Welsh Water has allocated £2million for the removal of surface water in the Llanelli sewerage system. This work includes diversion of surface water only drainage currently flowing into the combined system, resolution of infiltration problems and the introduction of bio-retention. These actions will reduce the surface water entering the combined system and further reduce storm discharges.

Please don't hesitate to contact me if you require any further information.

Yours,



**Jane Davidson AM**

Y Gweinidog dros yr Amgylchedd, Cynaliadwyedd a Thai  
Minister for Environment, Sustainability and Housing

Supporting information provided by the petitioner (Pollution of the Burry Inlet)

From Rhys Williams (Alun Davies AM Support)

Dear Gareth

As the lead petitioner in relation to the Pollution of the Burry Inlet I should like to submit the following evidence for consideration by the petitions committee.

REPORT ON SITE VISITS TO WELSH WATER ESTABLISHMENTS IN LLANELLI ON FRIDAY 5TH FEBRUARY 2010 and the possible consequences of NEW PROPOSED Sewage TREATMENT PROCESSES ON CURRENT & FUTURE development  
ARRANGED BY ANDY IRVING ENVIRONMENT AGENCY

The report is to be found in the attachment above. Cllr Bill Thomas would be prepared to speak to the report.

Below, for your information, is an email from Phil Coates who is the Sea Fishery Chief Officer for the area. It was sent to Cllr Bill Thomas who would be happy to speak to it to the committee. I have copied it for your information. Mr Coates was surprised by what Swansea University had told him the previous week about the 2009 sample results, namely that cockles had died in the sand before April. From this he concludes what petitioners have been saying since the disaster of 2005. Mortality begins in the sand and mud, in the sediment that they believe is polluted.

It has taken the university one year to make the Sea Fishery Chief Officer aware of this factor. We wonder whether they have told anyone else. and whether there has been any follow-up action has been undertaken such as core sampling. There many other questions. However, when it was announced that the EA would head up the task force this would surely be part of their responsibility and way of proceeding.

I formally request, therefore, that the Environment Agency is requested to provide to the committee any information it has obtained.

I understand that a meeting took place between representatives of the EU and UK governments on 27 January, 2010. Could the committee be informed as to any conclusions made?

Yours sincerely

Rhys Williams



Phil Coates SWSFC <>  
1 February 2010 16:49

To: wgthomas

Cc: RobertGriff, GLYNHYNDMAN

Hi Bill

I still have had no confirmation from Carms CC as to if the beds are closed or not. In email they said yes, then immediately said merely downgraded LT B to C.

The S&WW Local Action Group is a relatively recent advent. I am not sure that the procedures are statutory, but the accompanying notes probably explain that. If not then it is CEFAS who are the responsible body in the UK and [andrew.younger@cefas.co.uk](mailto:andrew.younger@cefas.co.uk) is your man.

EA sampling is insufficient to draw any conclusions re water quality. Ditto the monthly Public health sampling of shellfish flesh that we do for Carms CC really. But this itself is not helped by the inherent variability of the results. Ask any Public health lab - you can take 10 samples of the same shellfish and have 10 different results. Maybe that is not too bad if the range is eg 60000 e coli to 59,000 - but it makes a big difference if the range goes from 230 (A) grade to 60,000 (D grade & prohibited).

All(incl EU) realise that the system is very imperfect, but it is practically the best that can be done until other testing becomes realistic (eg mass spectrometry / Chromatography) rather than agar cell culture.

BTW - Swansea Uni told me something that surprised me last week.:  
1. On 2009 sampling they said that when they commenced in March, the cockles were already dying. I said the Ind did not see them on the surface until April. They said that cockles on the surface are NOT a good indicator of the amounts dying. There is a lot going on below the sands. I do not know what that means in practice, except that survey to establish causes must start even sooner than people think. Hence our keenness to get things started now  
2. The cockle physiology (preserved sections) showed that cockles spawned (as I recall ) in June - much much later than I had thought. If so that means that cockle deaths might not be directly related to the act of spawning.

Anyhow, I await the publication of Swansea's report alongside the other 2009 scientific studies. These appear to be delayed - I had expected to have seen them in November - at least as a draft. The Mortality WG will then meet after the results have been published. I wonder what holds it all up?

Regards

Phil

P J Coates, Director

VISIT TO CAMBRIAN PUMPING STATION

Cllr W. G. Thomas  
114 Old Castle Road  
Llanelli  
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# **REPORT ON SITE VISITS TO WELSH WATER ESTABLISHMENTS IN LLANELLI ON FRIDAY 5<sup>TH</sup> FEBRUARY 2010 AND THE POSSIBLE CONSEQUENCES OF NEW PROPOSED SEWAGE TREATMENT PROCESSES ON CURRENT & FUTURE DEVELOPMENT**

ARRANGED BY ANDY IRVING ENVIRONMENT AGENCY

Author Cllr W.G.THOMAS

Co Authors The Cockle Co-operative Officers.

### ESTABLISHMENTS VISITED.

Cambrian Pumping Station

Llanelli Treatment Plant

Northumberland Place Pumping Station.

### Attendees by Groups

- 1 Welsh Water Personnel.
- 2 Environment Agency Personnel
- 3 Llanelli M.P. & Members of Flood Forum.
- 4 Additional Participation by contractors on site at Llanelli Waste Water Treatment Plant and Northumberland Place.

Background Papers researched (some examples in Appendix 1)

- Urban Waste Water Directive & Regulations
- Llanelli Beach Report-Carmarthenshire County Council
- Llanelli Surface Water Removal- Welsh Water.
- Guidelines for managing water quality impacts within UK Marine Sites October 1999 prepared by UK Marine
- Improvements to Storm Sewage overflows impacting the Loughor Estuary
- OFWAT information notes on the urban waste water treatment directive.
- WISE –water information system for Europe
- Environment Agency Web Pages
- DEFRA web pages
- Welsh Water sewage flow schematic (1995 flow figures).
- Drawing of existing & new development sewage infrastructure.
- Wag letters from Minister & Chair of petitions committee.

### **Contents of Appendix one.**

Inspection chart of the Llanelli WWTW outlet pipe readings for in-combination discharges of treated and cleaned effluent.

Welsh Waters' Llanelli Surface Water Removal report.

Welsh Waters' improvement to storm sewage report.

(Environment agency web site maps of estuary & rivers condition yellow indicates moderate, brown indicates poor, Blue Sensitive water)

Welsh Water sewage flow schematic (1995 flow figures).

Drawing of existing & new development sewage infrastructure.

Wag letters from Minister & Chair of petitions committee.

### **Background of Site Visits**

The Llanelli MP Nia Griffiths arranged with Andy Irving the Llanelli based Environment Flood Prevention officer for the visits to take place. Welsh Water provided the transport and the guides to each facility. The report will concentrate on summarising the important salient points concerning the visit and the impacts and implications on already known factors.

### **Background information on flows**

The schematic provided by Dr Lewis Keil a Welsh Water Scientist is used to follow and understand the flow of sewerage to Cambrian Place, Northumberland Place and Llanelli Waste Water Treatment Works. The Schematic represents the changes introduced when the new W.W.T.W opened at Pen Y Bryn Bynea in 1997. By following the progress of the flow chart it can be clearly established that there are eight outfalls to the sea between Burry Port and the Loughor Estuary. These outlets have all discharged to sea at some time during the past thirteen years since the three older treatment plants of Northumberland Place, Pwll, Burry Port and Bynea were closed. However telemetry equipment may not be present on every outlet and the one's that do have telemetry have a long

history of maintenance problems, therefore the true position of overflows and discharges is patchy to say the least. Of the three facilities visited two are in the middle of construction processes one has been modernised and completed. The Llanelli W.W.T. works I am informed by the Environment Agency is subjected to daily peak period flows during morning noon and evening, however this confirmation of daily peak flow periods did not have any indication of volume. In the mean while UV light treatment is now being put in place for the known sewage overflow volume during wet weather peak flow periods for Northumberland Place pumping Station and Llanelli wwtw. The Northumberland place peak flow rate has now been confirmed via applications for discharge consents placed in the press adding UV light treatment prior to the discharging of storm sewage effluent. The Estuary is a protected area and is the subject of a statutory limit of ten spills/overflows per year on average these spills are known to be more than ten times that amount along this small area of the coast.

#### Obligations laid down by statute for the treatment of Urban Waste Water.

The WISE web site, the DEFRA web site, The Environment Web site and Ofwat web site have similar information on the four main principles laid down as obligations.

- Designate Sensitive areas (sensitive water bodies) in accordance with three specific criteria, and to review their designation every four years
- Identify the relevant hydraulic catchment areas of sensitive areas and ensure that all discharges from agglomerations with more than 10 000 p.e. located within the catchment shall have more stringent than secondary treatment.
- Establish Less sensitive areas if relevant
- Establish a technical and financial programme for the implementation of the Directive for the construction of sewage collecting systems and wastewater treatment plants addressing

treatment objectives within the deadlines set up by the Directive (and the accession treaties for new member states).

The regulation aspects of the Directive require Member States to:

- Establish systems of prior regulation or authorisation for all discharges of urban waste water.
- Establish systems of prior regulation or authorisation for the discharge of Industrial waste water into urban sewage collecting systems to ensure:
  - That no adverse effect on the environment (including receiving waters) will occur.
  - Ensure that all urban waste water generated in agglomerations of more than 2000 p.e. are supplied with collecting systems, and that the capacity of these is such that all urban waste water is collected, taking account of normal local climatic conditions and seasonal variations
  - Ensure that National Authorities take measures to limit pollution of receiving waters from storm water overflows via collecting systems under unusual situations, such as heavy rain
  - Ensure that waste water treatment is provided for all agglomerations at the level specified by the Directive and within the required deadline:
    - Secondary Treatment is the basic level that should be provided, with more stringent treatment being required in sensitive areas and their catchments.
    - Ensure that technical requirements for the design, construction, operation and maintenance of waste water treatment plants treating urban waste water are maintained and that they ensure adequate capacity of the plant and treatment of urban waste water generated in agglomerations taking into account normal climatic conditions and seasonal variations.

Rivers and Estuaries condition status as per environment colour codes yellow moderate, brown poor.

- Ensure that the Environment is protected from the affects of the discharge of wastewater.

The above are a limited list of the requirements serving a purpose for this report.

#### Cambrian Place Pumping Station.

This is an old pumping station that has been changed twice in the past thirteen years. At one time it may have been used to pump a percentage of the town's sewage from Cambrian to Northumberland Place treatment Plant whilst the rest was transferred to Pwll Treatment Plant. Today Cambrian is a transfer pumping station in a line of pumping stations that stretch from Ashburnham in the West to Northumberland Place pumping station in the East. In 2007/08 we made a FOIA request to the Environment Agency requesting sight of discharge consent reviews, which under the 1991 Water Resources Act should be applied every two years. The reply I received was that consent was granted for Cambrian Place in 1974 and had not been reviewed. The pumping station has now been modernised, has storage capacity, 6 mm screens, filtration and can pump out effluent at a rate of 1500 litres per second to the river Lledi as part of a flood prevention scheme for local homes. The excessive flows arriving at Cambrian during wet weather was causing floods. However the action of pumping out 1500 lps into a Natura site and Sensitive designated Water Body breaches European Directives and Regulations including amongst these is The Urban Waste Water Directive. **From the above list of obligations it can be clearly understood that this facility at Cambrian Place does not meet the Urban Waste Water directive or regulations. Any solids of fewer than 6 mm + chemical+ nitrate or phosphate or ammonia is pumped out into a river. The project engineer stated he was unaware of the past history or of legislation CONSTRAINTS.**

#### The Llanelli Waste Water Treatment Works.

The visit to the works was undertaken without anyone leaving the bus due to the ongoing construction work. However the visit was worthwhile as it established the following



Rivers and Estuaries condition status as per environment colour codes yellow moderate, brown poor.

- New Construction work for U.V light treatment of the 780 lps sewage polluted water overflows.
- An extra 50 lps of effluent identified from the nearby Council run travellers encampment.
- The volume of 499 lps of clean water being discharged into the Estuary is discharged via the **same pipe** at the **same time** during peak flows. Therefore; overflows/storm flows; of sewage polluted water, are mixed with clean water, before entering the Estuary, this situation is a repeat of what was discovered at the site visit to Gowerton Treatment Works. *This does not appear to be cost effective as the cost of running the treatment plant during overflow periods is prejudiced by the discharge of dirty water to the same outlet pipe.*
- When the storage tanks are full the overflow went straight out via 6 mm screens without much settlement. This has the same effect as above
- This Turbid waste water that will be treated by UV light only, before being discharged, any solids under 6 mm will be discharged as well.
- Any nitrate, phosphate, ammonia or nutrients will be discharged into the Estuary from this point during peak periods of overflows.

#### **Observation comments on this process**

**The above findings means that the claims made by the WAG Petitions Chair of full treatment to all North estuary discharges is untrue. Indeed discharges from both treatment works on either side of the Loughor Estuary is prejudiced by poorly designed outlet pipes. At times of peak periods the discharge from both is polluted and does not meet the Urban Waste Water Directive or Regulations. Of all the sewage arriving during peak periods AT Llanelli works it appears that only 43% can be fully treated through the treatment plant, and that, is then polluted on its journey to the sea. The above situation does not meet with the principles and obligations laid down in The Urban Waste Water Directive or Regulations for waste water treatment works for any agglomerations.**

### Northumberland Place Pumping Station.

The final leg of the visit was to the pumping station that had once been a treatment plant. It is the area in Llanelli Towns' sewage infrastructure all the sewage effluent from the West, the North, North West, and parts of the North East arrives at, via the pumped sewer infrastructure. The Old Victorian sewer system having been replaced in the late 1980's by a new larger concrete pipe system designed at the time to deliver sewage and also store sewage under the Town of Llanelli. The modernisation of the treatment facilities in the Llanelli agglomeration has changed the flow of sewage to the extent that the three treatment plants in the West were closed and all the sewage pumped to the new treatment plant in the East, a journey of some fifteen miles. The journey for at least 50% of that sewage ends at Northumberland place pumping station as in peak periods we have a flow of at least 4255 lps and only a pass forward ability of 880 lps,

### Conclusion on the collection of waste water

**It would appear from Welsh Water Publications and reports that approximately 20% of the total sewage collected for the agglomerations of Ashburnham, Burry Port, Pwll, Llanelli Town, Llanelli Town North and Llanelli Town East are passed on for treatment during peak periods this does not take account of the regulations laid down in the urban waste water obligations. The project engineer stated he was unaware of this background information.**

### Further discoveries.

The new design project for this facility has changed the pumping station into a partial treatment facility with an application for discharge to sea via a beach outlet of partially treated sewage effluent. The requirement and obligations under the urban waste water directive and regulations of treatment for sewage collected from agglomerations of more than 10,000 people prior of discharge into Sensitive bodies of water is "**more stringent treatment than secondary**" at this point of discharge the treatment for up to 80% of the total collected during climatic conditions and seasonal variations does not meet the statutory standards set by regulation. The only treatment is 6 mm screens and UV light all solids

fewer than six millimetres are discharged into sensitive waters, possibly all trace elements of chemical, nitrates, phosphorus, ammonia and nutrients are discharged in an uncontrolled fashion as to have no idea what is being discharged in what amount.

It is claimed that the first flush of concentrated sewage is caught in the new storage tanks being built at the new treatment area. It was agreed on site with the project engineer that these tanks would fill in around thirteen minutes. This volume of storage will accommodate very little of the sewage contained within the infrastructure system, which includes over a mile of very large concrete pipes under the Llanelli Town Centre. There are also two very large newly constructed underground storage tanks one in the West at Pwll and one in the North East at Llanerch which we were informed during the consultation process by Welsh Water Contractors Morrison's, are designed to hold back solids and let dirty water go. This being the case a second flush of concentrated sewage enters the sewage system at some point during inclement weather. These storage tanks are under a park and a football field the approximate length and width being that of the football field. Some Welsh Water personnel have claimed the tanks work the other way around and hold back the water letting the concentrated sewage go first. This being the case it makes matters far worse as this concentrated sewage is many miles away from the Northumberland storage tanks and will take some considerable time to reach the new treatment facility at Northumberland place. The consequence of this is that the storage tanks are full, and this collection point for the agglomeration it serves is simply overwhelmed and the sewage is sent out to sea with very little treatment. Northumberland Place experienced **Ninety one Overflows in the last year alone, some of these lasting many hours a few over ten hours duration this information came from Welsh Water.**

#### **Observations**

**The claim that most sewage is caught in the first flush of effluent is Scientifically impossible to prove, because of the sheer volume of waste collected over some ten miles or so within the infrastructure pipes ending at this point, before being passed forward or discharged to sea. There are many**

Rivers and Estuaries condition status as per environment colour codes yellow moderate, brown poor.

flushes of sewage throughout this collection system. There are at least four places where the sewage can be discharged to the sea before reaching Northumberland Place, only the ones visited are having engineering modernisation work. It has I believe been demonstrated that this work is treating the symptoms and not the causes of Welsh Waters Problems. It is unfortunate that we were informed of the 13 million pounds already expended on treatment without any reduction in the volume of flows in the sewage infrastructure. The cause of the problems is volume; the answers appear to be either treat all the volume or reduce the volume then treat what is left in order to conform to the obligations of the urban wastewater treatment directive.

#### The in-combination affects

At the site visits The personnel of Welsh Water claimed that there were in-combination affects of pollution in the Estuary from Rivers, these they claimed were out of their control. This is not the case as Welsh Water themselves have produced for the MP Nia Griffiths a list of small treatment works **eighty two** in all, that are situated throughout Carmarthenshire that discharge into rivers. These rivers discharge into the Estuary either directly or indirectly. The information of their existence was used by us in a FOIA request to Dr Keil Lewis a Welsh Water Scientist, requesting any modernisation of their treatment capacity and capability since commission. We were informed that only one has a specialised nitrate removal system, the others are as they were built, having no specialised treatment processes. The in-combination effects of up to eighty six large and small Treatment Works cannot be discounted as not having an effect on the Waters of the Loughor Estuary Burry Inlet and Carmarthen Bay. Any additional sewage added to the already large in-combination volume could in all probability have a significant effect on the receiving waters, unless major volumes of surface water ingress are removed from the sewage infrastructure.

There are also in-combination effects to be considered from the proposed Development Sewage Infrastructure Plans for Machynys West and East, a schematic of which is included in Appendix 1 of this report. The proposed treatment being implemented at the three sites visited is claimed as

mitigation for new development, however the proposed treatment does not fulfil the obligations laid down in the Urban Waste Water Directive and cannot be proven to improve a situation of the receiving waters being classed as a Sensitive Water Body a designation of the whole receiving area of the Burry Inlet . There being no clear Scientific evidence available as to the cause, causes or contributing causes of the Sensitive Classification, the Precautionary Principle laid down in legal precedent must apply.

### **Motivation**

Another issue is motivation; what is the motivation behind the apparent eagerness to lift the Regulation 14 ruling placed on development of the Machynys West Site. The Ministers Letter of 20<sup>th</sup> October 2009 detailing the responsibility and duty of Wag and The Environment Agency has implications for both parties. The Environment Agency formed in 1995 and paid for out of Public Money are the National Assemblies Policy Implementation/ Monitoring and Enforcement Arm. It is assumed their role is to gather evidence such as we produce here and make an informed judgement on the whole issue and not site by site.

Also consideration of conflict should be given when engaging the E.A. to become the lead agent in an investigation of what went wrong. The Minister is seemingly engaging the very organisation that were charged with statutory and common law duty of responsibility for all WAG environmental Policy matters on the implementation of the European Directives and Regulations. It is assumed that their duty included compliance to European legislation. To then request the EA to investigate themselves as to why they have failed could be considered unsound practice. This is a clear conflict of interest, most probably there is a vested interest as no one wishes to find themselves guilty, and probably a pecuniary interest as they are in some part being paid twice from the public purse for the same responsibility.

There is also a question of WAG involvement in any Joint Venture with Carmarthenshire County Council in the developments. If the Welsh Assembly Government are supporting these developments with any form

of financial package, they cannot be seen to be promoting a development that may have significant effect on a protected area they themselves support and promote here and in Europe.

## **CONCLUSION**

The state of the Loughor Estuary, Burry Inlet and Carmarthen Bay is down to Water Quality problems. These problems cannot be divorced from the past treatment practices or any new treatment processes that do not fulfil the obligations of European Directives and Regulations. The proposed improvements at the coastal treatment plants are seemingly trying to treat the symptoms of the problems and not the causes. Removal of surface water followed by increased capacity and capability of tertiary treatment is probably a far better investment. The thirteen million pounds spent at the coastal treatment plant and at two pumping stations does not seem to meet the requirements of the obligations laid down in the Urban Waste Water Directive or regulations. In these circumstances there is no scientific evidence that any additional sewage would not have a significant in-combination affect, therefore the Precautionary Principle must prevail until such time as there is available Scientific Evidence bringing no effect to the already polluted receiving water bodies. The principle of trying to keep the water bodies at the same polluted and Sensitive level does not meet EU policy objectives of no deterioration of the Water Quality in the first instance.

The issues of vested interest, conflict of interest and pecuniary interest is the reason for the petition being presented to WAG for an impartial investigation, from the replies received to date this request has not been understood.

Rivers and Estuaries condition status as per environment colour codes yellow moderate, brown poor.

SYSTEM Sampling Point 109357 LLANELLI STW :				
FINAL EFFL NGR: SS5022098410 bot 01-SEP-2006&15-FEB-2006				
When Sampled	Time	3461	6423	9933
		F Coll Pre	StrepF PMF	Coliforms Pre
		NO/100ml	NO/100ml	NO/100ml
05-Sep-05	1430	8200	310	17200
14-Sep-05	1000	>100000	232000	>100000
21-Sep-05	1545	455	14	1182
28-Sep-05	1030	38600	2600	82000
05-Oct-05	1510	320	73	760
12-Oct-05	920	620000	69000	2200000
19-Oct-05	1530	1200000	35000	1600000
26-Oct-05	855	700000	420000	1150000
02-Nov-05	1420	310000	48000	660000
09-Nov-05	830	620000	28000	720000
16-Nov-05	1435	600000	39000	1000000
23-Nov-05	845	808	1182	9081
30-Nov-05	1235	230000	37000	680000
07-Dec-05	845	1182	273	3900
14-Dec-05	1225	4200	1273	10960
21-Dec-05	1550	14700	2800	>200000
04-Jan-06	1800	750000	114000	1220000
11-Jan-06	1210	136000	38000	182000
18-Jan-06	1800	3200	400	19000
25-Jan-06	905	770	210	3200
31-Jan-06	1535	28000		
08-Feb-06	930	>100000	52000	>100000

Llanelli Beach data						
When Sampled	Time	Weather	Faecal Coli ( per 100ml)	Faecal Strep. ( per 100ml)	Total Coli ( per 100ml)	
5/10/05	08:15		300	142	470	
12/10/05	14:30	Dry / heavy rain evening before	8,400	696	15,000	
19/10/05	08:15	Raining / heavy rain evening before	3,800	210	7,400	
28/10/05	14:30	Dry / heavy rain evening before	14,100	1,840	44,000	
2/11/05	07:00	Dry / heavy rain evening before	8,545	2,400	28,000	
9/11/05	11:00	Dry / very heavy rain evening before	6,500	1,000	No result	
16/11/05	07:30	sunny / dry	855	132	1,800	
23/11/05	11:00	dry	36	7	127	
30/11/05	16:30		510	254	1,136	
14/12/05	16:00	dry / sunny	530	116	800	
21/12/05	09:30	dry	8,800	3,400	18,600	
04/01/06	08:30	dry / sunny	410	214	1,091	
11/01/06	16:00	dry / sunny heavy rain previous evening	3,900	535	8,200	
18/01/06	08:30	damp / not raining	1,800	248	3,200	
25/01/06	14:30	dry	18	15	36	
01/02/06	08:00	dry	64	182	320	
08/02/06	15:30	dry / raining previous evening	1018	244	1400	



## Llanelli Surface Water Removal Studies

### Background

In rural areas a high proportion of water that falls as rain soaks into the ground, then seeps into streams and rivers and flows to the sea. However, in urbanised areas there is much less green and open space. Land in our villages, towns and cities has ever more houses and other buildings, tarmac roads and paths, paved patios and driveways. Natural drainage is therefore impeded.

Rain falling on roofs and other hard-standing surfaces, runs down gutters and drainpipes and into the sewerage system. Increasing urbanisation causes increased flows, meaning urban sewers often have less capacity to cope with the severe rain storms, which have become more frequent in recent years. This can result in flooding of people's homes and neighbourhoods, causing considerable distress.

In addition, surface water entering the sewers increases the amount of energy needed to pump it to the sewage works and to treat it, causing further environmental impact through higher carbon emissions. Welsh Water is a large energy user and we wish to reduce our carbon footprint. Tackling the issue of surface water runoff will therefore produce a dual environmental benefit, by protecting local environments and reducing carbon emissions.

### Removal of Surface Water from the Sewer Network

The problem of sewer flooding and pollution affects wide sections of society and involves various organisations. It is a problem that cannot be solved by Welsh Water alone, as the root causes need to be addressed. The company is determined to do all it can to reduce the risk of sewage flooding and pollution, and this requires working with others in a joint effort to reduce surface water flows in our 'combined' sewers, i.e. those carrying both sewage and surface water.

Surface water reduction is a long term strategy where visible changes and financial benefits may not be apparent for many years. The initial stages of any surface water reduction strategy will need to focus on education of key agencies and the general public to target behavioural change and to demonstrate that alternative approaches to surface water disposal can deliver the required long-term benefits.

The long term objective is to have drainage systems in developed areas which, as far as practical, mimic the original green field situation. Thereby most surface water is returned to the ground or to open watercourses at the earliest opportunity.

### Surface Water Reduction Pilots in Llanelli

Reducing surface water flows, and the associated hydraulic loading upon the sewers in Llanelli, will reduce flooding incidents and pollution, decrease energy costs, support conservation and recreational opportunities, and will be instrumental in minimising the impacts of climate change.

To examine the ways in which these objectives can be achieved in Llanelli Welsh Water has undertaken a pilot study to look at areas where sustainable drainage techniques can be installed to reduce surface water inflows into the combined sewer network. The study has been supported by a significant contribution of funding from the Welsh Assembly Government. This pilot work was concluded in 2008 and has recommended that a number of schemes should be carried out to trial surface water removal techniques in Llanelli.



Rivers and Estuaries condition status as per environment colour codes yellow moderate, brown poor.

Throughout the five areas investigated, namely Morfa, Cambrian, Ty Isaf, Copperworks and Wern, a land permeability study has shown that there are several locations where the possibility to remove the surface water from the combined sewer network does exist. Primarily these areas are at the frontage of properties where roof runoff, pavement runoff and highway drainage is connected to the combined sewer system.

It should be noted that the majority of the roof and paved areas, which connect with the combined sewers, are from the older terraced housing which is prevalent throughout the Llanelli catchment. However, the survey has also identified that several newer housing estates have been provided with separate surface water drainage, but that there is no nearby surface water outfall, such as a river or stream. As a result developers have connected some of these surface water drainage systems into the combined sewer at the end of their sites.

The survey work has also demonstrated that some of the largest inflows to the combined sewer network are from the drainage of our highways and car parks.

- **Ground Water and River Water**

As part of the same pilot work an extensive manhole and flow monitoring survey in the Morfa area was commissioned to investigate any potential inflows of ground and river water into the sewer network. The survey revealed that part of the network suffers from deterioration allowing the infiltration of ground and river water and that this is aggravated by a number of direct land drainage connections into the sewer network.

### **Surface Water Reduction Schemes in Llanelli**

Based on the findings of our pilot study work we have now identified 11 areas within Llanelli where we believe that by working together with other stakeholders such as the Local Authority and businesses we can remove surface water inflows into the combined sewer system. These schemes are aimed at reducing flood and pollution risk, together with lowering power consumption associated with pumping and treating these inflows. They will also provide additional capacity, which may be needed for future development in Llanelli. The projects are intended to allow Welsh Water to develop and test a range of surface water reduction solutions, which can also be used in other areas of Wales in future years. The schemes are sustainable in nature and will benefit future generations as well as today's.

We have the support of the Welsh Assembly Government and the Environment Agency Wales towards this ground breaking work and are currently seeking the support of Ofwat to our proposals, as part of our recent Business Plan submission.

Subject to this approval we are proposing an investment of £2.83m between 2010 and 2012 to deliver 11 surface water removal schemes within the Llanelli catchment.



## **Improvements to Storm Sewage Overflows impacting the Loughor Estuary**

### **Background**

In order to comply with the EC Shellfish Waters Directive, Dwr Cymru Welsh Water is required to improve the storm sewage overflows at Northumberland Avenue Sewage Pumping Station (PS) and at the New Llanelli Wastewater Treatment Works (WwTW).

The Directive lays down bacteriological standards for waters designated as shellfisheries and aims to ensure a suitable environment for shellfish growth. The shellfish water policy, as set by the Environment Agency, requires a faecal coliform (fc) concentration of less than 1500fc per 100mls of water across the shellfish water for 97% of the time.

### **Solutions Development**

Combinations of pumping station pass forward flow, storage volumes, and treated and disinfected flow, have been evaluated in terms of compliance with the Directive.

Extensive sewerage network modelling and water quality modelling has demonstrated that Ultra Violet irradiation of all storm sewage discharges in combination with additional storage at Northumberland provides the most practical and effective solution, with water quality projections throughout the estuary achieving the required standard at all locations where the Dwr Cymru Welsh Water assets impact.

### **Storm Sewage Disinfection**

The works currently progressing at Northumberland PS and at New Llanelli WwTW will provide Ultra Violet (UV) disinfection to all storm sewage flows generated. In the event of an equipment or power failure storm sewage overflows are available to prevent flooding to properties.

The efficacy of the disinfection process has been established through pilot plant trials and also through full scale operation at the Dwr Cymru Welsh Water WwTW at Cog Moors, Barry. Monitoring of the Cog Moors plant (capacity 2500 l/sec) through each storm event during the 2009 bathing season has confirmed that UV disinfection of intermittent discharges is both practical and effective.

The disinfection plants at Northumberland PS and at New Llanelli WwTW will be operated all year around.

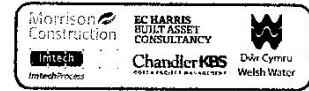
### **Storm Sewage Storage**

At Northumberland PS, foul and storm water combined sewage up to 880l/sec is passed forward to New Llanelli treatment works. Flows in excess of 880 l/sec will be passed to storage tanks providing a volume of 2800m<sup>3</sup> which will retain the catchment "first flush" storm sewage. When the storage volume is filled, flows in excess of 880 l/sec will be treated by UV disinfection before discharge. The capacity of the disinfection plant will be 3375 l/sec.

At New Llanelli WwTW, incoming flows up to 599 l/sec will be biologically treated and disinfected (as at present). Incoming flows in excess of 599 l/sec pass to storage tanks

21<sup>st</sup> October 2009  
6300/700/MK/AW/FJ/12.02/1362

Rivers and Estuaries condition status as per environment colour codes yellow moderate, brown poor.



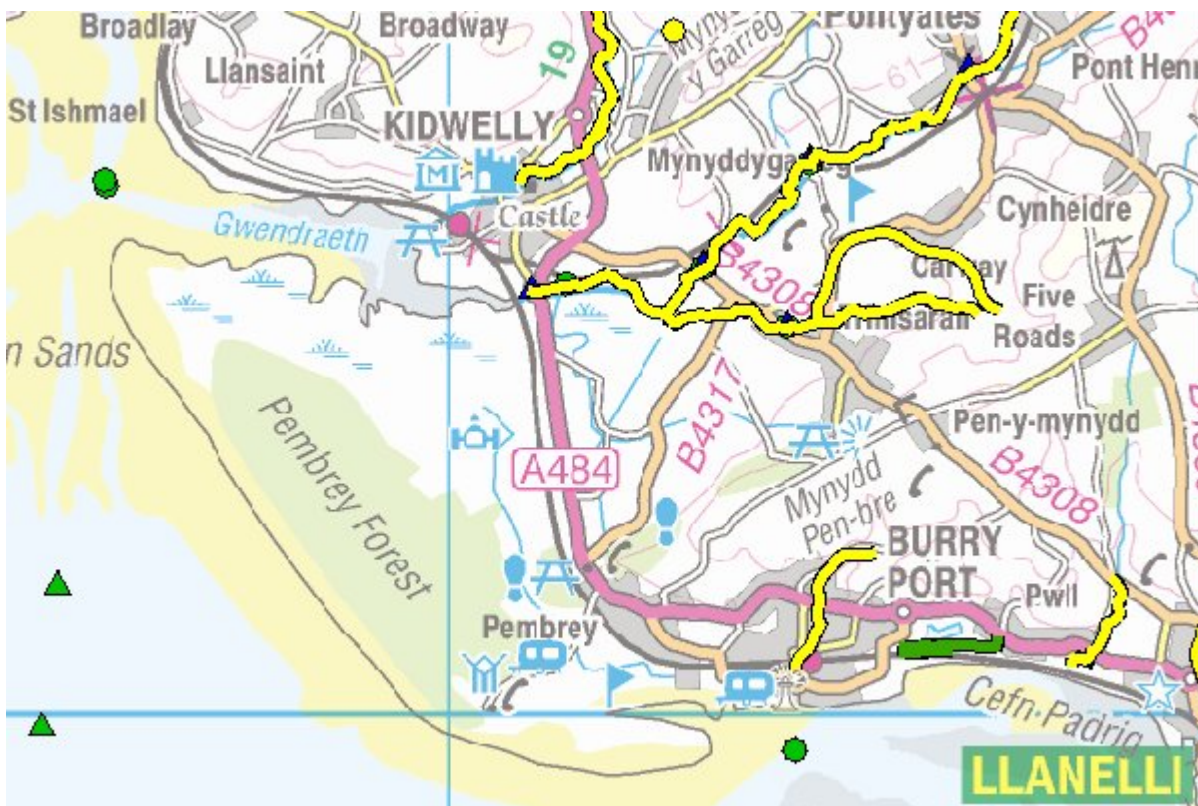
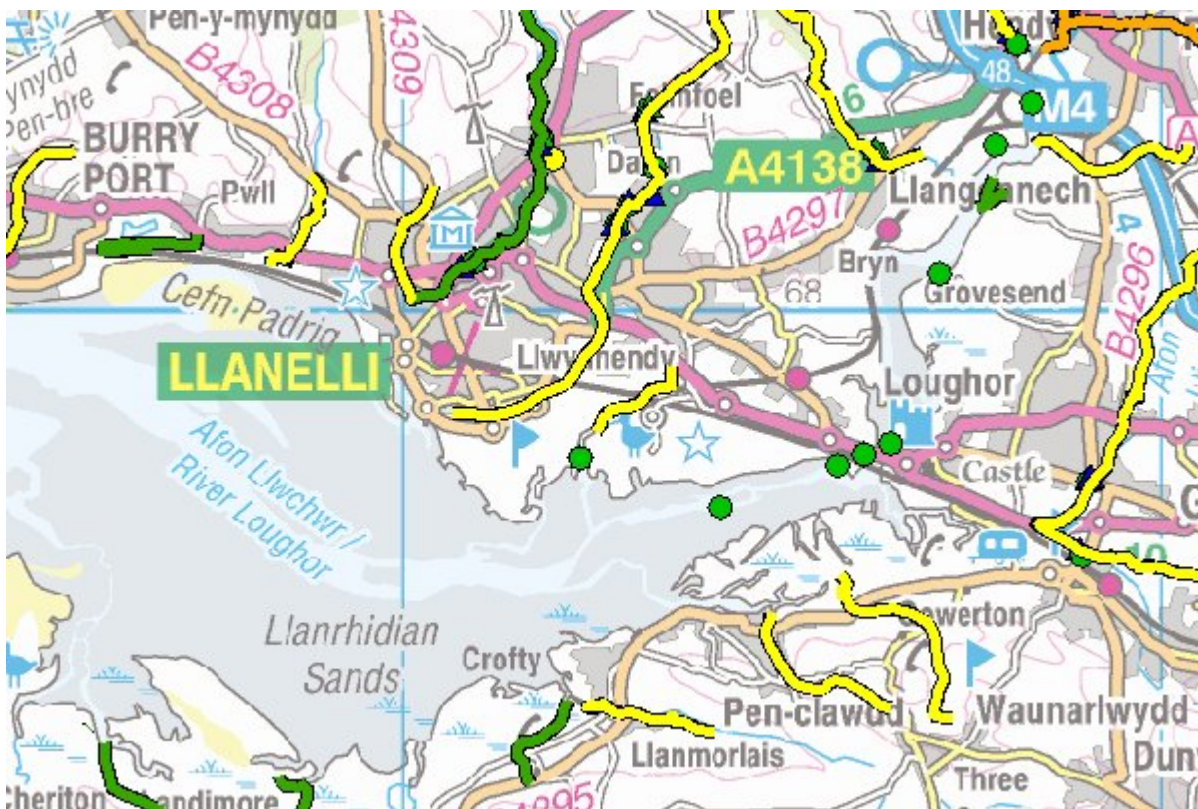
providing a volume of 3800m<sup>3</sup>, where flows are retained for subsequent treatment. When the storage volume is filled, flows in excess of 599 l/sec will be treated by ultra violet disinfection before discharge. The capacity of the disinfection plant will be 780 l/sec.

Thus, all treated effluent and storm sewage discharged to the Loughor Estuary will be provided with full disinfection.

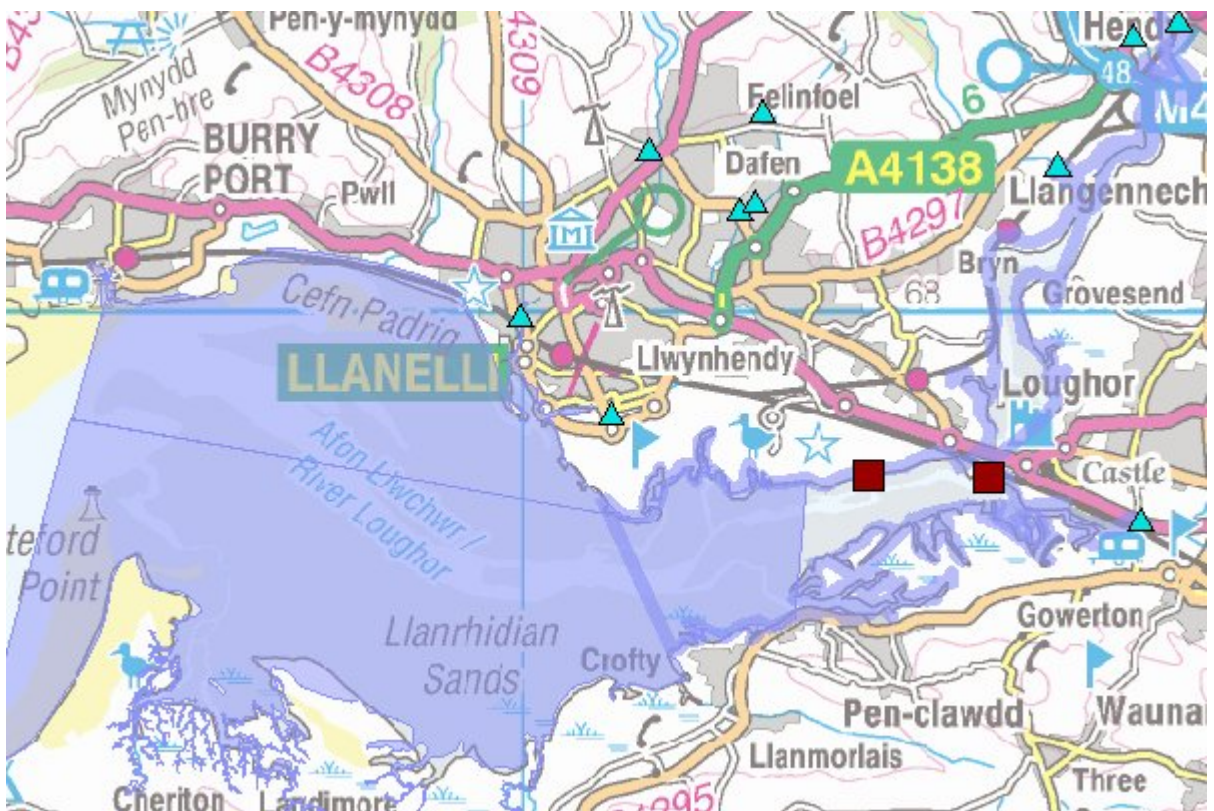
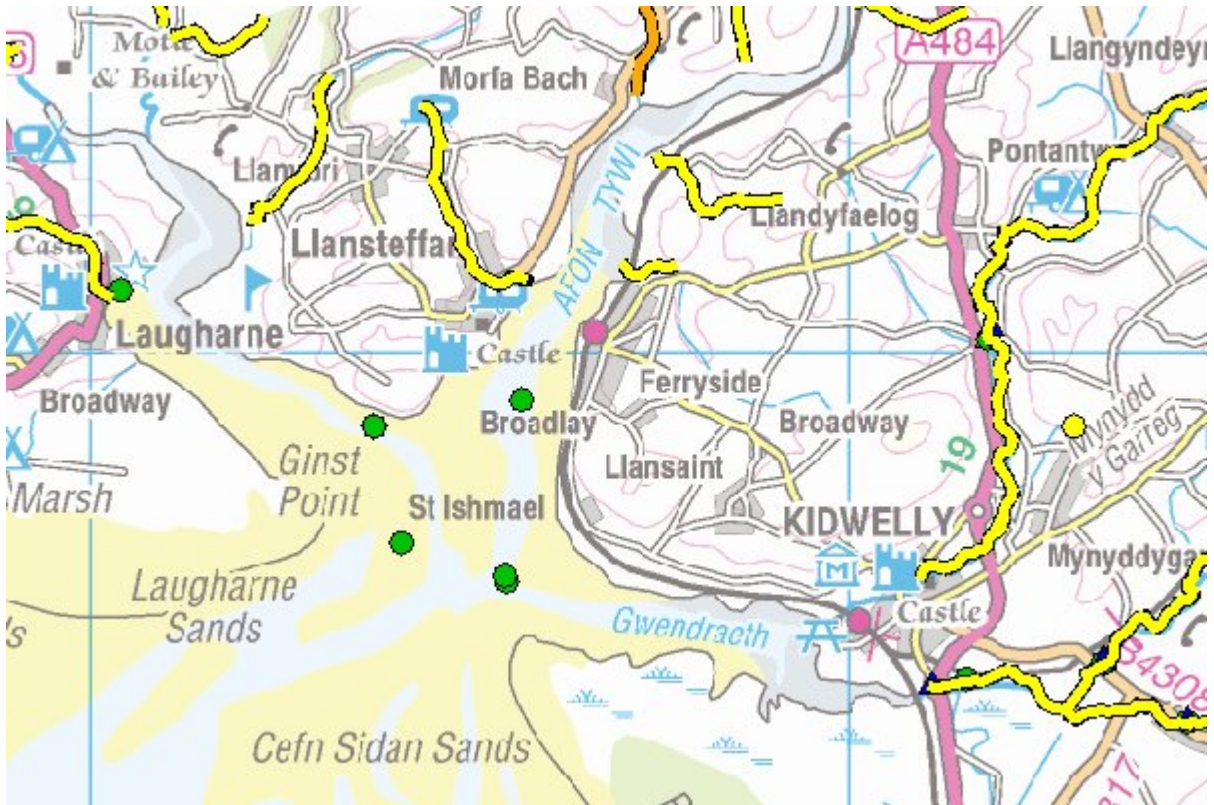
### **Progress**

Construction of the new facilities at Northumberland PS and Llanelli WwTW have commenced and are planned to be completed and commissioned by the end March 2010.

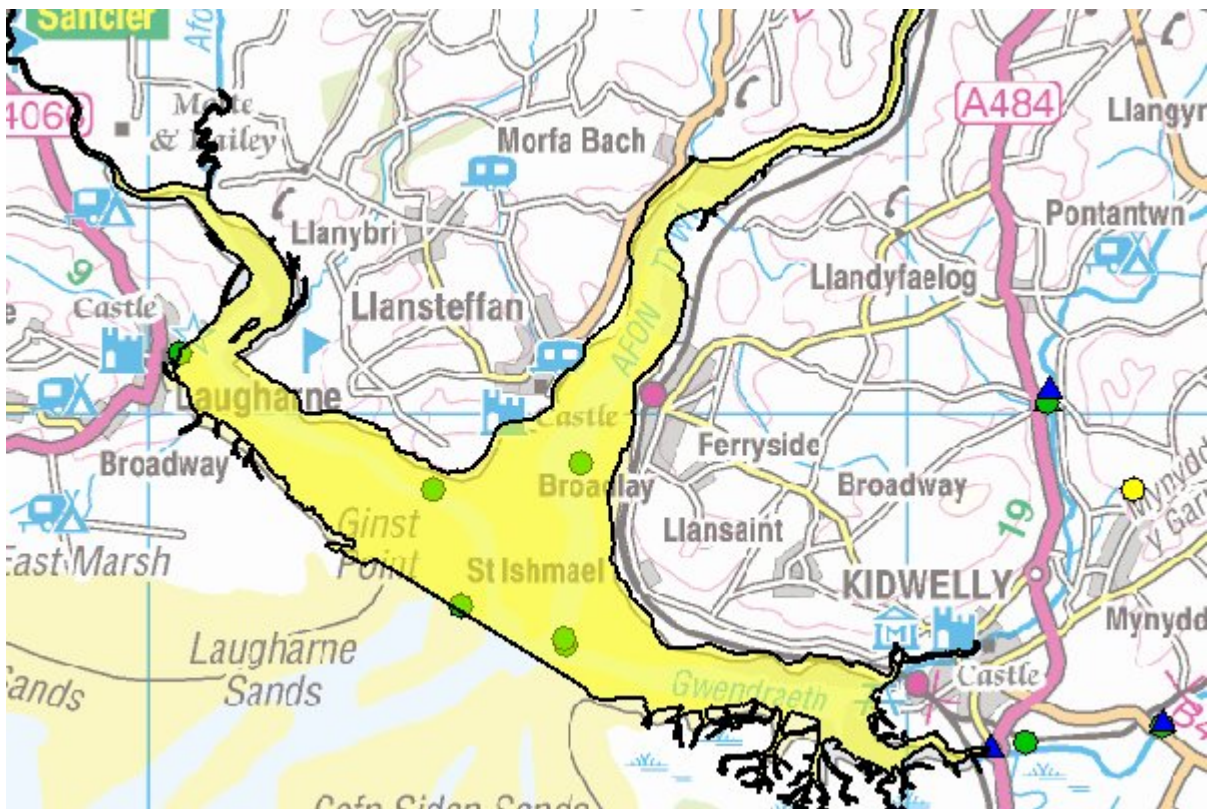
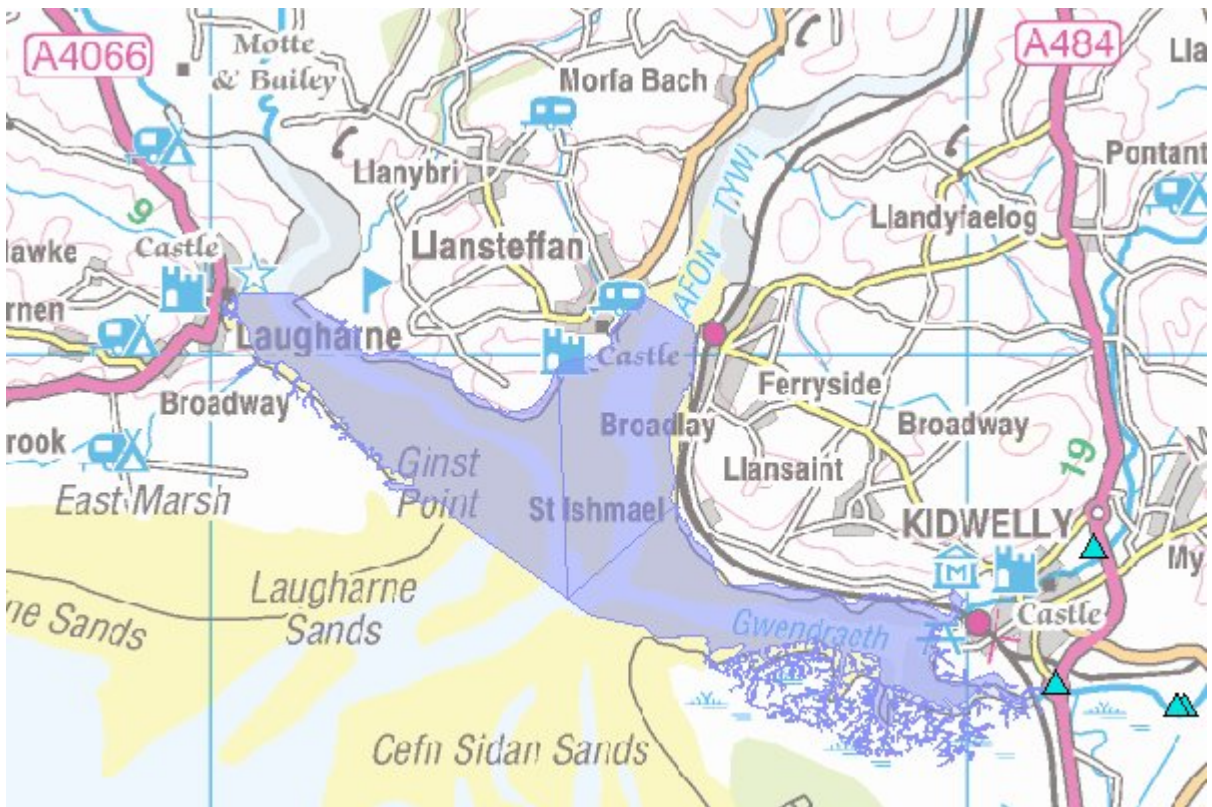
Rivers and Estuaries condition status as per environment colour codes yellow moderate, brown poor.



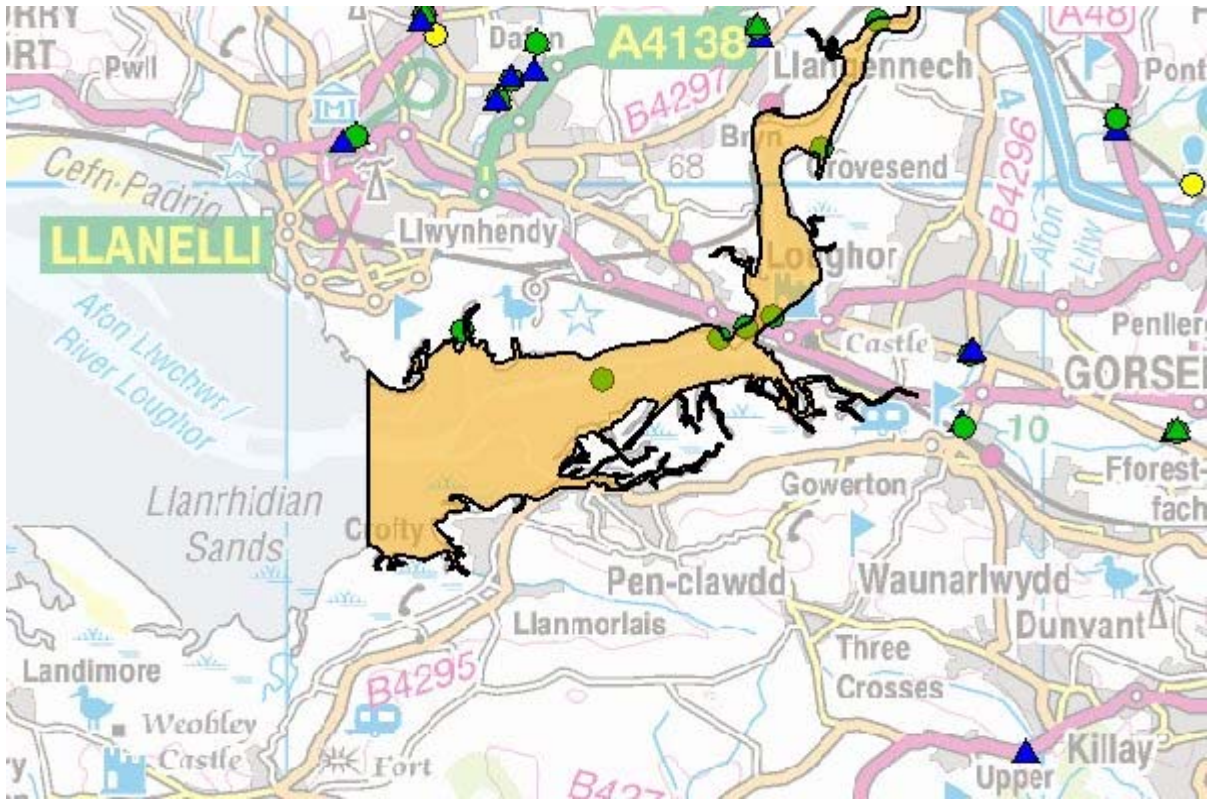
Rivers and Estuaries condition status as per environment colour codes yellow moderate, brown poor.



Rivers and Estuaries condition status as per environment colour codes yellow moderate, brown poor.

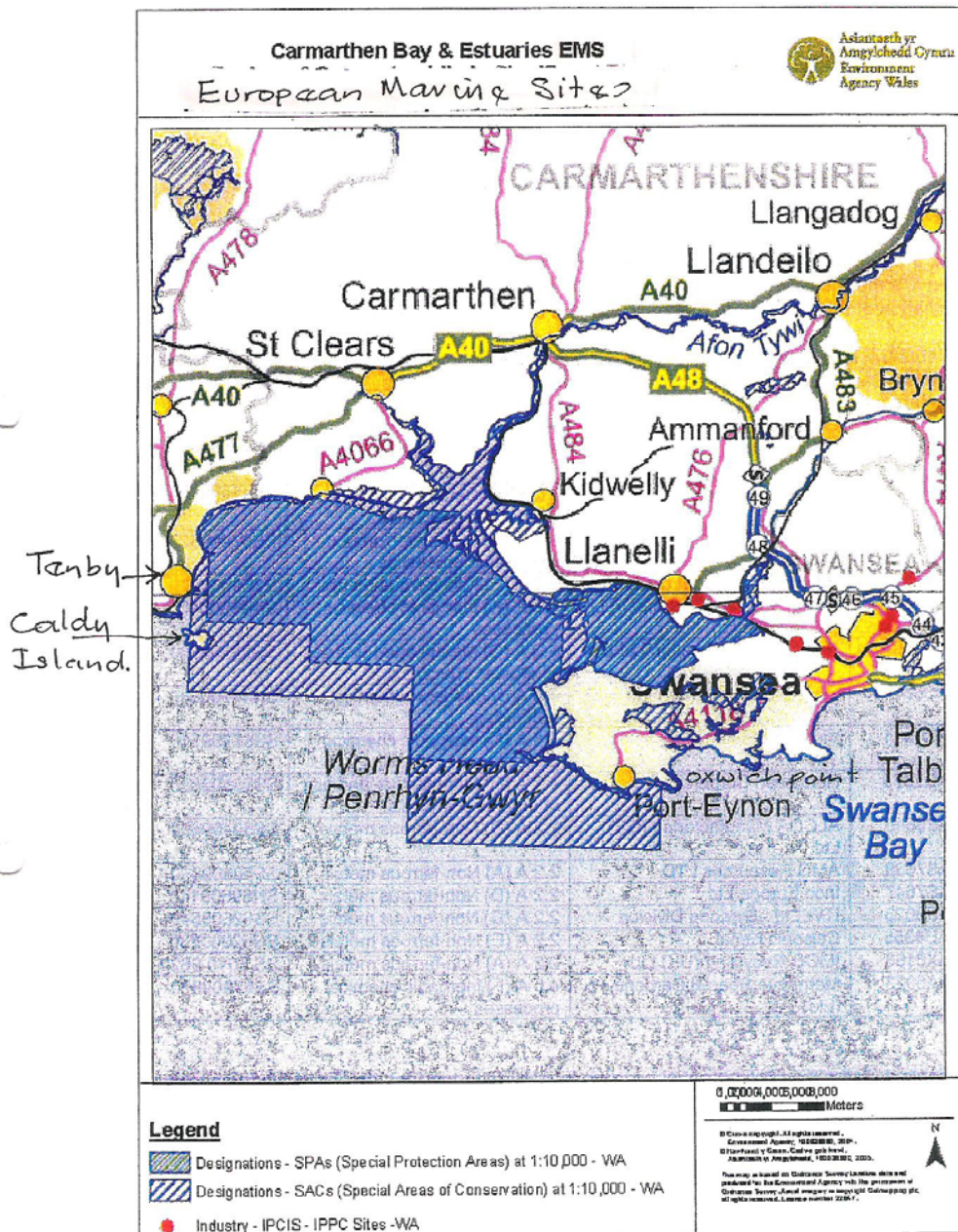


Rivers and Estuaries condition status as per environment colour codes yellow moderate, brown poor.



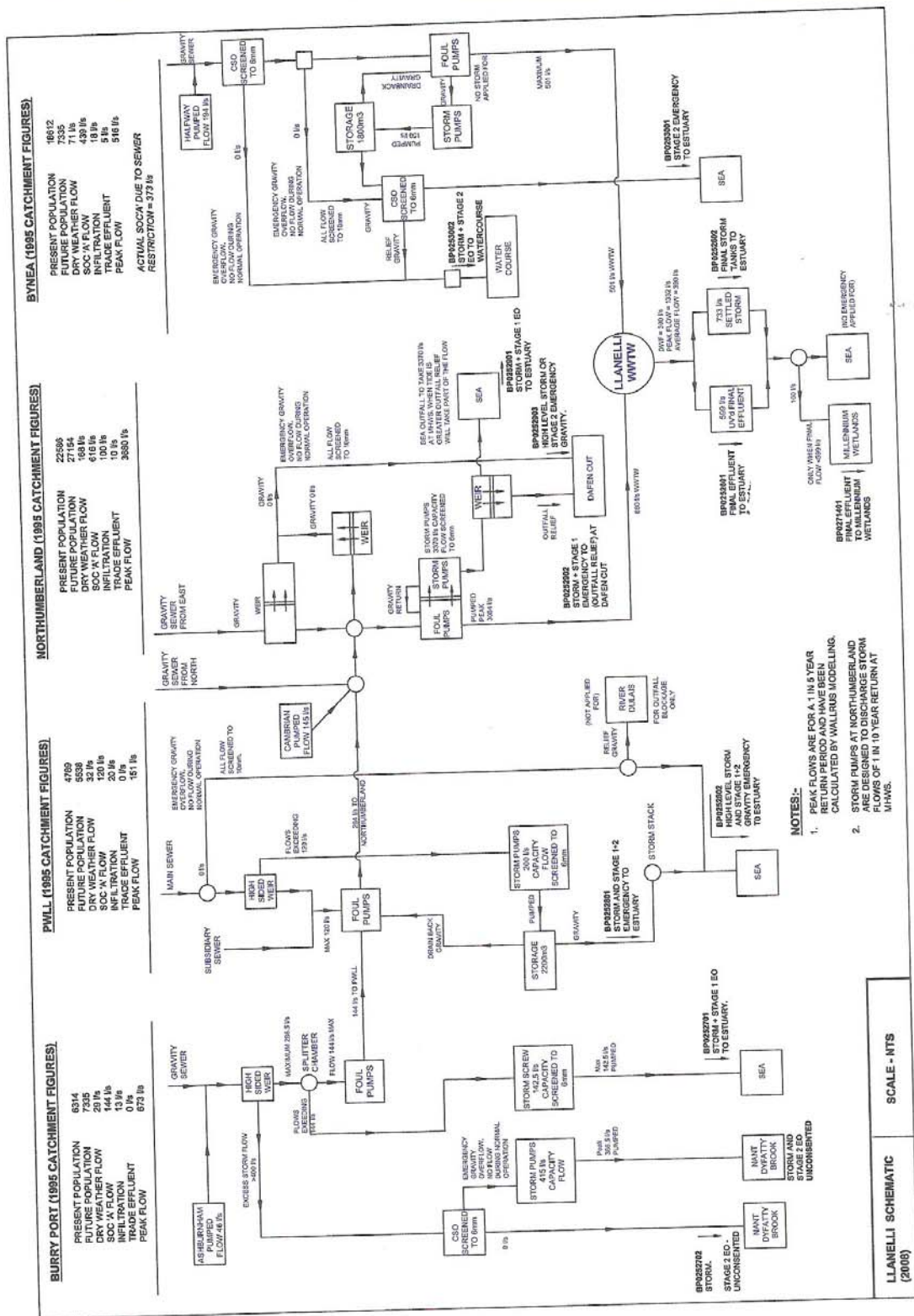
Rivers and Estuaries condition status as per environment colour codes yellow moderate, brown poor.

Figure B4.1: Location of Active PPC Installations





Rivers and Estuaries condition status as per environment colour codes yellow moderate, brown poor.





## **Y Pwyllgor Deisebau**

### **Petitions Committee**

Rhys Williams  
(via e-mail)

Bae Caerdydd / Cardiff Bay  
Caerdydd / Cardiff CF99 1NA

Our ref: P-03-238

2 February 2010

Dear Mr Williams

#### **P-03-238 Pollution of the Burry Inlet**

The Committee considered your petition at its meeting on 19 January. As part of the Committee's consideration, we discussed an update from the Minister for Environment, Sustainability and Housing. The Committee agreed to write to you and provide update you with progress on this issue.

The Committee has received confirmation that:

- The Welsh Government are responsible for the implementation of European obligations relating to the prevention of pollution and protection of water quality
- The Welsh Government is monitoring the situation in the Burry inlet and is in discussion with the relevant organisations with regard to waste water discharges, cockle mortalities in the Burry Inlet and water quality in the Lougher estuary.
- The Environment Agency has been asked to investigate the increased cockle mortalities in the Burry Inlet and Carmarthen Bay. Officials from the Welsh Government will monitor the programme. This is a two year study, with an interim report due in early 2010.

Rivers and Estuaries condition status as per environment colour codes yellow moderate, brown poor.

- A new treatment centre at Bynea means that sewage from the north shore of the Burry Inlet will receive full biological treatment, nitrogen removal and disinfection. The high level treatment process at Goweton Wastewater Treatment Work has been improved.
  - Llanelli has been identified as one of the eight sites to be included in the Surface Water Reduction Strategy, which aims to reduce surface water
- 
- contribution to the sewage network and reducing the frequency and quantity of storm discharge
  - A report commissioned by Dwr Cymru Welsh Water looking at nutrients and water quality in the Burry Inlet showed no adverse impact on the receiving body. A copy of this report 'Lougher Estate - Water Quality and Nutrient Assessment' is available from the Welsh Government.

The Committee are waiting for further information from the Minister in relation to this petition, and we will keep you updated with progress.

Yours sincerely

**Christine Chapman AM**  
**Chair, Petitions Committee**

Rivers and Estuaries condition status as per environment colour codes yellow moderate, brown poor.

Rivers and Estuaries condition status as per environment colour codes yellow moderate, brown poor.

**Jane Davidson AC/AM**  
Y Gweinidog dros yr Amgylchedd, Cynaliadwyedd a Thai  
Minister for Environment, Sustainability and Housing



Llywodraeth Cynulliad Cymru  
Welsh Assembly Government

Eich cyf/Your ref PET-03-238-241  
Ein cyf/Our ref JD/06003/09

2 OCT 2009

Val Lloyd AM  
Petitions Committee  
National Assembly for Wales  
Cardiff Bay  
Cardiff  
CF99 1NA

20 OCT 2009  
A17

20 October 2009

Dear Val,

Thank you for your letter of 2 October 2009 regarding two petitions the Petitions Committee considered at its meeting on 22 September 2009, namely; P-03-238 Pollution of the Burry Inlet and Carmarthen Bay and P-03-241 'Save our Sewers' Llanelli.

The Committee agreed to ask for my assistance in its consideration of these petitions by requesting information relating to;

***The agencies that are responsible for the sewerage system in Llanelli.***

In Llanelli and the surrounding area, I can confirm that the water company, Dŵr Cymru Welsh Water is responsible for the sewerage system and the Environment Agency has an obligation in ensuring water company discharges are compliant with European Council Directives to protect the environment.

***The level of responsibility that the Welsh Assembly Government has for preventing the pollution of the Burry Inlet and Carmarthen Bay.***

The Assembly Government is responsible for the implementation of a number of key European obligations relating to the prevention of pollution or protection of water quality which are relevant in this area. These include the Shellfish Waters Directive, the Urban Wastewater Treatment Directive and the Water Framework Directive.

The Environment Strategy for Wales and its Action Plan were launched in May 2006, and sets out the Welsh Assembly Government's vision for the environment over the next 20 years. The vision is of a Welsh environment that is clean, healthy, biologically diverse and valued by the people of Wales. Its outcomes will contribute to addressing climate change, promoting sustainable development, and improving our social and economic wellbeing.

On the 31 March 2009, I launched the Welsh Assembly Government's Strategic Policy Position Statement on Water which builds on this commitment by setting out my core principles which are ensuring access to safe drinking water, maintaining water and sewerage services at an affordable price and compliance with statutory obligations that

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CF99 1NA

English Enquiry Line 0845 010 3300  
Llinell Ymholiadau Cymraeg 0845 010 4400  
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PS.minister.for.ESH@wales.gsi.gov.uk

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Rivers and Estuaries condition status as per environment colour codes yellow moderate, brown poor.

drive all round water quality. As our Environmental Regulators the Environment Agency pursue these commitments on behalf of the Welsh Assembly Government.

***The actions that the Welsh Assembly Government is taking to prevent the pollution of the Burry Inlet and Carmarthen Bay and to improve the sewerage system in Llanelli.***

The Welsh Assembly Government is closely monitoring the situation in the Burry Inlet and Llanelli area and is in discussion with the Environment Agency, Dŵr Cymru Welsh Water and other interested parties with regards to waste water discharges, the impact of proposed developments in the Llanelli area on sewer capacity, cockle mortalities in the Burry Inlet and water quality in the Lougher Estuary.

As part of the commitment outlined in the Environment Strategy for Wales and my Strategic Policy Position Statement on Water, I can confirm that I along with Elin Jones, Minister for Rural Affairs have asked the Environment Agency as the competent authority to lead an investigation into increased cockle mortalities with the Burry Inlet and Carmarthen Bay. The role of Welsh Assembly Government officials will be monitoring the programme and checking the progress of the investigation.

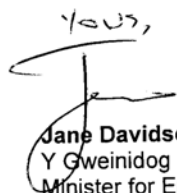
I can confirm that my officials will receive bi-monthly reports from the investigation team to monitor progress on the investigation and they have specifically reviewed the work packages that make up the overall programme that was agreed by the investigation team.

The Assembly Government has made it clear that it expects the regulator, the Environment Agency, to ensure that all regulations are being complied with and to investigate where problems appear to be occurring.

Finally, the Committee asked for details of the implications for the Welsh Assembly Government if breaches in EU law occur as a consequence of the sewerage spills. In particular, the Committee has asked whether any penalty imposed on the UK Government as a result of infraction proceedings would be passed on to the Welsh Assembly Government.

The position is set out in the Concordat on the Co-ordination of European Union Policy Issues which is annexed to the Memorandum of Understanding drawn up between the UK Government and the devolved Governments in 2001. Paragraph 4.25 of the Concordat states that to the extent that financial costs and penalties imposed on the UK arise from a failure of implementation or enforcement by a devolved administration on a matter falling within its responsibility, responsibility for meeting these will be borne by the devolved administration.

In summary, I want all the bodies in the area to work together to find a way forward which respects the shared responsibility to protect the environment and meet our obligations under various European Directives. I hope this explains the position; I will continue to monitor the situation very closely but in the meantime, please do not hesitate to contact me if you have any further queries.

1/10/13,  


**Jane Davidson AM**  
Y Gweinidog dros yr Amgylchedd, Cynaliadwyedd a Thai  
Minister for Environment, Sustainability and Housing

Gareth

I should be grateful if the evidence presented below by Cllr Bill Thomas could be considered by the Petitions Committee. You will note his statement (see below) "I would welcome the opportunity to give evidence." I hope that you will be able to accept his offer.

Rhys

---

**From:** william thomas [mailto:]  
**Sent:** 24 February 2010 13:55  
**To:** Williams, Rhys (AM Support Staff, Alun Davies)  
**Cc:** GRIFFITH, Nia; Davies, Alun (Assembly Member); Watson, Joyce (Assembly Member)  
**Subject:** Spills Information sent 23rd February

Dear Rhys

I sent you the latest information on the spills for 2009. (See email attached below)  
These are the spill records for the whole year . These the EA receive retrospectively at the end of the year. As you can see , there are areas where they do not receive any information . This information is still held by Welsh Water. In the Minister ' s letter, date October 20th 2009 you kindly sent to me , the Minister lays out the WAG responsibility for the Burry Inlet, and includes the reliance she and WAG places on the Environment Agency TO UNDERTAKE THE RESPONSIBILITY OF IMPLEMENTING WAG's POLICIES IN LINE WITH EU STATUE, DIRECTIVES AND REGULATIONS.

We have a huge problem understanding how the EA achieves all it is supposed to under the circumstances so the questions we pose are as follows:-

1 If they receive only partial information then how do they fulfill their obligations as they have no details on seven discharge points + no details on any discharges South of the Gowerton Waste Water Treatment Plant. From other reports we have been sent there are a number of outlets where spills can occur.

2 There are no recorded spills for Burry Port . However , Dr Kiel Lewis of Welsh Water wrote to Burry Port Community Council apologising for the spills that have occurred. In December 2009 these were numerous.

3 There are eighty two small treatment works operating all over Carmarthenshire and discharging into rivers ; for example three discharge into the River Gwilli prior to it entering the River Loughor and thence into the Estuary . When I fished it as a youth it was an important Salmon spawning river . However it is much in decline today. Only one plant , Cross Hands , has a Nitrate removal facility . Indeed of the eighty two works it is the only one with Nitrate removal facility. When we requested information on the discharges from these works we were informed that we would have to pay for it.

My understanding is that The Environment Agency is supposed to publish all relevant information on the pollution of water bodies. From their response to us they either do not have the information to hand or it is damning evidence as to why the rivers in Carmarthenshire are recorded on the EA website as Moderate or poor. To operate according to the process described by the Minister , the EA should be able



to report this information fairly easily and quickly and without charge . We consider it to be part of the public documents they should hold. We will be approaching the Information Commissioner on this matter but we do think the Committee should have the information in order to evaluate the bigger picture in Carmarthenshire.

4 Because of the above situation we constantly ask questions about pollution and are constantly informed that pollution come from the following sources:-

- 1 Farm run off
- 2 Sheep and Cows on The marches.
- 3 Bird Droppings
- 4 Washing machines and dishwashers.

It is always denied that it has anything to do with the population of Carmarthenshire being served by an overwhelmed sewage infrastructure. To claim that all is right with water quality does not equate with the EA records on their web site . Neither does it equate with their one review of consents to discharge . In this case at least 90 discharges into Carmarthen bay were classified as being non-conforming . Many of them discharged continuous sewage.

Prior to our being involved , Welsh Water's Business plans did not contain any of the works that have been undertaken in and around Llanelli and the comments from the EA, Welsh Water and Carmarthenshire County Council were always "the water quality is not a problem" .

Our Question we constantly ask but never have an answer to is why spend all the money on improvements if everything was OK.

We would respectfully ask that these e-mails are presented to the Committee , as we cannot understand how the EA achieve WAG and the Ministers objectives and obligations ; hence the request for a full public investigation, something that the task force cannot in our opinion achieve under the Environment Agency as they are , in our opinion , part of the problem with non-compliance to obligations set out in legislation. The people copied in Bcc are part of the group who sent the petition.

Cllr Bill Thomas

Rhys here are the spills for last year we have records of spills going back four years, in the Burry Inlet and Loughor Estuary Welsh Water are allowed only 22 spills per year. If one counts the Bathing waters and the effect on adjacent waters directive then it is either 3 spills per year or one spill in five years. I would welcome the opportunity to give evidence.

Bill

----- Forwarded message -----

From: **william thomas** <[william.thomas@parliament.uk](mailto:william.thomas@parliament.uk)>

Date: 23 February 2010 15:59

Subject: Re: RFI/BI/042 Overflow Events 08/09

To: "External Relations SWW," <[external\\_relations\\_SWW@environment-agency.gov.uk](mailto:external_relations_SWW@environment-agency.gov.uk)>

Cc: [RobertGriff.glynhyndman](mailto:RobertGriff.glynhyndman@parliament.uk) "GRIFFITH, Nia" <[griffithn@parliament.uk](mailto:griffithn@parliament.uk)>

Thanks for the spill info , can you tell me why there are no spills recorded at Burry Port please. If there is any spill info for Burry Port CSO can I have a copy please.  
Bill Thomas

On 23 February 2010 13:58, External Relations SWW,  
<[external\\_relations\\_SWW@environment-agency.gov.uk](mailto:external_relations_SWW@environment-agency.gov.uk)> wrote:  
Dear Mr Thomas,

**RFI/BI/042 Overflow Events 08/09**

Please see attached 2008/09 overflow event data which we hold for the following consented intermittent discharges

Ashburnham Pumping Station - Consent Ref BW2203101  
Burry Port Pumping Station - Consent Ref BP0252701  
Burry Port Pumping Station - Consent Ref BP0252702  
Gowerton STW Storm - Consent Ref BW2304001  
Northumberland Pumping Station - Consent Ref BP0252901  
Pwll Pumping Station - Consent Ref BP0252801

We do not hold any other overflow event data for Bynea, Llangennech, Hendy, Pontardulais, Rhosog or any other pumping station South of Gowerton Treatment Works to Llangennith for 2008/09. We do not hold overflow events for Kidwelly and Carmarthen Treatment Works for 07/08 & 08/09. We believe that this information is held by Dwr Cymru Welsh Water. Accordingly under Regulation 10 of the Environmental Information Regulations 2004 we inform you that your request should be directed to Dwr Cymru Welsh Water, Pentwyn Road, Nelson, Treharris, Mid Glamorgan, CF46 6LY.

If you are not satisfied with our decision not to supply the requested information you can contact us to ask for our decision to be reviewed. If you are still not satisfied following this, you can then make an appeal to the Information Commissioner, who is the statutory regulator for Freedom of Information.

This closes your request for information, our reference RFI/BI/042.

Kind regards,  
Rhian

**Rhian Roberts**  
**External Relations**  
Environment Agency Wales,

☎ Internal : 7 26 5575

☎ external : 01792 325575

✉ [external\\_relations\\_sww@environment-agency.gov.uk](mailto:external_relations_sww@environment-agency.gov.uk)



Keep energy use lower by wearing more layers this winter, rather than turning up the heating

---

**From:** william thomas [mailto:\_\_\_\_\_]  
**Sent:** 16 February 2010 13:58  
**To:** External Relations SWW,  
**Cc:** [RobertGriff glynhyndman](#); GRIFFITH, Nia  
**Subject:** RFI/BI/042 Overflow Events 08/09

Click [here](#) to report this email as spam.

Dear Sir

Under a foia request and the environmental information regulations 2004 can I have copies of the overflow events plus volume of overflow and duration of event for the following areas For 08/09

Llanelli wwtw, Bynea SPS, Pwll SPS, Burry Port SPS, Llangenech SPS, Hendy SPS, Pontarddulais SPS, Ashburnham SPS., Rhosog SPS plus any recorded data on overflow/spills for the area South of Gowerton treatment works to Llangenith.

Can you also include any overflow events for Kidwelly Treatment Works for 07/08 & 08/09, and Carmarthen Treatment Works for the same period

Thank You

Cllr. Bill Thomas

## Letter from Minister for Environment, Sustainability and Housing

Jane Davidson AC/AM

Y Gweinidog dros yr Amgylchedd, Cynaliadwyedd a Thai  
Minister for Environment, Sustainability and Housing



Llywodraeth Cynulliad Cymru  
Welsh Assembly Government

Eich cyf/Your ref P-03-238/241  
Ein cyf/Our ref JD/00843/10

Christine Chapman AM  
Chair - Petitions Committee  
National Assembly for Wales  
Cardiff Bay  
Cardiff  
CF99 1NA

26 April 2010

*Dear Christine,*

### **PETITIONS P-03-238 POLLUTION OF THE BURRY INLET AND P-03-241 SAVE OUR SEWERS – LLANELLI STAR**

Thank you for your letter of 31 March and enclosed report submitted by the petitioners detailing site visits to waste water treatment works (WWTW) and Pumping Stations (PS) in Llanelli. The Committee wishes to seek clarity on a number of issues raised by the petitioner which I'll consider in turn.

#### **1. Does Cambrian PS and Llanelli WWTW meet the Urban Waste Water Treatment Directive?**

The Assembly Government works with its partners and others to ensure that the requirements of European and domestic legislation are met. Ultimately, it is a matter for the relevant European authorities to determine whether or not the requirements of a particular Directive are properly implemented.

This question relates to matters which are the subject of ongoing investigation and communication between the European Commission, the UK and Welsh Assembly Government. Those communications must remain confidential so as not to prejudice their outcome so it would be inappropriate to comment further on these matters at this time.

The recent Review of Consents (RoC) conducted by the Environment Agency (EA) for Carmarthen Bay and Estuaries European Marine Site designation, required under the Habitats Regulations, considered the discharge consent for Cambrian Place PS, along with many other discharges. A key consideration in forming a judgement on whether the discharge posed a risk of an adverse impact on the designation features related to whether the discharges were deemed to be Unsatisfactory Intermittent Discharges (UIDs).

The criteria for UIDs formed the basis for including Water Company discharges within a 5-yearly investment programme, termed AMP (Asset Management Programme) (AMP4 covering the period 2005-2010). Cambrian Place PS was not considered an UID, therefore

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was not included within AMP4. The Review of Consents therefore determined that the discharge had no adverse effect upon the integrity of the European site.

**2. How many places within Carmarthenshire discharge happens which could impact on the water quality of the Loughor Estuary, Burry Inlet and/or Carmarthenshire Bay and what impact these discharges may be having?**

Regarding discharges to the Carmarthen Bay as a whole, 294 discharge consents were considered within the above-mentioned Review of Consents. The review was to ensure that the Carmarthen Bay & Estuaries European Marine Site achieves its long term water quality objective in line with the site's conservation objectives: to ensure the site is not at risk due to elevated nutrient levels.

Through the review for Carmarthen Bay & Estuaries European Marine Site, 260 of these discharges were shown not to have an adverse impact on the integrity of designation features.

The potential impact from the remaining 34 discharges was looked at in more depth during the final stage of the review. Most of these were intermittent discharges, previously deemed 'unsatisfactory' under the aforementioned criteria, but following improvement work on their assets by Dŵr Cymru Welsh Water, they progressed to 'satisfactory' status during AMP4. Of the remainder, the Environment Agency made a decision to modify the consents of the four most significant continuous discharges in order to reduce the input of Phosphorus to the designation, namely at Llanelli WWTW, Gowerton WWTW, Parc y Splotts WWTW and Pontyberem WWTW.

**3. Views on concerns expressed by the petitioners about the potential conflict of interest in relation to the appointment of the Environment Agency to lead the investigation into cockle mortality.**

The Assembly Government has asked the Environment Agency to lead the investigation because they are the independent, expert regulator for environmental water quality.

The cockle mortality investigation is overseen by an independent group of key stakeholders. This group includes the Environment Agency, but also includes members of the Cockle Working Group which consists of representatives from the cockle gathering community who themselves represent the petitioners in your correspondence.

The investigations have been developed by a Scientific Steering Group and informed by input and advice from the Working Group coordinated by the Environment Agency. This group includes representatives of all the stakeholders, including the industry, regulatory bodies and the scientific experts, specifically Dŵr Cymru Welsh Water, the Countryside Council for Wales, South Wales Sea Fisheries Committee (whose functions are now integrated into the Welsh Assembly Government and the Environment Agency), commercial cockle gatherers and wholesalers, and applied academic groups, namely: Universities of Hull, Aberystwyth, Bangor and Swansea; Water Research Council and Centre for Ecology Fisheries and Aquaculture Science (CEFAS).

The Welsh Assembly Government Technical Services Division is providing an independent review of the investigation and will monitor progress.

**4. Are the petitioners (Llanelli and Penclawdd Cockle Co-operative) involved in the cockle mortality study?**

As part of the investigation, Professor Mike Elliott at Hull University undertook a 2009 survey between March and July to investigate these mortalities. Professor Elliott produced a draft interim report containing the preliminary findings into cockle mortality.

The draft interim report was sent to the Cockle Working Group and other stakeholder bodies on 12 March 2010 and Professor Elliott discussed the findings of the report at a meeting of the Cockle Working Group on 19 March. Following this meeting, the report was subject to wider circulation for comment. Once the draft interim report has been considered by the working group and any agreed amendments made the final report will be published in May or June.

The Cockle Working Group consists of representatives of the hand gathering cocklers. The Llanelli and Penclawdd Cockle Co-operative are a part of this Group and at least one of their members has been sent a copy of the draft interim report.

*Yus,*



**Jane Davidson AM**

Y Gweinidog dros yr Amgylchedd, Cynaliadwyedd a Thai  
Minister for Environment, Sustainability and Housing

**Jane Davidson AC/AM**

**Y Gweinidog dros yr Amgylchedd, Cynaliadwyedd a Thai  
Minister for Environment, Sustainability and Housing**



Llywodraeth Cynulliad Cymru  
Welsh Assembly Government

Eich cyf/Your ref P-03-238/241  
Ein cyf/Our ref JD/01206/10

Christine Chapman AM  
Chair - Petitions Committee  
National Assembly for Wales  
Cardiff Bay  
Cardiff  
CF99 1NA

14 June 2010

*Dear Christine,*

**PETITIONS P-03-238 POLLUTION OF THE BURRY INLET AND PO-03-241 SAVE OUR SEWERS – LLANELLI STAR**

Thank you for your letter of 21 May in which you seek clarification of when the cockle mortality investigation in the Burry Inlet will be completed and the outcome known.

The cockle mortality investigation is ongoing; the draft interim report reflected a survey campaign between March and July 2009 conducted by Professor Mike Elliott at Hull University. The key findings of the interim report include:

- there was no gross changes of water and sediment quality sufficient to stress the cockles;
- sediment accretion could have stressed the cockles by increasing their position in the tidal range although this is considered unlikely;
- the remaining benthic community did not show any adverse changes again reinforcing the above two conclusions;
- there were high but uniform mortalities of cockles in the Burry Inlet, i.e. no apparent episodic mass mortality, but these were balanced by high recruitment;
- the notable mortalities follows spawning by the cockles which in turn followed the flesh condition changes associated with gonad maturation;
- there is some evidence of a reduced flesh condition, use of body reserves and energetics, especially in the Burry Inlet, and that these are linked to spawning but it is not yet known if these were sufficient to kill the cockles;
- the high levels of some parasites could have caused mortalities in the Burry Inlet but probably only with already stressed individuals;
- there was immunological evidence of stress but this occurred at all sites, both in the Dee and Burry Inlet;
- there is evidence of faster growth and earlier reproduction in the Burry Inlet cockles but this needs further investigation;

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- because of its older age structure, the Dee population proved not to be a suitable or valid control against which the Burry Inlet could be judged, hence comparisons have to be treated with caution.

The draft report was sent to the cockle working group and other stakeholders for their consideration. Following comments received by the cockle working group Professor Elliott produced a final report in May 2010. This final report will inform the next stages of the cockle mortality investigation. A copy of the report is attached.

I and the Minister for Rural Affairs met with the Environment Agency last month to discuss progress in the investigation. The Environment Agency advised that as the emphasis changes from the ongoing scientific investigations to longer term management of the shell fishery it is envisaged that the current Cockle Working Group will eventually wind down. It will be replaced by two new groups consisting of a management group and stakeholder forum.

The recommendations from the report have been prioritised and will be addressed in the 2010/11 ongoing investigation programme. These can broadly be summarized as follows:

- There is need to conduct statistical analysis of the results to highlight any cause and effect relationships between environmental or biological factors and the onset of mortality events, for example relationships between times of spawning, mortalities and condition of the animals in relation to their energy reserves and/or parasite infection rates.
- A significant number of scientific reports from around the world have been identified that may provide further insight into the mortality events. The need exists to expertly review these papers and to extract pertinent information that might assist with the investigation and help inform future management options.
- Carry out a management review of past and current practices and recommend options – an initial review is currently underway.
- Develop a stakeholder engagement plan and draw on local knowledge to help inform future decision making.

I hope you will find the information clarifies the future process in respect of this issue.

Yours,



**Jane Davidson AM**

Y Gweinidog dros yr Amgylchedd, Cynaliadwyedd a Thai  
Minister for Environment, Sustainability and Housing



## EXECUTIVE SUMMARY

### **Background**

Chronic mass mortalities have been observed within the commercial cockle (*Cerastoderma edule*) beds in the Burry Inlet annually since 2002. It is estimated that between 2003 and 2007 the financial loss to the commercial fishery was £14 million. The Welsh Assembly Government (WAG) requested an investigation into the cockle mortalities and asked the Environment Agency Wales (EAW) to lead the investigation. As part of this investigation EAW (together with other funding bodies WAG, Countryside Council for Wales (CCW), and South Wales Sea Fisheries Committee (SWSFC)) proposed a two year study to investigate these mortalities. This report presents the findings of the 2009 survey campaign which was undertaken between March and July to investigate these mortalities. The survey and analysis was undertaken by the Universities of Hull, Swansea and Bangor, the Centre for Fisheries and Aquaculture Sciences (Cefas) and EAW. Funding was provided by WAG, EAW, CCW and the SWSFC with in-kind support from the cockle gatherers and processors.

The 2009 survey aimed to determine changes in cockle populations, benthic (bed) communities and individual cockle health in relation to changes in environmental parameters such as sediment composition, accretion and water quality. Surveys were undertaken on a weekly basis, for 18 weeks, at two sites in the Burry Inlet and one control site in the Dee Estuary. This initial work analysed samples for water quality (dissolved oxygen, temperature, salinity, faecal coliforms, ammonia and chlorophyll *a*), bed sediment (particle size, organic content, redox layer, accretion and station height), benthic faunal (other sandflat organisms) communities (abundance and biomass), cockle populations (abundance, size-structure, assessment of moribund/dead cockles, flesh condition index) and cockle health (parasites, sexual maturation, biochemical analysis and immunology).

### **Main Findings**

All three sites were similar with respect to sediment type (mean and median grain size), with all the sediments classified as fine or very fine sand. Sand dominated the sediment categories and remained relatively high at both sites in the Burry (North and South); sand content in the Dee decreased across the survey period in line with an increase in mud content.

Organic concentration in the sediment ranged from 0.4% to 1.4% which is considered to be within the normal range of organic matter for sandy sediments. Although fluctuations occurred between these values, these changes are within any natural variation of the systems. A slight increase in organic content observed in the Dee reflects the increase in sediment mud content.

The redox potential discontinuity layer (RPD)<sup>1</sup>, as an indication of the oxygen conditions in the sediment, was deeper at both Burry Inlet sites (>10cm) than would be regarded as potentially harmful; there was no sign of hydrogen sulphide (a by-product of poor oxygen conditions) toxicity at either Burry North or Burry South and the redox potential data did not indicate sufficiently anoxic conditions to cause the cockles to migrate out of the sediment. The average RPD layer varied significantly in the Dee (1 - 5.5 cm) being within 2 – 3 cm of

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<sup>1</sup> The change from aerated (oxygen rich) surface sediments to deeper anoxic (oxygen deprived) layers.

the surface, with aerated sediment only just covering the cockles in some places. The depth of the RPD in the sediment may have contributed to the exposure of the cockle shells and consequent barnacle larvae settlement on those shells in the Dee Estuary.

The high level of sediment accretion observed in the Burry Inlet, particularly at Burry South, was the most notable feature for the environmental parameters. This confirmed observations from 2008 and anecdotal evidence from cockle gatherers over the years. Large amounts of sediment are being deposited on the cockle beds and the area is generally accreting. In comparison, very little sediment accretion was observed in the Dee.

The water quality analyses show that, apart from the impact of a storm event in July, all water quality parameters were considered to be within normal levels for such estuaries. However, initial investigations of un-ionised ammonia levels<sup>2</sup> in the Burry Inlet and Three Rivers Estuaries during 2008 indicate that unionised ammonia levels may on occasions introduce stress, although it needs to be confirmed whether the Burry concentrations differ significantly from other estuaries with sustainable cockle populations. The source of the ammonia is unknown although the cockles themselves will contribute to the levels observed.

As the benthic communities (i.e. the different species living in or on the bed) varied between sites, the benthic data were analysed on a site by site basis in order to investigate temporal trends within the data. The benthic community varied between the sites and with time. There was no evidence that any other benthic species other than the cockle showed a mass mortality. The lack of an effect in the larger-sized benthic species, and even those with the same suspension feeding habit as cockles, reinforces the conclusion that neither water nor sediment quality were responsible for the cockle mortalities.

Cockle mortalities were observed at the start of the survey, with cockle densities in the Burry Inlet declining during the investigation. 85% of cockles died during the 18 week survey with mortality rates varying between 0 and 6% per day, although moribund and dead cockles found on the sediment surface were an unreliable indicator for mortality rates. Spat (0-year class cockles) settled from June onward and reached densities of up to 6,000 per m<sup>2</sup> in the Burry Inlet.

The flesh condition index of cockles decreased from the end of April through to July, with both the mean shell and flesh weights of the cockles increasing during this period. During the same period, cockles in the Dee showed an increasing condition index, with an increase in flesh weight, but no shell weight, observed. While the condition of the cockles is expected to change over these periods (for example, cockles will normally lose condition while spawning), the changes in condition in relation to survival and growth needs to be further investigated. The initial assessment of cockle growth showed higher rates for both Burry Inlet sites compared to the Dee Estuary.

There was a high diversity of parasites in animals from both estuaries, indicating the presence of other hosts in these areas, including crabs, other bivalves and gastropods (mud snails) as well as fish and bird hosts. It is of note that the numbers, prevalence and types of infections by certain parasites are much reduced compared with previous years of sampling whereas other had higher levels in 2009.

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<sup>2</sup> Total ammonia occurs in two forms: an ionised ammonium ion (NH<sub>4</sub><sup>+</sup>) and un-ionised ammonia (NH<sub>3</sub>). Natural sources of ammonia occur mostly in the ammonium form (94-98%), however in water ammonium dissociates to un-ionised ammonia and the hydrogen ion.

There was clear evidence for maturation and subsequent spawning of cockles from all three sample sites. However, there was a size discrepancy in the cockles collected, with those from the Dee being much larger (and more mature) which was reflected in the gonad status of the animals. Those collected in the Dee showed a higher degree of maturation and appeared to spawn over a longer period compared with those from the Burry. In addition, cockles from the Dee appeared to recover more quickly following spawning. These differences may be the result of the older cockles present at the Dee than in the Burry Inlet.

The mortality rates results found in the study raise queries over whether the phenomenon described by the cockle fishermen as a sudden mass mortality is really quite sudden, and also on the accuracy of assessing the extent of the mortalities. These surveys have sampled deeper in the sediment than before and have shown much higher numbers of dead cockles below the surface than previously described. The results have confirmed that the Burry population is dominated by the younger age classes and possibly in the age of first reproduction and so the major links between changes to condition, growth during the first year, timing and extent of spawning and mortalities need to be investigated further and compared to populations elsewhere.

### **Conclusions**

The analyses during the period March to July 2009 have produced the following conclusions:

- there were high but uniform mortalities of cockles in the Burry Inlet, i.e. no apparent episodic mass mortality, but these were balanced by high recruitment;
- the notable mortalities follows spawning by the cockles which in turn followed the flesh condition changes associated with gonad maturation;
- there is some evidence of a reduced flesh condition, use of body reserves and energetics, especially in the Burry Inlet, and that these are linked to spawning but it is not yet known if these were sufficient to kill the cockles;
- the high levels of some parasites could have caused mortalities in the Burry Inlet but probably only with already stressed individuals;
- there was immunological evidence of stress but this occurred at all sites, both in the Dee and Burry Inlet;
- there is evidence of faster growth and earlier reproduction in the Burry Inlet cockles but this needs further investigation;
- because of its older age structure, the Dee population proved not to be as suitable as expected as a control against which the Burry Inlet could be judged, hence comparisons have to be treated with caution;
- there was no gross changes of water and sediment quality sufficient to stress the cockles with perhaps the potential for ammonia stress;
- however, as the un-ionised ammonia data were not obtained concurrently with the remaining data then their value is further questionable;
- sediment accretion could have stressed the cockles by raising their position in the tidal range although this is considered unlikely;

- the remaining benthic community (i.e. apart from cockles) did not show any adverse changes again reinforcing the above conclusions.

### ***Recommendations for Further Work***

It is emphasised that this survey work is only part of the proposed investigations for the Burry Inlet and therefore some of the suggested work (below) may be ongoing or may already have the funding in place for this coming year. The recommendations below are given in order of priority and it is emphasised that the third block need not be attempted until the first two blocks have been completed. These recommendations relate to studies linked to those in the present report. They do not include links between the mortalities, the harvesting and the management of the beds.

#### *Further work on the 2009 samples, data and information:*

- The available data for 2009 should be further interrogated both to show the relationships between the environmental and biotic data but also within the biotic data (e.g. relationships between times of spawning, mortalities, condition and storage material changes).
- This could be done by undertaking a multivariate analysis on the combined data sets in order to investigate any relationships between the various factors, for example this would include an analysis of the changes during the recorded storm event and the changes in bivalve populations in relation to changes in environmental variables.
- Further investigation into the effects of water and air variables (e.g. temperature) in relation to seasonal cycles to determine environmental triggers for natural cycles.
- Further work on the age and growth of the cockles already sampled – further interrogation of the growth rates of both areas according to size-frequency histogram and growth cessation ring analysis.
- A re-evaluation of condition index changes, using other indices, and linked to the spawning and energetic information.

#### *Further work without additional fieldwork:*

- The interrogation of existing literature and data which are available for the Burry Inlet against that elsewhere. This is considered of key importance and can be easily achieved following the initial literature searches already undertaken by the EA Science Team.
- Following on from the above, an indication of growth rates for different areas in relation to population sizes and mortalities.
- An indication of maturation and spawning times and cycles for populations in different areas.
- Similarly, the modelling of the population dynamics and assessment of impact of historical management practices would be valuable especially taking into account the restrictions imposed on access to cockle beds spatially and to minimum cockle sizes only.
- The literature reviews should assess the phenomenon of apparent abnormal mass mortalities in cockles and other shellfish; this will build on the EA-coordinated survey developing across England and Wales. However, this may be constrained by lack of

staff time, base-line data, and techniques to accurately assess cockle densities and mortality rates on a routine basis.

#### *Further field campaigns*

- For future surveys, additional environmental variables may be valuable, for example turbidity could indicate the availability of phytoplankton production and thus food supply for the cockles. The EAW's environmental data buoy installed in the Burry Inlet will provide constant monitoring of environmental conditions and it is hoped that these data will be available online for all to access.
- Following on from the investigation into un-ionised ammonia, it is suggested that further monitoring and a comparison of sampling techniques for un-ionised ammonia levels are recommended for the future. There may be the opportunity to calculate unionised ammonia in other estuaries with cockle populations from archived data.
- Given the varying degree of accretion in the Dee, a more suitable measurement technique would be valuable (e.g. the establishment of metal plates across the site (after Brown, 1998)) linked to an analysis of the preferred tidal heights for the cockles.
- Further consideration of sampling frequency would be valuable to identify whether additional samples would further link cockle mortalities and environmental parameters as a species-specific phenomenon.
- The continuation of monitoring in the Burry Inlet (and the Dee to a lesser extent) over the entire year (and subsequent years) to allow both the exact timing of the mortality events to be established and an assessment of winter condition as an influence on summer mortalities and reproduction cycles.
- Further investigation of the settlement, growth and mortalities of spat across the intertidal areas and then extend this to growth and productivity of the cockles in their first 2 years.
- It is suggested that bacterial work, such as DNA fingerprinting of flora from various organs and the surrounding environment, may be a useful field to investigate. An assessment of bacteria which are known to cause mortality in cockles would also be useful.
- While field survey approaches provide valuable information, the repercussions of the health of the cockles in relation to long term survival may require an experimental approach, for example to determine the density-dependent influences in the populations.
- Given the uncertainties, it would be valuable to understand the hydrographical changes in the Burry Inlet - to determine whether all the dead cockles actually come from the area in which they are found or have been transferred from elsewhere especially as many bivalves move by hydrographic concentration. Similarly, the origin of the spat is unclear.

The Office of Alun Davies AM

The National Assembly for Wales  
Cardiff  
CF99 1NA

20 July 2010

Christine Chapman AM  
Chair – Petitions Committee  
National Assembly for Wales  
Cardiff  
CF99 1NA

Dear Ms Chapman

**Re: -03-238 Pollution of the Burry Inlet petition**

Burry Inlet Cockle Mortalities Investigation: Scientific Findings March to July 2009  
Final Report to Environment Agency Wales  
Institute of Estuarine and Coastal Studies University of Hull

You will be aware that I responded, as requested, to the letter of 26 April 2010 from the Minister for Environment, Sustainability and Housing. The observations contained in that letter and in the attachments still stand. I should be grateful if they were to be given full attention in any further consideration of this issue.

I shall then direct my observations specifically to the recent report with the understanding that previous submissions will still be accorded the appropriate validity.

First, the report must be seen as part of an on-going investigation. The problem is the mass mortality of cockles affecting the livelihood of the cockle gatherers and the economy of west Wales. The answer, alas, is not as simple as is stating the problem. Reading the report is to follow the process of the investigation. It does not, unfortunately, come up with a clear cause.

However, because the problem is so serious in its effects on the ecology and economy of the area, the investigation must continue. I direct your attention to the conclusions of the report and to the recommendations for further work. Throughout, there is the clear assumption that the investigation must continue.

Second, the investigation contained in the report took place between March and July 2009 and the first conclusion is that “there were high but uniform mortalities of cockles in the Burry Inlet, i.e. no apparent mass mortality, but these were balanced by high recruitment.”

The cockle gatherers dispute this. They are particularly frustrated that an event in June 2005 seems to have been forgotten by all apart from them.

Briefly, 2004 had been a good year and there were plans to develop the cockle stocks and to increase the export opportunities. However, in June 2005, there occurred an incident that did cause mass mortality. A sewage pipe fractured. This was the main

sewage pipe to the treatment plant. Millions of gallons of sewage effluent had nowhere to go except out through emergency discharge consents all along the coast. Within days some of the cockle beds were dead. From the perspective of the cockle gatherers thousands of tons of cockles had gone and their development plans were in ruins. Five years later they feel not only that little progress has been made but that the event of June 2005 has been quietly and conveniently forgotten.

The report certainly shows an awareness that a “storm event” can be a factor. In the section **Main Findings** of the **Executive Summary**, the following sentence appears: “The water quality analyses show that, apart from the impact of a storm event in July, all water quality parameters were considered to be within normal levels for such estuaries.” However, we note that in the section headed, *Further work on the 2009 samples, data and information* the report suggests “. . . undertaking a multivariate analysis on the combined data sets in order to investigate any relationships between the various factors, for example this would include an analysis of the changes during the recorded storm event and the changes during the recorded storm event and the changes in bivalve populations in relation to changes in environmental variables.” The “storm events” to which the report refers occurred in July 2009 during the time of the investigation. The cockle gatherers’ frustration is that what, in their view, are the catastrophic long-term consequences of the storm event of June 2005 have not been sufficiently considered or researched.

The report notes a “high level of sediment accretion . . . in the Burry Inlet.” The Dee Estuary was used as a control site and here, “very little sediment accretion was observed.” Interestingly, the report says that “these surveys have sampled deeper in the sediment than before and have shown much higher numbers of dead cockles below the surface than previously described. The results have confirmed that the Burry population is dominated by the younger age classes and possibly in the age of first reproduction and so the major links between changes to condition, growth during the first year, timing and extent of spawning and mortalities need to be investigated further and compared to populations elsewhere.” The final bullet point of the conclusions states that “the remaining benthic community (i.e. apart from the cockles) did not show any adverse changes . . .” The final bullet point in paragraph 4.4.3 in the main report makes the point more explicitly. “Unlike cockles, the five other larger benthic species in the Burry Inlet did not suffer unusual mortalities (*Macoma balthica*, *Angulus tenuis*, *Scrobicularia plana*, *Arenicola marina* and *Lanica conchilega*). As these species include deposit and suspension feeders, as with the cockles, then it is suggested that the cockle mortalities was not due to a reduction of sediment or water quality.”

The conclusion to which we seem to be inexorably driven is that cockle mortalities are the result of a “species-specific phenomenon.” We applaud, therefore, the assertion that “an assessment of bacteria which are known to cause mortality in cockles would also be useful.”

We are concerned, still, that the observations of the cockle gatherer themselves seem not to be given sufficient weight. Speaking of the devolution referendum of 1979, “When you see an elephant on your doorstep, you know it's there,” Secretary of State for Wales, John Morris commented. That reflects the feelings of the cockle gatherers.

This is why we particularly welcome the encouragement to conduct further research into areas that do not of necessity depend on species specific bacterial mortality. Thus, we hope that the following bullet point taken from Page 94 will be fully considered and explored appropriately:

“Following on from the investigation into un-ionised ammonia, it is suggested that further monitoring and a comparison of sampling techniques for un-ionised ammonia levels are recommended for the future. There may be the opportunity to calculate unionised ammonia in other estuaries with cockle populations from archived data.”

We welcome this investigation. However, it must not be considered definitive. It must be part of an on-going investigation. Those who work and live in and around the Burry Inlet need to be consulted and listened to. The relationship between and amongst those who make the investigations and take the decisions is itself evolving. According to the BBC blog by Betsan Powys on 13 July 2010:

“A little-noted statement last week from Sustainability Minister Jane Davidson indicated a radical plan is afoot to take in-house to WAG most, or all, of the organisations relating to the natural environment here - among them the Welsh arm of the UK-wide Environment Agency.”

If this means the possibility of decisive action taken on the basis of informed investigation and comprehensive information then we should be happy. We should also hope that this will mean that the wider picture will be considered. To make the point more explicitly, while we are defined as “cockle gatherers” because of our occupation, we are as concerned as any Minister would be, of the effect on humans of coastal pollution. Thus, the investigation by Professor Pennington into the E-coli outbreak in south Wales is in our minds, as it will be in the Minister’s. We are concerned that the E-coli results for Llanelli beach, adjacent to the Pwll cockle bed, show high levels of E-coli that are dangerous for humans.

The investigation needs to continue and needs to include test equipment on all major outfalls at the point of discharge. There also needs to be a policy of transparency for all involved – whether by the Environment Agency or by Carmarthenshire County Council. Results need to be seen and to be shared. The experience of the cockle gatherers is that, too often, results are revealed only when sought under a Freedom of Information request. This is unacceptable and unhelpful in seeking a solution to the problem.

What is important now is that the investigation should continue, that those closest to the problem should be consulted and that what can be done in the short-term to alleviate the problems should be done without delay.

Yours sincerely

*Rhys Williams*



Response from Minister for ESH

**Jane Davidson AC/AM**

Y Gweinidog dros yr Amgylchedd, Cynaliadwyedd a Thai  
Minister for Environment, Sustainability and Housing



Llywodraeth Cynulliad Cymru  
Welsh Assembly Government

Eich cyf/Your ref: P-03-238  
Ein cyf/Our ref: JD/02246/10

Christine Chapman AM  
Chair - Petitions Committee  
National Assembly for Wales  
Cardiff Bay  
Cardiff  
CF99 1NA

25 October 2010

*Dear Christine,*

Further to your correspondence dated 5 October 2010, I can confirm that the pollution incident arising from a break in a Dŵr Cymru Welsh Water sewer in June 2005 was investigated by the Environment Agency (EA) at the time.

Cockle mortalities have been reported annually since 2002. The cockle working group discussed the possible impact of the 2005 bursts on the cockle mortality that year. However, no links between the cockle mortality and the sewage pipe break were established by the EA's investigations undertaken at the time. The EA stated at the time that any effect would be localised and would not have been a major factor in the widespread cockle die off throughout the area.

The June 2005 incident has been brought to the attention of the independent researchers investigating the ongoing cockle mortality. They have confirmed that this will be considered, along with all other evidence, as part of the ongoing cockle mortality investigation. The investigation involves data analyses of all potential factors that might influence the cockle mortalities.

The researchers have highlighted that it would be unusual for a pollution incident to only affect a single species. The final report on this investigation will be published in March 2011.

I trust this information is sufficient at this time however if you require copies of the incident reports these are available from the Environment Agency for your consideration.

*Ys,*  
*Jae*

**Jane Davidson AM**

Y Gweinidog dros yr Amgylchedd, Cynaliadwyedd a Thai  
Minister for Environment, Sustainability and Housing

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**Jane Davidson AC/AM**

Y Gweinidog dros yr Amgylchedd, Cynaliadwyedd a Thai  
Minister for Environment, Sustainability and Housing



Llywodraeth Cynulliad Cymru  
Welsh Assembly Government

Eich cyf/Your ref: P-03-238  
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Christine Chapman AM  
Chair - Petitions Committee  
National Assembly for Wales  
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November 2010

*Dear Cho,*

**P-03-238 Pollution of Bury Inlet**

I confirm that a copy of the report into the pollution issues in the Burry Inlet will be forwarded to you as soon as it is available.

*Yours,*

**Jane Davidson AM**

Y Gweinidog dros yr Amgylchedd, Cynaliadwyedd a Thai  
Minister for Environment, Sustainability and Housing

## Response received from Cllr Thomas

Dear Rhys

I have forwarded to you the story of Welsh Water pleading guilty to polluting the OUTER LOUGHOR ESTUARY & BURRY INLET, they are due before the Court in Cardiff in March to be sentenced. Our petition has now been at the Welsh Assembly for two years can you update us on why this has not been heard properly. The evidence we presented was from Welsh Water, The Environment Agency & Carmarthenshire County Council, this evidence was about pollution of the above area during the time of our Petition,

We would like to know what the Petition Committee are doing or are they waiting for us to go away. the issue of cockle mortality is still ongoing and every year we are left with only cockle spat, the cockle get to one year old and perish indeed some are now dying during December which does not bode well for the spring, we hope this year will be different however for the past 5 years the cockle in the estuary has been dying before they reach maturity. We attended the last Environment meeting in Llanelli where a Swansea University Scientist stated that there was not enough money to carry out the investigation and that there never had been enough money, indeed the Scientist added that one of the leading experts in Britain had not involved himself in the investigation because of that very fact.

We have read all the letters you sent to us, including the Ministers letters to the petition committee Chair, these in particular seem to be designed to push the matter further away from the committee being able to deal with our request for a full independent inquiry into the whole affair and concentrate on the claims by the EA that their tests do not show anything. The EA tests which were being referred to are the tests results being recorded in the middle of the Estuary which were taken by hand at high tides only so they were not the complete picture, there is now A buoy out at the same place, taking tests, but the people who are responsible for it stated that in the area where it is the water is at its most turbulent and we may get better BOD results, and a better idea of the concentrations of suspended solids in the water if the buoy were placed on the cockle beds or at a quieter spot nearer the discharge points, to us that would seem reasonable.

For the past few years we have asked for all the Estuary WIMS test results to be made public we would also like to have these looked at by an independent microbiologist Scientist so that we have an independent opinion on the levels you can see in the two charts we include . The more we have to wait for requests like this to be handled the more we feel that there is very much more to come out than is being disclosed.

We have attached once again the two WIMS test results we have, we have been informed by the EA there are many of these tests undertaken all over the Estuary, is it too much to ask that an independent Scientist gives an opinion on the possible effect of such discharges on water quality within the areas the discharges occur.

Bill Thomas

17March 2011

Dear Colleagues

The purpose of this letter is to request that the Petitions Committee and its officers re-consider the Cockle Co-operative's wish to give oral evidence to the Petitions Committee.

I quote the following email of 27 October 2010 to Cllr Bill Thomas for two reasons:

- a) it succinctly describes the position in October and
- b) it is an example of the even-handed manner in which information has been communicated.

Dear Bill,

Following your previous email, please find below a response from the Petitions Committee. It appears that we must wait until the Minister responds before we can move forward.

*'We know that the Cockle Co-operative are keen to give oral evidence to the Committee, as the lead petitioner (Rhys) has made us aware. However, the decision on who the Committee wish to take oral evidence from is for the Committee to make. The Committee will decide to take oral evidence, when they feel that it will help with their understanding of the issues raised by the petition and help aid their consideration. Due to the nature and business of the Petitions Committee, they are unable to take oral evidence from all petitioners. We do make it clear to petitioners that there is no guarantee that they will be invited to give oral evidence.'*

*The Committee are continuing to consider this petition, and are currently awaiting a response from the Minister for Environment, Sustainability and Housing. Once this has been received, the Committee will next consider the petition.'*

If the committee decide to take evidence myself and Rhys are happy to help in any way we can at that point.

Kind regards,

Richard

**Richard Burgess**

Researcher / Ymchwilydd  
Joyce Watson AM / AC

Since October, much has occurred. One change is that Richard Burgess has left the Assembly and Nitesh Patel from the office of Joyce Watson AM is now liaising with Rhys Williams from the office of Alun Davies AM in the matter of the petition.

For ease of communication and in the interests of openness there follows and amended version of an email sent last week by Cllr Bill Thomas:

Following your last communication 27th October 2010 there have been significant occurrences. First, the recent revelations from the EA on surface water problems and the discharge consents reviews of 500 discharges, have caused us to resubmit our request to give oral evidence to the Committee. The first I.D. 31 makes it clear what is expected of the EA. The second makes it clear what is expected of the developers. Presumably, that would mean huge engineering works to remove surface water from a sewage system that has existed underground for over a hundred years with additions but with little significant modification.

The cockle gatherers wished to present evidence on the first issue. They would have used this as evidence of non-compliance by the EA to Statutory Duty and WAG policies. However, this has been avoided and the Committee Chair assured of progress with corrective actions. However, it does not present the Petition Committee with the possible cause of the problems. In other words, it neatly side-steps the crucial issue of cause and effect.

It appears to the Cockle Gatherers that the Petition Committee is encouraged to focus on the task force recommendations instead of deciding how we all arrived at this place in the first place.

The evidence of non-compliance increases with every new revelation. The concerns of those whose livelihoods are at stake and of those organisations that represent them appear not to be taken sufficiently into account. This is why we request that the Cockle Gatherers be allowed to present oral testimony to the Petitions Committee.

Sent on behalf of the Officers of the Cockle Gatherers.  
Bill Thomas

That, therefore, is our request on behalf of Cllr Bill Thomas and the Cockle Co-operative.

Yours sincerely

Rhys Williams and Nitesh Patel  
(AM Support Alun Davies and AM Support Joyce Watson)