Report of the Measurement Review for a New Zealand Living Wage

Prepared for the Living Wage Movement Aotearoa NZ

Charles Waldegrave, Erin Rogers,

and Giang Nguyen

Family Centre Social Policy Research Unit

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Living Wage Update Summary

The New Zealand Living Wage (NZLW) hourly rate for 2023/24 is **$26.00**. It will come into effect on 1 September 2023.

This is an increase of $2.35 or 9.9% on the 2022/23 rate. This increase is the result of a comprehensive 5-yearly review of prices, expenses and calculation methods. Subsequent to this year's increase, annual updates will revert to calculations based on the annual movements in average ordinary-time wages from Stats NZ's Quarterly Employment Survey (QES) until the next review in 2028. December Quarter QES statistics will be used for these increases.

The NZLW is defined by Living Wage Aotearoa New Zealand as:

> *The income necessary to provide workers and their families with the basic necessities of life. A living wage will enable workers to live with dignity and to participate as active citizens in society* [1].

Regular review of the cost of living is essential to ensuring the Living Wage fulfils its definition robustly and transparently. The original Living Wage, introduced in 2013, was designed to track with market wages annually, on the basis that reviews would be undertaken every 5 years [2]. Already, a 2018 review has taken place [3]. This report constitutes the full review for 2023 that covers changes to data and methodology with relevant citations.

The 2023 Living Wage is calculated item by item as seen in Table 1 on the following page. Household items in 12 categories are estimated for a family of two adults and two children based on available data. Tax, Kiwisaver contributions, tax credits and the accommodation supplement are included in the calculation of the gross income required to meet the household's expenses. The hourly rate is derived by dividing the gross income by 60 hours per week for 52 weeks in a year, or one full-time and one half-time working adult.

As in previous years, the final figure of $25.99 is rounded to the nearest 5 or 10 cents mark to provide, in this case, a 2023 Living Wage figure of **$26.00**.

This new Living Wage sits modestly at 68 percent of the average hourly earnings in New Zealand ($38.19) for QES December 2022 quarter. The QES does not provide median hourly earnings. Stats NZ's Household Labour Force Survey publishes a value for median hourly earnings from wages and salaries in the June quarter release only ($29.66). The new Living Wage sits at 88 percent of this median.

The announcement 3 April this year gave employers lead time to implement the living wage by 1 September.

Table 1: Calculation of the Living Wage from estimated average itemised costs for a 2 adult 2 child family

CATEGORY	2023 COST ($)
Food	259.66
Clothing and footwear	52.95
Actual rentals for housing	520
Household energy Electricity for appliances, hot water and heating	66.05
Household contents and services	43.53
Health GP, dental treatment and medical supplies	16.28
Transport Vehicles, running costs and public transport	152.47
Communication Phone and internet	27.42
Recreation and culture Computing equipment, sports gear, books, craft supplies etc	83.30
Education	24.74
Miscellaneous goods and services Insurance, personal care, credit services	98.43
Other expenditure Interest, savings and koha	84
Weekly total expenses	**$ 1,428.83**
Tax and ACC levy	274.66
Kiwisaver (3%)	46.78
Accommodation Supplement (modelled average)	- 89.07
Family and In-Work Tax credits	- 102
Weekly gross income (household 1.5 incomes)	**$ 1,559.20**
Annual gross income (household 1.5 incomes)	**$ 81,078.00**
Hourly rate (per person)	**$ 25.99**

The increased item costs since the last review in 2018 are for housing, miscellaneous goods and services, food, other expenditure, transport, household contents and services, and clothing and footwear. The largest of these is housing costs. Increased cost in the other items, especially food, are also due to inflation since 2018, particularly during the 2022 year.

The decreases are for education, health, communications, recreation and culture, and energy. We have used a more up-to-date data source for education costs and utilised the Community Services Card subsidies for health costs since households on the Living Wage fall within the Community Services Card thresholds. Phone and internet charges have reduced, as have energy costs when accounting for heat pump efficiency, a reasonable expectation for many rental homes since the introduction of the Healthy Homes legislation.

Table 2: The data sources used to estimate the Living Wage

CATEGORY	2023 Living Wage data source
Food	University of Otago Annual Food Cost Survey 2021 inflated with Stats NZ Food Price Index
Clothing and Footwear	Custom requested Household Economic Survey (HES) 2019 data, inflated by Stats NZ Level 2 Consumer Price Indices (CPI)
Rent	Lower quartile rent for 3-bedroom dwellings from the Ministry of Business Innovation and Employment (MBIE) Detailed Quarterly Tenancy Data published by Tenancy Services
Household energy	Fuel Poverty Review, Stats NZ Dwelling and heat pump use data from Census 2018, Energy Efficiency and Conservation Authority (EECA) heat pump sales and efficiency data, MBIE Quarterly Survey of Domestic Electricity Prices
Household contents and services	HES
Health	Ministry of Health GP utilisation data, GP fees readily advertised by 10 of the Primary Health Organisations, dental costs collected by Education New Zealand, HES
Transport	Trademe used car prices, two car scrappage reports and fleet statistics from the Ministry of Transport; commute distance paper and Auckland public transit fares; HES
Communication	Advertised internet and phone plans
Recreation and Culture	HES
Education	HES
Miscellaneous Goods and Services	HES
Other Expenditure	Original Living Wage focus groups, CPI adjusted

Introduction

A living wage is defined by Living Wage Movement Aotearoa NZ as:

> *the income necessary to provide workers and their families with the basic necessities of life. A living wage will enable workers to live with dignity and to participate as active citizens in society.*

Since the introduction of the New Zealand Living Wage (NZLW) in 2013, it has become well-known and widely adopted. There are currently 385 Living Wage accredited employers across Aotearoa, from councils to coffee shops, sports clubs to banks, clothing manufacturers to political parties [4]. The NZLW is gaining popularity among small and larger organisations, proving effective at raising the earnings of low-income workers, with no apparent reduction in jobs, and no increased risk of business failure [5] [6]. In turn, employees paid at or around the NZLW have been seen to have significantly improved attitudes to work and subjective wellbeing compared to their lower-waged counterparts [7] [8] [9] [10]. These benefits for employees have been linked to improved work productivity, with fewer sick days and lower staff turnover, to the point of potentially increasing revenue for employers [11] [12].

In November 2021, the NZ government announced it would pay the NZLW to public service contractors such as cleaners, caterers and security [13]. The Ministry for Business, Innovation and Employment (MBIE) also implemented NZLW into contracts for COVID-19 MIQ facilities. Minister Hon Michael Wood states:

> *"We have made real progress to address low pay since 2018 by increasing the minimum wage every year, making it easier to raise pay equity claims, and agreeing to bring in Fair Pay agreements. The extension of the living wage is another milestone alongside these decisions,*
>
> *"The living wage will improve living standards for workers and their whānau, which is even more important during the global COVID-19 pandemic. Low-paid workers are particularly vulnerable to the economic impacts of the crisis,*
>
> *"I want to acknowledge the work of the Living Wage Movement Aotearoa and its allies in pushing for this change. We committed to extend the living wage in our manifesto, and for the Public Service to lead by example."*

These statements demonstrate both the value placed on the NZLW and its impact for families in Aotearoa. The wage benefits are not limited to people employed by Living Wage accredited organisations.

Prime Minister Chris Hipkins announced earlier this year a $1.50 per hour inflation-adjusted increase to the NZ minimum wage, voicing concern for those in the community who are feeling the greatest financial pain [14]. The calculations for the NZLW increase set out in this report is $2.35. This is a result of an item-by-item review of budgeted costs. Increases and decreases are transparently set five-yearly five-yearly review. The NZLW has had an important role of assessing actual costs and has clearly influenced the setting of the legally enforced minimum wage. The shrinking gap between the two is illustrated in Figure 1 which uses data sourced from MBIE.

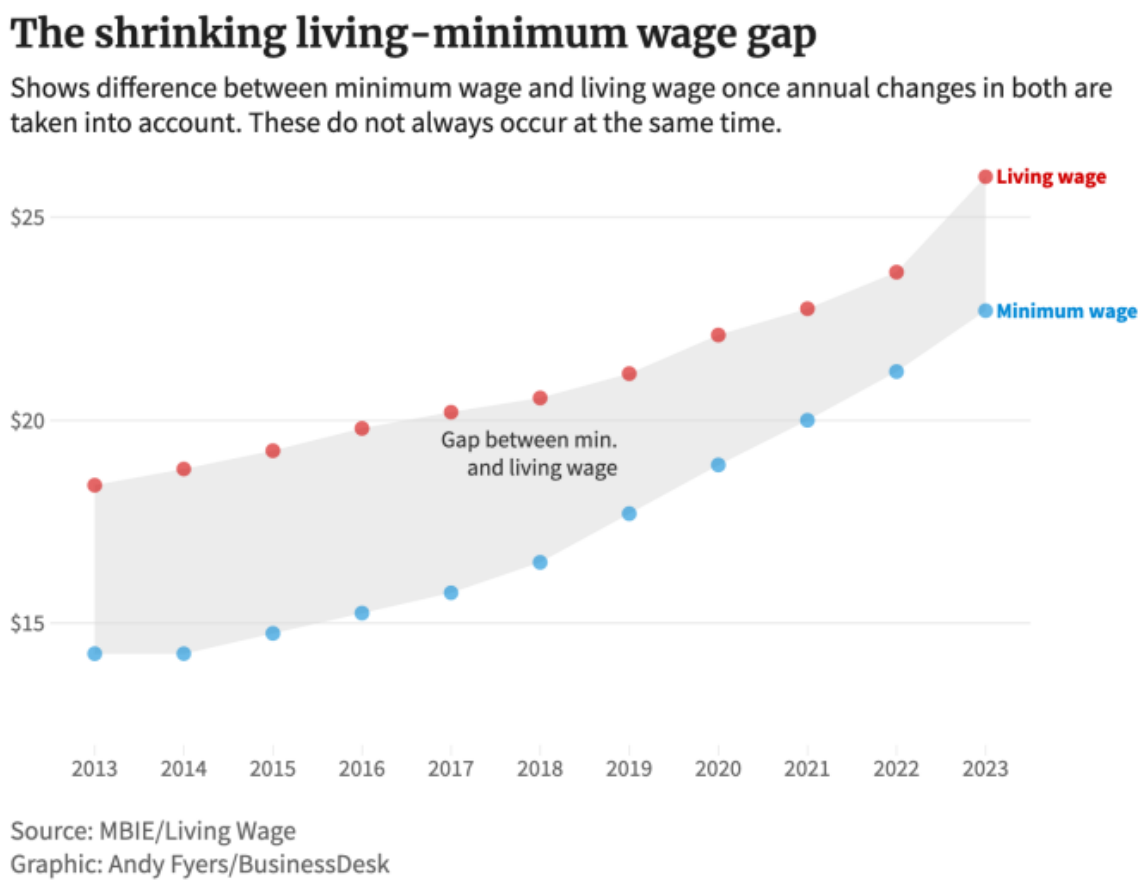

Figure 1: The shrinking gap between minimum and living wages in NZ [15]

The rising cost of living is on the mind of the government, businesses and the public alike. A robust living wage must be reviewed regularly with appropriate scrutiny. This report builds on the prior research of the Family Centre Social Policy Research to provide an empirical basis for determining the level of a living wage for New Zealand, and its annual adjustments in relation to market wages. Up-to-date data is required on the minimum expense needed for healthy living and modest participation in society. Methods must be transparent and clearly understandable for it to be adopted by New Zealand businesses and other organisations.

Table 3: List of abbreviations used in this report

CPI	Consumer Price Index
CSC	Community Services Card
GP	General Practice
HES	Household Economic Survey
MBIE	Ministry for Business, Innovation and Employment
MoH	Ministry of Health
NZLW	New Zealand Living Wage
2A2C	2 Adult 2 Child

Five Year Measurement Review

The NZLW is set at an hourly rate, which if earned by 1.5 full-time employees over the course of the year would be sufficient for a household of 2 adults and 2 children to live modestly and participate in society. Since a living wage is a market wage, annual updates are calculated according to the movement in the NZ average ordinary time hourly rate, as provided by the Quarterly Employment Survey collected by Stats NZ. The December quarter data will be used for future updates. It was also agreed that every five years, the methodology would be reviewed. If new databases or information enables improved accuracy of the estimates, they should be incorporated. Any changes to government transfers or tax also needs to be incorporated into the subsequent NZLW adjustment.

The original NZLW rate in 2013 was set at $18.40 per hour. The first five-year review in 2018 incorporated new data sources and recalculated the NZLW at $20.53 [3], up from $20.20 in the previous year. This second review in 2023 also incorporated some improved data sources and recalculated the NZLW at $26.

Many expenses in the original NZLW calculations were based on household expenditure data from Stats NZ's Household Economic Survey (HES). HES data measures actual expenditure in a sample group for various items, which may be more or less than is actually needed for healthy but minimal living. HES expenditure figures used in past and present NZLW reports are based on average expenditure in each category, specifically for households with two adults and two dependent children, having incomes that fall in the first five deciles, or bottom half, of the income distribution. This group is chosen as the best approximation of spending requirements as lower-income earners are less able to spend in excess. However, they may also underspend on some essentials.

The first NZLW incorporated food costs based on the University of Otago Annual Food Cost Survey, rent from the Rental Bond database and advertised childcare costs. The 2018 Review brought in several new data sources: estimates for housing, energy requirements based on a fuel poverty study, Ministry of Health (MoH) GP (General Practice) utilisation, advertised GP and dental costs, and education fees from the NZ Education Research Council and the Early Childhood Education Survey of Income, Expenditure and Fees. All of these data sources have been obtained to source a more accurate needs-based estimate – a minimum amount required to meet the item cost. These kinds of sources are preferable to HES because they are needs based rather than expenditure-based.

The expenditure items selected then and for this review, were derived from HES:

- food
- clothing and footwear
- rent
- household energy
- household contents and services
- health
- transport
- communication
- recreation and culture
- education – primary and early childhood
- miscellaneous goods and services
- other expenditure (savings and interest)

The total of all estimated item costs represents the amount of disposable income required to meet those costs. The corresponding amount of gross income required to produce that amount of disposable income is identified in a calculation that takes into account KiwiSaver contributions, income tax on the two incomes, tax credits based on the total household income, and the Accommodation Supplement. The total household gross income then forms the basis for calculating the NZLW hourly rate. The hourly rate is derived by dividing the total

gross household income by 52 weeks in a year and 60 working hours per week, representing one full time working parent and one halftime working parent.

Table 4 shows the data sources used in the previous living wage review alongside the present review. Note that HES 2016 data was inflated to June 2017 levels using Consumer Price Indices (CPI) Level 2. Likewise, HES 2019 data has been inflated to September 2022.

Table 4: Comparison of data sources for present and previous NZLW estimates

Expenditure Category	2018 NZLW source	2023 NZLW source
Food	University of Otago Annual Food Cost Survey 2017	University of Otago Food Cost Survey 2021, Stats NZ Food Price Index
Clothing and Footwear	HES 2016	HES 2019
Rent	MBIE Rental Bond Database	MBIE Rental Bond Database (Tenancy Services)
Household energy	Fuel Poverty Study, Dwelling data from Stats NZ, electricity prices	Fuel poverty study, Dwelling data from Stats NZ, Stats NZ heat pump usage, heat pump efficiency and sales data, MBIE Quarterly Electricity Prices
Household contents and services	HES 2016	HES 2019
Health	MoH, advertised GP fees and dental costs, HES 2016	MoH, advertised GP fees and dental costs, HES 2019
Transport	HES 2016	Trademe used car sales data, car scrappage reports, a commute distance paper, Auckland public transit fees, HES 2019
Communication	Advertised internet and phone plans	Advertised internet and phone plans
Recreation and Culture	HES 2016	HES 2019
Education	NZ Education Research Council report (2009) and Early Childhood Education Survey of Income, Expenditure and Fees (2013)	HES 2019
Miscellaneous Goods and Services	HES 2016	HES 2019
Other Expenditure	Original Living Wage focus groups (CPI-adjusted)	Original Living Wage focus groups, inflated

This review revisits the rationale for a living wage, and covers the databases and calculations used for each expenditure category. The review concludes with the revised estimate of the NZLW based on the gross household income required to cover the expenses. Appendices provide a more in-depth explanation of databases and calculations as required.

Key concepts in the rationale of a living wage

A living wage is a market wage

A living wage is an individual market wage. It is set at a level that supports a household of 2 adults + 2 children on 1.5 incomes in New Zealand and most other countries with a living wage. Such an income will be more generous to a household of 2 adults without children and more stringent for a family with 3 or more children. It will be more generous to a family without a disabled child than to a family with one. The market pays a wage for workers to do particular jobs regardless of their family size, medical needs or other financial obligations. It has to be pitched somewhere and living wage movements internationally pitch it in relation to a family with children, because society is poorer if working families with children are still below the poverty threshold.

This is in contrast to a targeted welfare transfer. Targeted welfare transfers such as the job seeker benefit, the supported living payment and child tax credits are paid differently according to family size, particular needs and housing costs. A living wage is different. It is a market wage paid by employers, a market mechanism that is directed to lift the incomes of low paid workers, and it certainly achieves that [5] [6].

Both Treasury [16] and Boston and Chapple [17] reviewed the living wage without reference to the broad literature in the field. They complained that the living wage is not effective in reducing poverty for all people in society and advocated that targeted welfare payments alone help the poorest people. This misses the whole purpose of a living wage. It was never designed to reduce all poverty in society. Rather its aim is to ensure people in paid employment are not in poverty and are able to participate in society. It is a wage in the market place. Those employers who pay it have agreed to do so voluntarily.

Although it has an important role in addressing growing inequalities, it is not a welfare transfer. People live in households but are paid in the market as individuals regardless of their household obligations. As 40 percent of children in poverty have at least one adult working full-time [18], a living wage contributes to poverty reduction substantially. Furthermore, it is important that when people come off benefits and find work, they are paid a decent wage.

The living wage is not mandatory

A living wage addresses wellbeing in our community and, in particular, the problem of employees at the lower income end becoming increasingly socially excluded. Often, they struggle to afford even basic necessities, let alone live with dignity and participate as active citizens in society, despite the fact they are working full time.

Certain commentators, again the Treasury [16] and Boston and Chapple [17] present alarming figures of costs to the country if the mandatory minimum wage was lifted to the level of the living wage. The network of organisations promoting the living wage in New Zealand, have been very clear that the living wage is quite separate from the statutory compulsory minimum wage. It is not suggested that the minimum wage be lifted to the level of the living wage. They are quite separate entities and have different functions.

The NZLW is not compulsory, nor is any living wage movement in the world seeking to make it compulsory. It carries moral force and tests business ethics. A living wage enables an employer to know that what s/he pays a worker is sufficient for them to live modestly and

participate in society. It has proved very attractive to many employers and studies show it pays off in terms of morale and productivity [7] [8] [9] [10].

Household of 2 adults and 2 children

Canada and most US States use a target household of two adults and two dependent children to calculate a living wage [19] [20]. Both the United Kingdom and the Republic of Ireland use weighted averages for different family types, including single people through to couples with children [21] [22]. The inclusion of singles and families without children means that the target household is less than 2 adults and less than 2 children.

If a living wage is to enable workers to live with dignity and to participate as active citizens in society, it must be sufficient for families with children. A household of 2 adults and 2 children (2A2C) has been chosen for NZ since a living wage should at least support a family sized to ensure natural population replacement. Furthermore, the 2018 census results show that 59% of households with dependent children have 2 or more. Such a living wage also supports a family throughout its life cycle so that young adults are not discouraged from having children and older workers can save for retirement.

The NZLW focus on a two adult and two child household has been criticised as an example of poor targeting because single people receiving the living wage rate were better off in equivalised disposable income terms than couples with children [16] [23]. But this criticism ignored the relationship between the market and non-market components of the living wage [24]. Unlike government transfers, market wages are not targeted according to need: employers are not, for example, expected to pay the sole income earner of a three-person household a multiple of what they pay a single person doing the same job. Furthermore, research has shown worker quality of life to pivot significantly upward at wages around the NZLW, regardless of the number of household dependents [9]. This finding both supports the methodology and shows how the benefits of the NZLW readily extends to families of other shapes and sizes.

One and a half incomes

The original Report chose two incomes because the Stats NZ Household Labour Force Survey results for June 2012 showed that in 68.5 percent of households with two adults and two dependent children, both adults were income earners. For the June 2017 quarter, both adults were employed in 74.5 percent of 2A2C households. It chose 1.5 incomes to allow one parent to be home with their children for half a working week however that may be divided.

The hours worked to calculate a living wage does vary by jurisdiction. The Canadians chose 70 hours, 35 hours each for both parents, whereas the United States formulas tend to use the income of one parent in fulltime employment. The United Kingdom uses 1.44 incomes, not that different from the New Zealand setting at 1.5. In the United Kingdom though, full time work is officially 38.5 hours and so they calculate 55.5 hours (38.5 + 17 hours).

The average of the four jurisdictions (United States 40 hours, United Kingdom 55.5 hours, New Zealand 60 hours and Canada 70 hours) is 56.38, not that far from the 60 hours chosen in the original Report. The parameters are judgements as to what is considered reasonable in order for a family in New Zealand to live with dignity and to participate as active citizens in society.

Calculating living wage estimates for each item

Datasets containing actual prices are used, where applicable, to estimate the necessary cost for an expense category. Where prices are not able to be used, the Household Economic Survey (HES) provides an estimate based on average expenditure. Further information about the chosen methods of calculation are provided in the Appendices.

HES obtains expenditure data every three years from a national household sample of approximately 5,000 (to be increased from 2022 and beyond). The HES tables used in this review are based on average expenditure for a couple with two dependent children falling in household income deciles 1 to 5, the lower half of incomes. Sample Errors are stated alongside HES data to describe the data quality.[1]

Food

The last review in 2018 introduced the Otago Food Cost survey as a data source for calculating necessary food costs for various combinations of 2A2C families. Unfortunately, there was no collection for this survey in 2022 due to the COVID-19 pandemic. Instead, the 2021 survey results have been used [25], inflated by the seasonally adjusted Food Price Index from Stats NZ. The inflation occurs over the period from March 2021 to December 2022. See Appendix 1 for the full derivation of food costs from survey and inflation data.

Weekly food costs are calculated to be **$259.66.**

Clothing and Footwear

There appears to be no data available capable of encompassing what constitutes necessary clothing and footwear, the turnover of these items from wear / loss and outgrowing, and their itemised cost. Far from it, a report by Oranga Tamariki details some of the complexity of the clothing needs for children and young people beyond practical function [26].

As in previous reports, this review finds that HES (Table 5) is the best available source of data for this type of expenditure. The HES figure for *Footwear* expenditure is higher for the lower income group than for all 2A2C families at $13.46. This difference most likely arises from the high sampling error for the lower income group, rather than higher actual spending. Therefore, we propose using the lower figure as a more accurate representation of cost.

Using $13.46 for *Footwear* and $39.49 for *Clothing* provides an overall cost of **$52.95.**

[1] This type of error arises from using sample rather than whole-population data and tends to be worse in a smaller subset of the original sample, as in this case. These sample errors are half a 95% confidence interval, expressed as a percentage of the value. At times, data for the total population of couples with two dependent children is utilised for its improved data quality. Supressed data is denoted with ".. S".

Table 5: HES clothing and footwear expenses for 2 adult 2 child families in the lower half of incomes

CLOTHING AND FOOTWEAR	HES Average weekly spending	Sampling Error (%)	Alternative estimate
03.1 Clothing	$ 39.49	50	
03.2 Footwear	$ 16.18	68	$ 13.46
03 Total Clothing and footwear	$ 55.68	45	$ 52.95

Housing

As in the 2013 and 2018 NZLW methodology, rent costs have been calculated from lower quartile rent for 3-bedroom homes across New Zealand. This information is found from actual Rental Bond data, published by Tenancy Services. The July 2022 lower quartile rent was $520.

Accommodation Supplement varies by income and location. For this review, a new method of modelling an average value for Accommodation Supplement across New Zealand was used and is detailed in Appendix 2. This method combines detailed datasets of real rental and household income data with Accommodation Supplement parameters. As the Accommodation Supplement is income-dependent, it is calculated within in the gross to net income equivalence. For the NZLW set within this report, actual rent is taken as **$520**, while the modelled Accommodation Supplement figure comes to **$89.07**. These figures are both shown in Table 19, with Accommodation Supplement listed alongside tax and tax credits.

Household Energy

In the 2018 review, new data sources yielded a needs-based estimate of household energy for a 3-bedroom house. Energy requirements for a 3-bedroom house in several major NZ regions [27] was combined with the number of 3 bedroom houses in those regions for an approximate weighted NZ average. No new data is yet available for energy requirements, though a new Household Energy End-Use Project which informed the original figures is currently underway [28]. Hence the energy requirements are unchanged from the 2018 NZLW review. Dwelling estimates have been updated from 2017 to those of Census 2018.

This review introduces the effect of Heat pumps into the energy calculation. Healthy Homes legislation sets a minimum standard of heating in rental homes that has seen many heat pumps installed [29]. Since heat pumps move more kWh of heat than they require to run, they are much cheaper than using a straight electricity cost per kWh of required heat.

The Energy Efficiency and Conservation Authority provides efficiency data of heat pumps sold in NZ from 2004 to 2022 [30]. Census 2018 data shows that 47% of households reporting on heating type primarily used a heat pump [31]. Combining these datasets reduces the cost of heating from the regular electricity cost of 33 cents per kWh [32] to 21 cents per kWh. This calculation is found in Appendix 3.

The combined cost of non-heating electricity (

Table 6) and heating electricity (Table 7) amounts to **$66.05**.

Table 6: Calculation of weighted average household electricity cost (non-heating)

Region	Non-heating electricity (kWh)	No- 3 brm houses	Total Energy (kWh)	Electricity cost (/kWh)	Weekly cost
Auckland	5500	194664	1070652000		
Wellington	5900	79011	466164900		
Canterbury	6200	96702	599552400		
Otago	6600	38190	252054000		
	Total	**408567**	**2388423300**		
		Average	**5846**	**$ 0.33**	**$ 36.54**

Table 7: Calculation of weighted average household electricity cost (heating)

Region	Heating electricity (kWh)	No- 3 brm houses	Total Energy (kWh)	Electricity cost (/kWh)	Weekly cost
Auckland	4000	194664	778656000		
Wellington	8000	79011	632088000		
Canterbury	11000	96702	1063722000		
Otago	13000	38190	496470000		
	Total	**408567**	**2970936000**		
		Average	**7272**	**$ 0.21**	**$ 29.51**

Household contents and services

There are online tools available for estimating the sum insured cost of household contents. However, without meaningful data on the turnover of items, there are too many unknowns to estimate regular, ongoing cost. Thus, HES data is used (Table 8).

Weekly spending on *Household contents and services* comes to **$43.53**.

Table 8: HES household contents and services expenses for 2 adult 2 child families in the lower half of incomes

HOUSEHOLD CONTENTS AND SERVICES	HES Average weekly spending	Sampling Error (%)
05.1 Furniture, furnishings and floor coverings	$ 10.52	76
05.2 Household textiles	$ 2.90	88
05.3 Household appliances	$ 11.75	61
05.4 Glassware, tableware and household utensils	$ 0.00	0
05.5 Tools and equipment for house and garden	$ 1.47	90
05.6 Other household supplies and services	$ 11.94	53
05 Total Household contents and services	$ 43.53	40

Health

Health costs have been estimated from a combination of data sources. *Out-patient services* are estimated using MoH General Practice (GP) utilisation data, GP and dental fees. *Medical products, appliances and equipment* uses HES data.

Ten Primary Health Organisations across the country provided tabulated data of GP fees for their medical centres, in total 196. Average fees across these medical centres are included in Table 9, with the full list of fees in Appendix 4. The NZLW household income calculated in this report (for one half-time and one full-time worker) is less than the $81,393 income threshold that allows a Community Services Card (CSC) to be used for GP fees [33]. Non CSC fees are included only for comparison.

Table 9: GP Fees per age group and Community Services Card holdership

Age Group	< 14	14-17	18-24	25-44	45-64
Cost no CSC	$ 0	$ 30.37	$ 40.43	$ 42.21	$ 42.23
Cost with CSC	$ 0	$ 13.09	$ 19.20	$ 19.20	$ 19.20

GP utilisation data can be readily found from the MoH [34]. There is a clear drop in GP visits in the 2020/2021 and 2021/2022 time periods coinciding with the COVID-19 pandemic. Hence, a needs-based estimate is better based on the more steady 2019/2020 GP utilisation figures which are used in Table 10 below.

Table 10: Calculation of household GP costs

Household members		GP visits per year	Age Group	Average consultation fee		Average annual cost	
				No CSC	*With CSC*	*No CSC*	*With CSC*
Children	1	2.7	0-14	$ -	$ -	$ -	$ -
	2	2.7	0-14	$ -	$ -	$ -	$ -
Adults	1	2.9	18-64	$ 41.63	$ 19.20	$ 120.72	$ 55.68
	2	2.9	18-64	$ 41.63	$ 19.20	$ 120.72	$ 55.68
					Annual total	**$ 241.44**	**$ 111.36**
					Weekly total	**$ 4.64**	**$ 2.14**

Dental costs are provided by Education New Zealand (ENZ) [35], as in the 2018 review. For the two adults, costs associated with treatments covering extractions, fillings, cleaning and x-rays are averaged to $181. For two adults having such treatment once a year the annual cost would be $362, or $6.96 per week. For children under 18, such treatments are government-funded.

Based on $2.14 for GP fees and $6.96 for dental costs, *Out-patient services* costs total to $9.10 for CSC holders (or $11.60 otherwise).

In the 2018 review, Pharmac data was used to estimate prescription costs. However, HES data was ultimately used for the total cost of *Medical products, appliances and equipment* since other spending in this category could not be separately quantified. Thus, for this review we will simply use the HES average expenditure of $7.18 (Table 11).

Adding $7.18 for *Medical products, appliances and equipment* to $9.10 for *Out-patient servic*es provides a total health-related expenditure of **$16.28**.

Table 11: HES health expenses for 2 adult 2 child families in the lower half of incomes

HEALTH	HES Average weekly spending	Sampling Error (%)	Alternative Estimate
06.1 Medical products, appliances and equipment	$ 7.18	52	
06.2 Out-patient services	$ 15.89	49	$ 9.10
06.3 Hospital Services	$ 0.00	0	
06 Total Health	$ 23.22	40	**$ 16.28**

Transport

Needs-based estimates for *Purchase of vehicles* and *Passenger transport services* are introduced in this review. Other car costs such as Warrant of Fitness, insurance, maintenance, repairs, parking fees and road tolls would vary hugely on the car, circumstance and a household's location. Thus, HES data has been used for *Private transport supplies and services* (Table 12).

The *Purchase of vehicles* category is a large expense in HES of very low quality. Hence, an alternative dataset and method have been sought. Prices of second-hand cars were collected on Trademe according to filtered criteria. The criteria and individual results are listed in Appendix 5. The average price of the 47 cars was $5492.47, and average distance travelled 170,638 km.

Two scrappage trials across Auckland, Wellington and Christchurch showed that average odometer readings at scrapping was 214,000 km [36] [37]. This figure tells us that the used car selection has an average of 43,362 km of service remaining.

Ministry of Transport annual fleet statistics shows that light passenger vehicles have travelled an average of 9785 km in 2021 or 10740km in 2018 prior to the COVID-19 pandemic [38]. Average travel estimated by participants in the Auckland scrappage trial was similar, at 10,000 km per year. Therefore, assuming 10,000 km of travel per year, the used car selection has an average of 4.3 years of service remaining. The purchase cost spread over this time equals $24.36 per week.

Passenger transport services can be calculated as the cost of the half-time working adult to use public transport to get to their job, assuming that the full-time worker takes the car. The median work commute observed in the Stats NZ IDI is 6.7km in 2018 [39]. If we take Auckland as our biggest population centre and a good baseline, this distance might cover 2 public transit zones at most, at an ordinary fare cost of $3.90, totalling $23.40 for 3 days at work. With half-price fares continuing until the end of June 2023, we can cut this cost by a further quarter, to $17.55.

Using $24.36 for *Purchase of vehicles* combined with $17.55 for *Passenger transport services* and the HES value of $110.56 for *Private transport supplies and services* gives a weekly total of **$152.47**.

Table 12: HES transport expenses for 2 adult 2 child families in the lower half of incomes

TRANSPORT	HES Average weekly spending	Sampling Error (%)	Alternative Estimate
07.1 Purchase of vehicles	$ 153.94	101	$ 24.36
07.2 Private transport supplies and services	$ 110.56	33	
07.3 Passenger transport services	$ 60.79	56	$ 17.55
07 Total Transport	$ 336.12	56	**$ 152.47**

Communication

As in the 2018 review, data for both prepaid phone and broadband internet plans have been found online directly from providers. Table 13 provides an average price for basic unlimited broadband internet plans from 10 companies giving an average weekly spending of $17.88.

Table 13: Cost of a basic fibre unlimited broadband plan advertised by different retailers

Internet Provider	Plan	Weekly cost	
Bigpipe	$79 / mth	$	18.23
Electric Kiwi	$2.65 / day	$	18.55
Flip	$14 / wk	$	14.00
My Republic	$82 / mth	$	18.92
Nownz	$79 / mth	$	18.23
Orcon	$89.95 / mth	$	20.76
Slingshot	$79.95 / mth	$	18.45
Spark	$75 / mth	$	17.31
Vodafone	$69 / mth	$	15.92
2 Degrees	$75 / mth	$	18.45
	Average	**$**	**17.88**

It is assumed that both adults in the household will have a phone with a basic plan. Table 14 provides $3.33 as the average weekly cost of a basic phone plan. Hence the weekly household cost of two phone plans will be $6.66.

Table 14: Cost of basic pre-paid phone plan advertised by different retailers

Phone provider	Plan	Weekly cost	
Skinny	$9 / 4wk	$	2.25
Spark	$20 / 4wk	$	5.00
2 Degrees	$10 / mth	$	2.31
Vodafone	$15 / 4wk	$	3.75
	Average	**$**	**3.33**

As in the last review, a replacement cost of $150 per phone, assuming a lifespan of two years [40], provides a weekly cost of $2.88. This phone replacement cost compares to $13.35 for *Telecommunications equipment costs* for all 2A2C families (data has been

suppressed for the lower income group). Since higher incomes contributed to that figure, the lower figure $2.88 is a more modest and reasonable weekly cost.

Combining an internet plan at $17.88, 2 phone plans totalling $6.66 and replacement phone cost at $2.88 comes to an average weekly *Communication* total of **$27.42**.

Recreation and culture

HES data (Table 15) is used for *Recreation and culture* as a needs-based estimate cannot be found for this category of spending. However, we will exclude *Major recreational and cultural equipment* as being surplus to need. With so little spending on *Flights and Accommodation* that the data is supressed, we will assume this value is zero as well. Meanwhile, the remaining *Recreation and culture* budget acknowledges that modest spending on items like computers, sports equipment, arts and crafts, books, the odd movie outing and so is part of a healthy family life. Having money for these promotes wellbeing and allows a family to participate in society with dignity.

The figure for *Audio-visual and computing equipment* has ended up higher for the lower income group than for all 2A2C families at $8.14 per week. This is likely due to the high sample error rather than actual increased spending so the lower figure will be used.

Using $8.14 for *Audio-visual and computing equipment*, excluding *Major recreational and cultural equipment* and *Flights and Accommodation* gives a total weekly spending of **$83.30**.

Table 15: HES recreation and culture expenses for 2 adult 2 child families in the lower half of incomes

RECREATION AND CULTURE	HES Average weekly spending	Sampling Error (%)	Alternative Estimate
09.1 Audio-visual and computing equipment	$ 10.72	82	$ 8.14
09.2 Major recreational and cultural equipment	$ 24.47	122	$ 0
09.3 Other recreational equipment and supplies	$ 23.53	51	
09.4 Recreational and cultural services	$ 34.35	42	
09.5 Newspapers, books and stationery	$ 3.58	52	
09.6 Accommodation services	$ 13.70	103	
09.9 Flights and Accommodation	.. S		$ 0
09 Total Recreation and culture	$ 116.92	42	**$ 83.30**

Education

From literature review, there appears to be no new data for the actual costs of education more recent than the sources used in the last review: The 2013 Survey of Income, Expenditure and Fees for Early Childhood Education, and the 2007 survey by the New Zealand Council for Educational Research on school fees. Values from these sources were inflated using education-specific CPI for the last NZLW review. While CPI could extend these figures to the present, the lack of recent benchmarks makes this method unreliable. The Australian Scholarships Group did carry out a survey of school costs for its members in 2017 [41] but the size of the survey is unknown and may carry biases not otherwise found in HES which is based on random sampling.

In 2018, education was assumed to be 30 hours per child per week. For early childhood, actual participation in education was 21 hours per week [42]. This may be why the HES estimate was lower than the estimated cost in 2018. Whether this is due to lack of demand or lack of funds is not possible to distinguish. It's also worth noting that around 40% of children enrolled in such services in 2021 are below 3, and therefore can't make use of the 20 free hours, as assumed in the 2018 review.

Given the many possible age combinations in our 2A2C family, and lack of recent data, HES is our most reliable source of information for early childhood costs (Table 16).

Early childhood education at $16.96, plus *Primary, intermediate and secondary education* at $7.78 totals to **$24.74**.

Table 16: HES education expenses for 2 adult 2 child families in the lower half of incomes

EDUCATION	HES Average weekly spending	Sampling Error (%)	Alternative Estimate
10.1 Early childhood education	$ 16.96	54	
10.2 Primary, intermediate and secondary education	$ 7.78	104	
10.3 Tertiary and other post school education	.. S		$ 0.00
10.4 Other educational fees	$ 3.99	120	$ 0.00
10 Total Education	$ 31.17	44	**$24.74**

Miscellaneous goods and services

HES data (Table 17) is used for *Miscellaneous goods and services*. *Credit services* has poor quality data and the lower value of $2.85 for all 2A2C families is used instead. Additionally, *Other miscellaneous services* are excluded from the estimated cost, assumed as surplus to need. This gives a total of **$98.43**.

Table 17: HES miscellaneous goods and services expenses for 2 adult 2 child families in the lower half of incomes

MISCELLANEOUS GOODS AND SERVICES	HES Average weekly spending	Sampling Error (%)	Alternative Estimate
11.1 Personal care	$ 17.77	32	
11.3 Personal effects nec	$ 9.91	104	
11.4 Insurance	$ 67.90	38	
11.5 Credit services	$ 3.13	117	$ 2.85
11.6 Other miscellaneous services	$ 5.08	88	$ 0.00
11 Total Miscellaneous goods and services	$ 106.71	35	**$ 98.43**

Other expenditure

In the 2018 methodology, this category of spending is taken to be $70, with a $60 contribution to savings and $10 to non-mortgage interest payments. This figure is derived from the savings aspirations of the original Living Wage focus groups. HES was not used as the *Interest payments* subcategory here was assumed to mostly cover mortgages. This was

an incorrect assumption as mortgage interest comes under housing expenditure. Thus, lower income households spend much more than previously assumed on non-mortgage interest.

It is difficult to assess what value of interest payments could be considered modest on a living wage. It is unclear what is reasonably covered by a market wage compared with a debt problem that is a welfare issue instead. Idealistically, interest payments are not necessary if savings are high enough, assuming purchases are not needed more urgently than savings allow. However, being on a low income and having children are both correlated with likelihood to have debt [43] and both circumstances are central to the NZLW definition.

Without good data, we will continue with the past methodology, CPI-inflated to the present. This 2018 figure of $70 becomes **$84**. The benefit of this figure is that it is more than double the HES *Contributions to savings* category on its own (Table 18). Therefore, it at least provides some additional resilience to the budget for big or sudden purchases such as cars, phones or tangihanga.

Table 18: HES other expenses for 2 adult 2 child families in the lower half of incomes

OTHER EXPENDITURE	HES Average weekly spending	Sampling Error (%)	Alternative Estimate
13.1 Interest payments	$ 143.94	49	
13.2 Contributions to savings	$ 30.14	40	
13.3 Money given to others (excluding donations)	.. S		
13.4 Fines	.. S		
13 Total Other expenditure	$ 180.81	39	**$ 84.00**

The 2023 New Zealand Living Wage

The 2023 NZLW is calculated item by item as the foregoing section has demonstrated. A weekly total comprising the addition of the agreed estimates for each of the 12 items is prepared. This is a household total, not an individual total. The net weekly total is then multiplied by 52 to become an annual net total. The gross income required to receive the net amount is then calculated. This is a detailed calculation that takes into account the effects of income tax (Appendix 6), tax credits (Appendix 7), and the Accommodation Supplement (Appendix 2). The R code used for the calculation can be found in Appendix 8. Finally, the hourly rate is derived by dividing the total gross household income by 52 weeks in a year and then dividing that result by 60 hours per week or one full time working parent and another halftime working parent, i.e. 1.5 fulltime workers.

The results are set out in Table 19 and produce an hourly wage rate of $25.99. Alongside each item is the data source or sources.

Table 19: The 2023 itemised NZLW estimate

Category	Expense	Source
Food	$ 259.66	2021 Otago Food Cost Survey, Stats NZ Food Price Index
Clothing and footwear	$ 52.95	HES 2019
Actual rentals for housing	$ 520.00	Tenancy Services Rental bond data
Household energy	$ 66.05	Fuel poverty study, Stats NZ heat pump usage, heat pump efficiency and sales data, MBIE Quarterly Electricity Prices
Household contents and services	$ 43.53	HES 2019
Health	$ 16.28	MoH GP utilisation, advertised GP fees and dental costs, HES 2019
Transport	$ 152.47	Trademe used car sales data, car scrappage reports, commute distance paper, Auckland public transit fees, HES 2019
Communication	$ 27.42	Internet/ pre-paid mobile plans
Recreation and culture	$ 83.30	HES 2019
Education	$ 24.74	HES 2019
Miscellaneous goods and services	$ 98.43	HES 2019
Other expenditure	$ 84.00	Original Living Wage focus groups, inflated with CPI
Weekly total expenses	$ 1,428.83	
Tax and ACC levy	$ 274.66	Work and income
Kiwisaver (3%)	$ 46.78	
Accomodation Supplement	- $ 89.07	Work and income, Tenancy Services Rental Bond Data, Stats NZ geographic and household income data
Family and In-Work Tax credits	- $102	Work and income
Weekly gross income	$ 1,559.20	
Annual total net	$ 74,299	
Annual total gross	$ 81,078	
Hourly rate	$ 25.99	

As in previous years, the final figure of $25.99 is rounded to the nearest 5 or 10 cents mark to provide, in this case, a 2023 Living Wage figure of **$26.00.**

The NZLW produces a disposable household income that appropriately sits well below median household income and considerably above the poverty threshold at 60 percent of disposable household median income. The annual net total of $74,299 amounts to 80 percent of average disposable household income in New Zealand. This estimate ($26.00) is $3.30 above the recently increased (1 April 2023) minimum wage, or $198 per week. The difference between the two wage settings is 15 percent of the minimum wage.

This five-yearly review has involved in a full recalculation of the NZLW that has resulted in an hourly wage rate of $2.35 above the 2022 living wage. This large relative increase reflects substantial rises in the cost of housing, food, transport and insurance since the last review. The large increase in the minimum wage, petrol tax cut, public transport subsidy and cost-of-living payments are all recent measures the NZ government has implemented to ease the burden of the rapid rise in living costs. This newly increased NZLW estimate asks the market to respond in kind, to ensure that low-wage earners have enough income to live healthily and participate in society with dignity.

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Appendix 1.
Estimated Food Costs information

Food cost information is published annually by the University of Otago Department of Human Nutrition [25]. For ages and genders, and average food cost is produced for basic, moderate and liberal diets. Different regional estimates are also produced. Table 20 shows the basic costs produced for the nation-wide average estimate in 2021.

Table 20: Food costs for different types of individual 2021

Person specification	Basic Food cost
Man	73
Woman	62
Adolescent boy	76
Adolescent girl	62
Child 10 yr	52
Child 5 yr	44
Child 4 yr	34
Child 1 yr	30

For the NZLW calculation, several combinations of two adults and two children are assembled, based on children's pre-school and primary school ages. The average of these is used, Table 21.

Table 21: Food costs for various household compositions (2021)

Family composition	Basic Food cost
2A+Adolescent boy + 4 year old	245
2A + Adolescent girl + 4 year old	231
2A + 10 year old + 4 year old	221
2A + 5 year old + 4 year old	213
Average	227.5

The food cost of $227.50 is then multiplied by the difference in food price index from the collection of the data in March 2021 to the latest data available at the time of calculation (Table 22). The multiplier (1292 / 1132) gives an inflated food cost total of $259.66.

Table 22: Food Price index for inflation adjustment

Quarter	Seasonally adjusted Food Price Index
March 2021	1132
October 2022	1292

Appendix 2.

Accommodation Supplement formula

The Accommodation Supplement (AS) is a weekly payment which helps people with their rent, board or the cost of owning a home, if their income from other sources is below a certain income threshold level and their housing cost is above a certain rent or mortgage payment cost level. The amount of Accommodation Supplement payable ranges between a specified maximum and reduces towards zero as income increases from the threshold level to a specified cut point. Income and housing cost thresholds, cut points, and maximums vary for different categories of household, and each of the four areas of New Zealand. The area based variations reflect differences in housing costs across the country, with Area 1 comprised of the most expensive housing areas, and Area 4 the least expensive and comprised of all areas not included in any of the first three.

This work uses the income and housing cost thresholds, cut points and maximums specified for non-beneficiary households of married, civil union or de facto couples with children, for each of the four areas, seen in Table 23.

Table 23: Accommodation Supplement parameters for a non-beneficiary couple with children (Column subheadings are used in the R code, Appendix 8)

Area	Income threshold	Rent threshold	Maximum	Cut-out point
AS_code	*income_threshold*	*rent_threshold*	*maximum*	*cut_out_point*
1	969	173	305	2189
2	969	173	220	1849
3	969	173	160	1609
4	969	173	120	1449

The calculation of the level of supplement (if any) available to a household is carried out according to the following formula:

Where:
AS = Accommodation Supplement
R = Rent
Rt = Rent threshold (Non-beneficiary)
Yg = Gross income
Yt = Income threshold
AND subject to relevant threshold, cut out point and maximum values.

AS = [(R - Rt)*0.7] – [(Yg – Yt)*0.25]

Accommodation Supplement big data modelled average approach

In this review, a detailed approach to calculating AS is introduced. The method joins the datasets listed in

Table 24. Most tables were able to be joined together by variables that were the same. The AS areas were not as directly comparable to the Stats NZ Statistical Area 2s (SA2s) used elsewhere and some manual matching was required.

Table 24: Datasets, variables and sources for the Accommodation Supplement calculation

Dataset: filter	Variables	Source
Detailed Quarterly Tenancy Data: All 3 bedroom dwellings, July 2022	Location ID (SA2) Geometric mean rent Active Bonds	Tenancy Services [https://www.tenancy.govt.nz/about-tenancy-services/data-and-statistics/rental-bond-data/]
Geographic Areas table	Location ID (SA1/SA2, 2018) Location name (SA2, 2018)	Stats NZ [https://datafinder.stats.govt.nz/table/111243-geographic-areas-table-2023/data/]
Total household income by household composition, for households in occupied private dwellings, 2013 and 2018 Censuses: Couples with children in 2018	Location name (SA2/NZ) Median income Number of households in income group	Stats NZ [https://nzdotstat.stats.govt.nz/wbos/Index.aspx?DataSetCode=TABLECODE8422#]
AS Definition of Areas	Location name (suburb / approximately SA2) AS area	Work and Income [https://www.workandincome.govt.nz/map/deskfile/extra-help-information/accommodation-supplement-tables/definitions-of-areas.html]
AS Income Cut-out points for non-beneficiaries (current)	AS area Income threshold Cut-out point Maximum	Work and Income [https://www.workandincome.govt.nz/map/deskfile/extra-help-information/accommodation-supplement-tables/income-cut-out-points-for-non-beneficiaries-curren.html]
AS rent thresholds	AS rent threshold	Work and Income [https://www.studylink.govt.nz/products/a-z-products/accommodation-supplement.html]

The scope of the resulting dataset covers SA2s containing families with a couple + kids (in 2018) that also had data for rent and bond of 3-bedroom dwellings (2022). The variables were (R code names used in Appendix 8 in italics):

- *SA22018_code*: Location ID at the SA2 level
- *Area*: Location name
- *median_income*: Median income (couple + kids)
- *Geometric.Mean.Rent*: Geometric mean rent (3 bedroom dwellings)
- *Active.Bonds*: Active bonds (3 bedroom dwellings)

- *income_threshold*: Income threshold for the AS
- *cut_out_point*: Income cut-out point for the AS
- *rent_threshold*: Rent threshold for the AS
- *maximum*: Maximum payable AS

Locations with high median incomes were filtered out to get a more realistic picture of rent and supplement for lower income. The number of active bonds was used to weight each SA2's contribution to an overall average NZ rent and AS

Taking the lowest income 243 locations provides a weighted average rent of approximately $520, equivalent to the NZ-wide lower quartile rent for 3 bedroom homes. This same group of locations can then be used to calculate income-based AS. For example:

Household income	Accommodation Supplement (weighted average)	Housing costs (net)
79,000	$96.62	$423.15
80,000	$92.68	$427.09
81,000	$88.74	$431.02
82,000	$84.80	$434.96

Appendix 3.

Heat pump effect on electricity cost for heating

Heat pump efficiency, known as the Coefficient of Performance (CoP), has an average sales-weighted value of 3.86 between 2004 and 2022. Using a CoP of 3.86 means we can say that for every 1 kWh of electricity put into a heat pump, 3.86 KWh of heat enters the room. Therefore electricity costs for heating will be 3.86 times less.

The proportion of households using heat pumps as their main heating source is 47.32%. These households spend \$0.325/3.86 = \$0.084 per Kwh on heating-related electricity, while the remaining households spend the full \$0.325 per Kwh. For all households, the heating-related electricity cost is therefore:

$$47.32\% \times \frac{\$0.325}{kWh}\frac{1}{3.86} + (100\% - 47.32\%) \times \frac{\$0.325}{kWh} = \frac{\$0.211}{kWh}$$

Appendix 4.

GP costs from Primary Health Organisations

The data in Table 25 was collected from all Primary Health Organisations that had a table of GP fees for their practices on their website (accessed November 2022).

Table 25: GP Fees collected for individual health centres (2022)

Practice	Under 14 years	14 – 17 years CSC	18+ CSC	14 – 17 years	18 – 24 years	25 – 44 years	45 – 64 years	65+ years
Aotea Health	0	13	19.5	13	19.5	19.5	19.5	19.5
Auckland Central Medical and Health Centre	0	13	19.5	32	55	59	59	39
AUT Student Medical Centre	0	13	19.5	13	19.5	19.5	19.5	19.5
Avondale Family Doctor	0	13	19.5	13	19.5	19.5	19.5	19.5
Avondale Health Centre	0	13	19.5	27	49	49	49	40
Avondale Health Residential Care Medical Services	0	13	19.5	13	19.5	19.5	19.5	19.5
Calder Centre	0	13	19.5	13	19.5	19.5	19.5	19.5
Cairnhill Health Centre	0	13	19.5	57	57	58	58	54
Dominion Medical Centre	0	13	19.5	13	19.5	19.5	19.5	19.5
Epsom Medical Care	0	13	19.5	13	19.5	19.5	19.5	19.5
Glenavon Doctors Surgery	0	13	19.5	13	19.5	19.5	19.5	19.5
Health Connections	0	0	0	0	0	0	0	0
Meadowbank Medical Centre	0	13	19.5	40	49	55	55	49
Mt Albert Medical Centre	0	13	19.5	39	49	54	54	49
Newmarket Medical Centre	0			45	77	77	77	57
Piritahi Hau Ora	0	13	19.5	13	19.5	19.5	19.5	19.5
Prana Family Health	0	13	19.5	20	30	30	30	20
Raphael Medical Therapy Centre	0	13	19.5	32	40	52	52	45
Tend Symonds Street	0	13	19.5	51	51	51	51	51
Tend Kingsland	0	13	19.5	51	51	51	51	51
Three Kings Family Medical Centre	0	13	19.5	43	43	45	45	40
The Good Medicine Clinic	0	13	19.5	20	45	45	45	45
Viaduct Medical Centre	0	13	19.5	13	19.5	19.5	19.5	19.5
Waiheke Medical Centre	0	13	19.5	22	40	40	40	35
5th Ave on 10th	0	13	19.5	32	47	47	47	47
Bethlehem Family Doctors	0	13	19.5	33	49	50	50	50
Bethlehem Medical Centre	0	13	19.5	31	49.5	49.5	49.5	48.5
Chadwick Healthcare Bethlehem	0	13	19.5	48	54	54	54	54
Chadwick Healthcare Greerton	0	13	19.5	48	54	54	54	54
Chadwick Healthcare South City	0	13	19.5	48	54	54	54	54
Chadwick Healthcare Tauriko	0	13	19.5	48	54	54	54	54
Dee Street Medical Centre	0	13	19.5	43	56	56	56	56
Epic Health Medical Practice	0	12	19.5	30	40	50	50	45
Family Doctors, Brookfield	0	13	19.5	38	49	54	54	51
Family Doctors, Pyes Pa	0	13	19.5	38	49	54	54	51
Family Doctors, The Lakes	0	13	19.5	38	49	54	54	51
Farm Street Family Health Centre	0	13	19	28	42	50	50	45
Fifth Avenue Family Practice	0	13	19.5	28	44	52	52	52
Gate Pa Medical Centre	0	13	19	35	40	50	50	50
Girven Family Practice	0	13	19.5	40	49	49	49	48
Hairini Family Health Centre	0	13	19.5	38	41	44	44	43

Healthcare on Fifteenth	0	13	19.5	40	45	48	48	48
Katikati Medical Centre	0	13	19.5	39	45	45	45	45
Mount Medical Centre	0	13	19	48	53	53	53	51
Ngati Kahu Hauora	0	13	19.5	13	19.5	19.5	19.5	19.5
Omokoroa Medical Centre	0	13	19.5	30	48	48	48	47
Otumoetai Doctors	0	13	19.5	28	44.5	46	46	46
Papamoa Beach Family Practice	0	13	19.5	34	44	48.5	51	47.5
Papamoa Pines @ Whitiora	0	13	19.5	50	53.5	54.5	54.5	52
Papamoa Pines Medical Centre	0	13	19.5	50	53.5	54.5	54.5	52
Poutiri Wellness Centre	0	10	15	13	18.5	18.5	18.5	15
Tara Road Medical Centre	0	13	19.5	44	52	52	52	51
Te Puke Medical Centre	0	13	19.5	35	45	52	52	52
Te Puna Doctors	0	13	19.5	34	44	47	49.5	46.5
The Doctors Bayfair	0	13	19.5	40	52	52	52	52
The Doctors Bureta	0	13	19.5	40	50	50	50	50
The Doctors Kopeopeo	0	13	19.5	13	19.5	19.5	19.5	19.5
The Doctors Papamoa	0	13	19.5	35	52	52	52	52
The Doctors Phoenix	0	13	19.5	28	40	40	40	40
The Doctors Tauranga	0	13	19.5	40	55	55	55	53
The Doctors Total Health	0	13	19.5	13	19.5	19.5	19.5	19.5
The Doctors Welcome Bay	0	13	19.5	40	50	50	50	50
The Doctors Waipawa	0	19.5	19.5	35	50	50	50	50
Tuki Tuki Medical Limited	0	19.5	19.5	30	40	40	40	40
The Havelock North Health Centre	0	19.5	19.5	30	50	50	50	50
Te Taiwhenua O Heretaunga	0	0	16	0	0	16	16	16
M&I Health Centre Limited	0	0	19.5	0	0	19.5	19.5	19.5
The Doctors Hastings	0	19.5	19.5	35	50	50	50	50
The Hastings Health Centre	0	19.5	19.5	30	50	50	50	50
The Doctors Gascoigne	0	19.5	19.5	13	19.5	19.5	19.5	19.5
Mahora Medical Centre	0	19.5	19.5	34	44	44	44	44
Te Mata Peak Practice	0	19.5	19.5	29	52	52	52	52
Maraenui Medical	0	0	19.5	0	19.5	19.5	19.5	19.5
Carlyle Medical Centre	0	19.5	19.5	30	47	47	47	47
Central Medical (HB) Limited	0	19.5	19.5	40	46.5	46.5	46.5	43.5
Clive Medical Centre	0	19.5	19.5	31	43	47	47	45
The Doctors Ahuriri	0	19.5	19.5	35	50	50	50	50
Greendale Family Health Centre	0	19.5	19.5	40	47	47	47	47
Hawke's Bay Wellness Centre	0	19.5	19.5	32	42	42	42	42
Tamatea Medical Centre	0	19.5	19.5	45	45	45	45	45
Taradale Medical Centre	0	19.5	19.5	44	47	47	47	47
The Doctors Napier	0	19.5	19.5	35	50	50	50	50
The Doctors Greenmeadows	0	19.5	19.5	35	50	50	50	50
Totara Health – Flaxmere	0	0	19.5	0	19.5	19.5	19.5	19.5
Totara Health – Nelson Street	0	0	19.5	0	19.5	19.5	19.5	19.5
Eastcott Medical	0	19.5	19.5	37	45	45	45	45
Civic Family Health Care	0			35	48	48	48	48
Marlb Health Centre	0			35	48	48	48	45
Lister Court Medical	0			34	48	48	48	48
Manu Ora	0			40	60	60	60	60
Omaka Medical	0			35	50	50	50	50
Picton Medical Centre	0			35	48	48	48	48
Redwoodtown Medical Centre	0			32	48	48	48	48
Renwick Medical Centre	0			28	44	44.5	45	43
Springlands Health	0			35	48	48	48	48
Wairau Community Clinic	0			30	48	48	48	43
Golden Bay Community Health	0	13	19.5	32	45.5	46.5	46.5	44
Mapua Health Centre	0	13	19.5	35	45	52	52	45

The Doctors Motueka	0	13	19.5	13	19.5	19.5	19.5	19.5
Greenwood Health	0	13	19.5	26	39.5	39.5	39.5	39.5
Wakefield Health Centre	0	13	19.5	34.5	46.5	50	50	46.5
Murchison Health Centre	0	13	19.5	27	38	39	39	37
Tahunanui Medical Centre	0	13	19.5	32.5	42.5	48	48	48
Stoke Medical Centre	0	13	19.5	35.5	44	49.5	49.5	47
Florence Medical Centre	0	13	19.5	36	47	50	50	47
Richmond Health Centre	0	13	19.5	35	50	55	55	50
Tasman Medical Centre	0	13	19.5	41	49	52	52	50
Harley Street Medical	0	13	19.5	37	44	49	49	47
Toi Toi Medical	0	13	19.5	30	41.5	49	49	47
Nelson City Medical Centre	0	13	19.5	37	49	51	51	49
Titoki Medical	0	13	19.5	40	50	50	50	50
Medical and Injury Centre	0	13	19.5	13	19.5	19.5	19.5	19.5
Nelson East Medical	0	13	19.5	35	38	52	52	52
Nelson Family Medicine	0	13	19.5	38	48	48	48	41
Rata Medical	0	13	19.5	42	52	52	52	52
Tima Health	0	13	19.5	35	48	49	49	48
Hauora Health Centre	0	13	19.5	30	48	48	48	45
St Luke's Health Centre	0	13	19.5	34	46	49.5	49.5	47
Eruera Medical Centre	0	13	19.5	32	44	44	44	44
Korowai Aroha Health Centre	0	7	15	7	15	14	15	15
Ngongotaha Medical Centre	0	13	19	30	40.5	40.5	40.5	40.5
Ranold Medical Centre	0	13	19	34	42	43.5	43.5	41.5
Rotorua Medical Centre	0	13	19	13	19	19	19	29
Ruatahi Medical Centre	0	13	19	27	39	40	40	38
Te Ngae Medical Centre	0	13	19.5	29	40	42	42	40
Three Lakes Clinic	0	13	19	35	35	45	45	40
Tiaho Medical Centre	0	12	18	12	18	18	18	18
Weslend Medical Centre	0	13	19	28	39	41	41	39
Western Heights Health Centre	0	13	19	13	19	19	19	19
Mangakino Health Services	0	13	19.5	13	19.5	19.5	19.5	19.5
Murupara Medical Centre	0	9.5	15	11.5	17	17	17	17
Dr Diana Scott's Practice	0	13	19.5	46	47	47	47	46
Dr Griffiths' Practice	0	13	19.5	32	28	30	30	34
Harper Street Health - Dr Helliwell	0	13	19.5	37.5	50.5	50.5	50.5	44.5
Dee Street Primary Care	0	13	19.5	25	46	46	46	44
Medi Clinic	0	13	19.5	36.5	48.5	48.5	48.5	48.5
Birchwood Surgery	0	13	19.5	33	45	45	45	42
Temuka Health Care (Dr Vara's)	0	13	19.5	33	40	40	40	40
Dr Walker's Family Practice	0	13	19.5	20	34	34	34	34
Dr Werkmeister's Practice	0	13	19.5	38	48	48.5	49	47
Fairlie Medical Centre	0	13	19.5	28.5	40	40.2	40.2	40.2
Four Peak Health	0	13	19.5	40	47	47	47	47
High Country Health Ltd	0	13	19.5	35.5	46.5	46.5	46.5	39.5
Oak House Medical Centre	0	13	19.5	35	45	45	45	45
Pleasant Point Health Care	0	13	19.5	35	45	45	45	45
Temuka Family Practice	0	13	19.5	45	52	52	52	52
Timaru Medical Centre	0	13	19.5	30	38	48	48	48
Waimate Medical Centre	0	13	19.5	36	49.5	49.5	49.5	49.5
Wood Street Surgery	0	13	19.5	37	48	48	48	48
Blue Penguin Medical Centre	0	13	19.5	33	45	45	45	42
Avalon Medical Centre	0	13	19.5	33	44.5	45.5	45.5	42
Connolly Street Medical Centre	0	13	19.5	43	47	50	51	45
Gain Health Centre	0	13	19.5	40	50	55	55	50
High Street Health Hub (Hutt Central, Epuni)	0	13	19.5	36	44	50	50	44.5

Hutt City Health Centre (Lower Hutt, Wainuiomata)	0	13	19.5	26	37	47	47	42.5
Hutt Union Health (Pomare, Taita, Petone)	0	0	15	0	15	15	15	15
Kopata Medical Centre	0	13	19.5	40	44	47	47	41
Manuka Health Centre	0	13	19.5	13	19.5	19.5	19.5	19.5
Muritai Health Centre	0	13	19.5	45	55	55	55	50
Naenae Medical Centre	0	13	19.5	29	39	40.5	40.5	35
Petone Medical Centre	0	13	19.5	13	19.5	19.5	19.5	19.5
Queen Street Medical	0	13	19.5	38	46	51	52	42.5
Silverstream Health Centre	0	13	19.5	45	55	55	55	50
Soma Medical Centre	0	13	19.5	27	40	43	43	38
Stokes Valley Medical Centre	0	13	19	13	19	19	19	19
Upper Hutt Health Centre	0	13	19.5	42.7	52.7	53.7	53.7	42.5
Waiwhetu Medical Centre	0	13	19.5	27	31	36	36.5	24.5
Whai Oranga O Te Iwi Health	0	10	18	12	19	19	19	19
Akaroa Health Centre	0			28	45	45	45	45
Amberley Medical Centre	0			39	51	51	51	51
Amuri Community Health Centre	0			37	47	47	47	47
Ashburton Health First	0			44	52	52	52	52
Cheviot Community Health Centre	0			20	30	40	40	40
Good St Medical Centre	0			36	50	50	50	48
Hanmer Springs Health Centre	0			34	45	45	45	45
Kaiapoi Family Doctors	0			39	54	54	54	52
Moore St Medical Centre	0			48	53	53	53	53
Rakaia Medical Centre	0			29	46	46	46	46
Rangiora Family Doctors	0			36	50	50	50	50
Selwyn Village Healthcare	0			32	55	55	55	55
Three Rivers Health	0			44	48	48	48	48
Tinwald Medical Centre	0			45	49	49	49	49
Waikari Health Centre	0			29	40	40	40	39
Woodend Medical Centre	0			20	40	40	40	40
Aramoho Health Centre	0	13	19.5	22.5	44.5	44.5	44.5	44.5
Gonvill Health Limited	0			13	19.5	19.5	19.5	19.5
Impilo Family Practice	0	13	19.5	43	43	43	43	43
Springvale Medical Centre	0	13	19.5	43.5	43.5	43.5	43.5	43.5
St John's Medical Centre	0	13	19.5	36	46	46	46	46
Te Waipuna Health - Whanganui	0			0	0	17.5	17.5	5
Wicksteed Medical Centre	0	13	19.5	33	46	46	46	46
Bulls Medical	0	13	19.5	35	40	40	40	40
Ruapehu Health Limited	0			0	0	19.5	19.5	19.5
Stewart Street Surgery	0	13	19	33	41	41	41	41
Te Waipuna Health - Waverly	0			0	0	17.5	17.5	5
Taihape Health Limited	0			13	19.5	19.5	19.5	19.5
	Under 14 years	14 – 17 years CSC	18+ CSC	14 – 17 years	18 – 24 years	25 – 44 years	45 – 64 years	65+ years
AVERAGE	0	13.09	19.20	30.37	40.43	42.21	42.23	40.53

Appendix 5.

Trademe Used Car Sales Data

Data in Table 26 was collected from a Trademe motors search result, accessed 18 January 2023. The filtering parameters were: used cars; car type sedan, hatchback or stationwagon; has buy now; odometer reading 140,000-200,000; 5 seats; 4-5 doors.

Of the 96 results, the first half by lowest buy now were collected, Table 25. One was removed as on-road costs were not included from the sale price, and would be of unknown value.

Table 26: Sales, manufacture year and odometer readings for a collection of used cars advertised on Trademe

Price ($)	Year	Odometer (1000 kms)
2000	1999	175
2800	1997	198
3000	1998	154
3000	1998	146
3000	2004	193
3300	2007	188
3500	2010	191
2800	1999	193
3800	2005	189
4000	2001	140
4000	2005	157
4000	1992	152
4000	1988	176
4000	2008	147
4500	2007	165
4500	2005	184
4600	2004	178
5000	2005	163
5300	2012	165
5490	2010	187
5500	2009	181
5500	2007	194
5500	2003	183
5800	2011	198
5850	2008	181
5899	2006	173
5990	2004	195
6000	2008	187
6200	2011	180
6200	2005	170
6300	2010	150
6500	2012	142
6800	2007	178
6882	2009	175
6890	2004	157
6995	2005	191
7000	2008	145
7000	2002	148
7500	2008	187
7500	2013	172
7500	2005	172

7500	2005	144
7500	2010	172
7550	2011	140
7700	2006	149
8000	2001	167
8000	2006	148

Appendix 6.

Inland Revenue Department income tax rates information

Income tax rates by individual income tax bracket are given in Table 27. These are incorporated into the R code in Appendix 8.

Table 27: Income tax brackets and rates

For each dollar of income	Tax rate
Up to $14,000	10.5%
Over $14,000 and up to $48,000	17.5%
Over $48,000 and up to $70,000	30%
Over $70,000 and up to $180,000	33%
Remaining income over $180,000	39%

The ACC earners levy from 1 April 2023 to 31 March 2024 is $1.53 per $100 (1.53%) up to an income threshold of $139,384 (higher than needs to be considered for the NZLW).

Appendix 7.

Working for Families family and in-work tax credits

Table 28: Family and in-work tax credits for different household income levels (Column subheadings are used in the R code, Appendix 8)

Household income (from)	Household income (to)	Two child family tax credit	Two child in-work tax credit
hh_income_lower	*hh_income_upper*	*two_child_ftc*	*two_child_iwtc*
0	42700	231	72
42701	44000	225	72
44001	45500	217	72
45501	47000	209	72
47001	48500	201	72
48501	50000	193	72
50001	51500	186	72
51501	53000	178	72
53001	54500	170	72
54501	56000	162	72
56001	57500	154	72
57501	59000	147	72
59001	60500	139	72
60501	62000	131	72
62001	63500	123	72
63501	65000	116	72
65001	66500	108	72
66501	68000	100	72
68001	69500	92	72
69501	71000	84	72
71001	72500	77	72
72501	74000	60	72
74001	75500	61	72
75501	77000	53	72
77001	78500	45	72
78501	80000	38	72
80001	81500	30	72
81501	83000	22	72
83001	84500	14	72
84501	86000	6	72
86001	87500	0	71
87501	89000	0	63
89001	90500	0	56
90501	92000	0	48
92001	93500	0	40
93501	95000	0	32
95001	96500	0	24
96501	98000	0	17
98001	99500	0	9
99501	101000	0	1
101001	102500	0	0
102501	104000	0	0
104001	105500	0	0
105501	107000	0	0
107001	108500	0	0

Appendix 8.

R code for calculating gross and net income equivalence

This code generates a dataset/spreadsheet with a range of gross household income values in one dollar increments, and associated values for:

- KiwiSaver (3%)
- Family Tax credits and In-work Tax credits
- Household tax and ACC levy (based on one half-time and one a full-time worker)
- Accommodation supplement
- Net household income after the above additions and subtractions

The range of gross incomes is set to encompass the range of values within which the living wage is likely to fall. The code presented below is set to generate a range of incomes from 70,000 to 100,000, which is wider than necessary for the purpose of this review, but useful for verifying the accuracy of results over a range of incomes.

The dataset is used identify the gross household income and net household income associated with any particular level of household disposable income, such as that given in the NZLW weekly budget.

The income brackets and associated taxing rates are listed in Appendix 6. The Working for Families and in work tax credit calculation is based on a table of values provided by IRD (an IR271 form) covering the period 1 April 2022 to 31 March 2023, as seen in Table 28 of Appendix 7, referred to as “family_tax_credit_table.csv” in the code below.

The basis for Accommodation Supplement coding is detailed in Appendix 2. The “household_tenancy_and_AS_data.csv” dataset is too extensive to include directly in this report but was assembled from rental, geographic and income data as described in Appendix 2. The dataset “AS_table.csv” is simply Table 23 from Appendix 2.

Code

```
#libraries
library(dplyr)
library(tidyr)

#datasets
ftc <- read.csv("family_tax_credit_table.csv")
AS_table <- read.csv("AS_table.csv")
rent_and_AS <- read.csv("household_tenancy_and_AS_data.csv")
lower_quartile_rent <- 520
kiwisaver_rate <- 0.03

#functions
calculate_kiwisaver <- function(hh_income, kiwisaver_rate) {
  hh_income*kiwisaver_rate
}

calculate_household_tax <- function(hh_income) {
  income_1 <- 2/3 * hh_income
  income_2 <- 1/3 * hh_income
```

```
  calculate_individual_tax(income_1) + calculate_individual_tax(income_2)
}

calculate_individual_tax <- function(income) {
  tax_rates <- c(0.105, 0.175, 0.3, 0.33, 0.39)
  upper_bound <- c(14, 48, 70, 180) * 1000
  lower_bound <- c(0, 14, 48, 70) * 1000

  income_bracket <- first(which(income <= upper_bound))
  upper_bound <- c(upper_bound[1:(income_bracket -1)], income)
  lower_bound <- lower_bound[1:income_bracket]

  acc_earners_levy <- min(income, 136544) / 100 * 1.6

  sum((upper_bound - lower_bound) * tax_rates[1:income_bracket]) + acc_earners_levy
}

lookup_tax_credits <- function(hh_income) {
  rownum <- first(which(hh_income <= ftc$hh_income_upper))
  if (is.na(rownum)) return(0) else {
    return((ftc$two_child_ftc[rownum] + ftc$two_child_iwtc[rownum]) * 52)
  }
}

find_lower_income_neighbourhoods <- function(areas, rent_target) {
  areas <- areas %>%
    arrange(median_income)
  areas$cumulative_weighted_rent <- NA

  for (i in 1:nrow(areas)) {
    weighted_rent <- sum(areas$Geometric.Mean.Rent[1:i] * areas$Active.Bonds[1:i]) / sum(areas$Active.Bonds[1:i])
    areas$cumulative_weighted_rent[i] <- weighted_rent
  }
  number_of_areas <- first(which(areas$cumulative_weighted_rent > rent_target))
  areas <- select(areas, -cumulative_weighted_rent) %>%
    left_join(AS_table, by = "AS_code")
  return(areas[1:number_of_areas,])
}

calculate_accomodation_supplement <- function(hh_income) {
  AS_outcome <- rent_and_AS %>%
    rowwise %>%
    mutate(income = hh_income/52,
           AS =  (Geometric.Mean.Rent - rent_threshold) * 0.7 - (income - income_threshold) * 0.25
    )
    AS_outcome$AS[(AS_outcome$income > AS_outcome$cut_out_point)] <- 0

  return(sum(AS_outcome$AS * AS_outcome$Active.Bonds) / sum(AS_outcome$Active.Bonds) * 52)
}

calculate_net_household_income <- function(hh_income) {
  additions <- lookup_tax_credits(hh_income) + calculate_accomodation_supplement(hh_income)
  subtractions <- calculate_kiwisaver(hh_income, kiwisaver_rate) + calculate_household_tax(hh_income)
  hh_income + additions - subtractions
}

#creating gross to net table
rent_and_AS <- find_lower_income_neighbourhoods(rent_and_AS, lower_quartile_rent)
gross_to_net <- data.frame(gross_incomes = 70000:100000)
gross_to_net$net_incomes <- sapply(gross_to_net$gross_incomes, calculate_net_household_income)

#lookup function
find_gross_income <- function(net){
```

```
  index <- first(which(gross_to_net$net_incomes > net))
  gross_to_net$gross_incomes[index]
}

find_gross_income(74299)

write.csv(gross_to_net, "gross_to_net.csv")
```