17 October 2022

Steve Barclay
Acting Director – Planning Services
Victorian Planning Authority
Level 25, 35 Collins Street
MELBOURNE VIC 3000

Our Ref: REQ002576

Dear Steve,

RE: SODIC SOILS

Thank you for the opportunity to provide advice to the Victorian Planning Authority (VPA) in relation to sodic soil requirements for planning and development. Following the meeting on 13 September 2022 and review of your email sent on 15 September 2022, the Environment Protection Authority (EPA) provide the following advice.

VPA Proposed Requirements
We understand that VPA are seeking to update its Land Capability Assessment (LCA) request for quote (RFQ) to add the following inclusions as deliverables for external consultants:

- *"Extent of sodic soils and make relevant recommendations on the design, construction, and ongoing maintenance for public infrastructure such as roads, drainage, and open space.*
- *A recommendation on whether sodic soils testing is required for the PSP, and if applicable, provide an indication on the appropriate timing of the test and whether it should be undertaken by the VPA as part of the planning process, or by individual landowners/developers as part of development approvals after the PSP is gazetted.*
- *If sodic soils testing is deemed necessary, the consultant should provide advice on the frequency/spread of testing and any specific locations which may require any additional more concentrated testing".*

VPA have advised that this is to assist in determining as early as possible whether sodic soils are likely to be present and if so, what the course of action should be. In addition, if sodic soils are detected/likely, VPA are keen to form an agreed approach with EPA, based on the LCA procured as to whether:

a. *"VPA must procure further technical work for sodic soil testing; or*
b. *Planning controls can be included to ensure that sodic and dispersive soils are managed at the subdivision stage, post-PSP approval (similar to the Sodic and Dispersive Soils Management Plan application requirement for the Shenstone Park PSP)".*

Having discussed the proposed approach with EPA's Land and Waste Sciences Unit, we provide the following information for context and advice.

Context

Sodic soils are widespread in Victoria, covering an estimated 59% of land area. Sodic soils have an elevated proportion of exchangeable sodium relative to other exchangeable cations which leads to physical and chemical characteristics that can pose risk to land and water. Soil that has an exchangeable sodium percentage of >6% is considered sodic. Sodicity can impact the ability of soil particles to bind together, leading to degradation in soil structure.

Impacts of sodicity may include reduced water movement in soil, reduced infiltration due to crusting, accelerated erosion, increased sediment loads to waterways and high turbidity in receiving waterbodies.

Risks arising from Urban Development

Urban development typically requires civil works that will result in ground disturbance, periods of soil exposure, and changes to water movement through and over the landscape. Where sodic soils are present, this increases the likelihood of impacts to land and water. Such impacts might include:

- Dispersion of soils;
- Loss of soil and soil structure;
- Poor infiltration which may cause greater run off, increasing stormwater flows;
- Poor infiltration which may cause ponding and greater water infiltration;
- Difficulty growing vegetation;
- Reduced capacity for land use;
- Erosion impacting waterbodies and their ecosystems through sediment load and high turbidity;
- Erosion impacting land stability, damaging private and public buildings and infrastructure; and
- Increased erosion in downstream areas caused by greater stormwater loads.

Advice

Having reviewed the proposed RFQ content/deliverables, EPA considers that a sodic soil assessment informed by preliminary testing will be necessary where these soils are present, and a precinct-wide approach prepared up-front, will manage the risks they pose for the precinct. A management strategy at a subdivision level may not provide the best management of these risks.

EPA therefore recommend that a sodic soils assessment should be undertaken as early as possible in the planning process, and at a precinct-wide level. The sodic soils assessment should identify risks, and feed into a sodic soils management plan that mitigates the risks associated with loss of soil and soil structure so far as reasonably practicable.

Early completion of these assessments is important. For example, a precinct-wide approach to development may be required to best manage the risks of sodic soils. Landscape characteristics can influence the magnitude of risk that sodic soils pose, and there may be areas of higher risk in the precinct that can be mitigated through assigning particular land use or infrastructure to high or low risk areas as appropriate. For example, avoiding distur[redacted]g., with high sodicity and high slope) would reduce the risk. Management approaches identified in the sodic soils management plan should be included as conditions for developers at the subdivision stage. A piece-meal approach to sodic soil management conducted at a subdivision level may elevate the risk of harm from sodic soils in the [redacted]

Recommended wording for the LCA RFQ

EPA considers that the inclusion of deliverables to address sodic soils in the LCA RFQ would be a staged process. The first stage would be for a consultant to establish whether sodic soils are present at the precinct. If sodic soils are not present, no further assessment or testing would be required. If preliminary testing identifies that sodic soils are present at the precinct, then a precinct-wide assessment of the potential risks posed by sodic soils would be appropriate.

Therefore, EPA suggest the following wording to replace the current draft wording for the LCA RFQ:

1. *Preliminary testing at the precinct, to determine whether sodic soils are present or likely to be present.*
2. *If sodic soils are detected, a sodic soils assessment is to be prepared. The assessment should include, but may not be limited to, the following:*
    - *Extent of sodic soils and the risks posed by sodic soils in the precinct.*
        - *Presentation of site specific data including soil dispersion and ESP data for soils and sub soils*
        - *Presentation of site specific data which links soil and landscape characteristics to the sodic soil risks*
    - *The potential for sub-surface erosion (sub-surface structure decline).*
    - *Relevant recommendations on:*
        - *the location, design, construction, and ongoing maintenance for public infrastructure such as roads, drainage, and open space~~.~~; and*
        - *the location, design, construction and ongoing maintenance for private infrastructure.*
    - *Collection and treatment of stormwater is a critical aspect of the management of the site and must be addressed.*
    - *The assessment should include site specific management controls that can be included in the planning controls and could consider:*
        - *Planning approaches;*
        - *Topsoil preservation;*
        - *Surface water management;*
        - *Minimising interaction with rain or surface water; and*
        - *Soil amelioration.*
3. *Where a sodic soils assessment has identified that sodic soils pose a risk to the precinct and require management, a sodic soils management plan should be prepared following completion of the sodic soils assessment. The management plan must propose recommendations to mitigate the risks so far as reasonably practicable. The recommendations for the management of sodic soils should be drafted in a way so that they can be included in the relevant planning provisions for the precinct.*

We trust that you find this information helpful. If you require further clarification or if our advice is not aligned with your view of the environmental risk, or you wish to discuss this advice further, please contact Kristen Argus, Senior Planning Advisor on [redacted]

Yours sincerely,

[redacted]

Trisha Brice
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Environment Protection Authority Victoria