Skewen Flood Debris Testing
Accompanying note to laboratory testing data – February samples
23rd February 2021

This note relates to 'sludge' (fine grained debris accumulated in flood impacted gardens). Samples were taken from seven representative locations as follows:

Sample Location	Lab Reference	Date and Time of Sampling	Sample description
2 Highland Close	21020347-001 21020383-001	02/02/2021 - 10:20 04/02/2021 – 13:45	brown orange sludge brown silt
7 Goshen Park	21020347-002 21020383-002	02/02/2021 - 11:10 04/02/2021 – 13:00	brown sludge brown silt with miscellaneous organic matter
10 Goshen Park	21020347-003 21020383-003	02/02/2021 - 11:10 04/02/2021 – 13:20	brown sludge brown silt
6 Sunnyland Crescent*	21020347-004 21020383-004	02/02/2021 - 11:30 04/02/2021 – 14:00	brown sludge brown silt with miscellaneous organic matter
94 Dynevor Road^	21020651-001 21020653-001	08/02/2021 – 12:30 Both samples	brown sludge with miscellaneous organic matter (both samples)
93 Dynevor Road^	21020651-002 21020653-001	08/02/2021 – 12:15 Both samples	brown sludge (both samples)
77 Dynevor Road^	21020651-003 21020653-001	08/02/2021 – 12:00 Both samples	brown sludge brown sludge with miscellaneous organic matter
* recorded in early lab reports as '5 Synnbent Crescent') ^ labelled Dynror Road within the report column headings			

All samples were taken from external garden areas prior to or at the time of material removal as part of ongoing clean-up operations. Samples have been tested for a broad range of contaminants so as to allow waste characterisation and classification for ongoing management and disposal. The following comments are based on data received by the Coal Authority to date and have been discussed with Public Health Wales, NRW and NPT Council.

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Sampling records and photographs are compiled separately and are available on request. The chemical testing results make reference to the generally fine grained nature and high moisture content (60-80% water by mass) of the samples. From photographs of the sampling locations, it appears that the samples are typical of the fine grained matrix of the flood debris and as expected, do not include significant large debris fragments (construction / roadway / shaft backfill materials – bricks, stones, broken concrete etc). The testing data can therefore be viewed as 'selected worst case' samples in terms of any contamination content and the impacts on future management and disposal requirements. With respect to the possible presence of asbestos containing materials (ACMs), it is noted that these are usually associated with internal building products eg old floor tiles, insulation board and has not been seen in the external flood debris to date).
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Although the presence of mine water ochre (fine grained, orange or brown mixed iron hydroxide and oxide) has been noted widely and ochre is likely to make up a proportion of the sludge material / remaining debris, the chemical results suggest that additional contamination has been mixed into the flood debris deposits (during the incident itself, rather than any more recent waste handling / movement activities). Baseline / background data from the area is not currently available for comparison against the flood debris samples. Additional samples will be taken following the clean up work.

Given the nature of the incident, with flood water passing through domestic houses and sewerage infrastructure, contamination by or mixing with sewage is also possible. Public Health Wales has issued precautionary advice on this basis, which should be adopted by all parties coming into contact with the flood debris, whether in gardens, public open space or inside houses). https://phw.nhs.wales/services-and-teams/environmental-public-health/flooding/

Test results have demonstrated an absence of detectable levels of polychlorinated biphenyls (PCBs) and based on a general knowledge of the area and typical mine water sediments, no other significant contaminants are expected in remaining flood debris. The Coal Authority is happy to discuss any specific remaining concerns as required.

Screening of the available chemical data against waste classification criteria has resulted in the flood debris materials being classified as Non-Hazardous waste with a standard waste code 17-05-04 (non-hazardous) – Construction waste, soil and stones. This has been agreed by NRW and can be used by all those handling and treating the wastes in the future.

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On the basis of these testing data and other information about the incident, debris clearance and other recovery operations can proceed on the basis that the flood debris materials do not pose any out of the ordinary hazards to those that may come into contact with them (previously mentioned PHW and normal waste handling precautions aside). Anyone working with the materials should take precautions to avoid skin / eye contact and ingestion or inhalation (basic breathing protection recommended for any surface jet washing / high pressure drain clearance that may produce inhalable mists). Clean-up personnel should be briefed to be on the look-out for any unusual materials or changes in the nature of the debris being cleared. Standard precautions against the possible presence of leptospirosis should also be in force. Anyone noticing anything unexpected or unusual about the materials they are handling should seek further advice from their managers or the Coal Authority Incident Team.

Standard site welfare provisions for use by personnel involved in clearance / recovery of possessions from properties is considered adequate to mitigate against the potential hazards from the flood debris.

Liquids / residues arising from on-going clean-up operations should not be allowed to enter surface water drainage where possible / practical where it is linked to local surface waters as there is a need to protect the river / canal from additional run-off and sedimentation.

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The following laboratory reports form part of this note:

Socotec 21020347_V01 (8 page pdf as issued by the laboratory).
Socotec 21020383_V01 (15 page pdf as issued by the laboratory).
Socotec 21020651_V01 (16 page pdf as issued by the laboratory).
Socotec 21020653_V01 7 page pdf as issued by the laboratory).

The laboratory reports contain data from a total of 14 samples (two from each of seven locations), analysed for the following broad range of individual potential contaminants:

Total typical contaminant content: colour, visible constituents, pH, metals, organic matter / loss on ignition and polycyclic aromatic hydrocarbons (PAHs).

Leachable contamination (10:1 water extract reported as mg/kg dry weight of the sludge), concentrations of contaminants in the leachate (10:1 water extract reported as mg/l of leachate) Additional total content testing for organic contaminants (solvents, fuels and oils): pH, conductivity, total dissolved solids (TDS), total organic carbon, metals, chloride, sulphate, fluoride, phenol, benzene / toluene / ethylbenzene / xylenes (BTEX), total petroleum hydrocarbons (TPH), PAHs and polychlorinated biphenyls (PCBs).