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Manager
Contaminated Sites Branch
Department of Environment and Conservation
Locked Bah 104
Bentley Delivery Centre WA 6983

By email: ass@dec.wa.gov.au

Dear Sir

Proposed change to the inorganic sulfur action criteria for the management of sandy acid sulfate soils in Western Australia

The Urban Development Institute of Australia (UDIA WA) is pleased to provide comment on the above discussion paper. UDIA (WA) is the peak body representing the property development industry in Western Australia with members engaged in a range of disciplines including land development, environmental planning, urban planning, urban design, infrastructure and engineering.

The proposed changes directly impact the activities of our members with particular concerns related to the potential for increased costs resulting from both the new trigger levels and delays in the issuing of dewatering licences. These costs directly impact on housing affordability which is a key area of concern for UDIA. Before the criteria are adopted and, with the aim of precluding unnecessary costs being imposed on the industry and ultimately the purchasers of new homes, we recommend that DEC:

- Undertake further scientific studies supporting lower action criterion of 0.01%S for Bassendean soils, as the currently available reporting is inadequate and insufficient to justify the change in criteria
- Clarify whether it intends fit-for-purpose application of the criteria or whether the 0.01%S for Bassendean soils will be applied universally with no consideration given to local conditions.

UDIA queries that the risk of acidification of groundwater is a sufficiently common occurrence to justify DEC's action, being mindful of the potential additional costs the development industry will have to bear. The evidence presented is not sufficiently robust to support a case for changing the criteria where the increased costs are outweighed by the risk of likely and significant environmental impacts.

Adoption of Criteria

The DEC have identified that the poorly buffered Bassendean sands are at higher risk of acidification through oxidation of pyrite (ASS) at concentrations which are lower than the current "action criteria" of 0.03%S. The absence of acid-buffering capacity in these soils mean that even

at these relatively low pyrite concentrations, the soils remain “high-risk” for acid leaching. This has since been demonstrated in the laboratory.

NatCASS (National Committee Acid Sulfate Soils) has identified around 4 soil types (including Bassendean soils in Western Australia) that are being considered for the revised trigger.

Experience in WA has identified groundwater acidification impacts below the surface of Bassendean sands; these soils nominally have low concentrations of pyrite and existing acidity (measured as TAA), and were therefore thought to be of lower risk. However, having detected groundwater acidification impacts at a number of sites, this has since led to further investigation.

Application of Criteria

We understand that the 0.01%S criteria apply as follows:

- To Bassendean sand types, being soils located at or below the water table, and in areas where groundwater has been or is susceptible to groundwater acidification.

The 0.01%S criteria are applicable to acidity in the form of pyrite, that is acidity measured in the laboratory as Chromium Reducible Sulfur (CRS – i.e. a form of potential acidity). This differs from the 0.03%S criterion used for sands generally, which is measured as net acidity. The basis of calculating acidity is made complex by the numerous different tests in use, however we understand the new rationale for assessing Bassendean soils will be:

- Where $CRS \geq 0.01\%S$, liming would be practiced
- For Net Acidity $\geq 0.03\%S$, liming would be practiced
- For all other samples, i.e. where net acidity $< 0.03\%S$ and also $CRS < 0.01\%S$, then the DEC will also review the change in pH, and absolute pH values on oxidation. Where samples are $pHOX < 3$ then liming would be prescribed, and for samples having $pHOX$ between 3-4 then further assessment would be required, i.e. What are the results in surrounding samples? What is the quality of the groundwater?

It is yet to be seen how sensitive the testing is within the Bassendean soils with respect to potentially exceeding the new criteria given the previous laboratory detection limit was 0.02%.

Impact on the development industry

Based on the revised approach, significantly more soils will come under scrutiny. Practically this would mean adding / incorporating lime before backfilling excavations to a greater extent than has been practiced previously in these landscapes. There will be an increased requirement for scientifically robust assessment of both soil types and groundwater conditions, and the setting of practicable construction management approaches in reducing acidification risk.

It is also likely there will be additional civil costs to supply and apply the treatment as well as costs for consultant time/expenses in validation sampling. Further costs will result from probable delays in clearing larger volumes of treated soil and returning it to the excavations. There are also potential additional time and logistical issues with larger treatment and storage areas needing to be constructed, however this will vary from site to site.

UDIA is equally concerned that the new trigger levels may result in further delays in developers receiving WAPC signoff on subdivision conditions associated with ASS which will impact on the issuing of dewatering licences. UDIA has recently advocated fast tracking smaller, low risk dewatering applications with the aim of reducing lengthy delays in obtaining licenses. UDIA's position is supported by the Department of Water who proposed that the criteria of the existing exemption order under Section 26C of the *Rights in Water and Irrigation Act 1914* (RiWI Act) be extended to exempt dewatering activities from licensing where:

- a) The only water that is able to be taken from the well is from the water table aquifer (i.e. the water is not artesian);
- b) The water is taken from the well at a pump rate of less than or equal to ten litres per second over a period of less than 30 days;
- c) The volume does not exceed 25,000kL; and
- d) The water taken from the well is taken for the purposes of dewatering.

The DoW believes the risk of unacceptable environmental outcomes from short term, small and/or low impact dewatering operation is low. Limitations specified in the proposed exemption order ensures that the risk associated with exempting those dewatering operations will be low. The above exemption was prepared under the previous criteria and DEC's proposed changes will feasibly jeopardise progress of the exemption order. UDIA seeks clarification of the impact of the DEC proposal on the above as this is a critical issue for the development industry.

Insufficient justification for change in criteria

While DEC is required to take a precautionary approach in its assessment of risk to the environment it is our view that further scientific studies supporting lower action criterion of 0.01%S for Bassendean soils are necessary, as the currently available reporting is inadequate and insufficient to justify the change in criteria. The methodology used to prove that the occurrence is representative of the typical dewatering undertaken during civil construction or its relevance to actual sites in WA where groundwater acidification has occurred should be presented. There could be projects where a low trigger level has resulted in acidification of the groundwater in Bassendean sands, but we would like clarification of other factors that might have been atypical or particular to those projects. For example, could more appropriate dewatering, treatment and infiltration have been implemented? Was there an extended period of dewatering for some reason which was unexpected? UDIA queries that the risk of acidification of groundwater is a sufficiently common occurrence to justify DEC's action, being mindful of the potential additional costs the development industry will have to bear.

Conclusion


The full body of knowledge regarding the sites of concern in Western Australia and the situations following which the acidification has occurred rests with the DEC. There clearly has been a lack of peer-reviewed scientific reporting on ASS conditions with WA, and an historical reliance on work from east-coast Australia.

UDIA requests the DEC to make available more complete reporting on the investigations undertaken to date, and to release promptly the ongoing study findings as they become available

as the currently available reporting is inadequate and insufficient to justify the change in criteria. The other key issue for UDIA is whether DEC intends to apply the criteria universally or only for specific conditions.

I trust you will find UDIA's comments constructive and I would appreciate it if DEC would keep the Institute closely informed of the outcomes of future investigations in this field.

Yours sincerely



Debra Goostrey
Chief Executive Officer