Briefing Note: Release of Equity Index Technical Report and He Whakaaro

<table>
<thead>
<tr>
<th>To:</th>
<th>Hon Chris Hipkins, Minister of Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td>19 September 2019</td>
</tr>
<tr>
<td>Priority:</td>
<td>Low</td>
</tr>
<tr>
<td>Security Level:</td>
<td>In Confidence</td>
</tr>
<tr>
<td>METIS No:</td>
<td>1205440</td>
</tr>
<tr>
<td>Drafter:</td>
<td>Philip Stevens</td>
</tr>
<tr>
<td>DDI:</td>
<td>9(2)(a)</td>
</tr>
<tr>
<td>Key contact and number:</td>
<td>Philip Stevens</td>
</tr>
<tr>
<td>Messaging seen by Communications team:</td>
<td>No</td>
</tr>
<tr>
<td>Round robin:</td>
<td>No</td>
</tr>
</tbody>
</table>

**Purpose of Report**

The purpose of this paper is for you to:

**Note** that the Ministry plans to release the 'Equity Index Technical Report' and 'Accounting for Disadvantage' He Whakaaro on the Education Counts website.

**Note** that over the past year, the Ministry has been redeveloping and refining the Equity Index model to better identify the equity challenge faced by schools and services.

**Agree** that this Briefing be proactively released.

**Summary**

- The Ministry will release two papers that provide an overview of the development of the first iteration of the Equity Index and some of the insights of the analysis.

- The papers are timed to follow the Cabinet discussion seeking in principle-agreement to replace the decile system with an Equity Index. We expect that a decision to replace the decile system will generate significant public interest, so having these documents publicly available will help to build trust and support in the new system.

---

Dr Philip Stevens  
Group Manager  
Analysis, Research & Evaluation  
Evidence, Data & Knowledge  
19/9/19

Hon Chris Hipkins  
Minister of Education  
26/9/19
Background

1. On 16th September, Cabinet agreed in-principle to replace deciles with the Equity Index [CAB-19-MIN-0472]. This will enable us to provide certainty around the future of the decile system to the education sector and the New Zealand public.

2. The Ministry will continue the detailed design of the operational use of the Equity Index. This work will include consideration of the practicalities of the implementation, once the package of supports has been designed and agreed. Financial impacts on individual schools and services and transitioning of other supports currently targeted using decile will also be considered.

3. The Ministry has begun engagement with the sector through an Equity Sector Reference Group and a Technical Reference Group.

4. The Equity Sector Reference Group is made up of a group of principals from a range of schools across Aotearoa New Zealand, including coverage of all deciles, urban and rural areas, Maori-medium and mainstream education, and primary, intermediate and secondary schools. This ensures we are able to incorporate a broad range of views into the design of the new resourcing system and understand impacts across the schooling system.

5. The Technical Advisory Panel for the Ministry of Education Equity Index Model was set up in 2018 to provide independent expert advice and recommendations to improve the performance of the equity index model in identifying disadvantaged students. The panel members are technical experts from academic or not-for-profit organizations, but are not appointed as representatives of any organization. The Group members are as follows:

a. Dr Philip Stevens (Chair), GM Analysis, Research & Evaluation, Ministry of Education

b. Prof Gavin Brown, Associate Dean Postgraduate Research and the Director of the Quantitative Data Analysis and Research Unit in the Faculty of Education and Social Work at the University of Auckland.

c. Charles Darr, Chief Researcher, New Zealand Council for Educational Research;

d. Elliot Lawes, Psychometrician, New Zealand Council for Educational Research;

e. Dr Michael Johnston, Associate Dean (Academic) School of Education, Victoria University Wellington;

f. Dr Peter Keegan, Senior Lecturer, Faculty of Education and Social Work, University of Auckland;

g. Dr Brigid McNeill, Associate Professor, College of Education, Health & Human Development, University of Canterbury;

h. Dr Nichola Shackleton, Senior Research Fellow and Deputy Director of COMPASS Research Centre, University of Auckland;

i. Prof Jeffrey Smith, Associate Dean, College of Education, University of Otago;

j. Jason Timmins, Principal Analyst/Manager, Insights, Education Review Office
6. The Group provided extensive review of the model and provided technical guidance on model revisions and enhancements to deliver the greatest modelling efficiency gains.

The Equity Index Model

7. The Equity Index is a statistical model developed to estimate the level of schools' socio-economic disadvantage that impacts children's educational achievement. Primarily, it can be used to better allocate resources to support disadvantaged students than the current decile system.

8. The Index is made up of a large set of socio-economic predictors weighted differently depending on the age of the child. The predictors were selected from an array of socio-economic predictors. The selection was based on the strength of the correlations between the achievement of students who have recently completed their schooling and the socio-economic predictors in their lives.

9. Using the Equity Index together with administrative data held in the IDI, each child enrolled in a school or service can be assigned a score depending on the unique combination of factors characterising the socio-economic context of that child. Thus, the index looks at the full combination of socio-economic circumstances to determine a child's level of disadvantage, rather than any one specific factor.

10. The Equity Index for schools is created using a basket of data points (or variables) that are statistically linked with socio-economic disadvantage and educational achievement. The initial version of the index uses 29 variables and further variables are being considered. These variables are anonymised government administrative data in the IDI and are used as a 'basket' rather than being individually ordered (i.e. two identical scores could be arrived at via two different baskets of variables). Within the IDI, school enrolments are matched with the data points. These are weighted and then combined at a school level to create a measure the level of schools' socio-economic disadvantage as it affects children's educational achievement. The Equity Index value per school is then extracted from the IDI, subject to Statistics New Zealand privacy rules. Individual variables are never extracted, nor is student level data.

The Technical Report

11. The IDI is not easily available to everyone to use or interrogate and therefore a model such as the Equity Index runs the risk of not being transparent. To improve transparency, the Technical Report clearly explains how the model has been developed and the factors that it uses. This is designed to build trust and confidence in the model and any future applications of the information generated by the model.

12. The Technical Report details the process of development of the first iteration of the Equity Index, including the choice of factors included in the model, tests of model performance and validity, operational considerations and suggestions future work to improve the model.

13. The work to improve the model is well underway, informed by the suggestions of and discussions with the Technical Advisory Panel. Changes to the Equity Index methodology also respond to concerns raised by the education sector that the measure of educational success used in the Risk Index was too blunt. It measured a simple
pass/fail at NCEA level 2. The measure of educational success has been broadened in response to this technical and sector feedback. Instead the measure will now consider the spectrum of actual achievement at NCEA. This gives a more nuanced view of the equity challenge at each school.

Accounting for Disadvantage He Whakaaro

14. *He Whakaaro – Education Insights* are a series of short, easy to read papers, which look across the range of New Zealand education system evidence. They provide interesting and useful insights and highlight latest findings, new analysis or ways of looking at issues. They are designed to provoke further thought and discussion on key issues such as; student progression and attainment, the factors that support learning and patterns and trends across education.

15. We have produced a He Whakaaro – *Accounting for Disadvantage* – to introduce the insights into the level of socio-economic disadvantage across New Zealand’s schools provided by our work on the Equity Index so far.

16. We present insights into the distribution of individual disadvantage within schools, and compare the Equity Index with school deciles – our current instrument for identifying the level of disadvantage within a school. These insights have been presented to you previously in a number of Education Reports and Strategy Sessions [e.g. METIS: 1169230].

17. In short, the key messages are that:
   a. Disadvantage exists everywhere across New Zealand, but is spread unevenly across our schools;
   b. Deciles are a blunt instrument for identifying the level of disadvantage in a school. Across the schools in any given decile, we see large variation in the proportion of their students who are disadvantaged;
   c. These results are from the first iteration of the Equity Index methodology, which is being refined to improve its reliability and comprehensiveness.

Key Risks and Benefits

18. The papers provide transparency around the development of a more effective means of accounting for socioeconomic disadvantage to replace the decile system. We expect that there will be significant interest in the Equity Index once it is made public that it is replacing the decile system and wider public engagement begins. Having this information publicly available will help to build trust and support in the new system.

19. We will work with your office to coordinate the release of the Technical Report and He Whakaaro on Education Counts to align with announcements regarding the Decile replacement.

Next Steps

20. The papers will be published on the *Education Counts* website in the week commencing 23 September.
21. We are currently preparing a communications plan and will provide this to your office closer to the anticipated public release date of 23 September 23 and will work with your office to coordinate the release.

Proactive Release

22. We recommend that this Briefing is proactively released as per your expectation that information be released as soon as possible. Any information which may need to be withheld will be done so in line with the provisions of the Official Information Act 1982.

Annexes

Annex 1: Equity Index Technical Report
Annex 2: Accounting for Disadvantage He Whakaaro