National Planning Standards:   
Metrics (how things are measured)

Discussion paper I

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# What are metrics?

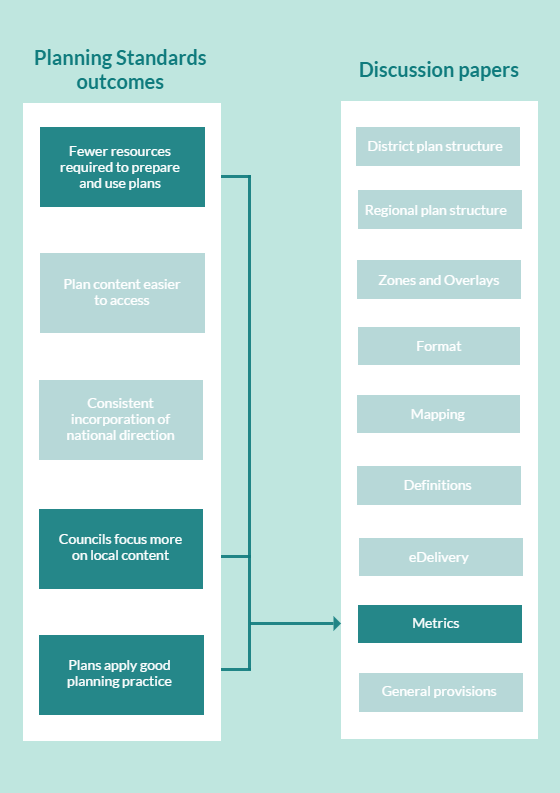
Metrics are standards of measurement for a variety of aspects ranging from simple matters (like length or area) to more complicated matters, such as noise and radio frequency. In regard to district and regional plans, metrics are typically part of a rule and are accompanied by thresholds that indicate if a use or development is permitted or requires a particular level of consent.

|  |
| --- |
| Example |
| Rule 21.24.1 of the Waikato District Plan (Living Zone) establishes the following metrics for earthworks:  Any activity is permitted if earthworks…do not disturb or move more than 100m3 within a single calendar year.  The metric = maximum cubic metresdisturbance per calendar year. The threshold = 100 cubic metres. |

# Context

Unnecessary plan variation affects the planning system by making plans difficult to understand and interpret. The first set of National Planning Standards addresses this by including minimum requirements for the structure, form and content of policy statements and plans. This paper sets out our ideas for how the National Planning Standards could provide a more consistent approach to the metrics contained in resource management (RM) plans. We propose developing a set of standardised metrics that would apply to district and regional plans. Figure 1 shows the National Planning Standards outcomes that can be addressed through the development of standards detailed in this discussion paper.

Figure 1: How the National Planning Standards outcomes can be addressed through standards in this paper



# What is the problem or opportunity here?

RM plans have largely been developed in isolation since the inception of the Resource Management Act (RMA) in 1991. As a result, the metrics in RM plans and their associated thresholds are varied. Our research suggests that while some of the variation is able to be justified by specific local conditions and community tolerances, much of it is unnecessary and likely to be symptomatic of the highly devolved planning system.

|  |
| --- |
| Case study |
| The following plans use different metrics to measure the number of car parks required for emergency services/facilities.  **Auckland Unitary Plan**: 1 car park per employee on site plus 1 per emergency service appliance based at the facility.  **Hutt City District Plan:** The greater of 1 car park per staff member or 100 square metres of gross floor area. |

There is currently no consistent set of nationally defined metrics for use in RM plans. This results in the same or similar metrics being defined, measured and interpreted differently from plan to plan. Different metrics can lead to uncertainty and misunderstandings at all stages of the resource consent process for councils, applicants and submitters. Furthermore, councils spend significant time developing their own metrics for the same or similar purposes. This lack of consistency also creates inefficiencies for organisations working across council jurisdictions.

A variety of organisations, such as state-owned enterprises and infrastructure providers, regularly submit on RM plans across the country seeking standardised provisions to control their assets. In the absence of RM plan consistency or national environmental standards (NES), applicants need to comprehend a range of metrics. Other regular users of plans also seek common metrics to make their interactions with the planning system easier and more certain.

Standardising metrics through National Planning Standards will help improve the user friendliness of RM plans and give plan users certainty as a result of consistent plan interpretation. Standardised metrics will also result in time and cost savings for people working across council boundaries as well as councils themselves that spend significant time developing metrics. Standardised metrics could also free up councils and practitioners to focus on core resource management issues by reducing the time spent developing, implementing and defending metrics.

Standardised metrics will complement other aspects of the National Planning Standards by acting as a ‘tool box’ for any standardised plan content. For instance, if standardised zone or overlay content included noise provisions, standardised metrics would ensure that all plans use compatible noise metrics.

Standardising metrics will impose costs on local authorities that will need to review and update their plans. However, these initial costs are expected to be offset by the associated benefits that occur over time as a result of national consistency.

# What does our research say?

Our research[[1]](#footnote-1) assessed 25 district and 5 regional plans to better understand how metrics are developed and applied. Important findings from this research are listed below.

* From the plans assessed, there were 14 metric themes that reflect those most commonly used in district and regional plans. These are:
* discharge, earthworks, light spill, minimum floor levels, noise, noise (insulation), odour, car parking, vehicle loading, radio frequency, reflectivity, sunlight access, vibration, water take.
* In general, there was some commonality in terms of metrics used across all themes, but there was a high degree of variation in the metric thresholds and terminology describing metrics.
* New Zealand Standards (NZS) are often used to prescribe the way that a metric is measured, particularly for noise and vibration. Many references to NZSs in district and regional plans are out of date, reflecting the difficultly of keeping this aspect of a district plan up to date. Schedule 1 – Part 3 (clause 31) of the RMA requires a district plan variation stating that an amendment or replacement of an NZS has legal effect.
* There is either no, or limited, analysis of the use of metrics in section 32 reports[[2]](#footnote-2) that were reviewed as part of this research. There are also only a small portion of submissions relating to metrics for RM plans.
* The number of times a metric is individually referred to in plans, within each of the metric themes, varies greatly depending on: whether the plan is a district or regional plan, how the plan is structured (ie, if the plan contains a lot of different zones and repeats rule content), the relevance of the theme for that area and the area’s characteristics. For example, the Westland District Plan contains 5 references to parking metrics, while the Hamilton City Plan 2012 contains 60 references to parking metrics.

Questions

I.1. Have you experienced any difficulty dealing with different metrics across resource management plans?

I.2. To what extent do you think the inconsistent use of metrics in plans is an issue?

# Our approach to identifying metrics for inclusion in the National Planning Standards

To help us determine what metrics should be included in the first set of National Planning Standards, we applied the following criteria to the 14 metric themes identified in our research:[[3]](#footnote-3)

* Criteria 1: Highly used in regional and district plans (those that have a strong frequency of use in the plans analysed as part of our research, that is, appearing in over 75 per cent of plans)
* Criteria 2: Common to both district and regional plans
* Criteria 3: Urban focused
* Criteria 4: Infrastructure focused.

We used similar criteria to identify what terms should have standardised definitions in the first set of National Planning Standards.

This approach resulted in a refined list of four metric themes that could be included in the first set of National Planning Standards. These four metric themes are: earthworks, noise, light spill, and building bulk and location.

Table 1: Assessment of common metrics for inclusion in the National Planning Standards

| Metric theme | Criteria 1: Highly used in district and regional plans | Criteria 2: Common to both district and resource plans | Criteria 3: Urban focused | Criteria 4: Infrastructure focused | Potential for inclusion in the National Planning Standards |
| --- | --- | --- | --- | --- | --- |
| Discharge | No | No | No | No | Not at this stage |
| Earthworks | Yes | Yes | Yes | Yes | Yes |
| Light spill | Yes | No | Yes | No | Yes |
| Minimum floor levels | No | No | Yes | No | Not at this stage |
| Noise | Yes | No | Yes | Yes | Yes |
| Noise (insulation) | No | No | Yes | No | Not at this stage |
| Odour | No | No | Yes | No | Not at this stage |
| Car parking (supply) and vehicle loading | Yes | No | Yes | No | Not at this stage |
| Radio frequency | No | No | Yes | Yes | Not at this stage |
| Reflectivity | No | No | Yes | No | Not at this stage |
| Building bulk and location | Yes | No | Yes | No | Yes |
| Vibration | No | No | Yes | No | Not at this stage |
| Water take | No | No | No | No | Not at this stage |

## Earthworks

The most common metrics used for earthworks include: area (square metres), volume (cubic metres), depth/height (metres), setback (metres) and NZS 4431:1989. Almost all district plans (23 out of 25) analysed contained metrics relating to earthworks. The metrics associated with earthworks are relatively non-technical and commonly understood.

While the metrics used for earthworks are common, the *metric thresholds* in RM plans vary greatly. For example, the living (residential) zone of the Waikato District Plan allows 100 cubic metres within a 12-month period, while the residential zones of the Hastings District Plan allow 25 cubic metres per annum.

Earthwork rules are a common trigger point for resource consent and are matter that both district and regional councils have responsibility for. Therefore, standardised earthwork metrics could have help align district and regional plan provisions and make RM plans more user friendly.

## Noise

The most common noise metrics include dBA, dBA L10, dBA Lmax and dB LAeq. NZSs also feature heavily in noise metrics.

Most district plans (23 out of 25) analysed as part of our research contained metrics relating to noise. Noise metrics are used frequently in RM plans but are inconsistently used, formatted and described. For example, some plans refer to ‘dBA’ while others use ‘dB’. There is an almost infinite variety of noise levels, ways to measure, timeframes within which to measure, where to measure from and hours of the day to which noise levels apply. Due to the fact that noise metrics are frequently used in RM plans but inconsistently used, significant benefits could be derived from standardisation. Our research also found that:

* 25 per cent of the individual references to noise related NZSs in the assessed RM plans relate to standards that have been superseded. This reflects the difficulty in keeping RM plans up to date when referencing external documents and processes.
* 7 per cent of the individual references to noise related NZSs in the assessed RM plans did not include the year in which the standard came into effect. This could have potentially been an intentional decision to ensure the references are not outdated when standards are updated.

There were three instances of incorrect NZS referencing and misspelt standard referencing.

If the inconsistency in plans is symptomatic of councils failing to update their plans to reference the newer NZSs, the National Planning Standards could help councils to make that change without the associated costs of going through a First Schedule process.

Our research also looked at noise insulation metrics that generally address reverse sensitivity effects on residential dwellings. For example, plans often refer to a ‘minimum performance standard’ of noise insulation for habitable rooms. Noise insulation metrics were only used in 12 of the 25 district plans analysed. The Ministry of Business, Innovation and Employment is currently reviewing clause G6 of the Building Code with a view to extending its scope to better manage the range of noise issues that district plan noise insulation requirements sought to address as a ‘work around measure’. At this stage, we will await the outcome of that review before considering further the need for a noise insulation metric for RM plans.

## Light spill

The most common light spill metric is ‘max lux’ measured:

* at or within another site, building or zone
* at a certain time of the day
* irrespective of location or time.

Our research found light-spill metrics are highly used in RM plans and there is a high level of commonality in metrics within this theme, although there are differences in the measurement descriptions. For example:

Waikato District Plan, Living zone – Any activity is a permitted activity if light spill from artificial lighting, other than a streetlight, navigation light or traffic signal, does not exceed: (a) 10 lux *measured vertically at any other site*.

Wanganui District Plan, Commercial zone – An artificial lighting system shall not result in increased luminance in excess of 8 lux in the *measured ambient level in the vertical plane at the windows of any residential building*.

Standardising light spill metrics could eliminate some of the nuisances that exist between RM plans without causing significant disruption to RM plans. This is because there is already a high level of commonality in the type of light spill metrics used in RM plans.

## Building bulk and location

The most common district plan rules that are used to control the bulk and location of buildings are: height, sunlight access, site coverage, setback and outdoor living area. Although there is a moderate degree of consistency in some of these metrics, standardisation would remove the subtle nuances between plans and could noticeably improve consistency in and resource consent processes across the country.

#### Sunlight access

The most common metrics used to measure sunlight access are: height (metres) and recession plane (degrees). Our research found that metrics relating to sunlight access are highly used in RM plans, but inconsistently described (eg, ‘sunlight access’, ‘height recession plane’, ‘height in relation to boundary’). National Planning Standards could provide consistency by applying standardised terminology, measurement and definitions.

Although there is a high level of consistency in sunlight access metrics (ie, metres and degrees), there is less consistency in metric *thresholds*. For example, the living zone of the Ashburton District Plan prescribes sunlight access provisions as 2.3 metres above ground level with an angle between 30 degrees to 55 degrees, while the Rangitikei District Plan prescribes 2 metres above ground and a 45 degree angle. Our research[[4]](#footnote-4) indicates that there is no obvious correlation between sunlight access thresholds and local conditions.

#### Height

Almost every district plan we assessed used metres as the metric to measure height. However, two different ways of measuring height appear to be used: a rolling height limit that follows the topography of the ground, and an average height limit that is based on the average ground level below a structure.

#### Site coverage

The most common metrics used to measure site coverage are percentage and square meters. There appears to be only a small amount of variation in how the metric was described, with the following three terms being used across all the district plans assessed: ‘building coverage’, ‘site coverage’ and ‘impervious surface’. There also appears to be a moderate degree of consistency of site coverage thresholds amongst similar zone types. For example, low density residential zones generally permit 30 per cent to 40 per cent of a site’s area to be covered by buildings. The definitions of key terms, such as ‘building’ and ‘net site area’, heavily influence how site coverage metrics are measured.

#### Setback

Setback metrics in the context of bulk and location rules require structures to have a certain separation distance from a particular reference point, boundary, building or activity. For the purpose of this paper, we have excluded setback metrics that specifically deal with privacy effects by way of window placement.

Only two terms were used to describe setback metrics across the district plans we assessed: ‘yard’ and ‘setback’. Every district plan we assessed used metres (m) as the metric to measure setback. However, there are a variety of nuances in what setback metrics are measured from, such as: the boundary of a site, a notional boundary or a zone boundary. There is also large variation in setback thresholds, which is likely a reflection of the various types of zones and overlays that use setback metrics for different purposes.

#### Outdoor living area

Metrics for outdoor living areas are linked to rules that require a minimum sized outdoor area to be provided for a residential unit. A variety of metrics are used to measure outdoor living areas, such as: meters, area, circle diameter, slope, access point, and orientation relative to a building. There also appears to be a large variety of metric thresholds for outdoor living areas. Due to the wide variation in outdoor living area metrics, significant benefits could be derived from standardisation.

Questions

I.3. Do you agree with the criteria that have been used to identify the main metric themes?

I.4. Do you think the four metric themes identified for inclusion will offer the most benefit?

I.5. Are there other metric themes that you think would benefit from standardisation through the National Planning Standards? (See appendix 1 for commentary on metric themes not included.)

I.6. Are then any specific difficulties you foresee with standardising certain metrics?

# Metric themes not proposed for inclusion in the National Planning Standards

## Discharge and water take metrics

Discharge and water take metric themes have not been considered for further investigation as National Planning Standards. This is because discharge metrics are a responsibility of regional plans rather district plans, and it is proposed that the first set of National Planning Standards will focus more on district plan and urban matters and their overlap with regional plans.

## Radiofrequency

Our research found that radiofrequency metrics were not regularly used in RM plans, but for those that do use them (5 out of 25 district plans) there was consistency (only 2 different metrics used). Given this commonality and the low number of plans using radio frequency metrics, it is not considered a priority for the National Planning Standards. Furthermore, the NES for Telecommunication Facilities 2016 establishes a permitted activity threshold in relation to radiofrequency generation that can be emitted by any “RFG facility” installed by a “facility operator”. Therefore, any standardised radio frequency metrics would only apply to those activities not regulated by the NES.

## Reflectivity

Reflectivity metrics were evident in 2 out of the 25 district plans assessed in our research. The metric used in these two plans was ‘percentage reflectivity value’, however this metric was applied in specific subzones and at different threshold levels. Given the low use of reflectivity metrics, they are not considered a high priority for inclusion in the National Planning Standards due to the relatively small benefits that would result from standardisation.

## Minimum floor level

Metrics relating to the minimum floor levels of buildings appeared in 9 out of the 25 district plans assessed in our research. The most commonly used metrics are datum (representing a specific local datum against which floor levels are measured against) and annual exceedance probability (AEP). It is not proposed to standardise floor level metrics at this stage because other metric topics offer greater benefits from standardisation. Further research is also required to determine if there will be any practical obstacles for local authorities to switch between datum and AEP metrics

The Independent Hearings Panel (IHP) for the Proposed Auckland Unitary Plan (PAUP) also noted[[5]](#footnote-5)that there is a jurisdiction issue between the RMA and the Building Act 2004 for setting minimum flood levels in response to flooding hazards.

## Odour

Odour provisions were not considered to be a metric which warrants standardisation in the National Planning Standards. This is because there is no measurable unit of odour discharge (eg, the most highly used provision across the assessed RM plans is ‘objectionable or offensive odour’).

## Vibration

Vibration metrics featured in 9 out of the 25 district plans assessed as part of our research. A wide variety of vibration metrics are used in district plans, the most common being NZS 2631: 1985-1989, with a metric threshold of ‘no vibration considered offensive or objectionable’. Given the low use of vibration metrics in plans, they are not considered a high priority for inclusion in the National Planning Standards due to the relatively smaller potential for benefit. However, we are cognisant that vibration could be an emerging issue that is increasingly being dealt with through RM plans.

## Car parking supply

Our research found car parking to be the most commonly used metric, appearing in every district plan we assessed. The metrics included in district plans for car parking supply vary greatly. Common metrics require a certain amount of carparks to be provided for a particular land use, depending on a range of metrics such as: gross floor area, unit, employee, student, classroom, public floor area, bedroom, spectator, seats and so on.

For example, under the Hamilton City Plan, ‘places of assembly’ are required to provide 1 parking space per 25 square metres of gross floor area. While the Wanganui District Plan required 1 space per 10 seats, or 3 per 100 square metres of gross floor area where the facility is not intended for seating.

Car parking metrics are also closely linked to land use activities and their associated definitions in district plans, that is, ‘commercial’, ‘retail’, ‘industrial’, ‘emergency service’. For instance, the car parking supply metrics in Auckland Council’s 7 legacy district plans referred to around 140 different land use activities.[[6]](#footnote-6) Therefore if car parking supply metrics were to be standardised, it would also necessitate the standardisation of a comprehensive list of land use activities.

Although car parking supply metrics scored highly against the criteria identified in table 1, they are unlikely to result in substantial benefits to the planning system without a complete list of land use activities also having standardised definitions. For this reason, car parking supply metrics are not proposed to be standardised in the first set of National Planning Standards.

Question

I.7. Do you agree that the above metrics themes should not be included in the first set of National Planning Standards?

# Other considerations

## Mandatory adoption of metrics in the National Planning Standards

We think it should be mandatory for RM plans to adopt the metrics in the National Planning Standards, in order to achieve the outcomes sought. However, councils will not be required to use every single metric, if there is clearly no need for them to do so. For example, some plans may not have any metrics relating to light spill, therefore, it would be unnecessary for such plans to adopt the light-spill metrics that have been set in the National Planning Standards.

The basis for applying metrics as National Planning Standards is to provide standardisation and certainty across councils. Accordingly, there need to be restrictions on the extent to which metrics can be changed or customised.

## Metric thresholds

Any decision to impose a metric *threshold* (effectively akin to setting a rule in an NES) will be carefully considered in the context of its ability to achieve consistency where it is clearly warranted and must be able to be justified in a section 32 evaluation. Options include the following.

**Option 1 Let local authorities set their own thresholds:** This option gives local authorities discretion to set their own metric thresholds that best suit their local conditions. However, this may dilute the impact of National Planning Standards by reducing the extent of consistency across RM plans.

**Option 2 Develop a threshold range:** This option would establish a range of metric thresholds as a ‘guidance’ for local authorities.

**Option 3 Develop fixed thresholds:** This option would require local authorities to adopt the thresholds that have been set as National Planning Standards, which is akin to setting a rule in an NES. This option would achieve the most consistency across RM plans but would prevent local authorities from establishing different thresholds in response to local conditions.

Alternatively, a mixture of the above options could be used, depending on the metric topic.

Developing mandatory metric *thresholds* is not considered to be a priority for the first set of National Planning Standards. This is due to the large amount of work that would be required to ensure mandatory thresholds do not significantly undermine the ability of local authorities to manage local environmental issues specific to their jurisdiction.

Questions

I.8. Out of the three options identified for metric thresholds, which one do you think is the most appropriate and why?

## Formatting and display of metrics

Our research found that the inconsistent description of metrics and thresholds is driving much of the lack of commonality.[[7]](#footnote-7) Adopting consistent terminology and formatting of metrics would help improve consistency in RM plans. Examples of some of the common inconsistencies are as follows.

* RM plans inconsistently describe metric and threshold applications, which can create confusion and different real life applications. For example, plans refer to light-spill metrics in the following ways: ‘no more than 10 lux’, ‘no greater than 10 lux’, ‘in excess of 10 lux’ and ‘a 10 lux minimum’. Another example is how land is described in different plans and what this means in terms of measurement, for example: ‘onto any other site’, ‘at the boundary of other site’.
* RM plans typically apply time-dependant thresholds in the areas of noise and light spill. These will be difficult to apply, unless there is a common understanding of what is considered day and night. Some plans just refer to ‘day’ or ‘night’, with or without an accompanying definition of what is considered ‘day’ and ‘night’ time wise. Others stipulate the time, and there is variation here, for example: ‘night’ can be 7pm – 7am or 10pm – 7am.

The metrics contained in the first set of National Planning Standards could help address these formatting inconsistencies by establishing draft provisions for a given metric that RM plans must align with. Standardising the format of metrics will also complement other aspects of the National Planning Standards such as standardised zone content, by helping to integrate content from the National Planning Standards with existing RM plans. For instance, if standardised zone content requires noise levels to be measured in a certain way, standardised metrics would ensure that the rest of the plan also uses compatible noise metrics.

The example below shows how the National Planning Standards could potentially establish consistent formatting and display of metrics by requiring all light-spill metrics in RM plans to align with either ‘Variation A’ or ‘Variation B’.[[8]](#footnote-8)

Artificial illuminance from [insert activity] in [insert location], shall not exceed:

* [insert threshold] lux above background levels between 7.00am – 10.00pm; and
* [insert threshold] lux above background levels between 10.00pm – 7.00am.

**Variation A**

When measured anywhere in a vertical plane along the boundary of another site. Lighting limits must be measured and assessed in accordance with Standard AS 4282-1997.

OR

**Variation B**

When measured at the window of a lawfully established dwelling. Lighting limits must be measured and assessed in accordance with Standard AS 4282-1997.

# Next steps

We are currently in a scoping phase for the National Planning Standards. The [‘Introduction to the National Planning Standards’](http://www.mfe.govt.nz/publications/rma/introduction-national-planning-standards) overview document details the process and engagement opportunities during each stage of development. Further research and specialist advice will be necessary to develop the metric topics identified for inclusion in the National Planning Standards. The flow chart below shows each stage of the development process and the anticipated timeframes.

Figure 2: Development process for the National Planning Standards



## Feedback

We now welcome your feedback on the ideas and options we have presented in this paper. Please use the questions in this paper as a guide. You do not have to answer them all and can give other constructive comments where you wish. To ensure your point of view is clearly understood, please explain your rationale and provide supporting evidence where appropriate.

We encourage you to send us feedback throughout the initial engagement period, which closes on 31 July 2017. Please send feedback to the email address below.

## Contact

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1. GHD. 2015. *Resource Management Plan Metric Research*. Prepared for the Ministry for the Environment by GHD. Wellington: Ministry for the Environment. [↑](#footnote-ref-1)
2. Section 32 of the RMA requires new proposals for policy statements and plans to be examined for their appropriateness in achieving the purpose of the RMA. Section 32 requires the policies and methods of those proposals to be examined for their efficiency, effectiveness and risk. [↑](#footnote-ref-2)
3. Common building bulk and location metrics were added to this list. [↑](#footnote-ref-3)
4. Ministry for the Environment desktop exercise that sampled the sunlight access thresholds from ‘standard’ residential zones across 34 district plans. February 2017. Document ID 8436514. [↑](#footnote-ref-4)
5. Auckland Unitary Plan Independent Hearings Panel. 2016. *Report to Auckland Council Hearing topics 022 Natural hazards and flooding and 026 General – others*. Retrieved from [www.aucklandcouncil.govt.nz/EN/planspoliciesprojects/plansstrategies/unitaryplan/Documents/ ihprecommendations/ihp022026naturalhazardsflooding.pdf](http://www.aucklandcouncil.govt.nz/EN/planspoliciesprojects/plansstrategies/unitaryplan/Documents/ihprecommendations/ihp022026naturalhazardsflooding.pdf) (April 2017). [↑](#footnote-ref-5)
6. Flow Transportation Specialists. 2012. *Unitary Plan Parking Standards: Number of parking and loading spaces required*. Auckland: Flow Transportation Specialists. [↑](#footnote-ref-6)
7. GHD. 2015. *Resource Management Plan Metric Research*. Prepared for the Ministry for the Environment by GHGD. Wellington: Ministry for the Environment. [↑](#footnote-ref-7)
8. Please note, these are simplified draft provisions for demonstrative purposes only. [↑](#footnote-ref-8)