Urban heat, housing quality, and tenure: a dual-season climate justice problem in South Auckland

Part 1: Literature Review

1.1 Defining the Climate Change Topic

This assignment addresses urban heat intensification as a primary climate hazard, arguing that the mechanism of inequitable exposure is housing quality and tenure insecurity. Rising temperatures driven by anthropogenic emissions are producing measurable increases in the frequency, duration, and intensity of heat events across Tāmaki Makaurau. NIWA climate projections for the Auckland region indicate that under a high emissions scenario (RCP8.5), the city will experience between 70 and 90 additional hot days per year by 2110, with southern and low-lying areas facing the steepest increases (Pearce et al., 2018). The Auckland Council's 2024 Urban Heat Assessment, prepared by Arup, documented nighttime urban heat island temperatures in South Auckland running 2 to 3 degrees Celsius warmer than surrounding rural areas at a spatial resolution of 300 by 300 metres (Auckland Council, 2024).

The analytical innovation of this assignment is a dual-season framing of the climate hazard. The same poorly insulated, poorly ventilated, and often damp rental housing stock that causes cold-related illness and excess winter mortality in New Zealand also traps heat in summer, preventing residents from cooling down during high-temperature events. This is not a coincidence of two separate housing problems. It is one structural failure chronic underinvestment in rental housing quality producing seasonal harm in opposite thermal directions. This framing is substantiated by the 2023 Census housing quality data utilised in the composite vulnerability index developed for this assignment, which shows that the SA2 zones with the highest rates of dampness, mould, and problematic heating types are spatially concentrated in the same South Auckland communities that the Auckland Council's Heat Vulnerability Index (HVI) identifies as facing the greatest climate heat exposure (Joynt and Golubiewski, 2019).

1.2 Identifying Environmentally Vulnerable Populations

The 2019 RIMU vulnerability assessment identified 64 census area units across Auckland as heat vulnerability hotspots using a composite HVI drawing on ten proxy variables including social deprivation, age structure, ethnicity, and residential tenure (Fernandez and Golubiewski, 2019). Spatial concentration of these hotspot zones is pronounced in Māngere-Ōtāhuhu, Ōtara-Papatoetoe, Manurewa, and Papakura the Southern Initiative suburbs that form the primary study site for this assignment.

Māori and Pacific peoples face compounding exposure pathways. The HVI uses Māori and Pacific ethnicity as a proxy variable for heat-sensitive chronic disease prevalence, including higher rates of cardiovascular, respiratory, and diabetic conditions in both communities compared to the general population. The same report notes that 15 percent of Pacific and 11 percent of Māori workers are employed in high heat-risk occupations including agriculture, construction, manufacturing, and transport, compared to 5 percent of European workers (Joynt and Golubiewski, 2019). Residential exposure and occupational exposure thus compound for the same communities, a pattern invisible in assessments that treat the two as separate domains.

Beyond ethnicity, vulnerability is structured by age, tenure, income, and housing quality. Children under five and adults over 65 face the greatest physiological heat vulnerability due to reduced thermoregulatory capacity. Those in rental housing, disproportionately Māori and Pacific households in South Auckland, cannot make adaptive investments in insulation or cooling regardless of need, producing the split incentive problem documented by Telfar-Barnard et al. (2017): landlords bear the cost of improvements while tenants receive the benefit. Low-income households face zero adaptive capacity even when aware of the risk, unable to afford fans, air conditioning, or relocation.

1.3 Assessing Possible Future Responses: Social Equity and Climate Justice

The RTPI's *Five Reasons for Climate Justice* (2020) provides the primary evaluative framework. Knox's four inequity areas, inequity in causes, consequences, responses, and procedural justice expose the systemic failure of existing policy to address the equity dimensions of urban heat exposure in South Auckland.

On causes, Māori and Pacific communities in South Auckland bear a disproportionate share of heat harm despite having contributed least to the emissions producing it. On consequences, the spatial coincidence of heat exposure, poor housing quality, low income, and ethnicity demonstrated by this assignment's composite vulnerability index confirms that climate harm is not distributed randomly. On responses, the Healthy Homes Standards Act 2019 was designed to address housing quality in rental properties through requirements covering insulation, heating, ventilation, moisture, and draught control. However, Telfar-Barnard et al. (2017) demonstrated through a Wellington and Dunedin trial that enforcement mechanisms relying on tenant-initiated complaints systematically fail in high-deprivation areas, where tenants fear retaliatory eviction and lack the resources to navigate the Tenancy Tribunal. Compliance rates remain low in precisely the SA2 zones where need is highest.

At national policy level, the Emissions Reduction Plan 2022 (ERP1) referenced Healthy Homes Standards as part of an equitable transition agenda but framed housing quality as an energy efficiency measure rather than a climate adaptation mechanism (Ministry for the Environment, 2022). The Emissions Reduction Plan 2024 (ERP2) retreated further, emphasising technology-led market mechanisms and substantially reducing the social equity framing of ERP1 (Ministry for the Environment, 2024). Neither plan treated housing thermal performance as a core component of community resilience to rising temperatures. Worksafe New Zealand's 1997 guidance on occupational heat explicitly excludes weather-related heat as an occupational risk, leaving outdoor workers, disproportionately Māori and Pacific, entirely outside the regulatory framework for heat harm.

Procedurally, the NZPI Code of Ethics carries Treaty of Waitangi obligations but does not include a positive duty to promote equity equivalent to RTPI clause 25. As the RTPI argues, risk identification without equity-driven response is itself a form of procedural injustice (RTPI, 2020). The Auckland Council RIMU reports of 2019 and

the Arup assessment of 2024 mapped who is vulnerable and where, but neither document adopted a climate justice response framework. This assignment contends that the gap between identification and action is itself a policy failure, and that local planning must act where national policy has been silent.

Part 2: Environmental Vulnerability

2.1 Site Selection

The primary study site is the four southern Auckland local board areas of Māngere-Ōtāhuhu, Ōtara-Papatoetoe, Manurewa, and Papakura, corresponding broadly to the Southern Initiative boundary established by Auckland Council. These areas were selected because the spatial coincidence of climate hazard exposure, social vulnerability, and structural housing quality failure is most pronounced at this location within the Auckland region. All four local board areas appear in the RIMU vulnerability hotspot classification, the Arup UHI mapping, and the composite vulnerability index produced for this assignment. Secondary reference is made to the Auckland region as a whole to contextualise the site within the broader spatial pattern.

2.2 The Climate Change Problem and Locational Consequences

Urban heat intensification operates through two spatially reinforcing mechanisms in South Auckland. First, the urban heat island effect, documented at 2 to 3 degrees Celsius warmer nighttime temperatures than surrounding rural areas in the 2024 Arup assessment, is most pronounced in areas of low vegetation cover, high impervious surface coverage, and dense residential development all characteristics of the study site. Second, sea surface temperature increases in the Tasman Sea and intensification of anticyclonic weather patterns are extending the duration and peak intensity of summer heat events across the Auckland region (Pearce et al., 2018).

The locational consequence is that South Auckland SA2 zones experience more frequent, longer, and more intense heat events than other parts of the region, compounded by nighttime temperatures that prevent physiological recovery. The bivariate map produced for this assignment (Figure 1) shows the spatial coincidence of composite vulnerability index scores and mean air temperature at SA2 level across the Auckland region, confirming that the zones with the highest combined vulnerability and heat exposure are overwhelmingly located in the study site. The composite vulnerability index, described in detail below, draws on 2023 Census housing quality data including dampness severity, mould severity, heating type, and rental tenure, combined with social vulnerability indicators including income, unemployment, ethnicity, age, and residential stability. This represents an original methodological contribution beyond the 2019 RIMU reports, which explicitly noted the absence of Census housing quality variables in their HVI construction.

Figure 1: Bivariate map of Composite Vulnerability Index Versus Mean Air Temperature

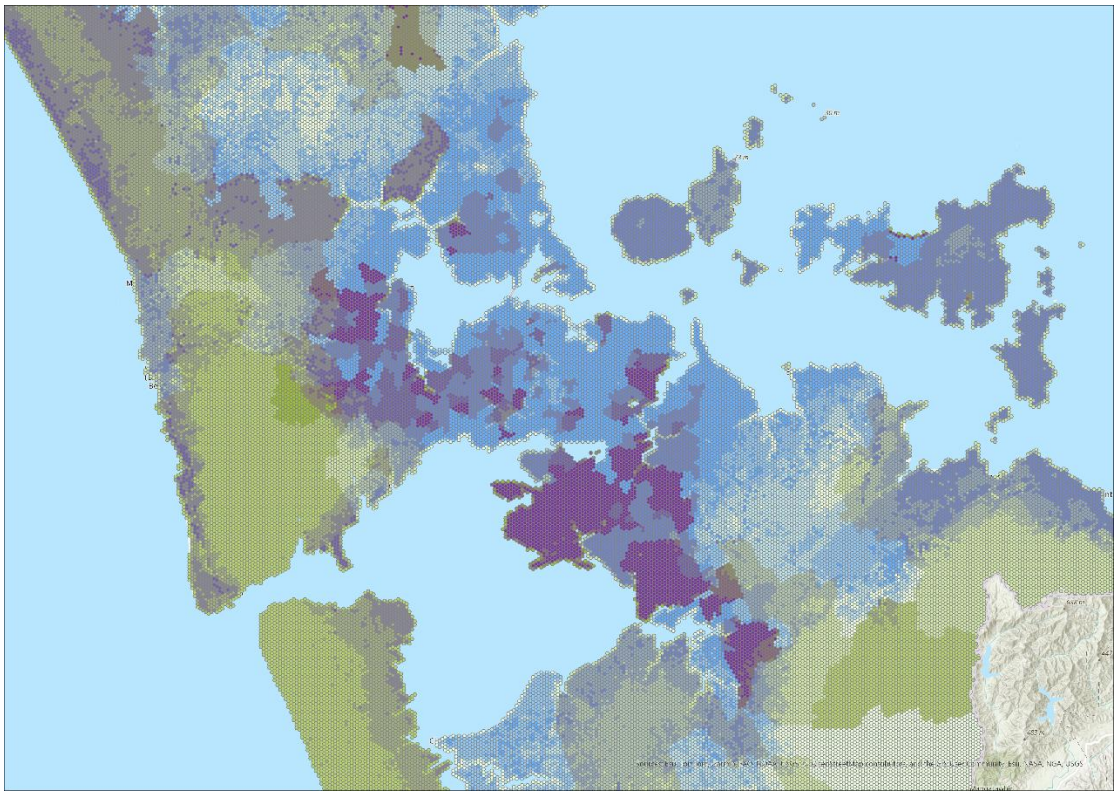


Figure 2: Housing Stock Quality Index by SA2.

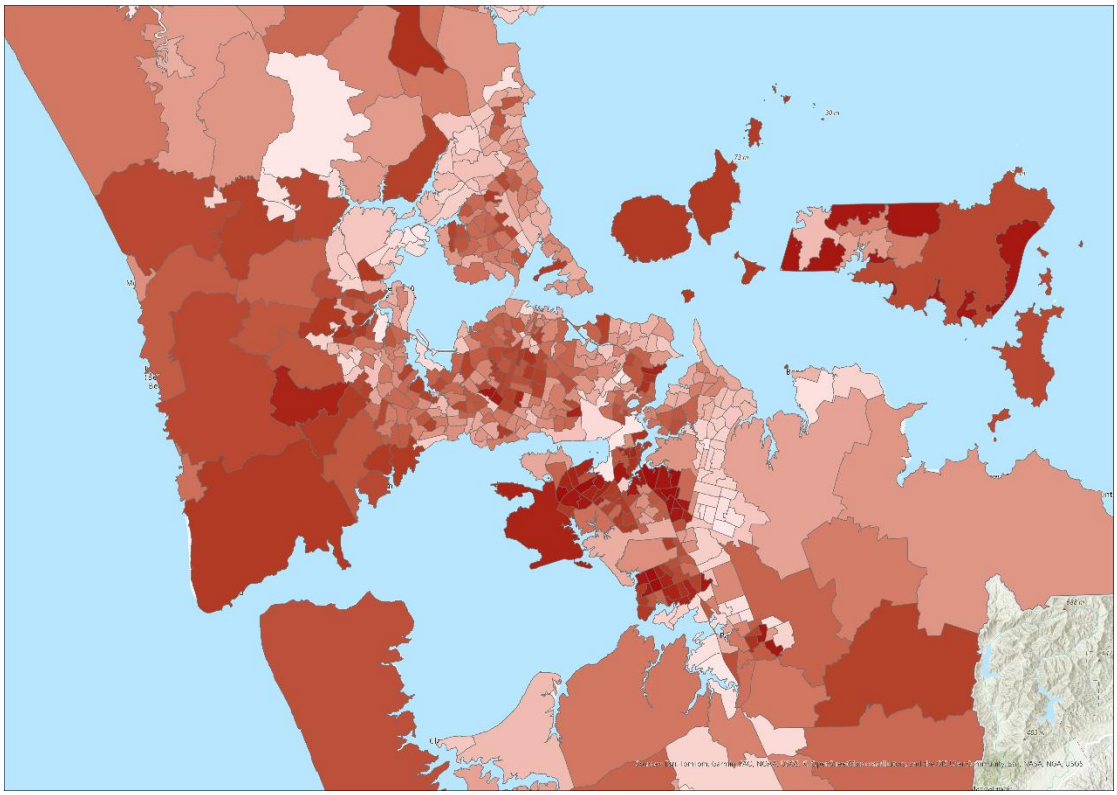


Figure 3: Household Vulnerability Index by SA2.

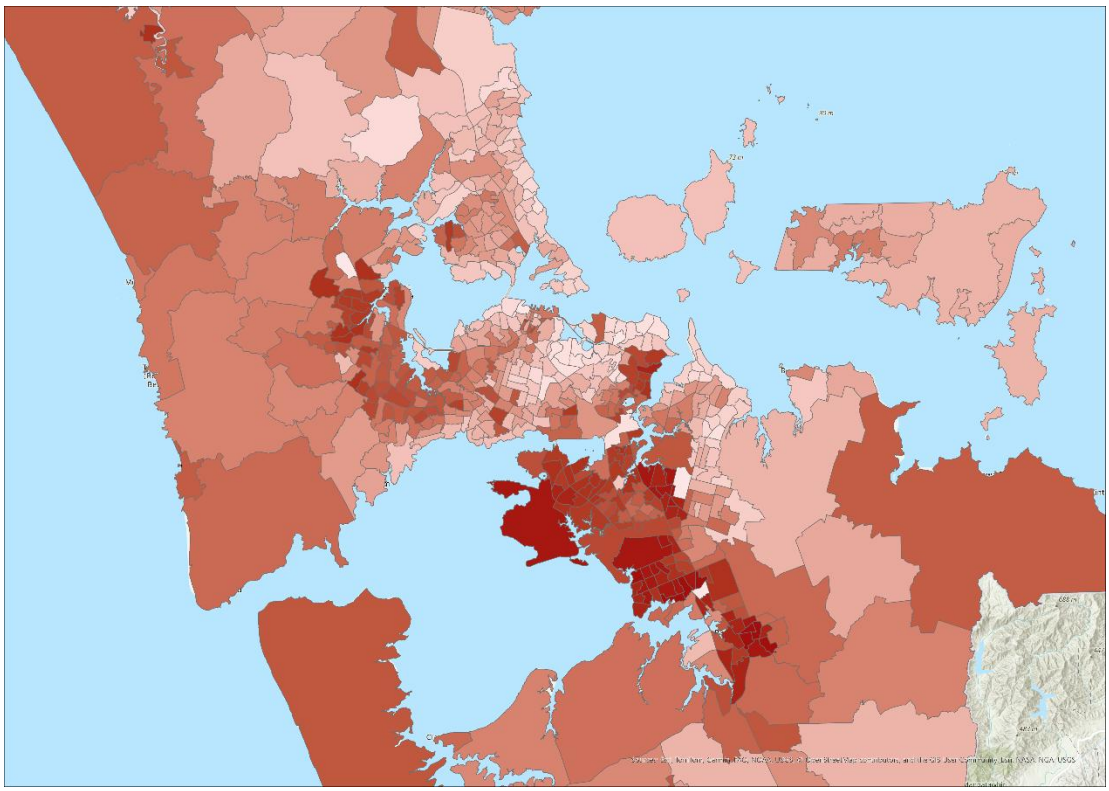
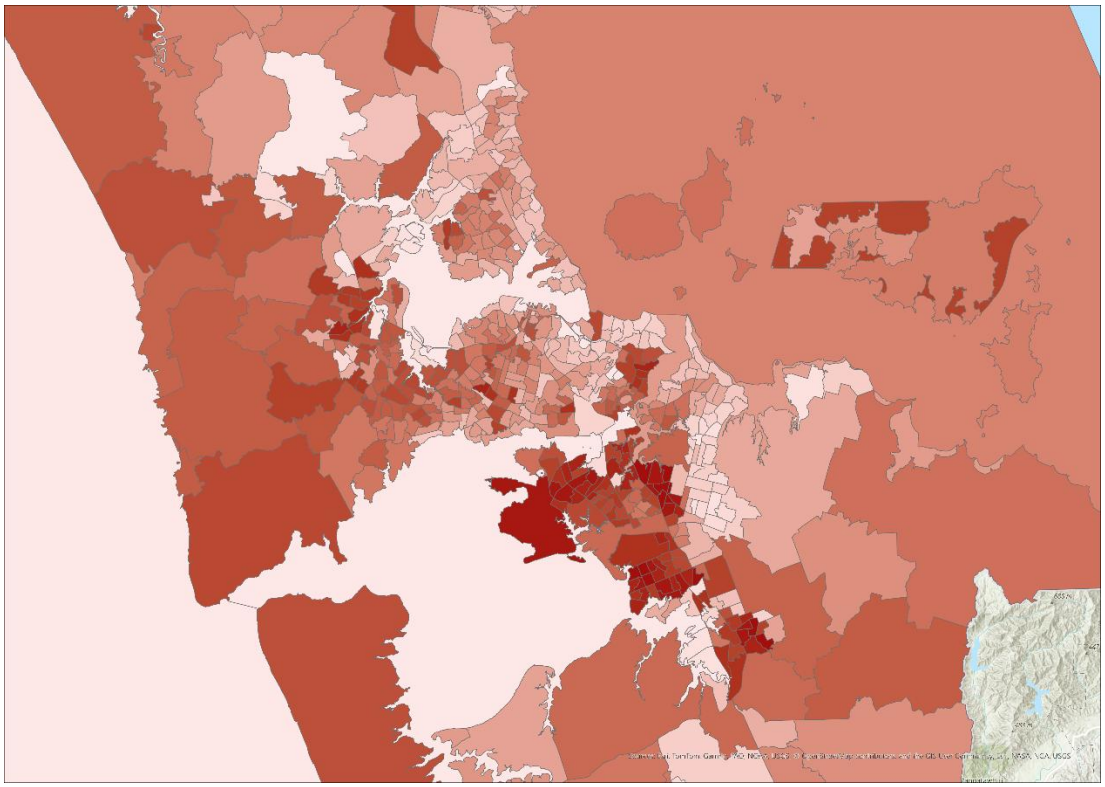


Figure 4: Combined Composite Vulnerability Index by SA2.



The dual-season framing is substantiated spatially. The same SA2 zones scoring highest on the Housing Stock Quality Index, reflecting high rates of dampness, mould, problematic heating types, and rental tenure also score highest on summer heat vulnerability in the bivariate analysis. This is not coincidental. Dwellings with no ceiling insulation, unflued gas heaters, and persistent dampness are also dwellings that cannot moderate internal temperature against external heat, trapping solar gain during the day and preventing overnight recovery. The housing stock is failing its occupants in two seasons through the same structural deficiencies.

2.3 Social Impacts

The social impacts of urban heat in South Auckland fall across health, economic, and community dimensions. Health impacts are most immediate. Heat morbidity and mortality risk is elevated for residents of poorly insulated and poorly ventilated rental housing, particularly among the elderly and children under five, both of whom are physiologically less able to regulate body temperature and less able to independently seek cooler environments. Exacerbation of existing cardiovascular, respiratory, renal, and diabetic conditions is documented in the New Zealand heat health literature, with Māori and Pacific populations carrying higher baseline prevalence of these conditions (Joynt and Golubiewski, 2019).

Occupational heat exposure compounds residential exposure for a significant portion of the study site population. Māori and Pacific workers in construction, agriculture, and transport face heat stress during working hours without adequate regulatory protection, then return to overheated rental housing in the evening with no recovery period. The 1997 Worksafe guidance gap means this dual exposure pathway is entirely outside the occupational health framework.

Economic impacts include productivity loss, increased healthcare utilisation, and the cost of coping strategies that fall entirely on low-income households. Households that cannot afford air conditioning, fans, or utility costs for cooling face a choice between thermal discomfort and financial stress. The split incentive structure of rental housing means landlords have no economic incentive to improve thermal performance, and tenants have no legal mechanism to compel improvement that does not require initiating a formal complaint, a process Telfar-Barnard et al. (2017) showed is prohibitively costly for tenants in high-deprivation areas.

At community level, heat events reduce the ability of vulnerable residents to participate in outdoor community life, isolating elderly and chronically ill residents in overheated dwellings. The manaakitanga networks that the 2019 RIMU report identifies as a protective social factor informal community care and mutual support are themselves strained during prolonged heat events when the most vulnerable members of the community are most at risk.

2.4 Equity Issues

Applying Knox's four inequity areas to the study site confirms the systematic nature of climate injustice in South Auckland. On causes, Māori and Pacific renters in the study area contribute the least to the emissions driving urban heat intensification. Their concentration in the Southern Initiative suburbs is a consequence of historical exclusion from higher-ground, higher-quality housing markets through discriminatory lending, zoning, and urban renewal processes.

On consequences, the composite vulnerability index demonstrates that climate harm is spatially concentrated in the communities with the least capacity to respond. The correlation between the Housing Stock Quality Index and the Household Vulnerability Index across the study site confirms that poor housing quality and social vulnerability are not independent: they are co-located because the same structural conditions produce both.

On responses, the Healthy Homes Standards enforcement failure in high-deprivation areas, the Worksafe occupational heat guidance gap, and the absence of housing thermal performance as a climate adaptation mechanism in either ERP represent a systematic pattern of policy absence in exactly the areas of highest need.

On procedural justice, Māori and Pacific communities in the study site have had no meaningful input into housing standard policy design, HVI methodology, or climate adaptation planning. The 2019 RIMU reports and the 2024 Arup assessment mapped the problem without engaging affected communities in the design of responses. This absence of procedural participation is itself an inequity, compounding the inequities in causes, consequences, and responses.

Part 3: Intervention

3.1 Opportunities for Intervention Based on Climate Justice

The analysis in Parts 1 and 2 identifies three overlapping opportunities for intervention. First, the enforcement failure of the Healthy Homes Standards in high-deprivation rental areas creates a clear case for a proactive, council-led inspection regime that removes the burden of compliance initiation from tenants. Second, the spatial concentration of vulnerability demonstrated by the composite index provides a ready methodology for targeting such an intervention at the SA2 zones of highest combined risk. Third, the absence of housing thermal performance from both ERPs creates a policy gap that local government can partially fill through its rating powers and existing resource consent functions, without requiring primary legislation.

3.2 The Intervention: Mandatory Rental Warrant of Fitness, Spatially Targeted

The proposed intervention is a mandatory Rental Warrant of Fitness (WoF), modelled on the 29-criteria framework trialled in Wellington and Dunedin by Telfar-Barnard et al. (2017), with three features that distinguish it from previous iterations: proactive council-led inspection rather than complaint-triggered enforcement; spatial prioritisation using the composite vulnerability index to target rollout in the highest-risk SA2 zones first; and explicit anti-displacement protections to prevent the improvement mechanism from producing low-carbon gentrification.

The 29 WoF criteria cover insulation, heating source, ventilation, moisture and drainage, structural soundness, and security. For the purposes of this assignment, the thermal performance criteria, ceiling insulation, heating adequacy, and ventilation are the most directly relevant to the dual-season climate harm argument. A rental dwelling failing these criteria is one that produces cold and damp harm in winter and traps heat in summer. The WoF creates a binary pass/fail threshold that is operationally simpler than a continuous thermal performance standard while capturing the structural deficiencies identified in the composite index.

The spatial targeting mechanism uses the composite vulnerability index scores at SA2 level to phase the rollout. SA2 zones scoring in the top quartile of both the Housing Stock Quality Index and the Household Vulnerability Index, corresponding to the HH zones in the bivariate map, are the first-phase implementation areas. These are the zones where rental housing quality failure and social vulnerability most severely compound, and where proactive inspection will produce the greatest reduction in climate harm per unit of resource invested. Subsequent phases extend to lower-scoring zones as inspection capacity and funding are established.

3.3 Addressing Social Impacts, Climate Justice, and Community Resilience

The intervention addresses each of the Knox equity dimensions identified in Part 2. On causes, the WoF does not directly address the historical exclusion that produced the current spatial distribution of vulnerable renters, but by prioritising the communities that contributed least to the problem and face the greatest harm, it directs resources toward the inequity rather than distributing them uniformly.

On consequences, mandatory improvement of thermal performance in the highest-vulnerability SA2 zones directly reduces the physical conditions producing climate harm. Insulated, adequately ventilated dwellings with appropriate heating capacity are less likely to overheat in summer and less likely to produce cold and damp harm in winter. The health, economic, and community impacts described in Part 2 are all reduced by improving the housing stock through which climate exposure is mediated.

On responses, proactive council-led inspection removes the enforcement barrier identified by Telfar-Barnard et al. (2017). Tenants in high-deprivation areas do not need to know their rights, initiate a complaint, or risk retaliatory eviction. The inspection comes to them. This shifts the burden of enforcement from the most vulnerable party in the landlord-tenant relationship to the regulatory authority, which is its appropriate location.

On procedural justice, the spatial targeting process is designed to incorporate community organisation input in the identification and prioritisation of high-vulnerability areas. Mana whenua and local Pacific community organisations should be partners in the targeting methodology, not recipients of its outputs. This addresses the procedural exclusion identified in Part 2 and ensures the intervention reflects community-defined priorities rather than index-defined ones alone.

The anti-displacement mechanism is structurally critical. Any mandatory improvement scheme risks displacing the tenants it is designed to protect if landlords respond to compliance costs by raising rents or selling, a pattern the RTPI identifies as low-carbon gentrification (RTPI, 2020). The intervention incorporates three anti-displacement protections: a rent freeze provision during the compliance period prohibiting rent increases in SA2 zones subject to active WoF enforcement; tenant advocacy funding drawn from the rates differential mechanism to ensure tenants have access to

independent legal advice; and a right-to-remain provision ensuring that tenants cannot be evicted for the purpose of carrying out WoF compliance work without guaranteed right of return at the same rent.

The funding mechanism follows Telfar-Barnard et al.'s (2017) rates differential model. Rental properties in designated WoF zones pay a higher rates levy unless and until they hold a current WoF certificate. The differential revenue funds the inspection programme, tenant advocacy services, and a subsidised improvement fund for landlords unable to meet the capital cost of compliance. This self-funding model reduces reliance on general rates and creates a direct financial incentive for landlord compliance without requiring ongoing council subsidy.

The intervention also addresses the dual-season framing directly. A dwelling that passes the WoF thermal performance criteria will have adequate ceiling insulation, adequate ventilation, and a compliant heating source. These same features that reduce cold and damp harm in winter also reduce heat retention in summer: insulation moderates both heat loss and heat gain; adequate ventilation allows night-time cooling; and the elimination of unflued gas heaters removes a source of internal heat, moisture, and combustion products. The WoF is not a winter measure adapted to summer, it is a year-round thermal performance standard that addresses both seasonal manifestations of the same structural problem.

3.4 Relevant Actors

Successful implementation requires coordinated action across multiple actors at local, regional, and national scales.

- **Auckland Council:** lead implementing agency. Responsible for administering the rates differential mechanism, resourcing and deploying the inspection programme, designating WoF zones using composite vulnerability index data, and establishing the community partnership governance structure for targeting decisions. Powers derive from the Local Government (Rating) Act 2002 and existing resource management functions.
- **Central Government (Ministry of Housing and Urban Development / MBIE):** required to provide the legislative mandate for mandatory inspection through amendment to the Residential Tenancies Act 1986 or strengthening of the Healthy Homes Standards enforcement framework. Without national legislative backing, the rates differential mechanism is the primary enforcement lever available to Auckland Council.
- **Worksafe New Zealand:** required to update the 1997 occupational heat guidance to explicitly include weather-related heat as an occupational risk, and to develop sector-specific guidance for construction, agriculture, and transport workers facing compounding residential and occupational heat exposure.
- **Mana whenua and Pacific community organisations:** partners in the targeting methodology and governance structure. Required to ensure the procedural justice dimension of the intervention is genuine rather than consultative. Community organisations are also best placed to administer the tenant advocacy funding component, given existing trust relationships with affected communities.
- **Landlord and property management sector:** subject to the intervention, with financial incentive through the rates differential to achieve early compliance. The subsidised improvement fund is designed to remove cost as a barrier for smaller landlords who own housing in high-vulnerability zones.
- **Health New Zealand / Te Whatu Ora:** monitoring partner for health outcome data in WoF implementation zones, enabling longitudinal assessment of intervention effectiveness against the health impacts identified in Part 2.

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