The Relocation of Public Housing Tenants in South Western Sydney

A Health Impact Assessment
THE RELOCATION OF PUBLIC HOUSING TENANTS IN SOUTH WESTERN SYDNEY: A HEALTH IMPACT ASSESSMENT

Prepared by:
Population Health, South Western Sydney and Sydney Local Health Districts.

Copies of this report are available from Population Health, South Western Sydney Local Health District (http://www.swslhd.nsw.gov.au/populationhealth) or from the project author (belinda.crawford@gmail.com).

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Cover photo
Roy Byun
Abbreviations

ABS     Australian Bureau of Statistics
AHO     Aboriginal Housing Office
CALD    Culturally and Linguistically Diverse
CBD     Central Business District
CHETRE  Centre for Health Equity Training, Research and Evaluation
CRG     Community Reference Group
COPD    Chronic Obstructive Pulmonary Disease
FACS    Department of Family and Community Services
HEAL    Healthy Eating Active Living Program
HIA     Health Impact Assessment
HOPE VI Housing Opportunities for People Everywhere
IRSD    Index of Relative Socio-economic Disadvantage
LAHC    NSW Land and Housing Corporation
LGA     Local Government Area
NSW     New South Wales
SEIFA   Socio-economic Indexes for Areas
SES     Socioeconomic Status
SHARP   Scotland’s Housing and Regeneration Project
SIR     Standardised Incidence Ratio
UCBHIG  UC Berkeley Health Impact Group
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1. Executive Summary

1.1 Introduction

The relationship between poor housing and poor health has been well known for many years (1-5). Most research has focused on housing infrastructure, overcrowding and inadequate basic utilities for hygiene and nutrition (1, 2, 6-8). It is only in recent years that the impact of the built environment has been considered to have direct impacts on physical and mental health (9). Poor access to open spaces, infrastructure for recreation and healthy food outlets has been shown to discourage physical activity and healthy eating, resulting in increased risk of chronic disease, overweight and obesity and mental health disorders (10, 11). Reduced access to social and health care services through reduced availability and affordability may also contribute to ill-health, particularly for disadvantaged groups (12).

In Australia, disadvantaged neighbourhoods often consist of concentrations of poor quality public housing (13). Many housing authorities have implemented large-scale urban renewal programs to address the physical and social disadvantage evident in areas of concentrated public housing (3, 14, 15). These programs often require the relocation of large numbers of public housing tenants in order to demolish existing dwellings and make land available for redevelopment. This process may have positive or negative impacts on residents’ physical and mental health outcomes (3, 4, 14, 16-21). Common factors associated with rehousing include changes to housing quality and suitability, neighbourhood environments, social networks and access to social and health care services (17).

The NSW Land and Housing Corporation (LAHC), an agency of the NSW Department of Family and Community Services (FACS) is currently undertaking a number of estate renewal programs in South Western Sydney. These renewal programs aim to transform public housing estates into sustainable mixed-income communities, where 30% of dwellings will be retained as public housing, while 70% will be sold to private owners. They also aim to make these suburbs more liveable by improving homes and public spaces and supporting local communities to build on their strengths, skills and overall capacity. Renewal projects in South Western Sydney include the Bonnyrigg Living Communities Project, the Minto Renewal Project and the Airds Bradbury Renewal Project (22).

The aim of this Health Impact Assessment (HIA) is to examine the impacts of estate renewal and rehousing on the health, particularly chronic disease, quality of life and wellbeing, of public housing residents. In this HIA, we considered the policies, guidelines and practices that support the housing relocation process in South Western Sydney as well as the mechanisms by which different interventions and supports may lead to positive health outcomes. The relocation of public housing tenants associated with the Airds Bradbury Renewal Project was used as a case study example.
1.2 Airds Bradbury Renewal Project and Relocation Program

The suburbs of Airds and Bradbury are located within the Campbelltown Local Government Area (LGA), approximately 2.5km southeast of Campbelltown city centre. The Airds Bradbury Renewal Area consists of the Airds public housing estate, as well as a group of public housing dwellings located in the adjoining suburb of Bradbury. The suburb of Airds is recognised as one of the most socially and economically disadvantaged areas in New South Wales (NSW) (23). The estate was built in the 1970’s and 1980’s using ‘back to front’ Radburn design principles, where dwellings face onto walkways, parks and other public spaces, with car access from rear laneways (24). The Radburn design has been shown to be unsuitable for public housing estates in Australia, due to problems with car access, safety in rear lanes and surveillance of open spaces (25, 26). The estate comprises of 1,540 dwellings, of which 94% are publically owned and managed. In 2011, this area had a residential population of approximately 3,507 people (27).

The Airds Bradbury Renewal Project involves comprehensive regeneration of the Airds Bradbury public housing estate over the next 15-20 years. It is expected to transform the original 1,540 public housing dwellings into a sustainable mixed-income community of over 2000 homes (22). The LAHC are managing this project, in partnership with Housing NSW (an agency of the NSW Department of Family and Community Services (FACS)) and Landcom (now UrbanGrowth NSW, the NSW Government’s property developer). An integrated master plan was developed and approved by the Minister for Planning in 2012. A Rehousing Plan has also been developed (28).

As of 2011, public housing tenants from the Airds Bradbury Renewal Area have been rehoused to suburbs within and outside of the Campbelltown LGA to enable demolition and construction work. These relocations will continue precinct by precinct until 2015. Where possible, tenants are given the option to be relocated to a suitable renovated property in the estate or to be moved to a neighbourhood of their choice. They are also given the option of returning to the estate once the renewal project has been completed (29, 30). A Relocations Officer (employed by Housing NSW) works closely with tenants during the rehousing process and assists them in their settlement to new housing. Community engagement has been maintained throughout the project and a number of programs and activities implemented (28).

1.3 Methods

This HIA was conducted between June 2012 and June 2013 and consisted of the following stages (31):

1. A review of available literature on housing, estate renewal and relocation programs and health (particularly chronic disease) and quality of life of public housing residents;
2. A health and social profile of South Western Sydney, focusing on residents living in the Airds Bradbury Renewal Area; and
3. In-depth interviews with employees from Health and Housing organisations in South Western Sydney and residents involved in the Airds Bradbury housing relocations. Approval to complete these interviews was gained from the South Western Sydney Local Health District Human Research Ethics Committee.

The first round of in-depth interviews involved face-to-face interviews with 14 employees from Health and Housing organisations in South Western Sydney. The second round of interviews focused on current and past residents of the Airds Bradbury public housing estate. Residents volunteered to participate in the study by contacting the project coordinator [BC]. Residents were given an A$50 supermarket voucher for their time and participation. A total of 20 interviews were completed with residents from the following groups, based on their stage of relocation, during April and May 2013:

- Four interviews with residents who were waiting to relocate from Airds Bradbury;
- Six interviews with residents who were relocated to a renovated property in Airds Bradbury; and
- Ten interviews with residents who were relocated to a new or renovated property outside of the estate, either to a neighbouring suburb in Campbelltown LGA or to another area.

Interviews were recorded with a digital voice recorder and transcribed verbatim. Systematic coding of all data was undertaken at the completion of each interview. Computer aided qualitative data analysis software NVivo10 (QSR International, Burlington, MA) was used as a data management system. A series of themes emerged through a process of open and axial coding (32). The project coordinator [BC] completed coding. Two members of the research team [PS and VR] reviewed six transcripts in order to confirm and refine thematic analysis.

1.4 Results

For simplicity, the results of the three stages of the HIA have been integrated into the following six sections:

1. Health and neighbourhood conditions;
2. Health impacts linked to resident responses to estate renewal and rehousing;
3. Health impacts linked to housing and neighbourhood quality;
4. Health impacts linked to social networks and community engagement;
5. Health impacts linked to access to healthy foods and opportunities for physical activity; and
6. Health impacts linked to access to social and health care programs and services.

1.4.1 Health and Neighbourhood Conditions

All respondents reported a high level of poor health among residents in the Airds Bradbury public housing estate, compounded by social and economic disadvantage. This perception was confirmed by an analysis of social and health datasets. This analysis showed that the health issues for residents in Airds Bradbury were significantly greater when compared to surrounding areas, as well as to the population of NSW. Hospitalisations for dialysis, childbirth related conditions, injury and poisoning and digestive system diseases were considerably higher in Airds Bradbury.
than in surrounding areas and NSW. High rates of chronic health conditions such as cardiovascular disease, diabetes, respiratory disease and cancer were also reported. Risk factors for chronic disease such as smoking, high-risk alcohol consumption, physical inactivity and insufficient consumption of fruits and vegetables were also higher in this area when compared to NSW.

Poor physical, mental and social health has been found to mirror physical and neighbourhood conditions (3). Key characteristics of the suburb of Airds include low rates of educational attainment, high rates of unemployment and a high proportion of single parent families. The population in this area is also younger than in surrounding areas, as 40% of residents are aged less than 20 years. Almost 50% of households in Airds have incomes of less than A$600 per week and live below a recognised Australian poverty line (33).

1.4.2 Health Impacts linked to Resident Responses to Estate Redevelopment and Rehousing

Previous research of the health impacts of estate redevelopment and housing relocation programs have had mixed findings, with most studies reporting reduced stress and anxiety, but no improvements in residents’ physical health (3, 18, 34). The relocation of public housing tenants in Airds Bradbury was also identified to have positive and negative health impacts, often dependent on the individual, the circumstances of their relocation and their perceived sense of control. Residents who were more involved in renewal activities and in their relocation generally reported higher levels of satisfaction, when compared to residents who were less involved. Those residents who were unable to engage with the Housing Relocation Team prior to their move generally reported more challenges, stress and uncertainty. For some residents, particularly those moving outside of Airds Bradbury, relocation was viewed as an opportunity to move to a nicer house or suburb, with corresponding positive health impacts. There was general agreement that satisfaction with relocation can be improved by offering residents personalised support prior to, during and after rehousing. It is not clear whether this support and corresponding satisfaction with rehousing will lead to positive physical or psychosocial health impacts in the mid- to long-term.

1.4.3 Health Impacts linked to Housing and Neighbourhood Quality

Informants from Housing and Health organisations viewed estate renewal and rehousing programs as an opportunity to move tenants to better quality, more suitable properties. This process was associated with positive and negative health impacts. For many residents, moving to more appropriate housing resulted in reduced stress, increased physical accessibility and an improved sense of privacy and safety. Some residents explicitly linked moving to a new house with improvements to their physical health and quality of life. Improved privacy of homes in mixed-income communities was also seen to result in positive health outcomes. Additionally, the provision of houses based on identified need was associated with positive and negative health outcomes, with some residents experiencing benefits from moving to bigger houses with additional bedrooms. However, single people and couples without children reported some negative psychosocial health impacts if required to move to smaller, single bedroom properties.
Improved perceptions of safety and security were also seen as benefits of relocation for residents moving outside of Airds Bradbury. For residents waiting to relocate, or who had stayed within the estate, violence, crime and alcohol and substance abuse remained problematic, with some residents reporting concerns over leaving their homes. Finally, the cleanliness and maintenance of properties was reported to have improved for residents relocated outside of the estate. These residents reported moving into brand new or renovated properties in mixed-income suburbs. Common problems of dust, pests, noise and tobacco smoke persisted for residents waiting to move or for those who had been relocated to renovated properties within the estate.

1.4.4 Health Impacts linked to Social Networks and Community Engagement
The relocation of public housing tenants may have an impact on access to social and community networks, as socioeconomically disadvantaged groups tend to rely quite strongly on these networks for their physical and mental health (35, 36). Impacts on social and community outcomes for public housing residents in Airds Bradbury were mixed. The community centre in Airds Bradbury (AB Central) was seen as the primary location for social interaction and was successfully used for a number of community programs and activities. Problems with other common areas such as parks and shopping areas were noted, mostly due to concerns of safety and security from the threat of crime, violence and gang activity. Concerns over safety and security seemed to limit opportunities for social networking for residents waiting to relocate or for those who had been rehoused within the estate. The population loss and displacement from rehousing without corresponding movement into the suburb also appeared to have affected social networks. As social supports may encourage health promoting behaviours (3, 37), this loss of social cohesion may have negative impacts on health and wellbeing. Concerns over a changing social mix with plans for 30% public and 70% private housing were also reported, with potential negative health impacts including residential segregation and social isolation. However, opportunities for positive health outcomes from improved access to resources and services, including public transport links, recreational facilities, open spaces and healthy food outlets were also identified.

Engaging communities in estate renewal projects has been found to promote social cohesion and help to identify public concerns and needs, thereby contributing to improved health, wellbeing and equity (3). Residents who were actively involved in renewal and rehousing activities tended to report feeling a sense of control and satisfaction with their relocation. In contrast, residents who were not able to participate in community activities generally reported lower levels of satisfaction with their relocation as well as a reduced level of understanding of the processes of estate renewal and rehousing.

1.4.5 Health Impacts linked to Access to Healthy Foods and Opportunities for Physical Activity
Access to fresh and nutritious foods and opportunities for regular physical activity have been shown to have a range positive health impacts including reduced risk of morbidity and mortality from cardiovascular disease, type 2 diabetes and overweight, obesity and certain cancers (38, 39). Research has shown that estate renewal and
rehousing programs provide an opportunity to improve community facilities and increase access to fresh and healthy foods and opportunities for regular physical activity (3). However, the potential impacts of the redevelopment and relocations in Airds Bradbury were mixed. With respect to healthy eating, respondents consistently reported that fresh foods were neither affordable nor accessible within Airds Bradbury due to limited access to supermarkets and green grocers and a high number of convenience and takeaway stores. Additionally, community programs such as the fruit and vegetable cooperative and community garden were not well utilised. Informants also suggested that food literacy, or knowledge and skills needed to make informed and responsible choices about food and nutrition (40), was a barrier to healthy eating. They felt that many residents lacked the skills and knowledge required to cook fresh and healthy meals, instead relying on energy-dense, pre-packaged, convenience and takeaway foods. Informants also felt that plans to redevelop retail and grocery stores may improve access to healthy foods for residents living in Airds Bradbury, however may not lead to behaviour change unless accompanied by education programs to increase food literacy and cooking skills.

A lack of safe, usable open spaces and reduced access to public transport were identified as barriers to regular physical activity for residents living in the Airds Bradbury Renewal Area. The poor state of footpaths, limited public transport routes and concerns over safety and security seemed to restrict opportunities for regular exercise and physical activity. Improved access to recreational facilities and quality parks and open spaces are required to increase physical activity opportunities. For residents relocated outside of the estate, access to physical activity may be increased or decreased depending on the location of rehousing.

1.4.6 Health Impacts linked to Access to Social and Health Care Programs and Services

Access to social programs and services is an important contributor to physical and mental health outcomes, particularly for disadvantaged and minority groups (41). Informants from Housing and Health organisations reported that residents generally had good access to social services and programs, with many community organisations providing outreach services to target the concentrated disadvantage present in Airds Bradbury. Additional social and community programs were available at the local community centre (AB Central), including fitness classes, youth groups, parenting classes and seniors groups.

Access to medical and oral health care services in Airds Bradbury differed considerably for residents depending on their background, health literacy and access to private transport. Tharawal Aboriginal Corporation was identified to provide high quality general practice, dental, allied health and social support services for Aboriginal residents and their families. However, access to services and programs within the suburb was limited for other residents, with many travelling into Campbelltown city centre for bulk-billed medical services. Most residents reported that it was difficult to get to these areas, due to limited public transport in Airds Bradbury. For elderly residents, mobility problems and chronic conditions further restricted their ability to travel to and access health care services. Access to dental services was also limited, as many residents were unable to afford private dental care or attend the public
service in a nearby suburb due to lengthy waiting lists. This finding is concerning, but not surprising, given the limited funding allocated to public dental services in Australia (42, 43).

Although estate renewal and housing relocation programs provide an opportunity to enhance health care services for residents in disadvantaged areas (44), residents living in the Airds Bradbury estate were yet to see improvements. It is also not clear whether residents who are relocated to other neighbourhoods may benefit from increased access to services. Some residents reported improvements in their access to health care services in Campbelltown city, due to closer proximity and improved public transport links. However, for a number of other residents, their access to programs and services had declined, due increased cost and reduced availability. These findings are consistent with recent research, as health care seeking behaviours tend to decline when services are more expensive or unavailable, resulting in poorer health outcomes, particularly for chronic disease and mental health (45, 46).

1.5 Conclusions
The relationship between housing conditions and physical and mental health is well known (1-5). Research has shown that estate renewal and rehousing programs can help to improve the long-term health and wellbeing of public housing residents. However, there is also evidence to show that these programs may have negative impacts on residents’ physical and mental health, particularly in the short-term (3, 4, 14, 16-21).

Findings from this HIA include current and potential positive and negative health impacts of estate renewal and rehousing. Key themes include resident responses to the processes of estate renewal and relocation, housing and neighbourhood quality, social networks and community engagement, access to healthy foods and opportunities for regular physical activity and access to social and health care programs and services. There were some differences in the health impacts for residents waiting to relocate, compared to those residents who had been relocated within the estate and those who had been relocated to neighbouring suburbs or other areas outside of Campbelltown LGA.

These findings suggest that Housing and Health organisations involved in estate renewal and rehousing programs should attend to the following four major factors. They should ensure that:
1. Housing and neighbourhood generally are planned and built to high design standards;
2. Disruptions and inconveniences to individuals and the community during the actual redevelopment are reduced to the minimum;
3. There are appropriate services and procedures in place to support residents during each stage of the planning, renewal and relocation process; and
4. The needs and preferences of individual residents are taken into account.
1.6 Recommendations

The information collected from the literature review, the health and social profile and the qualitative interviews was collated and assessed in order to prioritise health impacts (31). Eleven practical, action-oriented recommendations were developed to improve the processes and outcomes of relocating public housing tenants in South Western Sydney. Recommendations are summarised in Table 1 below. Further detail is provided in Sections 7 to 11 as well as in Section 13 of this report.
Table 1: HIA Recommendations

<table>
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<tr>
<th>Recommendations</th>
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<tr>
<td><strong>Recommendation 1 (Sections 7.4 and 9.4)</strong></td>
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<tr>
<td>Housing authorities should maintain a personalised approach, with open and transparent communication with communities at all stages of the rehousing process. This may involve providing regular information sessions, organising community events and distributing newsletters and updates. Residents are likely to feel less stressed and anxious if they receive personalised support and clear and appropriate information at all stages of renewal projects (particularly in regard to tenant relocations). Providing information and choices may also improve residents’ involvement and sense of control over their relocation (3, 5, 14, 45).</td>
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<td><strong>Recommendation 2 (Section 7.4)</strong></td>
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<td>Housing authorities and other organisations involved in estate renewal programs should consider opportunities to minimise delays and maximise the efficiency of the rehousing process. Minimising delays may assist in reducing stress and anxiety for public housing tenants (14, 45).</td>
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<td><strong>Recommendation 3 (Section 8.5)</strong></td>
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<td>Housing authorities should continue to assess current and future housing needs of tenants and match them to appropriate and accessible housing. The health and wellbeing of public housing tenants is likely to improve if they are living in housing that matches their needs and functional abilities (1, 14, 17, 18, 47).</td>
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<td><strong>Recommendation 4 (Section 8.5)</strong></td>
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<td>Authorities and contractors who manage demolition and construction works should take action to minimise disruption as well as air and noise pollution for residents. Minimising disruption and exposure to environmental pollutants may help to reduce feelings of stress and anxiety, particularly for residents who remain living in the estate (14).</td>
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<td><strong>Recommendation 5 (Section 8.5)</strong></td>
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<td>Housing authorities should ensure public housing properties are appropriately maintained. Prompt maintenance is required to avoid environmental hazards and associated physical and mental health conditions (1, 47).</td>
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<td><strong>Recommendation 6 (Sections 8.5, 9.4 and 10.4)</strong></td>
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<td>Housing authorities, building contractors and other agencies involved in renewal activities should consider opportunities to improve the safety of construction sites and common areas. This may include monitoring street lighting, improving fencing and engaging with local police. Increased security for these sites may reduce the likelihood of anti-social behaviour, violence and crime and improve residents’ sense of safety and security. It may also encourage socialisation and the development of strong social and community networks. Improved safety and security may also encourage regular physical activity (14, 18).</td>
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<td><strong>Recommendation 7 (Section 9.4)</strong></td>
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<td>Housing and Health authorities and other agencies involved in estate renewal</td>
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<td>programs should consider opportunities</td>
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<td>to provide funding for a community centre, with a wide variety of social and</td>
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<td>health care programs. Programs may target vulnerable groups including children,</td>
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<td>young people, single parents and CALD groups. A variety of community, social</td>
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<td>and health care programs may bring people together and promote healthy activities</td>
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<td>as well as social networking and community engagement (3).</td>
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<td><strong>Recommendation 8 (Section 10.4)</strong></td>
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<td>Health authorities (Health Promotion and Community Health Services) and other</td>
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<td>community agencies should consider opportunities to implement healthy eating</td>
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<td>and physical activity programs for public housing tenants of all ages. This may</td>
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<td>include establishing and maintaining a community space for programs and services</td>
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<td>related to healthy eating and physical activity (e.g., community garden and</td>
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<td>kitchen, exercise and sporting programs). Residents should be encouraged to use</td>
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<td>these programs and service. New programs should be developed and implemented to</td>
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<td>meet the changing needs of the community (3).</td>
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<td><strong>Recommendation 9 (Section 10.4)</strong></td>
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<td>Housing and Health authorities should consider access to healthy and affordable</td>
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<td>food as part of the rehousing process for all residents. This may include</td>
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<td>resident access to major supermarkets and green grocers as well as culturally</td>
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<td>appropriate food sources. The relocation process should be used as an opportunity</td>
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<td>to link residents in with community and meal assistance programs as required.</td>
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<td>Increased access to healthy food sources may improve residents’ diet and nutrition</td>
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<td>and reduce morbidity and mortality from chronic disease (38).</td>
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<td><strong>Recommendation 10 (Section 11.4)</strong></td>
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<td>Housing and Health authorities should consider access to social and health care</td>
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<td>services as an integral component of the relocation process for all residents.</td>
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<td>This should focus on establishing or maintaining links with services and</td>
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<td>enabling equitable access regardless of the location of rehousing. Improved</td>
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<td>access to social, medical and dental services may increase residents’ health-</td>
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<td>seeking behaviours, with subsequent benefits for their physical and psychosocial</td>
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<td>health (14, 17, 18).</td>
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<td><strong>Recommendation 11 (Section 11.4)</strong></td>
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<td>Health organisations should consider opportunities to increase the provision of</td>
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<td>outreach services for public housing residents, in order to improve access to</td>
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<td>social supports and medical and dental services. Improved access to medical and</td>
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<td>dental services may improve health-seeking behaviours and health and wellbeing</td>
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<td>for residents (3, 41).</td>
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2. Introduction

This report documents the findings of a Health Impact Assessment (HIA) examining the impacts of estate renewal and the rehousing of public housing residents on their health, particularly chronic disease, wellbeing and quality of life, with the aim of developing some tentative best practice guidelines. In this introduction section, we set the scene for the HIA by discussing the potential health impacts of housing and neighbourhood quality. We also discuss the redevelopment of public housing estates and the rehousing process and its implementation in South Western Sydney.

2.1 Housing, the Built Environment and Health

The relationship between housing and health has been well known for many years (1-5). As described by the UC Berkeley Health Impact Group (3), the complex pathways between housing and health exist at the microenvironmental (housing), macroenvironmental (neighbourhood) and social levels. The microenvironmental level considers the association between the design and maintenance of housing and the corresponding health impacts (3). Research has found that poor housing conditions and inadequate basic utilities such as safe drinking water, sewerage systems and facilities for cooking and washing may be associated with negative health outcomes (1, 2, 6-8). Housing quality is also important, as poorly designed or maintained housing may relate to an increase in injury and death from falls, drowning or fire (3, 48).

The macroenvironmental (neighbourhood) and social levels consider the impacts of the built environment on physical and mental health outcomes. Previous research has found that living in disadvantaged areas may be associated with negative health impacts, including poor birth outcomes and delayed childhood development and increased rates of infectious diseases, chronic disease, mental health conditions and accidents and injuries (3, 49, 50). Disadvantaged neighbourhoods may lack access to open spaces, infrastructure for recreation and healthy food outlets, thereby discouraging physical activity and a healthy diet and resulting in increased risk of chronic disease, overweight and obesity and mental health disorders (3, 4, 10, 11). Additionally, people living in disadvantaged neighbourhoods may be exposed to a greater level of environmental hazards, including air pollution from traffic and building works. These exposures may be associated with increased risk of morbidity and mortality from chronic diseases such as cardiovascular and respiratory disease (3, 51). Poor access to social and health care services may be evident in disadvantaged communities, further contributing to the burden of ill health experienced by residents (4, 12).

2.2 Public Housing and Health

Disadvantaged neighbourhoods often consist of concentrations of poor quality social housing (13). In NSW, the social housing system provides products and services to families in need (30). The Department of Family and Community Services (FACS) is the primary administrator of the NSW social housing system. Social housing is delivered by the following sectors: (a) The NSW Land and Housing Corporation (LAHC), which own 130,000 properties (often referred
to as ‘public housing’), with 120,000 dwellings directly managed by Housing NSW; (b) Community housing providers which own 6,000 dwellings but manage 27,000 properties; (c) the Aboriginal Housing Office (AHO) which owns 5,000 dwellings that are managed by the LALC; and (d) Aboriginal community housing providers which own and manage 5,000 dwellings (30). This HIA report refers only to ‘public housing’ dwellings owned by the LAHC, with tenancy management provided by Housing NSW.

The poor health status of public housing tenants has been well established, with previous research demonstrating increased rates of infectious diseases, chronic illness, injury, mental health disorders, delayed childhood development, inadequate nutrition and poor oral health when compared to the general population (1, 52-54). Many public housing communities have poor social and built environment conditions, further compounding this burden of illness and disparity. Poor social and economic outcomes for public housing tenants are evident across a range of areas including low educational attainment and high rates of unemployment, poverty, welfare dependence, crime, alcohol and substance abuse and social dysfunction (3, 24, 30, 55). The level and scale of disadvantage and vulnerability may be short-term, however too often it becomes entrenched and intergenerational (30).

### 2.3 Estate Renewal Programs and the Relocation of Public Housing Tenants

Many housing authorities have implemented large-scale renewal programs in an effort to address the physical and social disadvantage of public housing estates as well as deal with aged and substandard public housing stock (3, 14, 15). A number of these programs are underway in South Western Sydney, including the Bonnyrigg Living Communities Project, the Minto Renewal Project and the Airds Bradbury Renewal Project. The renewal process is expected to transform these public housing estates into sustainable mixed income communities, of which 30% will be public housing and 70% will be private housing (22, 28). These programs often require the relocation of large numbers of tenants in order to make public housing dwellings available for demolition and construction. This process may have positive or negative impacts on residents’ health and wellbeing (17).

#### 2.3.1 Estate Renewal, Rehousing and Health

Previous research from the United States of America (16, 19, 20) and United Kingdom (21-26) have demonstrated conflicting findings of the effect of estate redevelopment and rehousing programs on the health and wellbeing of affected public housing residents. A large-scale study ‘Moving to Opportunity’ examined the impacts of moving low-income families from high-poverty neighbourhoods to mixed-income communities. Over 4,000 low-income families were randomly allocated to one of three research groups: experimental, Section 8 or control. Residents in the experimental group received housing vouchers that were used to move to neighbourhoods with less than 10% poverty. They also received relocation assistance and counselling. Residents in the Section 8 group received vouchers that enabled them to move to a neighbourhood of their choice. Finally, the control group received no treatment (16). Follow up studies identified improvements to physical and mental health, with lower rates of obesity, diabetes, psychological distress and major depression identified in females in the experimental group when
compared to the control group. Despite these health benefits, no improvements in educational levels, employment or income were reported (16, 56).

In a longitudinal study of the health and wellbeing of residents in the Housing Opportunities for People Everywhere, or HOPE VI Program in San Francisco, researchers found short-term benefits of relocation, including reduced self-reported anxiety and depression in those residents who moved into private, mixed-income housing. However, no significant improvements in physical health were identified, with many residents reporting deterioration in their health over time. Major social concerns were also identified, including long delays associated with redevelopment and rehousing, the subsequent displacement of some populations and problems caused by moving disadvantaged families into mixed-income communities (3, 57-60).

Research on the health impacts of large-scale regeneration and relocation programs in the United Kingdom has also demonstrated conflicting findings (18, 34, 45). In Scotland’s Housing and Regeneration Project (SHARP), approximately 330 public housing tenants and families were followed over two years in an investigation of the health effects of major housing improvement (61). Researchers found that housing conditions improved for residents who were relocated, particularly in regard to housing maintenance. Reduced stress, improved perceptions of safety and security, increased pride and an increased sense of belonging and of community were reported for those residents who were relocated. Despite the likely health impacts of improved housing conditions and community cohesion, no marked changes in physical or mental health were reported (18-21, 62). A study of the Health Gain Project in the London Borough of Tower Hamlets examined the health impacts of moving public housing tenants into better quality housing or of improving the quality of their existing housing. Researchers found that redevelopment activities contributed to improved health outcomes for residents, particularly in regard to self-reported illness and visits to medical practitioners. However, some negative experiences were reported over the length of the project, including reduced access to health care services (45).

At a local level, similar findings were reported from a qualitative review of the Minto Renewal Project in South Western Sydney. This study found that children and adults who moved to areas of low public housing concentration reported improved psychosocial health outcomes. However, the uncertainty, delay and ongoing disruption caused by relocation was identified as a potential source of distress, injury and hardship, if appropriate services were not put in place (63).

**2.3.2 Estate Renewal, Rehousing and Housing Quality**

Estate redevelopment and renewal programs provide an opportunity to improve housing quality, which may contribute to increased satisfaction as well as improved physical and mental health outcomes for affected residents (17, 64). In the HOPE VI Panel Study in San Francisco, researchers found that dwellings were in poor condition prior to redevelopment, with problems such as leaking water and peeling paint (65). The number of housing problems
decreased for residents who moved from areas undergoing redevelopment and most considered their new housing to be of excellent or good quality. Residents reported that they had bigger properties, with additional space and bedrooms for children as well as fenced-in yards for privacy. They also reported that their new housing was quieter, most likely due to reduced housing density (59, 66). Similarly, in the ‘Moving to Opportunity’ study, residents in the experimental group (relocated to low poverty neighbourhoods) rated the external environments of their homes to be higher in quality than those in the control group (67).

In the SHARP study of redevelopment and rehousing in Scotland, many residents reported poor housing quality prior to relocation, with problems of dampness, heat, noise and a lack of space and privacy (18). The proportion of residents reporting problems with their housing was found to decrease significantly following relocation. Negative experiences generally related to a lack of privacy and problems of noise from other household members and neighbours (18-21, 34, 62). In a study of housing regeneration in Devonport, Plymouth, new housing was found to be of higher quality, more attractive and less crowded than previous housing. These housing improvements were linked to positive psychosocial health impacts for residents relocated as part of the regeneration of the estate (14).

More locally, tenants rehoused as part of The Parks Urban Regeneration Project in Adelaide, South Australia, identified improvements in the perceived quality of their housing. After relocation, almost 60% of tenants rated the quality of their housing to be improved or greatly improved, with corresponding improvements in their satisfaction with their new property (17). Similarly, in the study of residents relocated as part of the Minto Renewal Project in South Western Sydney, NSW, researchers reported that over half of residents were pleased with their move, with reasons that included having a larger or newer property (63).

### 2.3.3 Estate Renewal, Rehousing and Social Networks

Strong social networks have been shown to be important to the health and wellbeing of disadvantaged groups (36, 64). The practical help delivered by family, neighbours and friends can help to reduce the strain and stress of challenging situations as well as to directly support people in times of ill health. Strong social networks may also act to reduce social isolation (68).

Estate renewal and tenant relocation may have positive or negative impacts on social networks and community ties (17, 64). Rehousing tenants to a number of different locations may result in a loss of social networks (17, 69). Consequently, this may affect residents’ ability to access necessary supports and assistance (70). On the other hand, relocation programs may encourage tenants to establish new social and community networks, thereby improving access to resources, opportunities and services (64, 71). Where possible, Arthurson (72) argues that moving groups of residents together may act to preserve social and community cohesion, provided that strong social networks are in place.
2.4 Airds Bradbury Renewal Project and Tenant Relocations
The suburbs of Airds and Bradbury are located within the Campbelltown Local Government Area (LGA), approximately 2.5km southeast of Campbelltown Central Business District (CBD). The Airds Bradbury Renewal Area consists of the Airds public housing estate, as well as a cluster of public housing located in the adjoining suburb of Bradbury. The suburb of Airds is recognised as one of the most socially and economically disadvantaged areas in NSW (23). The LAHC own approximately 95% of existing housing in the estate. Like many public housing estates in NSW, Airds Bradbury was constructed using ‘back to front’ Radburn design principles, where dwellings face onto walkways, parks and other public spaces, with car access from rear laneways (24). The Radburn design has been shown to be unsuitable for public housing estates in Australia, due to problems with car access, safety in rear lanes and surveillance of open spaces (25, 26). In 2011, the area had a residential population of approximately 3,507 people (27). The demographic, social and health context of Airds Bradbury is further outlined in Section 4 of this report.

The Airds Bradbury Renewal Project involves the comprehensive regeneration of the Airds Bradbury public housing estate over the next 15-20 years. It is expected to transform the original 1500 public housing homes into a sustainable mixed-income community of over 2000 homes, of which 30% will be retained as public housing, while the remaining 70% will be sold to private owners (22). The LAHC are managing this project, in partnership with Housing NSW and Landcom (now UrbanGrowth NSW, the NSW Government’s property developer). An integrated master plan was developed and approved by the Minister for Planning in 2012. A Rehousing Plan has also been developed. In the future, the redevelopment may be delivered by a Public Private Partnership. This partnership includes all services required for the project, such as design, refurbishment, construction, maintenance, finance, sales and community engagement. In the case of a Public Private Partnership, tenancy management will be provided by a registered community housing provider (28).

Since 2011, public housing tenants have been relocated from the Airds Bradbury Renewal Area in order to enable demolition and construction work. These relocations will continue, precinct by precinct until 2015. Where possible, tenants are given the option to be relocated to a suitable renovated property in the estate or to be moved to a neighbourhood of their choice. They are also given the option of returning to the estate once the renewal project has been completed (29, 30). A Relocations Officer (employed by Housing NSW) works closely with tenants and assists them in their settlement to new housing. Considerable community engagement has also been maintained throughout the duration of the project and a number of projects implemented, including establishing a Men’s Shed and community garden as well as supporting and encouraging local volunteers through the Community Change Makers program (28).
3. Methods

In order to examine the health impacts of estate renewal and the relocation of public housing tenants in South Western Sydney, we conducted a Health Impact Assessment (HIA). HIA methodology has been described as “structured, solution-focused and action-oriented approach to maximising the positive and minimising the negative health impacts of new initiatives” (31, p.05). Using this approach, we considered how estate renewal and the relocation of public housing tenants positively or negatively affected their health, particularly chronic disease and quality of life. We also considered the policies, guidelines and practices that supported the rehousing process. The Airds Bradbury Renewal Project and the associated relocation of public housing residents was used as a case study example.

We used the following quantitative and qualitative research methods: (a) analysis of health and social data from Airds Bradbury and surrounding areas; (b) in-depth interviews with employees from Health and Housing organisations in South Western Sydney; and (c) in-depth interviews with current and past residents of the Airds Bradbury public housing estate. Through the HIA, we attempted to identify and prioritise key issues and concerns for service employees and residents. In completing this HIA, we adhered to practical HIA guidelines as reported by Harris and colleagues (31).

3.1 Partnerships

This HIA was supported by the South Western Sydney Housing and Health Partnership, a collaboration between the Greater Western Division of Housing NSW, South Western Sydney Local Health District (LHD) and the Centre for Health Equity Training, Research and Evaluation (CHETRE), a division of The University of NSW (73). The project team was comprised of professionals working in Population Health, South Western Sydney LHD, NSW Land and Housing Corporation (LAHC), Housing NSW and CHETRE.

3.2 Funding

This HIA was funded by Population Health, Sydney and South Western Sydney LHD’s.

3.3 Health Impact Assessment Processes

The following section outlines the steps taken to complete this HIA.

3.3.1 Screening

Screening is the initial step where it is determined whether a HIA is appropriate or required (31). In this phase, we identified that estate renewal and the relocation of public housing tenants was a timely issue for Housing and Health organisations in South Western Sydney. The impact of housing on health is well known (1) and as public housing residents are disadvantaged and vulnerable, there was a potential impact on health equity (27). Additionally, we felt there was a need for health-based evidence to influence future estate renewal and rehousing programs in NSW.
3.3.2 Scoping

The scoping phase involves planning and designing the HIA as well as considering how findings will be reported (31). It was decided that an intermediate HIA would be conducted, focusing on estate renewal and public housing relocation in South Western Sydney, using the Airds Bradbury Renewal Project as a case study example.

3.3.3 Identification

The identification stage of the HIA involves developing a community profile as well as collecting information to identify potential health impacts of a proposal or program (31). At this point, we compiled evidence from scientific literature, with a particular focus on the links between housing, estate renewal and redevelopment and rehousing on health, particularly chronic disease, and quality of life. Additionally, we considered the impact of the built environment on health as well as access to social and health care services in disadvantaged communities. A summary of this review is presented in Section 2 of this report. Additionally, we completed a health and social profile of the population in Airds Bradbury and surrounding areas in order to identify potential health impacts of the renewal and relocation process. This profile is presented in Section 4.

The final component of the Identification stage involved collecting qualitative data from in-depth interviews with public housing residents as well as with employees from local housing and health organisations in South Western Sydney. Approval to complete this component of the project was provided by the South Western Sydney Local Health District Human Research Ethics Committee. Informed consent was gained prior to the commencement of interviews. Two rounds of in-depth interviews were completed. The project coordinator [BC] completed all interviews. The first round of interviews focused on employees from Housing and Health organisations in South-Western Sydney, who were selected based on their expertise and involvement in service delivery in the local area. These informants were contacted through local networks. Interviews lasted 60 to 90 minutes and were completed in person with informants at their workplace, from February to April 2013.

The second round of interviews focused on residents involved in the Airds Bradbury housing relocations. Staff from the local Housing authority mailed letters and pamphlets to current and past residents of the estate, informing them of the research study and providing the opportunity to volunteer for in-depth interviews. Twenty-five residents volunteered to participate in the study by contacting the project coordinator, the first 20 of whom were selected. Residents were given an A$50 supermarket voucher for their time and participation. Interviews were completed with residents at the local community centre or their place of residence during April and May 2013. The following interviews were completed with residents, based on their stage of relocation:

- Four interviews with residents who were waiting to relocate from Airds Bradbury;
- Six interviews with residents who were relocated to a renovated property in Airds Bradbury; and
- Ten interviews with residents who were relocated to a new or renovated property outside of the estate, either to a neighbouring suburb in Campbelltown LGA or to another area.
Semi-structured interview guides (Appendix A) were developed for residents and Health and Housing informants based on previous research of public housing estate redevelopment and relocation programs (3, 14, 16-18, 34, 74). Interviews were recorded with a digital voice recorder and transcribed verbatim. Systematic coding of all data was undertaken at the completion of each interview. A series of themes emerged through a process of open and axial coding (32). The project coordinator completed coding, while two members of the project team [PS and VR] reviewed six transcripts in order to confirm and refine emergent themes. Computer aided qualitative data analysis software NVivo10 (75) was used as a data management system.

During interviewing and coding, it seemed that the messages being received from residents and service employees were similar. As a result, we felt that it was appropriate to analyse and report the findings from these groups together. Where differences between the groups were identified, they have been discussed. A flowchart demonstrating identified themes and subthemes is provided in Appendix B.

3.3.4 Assessment
In the Assessment stage, we synthesised and critically assessed the information collected from the literature review, the health and social profile and the qualitative interviews, in order to prioritise potential health impacts. Initial recommendations were formed to enhance positive health impacts and minimise negative health impacts (31). Eleven broad recommendations are listed in Section 13 of this report.

3.3.5 Decision-Making and Recommendations
Eleven action-orientated recommendations were developed based on:
- Information collected during the HIA;
- Consideration of the organisations who will act on the recommendations; and
- Consideration of potential enablers and barriers to implementation (31).

The final report will be distributed to relevant stakeholders from local Housing and Health authorities.

3.3.6 Evaluation and Follow-Up
This stage involves monitoring the outcomes of decisions and recommendations made during the HIA. In general, there are two elements to the Evaluation stage. Firstly, process evaluation looks at how the HIA was conducted. Secondly, impact evaluation looks at the changes that were implemented as a result of the HIA (31). A detailed evaluation plan is beyond the scope of this HIA report.
4. Current Health and Neighbourhood Conditions

<table>
<thead>
<tr>
<th>HIA Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What is the demographic and social context of Airds Bradbury and surrounding areas in South Western Sydney?</td>
</tr>
<tr>
<td>2. What are the health issues and risk factors for public housing residents in Airds Bradbury compared to surrounding areas in South Western Sydney?</td>
</tr>
</tbody>
</table>

4.1 Background

In this section, we present the health, demographic and social context of the Airds Bradbury Renewal Area and surrounding suburbs in South Western Sydney. This profile was completed using secondary (existing) data on a range of indicators that relate to the context of public housing relocation projects and possible impacts on health, particularly chronic disease and wellbeing. Data sources include the Australian Bureau of Statistics (ABS) Census of Population and Housing, the NSW Admitted Patient Data Collection and the NSW Population Health Survey. We have presented data at a Local Government Area (LGA) level and where possible, data specific to the Airds Bradbury Renewal Area has been provided. It is important to note that for many health indicators, the health issues for public housing residents living in the Airds Bradbury Renewal Area are significantly greater when compared to the neighbouring suburb of Bradbury as well as other areas in Campbelltown LGA.

4.2 Geography: Airds Bradbury

Airds Bradbury is comprised of two suburbs, Airds and Bradbury, located within Campbelltown LGA. Airds is located 54 km southwest of the Sydney Central Business District (CBD). It is bounded by Georges River Road to the north, the Georges River to the east, St Helens Park to the south and Dorchester Park to the west. The suburb of Bradbury borders Airds to the west. It is located 54km south west of the Sydney CBD and is also part of the Campbelltown LGA. Bradbury is bordered by St Johns Road, St Patricks College and Hoddle Avenue to the north, the linear parkland to the east, Woodland Road to the south and Appin Road to the west (25).

4.3 Geography: Airds Bradbury Renewal Area

The Airds Bradbury Renewal Area is bounded by Georges River Road to the north, St Johns Road to the west, Greengate Road to the south and the Georges River Parkway Reserve to the east (Figure 1). The area predominantly includes public housing in Airds (1450 dwellings) as well as a small cluster of public housing in Bradbury (90 dwellings). This area also includes a range of public infrastructure including community facilities, schools, parklands and private services (such as a local shopping centre, licensed hotel and a petrol station).
4.4 Population Structure

The age-distribution of residents in the suburb of Airds is provided in Figure 2. The age-distribution of residents in NSW has been provided for comparison. It is important to note that the age-distribution of residents in the public housing section of Bradbury is similar to Airds; however the substantially larger number of private houses in Bradbury influences the results at a suburb level.

Airds has a much younger population than NSW, with 40% of residents aged less than 20 years. In comparison, most residents in NSW are between 30 and 60 years of age.
4.5 Social Determinants of Health

The ABS Socio-economic Indexes for Areas (SEIFA) score is used to rank geographic areas in Australia according to their socio-economic characteristics (23). The Index of Relative Socio-economic Disadvantage (IRSD) is a measure of relative disadvantage, summarising the economic and social resources of people and households within a defined geographical area. A lower score on the index is interpreted as a higher level of disadvantage. Conversely, a higher score on the index is interpreted as a lower level of disadvantage (23).

There are varying levels of disadvantage within the Campbelltown LGA. Using the 2011 Census of Population and Housing (27), Airds is ranked as the second most disadvantaged suburb in the LGA and the seventh most disadvantaged suburb in NSW. The IRSD score for Airds is 565.1 compared to 962.7 for Bradbury, 944.8 for Campbelltown City, 1011.3 for Greater Sydney, 995.8 for NSW and 1000 for Australia.

4.6 Demographic Characteristics

Demographic characteristics of the community in Airds are presented in Table 2. These characteristics include culture and language diversity, marital status and family composition. Demographic characteristics of Bradbury, Campbelltown LGA and NSW have been provided for comparison. Again, the demographic characteristics of
residents living in public housing in Bradbury are likely to be fairly similar to Airds; however the characteristics at a suburb level are influenced by the large number of private houses in the rest of the suburb.

Compared to Bradbury, Campbelltown LGA and NSW, the suburb of Airds has a much higher proportion of Aboriginal and Torres Strait Islander people (15% for Airds compared to 2.5% for NSW). There are also slightly more females than males in Airds, when compared to the other areas. Three quarters of the population of Airds identified Australia as their country of birth. English is the dominant language spoken in Airds, followed by Samoan, Arabic and Spanish. The proportion of residents of Airds that reported being married was under half that of Bradbury, Campbelltown LGA and NSW. Additionally, the proportion of one-parent families reported for Airds was double that of Bradbury, Campbelltown LGA and over three times that of NSW.

Table 2: Population and Demographic Characteristics of Airds, Bradbury, Campbelltown LGA and NSW, 2011

<table>
<thead>
<tr>
<th>People Characteristics</th>
<th>Airds</th>
<th>Bradbury</th>
<th>Campbelltown</th>
<th>NSW</th>
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<tbody>
<tr>
<td>Total population</td>
<td>3,507</td>
<td>8,738</td>
<td>--</td>
<td>6,917,658</td>
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<tr>
<td>Male</td>
<td>1,584</td>
<td>4,243</td>
<td>71,339</td>
<td>3,408,878</td>
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<td>1,923</td>
<td>4,495</td>
<td>74,628</td>
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<td>Aboriginal and Torres Strait Islander people</td>
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<td>250</td>
<td>4,728</td>
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<td>228</td>
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<td>Samoa</td>
<td>93</td>
<td>105</td>
<td>2,552</td>
<td>184,251</td>
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<th>Campbelltown</th>
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<tr>
<td>Married</td>
<td>576</td>
<td>3,280</td>
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<td>Divorced or separated</td>
<td>427</td>
<td>871</td>
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<td>Widowed</td>
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<td>5,197</td>
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<td>Never married</td>
<td>1,340</td>
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<th>Family composition</th>
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<th>Campbelltown</th>
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<tr>
<td>Couple family without children</td>
<td>108</td>
<td>816</td>
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<tr>
<td>Couple family with children</td>
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<td>One parent family</td>
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<td>513</td>
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<td>Other family</td>
<td>17</td>
<td>34</td>
<td>620</td>
<td>30,780</td>
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<th>Single (or lone) parents</th>
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<th>Campbelltown</th>
<th>NSW</th>
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<tr>
<td>Proportion of the total single parent population</td>
<td>Female</td>
<td>-- 87.4</td>
<td>-- 83.9</td>
<td>-- 84.5</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>-- 12.6</td>
<td>-- 16.1</td>
<td>-- 15.5</td>
</tr>
</tbody>
</table>

4.7 Education and Employment Characteristics

The education and employment characteristics of residents in Airds are shown in Table 3. Data from Bradbury, Campbelltown LGA and NSW have been included for comparison.

The proportion of people attending primary and secondary school in Airds was similar to the other areas; however attendance at technical or tertiary institutions was considerably lower. The most common non-school qualification in Airds was at the diploma or certificate level. A higher proportion of unemployed people were reported in Airds compared to the other areas. The median weekly income of people in Airds ranged from A$310 for personal income to A$544 for a household. This is more than 50% lower than the average weekly income for Bradbury, Campbelltown and NSW. Almost 50% of households in Airds earn less than A$600 week and live below a recognised Australian poverty line (33). This is more than double that of Bradbury, Campbelltown and NSW and is reflective of the financial and social disadvantage present in Airds. Traveling to work by car, as a driver, was slightly lower in Airds than in Bradbury, Campbelltown and NSW; however travelling in a car as a passenger was higher. The proportion of people catching public transport and walking to work was similar in Airds when compared to Bradbury, Campbelltown and NSW.

4.8 Household and Housing Characteristics

Household and housing characteristics of residents in Airds are provided in Table 4, with comparison to Bradbury, Campbelltown LGA and NSW. Characteristics include dwelling type and structure, tenure, household composition and number of motor vehicles.

Almost all of the dwellings in Airds are rented from a state housing authority. This is around three times higher than in Bradbury and Campbelltown LGA and almost seven times higher than for NSW. The most common dwelling type in Airds was a separate house, occupied by a family. The median weekly rent payment of A$144 is less than half the amount for NSW and is reflective of the large number of public housing dwellings. Around 28% of residents reported that they did not own a motor vehicle.
Table 3: Education and Employment Characteristics of Airds, Bradbury, Campbelltown LGA and NSW, 2011

<table>
<thead>
<tr>
<th>Population Characteristics</th>
<th>Airds</th>
<th>Bradbury</th>
<th>Campbelltown</th>
<th>NSW</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Education</strong></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Attending educational institution</td>
<td>1,362</td>
<td>2.6%</td>
<td>2,651</td>
<td>5.3%</td>
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<tr>
<td>Primary school</td>
<td>389</td>
<td>7.7%</td>
<td>743</td>
<td>15.5%</td>
</tr>
<tr>
<td>Secondary school</td>
<td>365</td>
<td>7.2%</td>
<td>603</td>
<td>12.4%</td>
</tr>
<tr>
<td>Technical or tertiary institution</td>
<td>134</td>
<td>2.7%</td>
<td>412</td>
<td>8.5%</td>
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</table>

<table>
<thead>
<tr>
<th><strong>Level of Educational Attainment: Non-School Qualification</strong></th>
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</thead>
<tbody>
<tr>
<td>Postgraduate degree or Graduate Diploma</td>
</tr>
<tr>
<td>Bachelor degree level</td>
</tr>
<tr>
<td>Diploma or Certificate level</td>
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</table>

<table>
<thead>
<tr>
<th><strong>Employment</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Employed full time</td>
</tr>
<tr>
<td>Employed part time</td>
</tr>
<tr>
<td>Away from work</td>
</tr>
<tr>
<td>Unemployed</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th><strong>Occupation</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Labourers (including machinery operators and drivers)</td>
</tr>
<tr>
<td>Community and Personal Service Workers</td>
</tr>
<tr>
<td>Technicians and Trades Workers</td>
</tr>
<tr>
<td>Clerical and Administrative Workers</td>
</tr>
<tr>
<td>Professionals and Managers</td>
</tr>
<tr>
<td>Sales Workers</td>
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</table>

<table>
<thead>
<tr>
<th><strong>Median Weekly Income</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal income $/week</td>
</tr>
<tr>
<td>Household $/week</td>
</tr>
<tr>
<td>Family with incomes less than $600/week</td>
</tr>
<tr>
<td>Family with incomes more than $2000/week</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Travel to work</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Car, as driver</td>
</tr>
<tr>
<td>Car, as passenger</td>
</tr>
<tr>
<td>Public transport</td>
</tr>
<tr>
<td>Walked only</td>
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### Table 4: Family and Housing Characteristics of Airds, Bradbury, Campbelltown LGA and NSW, 2011

<table>
<thead>
<tr>
<th>Housing Characteristics</th>
<th>Airds</th>
<th></th>
<th>Bradbury</th>
<th>n</th>
<th></th>
<th>Campbelltown</th>
<th>n</th>
<th></th>
<th>NSW</th>
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<tbody>
<tr>
<td>Dwellings Structure</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Separate House</td>
<td>775</td>
<td>69.1</td>
<td>2,597</td>
<td>87.4</td>
<td>38,052</td>
<td>80.5</td>
<td>1,717,699</td>
<td>69.5</td>
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<td></td>
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<tr>
<td>Semi-detached, townhouse</td>
<td>292</td>
<td>26.0</td>
<td>313</td>
<td>10.5</td>
<td>7,285</td>
<td>15.4</td>
<td>263,923</td>
<td>10.7</td>
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</tr>
<tr>
<td>Flat, unit or apartment</td>
<td>49</td>
<td>4.4</td>
<td>60</td>
<td>2.0</td>
<td>1,786</td>
<td>3.8</td>
<td>465,189</td>
<td>18.8</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Tenure Type</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Owned outright</td>
<td>29</td>
<td>2.7</td>
<td>899</td>
<td>30.3</td>
<td>11,435</td>
<td>24.2</td>
<td>820,006</td>
<td>33.2</td>
<td></td>
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</tr>
<tr>
<td>Owned with a mortgage</td>
<td>29</td>
<td>2.7</td>
<td>1,247</td>
<td>42.0</td>
<td>19,994</td>
<td>42.3</td>
<td>824,292</td>
<td>33.4</td>
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<tr>
<td>Rented</td>
<td>1,010</td>
<td>92.7</td>
<td>742</td>
<td>25.0</td>
<td>14,373</td>
<td>30.4</td>
<td>743,051</td>
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<td>Rental Tenure Type</td>
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<td></td>
</tr>
<tr>
<td>Real estate agent</td>
<td>17</td>
<td>1.7</td>
<td>381</td>
<td>51.3</td>
<td>6,491</td>
<td>45.2</td>
<td>430,135</td>
<td>57.9</td>
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<tr>
<td>State or territory housing authority</td>
<td>965</td>
<td>96.4</td>
<td>184</td>
<td>24.8</td>
<td>5,274</td>
<td>36.7</td>
<td>108,839</td>
<td>14.6</td>
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<tr>
<td>Housing cooperative/community group</td>
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<td>0.1</td>
<td>8</td>
<td>1.1</td>
<td>263</td>
<td>1.8</td>
<td>17,199</td>
<td>2.3</td>
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<td>Mortgage repayments</td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Median monthly mortgage repayments</td>
<td>$1,213</td>
<td></td>
<td>$1,733</td>
<td></td>
<td>$1,800</td>
<td></td>
<td>$1,993</td>
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<tr>
<td>Households where mortgage payments are less than 30% of household income</td>
<td>--</td>
<td>99.3</td>
<td>--</td>
<td>88.1</td>
<td>--</td>
<td>86.9</td>
<td>--</td>
<td>86.9</td>
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<td></td>
<td></td>
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<tr>
<td>Households where mortgage payments are 30%, or greater than household income</td>
<td>--</td>
<td>0.7</td>
<td>--</td>
<td>11.9</td>
<td>--</td>
<td>13.1</td>
<td>--</td>
<td>13.1</td>
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<tr>
<td>Rent Payments</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Median weekly rent payments</td>
<td>$144</td>
<td></td>
<td>$277</td>
<td></td>
<td>$260</td>
<td></td>
<td>$300</td>
<td></td>
<td></td>
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<tr>
<td>Households where rent payments are less than 30% of household income</td>
<td>--</td>
<td>74.4</td>
<td>--</td>
<td>91.5</td>
<td>--</td>
<td>89.4</td>
<td>--</td>
<td>88.4</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Households where rent payments are 30%, or greater, of household income</td>
<td>--</td>
<td>25.6</td>
<td>--</td>
<td>8.5</td>
<td>--</td>
<td>10.6</td>
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<td>11.6</td>
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<tr>
<td>Number of Motor Vehicles</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>None</td>
<td>318</td>
<td>28.4</td>
<td>242</td>
<td>8.2</td>
<td>4,437</td>
<td>9.4</td>
<td>258,153</td>
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<td>1 motor vehicle</td>
<td>485</td>
<td>43.3</td>
<td>1,172</td>
<td>39.5</td>
<td>17,545</td>
<td>37.1</td>
<td>933,953</td>
<td>37.8</td>
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<tr>
<td>2 motor vehicles</td>
<td>180</td>
<td>16.1</td>
<td>1,069</td>
<td>36.0</td>
<td>15,890</td>
<td>33.6</td>
<td>840,655</td>
<td>34.0</td>
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<tr>
<td>3 motor vehicles</td>
<td>67</td>
<td>6.0</td>
<td>401</td>
<td>13.5</td>
<td>7,829</td>
<td>16.6</td>
<td>360,074</td>
<td>14.6</td>
<td></td>
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</tr>
</tbody>
</table>


### 4.9 Hospitalisations

The most common causes of hospitalisation for residents in the Airds Bradbury Renewal Area during the period 2002 to 2011 are presented in Figure 3. Hospitalisation rates are an indication of the incidence of acute illness and conditions that require hospital care (76).

The main cause of hospitalisation for males in the Airds Bradbury Renewal Area from 2002 to 2011 was dialysis (27%). Many of these hospitalisations are likely to be repeat admissions, as some people may be admitted to hospital on a frequent basis for dialysis. For females, the main cause of hospitalisation was childbirth related (19%). This may be due to the high proportion of young people aged less than 25 years in the Airds Bradbury Renewal Area. The main causes of hospitalisation for chronic disease related illness were diabetes, acute respiratory conditions and chronic obstructive pulmonary disease (COPD). Hospitalisations for mental illness were also evident for males and females.
Hospitalisations by category of cause for male and female residents in the Airds Bradbury Renewal Area, compared to populations of Campbelltown LGA and NSW, are presented in Appendix C. For males, hospital admissions were significantly higher for dialysis, injury and poisoning, other factors influencing health, respiratory diseases, symptoms and abnormal findings, cardiovascular diseases, mental disorders, nervous and skin disorders, musculoskeletal diseases, skin diseases, infectious diseases, endocrine diseases and blood and immune diseases in Airds Bradbury when compared to Campbelltown LGA and NSW. Similarly, hospitalisations for diabetes, acute respiratory conditions, and chronic obstructive pulmonary disease (COPD) were also significantly greater in Airds Bradbury.
For females, hospital admissions for maternal, neonatal and congenital causes, respiratory diseases, symptoms and abnormal findings, injury and poisoning, cardiovascular diseases, mental disorders, skin diseases and endocrine diseases were significantly greater for residents in Airds Bradbury when compared to Campbelltown LGA and the general population of NSW. Similarly, hospitalisations for diabetes, acute respiratory conditions and COPD were greater for residents in Airds Bradbury than Campbelltown LGA and NSW.

### 4.10 Potentially Preventable Hospitalisations

Potentially preventable hospital admissions are admissions that may have been avoided by providing timely and effective preventative care or early medical treatment in primary health-care settings. These conditions are considered to be reflective of the availability, timeliness and adequacy of primary health care (77). Causes of potentially preventable hospital admissions for males and females in the Airds Bradbury Renewal Area are presented in Figure 4 below. The most common preventable condition for males was diabetes complications and for females it was chronic obstructive pulmonary disease (COPD). Other common chronic health conditions for males and females were asthma and congestive heart failure.

The potentially preventable hospitalisations for convulsions and epilepsy, ear, nose and throat infections, cellulitis, dental conditions, angina, perforated / bleeding ulcer and other vaccine preventable conditions were all significantly higher for male residents in Airds Bradbury when compared to Campbelltown LGA and NSW. For females, potentially preventable hospital admissions for asthma, ear, nose and throat infections, urinary tract infections, cellulitis, convulsions and epilepsy, congestive heart failure and angina were significantly higher for residents in Airds Bradbury. Additionally, potentially preventable hospital admissions for chronic conditions including diabetes complications and chronic obstructive pulmonary disease (COPD) were significantly higher for males and females in the Airds Bradbury Renewal Area compared to populations of Campbelltown LGA and NSW. Potentially preventable hospitalisations by category of cause and place of residence are presented in Appendix D.
Figure 4: Proportion of Potentially Preventable Hospitalisations by Cause and Gender, Airds Bradbury Renewal Area, 2002 to 2011

Source: NSW Admitted Patient Data Collection (SAPhARI), Centre for Epidemiology and Evidence, NSW Ministry of Health.
4.11 Chronic Disease Risk Factors

Information on the chronic disease risk factors (health behaviours) of residents (adults 16 years and over) in Campbelltown LGA is presented in Figure 5. Information for the Airds Bradbury Renewal Area is not available for these indicators. Data from NSW has been provided for comparison. For all risk factors, the issues for residents in Airds Bradbury are likely to be significantly greater than for Campbelltown LGA.

Over the period 2008 to 2010, self-reported rates of smoking were higher in Campbelltown LGA, as 22% of respondents reported smoking daily, compared to 13% for NSW. Additionally, the prevalence of current smoking, defined as smoking daily or smoking on some days, was higher in Campbelltown LGA than in NSW (25% for Campbelltown compared to 17% for NSW). The number of people reporting adequate levels of physical activity and consumption of the recommended serves of vegetables per day were both lower in Campbelltown LGA when compared to data from NSW. Almost 62% of people in Campbelltown LGA reported that they were overweight or obese, compared to 53% for NSW.

Figure 5: Chronic Disease Risk Factors for Campbelltown LGA and NSW, by Gender, 2008-2010

Source: NSW Population Health Survey (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.
4.12 Health Service Use and Access

Information on health service use and access for residents (adults aged 16 years and over) in Campbelltown LGA is provided below (Figure 6). Information for the Airds Bradbury Renewal Area is not available for this indicator. Data from NSW has been provided for comparison. It is important to note that the issues for residents in Airds Bradbury are likely to be significantly greater than for Campbelltown LGA.

Over the period 2008 to 2010, almost 92% of people reported that they had visited a general practitioner in the last 12 months, a rate that was slightly higher than for the NSW population. However, only 51% reported that they had visited a dental professional in the last 12 months, with only 7% reporting attendance at a public dental service. Additionally, 9% of people reported difficulties accessing medical care. This included access and waiting times to see a General Practitioner, the number of bulk-billing General Practitioners in the area, access and waiting times to see a specialist, quality of medical care, waiting times for elective surgery, cost of health care services and emergency department waiting times. This 9% of people who reported difficulty accessing medical care in Campbelltown was lower than the 18% reported for NSW.

Figure 6: Health Service Use and Access for Campbelltown LGA and NSW, by Gender, 2008-2010

| Health Service Use and Access                                      | Campbelltown LGA | NSW  
|-------------------------------------------------------------------|------------------|----- 
| Visited a general practitioner in the last 12 months             | 91.9             | 89.2 
| Visited a dentist in the last 12 months                          | 51.3             | 58.9 
| Attended a public dental service in the last 12 months           | 6.7              | 5.8  
| Difficulties accessing health care when needing it               | 9.3              | 17.9 

Source: NSW Population Health Survey. Centre for Epidemiology and Evidence, NSW Ministry of Health.
4.13 Social Factors and Community Connectedness

Information on social and community connectedness for residents (adults aged 16 years and over) in Campbelltown LGA is provided below (Figure 7). Information for the Airds Bradbury Renewal Area is not available for these indicators. Data from NSW has been provided for comparison. Again, the issues for residents in Airds Bradbury are likely to be significantly greater than for Campbelltown LGA.

Over the period 2008 and 2009, the perception of safety and trust in the community and neighbourhood was approximately 20% lower for Campbelltown LGA than NSW, as fewer people felt that the neighbourhood had a reputation for being a safe place and that most people could be trusted. However, more positively, 52% of people reported that they could ask neighbours for help and 58% had visited neighbours in the past week. Additionally, more than three quarters (81%) of people in Campbelltown LGA reported that they ran into friends and acquaintances when shopping in the local area and 65% would feel sad to leave their neighbourhood.

Figure 7: Social and Community Factors for Campbelltown LGA and NSW, by Gender, 2008 - 2009
4.14 Death Rates and Causes of Deaths

Causes of death for the period 2003 to 2007 for Campbelltown LGA are presented in Figure 8. This data reflects the quality of population health strategies and health service delivery, as well as broader issues such as social cohesion, socioeconomic factors and behavioural risk and protective factors (77). Death data was not available for the Airds Bradbury Renewal Area specifically, and Campbelltown LGA has been used instead. Again, it is important to note that the health issues for residents in Airds Bradbury are likely to be significantly greater than for Campbelltown LGA.

In the period 2003 to 2007, the leading causes of death for people in Campbelltown LGA were cardiovascular disease (32% for males and 35% for females), malignant neoplasms (cancer) (31% for males and 29% for females) and respiratory diseases (8% for males and almost 10% for females). Males experienced a higher proportion of death due to injury and poisoning (10%) when compared to almost 4% for females.

Figure 8: Proportion of Deaths for Campbelltown LGA, by Cause and Gender, 2003 to 2007

Source: ABS mortality data (SAPhARi). Centre for Epidemiology and Evidence, NSW Ministry of Health
Standardised mortality ratios (SMRs) by cause of death for Campbelltown LGA are shown in Appendix E. For males, there were no categories of cause that were significantly greater or less in Campbelltown LGA than for the NSW population. For females, deaths from infectious diseases were significantly greater in Campbelltown LGA than in NSW. However, deaths from mental disorders and nervous and sense disorders were significantly lower for Campbelltown LGA than for NSW.

4.15 Conclusions

This demographic, social and health profile shows that Airds is one of the most socially and economically disadvantaged suburbs in NSW. Key characteristics of the suburb include low rates of educational attainment, high rates of unemployment and a high proportion of single parent families. The population in Airds is younger than surrounding areas, with 40% of residents aged less than 20 years. Almost 50% of households in Airds earn less than A$600 per week and live below a recognised Australian poverty line (33).

The health issues for residents in the Airds Bradbury Renewal Area are significantly greater when compared to surrounding areas as well as the population of NSW. Hospitalisations for dialysis, childbirth related conditions, injury and poisoning and digestive system diseases were considerably higher in the Airds Bradbury Renewal Area than in surrounding areas and NSW. High rates of chronic health conditions such as cardiovascular disease, diabetes, respiratory disease and cancer were also reported. Risk factors for chronic disease such as smoking, high-risk alcohol consumption, physical inactivity and insufficient consumption of fruit and vegetables were also higher in this area when compared to NSW. Leading causes of death for residents in Campbelltown LGA were cardiovascular disease, malignant neoplasms and respiratory diseases. Females in Campbelltown LGA experienced a significantly higher proportion of death due to infectious diseases when compared to the population of NSW.
5. Housing and Health Policies and Guidelines

<table>
<thead>
<tr>
<th>HIA Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What policies and guidelines have an impact on estate renewal programs in South Western Sydney?</td>
</tr>
<tr>
<td>2. What policies and guidelines support the relocation of public housing residents in South Western Sydney?</td>
</tr>
<tr>
<td>3. What policies and guidelines affect the provision of and access to health and chronic disease services for public housing residents in South Western Sydney?</td>
</tr>
</tbody>
</table>

5.1 Background

This section provides a review of the broad policy context impacting on public housing estate renewal programs, the process of housing relocation and the provision of health services, focusing specifically on chronic disease. The social, housing and health related policies that were most relevant to this HIA have been included in this review. National, state and local policies have been included.

5.2 Social Policies and Guidelines

The Draft Metropolitan Plan for Sydney 2036 (78) highlights the challenges facing Sydney over the next 25 years. It includes an expected population growth to six million people by 2036 and with it the need for 770,000 new homes. The South West Subregional Strategy (79) translates objectives from this plan to a local level and highlights urban development plans to support population growth. This strategy identifies the suburbs of Airds and Bradbury as an area for urban renewal (79).

At a local level, the Campbelltown City Council Revised Social Plan 2010-2012 (80) outlines the social objectives of Campbelltown City Council for the three-year period. The plan outlines major factors shaping social conditions in Campbelltown, including urban development and renewal, migration in and out of the LGA, a changing age structure with a rapidly ageing population, poverty and disadvantage and leadership and participation. A number of strategies and action plans are identified in this plan including:

1. A Children’s Services Plan outlining proposed actions and responses to broad issues (e.g., early learning, early intervention, child protection) that are primarily managed by other agencies;
2. A Youth Strategy with identified priorities for action including developing programs that emphasise achievement and team work;
3. An Ageing Strategy highlighting the actions required to manage the impacts of an ageing population;
4. An Aboriginal Community Plan identifying how Campbelltown City Council will respond to Closing the Gap initiatives;
5. A Multicultural Action Plan identifying ways that Campbelltown City Council may work with local cultural groups;
6. A Women’s Strategy highlighting key issues such as uptake of pre- and post-natal services, reducing violence against women and encouraging female employment, education and recreational opportunities;
7. A Community Engagement Strategy outlining how existing activities may be integrated and developed;
8. A Community Resource Strategy highlighting strategies to provide leadership and support to community organisations; and
9. An Economic and Employment Strategy with initiatives to improve employment and economic growth in Campbelltown LGA.

It is anticipated that this plan will guide Campbelltown City Council to work with partner agencies to build on the strengths of the community and address those areas that require improvement (80).

5.3 Housing Policies and Guidelines
The Living Communities Initiative outlines the NSW Land and Housing Corporation’s (LAHCs) approach to improving public housing through community renewal and regeneration programs. This approach has been used with success in previous estate renewal projects in South Western Sydney (Bonnyrigg Living Communities Project and Minto Renewal Project). The initiative provides guidance for the Airds Bradbury Renewal Project (28). The aims of this approach are to:

- Improve local services and provide residents with more opportunities;
- Support the community to build on its strengths, skills and overall capacity; and
- Improve housing and public areas and achieve better integration of public and private housing within a mixed-income community.

These aims are supported by an approach that facilitates:

- The integration of social, economic and physical development activities with a common set of aims and objectives;
- A place-based approach;
- Strong community engagement and clear and transparent communication; and
- Strong partnerships between the community housing sector, local government, non-government organisations, private organisations and the local community.

Housing NSW’s Relocating Tenants for Management Purposes and Matching and Offering a Property to a Client policies (81) guide the processes of relocating public housing tenants in NSW. In line with these overarching policies, the Housing Relocation Team in Airds Bradbury developed the Airds Bradbury Renewal Project Guidelines for Relocating Tenants 2011-2013 (82). This guideline informs tenants of timeframes for relocation and outlines the steps taken to assess their housing needs and find a replacement home. It also covers rent and other costs, resident entitlements and responsibilities as well as the processes to appeal Housing NSW decisions. The guideline was developed to improve relocation processes and outcomes for public housing tenants (82).
5.4 Health Policies and Guidelines

The National Health Reform Agreement 2011 (83) is one of six National Agreements established by Commonwealth, State and Territory governments. This agreement outlines major reforms to deliver a nationally unified and locally controlled health system. The reform aims to improve population health outcomes and ensure the sustainability of the Australian health care system. More specifically, the reforms provide for increased Commonwealth funding in order to develop a stronger financial basis for the health system. Additionally, local governance mechanisms including the Local Hospital Networks and Medicare Local primary health care organisations were established in order to improve accountability, transparency and responsiveness of services for local communities (83-85).

Primary health care was recognised as an integral component of the health system with resources directed towards primary prevention, reducing the need for hospital services and improving the management of chronic conditions, particularly for people who experience inequitable health outcomes (85). The National Primary Health Care Strategic Framework (85) was developed in April 2013, prioritising action across the following four strategic outcomes:

- Build an integrated and consumer-focused primary health care system;
- Improve accessibility and reduce inequity;
- Increase early intervention, health promotion and screening services; and
- Improve quality, safety, performance and accountability.

The National Chronic Disease Strategy (86) provides direction for improving chronic disease prevention and care at a national level. Key areas of focus include prevention, early detection and treatment, integration, continuity of prevention and care and self-management. Five supporting National Service Improvement Frameworks (87-91) focus on the priority chronic diseases of asthma; cancer; diabetes; heart, stroke and vascular disease; and osteoarthritis, rheumatoid arthritis and osteoporosis. The frameworks reflect the phases of the patient journey, including reducing risk, early diagnosis, managing acute conditions, long term care and management in the advanced stages of disease (86).

At a state level, the NSW 2021 plan (92) further identifies primary health care as a priority area in order to improve quality of life and manage increasing health costs. This focus on wellness and illness prevention includes targets to:

- Reduce rates of smoking, overweight and obesity and risky alcohol intake by establishing an Office of Preventative Health, delivering public education campaigns for smoking and risky drinking and investing in child and adult health promotion programs;
- Close the gap in Aboriginal infant mortality by delivering the Aboriginal Maternal and Infant Health Service to improve health outcomes for Aboriginal mothers and their babies;
- Improve outcomes in mental health by establishing a NSW Mental Health Commission and appointing a Mental Health Commissioner, enhancing discharge planning and preventing hospital admissions by maintaining hospital avoidance programs; and
• Reduce potentially preventable hospital admissions by delivering the **NSW Chronic Disease Management Program - Connecting Care in the Community** and developing, implementing and evaluating a **NSW Immunisation Campaign** (92).

The aim of the **NSW Chronic Disease Management Program - Connecting Care in the Community** (93) is to support people with chronic disease to better manage their conditions to improve their health, wellbeing and quality of life. It also aims to prevent complications associated with chronic disease and reduce the need for hospitalisation. The program connects the person and their carer with appropriate services so that they are better able to manage their symptoms, care needs and medications. It focuses on the major chronic diseases of diabetes, congestive heart failure, coronary artery disease, chronic obstructive pulmonary disease (COPD) and hypertension. People who are prioritised for enrolment into the program include Aboriginal people and frail elderly people as well as people who experience a disproportionate burden of chronic disease. Generally, this includes people from culturally and linguistically diverse (CALD) backgrounds and disadvantaged and minority groups, including public housing residents (93). This program is currently being implemented in South Western Sydney Local Health District (LHD), with outreach services provided from Liverpool and Campbelltown Hospitals. However, access to services remains an important factor for residents in South Western Sydney, as is continuity of care for residents relocated as part of the redevelopment of Airds Bradbury.

Finally, **Chronic Care for Aboriginal People** (94) programs and initiatives commenced in 2008, following on from the **Walgan Tily Redesign Project** (95). Eight fundamental elements (identification, trust, screening and assessment, clinical indicators, treatment, education, referral and follow-up) were identified to be essential to the Model of Care for working with chronic disease in Aboriginal communities. These programs and initiatives aim to prevent or limit the progression of chronic disease and improve access to affordable services for Aboriginal people. Additionally, they aim to address the cultural and environmental factors that influence health, reduce risk behaviours linked to the development or progression of chronic disease and improve the clinical care of an Aboriginal person with chronic disease (94). In South Western Sydney LHD, this program focuses on the follow up of Aboriginal people with chronic disease following discharge from hospital (**48 Hour Follow Up**). The objective of this initiative is to provide follow up within 48 hours or 2 working days of discharge from an acute hospital facility, thereby facilitating appropriate links to General Practitioners, Aboriginal Medical Services and other services that provide care post hospital discharge. It covers issues such as knowledge of and access to medications, arranging referrals and booking transport and general wellbeing and quality of life (94). At present, the program is provided only at Campbelltown Hospital. Access to these services therefore remains an important consideration, particularly for residents relocated outside of the Campbelltown LGA.
6. Qualitative Findings

In Section 7 through to Section 10 we present the findings from 34 in-depth interviews with employees from Health and Housing organisations in South Western Sydney as well as with residents at various stages of relocation as part of the Airds Bradbury Renewal Project. Our findings are presented in terms of the health impacts linked to:

- Individual responses to estate renewal and rehousing programs (Section 7);
- Housing and neighbourhood quality (Section 8);
- Social networks and community engagement (Section 9);
- Access to healthy foods and opportunities for physical activity (Section 10); and
- Access to programs and services (Section 11).
7. Health Impacts linked to Individual Responses to Estate Renewal and Relocation Programs

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<th>HIA Questions</th>
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<td>1. How do the processes of estate renewal and relocation impact on the health and wellbeing of public housing residents?</td>
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<tr>
<td>2. Do feelings of stress and anxiety differ for residents waiting to relocate, compared to those residents who are relocated within Airds Bradbury and those residents who are relocated to neighbouring suburbs or other areas?</td>
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7.1 Background

Previous research from the United States of America (16, 19, 20) and United Kingdom (21-26) has demonstrated conflicting findings of the health impacts of estate redevelopment and relocation programs. Findings from the ‘Moving to Opportunity’ study identified benefits to physical and mental health, with lower rates of chronic disease, psychological distress and major depression reported by those residents who were relocated from high-poverty areas to mixed-income communities. These residents also reported improvements in their perception of safety and security in their new neighbourhoods. However, no improvements in educational attainment, employment or income were reported (16, 56). Similarly, research from the Housing Opportunities for People Everywhere or HOPE VI Program in San Francisco found that improvements to housing and neighbourhood quality had a significant impact on mental health outcomes, with reduced anxiety and depression reported by female tenants who had been relocated. However, no significant improvements in physical health were identified. In fact, many residents reported that their health had deteriorated over time (57-60). Despite improved housing quality for tenants involved in Scotland’s Housing and Regeneration Project (SHARP), no significant changes to physical and mental health outcomes were reported. However, improved community cohesion and social functioning were identified for those tenants who were rehoused (18-21, 62).

Despite mixed health outcomes, research has consistently identified stress and anxiety as key factors affecting public housing tenants undergoing relocation (3, 16-18). Additionally, residents’ who move away from their homes may lose family and community relationships and feel isolated in their new community (96).

7.2 Themes

Respondents identified the following four themes and corresponding health impacts linked to resident responses to the processes of estate renewal and rehousing: (a) stress, delays and uncertainty; (b) opportunity and a chance to move; (c) resistance to relocation; and (d) resident participation and relationship with service providers. These themes are also shown in the flowchart in Appendix B.
7.2.1 Stress, Delays and Uncertainty

Informants from Housing and Health organisations consistently reported that tenants who are relocated as part of estate renewal programs are likely to feel stressed and anxious: “It seems to be always associated with stress, increased stress, no matter which way you look at it” (Informant, Housing Organisation). Inevitable delays and the uncertainty of relocation were identified as primary contributors to these feelings of stress. Some residents also commented that they felt vulnerable in that they were losing a sense of personal security that they had in their home and neighbourhood. Residents who had lived in the area for a considerable period of time and who had built strong social support networks most commonly reported this feeling of vulnerability. A resident who had lived in the estate for over 15 years before being relocated said:

One of the reasons I didn’t want to move was because there were too many memories there. There was friends who’d watched my back and I’d watch theirs and the house was always protected. Now I feel a bit vulnerable, because I don’t know the people in my new street. (Female resident, relocated away from the estate)

Many residents also reported feelings of stress and uncertainty about the timing and location of their move. These feelings seemed to be strongest for residents who were waiting to relocate. They often perceived that they had been forgotten and expressed worry and anxiety about potential delays to their move: One tenant said: “It’s the anxiety that’s getting to me...I signed a lifetime tenancy and I was guaranteed that I wouldn’t move... Initially it was supposed to be 2013, but now its 2014 and 2015, so it’s just sort of delayed again” (Female resident, waiting to relocate). When reflecting on the stress and delays leading up to his relocation, one tenant commented:

That was so stressful... Because so many times they’d say ‘oh, yeah soon, soon, soon’. Then you’d wait another six weeks. They’d say ‘oh yeah, it’s coming, it’s coming’. This went on for a year from the time we first found out that we were going to be relocated until we actually moved in. (Male resident, relocated away from the estate)

The relocation of public housing tenants has been found to be commonly associated with feelings of anxiety, stress, grief and loss, further contributing to hardship and inequity for already disadvantaged groups (14, 58, 97, 98).

7.2.2 Opportunity and a Chance to Move

For some residents, the stress and anxiety associated with relocation was softened by the benefits of moving to a new or better quality property or suburb. This was most common for residents who had relocated outside of Airds Bradbury, either to a neighbouring suburb or to another area. For these residents, the relocation process seemed to be associated with positive health impacts, in that they were given the opportunity to request a new or more suitable house and location:
We’re just so happy that we’ve got a really nice house, a comfortable house. We’re so happy for the kids – they’ve got somewhere clean to live and they have a better chance and better hope for the future. We couldn’t ask for anything more. (Female resident, relocated away from the estate)

For many residents, this involved moving to a mixed-income suburb, with improved neighbourhood facilities such as public transport links, useable green spaces and healthy food outlets. Some made use of these facilities, reporting improvements in their diet and levels of physical activity. Additionally, most residents reported feeling happier, safer and more secure in their new homes, with subsequent improvements in quality of life for themselves and their families: “Moving was an opportunity for a new start, moving forward and bettering my life and my family’s life” (Female resident, relocated away from the estate). Despite the perceived opportunity and benefits of moving, most residents did not report improvements to their physical health. Previous research has found that the psychosocial benefits of moving often do not correspond to long-term changes in residents’ physical health (18, 34).

7.2.3 Resistance to Relocation
A number of residents did not want to move away from their homes and neighbourhood and were quite active in their resistance. These residents reported feeling a high level of stress and anxiety, particularly when waiting to hear about the timing and location of their move. When discussing the challenges of moving house after living in the estate for over 10 years, one resident said:

That time [during rehousing] was not good…. I didn’t want to move and my daughter said to me, ‘well you’ve got no choice in the matter Mum, they’re going to move you whether you want to or not’. I said ‘well I’m going to dig my heels in and stay’. It was just very bad for me. At the time I just couldn’t sleep some nights, just worrying about it. (Female resident, relocated away from the estate)

These residents were typically older and had lived in the estate for a considerable period of time. Most often they had moved to the estate with the expectation of permanency and had developed an attachment to place and to their community. This finding is consistent with previous Australian research by Baker (17) and Arthurson (72) as being required to move can cause stress and threaten personal security, particularly for elderly residents.

7.2.4 Resident Participation and Relationships with Service Providers
Residents who were more involved in redevelopment activities and who sought a positive relationship with the Housing Relocation Team generally seemed to have a more positive experience than those who were less involved. This participation and positive relationship seemed to enable residents to communicate openly with Housing Officers, express their views and better understand the relocation process. When discussing her relationship with the Housing Relocation Team, one resident said: “The team went to a great extent to connect with me and made sure I knew what was going on... It makes moving so much easier” (Female resident, relocated within the estate). Similarly, an informant from the housing authority said:
My personal ethics around this is - you need to listen to people, you need to not cut them off, you need to actually listen and follow up what they say and you need to treat people with respect and understand that they are angry because they're being shoved out of their home. It may have been their home for many, many years. Their children may have been brought up there. (Informant, Housing Organisation)

Residents who were actively involved in redevelopment activities frequently reported that they felt respect for themselves as individuals, as well as for their community: “We're given respect as residents. We're made to feel that we're important. This is our community and it's about our ownership of this community, which is what they [Housing Relocation Team] has done for us” (Female resident, relocated within the estate). Other residents felt that being involved helped with the uncertainty of relocation: “The uncertainty [of moving] would be worse if I wasn’t involved. Like at the last meeting when they told us about the delay. Being involved helps me understand the whole process [of estate renewal]. It is a big process” (Male resident, waiting to relocate). In contrast, residents who were unable to engage or not interested in participating in their relocation generally reported feeling less control over their move, with increased difficulties, uncertainty and stress.

Previous research has found that feeling well informed and empowered to participate leads to positive health outcomes (2). Similarly, a perceived lack of control and corresponding stress and anxiety can lead to increased risk of physical and mental health problems (99, 100). Respondents consistently commented that maintaining a personal relationship and providing residents with information and choices are the most effective strategies to minimise the stress, anxiety and worry felt by tenants during the rehousing process: “One of the reasons it’s working well in Airds Bradbury, is because the Housing Relocation Team have a personal relationship with the people” (Informant, Housing Organisation).

7.3 Conclusions

Public housing estate renewal and rehousing programs have been identified to have positive and negative health impacts for tenants (3, 16, 17, 34, 45, 59, 63). In this study, health impacts seemed to be dependent on the individual, their participation in rehousing activities and their relationship with service providers. All respondents commented that the process of relocation was likely to cause stress and anxiety for tenants, particularly for those who were waiting to relocate. However, for other residents, particularly those moving outside of the Airds Bradbury Renewal Area, relocation was a much more positive experience. They saw it as an opportunity to move to a nicer house or suburb, with corresponding improvements to their quality of life. Despite these positive and negative psychosocial health impacts, most residents did not report changes to their physical health. Clear, consistent and appropriate communication and a positive, personal relationship with Housing Officers and the Housing Relocation Team were seen as the most effective strategies to increase resident satisfaction and minimise the stress, anxiety and uncertainty of relocation.
7.4 Recommendations

Two broad recommendations have been developed to encourage residents to engage in estate renewal and rehousing activities. These recommendations have been drawn from relevant literature, as well as from the experiences of respondents as reported in this HIA. Recommendations are also provided in Section 13.

1. Housing authorities should maintain a personalised approach, with open and transparent communication with communities at all stages of the rehousing process. This may involve providing regular information sessions, organising community events and distributing newsletters and updates. Residents’ are likely to feel less stressed and anxious if they receive personalised support and clear and appropriate information at all stages of renewal projects (particularly in regard to tenant relocations). Providing information and choices may also improve residents’ involvement and sense of control over their relocation (3, 5, 14, 45).

2. Housing authorities and other organisations involved in estate renewal programs should consider opportunities to minimise delays and improve the efficiency of rehousing. Minimising delays may assist in reducing stress and anxiety for public housing tenants (14, 45).
8. Health Impacts linked to Housing and Neighbourhood Quality

**HIA Questions**

1. How does housing and neighbourhood quality affect health and wellbeing?
2. What are housing and neighbourhood conditions like for residents in Airds Bradbury?
3. How do housing and neighbourhood conditions change for residents who are relocated as part of estate redevelopment programs?
4. Does housing and neighbourhood quality differ for residents waiting to relocate, compared to those residents who are relocated within Airds Bradbury and those residents who are relocated to neighbouring suburbs or other areas?

**8.1 Background**

The relationship between housing and health is well known (1, 2). Substandard and poorly maintained housing has been linked to a wide range of health conditions including delayed childhood development, injuries, infectious diseases, chronic disease and mental health disorders (1, 12). Research has found that inadequate basic utilities such as safe drinking water, sewerage systems and facilities for cooking and washing may be associated with negative health outcomes (1, 2, 6-8). Poorly designed or maintained housing may also contribute to increased morbidity and mortality from injury, drowning or fire (3, 48).

Neighbourhood quality has been found to have an impact on physical and mental health outcomes, particularly for disadvantaged communities (3). Residents living in disadvantaged neighbourhoods may lack access to fresh and affordable healthy food outlets, usable open spaces and recreational facilities. Poor access to these facilities discourages regular physical activity and may be linked to chronic disease, overweight and obesity and adverse mental health outcomes (10, 11). These communities may also lack access to social and health care services, further contributing to the burden of disadvantage, inequity and ill health felt by residents (12).

Estate renewal and rehousing programs have been identified as an opportunity to improve housing and neighbourhood quality (17), and subsequently improve physical and mental health outcomes for public housing tenants (18, 34, 45). In the HOPE VI Panel Study in San Francisco, researchers found that dwellings were in poor condition prior to redevelopment, with problems such as leaking water, peeling paint and inadequate heating and cooling (65). In follow up studies, residents who moved from areas undergoing redevelopment reported significant improvements in housing quality. The number of housing problems decreased post relocation and most residents considered that their new housing was either of excellent or good quality (59, 66). Similarly, in the SHARP study of redevelopment and rehousing in Scotland, residents reported a significant improvement in housing quality post relocation, particularly for warmth, privacy, accessibility, space and safety (18-21, 34, 62).
Australian research has also identified improvements in housing quality for residents relocated as part of estate redevelopment programs. In an evaluation of The Parks Urban Regeneration Project in Adelaide, researchers found that over half of residents felt that the quality of their housing was either ‘improved’ or ‘greatly improved’ post relocation (17). Similarly, over half of residents who were relocated as part of the Minto Renewal Project in South Western Sydney, NSW, reported that they were pleased with their move, stating reasons such as having a larger or newer property (63).

### 8.2 Housing Quality in Airds Bradbury

Housing informants reported that housing stock in Airds Bradbury primarily consisted of detached cottages and terrace houses, with one to four bedrooms. Terrace houses may have up to 20 stairs, leading from the bottom level with the kitchen and living room to the bedrooms on the upper level. Many of these properties are in original condition, with no upgrades provided other than periodic maintenance. Many residents have also lived in their house for a considerable period of time, raising concerns over housing suitability. Estate regeneration was identified as the best option to address the concentrated disadvantage in Airds Bradbury and deal with aged and poorly maintained public housing dwellings. Funding provided for the redevelopment project means that there is additional scope to provide renovations for remaining housing stock in the study site. While government regulations ensure that must be at a ‘safe and habitable standard’ (101), this funding means that additional work may be done to improve housing quality. This may include painting, new carpets or flooring and new kitchens and/or bathrooms (25, 102).

### 8.3 Themes

The following five themes and corresponding health impacts relate to housing and neighbourhood quality: (a) disruption due to demolition and construction; (b) housing suitability given resident needs and abilities; (c) privacy and space; (d) safety and security; and (e) cleanliness and maintenance. These themes are shown in the flowchart in Appendix B.

#### 8.3.1 Disruption due to Demolition and Construction

Environmental disturbances are commonly associated with demolition and building works that, in turn, may affect physical and mental health outcomes (14). Most respondents reported an increase in dust, noise and rodent activity from building work around the estate. They also reported that demolition and construction works caused inconvenience at times, most often due to road closures or increased traffic from construction teams and trucks. This seemed to primarily affect those residents who were waiting to relocate or those who had been relocated to a renovated property within the estate. When discussing demolition and construction work in the estate, one resident commented: “There has been no redevelopment, just demolishing. All those houses knocked down to put roads through and hundreds of people wanting homes and everyone being disrupted” (Male resident, relocated within the estate). Many residents linked the environmental disturbances to exacerbations of asthma or other respiratory
infections for themselves and their family members. Some residents were also concerned about potential threats from chemical contaminants released during the demolition process:

One time, they were knocking the house down over the road [in Airds Bradbury]. I came out in the morning and my son was playing right near the fence where they were doing the asbestos removal. I went off and then I rang the Housing people because I was so worried. I asked if it is safe and they assured me that it was safe. But I still worry. I don’t know if they should be doing that [demolition] when there’s little kids running around. (Female resident, relocated away from the estate)

The inconvenience of demolition and construction works was also seen to be associated with feelings of stress, anxiety and reduced quality of life. For other residents, moving away from the inconvenience, dust, noise and smoke was a benefit of relocating to another suburb. However, most respondents, regardless of their feelings toward the building construction activities, recognised the anticipated benefits of renewal activities.

Demolition and construction works raised safety and security concerns for some residents, who felt that crime and violence had increased since the redevelopment began. When discussing safety and security around construction sites, one resident said: “I didn’t feel safe there [in Airds Bradbury]. There was always people in there [construction sites] drinking and riding motorbikes and carrying on” (Female resident, relocated away from the estate). Reports of increased crime and anti-social behaviour with demolition and construction works are consistent with previous research from the United States of America (3) and United Kingdom (14, 34).

8.3.2 Housing Quality and Suitability

Housing informants consistently identified estate renewal and relocation programs as an opportunity to move residents to better quality, more suitable properties. They reported that many elderly tenants have lived in the same property in the Airds Bradbury public housing estate for a considerable period of time, in some cases more than 25 years. These properties were no longer suitable for their needs, particularly in regard to housing layout, the allocation of bedrooms and the number of stairs. As part of the rehousing process, a Housing Relocations Officer assesses the needs and functional abilities of all tenants in order to match them to a suitable property: "So when they [tenants] get relocated it’s actually an opportunity to get them something that’s much more suitable. That can have a real impact on people’s health as well" (Informant, Housing Organisation). Moving residents to more suitable, appropriate and accessible housing was also seen to have a positive impact on their satisfaction with relocation. Positive psychosocial health outcomes were also reported, including reduced worry, stress and anxiety. Despite the known links between housing and health (1), most residents did not identify improvements to their physical health post relocation.

8.3.3 Privacy and Space

Privacy and space were identified as important factors influencing residents’ satisfaction with rehousing. The design of houses in the Airds Bradbury Renewal Area, as in other public housing estates, provided limited privacy, often due to
the close proximity of properties and the cul-de-sac layout of streets (25). Many residents, particularly those with young families, commented that noise in Airds Bradbury was a constant problem:

“In our house in Airds, there was just no escape. The walls were just paper thin, you could hear them flushing the toilet next door. You could hear them walking up and down the stairs. So when they decided to play music and stuff, yeah it just affected you”. (Female resident, relocated away from the estate)

Housing informants reported that all residents that are relocated away from public housing estates should have more privacy in their new homes. One tenant commented that his new property was much more private and peaceful: “Oh the neighbours are much quieter her. You won’t get woken up at two o’clock with singing drunks going up the alleyway. Our new house is quiet, it’s peaceful...it’s just a whole different atmosphere really. It’s 100% better” (Male resident, relocated away from the estate). This tenant also reported feeling less stressed and anxious after moving to a quieter, more private property: “Like I’ve wound down. I’m not stressed the whole time”. Research has shown that improving the privacy of homes may have positive psychosocial health impacts including reduced stress and anxiety (3, 18, 103).

Estate renewal and relocation programs also provide an opportunity to move residents into bigger or smaller properties, depending on their needs and family circumstances. For families moving into larger houses, this was seen to have positive psychosocial health impacts, including reduced stress and increased quality of life. One resident described the benefits of moving to a larger property:

“We’re so happy here. We are ecstatic. In Airds we had a three-bedroom house... My seven-year-old daughter had to sleep in a room with my husband and I, which she had been ever since she was a baby. So now in our new house, she has her own bedroom. She loves it and we've done it up for her. I’ve put nice pictures in the bedroom and a little mirror and a stand and everything... Yeah we love it too”. (Female resident, away from the estate)

Potential negative health impacts of moving residents into smaller properties were also reported. In line with social housing policy in NSW (81), single people and couples without children are more likely to be moved from two and three bedroom houses to single bedroom properties. Many residents felt that this policy caused additional anxiety on top of the stress of relocation. For residents downsizing to one-bedroom properties, it was seen to limit opportunities for friends and family to visit. A resident who was relocated from a three-bedroom family home to a single bedroom apartment said: “My family can’t stay [with me], because my unit has only one bedroom. I don’t like the fact it’s one bedroom” (Female resident, relocated within the estate). Another resident said: “It [waiting to move] has been absolutely horrible. I have given away DVD players and extra TVs and stuff trying to shrink down [from a four bedroom property] to at least a two bedroom... It’s a real stress” (Female resident, waiting to relocate).
8.3.4 Perceived Safety and Security

Many respondents felt that the Airds Bradbury public housing estate was very unsafe. They reported frequent violence, crime and antisocial behaviour, particularly in areas undergoing demolition and construction works. This was most evident for tenants who were waiting to move or for those who had been relocated to a renovated property in the estate. One resident described feeling very unsafe and frightened after a recent robbery at her home: “I feel as though I’m a prisoner here. I’m stuck here. I can’t go out much unless someone comes around to look after the house” (Female resident, relocated within the estate). These tenants generally reported fewer health benefits when compared to those residents who had moved to neighbouring suburbs or other areas.

For a number of residents, fears of danger and violence had been such a concern that they had requested to be moved away from the estate: “We were always having problems [when living in Airds Bradbury]…. Our house was always getting robbed. We were always getting threatened. So we’re glad to be out of there to be honest” (Female resident, relocated away from the estate). For these residents, moving away from the estate significantly improved their sense of safety and security. Despite improved perceptions of safety and security with housing improvement and relocation to mixed-income communities, corresponding improvements to physical and mental health outcomes have been inconsistent in the literature to date (19-21).

8.3.5 Cleanliness and Maintenance

Respondents consistently commented that the cleanliness and maintenance of public housing properties in Airds Bradbury was poor. Common problems included pest infestations of cockroaches, mice and rats as well as exposure to mould, dust and tobacco smoke. Problems with heating and cooling were also identified. In line with recent research (104), exacerbations of asthma were the most common health impact reported by residents, followed by allergies and other respiratory conditions. For many residents, problems with cleanliness and maintenance prompted them to request to be moved outside of Airds Bradbury:

The houses [in Airds] are disgusting. They're so old and just falling to pieces and they should have been knocked down years ago. Another thing with the knocking down of the houses, it's created a lot of cockroach and rodent problems…. All these cockroaches came and just smothered us. It's so disgusting. (Female resident, relocated away from the estate)

Residents moving to new properties frequently reported improvements in the condition of their housing. However, housing improvements were less significant for residents who had been relocated to a renovated property in Airds Bradbury, as problems with pests, dust and noise persisted, most likely associated with demolition and construction works. Ongoing problems with mould were also reported by residents in Airds Bradbury, often linked to allergies and exacerbations of asthma and other respiratory conditions. When discussing the quality of her house in Airds Bradbury, a resident said: “In the place in Airds there was a lot of mould and just because there was cracks everywhere and just dust, a lot of dust as well. My son's an asthmatic and it used to really worry me” (Female resident, relocated away from the estate).
8.4 Conclusions
Housing and Health informants frequently viewed estate renewal and rehousing projects as an opportunity to move public housing tenants to better quality, more suitable properties. This process was associated with positive and negative health impacts. For many residents, moving to more suitable housing resulted in positive psychosocial health impacts through reduced stress, increased satisfaction and increased physical accessibility. Additionally, the provision of houses based on identified need was seen to be associated with positive and negative health outcomes, with some residents experiencing benefits from living in bigger houses with additional bedrooms. However, single people and couples without children reported some negative health impacts if forced to move to smaller, single bedroom properties. Improved perceptions of privacy, safety and security were also seen as benefits of relocation for residents moving outside of the estate. For residents waiting to relocate, or who had moved to a renovated property in Airds Bradbury, concerns of violence, vandalism and alcohol and substance abuse persisted. The cleanliness and maintenance of properties was also reported to have improved for residents who were moved to new or renovated properties in mixed-income suburbs. Common problems of dust, pest, noise and tobacco smoke persisted for residents waiting to move or for those who had been relocated within Airds Bradbury.

8.5 Recommendations
The following recommendations have been developed with consideration of recent research as well as the experiences of respondents as reported in this HIA. These recommendations are also listed in Section 13.

1. Housing authorities should continue to assess current and future housing needs of tenants and match tenants to appropriate and accessible housing. Appropriate and accessible housing usually benefits health and wellbeing (1, 17, 18, 47).
2. Authorities and contractors who manage demolition and construction works should take action to minimise disruption as well as air and noise pollution for residents. Minimising disruption and exposure to environmental pollutants may help to reduce feelings of stress and anxiety, particularly for residents who remain living within the estate (14).
3. Housing authorities should ensure public housing properties are appropriately maintained. Prompt maintenance is required to avoid environmental hazards and associated physical and mental health conditions (1, 47).
4. Housing authorities, building contractors and other community agencies involved in renewal activities should consider opportunities to improve the safety of construction sites and common areas. This may include monitoring street lighting, improving fencing and engaging with local police. Increased security for these sites may reduce the likelihood of anti-social behaviour, violence and crime and improve residents’ sense of safety and security (14, 18).
9. Health Impacts linked to Social Networks and Community Engagement

HIA Questions

1. How do social networks influence health?
2. How cohesive is the community in Airds Bradbury? Is this likely to change with population loss out of the estate during renewal activities?
3. Do social relationships and supports differ for residents waiting to relocate, compared to those residents who are relocated within Airds Bradbury and those residents who are relocated to neighbouring suburbs or other areas?
4. How were residents engaged in the redevelopment project in Airds Bradbury?

9.1 Background

Social networks have been shown to be important to the health and wellbeing of disadvantaged groups (36, 64). The practical help delivered by family, neighbours and friends can help to reduce the strain of difficult and stressful situations as well as to directly support people in times of ill health. Strong social networks may also act to reduce social isolation (3, 37, 68). Estate renewal and rehousing programs can have positive or negative impacts on social and community networks. On one hand, the inclusion of social and economic initiatives as part of estate renewal programs can help to sustain and even strengthen existing social networks (68). Additionally, there is some evidence to show that moving tenants to different locations may have positive impacts, in that they may establish new social and community networks and have improved access to opportunities, resources and services (17, 64, 71). However, if not managed well, the population loss from rehousing may disrupt relationships and networks that provide valued social supports (68, 70).

Community engagement is an integral component of estate renewal programs. Active community engagement can help to maintain or promote social cohesion. It may also assist authorities to identify public concerns and needs. On the other hand, a failure to meaningfully engage the community can disengage residents and result in criticism and opposition of renewal projects (3).

9.2 Themes

Respondents identified four themes, with potential positive and negative health impacts. These are: (a) physical and social assets for social interaction; (b) social cohesion; (c) mixed-income housing; and (d) community engagement. These themes are shown in the flowchart in Appendix B.

9.2.1 Assets for Social Interaction

The presence of safe and accessible common spaces has been identified to be important to the development and maintenance of social and community networks in public housing estates (3, 72). Housing informants reported that
residents relied on the community centre as a public meeting space and site for social activities. In the Airds Bradbury Renewal Area, AB Central acts as this ‘community hub’. A number of community-based programs are run at AB Central including fitness and physical activity groups. When discussing community spaces in the estate, an informant said: “We tried to make this [AB Central] a community hub. However, it tends to be all about sport because that’s how you engage with young people in the community” (Informant, Housing Organisation). AB Central also serves as a meeting place and site for community and seniors groups such as the Community Reference Group, the Master Planning Group and the Airds Bradbury Originals. Additionally, respondents mentioned a number of programs and initiatives promoting social interaction including a community garden, Men’s Shed and Fruit and Vegetable Cooperative.

Most respondents felt that AB Central was the only usable common space in the suburb. Although parks and open spaces were easily accessible, respondents reported feeling concerned about gang activity, violence and crime. They also reported that the parks in the estate lacked age-appropriate recreational activities for older children and adults. Similarly, respondents were concerned about their own safety at the local shops. One informant said: “Environments can be so detrimental or hazardous for chronic disease. The idea of not having safe areas where you can go is really stacking the odds against you. They are risk factors for themselves, for chronic disease” (Informant, Health Organisation).

For residents waiting to relocate, or for those people that had been moved within the estate, this lack of usable common areas limited opportunities to interact with other community members or make use of parks and open spaces. Respondents were hopeful that these common spaces would improve after the redevelopment. When discussing proposed changes to community spaces in Airds Bradbury, an informant said:

In Airds we’ve got massive parks; we’ve got heaps of them. But none of them are used. We have no play equipment; we have no gathering or picnic areas. We don’t have barbecue and toilets out here.
So I think that the provision of really good quality recreation space will have a really positive impact.
(Informant, Housing Organisation)

Most residents who had moved outside of Airds Bradbury noted improved common spaces in their new suburbs, including parks and recreation areas, walking tracks and sites for social interaction. One resident commented: “I can now meet my friends and let the children play in the park. I don’t even have to check the play equipment for broken bottles or needles first. I never would have done that in Airds” (Female resident, relocated away from the estate).

9.2.2 Social Cohesion

Housing informants consistently commented that there were strong sub-communities in many of the public housing estates in South Western Sydney. This has been referred to as strong bonding social capital and has been shown to be valuable for disadvantaged communities in that they can build relationships of trust and group together for friendship and support (105-107). Despite strong bonding social capital, respondents felt that there were low levels of trust...
between some residents and outside organisations, often leading to problems of crime, violence and dysfunctional behaviour. This has been referred to as low levels of bridging social capital, a common problem in low-income, disadvantaged and public housing communities (105-107).

Despite a strong sub-community in the estate, some respondents felt that social networks had changed over the course of the renewal project. Some residents felt that social networks had been stronger prior to the start of relocations and reported a sense of loss for their former community. One resident said she felt disconnected and vulnerable after moving to a neighbouring suburb, as she missed her old friends and neighbourhood:

“That was one of the reasons why I didn’t want to move, because there was too many memories there I suppose…. There was friends that watched my back and I’d watch theirs when they went away. But now I feel a bit vulnerable, because I don’t know the people in my new street.” (Female resident, relocated away from the estate)

Another resident who had lived in the estate for 35 years said:

“I find it really sad. My husband thinks it’s so sad…I knew quite a few people in different streets and even if you didn’t know them to speak to, you knew them to say good morning. That’s one thing I really miss, you know, everybody saying good morning.” (Female resident, relocated away from the estate)

Previous research has found that relocated tenants may have difficulty establishing new networks and subsequently report a loss of emotional and social supports in their new neighbourhoods (108).

For other residents, moving away from the area made no difference or even improved their social networks. One resident felt that it was much easier to see her friends after moving away from the estate: “Everything here is so close… I’ve got a lot of friends in the area, especially guys. Before, not many people used to come to Campbelltown and now everyone just comes. It’s actually got us [friends] closer than when we used to live in Airds” (Female resident, relocated away from the estate). Some residents also benefited from improved access to resources and services, such as public transport links, community centres, recreational facilities and useable open spaces.

9.2.3 Mixed-Income Housing

Respondents identified a number of positive and negative health impacts of moving public housing tenants to mixed-income communities. Many viewed plans to change the social mix of the estate positively and felt it would improve access to opportunities, resources and services in the area: “I kind of like to think in the back of my mind that sort of separating these people [public housing residents] might be the catalyst to break that cycle of disadvantage” (Informant, Health Organisation). One tenant who had moved from the estate to a mixed-income suburb commented:

“I like the fact that they’re moving the private in with the Department of Housing people. Like it breaks that cycle of just all Department of Housing people… I’m living in private [mixed-income community]
now, so I’m loving it, and the kids are loving it. They can actually go down to the park. (Male resident, relocated away from the estate)

Research has shown that changing the social mix of a public housing estate may improve community cohesion through reduced disadvantage, inequity, stigma and intergenerational unemployment (71). The change to a mixed-income community may also result in benefits from health promoting activities such as increased physical activity and improved nutrition. It may also contribute to a reduction in unhealthy or risky behaviours such as smoking, alcohol and substance abuse, violence and crime in the area (3, 109).

Many respondents also identified a number of potential negative health impacts of mixed-income housing, such as residential segregation, reduced community cohesion and social isolation. While many informants understood and supported the idea of mixed-income housing in principle, they were concerned about potential differences between public and private residents. They felt that low levels of trust between the different groups might further contribute to gang activity, crime, violence and dysfunctional behaviour in the estate:

*I like that model [mixed-income housing] because you don’t have pockets of disadvantage. But there will still be that kind of ‘us and them’ mentality and I don’t know if there’s any perfect percentage split that you could actually do. But there’s the connotation or the expectation that people who own their house privately are better people, and I don’t think that’s necessarily the case* (Informant, Health Organisation)

#### 9.2.4 Community Engagement

Community engagement was viewed to be an essential component of the Airds Bradbury Renewal Project. As such, a number of community and volunteering groups had been established and were facilitated by Housing Organisations, including the Bradbury Airds Neighbourhood Connection, the Community Reference Group, the Master Planning Group and the Community Change Makers group. All groups had slightly different functions, however all focused on facilitating residents’ involvement and encouraging open communication with Housing authorities. Housing informants commented that residents in Airds Bradbury had been involved in planning for the redevelopment from the initial stages, including the development of original concept plans:

*Airds has a strong volunteering culture. We based our capacity building and our engagement around volunteering. So we set up a community change-making volunteering group. They’ve been very successful. They have won a number of grants from council and government, they are now incorporated and they have their own board.* (Informant, Housing Organisation)

In line with previous research (3, 14, 68), resident involvement in estate redevelopment was seen to have a number of beneficial outcomes including empowering residents, encouraging the acceptance of Housing policies and recommendations and increasing community cohesion. In Airds Bradbury, a small group of residents seemed to be consistently involved in renewal and rehousing activities. Housing officials and consultants working on the project actively encouraged their participation. Many of these residents had lived in Airds Bradbury for a considerable period
of time and had requested to be relocated within the estate: “Airds has a strong core group of residents who have lived here a long time... I would be loathed to see them moved out” (Informant, Housing Organisation).

Residents who were more involved in renewal activities seemed to be more satisfied and have positive outcomes following rehousing. However, a number of other residents were either unable to participate or not interested in attending resident meetings and community engagement activities. These residents tended to communicate feeling disengaged and were generally less aware of the processes involved in and status of the Airds Bradbury redevelopment. They also seemed to be less understanding of the relocation process and the challenges associated with rehousing a large number of tenants. A lack of participation in redevelopment activities tended to result in lower levels of satisfaction with rehousing, regardless of the stage of relocation. It is not clear whether lower levels of satisfaction resulted in poor health outcomes for this group of residents.

9.3 Conclusions
Respondents identified AB Central as the primary location for social interaction and reported that it was successfully used for a number of community programs and activities. Problems with other common areas such as parks and shopping areas were noted, mostly due to concerns of safety and security from the threat of gang activity, vandalism, violence and crime. Efforts to make existing community assets more useable, safe and visually appealing may facilitate the development and maintenance of social and community networks. Population loss and displacement from rehousing was seen to have an impact on social networks for some residents. As social supports can promote positive behavioural change (35, 36), this loss of social cohesion may have negative impacts on health and wellbeing. Concerns over a changing social mix were also reported, with potential negative health impacts including residential segregation and social isolation. However, mixed-income housing may also contribute to positive health outcomes for tenants, from social norming and improved access to resources and services (109).

Research indicates that community engagement is an essential component of estate renewal projects (3, 14). A number of positive impacts of community engagement were identified, including improved control and satisfaction, particularly for residents who were actively involved in redevelopment activities. Residents who did not participate in these activities tended to report lower levels of satisfaction and understanding of the processes of area redevelopment and public housing relocation.

9.4 Recommendations
Three broad recommendations were developed to promote social networking and social cohesion during estate renewal and rehousing projects. These recommendations have been drawn from the literature, as well as the findings from qualitative interviews completed for this HIA. These recommendations are also summarised in Section 13 of this report.
1. Housing authorities and other agencies involved in estate renewal programs should consider opportunities to provide funding for a community centre, with a wide variety of social and health care programs. Programs may target vulnerable groups including children, young people, single parents and CALD groups. A variety of community, social and health care programs may bring people together and promote healthy activities as well as social networking and community engagement (3).

2. Housing authorities should maintain a personalised approach, with open and transparent communication with communities at all stages of the rehousing process. This may involve providing regular information sessions, organising community events and distributing newsletters and updates. Residents’ are likely to feel less stressed and anxious if they receive personalised support and clear and appropriate information at all stages of renewal projects (particularly in regard to tenant relocations). Providing information and choices may also improve residents’ involvement and sense of control over their relocation (3, 5, 14, 45). See also Section 7.4.

3. Housing authorities, building contractors and other community agencies involved in renewal activities should consider opportunities to improve the safety of construction sites and common areas. This may include monitoring street lighting, improving fencing and engaging with local police. Increased security around construction sites and common areas may encourage socialisation and the development of strong social and community networks (14, 18). See also Sections 8.5 and 10.4.
10. Health Impacts linked to Access to Healthy Foods and Opportunities for Physical Activity

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10.1 Background
Access to fresh and healthy foods and opportunities for regular physical activity have been shown to have a range of positive health impacts including reduced risk of morbidity and mortality from chronic diseases such as cardiovascular disease, type 2 diabetes and overweight and obesity as well as some cancers (39, 110). These health-promoting behaviours may also prevent mental health problems including stress, anxiety and depression (3, 38, 111).

It is well known that a nutritious diet and regular physical activity shows a socioeconomic gradient, with a poor diet and lower levels of physical activity evident in low low-income and disadvantaged areas (112). Low socioeconomic areas, including public housing estates, tend to have few supermarkets and green grocers, with a higher density of corner stores, takeaway and fast food outlets. Healthy fresh foods may be more expensive and less available in low income when compared to high income areas (112, 113). Concerns about safety and security may also limit opportunities for residents to use parks, public spaces and recreational facilities to engage in regular physical activity (114).

Retail centres, supermarkets and greengrocers may be established during estate renewal programs, thereby increasing access to healthy and affordable foods (3, 68). These programs may also promote physical activity for tenants through the provision of quality open spaces, playgrounds and recreational facilities. Physical improvements to sidewalks, street lightening and cycle paths may also encourage physical activity for residents who remain living in or move to the area (3, 115).

10.2 Themes
Respondents identified the following five themes with potential positive and negative health impacts: (a) food access and availability; (b) food literacy; (c) access to parks and recreational facilities; (d) walkability and accessibility of public transport; and (e) perceptions of safety and security. These themes are shown in Appendix B.
10.2.1 Access to Healthy and Affordable Foods

Housing and Health informants consistently commented that access to healthy food was limited in public housing estates in South Western Sydney. There was only one small grocery store in the Airds Bradbury Renewal Area. They felt that the lack of a major supermarket limited the affordability and availability of fresh and healthy foods. Additionally, the quality of fresh produce was reported to be quite poor: “There is a lack of fresh fruit and vegetables at competitive prices. The quality across the board is abysmal” (Informant, Housing Organisation). Informants also reported a predominance of takeaway fried foods and baked goods, with limited access to healthy, pre-prepared foods. An informant who worked in the estate commented: “You can only buy fried crap. You can’t get healthy food. As workers, we can’t get a sandwich in this community for lunch. It’s either fried food or sweet bakery items” (Informant, Housing Organisation). Research has shown that low socioeconomic localities frequently have few grocery stores and more takeaway and fast food outlets (113).

Limited access to fresh foods was identified to be a food security concern for residents, particularly for those waiting to relocate or who had been rehoused within the estate. Plans to redevelop the shopping complex in Airds Bradbury may improve food security in the future, however respondents identified that strategies to reduce the cost and improve the quality and availability of healthy foods are required in the short to medium term. A number of residents felt that the lack of a major supermarket limited opportunities to buy fresh foods: “One of the issues is the shopping centre…. We don’t like the shopping centre itself” (Male resident, relocated within the estate). Community interventions to increase access to healthy foods were also met with limited success. Many residents were unaware of or uninterested in accessing a weekly fruit and vegetable cooperative or attending the community garden. Despite the potential benefits of these food security programs, they did not seem to have a noticeable impact on residents’ access to fresh foods.

Respondents felt that access to fresh and healthy foods should improve for residents who are relocated outside of the estate, as mixed-income suburbs tend to have better access to supermarkets and food outlets when compared to public housing estates: “People would generally have access to better, I reckon more affordable, quality fresh food than they would here in their local suburb. I can’t imagine that it would be any worse or the same [as in Airds Bradbury]” (Informant, Housing Organisation). Despite improved access, informants were unsure as to whether this would encourage residents to change their behaviour and adopt a healthy, more nutritious diet. Another informant said: “I think diet is very much an individual thing… I think it’s a bit of a stretch to say that the relocation itself would make that impact” (Informant, Housing Organisation).

10.2.2 Food Literacy

Food literacy is defined as the knowledge and skills needed to make informed choices about food and nutrition. This broad term includes knowledge of the foods required to meet nutritional needs, of the difference between core and occasional foods and of the skills required to prepare and store healthy meals. Research has shown that food literacy
also shows socioeconomic gradient, with lower levels of food literacy evident in disadvantaged groups (40). Housing and Health informants consistently identified reduced food literacy as a barrier to healthy eating for public housing residents in Airds Bradbury. They reported that many residents lacked the knowledge and skills required to prepare nutritious meals, instead relying on pre-packaged, convenience foods or take-away meals: “We know that fast food is convenient... There are groups of people who struggle to prepare fresh food and fresh meals in their house because they don’t have the knowledge” (Informant, Housing Organisation). Informants were sceptical that simply relocating residents away from the estate would have a significant positive impact on their diet:

I don’t know that it [diet] would change with rehousing. If they don’t have the cooking skills and ability to prepare foods... and that comes from the environment that you’ve grown up with. If you haven’t been taught what to do, then you won’t know what to do and you’ll just default to the easy option of takeaway food. (Informant, Health Organisation)

Most respondents felt that the implementation of community health promotion programs focusing on nutrition, cooking and food storage may assist in improving the diet and nutrition of residents in Airds Bradbury, regardless of their stage of relocation.

10.2.3 Access to Open Spaces and Recreational Facilities

Research has shown that people living in disadvantaged neighbourhoods often lack access to open spaces, parks and recreational facilities (112, 116). Subsequently, they may be less likely to engage in regular physical activity when compared to individuals who have convenient access to these facilities (3, 116). Despite the accessibility of parks in Airds Bradbury, respondents reported that they were not well utilised due to poor visual appearance, inadequate lighting, safety concerns and a lack of age-appropriate play equipment:

Encouraging physical activity is one of the biggest issues in all [public housing] estates, but particularly in this one [Airds Bradbury]. There are lots of no-go zones, lots of no man’s lands, lots of alleyways. There are lots of parts where there’s no surveillance at all. You can understand why people don’t do physical activity when it’s such a horrible environment. Not only is it unsafe, it looks crappy. (Informant, Housing Authority)

Residents reported that they were more likely to access programs at AB Central, such as soccer and gymnastics for children, sports programs for young people from Aboriginal and Torres Strait Islander backgrounds, fitness classes and walking groups for seniors. These programs were reported to be well utilised, however relied on ongoing encouragement and management from Housing authorities. Stakeholders identified that the planned redevelopment of Airds Bradbury, with improved parks and recreational facilities, may increase opportunities for physical activity for residents remaining within the suburb. Additional funding and support for community programs at the community centre (AB Central) may also increase the diversity of available activities as well as attendance and participation by residents.
Access to parks, open spaces and recreational facilities may be increased or decreased for residents relocated outside of Airds Bradbury, depending on the location of rehousing. For most residents, the quality of open spaces and facilities should improve with relocation, however access may decrease:

   Resident access to good quality open space has got to improve with that [relocation] but whether that’s accessible as easily as it was in Airds? So in Airds, you have open space on your doorstep but it’s not good quality. If you go to another area, you might have good quality open space, but it may not be on the doorstep.

   (Informant, Housing Organisation)

Research has shown that changing levels of physical activity may have positive or negative health impacts, particularly for chronic diseases such as diabetes, cardiovascular disease and overweight and obesity (117).

10.2.4 Walkability and Access to Public Transport

Walking has been identified easiest and most practical form of physical activity, particularly for low-income and disadvantaged groups (3, 118). However, respondents reported that there were limited attractive destinations or resources within walking distance in the Airds Bradbury public housing estate. For residents waiting to relocate or for those who had remained within the estate, the low level of walkability limited opportunities for regular physical activity. Respondents were hopeful that walkability would improve after the redevelopment, as there are plans to improve sidewalks and build attractive recreational facilities, common spaces and parks (25).

For residents relocated outside of Airds Bradbury, walkability and opportunities for physical activity seemed to be dependent on the location and characteristics of their new neighbourhood. Some residents felt that opportunities for physical activity had improved with rehousing as they had better access to safe and well maintained walking paths, parks and open spaces. One resident felt that her levels of physical activity had increased after moving: “My exercise has improved a lot [since moving]. I really enjoy going for walks” (Female resident, relocated away from the estate). However, other residents felt that walkability and physical activity had reduced since moving, mostly due to being unfamiliar with new neighbourhoods as well as because of steep hills, uneven ground and increased traffic: “Living in Leumeah [suburb of Campbelltown LGA], there’s hills. I can’t walk uphill... so I can’t really get the proper exercise I’m supposed to be doing living in Leumeah, because it’s up and down the hill” (Female resident, relocated away from the estate).

Respondents consistently reported that public transport links in the Airds Bradbury public housing estate were very poor, with only a single, circular bus route to the nearest shopping centre and train station in Campbelltown city centre. Informants reported frustration at the timeliness of the service, as well as delays caused by a one-way bus link around the suburb: “If I wanted to go to Airds shops myself I’d have to get the bus to there, then I’d have to get another bus into Campbelltown and then get another bus to come back. It doesn’t sort of come back this way” (Female resident, relocated within the estate). Residents relocated outside of Airds Bradbury generally reported improved access to public transport.
10.2.5 Perceived Safety and Security
Research has shown that perceptions of the safety of a neighbourhood can affect regular physical activity (3). Residents commonly reported feeling unsafe in the Airds Bradbury public housing estate due to ongoing problems of gang activity, violence, crime and alcohol and substance abuse: "The crime rate here [in Airds] is concerning. Straight across the road there's drug dealers and drug addicts all around" (Female resident, relocated within the estate). Some residents also raised safety and security concerns associated with building works in Airds Bradbury, as they perceived that violence and crime had increased since renewal works began. Consequently, this limited opportunities for physical activity, as residents were reluctant to walk to the shops, to school with their children or to exercise in the park in the evening. A lack of regular physical activity may contribute to an increased risk of ill health, particularly from chronic disease (3, 39). However, research has shown that resident perceptions of safety and security tend to improve following estate redevelopment, most likely due to a changing social mix (18, 34). Therefore, residents who remain living in the estate may have increased opportunities for regular physical activity once renewal works are completed.

As most residents relocated outside of Airds Bradbury move to mixed-income communities, Housing and Health informants felt that their perceptions of safety and security should improve: A change in neighbourhood provides people with an opportunity to go out of an evening and go for a walk. It provides an opportunity to change some of that lifestyle stuff" (Informant, Housing Organisation). Similarly, residents who had relocated to other areas reported that they felt safer and more secure in their homes and were able to walk to local shops and use parks and green spaces with reduced fear of crime and violence.

10.3 Conclusions
Respondents consistently reported that fresh and healthy foods were neither affordable nor accessible within the Airds Bradbury public housing estate due to limited access to supermarkets healthy food outlets. Additionally, community programs such as the fruit and vegetable cooperatives and community gardens were not well utilised. Reduced food literacy was also raised as a barrier to healthy eating. Informants felt that many residents lacked the skills and knowledge required to cook fresh meals, instead relying on pre-packaged, convenience or takeaway foods. Plans to redevelop retail and grocery stores may improve access to healthy foods for residents in Airds Bradbury, however may not lead to behaviour change unless accompanied by education programs to increase health literacy and cooking skills.

Reduced walkability and access to public transport were identified as barriers to regular physical activity. The poor state of footpaths, limited public transport routes and concerns over safety and security restricted opportunities for residents to engage in regular physical activity. Improved access to quality parks, open spaces and recreational facilities are required to increase physical activity opportunities for residents waiting to relocate or for those who remain living in Airds Bradbury. For residents relocated to other suburbs or areas, access to physical activity may be increased or decreased depending on the location and neighbourhood of rehousing.
10.4 Recommendations

Three recommendations have been developed with reference to findings from this HIA as well as from recent research. Recommendations are listed below as well as in Section 13.

1. Health authorities (Health Promotion and Community Health Services) and other communities agencies should consider opportunities to implement healthy eating and physical activity programs for public housing tenants of all ages. This may include establishing and maintaining a community space for programs and services related to healthy eating and physical activity (e.g., community gardens and kitchens and exercise and sporting equipment and programs). Residents should be encouraged to use these programs. New programs should be developed and implemented to meet the changing needs of the community. The provision of regular healthy eating and physical activity programs may encourage participation amongst residents (3).

2. Housing and Health authorities should consider access to healthy and affordable food should be considered as part of the rehousing process for all residents. This may include resident access to major supermarkets and green grocers as well as culturally appropriate food sources. The relocation process should be used as an opportunity to link residents in with community and meal assistance programs as required. Increased access to healthy food sources may improve residents’ diet and nutrition and reduce morbidity and mortality from chronic disease (3).

3. Housing authorities, building contractors and other community agencies involved in renewal activities should consider opportunities to improve the safety of construction sites and common areas. This may include monitoring street lighting, improving fencing and engaging with local police. Organisations involved in redevelopment activities should consider opportunities to improve the safety of construction sites and common areas. This may include monitoring street lighting, improving fencing and engaging with local police. Improved safety and security may encourage regular physical activity (14, 18). See also Sections 8.5 and 9.4.
11. Health Impacts linked to Access to Programs and Services

HIA Questions

1. What programs and services are available for residents in South Western Sydney LHD? What programs and services are available for public housing residents in Airds Bradbury?

2. What are the health impacts of improved access to programs and services? What are the health impacts of reduced access to programs and services?

3. Does access to programs and services differ for residents waiting to relocate, compared to those residents who are relocated within Airds Bradbury and those residents who are relocated to neighbouring suburbs or other areas?

11.1 Background

Socioeconomic status (SES) is an important determinant of health and health care (119). However, the mechanisms by which SES impacts upon health are complex, varied and influenced by many factors including educational attainment, employment, income, place of residence, neighbourhood quality and access to programs and services (120). Research has shown that disadvantaged groups, including public housing residents, are more likely to experience ill health and are less likely to seek support and engage in preventative health care when compared to the general population (119).

Resident access to social and health care services is often improved for residents during estate renewal and relocation programs. Most often this is due to the implementation of neighbourhood renewal activities, increased provision of programs and services and a personalised approach to relocation (68). However, it is not clear whether residents who are permanently relocated to other neighbourhoods also experience these benefits. Social and health care services may become more expensive and therefore less available for residents who are relocated to mixed-income communities (121). Research has also shown that residents’ self reported health may decline following rehousing. This may be due to difficulties accessing social services, medical professionals and acute and community health services (45).

11.2 Themes

Respondents identified the following two themes: (a) access to social and community services and programs; and (b) access to health care services and programs. These themes are shown in the flowchart in Appendix B.
11.2.1 Access to Social and Community Services and Programs

Informants from Health and Housing organisations reported that residents generally had good access to social services and programs, with many community organisations providing outreach services to target the concentrated disadvantage present in the Airds Bradbury public housing estate. These include community and youth services such as the Men’s Shed, Burnside and Youth off the Streets, as well as food security services such as OzHarvest. A number of social and community programs were also available at the community centre (AB Central), including fitness classes, youth groups, parenting classes and seniors groups. While some of these programs were managed by Housing authorities, many were run by community organisations that utilised available space at AB Central. Community attendance was reported to fluctuate, with the same core group of residents accessing most programs and services. Housing informants reported that residents who participated in community groups and programs tended to have stronger social ties and were more engaged in and involved with redevelopment and rehousing activities. In line with previous research (3, 14), these residents were also more likely to report satisfaction and improved psychosocial health outcomes, when compared to residents who were less engaged with community groups.

Respondents identified ongoing access to social and community services as an area of concern. In Australia, many special government services are only available in areas of high need or concentrated disadvantage. These services are unlikely to be established or maintained in middle-income areas. In the short-term, this is most likely to affect residents who move away from the estate. However, it may also be a factor for residents who remain living in the estate, as access to services may decline once the redevelopment is complete and the social mix of the area has changed (72). Informants commented that access to services had been a problem following the redevelopment of another public housing estate in South Western Sydney:

*One of the things we found in a previous redevelopment was that when the suburb changed from being a public housing estate to a normal suburb, a lot of the services pulled out, because it was no longer a high need demographic area... The services don’t get the funding anymore, because it doesn’t come up as a blip on the radar of high need... So that can have an impact.* (Informant, Housing Organisation)

11.2.2 Access to Health Care Services and Programs

Health informants reported that access to health care programs and services differed considerably for residents, depending on their background, health literacy and access to private transport. For residents of Aboriginal backgrounds and their families in Campbelltown LGA, Tharawal Aboriginal Corporation (Tharawal) provided access to high quality health care services. Tharawal was reported to provide general practice and dental services, allied health practitioners and health promotion and community programs such as a community garden and cooking school:

*Tharawal have a number of [chronic disease] programs. So they’ve got quit smoking programs and a range of exercise and physical activity programs. I think they actually employ an exercise physiologist*
and they’ve got, I think, a community kitchen and focus on giving people better access to good food (Informant, Health Organisation).

Respondents reported that access to Tharawal was improved by regular transport services provided by the organisation: “Tharawal has great patient transport. They’ll go and pick up the patients even if they live in Macquarie Fields [suburb within Campbelltown LGA] and take them back to Tharawal for a doctor’s appointment and then take them home again” (Informant, Health Organisation).

Health care services were reported to be somewhat limited for other residents, with a single general practitioner and pharmacist providing a restricted service in the centre of Airds. As a result, many residents travelled to Campbelltown or Liverpool to access bulk-billed medical services, specialists and discount pharmacies. Most residents reported that it was difficult to get to these areas, most often due to limited public transport links in Airds. For elderly residents, mobility problems and chronic conditions further restricted their ability to travel and access health care services. When discussing access to health services for residents living the Airds Bradbury public housing estate, an informant said:

Public transport is so limited, especially as patients with chronic disease normally have limitations in regards to how far they can travel, how long they can be away from their home for and particularly if we’re talking about a person with chronic airway limitations, maybe on oxygen therapy at home.  
(Informant, Health Organisation)

Respondents also reported that access to public dental services was very restricted. Many residents reported poor oral health and had not visited a dentist in a considerable period of time. This seemed to be due to long waiting times associated with the nearby public dental clinic and the high cost of private dental services in the area. This is concerning, but not surprising, given the limited funding allocated to public dental services in Australia (42, 43).

Health informants reported that South Western Sydney LHD provided a number of health care services and programs that may be accessed by public housing residents, including Chronic Disease, Aboriginal Health and Health Promotion programs and services. In terms of the management of chronic diseases, the LHD provided access to disease specific chronic care programs such as diabetes programs and cardiac and pulmonary rehabilitation at Liverpool, Campbelltown and Camden hospitals. Additionally, the Connecting Care in the Community program was available to residents with a chronic disease (such as diabetes, congestive heart failure, coronary artery disease, chronic obstructive pulmonary disease and hypertension) and a high or very high risk of an unplanned hospital or emergency department presentation (93). Health informants reported that access to hospital based chronic disease programs was limited by poor access to public transport. The Connecting Care in the Community Program was therefore seen as an appropriate service for residents with chronic disease as it enabled nurse specialist home visits. The program also takes a holistic, patient-centred approach and focuses on facilitating access to social and health care services:

Connecting care is about developing a partnership and providing care coordination. Chronic care looks after one singular health issue and nothing else. Connecting care is all encompassing... It's
about ensuring that a person with a chronic disease has access to a GP; has equal access to a specialist; has access to pharmacy to look at the type of medications that they’re having; may need help around the home or some other services such as ComPacs [short-term package of care to help people gain independence and prevent re-admission to hospital] or the EACH program [Extended Aged Care at Home - coordinated packages of care services that enable older people who have high care needs to continue to remain in their own homes]. (Informant, Health Organisation)

Health care programs were also provided by the South Western Sydney Medicare Local, including the Healthy Eating Active Lifestyle (HEAL) program, designed to support participants to develop lifelong healthy eating and physical activity behaviours. The HEAL program enables residents to access eight weekly group exercise and education sessions, supported by one-on-one consultations with allied health professionals, including exercise physiologists, physiotherapists and dietitians (122). Access to these programs by public housing residents tended to be limited, again due to difficulties accessing public transport and attending sessions in Campbelltown: “People just can’t come because they don’t have transport” (Informant, Health organisation).

Estate renewal and relocation programs provide an opportunity to enhance access to health care services for public housing residents (17, 44). However, residents waiting to relocate or who had been moved within Airds Bradbury were yet to see these improvements, with some reporting little or no change in their access to services and programs. Additionally, the health impacts of moving outside of the estate were unclear. Some residents reported improvements in their ability to access health care services in Campbelltown city centre, due to closer proximity and improved public transport links: “We go to the doctor here [in Campbelltown]. It’s closer, much more convenient” (Male tenant, relocated outside of the estate). These residents reported that they sought health care more frequently and were more focused on complying with recommendations, provided that there were no changes to the cost of treatment or medications.

For other residents, the availability and accessibility of health care services had declined. Some residents were unable or unwilling to change to services in their new neighbourhood. One tenant commented that she travelled back to Airds frequently to see the pharmacist. She felt comfortable with the system used to fill and pay for her medications and was concerned that her information would be lost if she changed to a new pharmacy: “I keep going to [the pharmacist] Airds, because we have all these prescriptions and she knows when they are due... I’d rather she kept all the information because, to be quite honest, I don’t want them to lose it in the end” (Female tenant, relocated outside of the estate). While this may be an option for residents with access to private transport or good social supports, others reported it was difficult to maintain over time, resulting in less frequent visits. When discussing the impact of relocation on access to services for public housing residents with chronic health conditions, an informant commented:

They [residents] want to stay with the doctors they know and when they’re on the other side of Campbelltown, that’s a problem. Often you find that their visits to that GP aren’t as frequent as they
Previous research has found that health seeking behaviours tend to decline when services are more expensive or unavailable, resulting in poor health outcomes, particularly for chronic disease and mental health (45, 46).

11.3 Conclusions
Access to social and health care programs and services are important determinants of health and wellbeing (41). Respondents reported that residents in Airds Bradbury tended to have good access to social services and programs. It was unclear as to whether these benefits extended to residents relocated outside of the suburb or LGA. Access to health care services in Airds Bradbury differed for residents depending on their backgrounds. Tharawal Aboriginal Corporation was identified to provide high quality general practitioner, dental and allied health services and social supports for Aboriginal residents and their families. However, access to health care services within Airds Bradbury was limited for other residents, with many travelling to Campbelltown for bulk-billed medical services. Access to dental services was also limited, with many residents reporting difficulties accessing public dental services in South Western Sydney.

Although access to health care and social services may be improved during estate renewal and rehousing programs (17, 44), residents in Airds Bradbury were yet to see improvements. It is also not clear as to whether residents who are relocated to other neighbourhoods equally benefit from increased access to services. Access to health care may be improved for some residents, due to improved proximity to services and increased public transport links, with resulting positive health outcomes. However, access may also be disrupted due to relocation, as services may be more expensive or unavailable, contributing to poorer health outcomes and reduced self-reported health.

11.4 Recommendations
Two broad recommendations have been developed with reference to available literature as well as the findings from this HIA. Recommendations are also provided in Section 13 of this HIA report.

1. Housing and Health organisations should consider access to social and health care services as an integral component of the relocation process for all residents. This should focus on establishing or maintaining links with services and enabling equitable access regardless of the location of rehousing. Improved access to social, medical and dental services may increase residents’ health-seeking behaviours, with subsequent benefits for their physical and psychosocial health (14, 17, 18).

2. Health organisations should consider opportunities to increase the provision of outreach services for public housing residents, in order to improve access to social supports and medical and dental services. Increased access to medical and dental services may improve health-seeking behaviours and contribute to improved health and wellbeing for residents (41).
Conclusions

The relationship between housing and health has been well known for many years (1-5). Research has shown that estate renewal and rehousing programs can help to improve the long-term health and wellbeing of public housing residents. However, there is also evidence to show that the process of relocating public housing tenants may have negative impacts on their physical and psychosocial health, particularly in the short-term (3, 4, 14, 16-21). Further research is required to investigate and measure the physical and psychosocial health impacts of estate redevelopment and rehousing programs over the mid to long-term.

Findings from this HIA include current and potential positive and negative health impacts of estate renewal and relocation programs for public housing tenants in South Western Sydney. Key themes include resident responses to the processes of redevelopment and relocation, housing and neighbourhood quality, social networks and community engagement, access to healthy foods and opportunities for physical activity and access to social and health care services and programs. For each of these themes, health impacts differed for residents waiting to relocate, compared to residents relocated within the estate and residents relocated to neighbouring suburbs or other areas.

Findings from this HIA suggest that Housing and Health organisations involved in public housing estate renewal and rehousing programs should attend to four factors. They should ensure that:

1. Housing and neighbourhood generally are planned and built to high design standards;
2. Disruptions and inconveniences to individuals and the community during the actual redevelopment are reduced to the minimum;
3. There are appropriate procedures and services in place to support residents during the whole planning, redevelopment and relocation process; and
4. Each individual’s needs and preferences are taken into account.
13. Recommendations

Eleven broad recommendations were developed to promote positive health impacts and minimise negative health impacts for public housing residents involved in estate renewal and rehousing programs. These recommendations were drawn from relevant research as well as from the experiences of residents and service employees as reported in this HIA. These recommendations, with corresponding health impacts and suggestions for lead organisations, are provided in Table 5. They have also been included in Sections 7 to 10 of this report (see left hand column of Table 5).

Key recommendations include efforts to reduce disruptions and inconveniences associated with development and demolition works as well as ongoing maintenance of public housing properties. A personalised approach to relocation, with open and transparent communication was identified to be important in reducing stress and anxiety for residents. Improved access to community spaces and programs, healthy food outlets, opportunities for physical activity and social and health care services were also seen to be important in enabling health promoting behaviours as well as improving physical and psychosocial health outcomes for residents.
### Table 5: HIA Recommendations and Potential Health Impacts

<table>
<thead>
<tr>
<th>Number</th>
<th>Recommendations</th>
<th>Potential Health Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Sections 7.4 and 9.4)</td>
<td>Housing authorities should maintain a personalised approach, with open and transparent communication with communities at all stages of the rehousing process. This may involve providing regular information sessions, organising community events and distributing newsletters and updates.</td>
<td>Residents’ health and wellbeing is likely to be improved if they receive personalised support and clear and appropriate information at all stages of renewal projects (particularly in regard to plans for tenant relocations). Providing information and choices may also reduce stress and improve residents’ involvement and sense of control over their relocation (3, 5, 14, 45).</td>
</tr>
<tr>
<td>2 (Section 7.4)</td>
<td>Housing authorities and other organisations involved in estate renewal programs should consider opportunities to minimise delays and maximise the efficiency of the rehousing process.</td>
<td>Minimising delays may assist in reducing stress and anxiety for public housing tenants (14, 45).</td>
</tr>
<tr>
<td>3 (Section 8.5)</td>
<td>Housing authorities should continue to assess current and future housing needs and match tenants to appropriate and accessible housing.</td>
<td>Residents’ health and wellbeing is likely to improve if they are living in housing that matches their needs and functional abilities (1, 14, 17, 18, 47).</td>
</tr>
<tr>
<td>4 (Section 8.5)</td>
<td>Authorities and contractors who manage demolition and construction works should take action to minimise disruption as well as air and noise pollution for residents.</td>
<td>Minimising disruption and exposure to environmental pollutants may help to reduce feelings of stress and anxiety, particularly for residents who remain living within the estate (14).</td>
</tr>
<tr>
<td>5 (Section 8.5)</td>
<td>Housing authorities should ensure public housing properties are appropriately maintained.</td>
<td>Prompt maintenance is required to avoid environmental hazards and associated physical and mental health conditions (1, 47).</td>
</tr>
<tr>
<td>6 (Sections 8.5, 9.4 and 10.4)</td>
<td>Housing authorities, building contractors and other community agencies involved in renewal activities should consider opportunities to improve the safety of construction sites and common areas. This may include monitoring street lighting, improving fencing and engaging with local police.</td>
<td>Increased security around construction sites may reduce the likelihood of anti-social behaviour, violence and crime and improve residents’ sense of safety and security. It may also encourage the development of social and community networks. Improved safety and security may also encourage regular physical activity (14, 18).</td>
</tr>
<tr>
<td>7 (Section 9.4)</td>
<td>Housing authorities and other agencies involved in estate renewal programs should consider opportunities to provide funding for a community centre, with a wide variety of social and health care programs. Programs may target vulnerable groups including children, young people, single parents and CALD groups.</td>
<td>A variety of community, social and health care programs may bring people together and promote healthy activities as well as social networking and community engagement (3).</td>
</tr>
</tbody>
</table>
### Table 5 (cont): HIA Recommendations and Potential Health Impacts

<table>
<thead>
<tr>
<th>Number</th>
<th>Recommendations</th>
<th>Potential Health Impacts</th>
</tr>
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<tbody>
<tr>
<td>8 (Section 10.4)</td>
<td>Health authorities (Health Promotion and Community Health Services) and other community agencies should consider opportunities to implement healthy eating and physical activity programs for public housing tenants of all ages. This may include establishing and maintaining a community space for programs and services related to healthy eating and physical activity (e.g., community gardens and kitchens and exercise and sporting equipment and programs). Residents should be encouraged to use these programs. New programs should be developed and implemented to meet the changing needs of the community.</td>
<td>The provision of regular healthy eating and physical activity programs may encourage participation amongst residents (3).</td>
</tr>
<tr>
<td>9 (Section 10.4)</td>
<td>Housing and Health authorities should consider access to healthy and affordable food as part of the rehousing process. This may include resident access to major supermarkets and green grocers as well as culturally appropriate food sources. The relocation process should be used as an opportunity to link residents in with community and meal assistance programs as required.</td>
<td>Increased access to healthy food sources may improve residents’ diet and nutrition and reduce morbidity and mortality from chronic disease (38).</td>
</tr>
<tr>
<td>10 (Section 11.4)</td>
<td>Housing and Health authorities should consider access to social and health care services as an integral component of the rehousing process for all residents. This should focus on establishing or maintaining links with services and enabling equitable access regardless of the location of rehousing.</td>
<td>Improved access to social, medical and dental services may increase residents’ health-seeking behaviours, with subsequent benefits for their physical and psychosocial health (14, 17, 18).</td>
</tr>
<tr>
<td>11 (Section 11.4)</td>
<td>Health organisations should consider opportunities to increase the provision of outreach services for public housing residents, in order to improve access to social supports and medical and dental services.</td>
<td>Improved access to medical and dental services may increase health-seeking behaviours and contribute to improved health and wellbeing for residents (41).</td>
</tr>
</tbody>
</table>
14. References


42. Richardson B, Richardson J. End the decay: The cost of poor dental health and what should be done about it [Internet]. Fitzroy, Victoria: Brotherhood of St Laurence; 2011 [cited 2014 Nov 14]. Available from: http://www.healthinfonet.ecu.edu.au/key-resources/bibliography/?lid=22348


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Appendix A: Interview Guides for Informants and Community Members

Interview Guide for Housing Informants

Question One (Introduction)
• I’m interested in your experiences working as a..... Tell me a little bit about your job and the projects that you do.
• Do you work (or are you involved in projects) in areas undergoing renewal / regeneration?
• What is your involvement with social housing tenants?
• Have you done this sort of work before?

Question Two (Policies, Guidelines and Practices)
• Do you have any organisational policies or guidelines for the relocation of social housing tenants?
• Do you have any local practices that you use to help with the relocation of residents?
• Do you have any personal policies or practices that you use to help with the relocation process, based on your own experiences of working for Housing?
• What strategies do you use to communicate with residents during the housing relocation process?

Question Three (Health and Chronic Diseases Services)
• Are there any health services or programs to support social housing residents in Airds?
• Are there any chronic disease related programs, activities or services for social housing residents in Airds?
• How well are these programs utilised?

Question Four (Housing and Environmental Health)
• In your experience, do housing conditions change for residents when they are relocated? Does this have an impact on their health?
• In general, how does the neighbourhood change during the renewal and regeneration process? Does this have an impact on the health of residents?
• How does relocation affect the health (particularly chronic disease) or residents? How does this differ for residents waiting to relocate? For residents relocated within the Campbelltown LGA? For residents relocated outside of the Campbelltown LGA?

Question Five (Lifestyle Related Factors)
• In your experience, does the process of housing relocation affect finances for tenants? What impact does this have on their health?
• How do changes to the environment affect the health (particularly chronic disease) of residents?
• How does moving house (or waiting to move house) affect the diet and nutrition of residents?
• How does moving house (or waiting to move house) have an impact on food security, or the ability of residents to access fresh, healthy and culturally appropriate foods?

Question Six (Social Impacts)
• How does the community (particularly the community dynamic) change during the process of redevelopment and housing relocation?
• How does housing relocation affect social networks and social supports?
• In your experience, how does housing relocation affect family networks? Let’s start with residents who are waiting to relocate. We will then move on to talk about residents that have relocated within the area and then finally, to residents that move out of Campbelltown LGA.

Question Seven: Access to Health Care
• In your experience, how does access to medical practitioners and primary care services change for residents involved in housing relocation?
• How does access to chronic disease services and programs change for residents involved in housing relocation?
• How does access to health care services change for Aboriginal residents involved in housing relocation?
• Are you aware of any strategies or programs in place to maintain or improve access to health care services for residents who are being relocated?

Question Eight (Final Comments)
• Do you have any other comments? Is there anything I haven’t asked you about?
• As a final question… If I were taking over your job tomorrow, what is the one thing that you would say to me about the health of social housing residents who are being relocated?

Interview guide for Health Informants
Question One (Introduction)
• I’m interested in your experiences working as a….. Tell me a little bit about your job and the projects that you do.
• Do you work (or are you involved in projects) in areas undergoing renewal / regeneration?
• What is your involvement with social housing tenants?
• Have you done this sort of work before?

Question Two (Health and Chronic Disease Programs)
• What are the most common health conditions that you see in residents in Airds?
• What are the most common health conditions?
• In your experience, do many residents in Airds... Smoke daily; drink alcohol at a risky or high risk level; not do any or enough exercise or physical activity each day; have a poor diet (not enough fruit and vegetables, high amounts of fat etc); have a high body mass (or are overweight or obese)?
• Are you aware of any health services or programs to support residents in Airds?
• Are you aware of any chronic disease services or programs to support residents in Airds?
• How do you feel that residents engage with these programs and services?
• How are you involved in these programs or services?

Question Three (Housing and Environmental Impacts)
• In your experience, how do housing conditions change for residents when they are relocated? How does this have an impact on their health?
• In general, how does the neighbourhood change during the renewal and regeneration process? Does this have an impact on residents?
• How does housing relocation affect the health (particularly chronic disease) or residents? Let's start with residents who are waiting to relocate. We will then talk about residents who stay within the area and then move on to those that relocate out of the LGA.

Question Four (Lifestyle Related Factors)
• How does the process of relocation affect the finances of tenants? What impact does this have on their health?
• How do changes to the physical environment affect the health (particularly chronic disease) of residents?
• Does moving house (or waiting to move house) affect the diet and nutrition of residents?
• Does moving house (or waiting to move house) have an impact on food security, or the ability of residents to access fresh, healthy and culturally appropriate foods?

Question Five (Social Impacts)
• How does the community (particularly the community dynamic) change during the process of redevelopment and housing relocation?
• How does housing relocation affect social networks and social supports?
• In your experience, how does housing relocation affect family networks? Let's start with residents who are waiting to relocate. Then we will move onto residents that have relocated within the area and then talk about residents that move out of the LGA.

Question Six (Access to Health Care)
• In your experience, how does access to medical practitioners change for residents involved in housing relocation?
• How does access to primary and other health care services change for residents involved in housing relocation?
• How does access to health care services change for Aboriginal residents involved in housing relocation?
• Are there any services in place to maintain or improve access to health care for residents who are being relocated?

Question Eight (Final Comments)
• Do you have any other comments? Is there anything I haven’t asked you about?
• As a final question… If I were taking over your job tomorrow, what is the one thing that you would say to me about the health of social housing residents who are being relocated?

Interview guide for Community Members

Question One (Introduction)
• How long have you lived in Airds? What are the good things about living here? What are the things that are not so good?

Question Two (Community and Social Environment)
• Tell me about the community in Airds.
• How has the community changed since the redevelopment and people started moving?
• How have your relationships with your friends changed since moving (or waiting to move) house? Have you found it easy to keep in touch with friends? If so, why do you think it was easy? If not, what were the challenges?
• Have your relationships with family members changed since moving (or waiting to move) house? Has it been easy to see family members as often as before you moved? If so, why do you think it was easy? If not, what were the challenges?

Question Three (Housing and Physical Environment)
• What has it been like living in Airds during the redevelopment?
• Tell me about moving (or waiting to move) house as part of the redevelopment. What has it been like?
• What sort of house have you moved to (or will you be moving to)? What are the good things about this house? What are the things that could be improved?
• Will your new house be the same as your current (or previous) house? If not, what are the differences?

Question Four (Lifestyle)
• How has moving house (or the process of moving house) impacted on your job or your finances?
• How has moving house (or waiting to move house) impacted on your daily exercise (like walking, cycling or going to the swimming pool)? If so, why do you think this has happened? If not, what things have you done to keep your exercise going?
• How did moving house (or waiting to move house) impact on the foods that you eat (i.e., on your diet)? Is your new house near shops that sell healthy food? Are these shops easy to get to? Do you find that healthy foods are affordable for you on a weekly basis?

Question Five (Health and Chronic Disease)
• How is your health at the moment? Do you have any medical conditions?
• Do you take medications or have you made any changes to your lifestyle because of these conditions?
• How has your health been since you found out you were moving or since you moved house?
• How have you changed your diet since you moved (or since you found out that you were moving house)? What about exercise? What about smoking or drinking alcohol?

Question Six (Access to Health Care)
• Have you been able to see the same doctors (or other health care providers) since you moved to your new house? Will you still be able to see the same doctors (or other health care providers) once you move to your new house?
• Have you been able to go to the same health groups (groups for enjoyment) now that you have moved to your new house? Will you be able to go to these health groups when you move to your new house?
• Have you been able to attend the same community groups (like the cooking group and the walking group) at AB Central since you have moved to your new house? Will you be able to attend these same groups when you move to your new house?

Question Seven (General comments)
• To wrap up now, do you have any other comments? Is there anything important that I haven’t asked you about?
• To finish off, what is the one thing that has had the biggest impact on your health and lifestyle since you moved (or found out you were moving) to your new house?
Appendix B: HIA Themes and Subthemes

HEALTH IMPACTS OF ESTATE RENEWAL AND THE RELOCATION OF PUBLIC HOUSING TENANTS

INDIVIDUAL RESPONSES TO ESTATE RENEWAL AND RELOCATION PROGRAMS
- Stress, delays and uncertainty
- Opportunity and a chance to move
- Resistance to relocation
- Resident participation and relationship with service providers

HOUSING AND NEIGHBOURHOOD QUALITY
- Disruption due to demolition and construction
- Housing quality and suitability
- Privacy and space
- Perceived safety and security
- Cleanliness and maintenance

SOCIAL NETWORKS AND COMMUNITY ENGAGEMENT
- Assets for social interaction
- Social cohesion
- Mixed-income housing
- Community engagement

ACCESS TO HEALTHY FOODS AND OPPORTUNITIES FOR PHYSICAL ACTIVITY
- Access to healthy and affordable foods
- Food literacy
- Access to open spaces and recreational facilities
- Walkability and access to public transport

ACCESS TO PROGRAMS AND SERVICES
- Access to social and community services and programs
- Perceived safety and security
Hospitalisations in particular geographic area is higher or lower than expected. Given the population and the distribution of the population, it is used to determine if the number of hospitalisations is significantly different from what is expected based on the population and age distribution of the community.

Standardised incidence ratio (SIR) is a ratio of the number of observed hospitalisations and the number of expected hospitalisations. It is used to determine if the number of hospitalisations is significantly different from what is expected based on the population and age distribution of the community.

**Table 6: Standardised Incidence Ratios (SIRs) and 99% confidence intervals for hospitalisations by category and chronic disease condition for males, 2002 to 2011**

<table>
<thead>
<tr>
<th>Chronic Disease Condition</th>
<th>Number of Hospitalisations, Airds Bradbury</th>
<th>Expected Number of Hospitalisations, Campbelltown LGA</th>
<th>SIR</th>
<th>99% CI</th>
<th>Number of Hospitalisations, NSW</th>
<th>Expected Number of Hospitalisations, NSW</th>
<th>SIR</th>
<th>99% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Infectious diseases</strong></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Infectious diseases</td>
<td>2368</td>
<td>290.7</td>
<td>636</td>
<td>372.4</td>
<td>207</td>
<td>275.5 - 306.4</td>
<td>125</td>
<td></td>
</tr>
<tr>
<td>Acute respiratory infections</td>
<td>964</td>
<td>175.0</td>
<td>598</td>
<td>161.1</td>
<td>207</td>
<td>169.9 - 190.1</td>
<td>366</td>
<td></td>
</tr>
<tr>
<td><strong>Digestive system diseases</strong></td>
<td>692</td>
<td>107.8</td>
<td>683</td>
<td>101.3</td>
<td>207</td>
<td>97.5 - 118.8</td>
<td>125</td>
<td></td>
</tr>
<tr>
<td><strong>Other factors influencing health</strong></td>
<td>682</td>
<td>98.0</td>
<td>799</td>
<td>85.4</td>
<td>207</td>
<td>88.6 - 108.1</td>
<td>366</td>
<td></td>
</tr>
<tr>
<td><strong>Respiratory diseases</strong></td>
<td>678</td>
<td>148.5</td>
<td>397</td>
<td>170.9</td>
<td>207</td>
<td>134.3 - 163.9</td>
<td>125</td>
<td></td>
</tr>
<tr>
<td><strong>Symptoms and abnormal findings</strong></td>
<td>609</td>
<td>158.7</td>
<td>371</td>
<td>164.3</td>
<td>207</td>
<td>142.7 - 176.1</td>
<td>125</td>
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<td><strong>Cardiovascular diseases</strong></td>
<td>578</td>
<td>151.6</td>
<td>355</td>
<td>162.9</td>
<td>207</td>
<td>135.9 - 168.6</td>
<td>125</td>
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<td><strong>Mental disorders</strong></td>
<td>486</td>
<td>176.1</td>
<td>283</td>
<td>171.5</td>
<td>207</td>
<td>156.2 - 197.8</td>
<td>125</td>
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<tr>
<td><strong>Nervous and sense disorders</strong></td>
<td>415</td>
<td>120.4</td>
<td>342</td>
<td>121.2</td>
<td>207</td>
<td>105.8 - 136.5</td>
<td>125</td>
<td></td>
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<tr>
<td><strong>Musculoskeletal diseases</strong></td>
<td>386</td>
<td>124.2</td>
<td>310</td>
<td>124.4</td>
<td>207</td>
<td>108.5 - 141.4</td>
<td>125</td>
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<tr>
<td><strong>Maternal, neonatal and congenital causes</strong></td>
<td>284</td>
<td>113.9</td>
<td>250</td>
<td>113.8</td>
<td>207</td>
<td>97.3 - 132.5</td>
<td>125</td>
<td></td>
</tr>
<tr>
<td><strong>Skin diseases</strong></td>
<td>275</td>
<td>169.6</td>
<td>120</td>
<td>228.3</td>
<td>207</td>
<td>144.5 - 197.8</td>
<td>125</td>
<td></td>
</tr>
<tr>
<td><strong>Infectious diseases</strong></td>
<td>236</td>
<td>154.3</td>
<td>122</td>
<td>186.3</td>
<td>207</td>
<td>129.6 - 182.1</td>
<td>125</td>
<td></td>
</tr>
<tr>
<td><strong>Genitourinary diseases</strong></td>
<td>212</td>
<td>102.2</td>
<td>215</td>
<td>98.7</td>
<td>207</td>
<td>85.0 - 121.7</td>
<td>125</td>
<td></td>
</tr>
<tr>
<td><strong>Neoplasms – malignant</strong></td>
<td>192</td>
<td>93.1</td>
<td>235</td>
<td>81.8</td>
<td>207</td>
<td>76.7 - 111.8</td>
<td>125</td>
<td></td>
</tr>
<tr>
<td><strong>Endocrine diseases</strong></td>
<td>163</td>
<td>200.0</td>
<td>79</td>
<td>205.8</td>
<td>207</td>
<td>161.9 - 243.9</td>
<td>125</td>
<td></td>
</tr>
<tr>
<td><strong>Blood and immune diseases</strong></td>
<td>122</td>
<td>220.8</td>
<td>55</td>
<td>280.1</td>
<td>207</td>
<td>249.1 - 312.5</td>
<td>125</td>
<td></td>
</tr>
<tr>
<td><strong>Chronic obstructive pulmonary disease</strong></td>
<td>122</td>
<td>113.9</td>
<td>111</td>
<td>132.8</td>
<td>207</td>
<td>97.3 - 132.5</td>
<td>125</td>
<td></td>
</tr>
</tbody>
</table>

Source: NSW Admitted Patient Data Collection and ABS population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

*Appendix C: Hospitalisations*
Table 7: Standardised incidence ratios (SIRs) and 99% confidence intervals for hospitalisations by category and chronic disease condition for females, 2002 to 2011.

<table>
<thead>
<tr>
<th>Chronic Disease Condition</th>
<th>Expected Number of Hospitalisations</th>
<th>SIR</th>
<th>99% CI</th>
<th>Expected Number of Hospitalisations</th>
<th>SIR</th>
<th>99% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maternal, neonatal and congenital causes</td>
<td>170</td>
<td>1.7</td>
<td>(1.1-2.4)</td>
<td>236</td>
<td>2.4</td>
<td>(1.7-3.2)</td>
</tr>
<tr>
<td>Breast and ovarian cancers</td>
<td>113</td>
<td>1.1</td>
<td>(0.7-1.7)</td>
<td>190</td>
<td>1.9</td>
<td>(1.4-2.5)</td>
</tr>
<tr>
<td>Acute respiratory disease</td>
<td>330</td>
<td>3.3</td>
<td>(2.9-3.8)</td>
<td>157</td>
<td>1.6</td>
<td>(1.2-2.1)</td>
</tr>
<tr>
<td>Chronic obstructive pulmonary disease</td>
<td>152</td>
<td>1.5</td>
<td>(1.1-2.0)</td>
<td>61</td>
<td>0.6</td>
<td>(0.3-1.0)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>118</td>
<td>1.2</td>
<td>(0.9-1.5)</td>
<td>41</td>
<td>0.4</td>
<td>(0.1-0.7)</td>
</tr>
<tr>
<td>Cardiovascular diseases</td>
<td>506</td>
<td>5.1</td>
<td>(4.6-5.7)</td>
<td>296</td>
<td>3.0</td>
<td>(2.4-3.6)</td>
</tr>
<tr>
<td>Endocrine diseases</td>
<td>169</td>
<td>1.7</td>
<td>(1.3-2.1)</td>
<td>117</td>
<td>1.2</td>
<td>(0.9-1.5)</td>
</tr>
<tr>
<td>Neoplasms – other than malignant</td>
<td>170</td>
<td>1.7</td>
<td>(1.1-2.4)</td>
<td>236</td>
<td>2.4</td>
<td>(1.7-3.2)</td>
</tr>
<tr>
<td>Blood and immune diseases</td>
<td>91</td>
<td>0.9</td>
<td>(0.6-1.3)</td>
<td>80</td>
<td>0.8</td>
<td>(0.5-1.2)</td>
</tr>
<tr>
<td>Skin diseases</td>
<td>251</td>
<td>2.6</td>
<td>(2.2-3.0)</td>
<td>114</td>
<td>1.2</td>
<td>(0.8-1.7)</td>
</tr>
<tr>
<td>Mental disorders</td>
<td>419</td>
<td>4.2</td>
<td>(3.7-4.7)</td>
<td>371</td>
<td>3.8</td>
<td>(3.3-4.4)</td>
</tr>
<tr>
<td>Genitourinary diseases</td>
<td>443</td>
<td>4.5</td>
<td>(4.0-5.0)</td>
<td>521</td>
<td>5.3</td>
<td>(4.8-5.9)</td>
</tr>
<tr>
<td>Nervous and sense disorders</td>
<td>419</td>
<td>4.2</td>
<td>(3.7-4.7)</td>
<td>371</td>
<td>3.8</td>
<td>(3.3-4.4)</td>
</tr>
<tr>
<td>Mental disorders</td>
<td>419</td>
<td>4.2</td>
<td>(3.7-4.7)</td>
<td>371</td>
<td>3.8</td>
<td>(3.3-4.4)</td>
</tr>
<tr>
<td>Injury and poisoning (including external causes)</td>
<td>142</td>
<td>1.4</td>
<td>(1.0-1.8)</td>
<td>62</td>
<td>0.6</td>
<td>(0.3-0.9)</td>
</tr>
<tr>
<td>Symptom and abnormal findings</td>
<td>65</td>
<td>0.7</td>
<td>(0.4-1.1)</td>
<td>315</td>
<td>3.2</td>
<td>(2.7-3.7)</td>
</tr>
<tr>
<td>Chronic respiratory disease</td>
<td>202</td>
<td>2.1</td>
<td>(1.7-2.6)</td>
<td>102</td>
<td>1.1</td>
<td>(0.7-1.6)</td>
</tr>
<tr>
<td>Rheumatic disease</td>
<td>729</td>
<td>7.4</td>
<td>(6.7-8.0)</td>
<td>469</td>
<td>4.9</td>
<td>(4.3-5.5)</td>
</tr>
<tr>
<td>Other causes of death</td>
<td>113</td>
<td>1.2</td>
<td>(0.9-1.6)</td>
<td>87</td>
<td>0.9</td>
<td>(0.6-1.3)</td>
</tr>
<tr>
<td>Chagas disease</td>
<td>8</td>
<td>0.1</td>
<td>(0.0-0.3)</td>
<td>3</td>
<td>0.0</td>
<td>(0.0-0.2)</td>
</tr>
<tr>
<td>Chagas disease</td>
<td>8</td>
<td>0.1</td>
<td>(0.0-0.3)</td>
<td>3</td>
<td>0.0</td>
<td>(0.0-0.2)</td>
</tr>
</tbody>
</table>

Source: NSW Admitted Patient Data Collection and ABS population estimates (SAPHaRI), Centre for Epidemiology and Evidence, NSW Ministry of Health.
Appendix D: Potentially Preventable Hospital Admissions

Table 8: Standardised incidence ratios (SIRs) and 99% confidence intervals for potentially preventable hospitalisations by cause for males, Airds Bradbury Renewal Area, 2010 to 2011

<table>
<thead>
<tr>
<th>Preventable Hospitalisation Category</th>
<th>NSW</th>
<th>Expected Number of Hospitalisations</th>
<th>SIR</th>
<th>99% CI</th>
<th>Expected Number of Hospitalisations</th>
<th>SIR</th>
<th>99% CI</th>
<th>NSW Admitted Patient Data Collection and ABS population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes complications</td>
<td>113.4</td>
<td>4</td>
<td>100.6</td>
<td>4</td>
<td>11.9</td>
<td>11.9</td>
<td>11.9</td>
<td></td>
</tr>
<tr>
<td>Convulsions and epilepsy</td>
<td>110</td>
<td>46</td>
<td>240.2</td>
<td>46</td>
<td>185.3</td>
<td>185.3</td>
<td>185.3</td>
<td></td>
</tr>
<tr>
<td>Ear, nose, and throat infections</td>
<td>107</td>
<td>62</td>
<td>182.3</td>
<td>50</td>
<td>132.4</td>
<td>132.4</td>
<td>132.4</td>
<td></td>
</tr>
<tr>
<td>Cellulitis</td>
<td>106</td>
<td>49</td>
<td>214.4</td>
<td>38</td>
<td>164.6</td>
<td>164.6</td>
<td>164.6</td>
<td></td>
</tr>
<tr>
<td>Asthma</td>
<td>101</td>
<td>78</td>
<td>129.6</td>
<td>63</td>
<td>98.8</td>
<td>98.8</td>
<td>98.8</td>
<td></td>
</tr>
<tr>
<td>Dental conditions</td>
<td>79</td>
<td>52</td>
<td>150.7</td>
<td>56</td>
<td>110.6</td>
<td>110.6</td>
<td>110.6</td>
<td></td>
</tr>
<tr>
<td>Chronic obstructive pulmonary disease</td>
<td>71</td>
<td>42</td>
<td>168.9</td>
<td>34</td>
<td>121.7</td>
<td>121.7</td>
<td>121.7</td>
<td></td>
</tr>
<tr>
<td>Committals</td>
<td>70</td>
<td>30</td>
<td>232.3</td>
<td>28</td>
<td>167.0</td>
<td>167.0</td>
<td>167.0</td>
<td></td>
</tr>
<tr>
<td>Dehydration and gastroenteritis</td>
<td>41</td>
<td>35</td>
<td>116.4</td>
<td>35</td>
<td>74.9</td>
<td>74.9</td>
<td>74.9</td>
<td></td>
</tr>
<tr>
<td>Congestive heart failure</td>
<td>36</td>
<td>26</td>
<td>141.0</td>
<td>20</td>
<td>87.8</td>
<td>87.8</td>
<td>87.8</td>
<td></td>
</tr>
<tr>
<td>Urinary tract infections</td>
<td>33</td>
<td>24</td>
<td>138.7</td>
<td>21</td>
<td>84.4</td>
<td>84.4</td>
<td>84.4</td>
<td></td>
</tr>
<tr>
<td>Iron deficiency anaemia</td>
<td>20</td>
<td>11</td>
<td>174.1</td>
<td>9</td>
<td>90.1</td>
<td>90.1</td>
<td>90.1</td>
<td></td>
</tr>
<tr>
<td>Influenza and pneumonia</td>
<td>15</td>
<td>10</td>
<td>150.1</td>
<td>10</td>
<td>69.0</td>
<td>69.0</td>
<td>69.0</td>
<td></td>
</tr>
<tr>
<td>Perforated/bleeding ulcer</td>
<td>12</td>
<td>5</td>
<td>257.3</td>
<td>4</td>
<td>106.0</td>
<td>106.0</td>
<td>106.0</td>
<td></td>
</tr>
<tr>
<td>Gangrene</td>
<td>9</td>
<td>3</td>
<td>259.2</td>
<td>3</td>
<td>90.2</td>
<td>90.2</td>
<td>90.2</td>
<td></td>
</tr>
<tr>
<td>Other vaccine preventable</td>
<td>9</td>
<td>3</td>
<td>349.9</td>
<td>2</td>
<td>121.8</td>
<td>121.8</td>
<td>121.8</td>
<td></td>
</tr>
<tr>
<td>Ruptured appendix</td>
<td>7</td>
<td>5</td>
<td>145.7</td>
<td>6</td>
<td>42.4</td>
<td>42.4</td>
<td>42.4</td>
<td></td>
</tr>
<tr>
<td>Hypertension</td>
<td>4</td>
<td>4</td>
<td>100.6</td>
<td>4</td>
<td>16.9</td>
<td>16.9</td>
<td>16.9</td>
<td></td>
</tr>
<tr>
<td>Other vaccine preventable</td>
<td>20</td>
<td>9</td>
<td>301.8</td>
<td>9</td>
<td>90.1</td>
<td>90.1</td>
<td>90.1</td>
<td></td>
</tr>
<tr>
<td>Other vaccine preventable</td>
<td>20</td>
<td>9</td>
<td>301.8</td>
<td>9</td>
<td>90.1</td>
<td>90.1</td>
<td>90.1</td>
<td></td>
</tr>
<tr>
<td>Other vaccine preventable</td>
<td>20</td>
<td>9</td>
<td>301.8</td>
<td>9</td>
<td>90.1</td>
<td>90.1</td>
<td>90.1</td>
<td></td>
</tr>
<tr>
<td>Other vaccine preventable</td>
<td>20</td>
<td>9</td>
<td>301.8</td>
<td>9</td>
<td>90.1</td>
<td>90.1</td>
<td>90.1</td>
<td></td>
</tr>
</tbody>
</table>

Standardised incidence ratio (SIR) is a ratio of the number of observed hospitalisations and the number of expected hospitalisations. It is used to determine if the number of hospitalisations in a particular geographic area is higher or lower than expected, given the population and age distribution for that community. The standardised incidence ratio (SIR) is a ratio of the number of observed hospitalisations and the number of expected hospitalisations. It is used to determine if the number of hospitalisations in a particular geographic area is higher or lower than expected, given the population and age distribution for that community. The standardised incidence ratio (SIR) is a ratio of the number of observed hospitalisations and the number of expected hospitalisations. It is used to determine if the number of hospitalisations in a particular geographic area is higher or lower than expected, given the population and age distribution for that community.
Table 9: Standardised incidence ratios (SIR) and 99% confidence intervals for potentially preventable hospitalisations by cause for females, Airds Bradbury Renewal Area, 2001 to 2011

<table>
<thead>
<tr>
<th>Preventable hospitalisation category</th>
<th>Number of Hospitalisations, Airds Bradbury,##</th>
<th>Campbelltown LGA</th>
<th>SIR</th>
<th>99% CI</th>
<th>Expected Number of Hospitalisations,##</th>
<th>Campbelltown LGA</th>
<th>SIR</th>
<th>99% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic obstructive pulmonary disease</td>
<td>3</td>
<td>55.9</td>
<td>0.6</td>
<td>(0.4-0.9)</td>
<td>0.9</td>
<td>5.2</td>
<td>1.8</td>
<td>(1.1-2.6)</td>
</tr>
<tr>
<td>Angina</td>
<td>5</td>
<td>4.9</td>
<td>1.1</td>
<td>(0.4-2.0)</td>
<td>2.1</td>
<td>3.4</td>
<td>1.4</td>
<td>(0.7-2.2)</td>
</tr>
<tr>
<td>Other vaccine preventable</td>
<td>1</td>
<td>1.7</td>
<td>1.7</td>
<td>(0.4-4.9)</td>
<td>0.6</td>
<td>2.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pelvic inflammatory disease</td>
<td>1</td>
<td>2.0</td>
<td>2.0</td>
<td>(0.4-10.2)</td>
<td>0.5</td>
<td>2.0</td>
<td>2.0</td>
<td>(0.4-10.2)</td>
</tr>
<tr>
<td>Influenza and pneumonia</td>
<td>1</td>
<td>2.1</td>
<td>2.1</td>
<td>(0.4-12.5)</td>
<td>0.5</td>
<td>2.0</td>
<td>2.0</td>
<td>(0.4-12.5)</td>
</tr>
<tr>
<td>Ruptured appendix</td>
<td>5</td>
<td>4.6</td>
<td>1.7</td>
<td>(0.4-5.8)</td>
<td>0.5</td>
<td>2.0</td>
<td>2.0</td>
<td>(0.4-5.8)</td>
</tr>
<tr>
<td>Perforated!/bleeding ulcer</td>
<td>4</td>
<td>6.8</td>
<td>2.6</td>
<td>(0.7-5.7)</td>
<td>0.6</td>
<td>2.4</td>
<td>1.4</td>
<td>(0.4-2.8)</td>
</tr>
<tr>
<td>Hypertension</td>
<td>4</td>
<td>5.9</td>
<td>1.8</td>
<td>(0.4-4.1)</td>
<td>0.6</td>
<td>2.4</td>
<td>1.4</td>
<td>(0.4-2.8)</td>
</tr>
<tr>
<td>Dental conditions</td>
<td>1</td>
<td>2.1</td>
<td>2.1</td>
<td>(0.4-4.9)</td>
<td>0.6</td>
<td>2.4</td>
<td>2.0</td>
<td>(0.4-4.9)</td>
</tr>
<tr>
<td>congenital heart failure</td>
<td>3</td>
<td>3.6</td>
<td>1.0</td>
<td>(0.4-2.1)</td>
<td>1</td>
<td>1.0</td>
<td>1.0</td>
<td>(0.4-2.1)</td>
</tr>
<tr>
<td>Mental conditions</td>
<td>3</td>
<td>3.4</td>
<td>1.0</td>
<td>(0.4-2.2)</td>
<td>1</td>
<td>1.0</td>
<td>1.0</td>
<td>(0.4-2.2)</td>
</tr>
<tr>
<td>Convulsions and epilepsy</td>
<td>4</td>
<td>6.9</td>
<td>2.6</td>
<td>(0.7-5.8)</td>
<td>0.6</td>
<td>2.4</td>
<td>1.4</td>
<td>(0.4-2.8)</td>
</tr>
<tr>
<td>Cellitis</td>
<td>4</td>
<td>6.4</td>
<td>2.6</td>
<td>(0.7-5.8)</td>
<td>0.6</td>
<td>2.4</td>
<td>1.4</td>
<td>(0.4-2.8)</td>
</tr>
<tr>
<td>Lower respiratory infections including pneumonia</td>
<td>4</td>
<td>6.4</td>
<td>2.6</td>
<td>(0.7-5.8)</td>
<td>0.6</td>
<td>2.4</td>
<td>1.4</td>
<td>(0.4-2.8)</td>
</tr>
<tr>
<td>Gastroenteritis and gastroenteritis</td>
<td>5</td>
<td>7.4</td>
<td>2.6</td>
<td>(0.7-5.8)</td>
<td>0.6</td>
<td>2.4</td>
<td>1.4</td>
<td>(0.4-2.8)</td>
</tr>
<tr>
<td>Congestive heart failure</td>
<td>4</td>
<td>6.9</td>
<td>2.6</td>
<td>(0.7-5.8)</td>
<td>0.6</td>
<td>2.4</td>
<td>1.4</td>
<td>(0.4-2.8)</td>
</tr>
<tr>
<td>Congestive heart failure</td>
<td>4</td>
<td>6.9</td>
<td>2.6</td>
<td>(0.7-5.8)</td>
<td>0.6</td>
<td>2.4</td>
<td>1.4</td>
<td>(0.4-2.8)</td>
</tr>
</tbody>
</table>

* Standardised incidence ratio (SMR) is a ratio of the number of observed hospitalisations and the number of expected hospitalisations. It is used to determine if the number of hospitalisations in a particular geographic area is higher or lower than expected, given the population and age distribution for that community.

Source: NSW Admitted Patient Data Collection and ABS population estimates (Saphari). Centre for Epidemiology and Evidence, NSW Ministry of Health.
Tables 10 and 11 show the number of deaths by cause as well as standardized mortality rates (SMRs) for male and female residents in Campbelltown LGA compared to NSW for the period 2003 to 2007. Categories highlighted in red (1) are those in which the incidence in Campbelltown LGA is significantly greater than in the general population of NSW. In contrast, conditions highlighted in blue (2) are those in which the incidence in Campbelltown is significantly less than that of NSW.

### Table 10: Standardized mortality ratios (SMRs) and 95% confident intervals for deaths by category of cause for males, Campbelltown LGA, 2003-2007

<table>
<thead>
<tr>
<th>Category of Causes</th>
<th>Deaths NSW</th>
<th>Expected Number of Deaths NSW</th>
<th>SMR</th>
<th>95%CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood and immune diseases</td>
<td>3</td>
<td>3</td>
<td>60.8</td>
<td>(68.2-22.3)</td>
</tr>
<tr>
<td>Skin diseases</td>
<td>7</td>
<td>7</td>
<td>30.7</td>
<td>(52.2-179.2)</td>
</tr>
<tr>
<td>Neoplasms - other (benign and carcinoma in situ)</td>
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<td>100.4</td>
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<td>(89.9-119.9)</td>
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<td>Nervous and sense disorders</td>
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<td>38</td>
<td>106.9</td>
<td>(89.9-123.9)</td>
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<tr>
<td>Infectious diseases</td>
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<td>(88.9-118.7)</td>
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<td>Maternal, neonatal and perinatal causes</td>
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<td>25</td>
<td>99.8</td>
<td>(56.6-165.7)</td>
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<td>Nervous and sense disorders</td>
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<td>99.8</td>
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<td>Mental and neurodevelopmental disorders</td>
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<td>Respiratory system diseases</td>
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<td>(69.2-141.4)</td>
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<tr>
<td>Immediate causes of death</td>
<td>38</td>
<td>38</td>
<td>99.8</td>
<td>(69.2-141.4)</td>
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</table>

Source: ABS mortality data and population estimates (SAPHEI), Centre for Epidemiology and Evidence, NSW Ministry of Health.
Table 1: Standardised mortality ratios (SMRs) and 99% confidence intervals for deaths by category of cause for females, Campbelltown LGA, 2003-2007

<table>
<thead>
<tr>
<th>Category of Cause</th>
<th>Campbelltown LGA</th>
<th>Expected Number of Deaths, NSW</th>
<th>Number of Deaths, NSW</th>
<th>SMR</th>
<th>99%CI</th>
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<tr>
<td>Cardiovascular diseases</td>
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<td>394</td>
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<td>Neoplasms, malignant</td>
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<td>103.4</td>
<td>(90.7, 117.4)</td>
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<td>109</td>
<td>130.0</td>
<td>(103.6, 160.9)</td>
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<td>Endocrine diseases</td>
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<td>42</td>
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<td>(92.1, 186.8)</td>
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<td>12</td>
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<td>6</td>
<td>111.4</td>
<td>(70.1, 172.4)</td>
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</tr>
</tbody>
</table>

Source: ABS mortality data and population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Standardised mortality ratio (SMR) is a ratio of the number of observed deaths and the number of expected deaths. It is used to determine if the number of deaths in a particular geographic area is higher or lower than expected, given the population and age distribution for that community.