HAWKE'S BAY
REGIONAL COUNCIL
TE KAUNIHERA Ā-ROHE O TE MATAU-A-MĀUI

10 April 2026

STANDARDS NEW ZEALAND
TE MANA TAUTIKANGA O AOTEAROA
WELLINGTON

Tēnā koe,

NZS 4411 Environmental standard for drilling of soil and rock

Hawke's Bay Regional Council (the Regional Council) appreciates the opportunity to provide feedback on the Environmental standard for drilling of soil and rock public consultation draft.

Please see Regional Council feedback on specific sections in the table on the following page (changes sought shown in red text).

Should you have any queries with regards to the content of this submission please do not hesitate to contact Saul Gudsell at saul.gudsell@hbrc.govt.nz

The Regional Council does not wish to be heard in support of this submission.

Ngā mihi,

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Feedback on public consultation draft by section:		
Section	**Comment**	**Proposed changes**
1.2 (d)	As outlined in the scope, dynamic penetrometers and cone penetrometers (CPTs) are technically classified as bores. However, in practice, these methods are often undertaken by field technicians who may not have the same equipment, training, or experience as drilling contractors, particularly when encountering complex subsurface conditions (e.g., shallow confined or artesian systems). While it may not be appropriate to impose the full requirements of bore construction standards on these activities, there is potential for similar risks (e.g., breaching confining layers or creating unintended hydraulic connections) if such conditions are encountered. Consideration could be given to including guidance or a best practice section for geotechnical investigation methods other than conventional drilling (such as CPT and dynamic penetrometer testing), to ensure that potential hydrogeological risks are recognised and appropriately managed. This guidance should be proportionate to the level of risk, recognising that these methods are often low-cost and low-risk in many settings, while still providing appropriate direction for situations where more complex subsurface conditions (e.g., confined or artesian systems) may be encountered.	Include guidance (e.g., in a best practice section) outlining considerations for geotechnical investigation methods (such as CPT and dynamic penetrometers), with a risk-based approach that remains proportionate for routine, low-risk applications, while providing additional direction where confined or artesian conditions may be encountered.
2.2.2 (a) and (k)	Accurate spatial and elevation data are critical for interpreting groundwater levels, hydraulic gradients, and for integrating bore data into regional monitoring and modelling frameworks. It is important that map coordinates are reported alongside the coordinate system and datum used to avoid ambiguity. In addition, recording the bore casing top elevation (measuring point) relative to ground level or a defined datum is essential for consistent water level measurements. Consideration could also be given to providing guidance on best practice for bore	Amend (a) to: The geographical location of the bore (address, area, map coordinates including coordinate system and datum) and bore casing top elevation (measuring point), with reference datum. Amend (k) to: An as-built record (or drawing) of bore construction, including surface seal(s), dimensions, casing stick-up, and casing top elevation relative to ground level or a defined datum.

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	surveying (e.g., use of differential GPS, and clearly defining whether elevations relate to casing top, ground level, or a local/national datum), as inconsistencies in these practices can significantly affect data quality and usability.	
2.3.2 Good industry practice	The document states: "Bore owners should select competent drilling contractors and practitioners with appropriate training, qualification, experience, and valid affiliation/membership/registration with recognised industry groups." While this is appropriate, it may be beneficial to recognise the importance of experience in local hydrogeological conditions, particularly in areas where subsurface conditions are complex or variable (e.g., thin or discontinuous confining layers, artesian conditions). Drillers unfamiliar with local conditions may be less aware of specific risks, which can increase the likelihood of unintended outcomes during drilling. Including reference to local or site-specific experience would help ensure that relevant subsurface risks are appropriately identified and managed.	Amend the final sentence of the first paragraph under 2.3.2 to: "Bore owners should select competent drilling contractors and practitioners with appropriate training, qualification, experience (including relevant local experience where conditions are complex), and valid affiliation/membership/registration with recognised industry groups."
3.1.2 (d)	In many hydrogeological settings, particularly alluvial environments, confining layers may be thin, laterally discontinuous, or mechanically weak. If these characteristics are not identified and appropriately managed during drilling (especially where artesian pressures are present) there is a risk of destabilising the confining layer, resulting in loss of confinement and the creation of uncontrolled or "rogue" flow pathways and/or artificial springs. Such issues have been observed in parts of the Heretaunga Plains, where site investigations that penetrated shallow confining units without appropriate controls led to localised loss of confinement, surface flooding, and, in some cases, persistent spring formation. These examples highlight the importance of recognising and managing confining layer integrity during drilling and investigation activities.	Amend (d) to: "Below-ground conditions as applicable (for example, artesian pressures, confining layer: presence, depth, continuity and stability, geothermal activity, land fill, gases, contamination);"

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	Therefore, it is recommended that confining layer characteristics be explicitly included in the list of examples in point (d) to ensure these risks are appropriately considered.	
3.1.3 Good industry practice	The document states: "Information should be sought about hydrogeological conditions in the area before drilling." While this is appropriate, it may be beneficial to provide additional guidance or cross-reference to best practice for managing specific hydrogeological risks, particularly artesian conditions. Artesian pressures can present significant risks during drilling, including uncontrolled flows, formation disturbance, and safety hazards if not properly anticipated and managed. This does not need to be extensive, but even brief guidance or a reference to relevant documents would provide a useful point of reference for practitioners, particularly where such conditions are encountered infrequently.	Include brief guidance or a cross-reference to best practice for managing artesian conditions during drilling (e.g., pressure control measures, use of conductor casing, and contingency planning), noting that this can be high-level guidance.
3.3.4 Good industry practice	The term "up-hole velocity" is not defined and may be unclear to some readers. It appears to refer to the velocity at which drill cuttings or samples are transported from the point of extraction to the surface. Clarifying this term would improve readability and ensure consistent interpretation.	Amend sentence above Table 3: "To support the receipt of representative lithology samples during the drilling process, the drilling method should maintain optimal up-hole velocity (i.e., the rate at which drill cuttings are transported from the point of extraction to the surface) throughout the drilling of the bore (see Table 3).
3.11.2 Minimum requirements	The current headworks section does not address flood risk. Where bores are located in flood-prone areas, inundation can compromise bore integrity and increase the risk of contamination. Including guidance to consider flood levels and site-specific risks would strengthen this section and support more resilient bore design.	Amend Section 3.11.2 by inserting: "(h) Headworks should be designed to avoid inundation where located in flood-prone areas. Bore drillers should consider expected flood levels and, where appropriate, confirm these with the relevant regional authority."
3.12.1.2 (f)	The document states: "... submitted to the bore owner and regulatory authority on completion (refer reporting); and" The reference to "reporting" is unclear, as it does not specify which section of the standard the reader should refer to. This may reduce usability and make it difficult to locate the relevant requirements.	Amend (f) to replace "(refer reporting)" with a specific cross-reference to the relevant section of the standard (e.g., "refer Section X.X"). and Include brief guidance on the minimum information to be recorded for bore

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	The document also states: "Complete and accurate records shall be kept of the decommissioning procedure and submitted to the bore owner and regulatory authority on completion." While this requirement is appropriate, there is no guidance on the minimum information that should be included in decommissioning records. Providing such guidance would help ensure consistency, completeness, and usability of records for regulatory and future reference purposes. For example, records could include key details such as the date of decommissioning, responsible contractor, reason for decommissioning, methods and materials used, and confirmation of sealing.	decommissioning (e.g., date, responsible party, reason for decommissioning, methods and materials used, and confirmation of sealing).
3.12.1.3 Good industry practice	Regional plans often set specific requirements for bore decommissioning, which are important for protecting groundwater. The current section focuses on industry practice but does not explicitly reference these regulatory requirements. Including this would provide clearer guidance and support alignment with statutory obligations.	Amend Section 3.12.1.3 to insert the following words or similar: "Prior to decommissioning, bore drillers should confirm whether any regional council rules or consent requirements apply to the work."
3.13.3 Good industry practice	While this section highlights the importance of maintaining bore integrity, most bore owners are unlikely to be familiar with NZS4411 or the expectations for routine inspection and maintenance. Poorly maintained bores can pose risks to groundwater, so clearer guidance would help ensure owners understand what is required and when action should be taken. To support best practice, it would be beneficial to include guidance encouraging bore drillers to provide owners with practical information on inspection and maintenance. This could include simple visual checks that owners can undertake, as well as indicative timeframes or triggers for when to engage qualified professionals.	Amend 3.13.3 Good Industry Practice to include: "Bore drillers should provide bore owners with clear information on ongoing inspection and maintenance requirements. This should include guidance on routine visual checks that can be undertaken by the owner, along with indicative timeframes or triggers for when more detailed inspection or maintenance by suitably qualified professionals is recommended."
4.1 General	Section 4.1 outlines bores for a range of water supply uses, which may create an impression	Amend Section 4.1 to insert the following words or similar: "Bore drillers and owners

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	that drilling a bore under this standard provides approval to take and use water. In practice, the ability to abstract water is governed separately under regional planning frameworks. Clarifying this distinction would help avoid confusion and ensure users understand their regulatory obligations.	should note that approval to drill a bore does not in itself authorise the abstraction or use of water. Bore owners must consult the relevant regional council to determine permitted volumes and whether resource consent is required, including for abstraction associated with bore or aquifer testing."
4.2.3 Good industry practice (general)	The document states: "Aspects of the bore design that contribute to this protection include ensuring the headworks and casing are sealed so that there is no potential for flow outside the casing down to the aquifer." While this highlights the importance of sealing and Section 3.10.3 gives guidance on achieving a good seal, there appears to be no guidance presented on how seal integrity should be verified for best practice. Without verification, there is a risk that inadequate sealing (e.g., poor grout placement, shrinkage, or bridging) may go undetected, potentially allowing vertical flow pathways to develop. Consider including guidance on best practice methods for verifying seal and annular grout integrity, along with proportionate QA/QC or verification steps. This could include approaches such as pressure testing, borehole camera inspections, or, where appropriate, geophysical methods (e.g., cement bond logging). Such guidance does not need to be overly prescriptive, but even high-level direction (particularly for higher-risk applications such as drinking water supply bores) would improve confidence that sealing and construction standards are achieved in practice.	Amend the final sentence in the first paragraph to include guidance on best practice methods for verifying seal and casing grout integrity (e.g., pressure testing, grout volume reconciliation, or geophysical logging where appropriate).
Table of contents	Sections 3.12.1–2 (Decommissioning and Site Reinstatement) are currently presented as sub-subsections; however, these topics are of sufficient importance to warrant promotion to full subsections within the standard. Bore decommissioning is a critical aspect of groundwater protection. Improperly decommissioned or abandoned bores can act as direct pathways for contamination, allowing vertical movement of contaminants between aquifers or from the surface to	Consider promoting Sections 3.12.1–2 (Decommissioning and Site Reinstatement) to full subsections and expand the guidance to reflect the importance of bore decommissioning in protecting groundwater quality.

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	depth. This risk is often long-term and difficult to remediate once established. Given the significance of these risks, the current level of detail appears limited relative to the importance of the topic. Elevating these sections would better reflect their importance and provide an opportunity to expand guidance on decommissioning practices, documentation, and verification of sealing. In addition, consideration could be given to including guidance on bore lifecycle management, such as expected design life, indicators of bore deterioration, and when assessment or replacement may be required. This would help support proactive management of aging infrastructure and reduce long-term risks to groundwater quality.	