

Mr S Ross,  
**Natural Resources Wales,**  
Chester Road,  
Buckley,  
Flintshire.  
CH7 3AJ

21<sup>st</sup> August 2015

Via email to: [stuart.ross@cyfoethnaturiolcymru.gov.uk](mailto:stuart.ross@cyfoethnaturiolcymru.gov.uk)

Our ref: GNF/NRWL210815

Dear Stuart,

**Pen-Y-Bont GP3830BG. Response to site inspection CAR form dated 29<sup>th</sup> July 2015.**

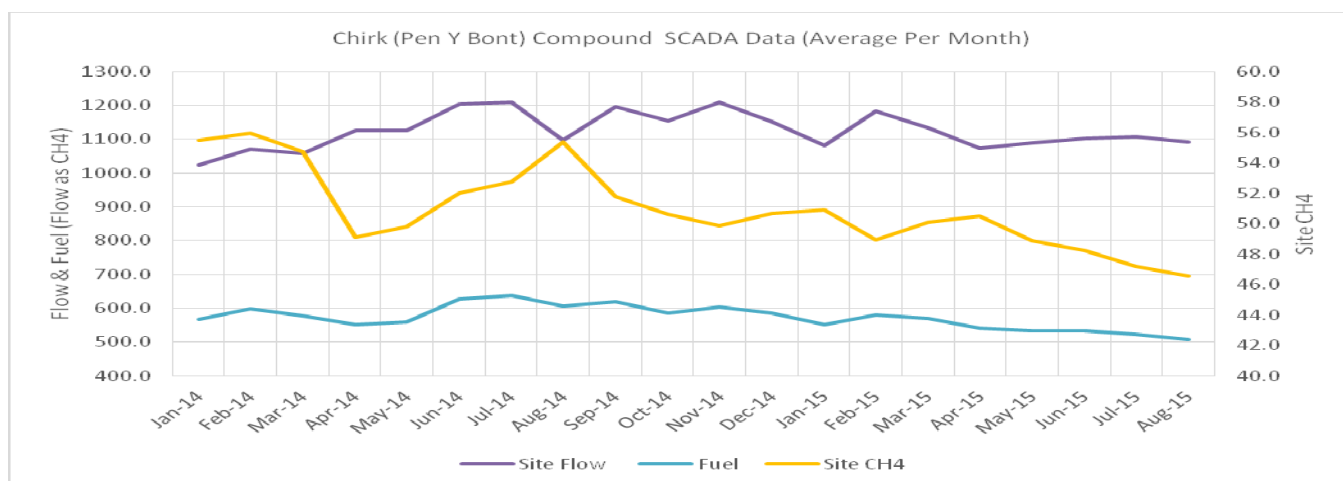
I am writing in response to your CAR form dated 29<sup>th</sup> July 2015 which required actions to be implemented following a site inspection which incorporated a review of the gas compound and gas field infrastructure;

**Gas Compound**

Gas quality (methane content) had changed significantly since the morning reading taken at the compound by the Infinis Gas Technician. It had reduced from 49%v/v to 44%v/v. Furthermore the methane content has reduced since the last inspection in March 2015, dropping by approximately 10%v/v. **The cause of the reduction both on the day and over time should be investigated and findings reported to NRW.**

*From information supplied from the Infinis Site Technician, selected gas wells, particularly newer wells and those in the tipping area, were balanced earlier in the day on the 28<sup>th</sup> or early on 29<sup>th</sup> July. Gas quality was then seen to drop. These gas wells were subsequently re-balanced which resulted in an improvement to compound gas quality, with associated flow drop, following the departure of the NRW team:*

| Asset ID | Reading Taken On | CH4 (%) | CO2 (%) | O2 (%) | Balance Gas (%) | Vacuum (mbar) | Flow (M3 / H) |
|----------|------------------|---------|---------|--------|-----------------|---------------|---------------|
| CHISITE1 | 29/07/2015 08:40 | 48.5    | 44.7    | 0.8    | 6               | -91.57        | 1280          |
| CHISITE1 | 29/07/2015 11:22 | 44.2    | 36      | 0.9    | 18.9            | -87.3         | 1290          |
| CHISITE1 | 29/07/2015 15:53 | 44.7    | 35      | 0.9    | 19.4            | -97.46        | 1200          |



The above graph covers the 18 month period as suggested in the CAR form. It is based upon continuous bulk gas and flow readings from the compound fixed analyser system. Due to the time scales involved, readings have been averaged to monthly for ease of comparison.

The values indicated confirm that gas quality (as % methane v/v) has reduced since the EA visit 18 months ago (>54%). The quality has also fallen since March 2015 (50.1%) to August 2015 (46.6%). Further investigation is required into the effect of liquid levels upon the gas wells, as suggested in paragraph 2. Infinis concurs that liquid levels within the gas wells are variable. The table below shows the average depths of liquid and depths to base from dipping across the site over time. The results concur with the observation in paragraph 2 in that, on average, 44-46% of total well depth is affected by liquid level.

|                      | 2011 | 2012 | 2013 | 2014 | 2015 |
|----------------------|------|------|------|------|------|
| Average Liquid Depth | 6.7  | 3.9  | 7.1  | 10.8 | 10.1 |
| Average Dip to Base  | 19.2 | 21.5 | 21.3 | 24.3 | 22.0 |
| % depth below liquid | 35%  | 18%  | 33%  | 44%  | 46%  |

Infinis will continue to investigate, maintain and balance to maintain gas quality and flow to the GUP.

#### Gas Field

**CHIW120** (new well), 29% CH<sub>4</sub>, elevated balance gas. Methane content reduced from 55% the day previous. Well head suction reduced by site technician. Possible reduction in slotted pipe work - **we recommend that the well is dipped to determine liquid level and pumped if necessary. Also, cross check the gas pressure in the main previous to the methane reduction.**

*This well was dipped directly after the inspection. Liquid at 10m, base at 31m therefore only 4m of perforations available.*

**CHIW76**, 28% CH<sub>4</sub>, CO<sub>2</sub> 19%, O<sub>2</sub> 11% BAL 40%. Well possibly sheared below ground level. **This well should be camera surveyed and if defective added to the next round of drilling. If the well is flooded with liquid pumping should be considered.**

*Both dip to liquid and dip to base are 13.5m. This well is collapsed or blocked (37% of original depth) and will be added to the next drilling program.*

**PW93R** (retro drill), -2.5 mbar, 60.3% CH<sub>4</sub>, 42.4% CO<sub>2</sub>, 0% O<sub>2</sub>, 0% BAL. High concentration of methane with low flow means that this well could be flooded. **Please ensure it is dipped as soon as possible.**

*Depth to liquid is 14.3m, depth to base is 34m.*

**PW91R** (retro rill), -0.15 mbar, 59.3% CH<sub>4</sub>, 42.5% CO<sub>2</sub>, 0% O<sub>2</sub>, BAL 0%, 65ppm CH<sub>4</sub> on cap anchor trench next to well. **Please see previous comment.**

*Depth to liquid is 13.7m, depth to base is 38m.*

**CHIR89**, -34 mbar, 50% CH<sub>4</sub>, 39% CO<sub>2</sub> (?), 9.9% BAL(?), 0.1% O<sub>2</sub>. When the well head was moved in the bentonite seal a release of gas occurred with associated strong odour. 4.0% methane detected from well seal. **This well requires better sealing.**

*This well has been resealed.*

**CHIR80** (new well) 35% CH<sub>4</sub>, 29% CO<sub>2</sub>, 3.9% O<sub>2</sub>, 30% BAL. Well turned off by technician due to elevated oxygen. **This well should be re-sealed and then re-balanced.**

*This well has been resealed and now reads 58.6% CH<sub>4</sub>, 43.2%CO<sub>2</sub>, 0% O<sub>2</sub>, 0% bal at -3.85mbar.*

**FCC to submit proposals to NRW to address the issues highlighted / questions raised in this report within 2 weeks of the date of this report.**

#### **Litter**

Litter pickers were present on site clearing litter from un-worked areas. **There was some loose litter on the flank facing the surface water lagoons, please ensure this picked by 07/08/15.**

*Litter on the NE flank of site facing the lagoons was picked during the remainder of the day of the audit visit and into the following day to clear the area.*

#### **Reports**

As discussed please submit the following reports;

a) CQA Validation report for the installation of gas wells May 2015 – *Infinis have informed us that Egniol are still awaiting some information to allow them to complete the CQA report, namely some small detail such as the delivery notes for the pipework, stone and bentonite used in the works.*

*Egniol say they will have the report completed early next week. Supplied on 28/08/15 and submitted to NRW.*

b) CQA Plan for capping works planned August / Summer 2015 – *CS to forward once available – capping to commence in 2<sup>nd</sup> week of September with cqa plans/reports for capping and emplacement of soils available by 1<sup>st</sup> week of September.*

c) Outstanding HRA Comments – *to be provided by mid-September.*

If you have any queries regarding the above please do not hesitate to contact me.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Geoff Forrest'.

**Geoff Forrest**

**Compliance Advisor**

Mobile: 07980 780937 | Email: [Geoff.forrest@fccenvironment.co.uk](mailto:Geoff.forrest@fccenvironment.co.uk)