URBAN ZONES: NPS-UD and CLIMATE-RELATED MATTERS

FNDC Proposed District Plan Hearing 14 - July 2025

Statement by community groups Vision Kerikeri, Carbon Neutral Trust & Kapiro Conservation Trust

NPS-Urban Development: policy on *planning decisions*

NPS-UD Policy 1: planning decisions

As noted in our earlier statement today, NPS-UD Policy 1 directs planning decisions to contribute to well-functioning urban environments.[1] This specifically includes the following climate issues:

- Supporting reductions in GHG emissions
- Supporting climate resilience

> ***NPS-UD Policy 1**: '**Planning decisions** contribute to well-functioning urban environments, which are urban environments that, as a minimum: …..*
> *(e) support reductions in greenhouse gas emissions; and*
> *(f) are resilient to the likely current and future effects of climate change*.'

Another key section of the NPS-UD repeats similar clauses.

Promoting energy efficiency

We strongly support PDP policies MUZ-P6 and **GRZ-P7** which state:

> '*Promote energy efficient design and the use of renewable electricity generation in the construction of [xxx zone] development*.'

These policies align with the NSP-UD.

Supporting climate resilience and improved stormwater management

Flooding is New Zealand's most frequent natural hazard, an increasingly affects urban areas.

The economic cost of flood damage is expected to continue rising substantially due to climate change and urban expansion.

According to the Insurance Council of New Zealand, flooding exacerbated by climate change in 2023 will cost about $3.5 billion.[2]

Urban stormwater requirements to support climate resilience and well-functioning urban environments

The integration of water-sensitive design (WSD) and comprehensive stormwater management is crucial in urban zones for resilient, healthy, and sustainable communities – supporting well-being (Far North 2100) and well-functioning urban environments (NPS-UD).

Box 1 outlines the benefits of urban water sensitive design requirements to be incorporated in urban zone rules wherever feasible.

[1] The Interpretation section (clause 1.4(1)) of NPS-UD specifies that '*well-functioning urban environment has the meaning in Policy 1*'.

[2] https://www.icnz.org.nz/industry/media-releases/2023-climate-disaster-payouts-top-2-billion/

The PDP must therefore explicitly mandate robust policies and rules for WSD principles and integrated stormwater management solutions across all urban zones, including requirements for green infrastructure and on-site stormwater retention and treatment.

Box 1: Benefits of water sensitive requirements in urban zones

WSD moves beyond traditional stormwater disposal by treating the urban water cycle as an integral part of urban planning and design. Its importance stems from:

- **Mitigating Urban Flooding:** By using permeable surfaces, green roofs, rain gardens, and other methods of on-site water storage systems for household use and detention of stormwater. WSD reduces stormwater runoff, lessening flood risk.
- **Improving Water Quality:** WSD systems filter pollutants from urban runoff, protecting waterways in line with the objectives of the National Policy Statement for Freshwater Management (NPS-FM), which aims to improve and maintain freshwater quality.
- **Enhancing wellbeing and ecological protection:** Integrating green infrastructure supports urban biodiversity and enhances wellbeing - the liveability, aesthetic appeal of urban spaces.
- **Building Climate Resilience:** WSD offers adaptive solutions for managing both excess water (flooding) and scarcity, crucial for urban areas facing climate change impacts.

Impermeable surface area and use of permeable materials

Intensification in urban areas will increase the total area of impermeable surfaces and the risk of future flooding, unless mitigation measures are adopted.

Our submissions (s521, s529, s443) call for measures to mitigate problems associated with climate-related issues and more extreme rainfall events.

Our submissions points included the following statements:

- 'The PDP should require … measures for all stormwater… engineering, infrastructure and related development, to prevent problems associated with more extreme rainfall events in future' [3]
- **'**greater [more restrictive] limits on impermeable areas, and/or requirements for minimum permeable areas, for subdivision, use and development.'
- 'In urban/residential zones… adopt measures to limit the cumulative total impermeable surface and/or protect a specified cumulative total permeable area.' [4]
- 'to include objectives, policies and rules/standards that require …permeable materials wherever feasible for surfaces such as driveways, paths etc.'

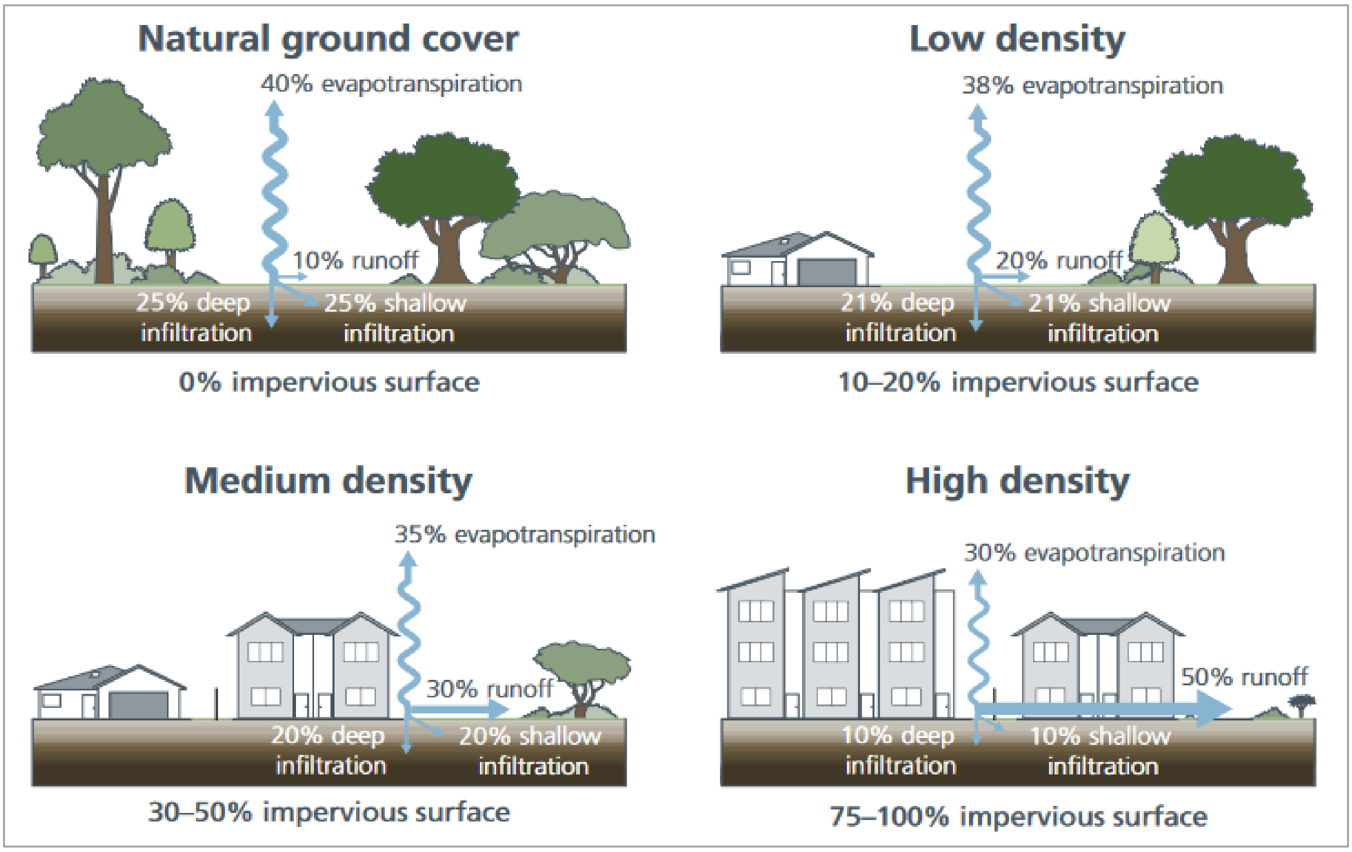
[3] Submission points: VKK s521.007, CNT s529.053, KCT s443.007.

[4] Submission points: Vision Kerikeri s521.008, s521.013; Carbon Neutral Trust s529.054, s529.217 s529.218 (ck); Kapiro Conservation Trust s443.008

Figure 1: Percentage impermeable surface and related % runoff, infiltration, and evapotranspiration

Diagram from a report by Parliamentary Commissioner for the Environment (2023) [5] notes that -

- 10-20% impermeable surface leads to about 20% runoff
- 75-100% impermeable surface leads to at least 50% runoff



Submission points supporting PDP amendments on impermeable surfaces (s521, s529, s443):

- 'PDP should address the fact that intensification can result in much larger impermeable surfaces covering a very high percentage of the urban land with houses, garages, other buildings, driveways, paving, tarmac, concrete etc.'
- 'Increases in impervious surfaces will impact on stormwater flows, how stormwater affects the water bodies it is discharged to.'
- PDP provisions should require measures to prevent problems associated with more extreme rainfall events in future:
    - **Flood risk**: As a higher and higher percentage of land in urban areas becomes covered by impermeable surfaces, it will eliminate much of the existing soakaway area for stormwater and increase the risk of flooding in residential/urban areas during high rainfall events.
    - **Water quality**: Large impermeable surface area would increase urban runoff to waterways during heavy rain…' leading to adverse effects on water quality due to sediment and pollutants in runoff.

[5] PCE (2023) *Are we building harder hotter cities? Vital importance of urban green spaces*. https://pce.parliament.nz/media/tetah53z/report-are-we-building-harder-hotter-cities-the-vital-importance-of-urban-green-spaces.pdf

Rainwater storage tanks for water use in buildings and stormwater detention

Detention tanks have limited use in areas like the Far North where periods of frequent rainfall can lead to tanks already being full when further heavy rain events occur.

Rainwater water storage tanks with household use are more suitable for this purpose. They have a dual use. They capture rainwater for use in households and buildings, for toilets, laundry and other uses if filtered. Water is used from the tank, therefore tanks would not normally be full when a high rainfall event occurs. This makes them more effective as stormwater detention devices.

Water storage and use in urban sites (e.g. in urban-size rectangular tanks next to buildings or located underground) will help to reduce the size of future construction of new/additional public water sources/supplies, reducing future costs to the Council.

Our groups seek following measures to help reduce adverse effects from stormwater

Mandate other robust policies and rules for WSD principles and integrated stormwater management solutions across all urban zones, including -

- policies and rules/standards that require permeable materials wherever feasible for surfaces such as driveways, paths etc.
- greater [more restrictive] limits on impermeable surface areas, and also requirements for minimum *permeable* areas and green infrastructure.
- adopting measures to limit the cumulative total impermeable surface and/or protect a specified cumulative total *permeable* area
- require the use of water storage systems that have a dual purpose: water storage for use in households/buildings and stormwater detention.

ANNEX A: FURTHER INFORMATION ON PERMEABLE AND IMPERMEABLE SURFACES

Study comparing impermeable area with low impact stormwater designs

A US study[6] compared increases in total impermeable area, stormwater runoff and pollutant concentrations as development progressed in a conventional development vs. a development that used low impact techniques. They found that runoff from impermeable surfaces in developed areas is a major cause of degradation to freshwater bodies and estuaries -

- **Conventional subdivision design**: A large increase in runoff volume was observed as total impervious area increased through development of a conventional subdivision. Runoff coefficients also increased. These relationships were non-linear, indicating that as imperviousness increases, annual stormwater runoff volume increases exponentially. Significant increases in stormwater runoff and pollutants were found in the conventional subdivision. Pollutant export regressions were similar to runoff regressions, indicating that the flow increase in the conventional subdivision was the primary driver behind pollutant export increases.
- **Low impact subdivision design**: In contrast, annual stormwater runoff volume in the subdivision did not change as watershed impervious coverage increased to a limited extent. This lack of change in flow with increased impervious area is attributed to the LID stormwater management techniques used throughout. runoff and pollution levels remained unchanged from pre-development levels in the subdivision that used low impact techniques.

[6] Dietz ME & Clausen JC (2008) Stormwater runoff and export changes with development in a traditional and low impact subdivision. Journal of Environmental Management 87 (2008) 560–566

Figure 2: Examples of permeable surfaces

Permeable paving with grass (left) and gravel (right)

Examples of permeable surfaces with 25%, 28% and 50% permeability

Groove-Stone Paver (25% Pervious) Collects stormwater into grooves, then seeps into drainage pipes.

Turf-Stone Paver (50% Pervious) Grass paver pavement capable of supporting traffic loads.

Pervious Concrete (28%) allows water to pass directly through.

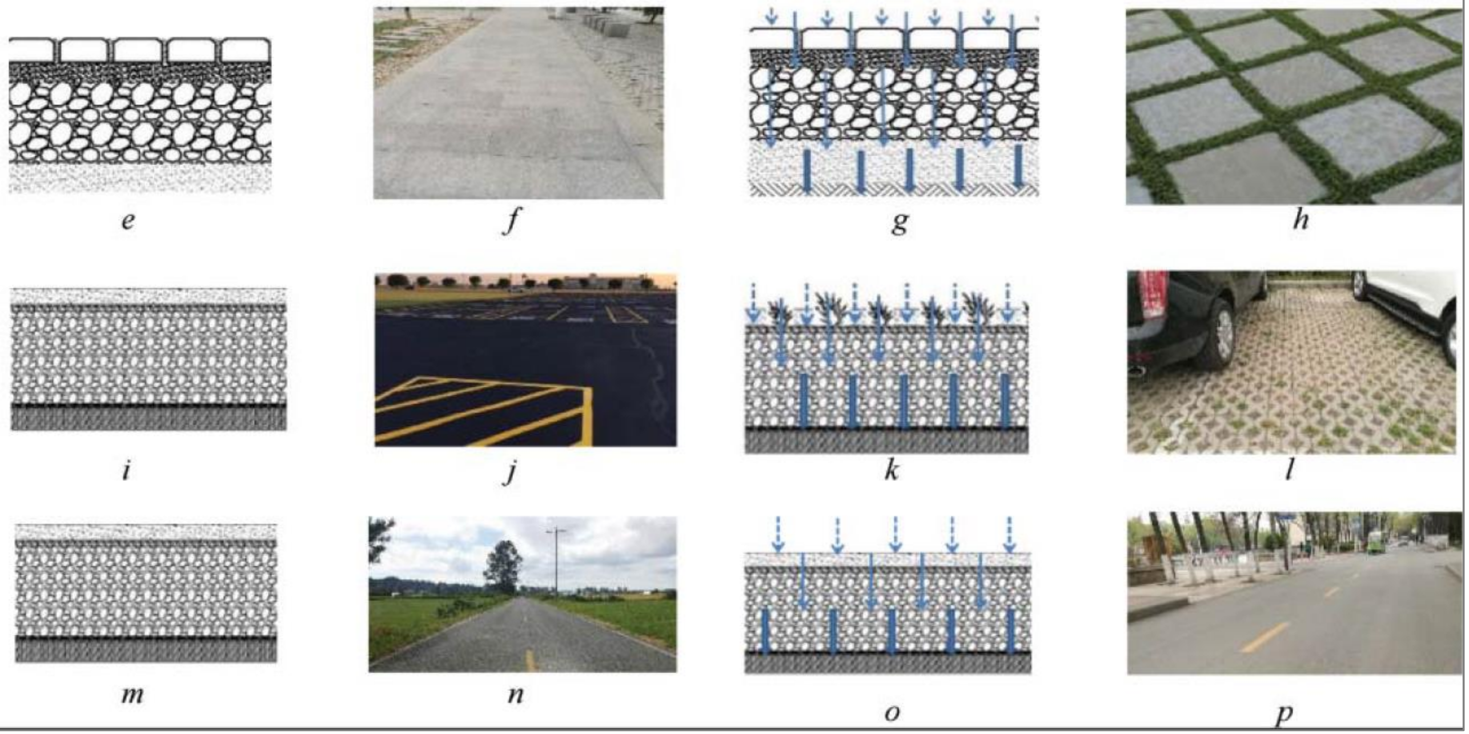


Figure 3: Examples of Surface Materials for Different Applications

Permeable Materials	Percentage of Permeability	Application	Price per m² (approximate)	Description
Porous turf	70% - 95%	Light Traffic Areas	\$20 - \$45	Reinforced grass, suitable for some vehicle traffic
Grass pavers	50% - 80%	Parking, Paths	\$30 - \$60	Cells that hold soil and grass
Gravel	20% - 40%	Parking, Paths	\$10 - \$30	Loose aggregate, low cost.
Permeable asphalt	15% - 25%	Roads, Parking	\$25 - \$40	Similar to traditional asphalt but allows water to drain through
Permeable concrete	10% - 20%	Parking, Footpaths	\$50 - \$70	Concrete with reduced fines allows water to pass through.
Permeable pavers	10% - 20%	Paths, public spaces	\$40 - \$80	Interlocking pavers with gaps filled with permeable material
Recycled rubber pavement	10% - 20%	Bike Paths, Footpaths	\$45 - \$70	Made from recycled tires, flexible and absorbing

Notes:

- Price: Costs can vary significantly based on geographic location, installation complexity, and material quality.
- Permeability: These are approximate percentages; actual permeability can be influenced by installation methods and maintenance.
- Picture Placeholder: For visual references, you might find images of each surface type online by searching terms like "permeable asphalt", "grass pavers", etc.