

Framework for consultation feedback on professional documents

PS64 Position statement on environmental sustainability in anaesthesia and pain medicine practice

Stakeholder name: New Zealand Society of Anaesthetists – Ngā Ringa Tauwhiro o Aotearoa

Submitted 29 May 2026

Questions	Yes or No	Comments
<p>1. Are the intent and purpose of the document clear and unequivocal?</p> <p>a. If not, then how could this be better achieved?</p>	<p>Y <input type="checkbox"/></p> <p>N <input type="checkbox"/></p>	<p>1. Purpose:</p> <p>1:1:</p> <ul style="list-style-type: none"> Adjust the language for a more positive outlook and include wellbeing alongside health benefits. Suggestion: <i><u>“affirm ANZCA’s commitment to maximising the health benefits and improved wellbeing of addressing climate change and promoting environmental sustainability.”</u></i> Using more positive language often leads to a more productive approach and incorporating living well further relates this to other position statements. Suggest also including a reference to aiming to work within the planetary boundaries (see response to question 6: other aspects that merit consideration). This emphasises the co-benefit of action on climate change, and aligns with the Lancet Commission on Health and Climate Change’s framing of addressing climate change as the greatest health opportunity this century. <p>1. Purpose:</p> <ul style="list-style-type: none"> Consider adding another purpose statement or extending the existing one to include climate resilience of the healthcare industry. Suggestion: <i><u>“assist clinicians and healthcare facilities to integrate environmental sustainability and climate resilient practices into the delivery of safe, high quality anaesthesia”.</u></i> We are constantly adapting as a result of climate events, for example, fossil fuel reliance, drug availability, and weather events. New Zealand is particularly vulnerable to this due to its distance from the rest of the world.

Questions	Yes or No	Comments
<p>2. Does the scope of the document align with its purpose?</p> <p>a. If not, then why not?</p>	<p>Y <input checked="" type="checkbox"/></p> <p>N <input type="checkbox"/></p>	<p>2. Scope:</p> <ul style="list-style-type: none"> Suggest adding: ‘..intended to apply to, but is not limited to’ <i>This document is intended to apply to, but is not limited to, all clinicians...</i> to emphasise that this is the minimum group that this statement applies to. This should also include ANZCA (the College) and research as representative bodies of anaesthetists in Australia and New Zealand.
<p>2 Are the applicable standards identifiable?</p>	<p>Y <input type="checkbox"/></p> <p>N <input type="checkbox"/></p>	
<p>3 Does the information presented adequately address the issues?</p>	<p>Y <input type="checkbox"/></p> <p>N <input checked="" type="checkbox"/></p>	<p>This is an excellent paper that will be of significant benefit towards promoting more environmentally sustainable healthcare and anaesthesia. Some suggestions relating to this question, where adjustments could enhance consideration of the issues, have been included in responses to other questions in this framework.</p>
<p>4 Do the recommendations fulfill the intent of the document?</p> <p>a. Are there any other recommendations that should be added? For example, are there any jurisdictional requirements that have not been considered, in relation to geographical location and/or professional organisational context? Are there any cultural safety requirements that may be applicable?</p> <p>b. Are there any recommendations that should be removed?</p>	<p>Y <input type="checkbox"/></p> <p>N <input type="checkbox"/></p>	<p>Relevance to the Aotearoa New Zealand Context</p> <p>The following are suggestions towards improving the statement to ensure it adequately represents Australian AND New Zealand, and has appropriate application to the Aotearoa New Zealand setting:</p> <p>3. Background:</p> <ul style="list-style-type: none"> Second paragraph: Remove reference to the UK and add New Zealand statistics. UK inclusion here is irrelevant to the Australasian document. <p>6. Waste:</p> <p>There are significant differences between the waste disposal options available in Aotearoa New Zealand and Australia, with far fewer options available in Aotearoa, which hasn’t been acknowledged in either the Statement or the Background Paper.</p> <ul style="list-style-type: none"> 6.4.2.2: There is no separate waste stream for pharmaceutical waste in Aotearoa New Zealand, excepting cytotoxic waste, which is transported out of the country for processing. All other pharmaceutical waste is placed in

Questions	Yes or No	Comments
		<p>clinical/yellow waste stream or sharps bins, and enters 'clinical', well managed, triple-lined landfills after autoclaving. The autoclaving does not denature the majority of pharmaceutical agents; it only makes them safe for handling, and the terminal leachates ultimately enter the water table.</p> <p>Background Paper:</p> <ul style="list-style-type: none"> • 2.2.8 Pharmaceutical waste impacts <ul style="list-style-type: none"> • High temperature incineration isn't available in New Zealand. The word 'only' could be removed from the sentence '<i>propofol can only be destroyed by high temperature incineration</i>' as this is not accurate. Of note, Aotearoa New Zealand has no pharmaceutical waste stream for incinerating medications. <p>-----</p> <p>By sections:</p> <p>4. Principles:</p> <ul style="list-style-type: none"> • 4.1: Add to this principle: the importance of avoiding unnecessary investigations and treatments: '<i>All consideration of environmentally sustainable practice must occur in the context of optimal patient <u>care, including minimising unnecessary interventions and overtreatment</u></i>'. Unnecessary interventions are a burden on the patient and have financial and environmental costs. • 4.2: Add to this principle: the need to appraise and examine new evidence and technology, and encourage implementation when it proves to be effective: '<i>Environmental sustainability is an area of new and rapidly emerging evidence and technology, <u>which should be frequently appraised and implemented when effective.</u></i>' This addition would make 4.2 less of a statement and sets expectations that we continue to evolve with new evidence and technology. <p>5. Medications:</p>

Questions	Yes or No	Comments
		<ul style="list-style-type: none"> <p>• 5.2.5: Suggest an additional statement: <i>‘Optimal fresh gas flows when using IV anaesthesia techniques should be considered and will depend on the local energy source for oxygen manufacture, CO2 absorbent and circuit filter arrangement’.</i></p> <p>When no volatile is in use, higher flow rates can reduce the rate of exhaustion of soda lime, however if the oxygen comes from a fossil-fuel burning source this is not beneficial. Consideration to humidification of the circuit and the filter in use also needs to be made.</p> <p>Reference: Wong C, Ho K, Ee A, et al. Optimal fresh gas flow when employing total intravenous anaesthesia. <i>Anaesthesiology</i> 2006 1;144(6):1309-1315</p> <p>• 5.2.5: Suggest simplifying the final statement <i>‘using total intravenous anaesthesia (TIVA) where clinically appropriate, as general anaesthesia with TIVA has been shown to have a lower carbon footprint than general anaesthesia with volatiles’</i> as it is more complex than this.</p> <p>Suggested alternative: <u>‘Consider the option of TIVA where clinically appropriate.’</u></p> <p>See note on Background Paper 2.1.4 under question 6 below – when comparing ultra-low flow volatile with sevoflurane against TIVA, focusing on carbon alone is oversimplifying the environmental effects.</p> <p>• 5.3: further explanation as to the environmental impacts in this section, specifically 5.3.4 and 5.3.5, would be helpful.</p> <p>6. Waste</p> <ul style="list-style-type: none"> <p>• Add another point about the use of alcohol-based hand rubs for surgical scrub.</p> <p>It’s mentioned in the Background Paper, but not the final statement – this reduces water waste and waste from ancillary items.</p> <p>• 6.2.4: Suggest including reusable drapes in this statement.</p> <p>Reusable drapes and gowns have a reduced environmental impact with no evidence that they result in an increased risk of infections when laundered and sterilised to manufacturing guidelines.</p>

Questions	Yes or No	Comments
		<p>Reference: Global guidelines for the prevention of surgical site infection, second edition. Geneva: World Health Organization; 2018.</p> <ul style="list-style-type: none"> <p>6.3: Add a mention of purchasing 'remanufactured' items where they meet relevant standards.</p> <p>Suitable companies are offering remanufacture in New Zealand and Australia, for example, Medsalv.</p> <p>Relates to R3, Figure 1 in the Background paper.</p> <p>6.4.1: Remove or significantly reduce the focus of the recycling list. More emphasis should be placed on the circular economy, and less emphasis should be placed on recycling. Recycling is the least effective intervention in reducing waste output, particularly plastic recycling, which is poorly efficient and releases toxins and microplastics in the process. Recycling can be a form of greenwashing and is often of minimal value. It should be considered after reduction, remanufacturing and reusing. Including this recycling list gives more importance to recycling over these other circular economy strategies that are well explained in the Background Paper, but only briefly mentioned in the statement. Furthermore, listing types of recyclable material is not particularly useful in this position statement since what is possible in each region is highly variable.</p> <p>Reference: Ellen MacArthur Foundation, The New Plastics Economy: Rethinking the future of plastics & catalysing action (2017).</p> <p>6.4.2.3: Adjust the second sentence, first paragraph to: <i>Of note, this does not include tempered glass vials or plastic syringes. <u>Empty tempered glass vials or syringes should be placed in the general waste stream. Tempered glass vials or syringes containing unused drug volumes should be placed in the clinical (drug disposal) waste stream.</u></i></p> <p>9. Infection Prevention & Control - Statement & Background Paper:</p> <ul style="list-style-type: none"> <p>Suggest moving the HVAC information to the Building and infrastructure design section.</p> <p>HVAC is a simple, universally achievable and significant change that can be made. We commend its inclusion. However, it would likely be better placed</p>

Questions	Yes or No	Comments
		<p>in the Building and Infrastructure Design section, both because this is the department or team you would approach regarding HVAC and when it should be considered in a new build.</p> <ul style="list-style-type: none"> • Add to the first example: <i>'Appropriate use of alcohol-based hand rubs. <u>This includes surgical scrub with alcohol-based hand rubs.</u>'</i> • Consider adding reusable drapes and gowns to this section. Reusable drapes and gowns have a reduced environmental impact with no evidence that they result in an increased risk of infections when laundered and sterilised to manufacturing guidelines. <p>References:</p> <ul style="list-style-type: none"> ○ Global guidelines for the prevention of surgical site infection, second edition. Geneva: World Health Organization; 2018. ○ Wardak Y, MacCallum C, Dunne B. Sustainable shift in surgical practice: embracing reusable gowns. ANZ Journal of Surgery 2024;94(9):1457-1459. <p>10. Building Design and Infrastructure:</p> <ul style="list-style-type: none"> • We suggest the HVAC information is better placed in this section, as above (Infection Prevention & Control feedback). • In the statement referencing NABERS energy ratings, suggest also including the Health New Zealand Te Whatu Ora specific guidance, which mandates that NZGBC 5 Green Star Certification should be applied to all new health facility buildings. As per Health New Zealand Design Guidance 2022. Section 1.10.4.1 https://static.info.content.health.nz/docs/health-pros/topics/infrastructure/NZ-Health-Facility-Design-Guidance-Note.pdf#page=16. • Consider including the consideration of retrofitting where possible over new builds. Retrofitting often has a significantly lower carbon footprint than a new build. <p>11. Travel:</p>

Questions	Yes or No	Comments
		<ul style="list-style-type: none"> Suggest adding: <i>‘Clinicians should employ careful thought and optimisation of their travel’</i>. To encourage planning travel to reduce distance flown, combining trips to minimise flights, and considering the class of travel to minimise environmental effect. <p>12. Advocacy:</p> <ul style="list-style-type: none"> Suggest including that <i>‘Clinicians have a moral duty to advocate’</i>. The list of examples of how to advocate should include <i>‘anaesthesia professional bodies’</i>. Clinicians can advocate through their professional bodies and should be supported by these bodies. Move <i>‘appointing a departmental sustainability lead, who is involved with quality improvement and education’</i> to the Quality and Improvement section (13.2). And use <i>‘should’</i> instead of <i>‘is recommended’</i>: <i>A departmental sustainability lead should be appointed, who is involved with quality improvement and education.</i> <p>13. Environmental and sustainability knowledge</p> <ul style="list-style-type: none"> 13.2: Move the appointment of a departmental sustainability lead to this section with adjustment to text as suggested above (12. Advocacy feedback). <p>Background Paper</p> <ul style="list-style-type: none"> 2.5 Building and infrastructure: Suggest a reference be added as to the beneficial effect of green spaces on enhancing recovery: Suggestion: Guidolin K, Jung F, Hunter S, Yan H, Englesakis M, Verderber S, Chadi S, Quereshy F. The Influence of Exposure to Nature on Inpatient Hospital Stays: A Scoping Review. HERD. 2024 Apr;17(2):360-375. doi: 10.1177/19375867231221559

Questions	Yes or No	Comments
<p>5 Are there any aspects that have not been considered that merit consideration?</p>	<p>Y <input checked="" type="checkbox"/></p> <p>N <input type="checkbox"/></p>	<p>Broadening this position statement beyond the carbon footprint.</p> <p>It's important to avoid 'carbon output tunnel vision' by also considering the other Planetary Boundaries ie, novel entities and water. The Planetary Boundaries are essential to environmental scientists today.</p> <p>Suggestions towards this:</p> <p>1. Purpose:</p> <ul style="list-style-type: none"> • Including reference in 1:1 to aim to work within the Planetary Boundaries (<i>see response to question 1, intent and purpose of the document</i>) <p>3. Background:</p> <p>Broadening the background section beyond carbon footprint by including:</p> <ul style="list-style-type: none"> • The Planetary Boundaries and their interconnectedness. • Recognition of the social needs of the world - the balance we need to strike between delivering good healthcare and keeping it within the Planetary Boundaries. <p>Suggested references:</p> <ul style="list-style-type: none"> ○ Krishnan A, Shelton C. Sustainable anaesthesia: beyond carbon and towards system-level change. <i>Anaesthesia</i> 2026 ○ Rockstrom J, Steffen W, Noone K et al. A safe operating space for humanity. <i>Nature</i> 2009;1:472-5 ○ Steffen W, Richardson K, Rockstrom J et al. Planetary boundaries: guiding human development on a changing planet. <i>Science</i> 2015;347:1259855 <p>6. Waste:</p> <p>To be less carbon focused and reflect that it's not just emissions that are reduced, but waste to landfill too:</p> <ul style="list-style-type: none"> • 6.3: Rename heading to '<i>Purchasing lower <u>environmental impact products</u></i>'. Also translates to 6.1 summary. • 6.4: Rename heading to '<i>Recycling and <u>reducing the environmental impact of waste disposal</u></i>'.

Questions	Yes or No	Comments
		<p>-----</p> <p>Including ANZCA in the document</p> <p>There are opportunities where ANZCA (the College) itself could be included in this document, as a representative body for anaesthetists across Australia and New Zealand:</p> <p>2. Scope:</p> <ul style="list-style-type: none"> • See response to question 2 - Does the scope align with the purpose. <p>4. Principles</p> <ul style="list-style-type: none"> • 4.3: Add to this principle: the importance of the involvement of ANZCA as the College: <i>'The role of the clinician and the College in environmental sustainability is multifactorial, including'</i>. <p>12. Advocacy</p> <ul style="list-style-type: none"> • The third sentence should include the College: <i>'Clinicians and the College may advocate at many levels, including:'</i> ANZCA, as the College, is also in a similar position to advocate for improving sustainable practices on behalf of anaesthetists. <p>-----</p> <p>By sections:</p> <p>3. Background:</p> <ul style="list-style-type: none"> • Third paragraph: Suggest adding: 'energy security': <i>".....improved health and reduced health costs, reduced fossil fuel use, energy security, less air pollution, mitigation of rising temperatures, less waste, and increased green spaces"</i>. The benefits of improved energy security are evident in our current 'fuel crisis' scenario, particularly for our Pacific neighbours. • Include inequality and how the effects of climate change on healthcare are disproportionate for lower socioeconomic populations, both within New

Questions	Yes or No	Comments
		<p>Zealand and in the Pacific.</p> <p>Suggested references:</p> <ul style="list-style-type: none"> ○ Raworth K. Doughnut Economics. London: Random House Business Books, 2017 ○ Also suggest referencing PS62 (Cultural competence and cultural safety) <ul style="list-style-type: none"> ● The third sentence: ‘vulnerable populations’ should include ‘people experiencing poverty’ and ‘our Pacific neighbours’. <p>Our Pacific neighbours are even more vulnerable to the outcomes of climate change, and with significant numbers of our Australasian anaesthesia community contributing to work in the Pacific and the close relationships we hold with the Pacific Island nations, they too should be considered in this document.</p> <p>4. Principles</p> <ul style="list-style-type: none"> ● Add to the principles the benefits of optimising health outcomes and avoiding unnecessary or inappropriate procedures for the patient and the environment. <p>There are notable patient and environmental benefits in avoiding unnecessary or inappropriate surgery. Whilst mentioned in section 8, beneficial care, the benefits warrant more exposure and should be considered as an additional principle.</p> <p>5. Medications</p> <ul style="list-style-type: none"> ● 5.1.2: Add in the range of leakage, 75-99%, with reference to this statement. The quantum of leak is important. ● 5.1.3: change ‘labour ward’ to ‘birthing suite’. Birthing suite is a more appropriate term and is better recognised across different professions. ● 5.2.4: This is an important statement. Consider expanding the information in this statement to include the effects of PFAs and TFAs. Suggestion: <i>‘The breakdown products of Sevoflurane and Desflurane are</i>

Questions	Yes or No	Comments
		<p><i>known to persist and accumulate in the environment with no known degradation pathways. <u>The environmental and biological effects are yet to be elucidated</u></i>.</p> <p>It's important to highlight that there are more effects than radiative forcing from these substances. And, we should acknowledge that the exact effects are not yet completely clear in this area – but we know it isn't good.</p> <p>10. Building Design and Infrastructure:</p> <ul style="list-style-type: none"> • Retrofitting often has a significantly lower carbon footprint than a new build and including the consideration of retrofitting where possible over new builds should be considered as an addition. <p>13. Environmental and Sustainability Knowledge</p> <ul style="list-style-type: none"> • 13.3: This section focuses on environmental sustainability being incorporated into the education of anaesthesia doctors in training, and it should be considered that this be expanded to integrate environmental sustainability into the continuing professional development of anaesthesia, pain medicine, and perioperative medicine specialists throughout their career. <p>Evidence and technology are rapidly advancing and changing, and ongoing engagement is needed to keep up to date.</p> <p>This addition will also assist fellows seeking a sabbatical to pursue this topic and investigate environmental fields.</p> <p>Background Paper</p> <ul style="list-style-type: none"> • 2.1.2: Nitrous Oxide: <ul style="list-style-type: none"> • We commend the background paper section on nitrous oxide and its explanation of how anaesthetic gases are harmful to the environment. • Suggest adding a comment about 'utilising the technology available in modern anaesthetic machines to minimise N2O leakage during machine checks'. <p>Checks are vital and should continue, however modern anaesthetic</p>

Questions	Yes or No	Comments
		<p>machines can check cylinders with minimal leakage compared to manual cylinder checks.</p> <ul style="list-style-type: none"> • 2.1.4: Intravenous Agents: <ul style="list-style-type: none"> • The whole of life greenhouse gas emissions resulting from choice of anaesthetic technique are more complex than these early papers acknowledge, and such emphasis should not be placed on the orders of magnitude stated. • 2.2.1: Circular Economy: <ul style="list-style-type: none"> • The Ellen MacArthur Foundation is an excellent reference to include here. https://www.ellenmacarthurfoundation.org/ • 2.2.8 Pharmaceutical waste impacts <ul style="list-style-type: none"> • Care should be taken so as not to overstate the environmental toxicity of pharmaceuticals or at least to look at real life examples of toxicity. The estimated effect sites of propofol are very low even in areas with massive populations. Reference: Waspe, J. and Orr, T. (2023), Environmental risk assessment of propofol in wastewater: a narrative review of regulatory guidelines. <i>Anaesthesia</i>, 78: 337-342. https://doi.org/10.1111/anae.15967 • ANZCA related documents: <ul style="list-style-type: none"> • We recommend this section also includes: <ul style="list-style-type: none"> ○ PS62 (Cultural competence and cultural safety) ○ PS40 (Healthcare industry relationships)
6 Do you think that the document will serve its stated purpose?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	We would like to thank ANZCA for the opportunity to provide feedback on this position statement from the point of view of Aotearoa New Zealand. We would also like to acknowledge the substantial amount of work which has been undertaken in preparing this Position Statement and its Background Paper and recognise what a great asset it will be.

Questions	Yes or No	Comments
7 Any other comments		<p>Review of the document: Given the rapidly changing evidence and technology in this sector this document should be reviewed more frequently. We suggest a three-yearly review.</p> <p>Grammatical errors:</p> <p>6.Waste</p> <ul style="list-style-type: none"> • 6.4.2: First paragraph: Double negative: <i>'not disposed of incorrectly'</i> change to <i>'disposed of correctly'</i>. <p>Background Paper</p> <p>2.2.7: Optimising Waste Management:</p> <ol style="list-style-type: none"> 7. This sentence is missing 'waste': <i>Around 100,000 tonnes of clinical <u>X</u> and pharmaceutical X was produced in Australia in 2023-24</i>