

Bonnyrigg Estate Concept Plan - Health Impact Assessment

Prepared for the New South Wales Land and
Housing Corporation

August 2018

Executive Summary

This report has been prepared to support a Section 75W modification application by the New South Wales Land and Housing Corporation (LAHC) to the Concept Plan Approval (MP06_0046) for the remaining stages of the development of the Bonnyrigg Housing Estate. Originally developed in the late 1970s the Estate contained a total of 930 dwellings of which 833 were social housing dwellings. Located South West of Sydney, within the Fairfield Local Government Area, the Bonnyrigg Housing Estate is an 80 ha area, directly adjoining the Bonnyrigg Town Centre.

NSW LAHC engaged the Institute for Public Policy and Governance at the University of Technology Sydney (IPPG) to review the health impact assessment considerations and conduct an updated health impact assessment (HIA) for the proposed amendments to the Concept Plan. With the main purpose of the HIA to gather and assess the evidence of the proposal on health impacts of the community to support decision making¹.

To inform the determination of the original concept plan, a Social Impact Assessment was prepared by Judith Stubbs in 2007, assessing the likely impacts of the proposal. The study stated that the project supported the objectives of the Premier's Council for Active Living Guidelines. In particular, the design encouraged a walkable community, close to shops, transport, open space and services, with diverse recreational opportunities, and increased safety through various aspects of the concept design.

Since the preparation of the original Social Impact Assessment by Judith Stubbs and Associates, the amendments to the *Environmental Planning and Assessment Act 1979* now reflect the NSW Government's commitment to the promotion of safe and well-designed communities. Good design outcomes are accessible, inclusive and improve community cohesion and liveability, ultimately leading to happier, more productive and comfortable inhabitants. This HIA has taken into consideration the clear framework for the consideration of healthy planning in accordance with the *Better Placed* design policy.

The assessment has found that overall the staged internal relocation model has helped to keep the community united. However, some older residents have been impacted negatively in terms of mental health associated with the relocation to date. Some residents have welcomed the increase in opportunities for passive surveillance and improved sense of security, whilst others have felt the density has impacted on their sense of privacy.

Population trends show there is a growing and ageing population with a need to ensure the Bonnyrigg Estate takes into consideration the needs of older persons, particularly in the design of public open spaces and pedestrian networks. There will be a continued need to provide culturally and linguistically appropriate facilities, as well as taking into consideration the growth in the number of lone persons and couple only households. Trends for the area show people are not eating recommended levels of fruit and there has been an increase in the proportion of the population that is overweight and suffering from diabetes. It is important that the design of the Estate continues to provide areas that will encourage physical activity, reducing the dependency on cars for transport, and encourage the connection to fresh fruits and vegetable consumption.

There is significant opportunity to increase the connectivity between the Estate and the Bonnyrigg Shopping Centre, Multi-Purpose Community Centre and surrounds. In particular the development of Superlots B and C are to take into consideration placemaking strategies that encourage a vibrant, active space, flexible enough to provide opportunity for informal and formal gatherings.

It is recommended that the strategies adopted within the Bonnyrigg Community Renewal Services Plan are continued. In addition it is important that NSW Health and NSW Land and Housing Corporation continue to work together to build upon the recommendations of this report, monitoring and evaluating the outcomes of the redevelopment on the health of the local community.

¹ <http://www.phrp.com.au/wp-content/uploads/2014/10/NB07073B.pdf>

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Background

Context

This report has been prepared to support a Section 75W modification application by the New South Wales Land and Housing Corporation (LAHC) to the Concept Plan Approval (MP06_0046) for the remaining stages of the development of the Bonnyrigg Housing Estate. Originally developed in the late 1970s the Estate contained a total of 930 dwellings of which 833 were social housing dwellings. Located South West of Sydney, within the Fairfield Local Government Area, the Bonnyrigg Housing Estate is an 80 ha area, directly adjoining the Bonnyrigg Town Centre.

The original Estate, was based around the 'Radburn' design principles. The original design is considered to have created a number of negative social and environmental impacts with the design considered to contribute to high levels of crime through badly designed and underutilized spaces. Whilst the design encouraged walking during the day there were key safety and security concerns with residents and pedestrians not feeling safe at night, ultimately discouraging residents to walk to local services and facilities during both the day and night.

In 2007 the NSW Government granted approval for a Concept Plan to reconstruct a more vibrant, safe, healthy and friendly neighbourhood, redesigning the layout to remove the negative social planning aspects associated with the 'Radburn' design principles. Transforming the low-density public housing estate the original Concept Plan included the provision of 2,332 dwellings, of which 700 would be established as social housing. The approval for the Concept Plan encompassed an 18 staged construction project, delivering the dwellings over a 13 year period.

Transforming the 1970s housing estate into a mix of dwelling types, the Estate incorporates apartments and detached homes, with a mix of both private and public housing. The redesign removes the cul-de-sac layout, seeks to encourage a more legible layout with direct walking routes and clearly defined spaces, both public and private. Creating an environment that increases opportunities for walking and cycling, the design sought to encourage increased social engagement between residents through a design that allows for more informal engagement and connection due to the new layout.

A number of modifications have been made to the Masterplan since the original Concept Plan approval was given in 2007.

Table 1 Modifications History

Modification	Changes
Approved Concept Plan (2007)	<ul style="list-style-type: none">• 2,332 dwellings (includes 700 social dwellings and 133 relocated offsite)• Voluntary Planning Agreement to provide 621m² of community centre, designed to provide halls, meeting rooms, health clinic, out-reach services.• Projected increase of 3,137 people
Modification 1 and 2 Approvals (2009 and 2010)	<ul style="list-style-type: none">• No changes to dwellings or community facility requirement with modifications including technical adjustments and reduced allotment widths for detached dwellings
Modification 3 Approval (2011)	<ul style="list-style-type: none">• No changes to requirements with modifications addressing issues of affordability and privacy
Modification 4 Approval (2011)	<ul style="list-style-type: none">• Increase from 2,332 to 2,500 dwellings (an increase of 168 dwellings, of which 62 were for social housing)

	<ul style="list-style-type: none"> Increased requirement for community facilities (additional 64.28m²). Modification proposed a total of 700m² (in excess by 14.72m² of what was required)
Current Modification	<ul style="list-style-type: none"> Increase from 2,500 dwellings to approximately 3000 dwellings Retain all social housing (833) on-site plus additional social housing Retain 70/30 mix (2100 private/ 900 public) An additional 207.46m² community facility floorspace

The most recent proposal reflects the recent changes in policy, governing the provision of social housing and to meet the increasing demand for social and affordable housing in NSW. The proposed amendment provides for an increase in dwelling numbers (both public and private) and allows for a better integration of the Estate with the existing Bonnyrigg Town Centre. Whilst some public housing residents chose to move away from Bonnyrigg when the renewal project was first announced (in 2007), those who remained have been able to remain living in Bonnyrigg due to the internal relocation model, providing for a temporary relocation on-site.

The Current Proposal

The current proposal seeks approval for an increase in the total number of dwellings from 2,500 to 3,000, of which 900 will be allocated as social housing. The proposed amendment will ensure that there is no net loss of social housing with the housing mix consistent with the NSW Government *Future Directions for Social housing Policy*.

The modification also proposes:

- Changes to the housing typologies with apartments and mixed use buildings between 4-8 storeys proposed, with greatest densities located closer to the Bonnyrigg Town Centre.
- Improved pedestrian and open space networks with an additional 1.27 hectares of public open space incorporated with a new public plaza allowing for improved pedestrian connections to the Bonnyrigg Town Centre.
- A refined road network, intended to improve connections for pedestrians and cyclists to the town centre around the Estate.

Future Directions for Social Housing

The modifications to the Concept Plan are intended to align with the new NSW Government social housing policy *Future Directions for Social Housing in NSW 2015*. In seeking to provide more social housing in NSW over the next 10 years the policy also seeks to provide more opportunities and support for people to advice and transition out of social housing. Overall the policy aims to see that there is a better social housing experience.

Health Impact Assessment

As defined by the European Centre for Health Policy (ECHP), World Health Organisation (WHO) in the 1999 Gothenburg consensus paper on Health Impact Assessment, "*Health Impact Assessment is a combination of procedures by which a policy, program or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population*". With further consideration of health being defined as "*a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity*"².

² European Centre for Health Policy. 1999. Cited NSW Health.
<http://www.health.nsw.gov.au/environment/hazard/Pages/health-impact-assessment.aspx>

A Health Impact Assessment (HIA) forms part of the Environmental Impact Assessment with the consideration of health relating to the environmental consequences of development, assessing the impact of this development on the health of the population. The consideration of health impacts takes into account the impact on the social, economic lifestyle and behavioural costs as well as the benefits to the local and broader communities that may be impacted by such development.

Revised Health Impact Assessment

This report has been prepared for the NSW Land and Housing Corporation (LAHC) as a technical study to support the modification of the Part 3A Concept Plan approval for the renewal of the Bonnyrigg Housing Estate MP06-0046. As identified within the Secretary's Environmental Assessment Requirements in accordance with Section 75W of the *Environmental Planning and Assessment Act 1979* the Environmental Assessment, seeking approval for the modification, must address relevant planning provisions, goals and strategic planning objectives of a number of plans and strategies, including:

- Future Directions for Social Housing in NSW 2015
- Better Placed – an integrated design policy for the built environment of NSW, 2017
- NSW Planning Guidelines for Walking (2013) and Cycling (2013)
- NSW Bicycle Guidelines
- Crime Prevention Through Environmental Design Principles

Specific matters are required to be addressed in the Environmental Assessment and include a revised health impact assessment, as undertaken in the original SIA.

NSW LAHC engaged the Institute for Public Policy and Governance at the University of Technology Sydney (IPPG) to review the health impact assessment considerations and conduct an updated health impact assessment for the proposed amendments to the Concept Plan. With the main purpose of the HIA to gather and assess the evidence of the proposal on health impacts of the community to support decision making³.

This report seeks to;

- Assess the severity and likelihood of health both positive and negative impacts, as a result of the modification.
- Determine whether the impacts may be direct or indirect.
- Assess the distribution of impacts.
- Identify recommendations that can reduce or eliminate the potential risks to health that may arise from the modification.

Given extensive community consultation has been undertaken over the life of the redevelopment of the Estate, targeted engagement with key stakeholders has been included to inform the HIA. In addition, consideration has been given to the results of recent engagement undertaken by Straight Talk to inform the development a review of the new multi-purpose community facility.

In addition, preliminary results of current research being undertaken by the University of NSW, City Futures Research Centre, *“the Bonnyrigg Longitudinal Study”*, have been used to inform the recommendations of this report, in consideration of the impacts of the renewal on the wellbeing and social and economic independence of Bonnyrigg residents.

³ <http://www.phrp.com.au/wp-content/uploads/2014/10/NB07073B.pdf>

1 Previous Health Impact Assessment

1.1 Introduction

To inform the determination of the original concept plan a Social Impact Assessment was prepared by Judith Stubbs in 2007 that assessed the likely impacts of the proposal. The purpose of the *Bonnyrigg Living Communities Social Impact Assessment 2007, Judith Stubbs* (the study), was to fulfil the requirements of relevant Heads of Considerations of the NSW Department of Planning's Environmental Assessment Requirements (EARs), specifically, those related to 'the likely social (including cultural) and economic impacts' and 'the public interest' of the Bonnyrigg Living Communities Project.

1.1.1 HIA Policy and Guidelines used in the original assessment

The original SIA incorporated the consideration of impacts on the health of the community and made reference to State and Federal guidelines for healthy living, including:

- The NSW Government, Premier's Council for Active Living (PCAL), *Designing Places for Active Living Planning and Design Guidelines* (the PCAL guidelines), and
- Federal Department of Health and Ageing (DHA 2001) *Guidelines for Health Impact Assessment* (HIA).

The PCAL guidelines are still considered relevant to this project in that they promote active and healthy living through the development of more walkable, safely designed neighbourhoods, close to public transport, services and retail facilities, which provide for a high level of social interaction.

Some supporting strategies of relevance within the PCAL guidelines include concentration of residential development so that it is within 400-800 metres of services, open space and public transport; providing for increased connectivity for pedestrians, cyclists and motorists, and improved urban interface; development of well-lit, safe and high amenity open space areas with passive and active recreational opportunities; providing for accessible environments for older people and those with a disability; and creating welcoming attractive street frontages and neighbourhoods.

The Federal Department of Health and Ageing (DHA 2001) *Guidelines for Health Impact Assessment* provides a further context to the assessment impacts of the proposal, including those of community health and well-being. The primary aim of the Guidelines, being the promotion and enhancement of the incorporation of HIA into the environmental planning and assessment process, thereby improving the recognition and consideration of health issues.

The HIA Guidelines note the critical link between human health and our surroundings. In particular, it calls for greater attention to the impacts of developments where 'health considerations should form part of any impact assessment for developments or decisions that could have health consequences'.

1.2 Key health findings of the 2007 SIA

The 2007 SIA study identified the following positive health impacts associated with the original proposal:

- Considerably improved public domain amenity including attractive, well-equipped parks, improved streetscapes, and the likelihood of new, more environmentally efficient and comfortable housing than currently exists.
- Improved public domain safety through redesign of the current Radburn layout of the estate.
- Improved connectivity within the Bonnyrigg Housing Estate and between this primary locality and surrounding shops, services, transport links, as well as other urban areas.

The study stated that the project supported the objectives of the PCAL guidelines. In particular, the design encouraged a walkable community, close to shops, transport, open space and services, with diverse recreational opportunities, and increased safety through various aspects of the concept design.

The following key findings and recommendations were identified within the original SIA:

- **Amenity** – Impacts related to noise, dust, vermin, as well as the potential for a more unsettled and unsafe area, likely to be experienced by those within and adjacent to the stage under demolition or redevelopment. The ability for most tenants to remain or be rehoused within Bonnyrigg whilst they wait for their new home was a strong mitigative measure against the loss of community networks and displacement, the study suggested that the downside of such a redevelopment with residents in situ is the potential for a seriously deteriorating, and less safe urban environment.
- **Health services** – Some impact was identified in relation to GPs and Dentists, particularly when considering accessibility issues related to the GP within the Plaza. There was also some impact identified in relation to Community Health Services, Physiotherapy, Podiatry and other subsidised Allied Health. Significant impact on Community Occupational Therapist, Mental Health Services (especially for refugees), Social Work and Speech Therapy – at the time, all operating beyond capacity and directly impacted by extent and nature of the redevelopment. Little or no impact was identified for hospitals, ambulance services, chemists.
- **Social and Physical Integration** – While there were likely to be improvements in public perception in the medium- to long-term arising from the tenure mix proposed, there was a risk identified that residents would become ‘outsiders in their own community’, a concern that was expressed many times during consultation for the study. The study stated that the distribution of public and private housing that would be indistinguishable in design throughout each precinct, and a close alignment between dwelling types for public and private residents (e.g. so that one particular home type does not become more associated with public households) was important in this regard. Although the study also identifies that evidence from empirical literature on social mix indicates more than a simple mixing of tenure is required to ensure positive improvements in life opportunities for disadvantaged tenants.
- **Community Strengths, Capacity and Well-Being** – The study noted that Bonnyrigg was a community with considerable community cohesion and social capital compared with other areas in Western Sydney. *The community networks include support between neighbours and from community, cultural and religious institutions, and are particularly important for vulnerable residents, including the aged, those with one or multiple disabled family members, low-income sole parent or larger families, Indigenous families and those with an existing history of displacement and trauma related to their humanitarian migrant or refugee status.* These impacts were also related to social health regarding measures of social well-being, and intersect with ‘cultural impacts’. The study stated that the redevelopment had the potential to raise significant issues of loss, grief and stress, particularly for more vulnerable tenants.

The study highlighted the importance of most people staying in Bonnyrigg as a strong mitigation measure, however, noted the importance of ensuring, “*that those who are most vulnerable are not faced with unintended barriers to their remaining in their community.*” The study recommended mitigation measures to ensure that housing types are suitable for those with special needs, including:

- An adequate spread of adaptable housing across precincts and dwelling types
- Provision for larger families with multiple disabilities or other high needs to be appropriately accommodated through actively seeking to relocate neighbours together, and
- Adequate compensation for loss of home and garden improvements.

The study also suggests that it is important to maintain links between those already disadvantaged through potentially isolating factors like language and culture, and those who can provide support.

The study identifies the following issues associated with the distribution of impacts:

At the level of the primary locality the study suggested that impacts were likely to be more diverse and unequally distributed. Highlighting the need to give particular regard to the extreme disadvantage of the existing population, and the special vulnerability of many residents, who will most intensely experience the positive as well as the negative outcomes of the proposed project.

1.3 Bonnyrigg Living Communities Project Community Renewal Services Plan, 2008

The *Bonnyrigg Living Communities Project Community Renewal Services Plan, 2008* (the Community Renewal Services Plan) outlines the Bonnyrigg Partnerships approach to community renewal, which has direct links to human health and wellbeing. The approach outlined is holistic, and encompasses both the physical and social renewal of the Bonnyrigg Estate:

The project ... is not just about the housing or the parks or the availability of services, but all those things that make for a sustainable and vibrant community. The project is also about community renewal, and how change is managed for the overall benefit of the community, with particular regard for the existing residents⁴.

The objectives or 'purpose' of the public-private partnership are to make the Estate a safer and more attractive place to live, especially by:

- *Improving services and providing tenants with better opportunities;*
- *Supporting the local community to build its strengths, skills and overall capacity; and*
- *Renewing the housing and public areas, and achieving better integration of private and social housing within the community⁵.*

1.3.1 Key community strengths

The Community Renewal Services Plan outlines the following community strengths, as identified in 2007:

- *High-level of community cohesion between neighbours, and among and across specific cultural groups.*
- *Positive perceptions of safety relative to other housing estates.*
- *A relatively stable tenant profile.*
- *Less entrenched social disadvantaged than some other estates.*
- *A high level cultural diversity, including proximity to numerous places of worship, cultural groups and networks that make it a unique area.*
- *Relatively well serviced at the local level in terms of retail (particularly the Plaza), educational facilities and transport.*
- *The co-existence of public and private housing, with relatively high satisfaction expressed by both groups, and a high level of owner-occupancy in private housing on the estate.*
- *Excellent regional transport infrastructure (though expense limits use in some cases), including the T-Way linking Parramatta and Liverpool and the recently completed M7.*
- *Excellent opportunities provided by regional employment concentrations (e.g. Wetherill Park).*
- *Pedestrian and bicycle accessibility around the estate and along the T-Way.*
- *The development of Bonnyrigg Park with numerous ponds, recreational areas, and facilities.*

1.3.2 Community renewal strategies

The Bonnyrigg Partnerships *Draft Community Renewal Service Plan* comprises thirteen sub-plans or strategies. These strategies outline the areas where it is anticipated Bonnyrigg Partnerships will make a more direct contribution to the implementation of the Bonnyrigg Community Renewal Service Plan. It is understood that this Community Renewal Service Plan is currently under review by NSW Land and Housing Corporation in association with Fairfield City Council. The current strategies of relevance to this HIA are discussed below:

⁴ RDP, Vol.1 p.17

⁵ Ibid.

Strategy 4: Multipurpose Neighbourhood Centre

A central component of the Renewal Services Strategy is the development of a Bonnyrigg Multipurpose Neighbourhood Centre (the Neighbourhood Centre) with a high level of physical accessibility from all parts of the site.

Guiding principles for the Neighbourhood Centre include:

- *The centre should be at the heart of the community and seek to be a magnet for all residents irrespective of economic circumstances, cultural background or religious affiliation*
- *The centre should be accessible for all existing and new residents in terms of design and location*
- *The centre should include a one-stop-shop providing access to all Bonnyrigg Partnership services*
- *The Centre will be designed to maximise interaction*
- *The centre should not seek to compete with Bonnyrigg Plaza, but provide a convenient place to meet some of the everyday needs of residents as well as attend to the social and civic life of the community*
- *Any services provided at the centre should be based on comprehensive and consultative assessment of the needs of existing and new residents, with service delivery provided through a partnerships approach with existing services, and augmented by external services where necessary (based on a service 'gap analysis').*
- *Any services provided at the centre should encourage community integration and cohesion (in partnership with existing services and networks where appropriate).*

The Community Renewal Services Plan suggests the Neighbourhood Centre incorporate the following components:

Bonnyrigg Partnerships Office	Bonnyrigg Community Centre
Tenanted by: <ul style="list-style-type: none">• Bonnyrigg Partnerships• Bonnyrigg Management• Bonnyrigg Development• Spotless• St George	Includes: <ul style="list-style-type: none">• Hall• Counselling room• Small offices• Medium Offices• Large office• Clinical/First aid room<ul style="list-style-type: none">○ Outreach e.g. baby health/community health – requirement• Kitchen• Medium designated space• Equipment room• Toilets• Storage

Note: St George Community Housing is referred to within the Community Renewal Services Plan.⁶

Strategy 5: Community Capacity Building

The section of the Community Renewal Services Plan discusses the important contribution the Bonnyrigg Partnerships can make to social capital – *the strength of community networks, the quality of the relationships between community stakeholders, the level of trust between different interest groups and the quality of leadership within the community to assume control of community initiatives and ensure their long term sustainability*⁷.

⁶ Referenced from Bonnyrigg Partnerships, Draft Community Renewal Services Plan P 25, using 'St George' as short hand for St George Community Housing.

⁷ Bonnyrigg Partnerships, Draft Community Renewal Services Plan, P 28.

Bonnyrigg Partnerships has allocated a budget for the duration of the Development Phase to supporting initiatives that promote participation in community life. These funds will be directed through the Bonnyrigg Community Renewal Trust and are expected to support:

- Social networks and events
- Training programs to foster local leadership
- Opportunities for volunteering in the community.

Strategy 8: Health and Wellbeing

The Community Renewal Services Plan recognises that the disruption caused by the redevelopment will create significant stress and anxiety for most residents. Furthermore, changes in public housing policies have increased the proportion of public housing tenants who have more complex needs, including mental health issues. Bonnyrigg Partnerships are therefore committed to implementing strategies to mitigate the additional stresses of the redevelopment.

Bonnyrigg Partnerships will adhere to the following principles:

- *Change always creates stress and anxiety, particularly for those who have little influence over the options for and timing of change.*
- *Stress and anxiety can be alleviated through initiatives to keep people informed, consult them on the process of change, provide as many choices as possible within the constraints of external factors and generally treat people with respect.*
- *The provision of specific support services to people experiencing significant anxiety will assist in alleviating that anxiety and enabling a successful transition.*

The following are relevant key health and wellbeing initiatives outlined in the Community Renewal Services Plan:

- Implementing a Counselling and Support Service to residents within the Bonnyrigg Living Community Area, to provide a combination of appropriate Stress Management courses and individual and family counselling on coping with the anxiety and stress of change precipitated by the redevelopment.
- Augmenting Mental Health services – mental health is a key service priority, and is likely to increase in importance with the tighter targeting of public housing, as well as potential exacerbation of existing mental health issues and general stress arising from redevelopment and relocation.
- Attracting appropriate service partners to provide outreach services from the Multipurpose Community Centre where this is appropriate, and mitigate social impacts to residents to the greatest extent possible.
- Continuation of service protocols or agreements in place in Bonnyrigg, including the Joint Guarantee of Service between DOH and the Area Health Service/Community Health team; and the Human Services Accord as a framework for coordinated service delivery.

1.4 Implications for the project

The guidelines and studies considered in the original SIA still constitute best practice in healthy planning. However, since the report was prepared there is new understanding around concepts of healthy planning with greater improvements to health impact assessment models. The 2017 amendments to the *Environmental Planning and Assessment Act 1979*, include a new object of “design” within the Act, seeking to ensure productivity, environmental management and liveability is supported, providing better community outcomes through well designed neighbourhoods. The recently adopted integrated design policy for the built environment of NSW *Better Placed* is now also relevant to the consideration of health impacts of the Bonnyrigg Estate Concept Plan.

A key consideration of this study is how has the general health and wellbeing of the relevant population changed over time and whether the proposed changes in density and housing composition threaten or compromise the following positive health impacts of the proposal identified in the original SIA by Judith Stubbs:

- *Considerably improved public domain amenity including attractive, well-equipped parks, improved streetscapes, and the likelihood of new, more environmentally efficient and comfortable housing than currently exists.*

- *Improved public domain safety through redesign of the current Radburn layout of the estate*
- *Improved connectivity within the Bonnyrigg Living Communities Area (BLCA) and between this primary locality and surrounding shops, services, transport links, as well as other urban areas.*

In particular, the following questions are key to the consideration of the health impacts of the modification.

- Will the proposed changes in density and housing composition exacerbate any of the health impacts identified in the original SIA by Judith Stubbs (as detailed above)?
 - Amenity
 - Health services
 - Social and Physical Integration
 - Community Strengths, Capacity and Well-Being.
- Since the commencement of demolition and construction on different stages of the project, is there any new evidence on the health impacts associated with the following “change” issues:
 - Impacts related to noise, dust, vermin, as well as the potential for a more unsettled and unsafe area experienced by those within and adjacent to the stage under demolition or redevelopment.
 - Impacts relating to social integration and stigma as a result of a new tenure and housing mix.
 - Weakened community cohesion or social capital.
- The following mitigations identified in the original SIA remain relevant to the updated proposal – measures relating to ensuring that housing types are suitable for those with special needs including:
 - *An adequate spread of adaptable housing across precincts and dwelling types*
 - *Provision for larger families with multiple disabilities or other high needs to be appropriately accommodated through actively seeking to relocate neighbours together, and*
 - *Adequate compensation for loss of home and garden improvements.*
- To what extent has the change process and renewal made the Estate a safer and more attractive place to live, especially by:
 - *Improving services and providing tenants with better opportunities;*
 - *Supporting the local community to build its strengths, skills and overall capacity; and*
 - *Renewing the housing and public areas, and achieving better integration of private and social housing within the community.*
- Has there been any progress/ further consultation/ analysis to identify the purpose of and occupancies in the Multipurpose Neighbourhood Centre?

2 Healthy Living Guidelines

Since the preparation of the original Judith Stubbs SIA, a number of new healthy living guidelines and strategies have been adopted.

2.1 Premier's Council for Active Living: Designing Places for Active Living Guidelines

Active Living NSW plays an important role in promoting the importance of the role of the built environment in facilitating opportunities for recreational physical activity, through the provision of well-maintained and useful open spaces, in addition to safe and amenable streets for walking and cycling. Recognised by NSW Health, the *built environment can be modified to facilitate or constrain physical activity. It can be structured in ways that increase opportunities for, and reduce barriers to physical activity*⁸. Opportunities to promote and increase physical activity need to be considered for all members of the community such as children, youth, elderly, socially and economically disadvantaged and differently abled. Consideration needs to be given as to the density of a residential area, land use mix, connectivity and accessibility as well as the quantity and quality of walking, cycling and public transport networks.

Developed in 2010 *Designing Places for Active Living* (the PCAL guidelines) seek to contribute to the range of initiatives addressing the impact of the physical environment on healthy living by proposing key design considerations for urban places in metropolitan, regional and rural areas. These design considerations have the potential to positively impact individual and community health and wellbeing in the broadest sense, thereby meeting multiple health, environmental and social objectives.

The resource is divided into seven design focus areas:

1. Cities, towns and neighbourhoods
2. Walking and cycling routes
3. Public transport
4. Streets
5. Open Space
6. Retail areas
7. Workplaces

For each focus area, there is a design objective, some important design considerations and links to key references and additional resources for detailed design guidelines and specifications. Key relevant design objectives and considerations are cited below. The objectives and considerations cited are relevant at a master planning/ concept plan level, and closer adherence to the guidelines may be useful at the development application/ more detailed design stages of the project.

Relevant design objectives:

- To provide diverse, mixed use cities, towns and neighbourhoods which are walkable with integrated activities and facilities clustered in accessible centres and local destinations.
- To provide an accessible and integrated network of walking and cycling routes for safe and convenient travel to local destinations and between key land uses within urban places.
- To establish and promote clear and direct walking routes to public transport stops.
- To provide attractive, safe and convenient public transport facilities, environments and services for users.
- To design connected and legible street networks that provide direct, safe and convenient pedestrian, cycle and public transport access; encourage responsible driving; provide a choice of routes; and

⁸ UNSW Built Environment. 2011. *Healthy Built Environments a Review of the Literature*. p. 45.

provide safe and easy access across streets, including pedestrian crossings on streets and roads with heavy traffic volumes.

- To provide a range of public open spaces within walking distance from dwellings.
- To design open spaces which are flexible, providing the opportunity for a variety of uses and activities to occur (such as community events), and responsive, to the diversity of the surrounding community (i.e. catering for different ages and social groups).
- To clearly define walking and cycling routes that pass through open spaces and to incorporate these routes into the broader walking and cycling network.
- To locate retail areas and shopping centres in a network of attractive and vibrant mixed use centres in a hierarchy of sizes and functions, closely aligned to the public transport system.
- To achieve well-located retail areas that are easily reached and accessed by walking and cycling.

Relevant design considerations:

Cities, Towns and Neighbourhoods

- Concentrate the highest appropriate densities of housing, employment, services and public facilities in integrated, mixed use centres within an acceptable walking distance - 400-800 metres - of major public transport nodes, such as rail stations and high frequency bus routes.
- Encourage a mix of housing, employment, services and public facilities in accessible centres, to provide opportunities for social interaction and activity at different times of the day and night. Provide infrastructure to support exercise, be it sports, walking or cycling.
- Align centres within corridors to support high frequency public transport services and further boost the effectiveness of centres.
- Provide an attractive, interconnected and legible street system which creates a sense of place, and provides a focus for community interaction.
- Integrate new development with the adjoining urban structure to improve connectivity and reduce local travel distances. For example, connect housing to local bus routes and community facilities through the street and cycle network.

Walking and cycling

- To provide an accessible and integrated network of walking and cycling routes for safe and convenient travel to local destinations and between key land uses within urban places.
- Plan and construct legible, connected walking and cycling routes leading to local destinations and focal points such as shops, schools, parks and public transport stops. Routes should be continuous and direct. Proximate duplicate paths should be avoided to maximise use and safety.
- Create safe places for people to walk and cycle, which are overlooked by buildings and have clear sightlines. Provide information to assist with safe route planning, such as route maps.
- Connect local walking and cycling networks to regional routes linking centres and facilities.

Public transport

- Design of roads within key strategic corridors and centres so that they assign a high priority to public transport.
- Locate active land uses such as corner shops near public transport stops (and vice versa), and ensure stops and access routes are clearly visible from surrounding development.
- Major public transport facilities (such as bus/rail interchanges) and even local facilities can be integrated into retail and commercial developments to form a viable and convenient mixed-use, after-hours precinct. Concentrate the highest appropriate densities of housing, employment, services and public facilities in centres within an acceptable walking distance (400 metres for bus, 800 metres for train) of major public transport nodes, such as rail stations and high frequency bus routes.

Streets

- Design hierarchical grid street networks to provide a connected and legible street system. New developments should be integrated into the adjoining street network to improve connectivity and reduce local travel distances.

- Support efficient bus operation with networks that directly connect houses with bus stops and bus routes with key destinations.
- Support walking by creating stimulating and attractive routes, which include trees, seats, signage and public art. Utilise local features to terminate view lines.
- Ensure streets are adequately lit and that lighting is well-maintained.

Open spaces

- Provide open space within safe, comfortable walking distance from dwellings, as well as in or adjacent to key destinations, such as town centres.
- Connect public open space to the local and regional walking and cycling network with safe pedestrian crossings leading to or near park entrances. Surround open space with a high quality urban environment to encourage walking and cycling to it.
- Promote safety and amenity through good design, such as drought-resistant shade trees, natural surveillance from surrounding uses, seating, lighting, regular maintenance and clear and convenient entry points. Parks should be landscaped to create interest and maximise visibility. Where appropriate, parks should be well lit to cater to increasing demands for use outside of traditional hours.
- Cluster compatible land uses within or at the edge of parks or open space corridors, such as cafes and restaurants, child care centres and indoor leisure/sports centres. This will help reduce the land required for parking and improve accessibility.

Retail areas

- To locate retail areas and shopping centres in a network of attractive and vibrant mixed use centres in a hierarchy of sizes and functions, closely aligned to the public transport system.
- To achieve well-located retail areas that are easily reached and accessed by walking and cycling.

2.2 Healthy Planning Policy Update

In 2016 The Premier's Council for Active Living was discontinued. However, the NSW Ministry of Health entered into a new contract with the National Heart Foundation - NSW Division to deliver a revised program of work to support active living and healthy built environments across NSW. The new entity created to deliver this work, Active Living NSW, supports the physical activity and healthy built environment deliverables of the NSW Healthy Eating and Active Living Strategy.

2.2.1 The NSW Healthy Eating and Active Living (HEAL) Strategy

The NSW *Healthy Eating and Active Living (HEAL) Strategy* provides a whole of government framework to promote and support healthy eating and active living in NSW. Through HEAL, the NSW Government is making a strategic and coordinated investment across agencies and sectors to change environments and support individuals to achieve and maintain a healthy weight throughout life. HEAL aims to encourage the people of NSW to make healthy lifestyle choices and to be supported in their choices by health focused planning, built environment and transport initiatives, as well as improved access to healthier foods.

2.3 Other relevant investment in healthy planning in NSW

The NSW Ministry of Health is committed to evidence based approaches to increase participation in physical activity and will continue to support the following programs of work in partnership with the National Heart Foundation:

- The annual FitNSW Forum to showcase best practice international, national and local initiatives to promote physical activity.
- The Healthy Planning Expert Working Group (HPWEG). A key focus of the HPEWG will be to work with the Ministry of Health and the NSW Department of Planning and Environment to deliver Healthy Built Environment Guidelines in accordance with A Plan for Growing Sydney.

- Work with councils and local health districts to promote the integration of healthy eating and active living strategies into Council Community Strategic Plans and Council Operational Plans.

NSW Health is also working with the Greater Sydney Commission and the Department of Planning and Environment to integrate healthy living actions in District Plans across Metropolitan Sydney and in regional plans across the State.

The Ministry of Health and Transport for NSW are developing and testing new approaches to encourage active travel to school.

Local Health Districts in partnership with regional offices of Department of Premier and Cabinet are taking a local leadership role in implementing the Premiers Delivery Plan.

The Ministry of Health, South West Sydney Local Health District and the Department of Premier and Cabinet are coordinating an enhanced regional intervention focus in the South Western Sydney region.

2.3.1 Healthy Urban Development Checklist

In 2009 the NSW Department of Health and the Sydney South West Area Health Service commissioned the development of the Healthy Urban Development Checklist⁹, with the aim of increasing the capacity of health professionals in examining and assessing urban development policies, plans and proposals in relation to matters of health. Whilst the Checklist was initially intended to be used by health professionals in responding to planning proposals, the checklist has enabled many professionals in the urban planning space to increase knowledge and awareness about healthy built environments, increasing a comprehensive base from which to assess the likely health outcomes of development proposals.

The Checklist provides the basis for understanding:

- The health effects of the urban development policy, plan or proposal, and;
- How a development proposal can be improved to provide better health outcomes.

The following characteristics of healthy urban developments are included in the Checklist:

- Healthy Food, with access to fresh, nutritious and affordable food being a basic requirement for human health and well-being.
- Physical Activity, being a normal part of everyday life whether it be structures, unstructured, planned or incidental.
- Housing, being a basic fundamental aspect to human health.
- Transport and physical connectivity, with the aim of supporting more active forms of transport including walking and cycling.

A review is currently underway of the Healthy Urban Development Checklist, undertaken by City Wellbeing (UNSW, City Futures Research Centre), AECOM and the NSW Ministry of Health, with a focus on the review of the scholarly and practice evidence for the most relevant and current healthy built environment criteria. Until such time as the review is complete and a revised Checklist released (to be known as the Healthy Built Environment Checklist) the existing Checklist remains a valuable resource in the evaluation of how development proposals support healthy community outcomes.

2.3.2 Better Placed

The office of the Government Architect NSW (GANSW) provides strategic design leadership in architecture, urban design and landscape architecture. By integrating design expertise, GANSW works across government, the private sector and the community to improve social, environmental and economic outcomes for NSW and all of its communities. Better Placed (2017) is the GANSW Policy. It is structured to work in a number of ways, with the purpose of achieving better places for the people of NSW by:

- Advocating the importance of design for better places, spaces and outcomes.
- Supporting industry and government to deliver good design for people.
- Enabling effective design processes to be established and supported in the planning system.

⁹ NSW Health. 2009. *Healthy Urban Development Checklist. A guide for health services when commenting on development policies, plans and proposals.*

Better Placed acts as an overarching policy outlining the NSW Government's position on design. It establishes the value of good design, and identifies key concepts, good process, and objectives for good design outcomes.

The policy responds to stakeholders requests for clarity in relation to what is meant by good design and the process to achieve it.

Better Placed advocates for good design to help respond to key challenges and directions for NSW, including health:

Design methods and processes can help by synthesising the many factors impacting upon health, and developing solutions for the built environment that incorporate cohesive, integrated and interconnected solutions...The design of the built environment can incorporate health priorities to create healthier places for NSW (Better Placed p.16).

Of relevance to this HIA in the Better Placed policy are the following key Design Objectives and outcomes:

- **Objective 3 – Better for community: inclusive, connected and diverse**

Accessible cities and towns make service delivery much more cost effective including health services, public transport and community facilities.

Environments which support accessibility and social interaction promote community physical and mental health, reducing longer-term health impacts and costs.

Multiple environmental and health benefits are created through walkable access, cycling and public transport by reducing private car usage, traffic impacts, air pollution, greenhouse gas emissions and household transport costs.

Developments which include a range of housing and tenure types provide resilience in the face of changing requirements. Streets and public spaces which are welcoming and accessible for all are more vibrant, interesting and safe.

- **Objective 4 – Better for people: safe, comfortable and liveable**

Buildings and spaces which people enjoy using will be better maintained and cared for. They will last longer as valuable parts of the city or town and minimise the need for replacement.

Safety and comfort reinforce each other: an environment which feels safe and comfortable encourages walking and activity, and more people on the street makes places feel safer and more interesting and enjoyable.

Places which feel safe and comfortable attract people and investment.

Liveable spaces support people and lifestyle, promoting safety, healthy, comfort and well-being for all.

2.4 Bonnyrigg Living Communities Project Case Study

The Bonnyrigg Living Communities project was the first time that the PCAL guidelines have been included in the formal condition of consent for a major development process. The Director General, Planning specified a number of requirements for the Concept Plan, including that the revitalization process respond to the six design focus areas in the PCAL guidelines. The relevant environmental assessment requirement was as follows:

The Environmental Assessment is to include a Health Impact Assessment which describes how the proposed physical environment promotes public health in regard to human comfort and capacity to support physical activity, and in particular addresses the NSW Government's guidelines Designing Places for Active Living issued by the Premiers Council for Active Living.

The PCAL case study focuses on the way in which the Concept Plan and Stage 1 of the redevelopment achieves the PCAL design objectives across two focus areas outlined in the guidelines. The first area is 'cities, towns and neighbourhoods'. The following section summarises how the Concept Plan meets design considerations outlined in the PCAL guidelines.

Concentrate the highest appropriate densities of housing, employment, services and public facilities in centres within an acceptable walking distance (400-800 metres) of major public transport nodes, such as rail stations and high frequency bus routes.

- Supports the development of the Bonnyrigg town centre by providing higher density dwellings - including six-storey apartment complexes, and retirement/aged care facilities and serviced apartments - to be located within 400 metres walking distance of the Bonnyrigg Plaza, the Liverpool to Parramatta bus T-way and the new multi-purpose community centre. In particular, this will encourage older residents to remain active as they can walk and use public transport to access a range of facilities in their local community.

Encourage a mix of housing, employment, services and public facilities in accessible centres, to provide opportunities for social interaction and activity at different times of the day and night.

- Proposes a diverse mix of private, and community housing, made up of different housing types - including apartments and an aged care facility adjacent to Bonnyrigg Plaza and detached family homes further from the town centre.
- Provides for the improvement of various existing facilities, such as the library and youth facilities, so the centre can better meet the needs of the surrounding population during the day and night.
- A new multi-purpose community centre will provide a hub for local retail, commercial and community services, which will be clustered in a central location, adjacent to public open space and aligned with pedestrian and cycle routes.
- Lighting strategies have been developed for areas of high public use to promote access at all hours, with type and design of lighting dependent on need, location and use. All pedestrian footpaths, cycleways, and streets will be well lit to promote access to centres at night.

Locate key land uses within safe and convenient walking distance of each other to encourage linked trips (e.g. shops, childcare centres, bus/rail interchanges).

- Provides a range of facilities, service and recreational opportunities within easy walking distance of homes and each other. It creates a number of new focal points, such as a multi-purpose community centre, with a mix of uses and community facilities to make it 'the focus of community life' and retail/commercial facilities.
- Includes a well-lit pedestrian and cycle network that is integrated with the road network to increase natural surveillance and visibility and improve safety for those walking and cycling to the cluster of facilities and services at Bonnyrigg Plaza, the Liverpool-Parramatta bus transitway, or the new community centre. It also seeks to create better connectivity between homes and the existing schools, parks, clubs, and shops in the surrounding suburbs by improving lighting and road crossings along these routes.

Align centres within corridors to support high frequency public transport services and further boost the effectiveness of centres.

- Provides a movement network that links residents to activity nodes and encourages use of public transport. It also provides for new internal and enhanced external bus services. The majority of residents will be within 400 metres walking distance of the existing rapid bus transitway that connects Bonnyrigg with Liverpool and Parramatta, and creates a good platform for increased public transport usage by residents visiting major adjoining centres.
- Provides a street network that will facilitate improved connections for future public transport services. The Plan includes an improved road layout that connects the separate halves of the existing estate to facilitate the provision of a bus route through the centre of the estate. Five bus stops are proposed along this internal bus route. These will be within easy walking distance (400 metres maximum) from all residences and a maximum of 250 metres apart. The new internal bus route will link to Bonnyrigg Plaza and the new multi-purpose centre to encourage access by public transport. Five new bus stops will also be provided on the site's perimeter roads.

Manage the location, supply and availability of parking to support walking, cycling and public transport access to major urban centres.

- Aims to minimise the total area consumed by car parking spaces by providing a significant number of shared, public, on-street car parking spaces. It proposes providing vehicle access to a large proportion of the off street parking attached to private dwellings from smaller access roads. By concentrating off street parking on access roads the number of driveways crossing on local and collector roads are limited, the purpose of this is to reduce disruption by driveways to the more intensely utilised pedestrian and cycle routes on these larger roads.

- Secure bicycle parking will be provided adjacent to sports fields, within the Bonnyrigg Plaza, near the rapid bus transit station, and in the new multi-purpose community centre.

Link centres and major destinations with regional walking and cycling networks to provide safe and convenient transport links between homes, jobs, shops and recreational facilities.

- Seeks to maximise the opportunities for residents and visitors to walk and cycle around the local area. The Plan proposes 2,700 metres of integrated cycleways along roads and 1,000 metres through parks, which will link to the regional off-road cycle network along the T-Way and Elizabeth Drive. Both these routes have already been constructed, and connect with other routes heading to destinations such as Liverpool, Parramatta, Fairfield and Canley Vale.
- Pedestrian and bicycle connections will also link the estate with nearby centres and the regional open space network. Walking networks will connect the community to the local shopping centre and regional public transport services, particularly the Liverpool to Parramatta Transitway.

Integrate new development with the adjoining urban structure to improve connectivity and reduce local travel distances. For example, connect housing to local bus routes and community facilities through the street and cycle network.

- Given that the estate exists within a highly developed urban area, a key aim of the redevelopment is to enhance connectivity with this adjacent area, enabling people to walk or cycle to nearby services, facilities, and public transport.
- Walking and cycling shareways and pedestrian paths are provided in the Concept Plan, focusing on key routes both within the estate and to the surrounding activity nodes, including schools, shops, bus stops, pedestrian crossings and places of worship. These networks have been developed in an integrated manner to provide for the clear separation of movements and safe places for pedestrian and cycle crossings at traffic intersections.

Additional design considerations from the 'open space' focus area within the PCAL guidelines include:

Provide open space within safe, comfortable walking distance from dwellings, as well as in or adjacent to key destinations, such as town centres.

- The Concept Plan rationalises the existing open space to realign parks with the road network and new facilities such as the multi-purpose community centre, in order to improve access and increase passive surveillance. All parks will be within safe, comfortable walking distance from dwellings, and will feature high quality landscaping, children's play equipment, seating and shade. The Central Valley Park running through the existing estate will be redeveloped to include a network of multi-functional parks adjacent to Bonnyrigg Plaza and the proposed community centre. As well as serving multiple environmental purposes, this corridor will provide direct and convenient cyclist and pedestrian access to a range of destinations within and outside the estate.

Connect public open space to the local and regional walking and cycling network with safe pedestrian crossings leading to or near park entrances.

- Existing public open spaces within the estate will be reconfigured so that the open space network provides better quality open space and passive and active recreation opportunities for residents. A number of public open spaces (including a 'sports park', 'Community Centre Park' and 'community gardens park') are planned. This mix is designed to encourage diverse uses of the open space, from formal sporting events to informal public gatherings and passive recreation.
- The public open space network is closely aligned with the pedestrian and bicycle network to encourage safe movements between parks and throughout the estate. The multi-use corridor paths through the Central Valley Park to be developed in Stage 1 will enable people to walk or cycle to destinations across the estate.
- The walking and cycling paths will link residences with local facilities, including playgrounds and sporting grounds, local schools, shops - including those at Bonnyrigg Plaza - and the new multi-purpose community centre. Creek corridors are accompanied by a variety of access infrastructure to enable greater connectivity, including several road bridges/culverts, and 12 pedestrian/cycleway bridges.

Encourage active recreation through the provision of a range of well-designed facilities such as children's play equipment, basketball rings, cricket practice nets, netball courts and tennis courts.

- Active recreation is encouraged, with a range of play facilities located throughout the estate. These include full and junior size soccer fields, full and half basketball courts, tennis courts, handball walls,

a variety of children's playgrounds for different age groups and a range of other informal playing spaces.

- The sports park to be developed in Central Valley Park during Stage 1 of the project will include pedestrian pathways and shared ways, bridges at strategic crossings to facilitate park access and integrate pedestrian and cycle movements across the estate, children's play equipment, soccer field upgrades and an open turf area for active play.

Create and maintain attractive and pleasant places for people to walk, cycle, train, sit, meet and talk.

- A range of passive recreation opportunities are provided within the Concept Plan, including informal and formal seating throughout the estate, park shelters and other facilities to encourage the use of the parks and promote resident interaction and a sense of community.

Whilst this evaluation was limited to assessing the Concept Plan and Stage 1 of the redevelopment against the PCAL design objectives for 'cities, towns and neighbourhoods', and 'open space', it is worth noting that other PCAL design objectives such as those for 'walking and cycling routes', 'public transport', 'streets', and 'retail areas' were also used to guide the projects development.

2.5 Implications for the project

In light of recent policy changes, it is important that the assessment of the Bonnyrigg Estate Concept Plan takes into consideration the clear framework for the consideration of healthy planning in accordance with the *Better Placed* design policy, as well as taking into consideration updated research and knowledge around social determinants of health.

Key considerations of the HIA relate to:

- Do the proposed changes to the concept plan threaten or compromise any of the positive health impacts identified in the original assessment of the project against the PCAL guidelines discussed above?
- In light of the design considerations outlined in the PCAL guidelines, are there any new positive or negative health impacts associated with the proposed changes to the concept plan? If so, how can these be mitigated?

3 Baseline Analysis

3.1 Social Determinants of Health

The social determinants of health encompass the “circumstances in which people are born, grow up, live, work and age, and the systems put in place to deal with illness.”¹⁰

There is a well-established connection between the social determinants of health and urban liveability, the physical and social settings present in an area.¹¹ Domains of liveability relevant to the scope of this report are crime and safety, health and social services, housing, leisure and culture, access to food, public and open space, transport and social cohesion. Within these areas, different liveability indicators contribute to the social determinants of health.

Crime, the perception of crime, and a lack of safety have negative causal links with mental health issues, self-reported health and their physical functioning and mobility. Crime indicators include crimes against people and property; perceptions of personal safety in public places to meet, and while walking alone.

Walkable environments and public transport routes to meaningful destinations provide inexpensive and active ways of engaging in employment, accessing services and improved opportunities. Indicators include transport networks and points of access, affordability of transport, and rates of engagement in different modes of transport.

Health and social services comprise healthcare, community centres, public amenities, childcare centres. These services are help build capacity and promote individual autonomy in individuals. Indicators include service affordability and proximity, stigma of access and capacity of services.

Public open spaces are important for health and wellbeing, conducive to physical activity, mental health and reduced blood pressure and stress levels. Ease of accessibility, quantity and variety of open space and frequency of use are all positive social determinants of health.

Various types of food and goods from different shops, which are walkable or easily accessible are more likely to support active travel behaviours and be correlated with greater nutrition. Food prices, the density of fast food nearby and land available for food outlets and general retail activity are indicators of food access and nutrition.

3.2 Demographic Characteristics of the Renewal Area

The following provides an overview of demographic characteristics of the existing and future Bonnyrigg populations, as reported in the Social Infrastructure Needs Analysis, prepared by IPPG, which were updated to reflect the 2016 ABS Census. Key among the report's demographic findings, was the amended Concept Plan which provided an additional 500 dwellings would increase the projected population of the Bonnyrigg renewal area by 1,587 people, to 8,468. This is based in the average occupancy rates of 2.69 persons in social housing and 3.38 persons in private housing dwellings, maintaining the mix of 70% and 30% private and social housing.

The population of Fairfield LGA is projected to increase by 9.9% between 2016 and 2036, as compared to 28.1% in NSW over the same period. The population is projected to age between 2016 and 2036, with significant increases in those over 65. Coming from a younger baseline in 2016, Fairfield is projected to have similar proportions of those 50+ as NSW by 2036, retaining a higher proportion of those aged 0-24, and fewer of those aged 30-49. The amount of people living in each dwelling is also projected to decrease, with smaller family sizes and more lone occupiers of dwellings.

¹⁰ World Health Organization, *Backgrounder 3: Key Concepts*, 2012
http://www.who.int/social_determinants/final_report/key_concepts_en.pdf?ua=1

¹¹ Badlan et al. 2018. "Urban Liveability: Emerging Lessons from Australia For Exploring The Potential For Indicators To Measure The Social Determinants Of Health."

3.3 Methodology

Consistent with the methodology of previous demographic analyses by JSA and Urbis, Bonnyrigg Estate has been defined as the four Census collection districts that make up the renewal area (collection districts 1321608, 1321609, 1321610, 1321611). At the time of preparation of the Newleaf Communities: Social Infrastructure Needs Analysis and Social Impact Assessment, Urbis relied upon the Australian Bureau of Statistics (ABS) 2006 Census data, which was released at the census Collection District (CD) level. At the time, this was the smallest geographic area defined in the Australian Standard Geographic Classification (ASGC), designed for use as the smallest unit for processing data, usually containing approximately 225 dwellings in each CD.

From July 2011 the ABS progressively replaced the ASGC with the new Australian Statistical Geography Standard (ASGS) where the smallest geographical area available became known as Mesh Blocks (the smallest geographical area, typically containing between 30-60 households for each mesh block). Given the consideration that Census CDs are relatively large areas comparative to the more recently classified Mesh Block areas, in forming our demographic analysis ABS concordances were used in order to match the relevant zones of CDs employed by the Urbis study. Census CDs (2006) were disaggregated to the Mesh Block level (SA1s: 1150927, 1150931, 1150932, 1150933, 1150934, 1150936) (2016). The population reported is counted as the number of persons usually resident (rather than enumeration).

In order to calculate the estimated population projections for the Bonnyrigg renewal area full occupancy was assumed. In addition, the occupants per dwelling was stratified by public or private dwelling and then by dwelling structure (separate house, or semi-detached house, terrace and townhouse of 1 or 2 or more storeys).

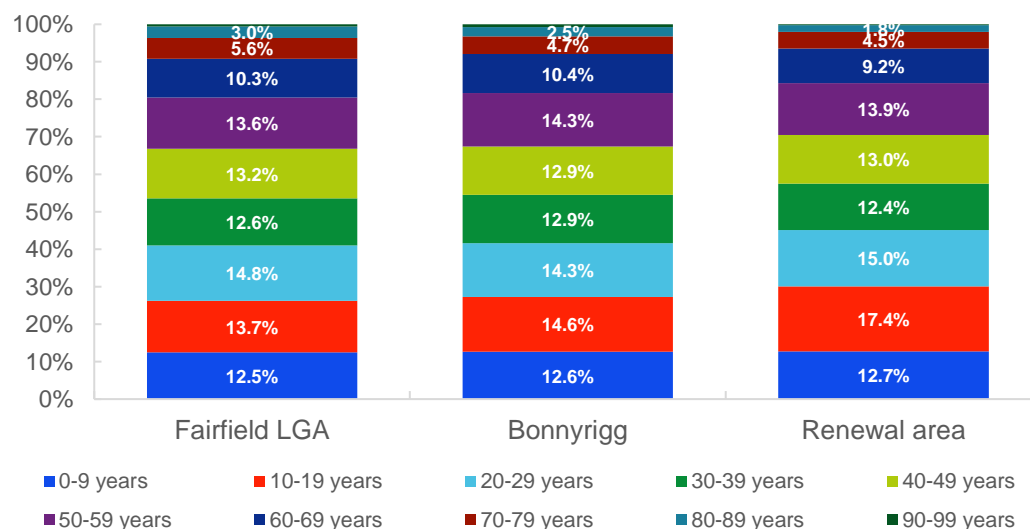
3.4 Current Population

In 2016, the population of the Bonnyrigg renewal area was 2,980. Consistent with the completion of the first three stages of the Bonnyrigg Estate project, the total population has increased by an additional 497 people (up from 2,483 in 2011).

Age

The 2016 Census provides the following breakdown of age cohorts. The age profile of residents in the renewal area generally reflects the surrounding areas, with a slightly higher proportion of 10-19 year olds (17%).

Figure 1: Population by Age: 2016



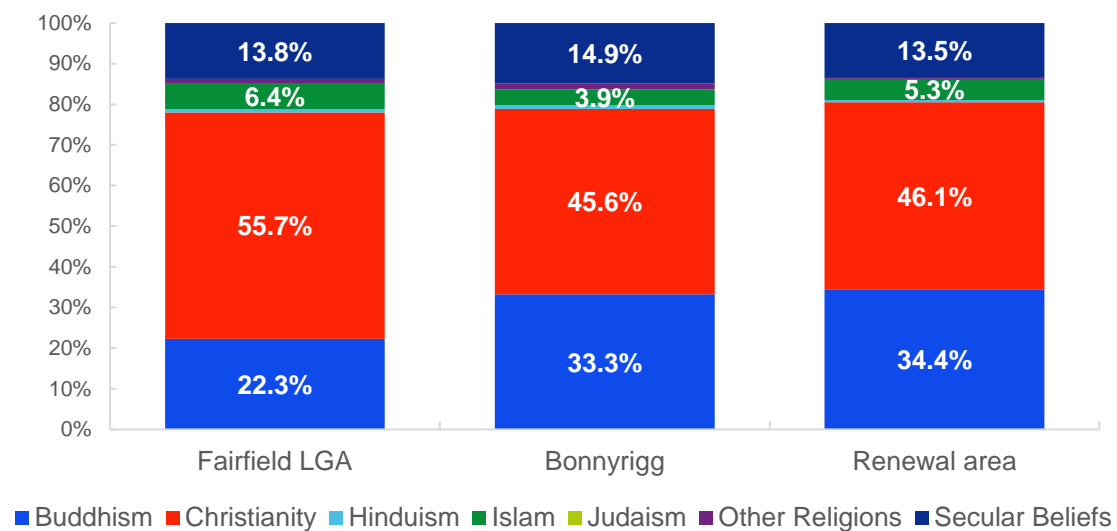
Nationality

In 2016, Aboriginal and Torres Strait Islander people made up 2.8% of the renewal area's population (down from 3.64% in 2011). This has decreased considerably since 2006 when this figure was 5.3%. However, it still remains higher than surrounding areas and the Fairfield LGA as a whole (0.7%). The population of the renewal area remains culturally diverse with 98.4% of the residents having both parents born overseas (this increased from 82.4% in 2011), which is significantly higher than surrounding areas and the Fairfield LGA as a whole (82.9%). In addition, 78.6% of residents in the renewal area speak a language other than English at home (this increased from 77.1% in 2011), this is compared to the state average of 26.5%.

Religious affiliation

In 2016, Christian denominations (45.6%) and Buddhism (30.6%) were the dominant religions in Bonnyrigg, consistent with the local area.

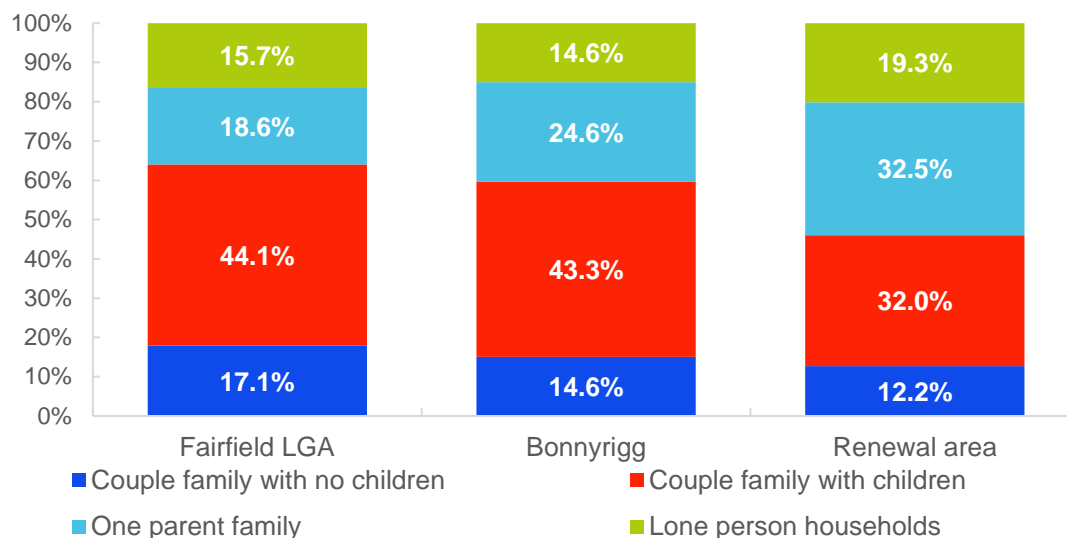
Figure 2: Population by Religious Affiliation



Family Structure

In 2016, the majority of the residents of the renewal area (68%) had one or more children, this is consistent with the surrounding area (Bonnyrigg, 70%) and the Fairfield LGA as a whole (67%). However, the renewal area contains a relatively high proportion of one parent families (32%) compared to the surrounding areas and the Fairfield LGA as a whole (19%), and a lower couple family with children rate (12%).

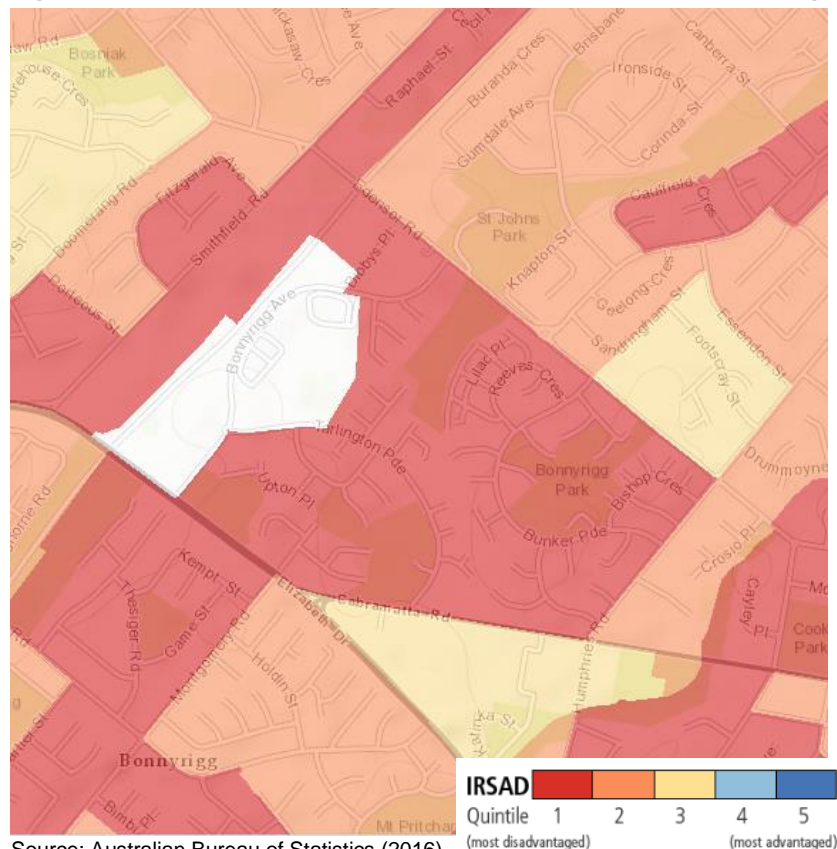
Figure 3: Population by Family Structure



Income

According to ABS' Socio-economic Indexes for Areas (2016), the Bonnyrigg renewal area was among the most socio-economically disadvantaged areas in NSW, ranking from the 1st percentile in the south east to the 9th percentile in the north west (according to SA1s). Bonnyrigg suburb was among the most socio-economically disadvantaged suburbs in NSW in 2016, ranking in the 7th percentile in the state (which means it was more disadvantaged than 93% of NSW suburbs).

Figure 4: Socio-economic Index for Relative Socio-Economic Advantage and Disadvantage



In 2016, the median weekly of Bonnyrigg residents aged 15 and over was \$427, which was 35% lower than the state average of \$664.

3.5 Fairfield LGA Population, Age and Housing Projections

Figure 5: Projections of the Distribution of Age Brackets, in Fairfield LGA and NSW, 2016-2036

Fairfield LGA	2016	%	2036	%	NSW, 2016	%	2036	%
0-4	14,650	7.1	13,950	6.2	512,700	6.6	603,700	6.1
5-9	13,100	6.3	14,100	6.2	488,650	6.3	599,850	6.0
10-14	13,350	6.5	14,550	6.4	461,450	6.0	597,500	6.0
15-19	14,050	6.8	15,450	6.8	460,550	5.9	588,250	5.9
20-24	15,150	7.3	15,350	6.8	493,650	6.4	588,900	5.9
25-29	14,650	7.1	13,550	6.0	554,250	7.2	611,650	6.2
30-34	14,050	6.8	12,550	5.5	571,300	7.4	627,100	6.3
35-39	13,000	6.3	12,550	5.5	526,400	6.8	636,500	6.4
40-44	13,450	6.5	13,300	5.9	523,900	6.8	645,300	6.5
45-49	13,700	6.6	13,950	6.2	507,850	6.6	652,150	6.6
50-54	13,700	6.6	14,150	6.2	496,450	6.4	621,650	6.3
55-59	13,600	6.6	13,000	5.7	482,650	6.2	551,700	5.6
60-64	11,400	5.5	12,250	5.4	427,600	5.5	528,700	5.3
65-69	9,300	4.5	11,400	5.0	387,650	5.0	496,650	5.0
70-74	6,600	3.2	10,800	4.8	300,500	3.9	464,400	4.7
75-79	5,250	2.5	10,150	4.5	221,500	2.9	419,600	4.2
80-84	3,800	1.8	7,750	3.4	158,450	2.0	324,800	3.3
85+	3,550	1.7	8,000	3.5	172,550	2.2	367,200	3.7
Total	206,350		226,800		7,748,050		9,925,600	

Source: NSW Department of Planning and Environment (2016)

According to the NSW Department of Planning and Environment, between 2016 and 2036 the population of Fairfield LGA is projected to grow from 206,350 to 226,800, an increase of 9.9%. By comparison, the population of NSW is projected to grow 28.1% over the same period.

Fairfield LGA's populations is projected to age between 2016 and 2036. By 2036, fewer people are represented in most age brackets under 64. The amount of people in older than 65 are projected to increase, with substantial increases in those aged 70-74 (3.2-4.8%), 75-79 (2.5-4.5%), 80-84 (1.8-3.4%) and 85+ (1.7-3.5%). By 2036, the proportion of those aged 50+ in Fairfield is roughly equivalent to that of NSW, coming from Fairfield's younger baseline in 2016. Fairfield is projected to have still higher proportions of those aged 0-24, and fewer people aged 30-49 than NSW.

Projections of the Household Type in Fairfield LGA, 2016-2036

Household Type	2016	%	2021	%	2026	%	2031	%	2036	%
Couple only	12,100	18.1	12,850	18.5	13,650	18.9	14,350	19.4	15,050	19.7
Couple with children	30,000	44.9	30,450	43.9	30,750	42.6	30,700	41.4	30,800	40.2
Single parent	12,000	18.0	12,500	18.0	13,050	18.1	13,450	18.1	13,950	18.2
Other family households	1,650	2.5	1,650	2.4	1,700	2.4	1,750	2.4	1,800	2.4
Multiple-family households	1,850	2.8	1,950	2.8	2,000	2.8	2,050	2.8	2,100	2.7
Lone person	8,250	12.4	9,050	13.0	10,000	13.9	10,850	14.6	11,800	15.4
Group	950	1.4	950	1.4	1,000	1.4	1,000	1.3	1,050	1.4
Total Households	66,800	100	69,400	100	72,150	100	74,150	100	76,550	100
Household Size	3.06		3.01		2.97		2.94		2.92	

Source: NSW Department of Planning and Environment (2016)

The amount of dwellings in Fairfield during this period is projected to increase by 14.6%, from 66,800 to 75,550. The diminishing size of households is due to an increase in lone person households, from 12.4% in 2016 to 15.4% in 2036; an increase in 'couple only' households from 18.1% to 19.7%, and; a reduction in 'couples with children' from 44.9% to 40.2% over the same period. The average household size is projected to reduce from 3.06 to 2.92; still higher than the change in NSW, from 2.58 to 2.49 over the same period.

3.6 Bonnyrigg Estate Social Housing Demographics

According to St George Community Housing Data (2017), there are currently 1722 residents living in 640 social housing dwellings within the Bonnyrigg renewal area.

There is a higher proportion of 56-79 year olds (26%) and 40-55 year olds (19%). The main languages spoken at home are Vietnamese (29%) and Other (26%) with 2.8% identifying as being Aboriginal or Torres Strait Islander.

25% of social housing tenants have children 17 years and under and the average weekly household income is \$695.48 with the main income source being Centrelink.

3.7 Incoming population

In 2011, Urbis estimated that the amended Concept Plan of 2,500 dwellings would increase the population to 6,881. Urbis based this estimate on an occupancy rate of 2.6 for private dwellings in Fairfield, and an occupancy rate of 3.2 for social housing dwellings in the Bonnyrigg renewal area. Approval for the amended Concept Plan was given based on these rates.

Updated figures show that according to the 2016 ABS census, the occupancy rate is now 3.38 for private dwellings in Fairfield. According to 2017 data from St George Community Housing, the occupancy rate is 2.69 for social housing dwellings in the Bonnyrigg renewal area.

It is important to note that occupancy rates can differ by both tenure (i.e. private and social housing) and dwelling (i.e. houses and apartments) type. For example, 2016 occupancy rates for Fairfield LGA were 2.57 for apartments, 3.44 for semi-detached houses, and 3.55 for single detached houses.

UTS:IPPG uses occupancy rates by tenure type (i.e. private and social housing). This is for both consistency and because there is a sharper distinction between the ratio of private (70%) and social housing dwellings (30%) when compared to the type of dwellings (predominantly apartments) being provided as part of this amendment.

Given these assumptions it is estimated that the amended Concept Plan comprising 3,000 total dwellings (of which, 500 are additional dwellings on top of the already approved Concept Plan) would increase the population by an additional **1,587 residents**.

This is based on an assumption that 70% of the additional 500 dwellings are private dwellings (350) with an occupancy rate of 3.38 per that for the Fairfield LGA. And 30% of the additional 500 dwellings are social housing dwellings (150) with an occupancy rate of 2.69 per 2017 social housing occupancy rates for the Bonnyrigg Renewal Area.

Based on these calculations, the estimated new total resident population is 8,468 people in total across the 3,000 dwellings. This includes 1,587 residents of the additional 500 dwellings which are being provided as part of this amendment.

Table 2: Incoming population calculation

Population estimates for 2,500 dwellings (already approved)	6,881
Additional Social Housing (150 dwellings)	150 dwellings x 2.69 (2017 SGCH average occupancy for social housing dwellings) = 404 people
Additional Private Housing (350 dwellings)	350 dwellings x 3.38 (2016 ABS Census average occupancy for private dwellings) = 1,183 people
Additional population from 500 dwellings which are the subject of this amendment	1,587
Total population estimates for 3,000 dwellings	8,468

3.8 Key Health Indicators

The Bonnyrigg Estate falls within the Fairfield LGA which forms part of the South Western Sydney Local Health District (SWSLHD). The SWSLHD is one of the state's largest districts, comprising Bankstown, Camden, Campbelltown, Fairfield, Liverpool, Wingecaribee and Wollondilly LGAs. The population is approximately 820,000 and is projected to grow to more than a million people in the next decade.¹² The district has six acute public hospitals, with Fairfield Hospital 3.2 km away (as the crow flies) and Liverpool Hospital roughly 5.1 km away. The closest major community health centre to the Bonnyrigg Renewal Area is in Miller which is around 3.7 km away, with the next closest facility in Liverpool, 4.8 km away.

Additionally, health figures are available for Fairfield LGA which offer a more precise indication of the current population of Bonnyrigg.

3.8.1 South Western Sydney Local Health District

Table 3: Health Status and Indicators in South Western Sydney and Fairfield LGA

Key Health Indicators	South Western Sydney District 2017, %	NSW, 2017, %	South Western Sydney District 2007	NSW, 2007, %
Recommended Fruit Consumption %	45.8	46.4	52.1	53.8
Recommended Vegetable Consumption %	6.1	6.6	5.8	9.2
Insufficient Physical Activity %	47.3	41.6	54.2	44.9
Diabetes or High Blood Glucose (over 16 years) %	10.8	10.1	7.4	7.1
Overweight or Obese Adults %	56.6	53.5	50.9	50.1
Current Smokers, Adults %	20.4	15.2	27.0	19.7
Immediate Risk Alcohol Consumption (over 16 years) %	17.5	26.1	-	-

Source: Health Stats NSW (2017)

In the South Western Sydney Local Health District, 17.5% of the population consumes alcohol at a level commensurate with long-term health risk (NSW 26.1%); while 20.4% of the population are currently smokers, as compared to 15.2% in NSW.

The National Health and Medical Research Council publish guidelines recommending levels of fruit and vegetable intake in order to prevent chronic disease and achieve better health outcomes.¹³ It is recommended that adults eat 2 serves of fruit per day, with 5.5 serves of vegetables required for males ages 16-18 and 50+, and 6 required for males aged 19-50. 5 serves are recommended for females aged

¹² South Western Sydney Local Health District, *About Us*, 2017
<https://www.swslhd.health.nsw.gov.au/about.html>. (accessed May 2018)

¹³ Health Stats NSW, *Fruit and vegetables: recommended daily consumption by adults*, 2018
http://www.healthstats.nsw.gov.au/Indicator/beh_veg_statage. (accessed May 2018)

16 and over. In the SWSLHD, 45.8% of adults consume the recommended amount of fruit per day (NSW 46.4%), and 6.1% ate the recommended amount of vegetables (NSW 6.6%). Levels of adequate fruit consumption have declined between 2017 and 2007 from 52.1 to 45.8%, and vegetable consumption increased slightly from 5.8 to 6.1%.

Those with diabetes or high blood glucose levels (10.8%), was slightly higher than that of NSW (10.1%), with those who do not partake sufficient physical activity (47.3%) considerably higher than NSW (41.6%). 56.6% of the population are overweight or obese (NSW 53.5%).

NSW Health observe that lower levels of fruit and vegetable consumption are recorded among culturally and linguistically diverse communities in the state, with a tendency towards higher levels of those overweight or obese with less adequate levels of physical activity.¹⁴ As 58.9% of the Bonnyrigg population were born overseas (NSW, 34.5%), lifestyle, physical activity and nutrition may be potential areas of higher health risk.

3.8.2 Fairfield LGA

Table 3: Health Status and Indicators in Fairfield LGA and NSW

Key Health Indicators	Fairfield LGA, 2014-2016	NSW 2014-2016	Fairfield LGA, 2005-2007	NSW, 2005-2007
Hospitalisations for All Causes per 100,000	31,777	34,995	28,995	32,212
Smoking While Pregnant %	7.6	8.8	9.6	13.5
Antenatal Visit Before 14 Weeks %	48.6	63.8	40.9	71.1
Dementia Hospitalisations per 100,000	2314.9	1943.7	3550.3	3014.2
Intentional Self Harm Hospitalisations per 100,000	111.4	135.1	102.0	138.3
Diabetes Related Hospitalisations per 100,000 (16 and over)	115	147.7	-	-
Potentially Preventable Hospitalisations per 100,000	2118.1	2112.3	1951	2201.1
Fall Related Hospitalisations per 100,000	685.3	747.1	472.1	655.2

Source: Health Stats NSW (2017)

Fairfield City LGA has a population of 198,814, covering an area of 102km², comprising an area including Bonnyrigg, Cabramatta, Fairfield, Smithfield, and Horsley Park.

7.6% percent of those smoked at some point during their pregnancy (8.8% NSW). 48.6% of those pregnant had an antenatal visit prior to the 14th week of their pregnancy, considerably lower than NSW (63.8%).

With conditions of ageing, Fairfield LGA had fewer hospitalisations for all causes (2016-2017), at 31,430.3 (NSW 35,968.8). Coronary heart disease attributable deaths (2014-2015), at 70.2 per 100,000 (NSW, 66.8). With fewer fall-related hospitalisations per 100,000 at 685.3, as compared to NSW at 747.1. Fairfield had a rate of 2314.9 dementia hospitalisations per 100,000 of population, higher than in NSW (1943.7).

Fewer alcohol attributable hospitalisations (2013-15) per 100,000 were recorded than at 523.8, than NSW, at 670.4. Smoking attributable deaths (2013), at 56.4 per 100,000 (NSW 58.4). Fewer people had circulatory disease hospitalisations, at 1462.3 per 100,000 (NSW 1715.8). Potentially avoidable deaths (2014-15) at 90.3 per 100,000 (NSW 105.7). Fewer intentional self-harm hospitalisations were recorded, at 111.4 per 100,000 of population, as compared to 135.2 in NSW.

¹⁴ NSW Health, *NSW Healthy Eating and Active Living Strategy, 2013-2018*, 2013<http://www.health.nsw.gov.au/heal/Publications/nsw-healthy-eating-strategy.pdf> (accessed May 2018)

3.9 Transport and Accessibility

The Bonnyrigg Estate is serviced by several bus routes, running to the nearby suburbs of Parramatta, Liverpool, Cabramatta and Fairfield. Many of these routes are accessible from the Bonnyrigg T-Way station located outside of the plaza, noted to be within 400m walking distance of the majority of residents within the Bonnyrigg Estate.

Cabramatta and Canley Vale Stations are the nearest train stations, within 5km from the Estate. The T2 Inner West and T5 Cumberland lines, T3 Central and City Circle lines servicing these stations. The stations are accessible via the 805, 806, 807, 816, 817 buses.

It is noted that the street network provided will facilitate improved connections for future public transport services with the provision of a bus route through the centre of the estate. The new internal bus route will connect the community, linking to the Bonnyrigg Shopping Centre and the new Multi-Purpose Centre.

3.10 Crime Statistics

A brief assessment of NSW Bureau of Crime Statistics and Research (BOCSAR) statistics, relevant to the Bonnyrigg suburb and relevant catchment area has been undertaken to gauge an understanding of the nature of crime rates and social considerations, relevant to the local area.

Criminal activity and the perception of crime, or the feeling that an area is unsafe can reduce the physical and social mobility of residents and their children in order to avoid places or situations perceived as unsafe¹⁵. This effect may be increased for residents that perceive that they are particularly vulnerable to crime such as women and older adults. Other associations exist between crime and the fear of crime with mental health, but this link is less established.

3.10.1 Bonnyrigg suburb and NSW Crime Trends

The NSW Bureau of Crime Statistics and Research (BOCSAR), gathers data on crime incidents across NSW on the suburb level. The table below identifies that the majority of offences have remained stable or have trended downwards over the last 5 years.

Table 4: Bonnyrigg Suburb Crime Trends

Bonnyrigg	Year to Mar 2017 rate	Year to Mar 2018 rate	5 year trend	NSW Year to Mar 2018 rate	NSW 5 year trend
Domestic Assault	423.3	476.6	stable	365.3	stable
Count	39	43		28,268	
Alcohol Related Domestic Assault	77.6	55.4	n.c	114.4	Down 3.9% per year
Count	7	5		8,857	
Non-domestic Assault	288.2	243.8	Down 7.7% per year	415.5	stable
Count	26	22		32,156	
Alcohol Related Non-domestic Assault	33.3	22.2	n.c	130.4	Down 7.1% per year
Count	3	2		10,089	
Alcohol Related Assault	110.8	88.7	n.c.	260.3	Down 5.8% per year
Count	10	8		20,145	

¹⁵ Giles-Corti, Billie, Anne Vernez-Moudon, Rodrigo Reis, Gavin Turrell, Andrew L Dannenberg, Hannah Badland, and Sarah Foster et al. 2016. "City Planning And Population Health: A Global Challenge". *The Lancet* 388 (10062): 2912-2924, 2916

Bonnyrigg	Year to Mar 2017 rate	Year to Mar 2018 rate	5 year trend	NSW Year to Mar 2018 rate	NSW 5 year trend
Break & enter non-dwelling	88.7	99.8	n.c	99.8	Down 8.3% per year
Count	8	9		10,328	
Intimidation, stalking & harassment	288.2	532.0	stable	401.7	stable
Count	26	48		31,086	
Malicious damage to property	665.0	532.0	Down 17.9% per year	779.5	Down 6.2% per year
Count	60	48		60,330	
Motor vehicle theft	221.7	133.0	n.c	167.5	Down 5.5% per year
Count	20	12		12,960	
Steal from motor vehicle	476.6	376.9	Down 12.3% per year	504.6	Down 4% per year
Count	43	34		39,053	
Steal from person	44.3	88.7	n.c	58.8	Down 10.8% per year
Count	4	8		4,549	
Drug Offences	853.5	831.3	Stable	772.2	Up 5.4% per year
Count	77	75		59,764	
Sexual Assault	55.4	55.4	n.c	74.5	Up 3.3% per year
Count	5	5		5,764	

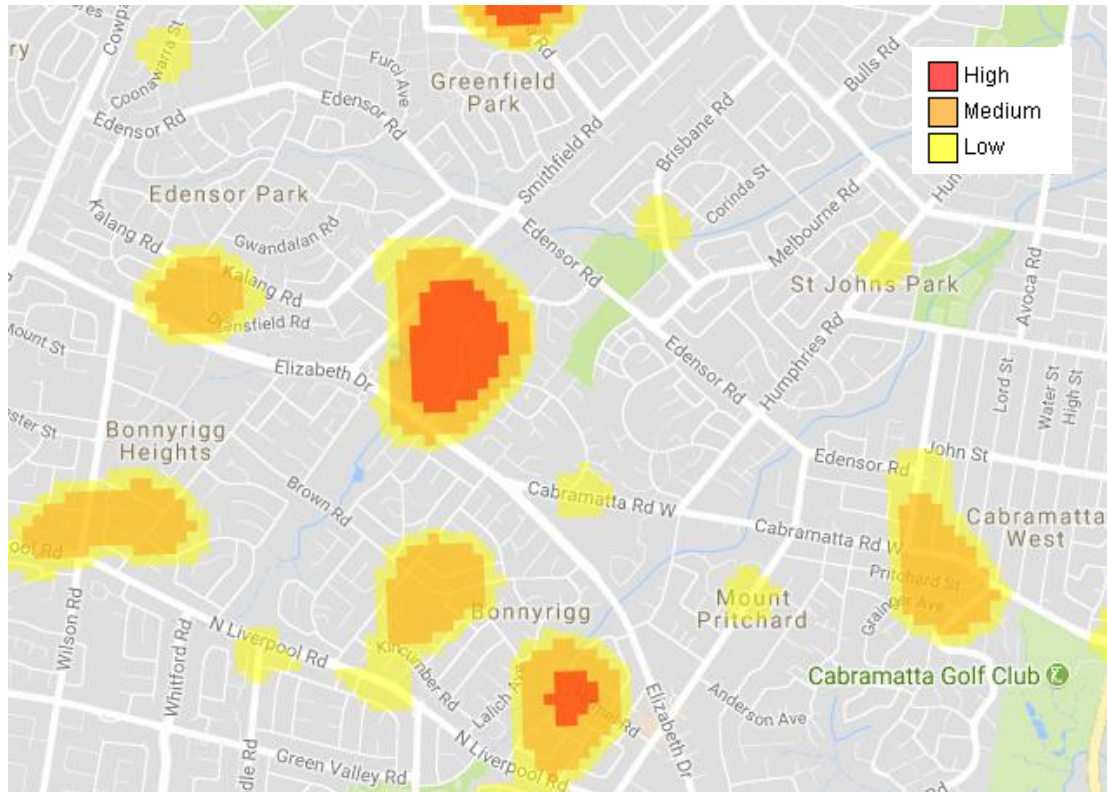
Source: NSW Bureau of Crime Statistics and Research, Crime Trend Tool. Accessed March 2018.

3.10.2 Hotspots of Robbery and Malicious Damage to Property near Bonnyrigg

A consideration for the assessment of health impact is whether the premises will be located within an existing 'hotspot' of crime. The NSW Bureau of Crime Statistics and Research (BOCSAR) produce density and hotspot maps to identify areas of high crime density relative to crime concentrations across NSW. As discussed by Burgess¹⁶, crime density analysis provides a measurement of the number of crime incidents within a specified area, providing an indication of the level of clustering and dispersion of crime incidents. In interpreting crime hotspot maps it is important to note that hotspots reflect the density of incidents in a specific area, and not the number of incidents in the suburb. They also do not necessarily reflect areas where people have a higher than average risk of victimisation as they are not adjusted for the number of people residing or visiting the suburb.

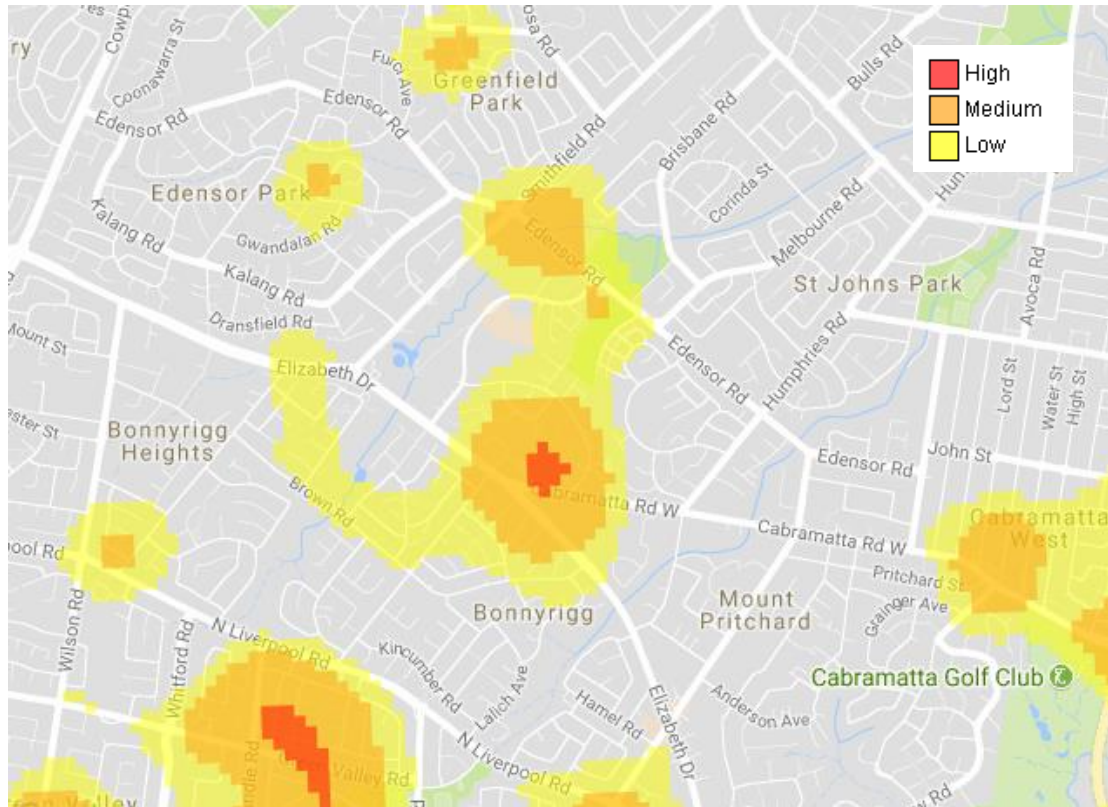
¹⁶ Burgess M. 2011 *Understanding Crime Hotspot Maps*. Crime and Justice Statistics. NSW Bureau of Crime Statistics and Research. Issue Paper 60.

Incidents of Robbery from April 2017 to March 2018



The map above identifies the location of the site in relation to hotspots of robbery. The maps show that the Bonnyrigg Estate is located within an area of high concentration of incidents of robbery across NSW, recorded between April 2017 and March 2018. The concentration is most acute on the north-west side of the Bonnyrigg Renewal Area, proximate to the Bonnyrigg Plaza.

Incidents of Malicious Damage to Property from April 2017 to March 2018



This hotspot maps show that the Bonnyrigg Renewal Area is within an area with high levels of malicious damage to property relative to the concentration in NSW, recorded between April 2017 and March 2018. The concentration is most acute near a series of shops on the south side of the estate near Monash Place and near a strip of shops, and through the development, north-south the north-west side of the Bonnyrigg Renewal Area, proximate to the Bonnyrigg Plaza.

3.10.3 Perception of Safety

In meeting with representatives from the Southern Western Sydney Local Health District Healthy Places team, the need for the Bonnyrigg Renewal Area to feel safe was established a key consideration in how residents engage with the area, and feel entering and exiting the area. A lower perception of risk would encourage a more active lifestyle, and increased mobility for residents.

The principles of Crime Prevention through Environmental Design (CPTED) seek to limit influence and limit the likelihood of criminal activity by:¹⁷

- Increasing the perception of risk to criminals by detection, challenge and capture
- Increase the effort needed to commit the crime
- Reducing the potential rewards of crime by minimizing, removing or concealing the benefits of conducting the crime

This can be achieved through approaches such as creating well-lit areas which are attractive to gather or congregate in, landscaping which promotes visibility and encouraging the feeling of ownership and shared responsibility over the space by residents.

Indeed, the findings of the Bonnyrigg Communities Project Case Study found that lighting strategies were developed for areas of high public use that assists in ensuring pedestrian footpath, cycleways and streets

¹⁷ Department of Urban Affairs and Planning, *Crime prevention and the assessment of development applications*, 2001, 8. http://www.police.nsw.gov.au/__data/assets/pdf_file/0003/9390/duapguide_s79c.pdf (accessed May 2018)

are well lit, promoting safe access to centres at night. In addition, it was found that the Bonnyrigg Living Communities Project created attractive and pleasant places for people to walk, cycle, train, sit, meet and talk, promoting resident interaction and building on a sense of community.

3.11 Conclusions

The baseline analysis reveals the following relevant considerations in the planning and development of the Bonnyrigg Estate.

- With population trends showing a growing ageing population, there is a need to ensure the Bonnyrigg Estate takes into consideration the needs of older persons, particularly in the design of public open spaces and pedestrian networks. There may be a need to consider facilities and services that meet the needs of significantly older and higher needs people living with dementia.
- It is anticipated that whilst there will be a significant proportion of couples with children living in Fairfield over the next 20 years, there will be an increase in the portion of lone person and couple only households.
- There will be a continued need to provide culturally and linguistically appropriate facilities and services, with the design of public spaces to take into consideration the culturally diverse population.
- With rates of crime higher for incidents of intimidation, stalking and harassment, as well as steal from person and drug offences it is important that elements of CPTED are incorporated into the design of the Bonnyrigg Estate to ensure areas are well lit, with safe access throughout both day and night. It is important to ensure the Estate continues to provide attractive, pleasant places for people to walk, cycle, exercise, sit and meet and talk.
- In considering key health indicators, with trends showing:
 - people are not eating the recommended levels of fruit,
 - recent increases in the rate of diabetes;
 - an increase in the proportion of the population that is overweight;

It is important that the concept design of the Estate continues to provide for areas that will encourage physical activity, in particular walking and cycling networks, with safe and amenable streets that can be used for non-utilitarian walking and cycling. It is important that the Bonnyrigg Estate supports physical and mental health needs of the community and whilst it is understood that the detailed design considerations may come at later stages in the development, it is important that the design considerations incorporated at the concept planning stage are also adopted in the final development stages.

4 Stakeholder Engagement

Given extensive engagement with the community has been undertaken over the life of the redevelopment of the Estate, targeted engagement has been used to inform the HIA. In addition, the results of other recent engagement activities in relation to the design and management of the multi-purpose community facility and the longitudinal study of the Bonnyrigg Estate, conducted by UNSW, have been considered in relation to the community needs and attitudes to the modification.

4.1 Social Infrastructure Needs Analysis

To inform this Health Impact Assessment stakeholder engagement undertaken to prepare the Bonnyrigg Social Infrastructure Needs Analysis was also taken into consideration. The key findings from discussions with stakeholders to inform the Social Infrastructure Needs Analysis¹⁸ revealed:

- There was a need for flexible sporting facilities that could cater for the elderly population as well as children.
- There was a need for community gardens with safe outdoor spaces.
- There was a need for playground areas for all ages, young and old.
- There was capacity for local medical practitioners to take new patients.
- There is a need to consider maintenance and good up-keep of future community facilities.
- There is a need for safe spaces with good lighting and surveillance.
- More local shops and cafes are desirable, even the consideration of an internet café.
- There is a desire for the multi-purpose centre to operate for long hours throughout the day and night to allow a variety of uses and accessible for those who work during the day.

4.2 UNSW Bonnyrigg Longitudinal Study

This Health Impact Assessment has also been informed by the results of the University of NSW Australia's City Futures Research Centre, longitudinal panel study, tracking the impact of the physical and community renewal activities on the local population. The first wave of the study, which undertook a series of interviews with approximately 100 households between 2011 and 2012, identified the following key messages related to health:

- The staged internal relocation model has helped keep the community together, which is not without challenges and concerns, specifically in relation to the stress associated with temporary relocation of residents.
- Some of the older residents have been impacted negatively in terms of their mental health associated with relocation to date, and some who chose to move away to minimize disruption have experienced difficulties in breaking ties with their old community.
- The more compact layout has received mixed reviews with welcomed increased opportunities for passive surveillance and improved sense of security yet, noted difficulties by some with the decrease in privacy due to closer neighbours.
- Perception of crime is a big issue in Bonnyrigg and residents are hopeful the redevelopment will help improve issues associated with crime. According to the research, since the renewal project commenced in early 2008, there have been notable changes to crime and safety in the Fairfield LGA. There were notable reductions in non-dwelling break and enter, motor vehicle theft, stealing from motor vehicles, stealing from persons, and malicious damage to property at rates similar to those seen throughout NSW.

¹⁸ IPPG. 2017. *Social Infrastructure Needs Analysis. Bonnyrigg Renewal Area.*

- Maintaining transparency and communication with residents should be paramount throughout the redevelopment. Noting that Bonnyrigg is an informed community that understands the broad parameters of the project.
- Expectations regarding community engagement should be on resident's terms, and in timeframes appropriate to household context and relative to everything else going on in their lives. This message is reflective of the residents relocation strategies and ability to be involved in the project depending on what stage of relocation they are at. It is noted that a more streamlined activities program is anticipated to be delivered as the development progresses, to assist with community renewal outcomes that will cater for the community's needs.

The results of the first wave study identified that the community of Bonnyrigg was well informed with regular newsletters distributed that include progress updates. However, it is noted that over time, there was a drop off in the number of programs and events that were taking place, specifically the communication and meaningful consultation during the 2012 Stage 3 phase.

Wave 2 of the Longitudinal Study

In 2017, St George Community Housing commissioned the City Futures Research Centre to revive the longitudinal study to identify and report upon the on-going impacts the renewal has had on the wellbeing and social and economic independence of residents. The report, detailing the investigation findings of this second wave were not finalized at the time of this assessment, and it is understood the project has been put on hold.

4.3 Bonnyrigg Community Precinct

To support the development of the New Bonnyrigg Community Precinct Straight Talk was engaged to provide facilitation and engagement throughout 2017 and 2018. The key findings of this engagement have been used to inform this Health Impact Assessment. Engagement activities included steering committee workshops, pop up displays and discussions with the local community as well as stakeholder engagement meetings with community groups. The key findings of the engagement reveal:

- There is recognition that some residents in the Bonnyrigg Estate will have smaller homes and backyards and so the community centre needs to provide sufficient space and function facilities to allow for a gathering space for families and social events.
- Indoor and outdoor transition spaces are important to the community to allow for a variety of community events, including food trucks, markets, café pop ups and social gatherings.
- There is a commitment to provide a community garden space. NSW Land and Housing Corporation is currently in discussion with Fairfield Council to determine the management and operation of this space, taking into consideration recent engagement indicating the local community has a desire for a nursery space with social enterprise aspects to allow people to both socialize and be educated with greenhouses and curated spaces rather than individual plot areas.

4.4 Visioning Bonnyrigg

In addition to the recent Straight Talk community engagement in relation to the New Bonnyrigg Community Centre a compiled engagement report was prepared in 2016 detailing the community interest in relation to place-making activities in Bonnyrigg by St George Community Housing. Relevant to the consideration of health impacts are the following findings.

- The vision for Bonnyrigg is one of a safer, more cosmopolitan shopping area, with high quality parks and a wider range of family friendly activities.
- People valued the parklands and the close and friendly community that is convenient and accessible.
- Needs related to a cleaner and well maintained public spaces, with family friendly activities that encouraged active recreation.
- Many respondents felt safe in Bonnyrigg however wanted to ensure key safety measures to be adopted included effective lighting, security cameras, increased police/security guard presence with increased activation of areas to increase passive surveillance.

- Youth participants were keen to see improved and expanded passive and active recreation opportunities for children and young people with more organized community-based activities.
- Culturally and Linguistically Diverse groups wanted Bonnyrigg to become a safer, cleaner and tidier place with better activation and a greater variety of shops, cafes and community facilities.

4.5 Targeted Stakeholder Discussions

4.5.1 NSW Health – South Western Sydney Local Health District

IPPG met with representatives of NSW Health, South Western Sydney Local Health District, in both June and July 2018 to discuss the proposed modification to the Bonnyrigg Estate Concept Plan. The initial discussions with NSW Health sought to identify the key local health considerations of the Bonnyrigg Community and ways in which the proposed modification could assist in improving the long term health outcomes for the community.

NSW Health views in relation to the modification are outlined below:

- Whilst there are difficulties in the analysis of health statistics at the very local level, the key health indicators for the broader area are useful to identify some trend issues that may be relevant to the design and development within the local area.
- The Bonnyrigg area currently experiences some socio-economic polarization and there is concern that in the long term, the influx of households will distort the socio-demographic index, contributing to longer term effects on education and health facilities for those with significant needs in the local area.
- There are some drug and alcohol dependency issues in the community and there is a need for youth health facilities, primary and community health services.
- NSW Health identified the importance of ensuring the community centre is inclusive and does not have programs designed only for households of certain socio-demographic backgrounds.
- With recognition that the provision of affordable healthy food choices is a key element to supporting the long term health of the local Bonnyrigg community, it was thought that whilst the nearby shopping centre has undergone redevelopment, the grocery market is considered relatively expensive for those on very low incomes.
- To increase connectivity to other major centres across Sydney, such as Parramatta and Liverpool, Fairfield and Cabramatta, consideration could be given to the provision of shuttle bus services. It was considered a service such as this would assist in allowing residents to have greater accessibility to major administrative services and specialist appointments, with less dependence on a car.
- There is still a strong interest in ensuring the redevelopment of the Estate focuses on the building of relationships between residents, with consideration of relocation programs and how to increase community cohesion for existing and new residents.

4.5.2 NSW Health – South Western Sydney Local Health District and St George Community Housing

Following initial discussions with NSW Health a second meeting was held between IPPG, NSW Health, South Western Sydney Local Health District, NSW Land and Housing Corporation and St George Community Housing to discuss in more detail the specific design elements of the modification and the ways in which the design will create connections and linkages with the existing community and surrounds.

A particular focus of the discussions was the relationship of the Bonnyrigg Estate to the nearby Bonnyrigg Shopping Centre. Noting that accessways towards the North West of the Multi-Purpose Centre, (identified as Superlots B and C) will become a major connection point between the Bonnyrigg Estate and the Bonnyrigg Shopping Centre. To ensure linkages are successful between users of the Multi-Purpose Centre and the Bonnyrigg Shopping Centre, it was considered important to ensure the design and activation of the areas within Superlots B and C is of high quality, making this an engaging space that will be well utilized by pedestrians and cyclists. Discussion focused on long term opportunities for incorporating Better Placed design concepts to ensure this connecting link, incorporates high quality

design, enhancing the urban environment and creates a great space in which the local community can connect, play, work and learn.

NSW Land and Housing Corporation in looking to finalise the uses of the ground floor commercial spaces within Superlots B and C, gave consideration as to whether NSW Health would need allocated space for additional health services in the area. However, following confirmation from NSW Health, no additional health services are required in the area given as population projections are not considered large enough to warrant such a need from NSW Health. As a result the discussions emphasized the importance of concentrating the final design of this area around concepts of “placemaking” creating vibrant and an active linkage point to Tarlington Reserve, the Bonnyrigg Shopping Centre and the new Bonnyrigg Multi-Purpose Community Centre. Consideration should be given to opportunities to provide public art, innovative street furniture and lighting in this area, with clear signage and effective landscaping.

It was recommended that the design of the ground level space allows for some area of hard surfacing that can be flexible in use to allow for coffee carts, food trucks, flexible seating arrangements, art works and innovative lighting strategies. Particular interest groups that were initially thought to use the space were cycling groups, mothers groups and teenagers who are currently observed within Tarlington Reserve weekdays, after school.

The final design should align with the new Better Placed design policy making sure the design of the space:

- Is relevant to the local setting
- Is sustainable and durable
- Is inclusive, connected and diverse,
- Is safe and comfortable and liveable,
- Is functional and efficient,
- Adds value to the Estate,
- Is engaging, inviting and attractive.

Overall the meeting was positive, with recommendations to continue to monitor and evaluate the health of the community as a result of the redevelopment. NSW Land and Housing Corporation and NSW Health along with St George Community Housing are keen to build on this established relationship to work together in the long term redevelopment of the Estate, ensuring good health outcomes for the existing and future community of Bonnyrigg.

5 Evaluation of Health Impacts

Factors such as where we live, the state of our environment, genetics, our income and education level, and our relationships with friends and family all have considerable impacts on health. The social and economic environment, physical environment and individual characteristics and behaviours are all determining factors that can influence the health of an individual¹⁹. Higher income and social status are linked to better health, with low education levels linked with poor health. It is also considered that strong social support networks are linked with better health outcomes and access and use of services that prevent and treat disease influences health. The physical environment with safe water, clean air, healthy workplaces, safe houses, cohesiveness all contribute to good health outcomes for communities.

Positive daily social interactions are important for wellbeing and positive mental health. As stated by the Director of Cardiovascular Health within the NSW Heart Foundation, *“well planned environments where people can walk, cycle or enjoy green space can make a big difference to the rates of chronic diseases and also mental health. People who live within 400m of public open space are more likely to engage in moderate, vigorous physical activity, than those who don’t”*.²⁰

It is important that the review of the Bonnyrigg Estate Concept Masterplan takes into consideration:

- Density and accessibility, where higher density living will have a flow on effect of reducing street space, creating a more intimate environment.
- The configuration that supports and facilitates social interaction, chance meetings and planned events in the public realm.
- Inclusivity, providing opportunities for all, regardless of the socio-economic status of residents within the newly developed area.
- A clear urban form that allows for easy navigation throughout the Estate.
- The design and operation of the urban centre, ensuring there is a diverse range of uses/activities provided within walking distance of residents.
- A clear delineation between transport modes to ensure safe travel throughout, reducing pedestrian and vehicular conflicts.
- An accessible public domain space that is defined by:
 - Clear linkages between neighbourhoods and important destinations;
 - Activities in surrounding buildings;
 - A space that allows for multiple uses, throughout both day and night by families and individuals of all ages;
 - Celebration of the history of the area, giving recognition to the aspirations of people that live there;
 - A streetscapes that support local business activity as well as active lifestyles;
 - A place that encourages walking and cycling, over driving;
 - A visually appealing space that engages individuals to explore and inhabit the area.

With these elements in mind, an assessment of the modification of the Bonnyrigg Estate Concept Plan has been undertaken, with key consideration of health characteristics referred to within the Healthy Urban Development Checklist²¹.

¹⁹ World Health Organisation. Health Impact Assessment. *The determinants of health*. Cited: <http://www.who.int/hia/evidence/doh/en/>

²⁰ Mitchell. JA. 2018 *FitNSW 2018: Building healthier and happier communities through our built environment*. Heart Foundation News 2018.03.08

²¹ NSW Health. 2009 *Healthy Urban Development Checklist. A guide for health services when commenting on development policies, plans and proposals*.

Table 3 Health Impact Evaluation

HEALTH CHARACTERISTIC	KEY ELEMENT	DETAILED CONSIDERATION	RELEVANT TO MOD	COMMENT	RECOMMENDATION
Community Safety and Security	<p>Elements of design and planning can add to the sense of safety and security felt by specific communities.</p> <p>Consider crime prevention and sense of security.</p>	<p>Does the proposal include community safety and crime prevention in its objective?</p> <p>Does the plan promote natural surveillance and clear sightlines?</p> <p>Does the development appropriately identify intended use and users?</p> <p>Is there an active mix of land uses?</p> <p>Does the proposal promote safe and easy movement?</p>	YES	<p>Perception of crime is an important issue to Bonnyrigg residents with many hopeful that the redevelopment will assist in improving issues associated with crime. Since 2008 there have been notable changes to crime and safety in the Fairfield LGA with perceptions of safety and security improving. Many residents have recently reported feeling safe in Bonnyrigg however, want to ensure key safety measures continue to be adopted to maintain and increase levels of safety and security.</p> <p>Key crime indicators relevant to the redevelopment relate to:</p> <ul style="list-style-type: none"> Rates of domestic violence (noted to be higher than the NSW average, Bonnyrigg: 476.6 per 100,000 population, NSW: 365.3 per 100,000 population). Intimidation, stalking and harassment (Bonnyrigg: 	<p>Given lighting plays an important role in increasing visibility and prevention of crime, encouraging greater activation of spaces at night lighting strategies should continue to be developed and applied throughout the Estate, ensuring all spaces are well lit and encourage active use after dark.</p> <p>Lighting fixtures are to be sturdy and vandal-proof, with landscaping and lighting complementary to reduce opportunities for concealment. Lighting should focus on pedestrian linkages, entry and exit points to buildings and public spaces.</p> <p>It is recommended that landscaping plans continue to ensure that site lines are not interrupted and do not create areas of entrapment or concealment. Landscaping measures should be used to create defined, legible spaces, encouraging legitimate use of appropriate areas.</p> <p>Clear signage should be incorporated throughout the Estate to assist with access control measures to make it clear where people are permitted to</p>

HEALTH CHARACTERISTIC	KEY ELEMENT	DETAILED CONSIDERATION	RELEVANT TO MOD	COMMENT	RECOMMENDATION
				<p>532.0 per 100,000 population, NSW: 401.7 per 100,000 population).</p> <ul style="list-style-type: none"> Steal from person (Bonnyrigg: 88.7 per 100,000 population, NSW: 58.8 per 100,000 population). Drug offences (Bonnyrigg: 831.3 per 100,000 population, NSW: 772.2 per 100,000 population). <p>The proposal provides opportunities for surveillance from adjoining buildings from nearby streets and shops and commercial areas. The design encourages site lines throughout with reduced opportunities for concealment in public spaces.</p> <p>The layout is logical with an active mix of land uses. However, it is important that the spaces are well maintained to encourage active use by all residents.</p>	<p>go throughout the Estate. Innovative and well-designed signage can assist with wayfinding. Signing should be clear and unambiguous to ensure excuses cannot be made for persons moving through restricted areas.</p> <p>It is recommended that continual monitoring of perceptions of safety and security is undertaken to ensure the current findings that residents have found the newly developed areas create attractive and pleasant places to walk, cycle, train, sit, meet and talk continue to develop.</p>

HEALTH CHARACTERISTIC	KEY ELEMENT	DETAILED CONSIDERATION	RELEVANT TO MOD	COMMENT	RECOMMENDATION
Housing	<p>Housing or shelter is fundamental to human health. Housing can impact on personal and family wellbeing, mental and physical health, employment opportunities, social connectedness and environmental sustainability.</p> <p>Housing should support human and environmental health.</p>	<p>Does the proposal provide housing in locations that allow residents to walk, cycle or travel by public transport to work and services?</p> <p>Does the proposal encourage car dependency?</p>	YES	<p>Yes, as outlined in the original proposal all housing is accessible to the nearby Bonnyrigg Shopping Centre with bus routes connecting throughout.</p> <p>The provision of accessible cycleways, bus network throughout the Estate and walking networks enable residents to connect to major regional destinations via regional public transport services. Discussions with key stakeholders revealed the need to investigate further public transport options to ensure residents, particularly those with significant medical and community service needs, can gain more direct access to major centres so that there is less dependence on the car for multiple service trips.</p>	It is recommended that opportunities are explored with St George Community Housing and Fairfield Council to establish a local shuttle bus service that allows for more direct connections for residents to major centres such as Fairfield and Cabramatta, noting that many residents would be seeking to travel to these areas to access key medical and community services.
Housing cont.	Dwelling diversity should be encouraged.	Does the proposal encourage a diversity of lot sizes and housing types, to accommodate households at different life cycle stages with different levels of affordability?	YES	The proposal continues to provide a variety of housing types and diversity of lot sizes to provide dwellings for many household types of different needs and at different life cycle stages. The proposal provides significant social benefit with the provision of additional public housing throughout, designed in such a	Taking into consideration the preliminary results of the UNSW Bonnyrigg Longitudinal Study it is recommended that the staged internal relocation model continues with key messages and updates communicated with residents throughout the entire redevelopment process.

HEALTH CHARACTERISTIC	KEY ELEMENT	DETAILED CONSIDERATION	RELEVANT TO MOD	COMMENT	RECOMMENDATION
				way to ensure a mix of public and private housing throughout.	
Housing cont.	Affordable housing should be promoted.	<p>Does the proposal provide affordable housing opportunities?</p> <p>Do the housing types meet the needs of households in relation to dwelling type, size and location?</p> <p>Is affordable housing distributed throughout the development and not clustered?</p> <p>Is affordable housing designed to be indistinguishable from other forms of housing?</p>	YES	All of the recommended urban form considerations have been adopted. Affordable dwellings will be indistinguishable from other forms of housing and will be distributed throughout, not clustered. A variety of dwelling types have been proposed, in order to meet the diverse needs of residents.	It is recommended the Longitudinal Study is continued to identify and report on the on-going impacts the renewal has had on the wellbeing and social and economic independence of residents.
Physical Activity	<p>Good urban development should be designed in such a way as to provide various opportunities for physical activity.</p> <p>Incidental physical activity should be encouraged.</p>	<p>Are most homes within a comfortable walking distance (within 400-500m) of frequent destinations to meet every day needs?</p> <p>Are land uses arranged to encourage walking, cycling other forms of active transport between activities?</p> <p>Are streets (including bicycle and pedestrian networks) highly connected, offering</p>	YES	<p>As identified within the Bonnyrigg Living Communities Case Study, open space has already been provided within close walking distance from dwellings, incorporating well designed facilities to encourage active recreation.</p> <p>It is anticipated this design consideration is maintained and adapted as the development continues, incorporating best practice standards in the design</p>	<p>Continue to incorporate the consideration of high quality landscaping, lighting to ensure public spaces are well maintained, create a sense of safety and security, assisting to support physical activity.</p> <p>Opportunities for physical activity should be supported both day and night, with lighting strategies to be implemented for open space areas to allow for safe secure activity after dark.</p>

HEALTH CHARACTERISTIC	KEY ELEMENT	DETAILED CONSIDERATION	RELEVANT TO MOD	COMMENT	RECOMMENDATION
		<p>direct routes to destinations of choice?</p> <p>Does the proposal have an impact on those in the target area who are identified as most at risk of not achieving national physical activity guidelines?</p>		<p>and operation of open space areas, ensuring high quality passive and active recreation opportunities are provided for all residents.</p>	<p>The development of public open space areas should encourage opportunities for 'green gyms' to increase the number of people who can informally exercise out of doors without having to pay for gym memberships.</p> <p>Opportunities to incorporate design elements that encourage physical activity and active transport should be explored in the final stages of the design, particularly with the placemaking opportunities around Superlot B and C. As a major access point between the Bonnyrigg Shopping Centre and the Bonnyrigg Estate, connecting the community to the Multi-Purpose Community Centre, it is considered space should be allocated for bicycle parking and pedestrian networks, incorporating public squares, pathways in this area to encourage walking and cycling.</p>
Physical Activity cont.	Are opportunities for walking, cycling and other forms of active transport promoted?	<p>Does the proposal include provisions for bicycle and pedestrian pathways and a strategy for funding them?</p> <p>Will bicycle provisions be available from the earliest</p>	YES	It is recommended that appropriate bicycle parking is continued to be provided as dwellings are completed. It is also recommended the provision of bicycle parking and potentially a pop-up bicycle workshop space	It is recommended that in addition to bicycle parking stations already provided (or allocated) additional consideration is given to bicycle parking and pop-up bicycle workshop spaces towards the commercial

HEALTH CHARACTERISTIC	KEY ELEMENT	DETAILED CONSIDERATION	RELEVANT TO MOD	COMMENT	RECOMMENDATION
		<p>possible stages of planned use and settlement?</p> <p>Are footpaths and bicycle lanes and paths provided throughout the proposed development, and do they link with schools, shopping areas and residential areas?</p> <p>Are footpaths and shared paths designed to comfortably accommodate users travelling in each direction?</p> <p>Do pathways consider topography, minimising steep slopes and providing alternatives to steps?</p> <p>Is safe movement for pedestrians and cyclists promoted?</p>		<p>be incorporated within the areas closest to Superlots B and C.</p> <p>As was identified within the Bonnyrigg Living Communities Project Case Study, the pedestrian and bicycle connections will link the estate with the nearby centres and the regional open space network.</p> <p>Walking and cycling shareways are continued throughout, connecting residents to the surrounding activity nodes, including schools, shops, bus stops etc.</p>	<p>ground floor areas within Superlot B and C.</p> <p>It is recommended that walking and cycling shareways are continued with appropriate signage throughout to connect users to key activity areas (schools, shopping areas, community centres).</p> <p>Bicycle use should be encouraged by providing paths of sufficient width to enable two cyclists going in opposite directions to pass comfortably as well as path continuity to that cyclists do not have to stop frequently.</p>
	Is access to usable and quality public open spaces and recreational facilities promoted?	<p>Does the proposal provide public open space to meet the needs of the future community?</p> <p>Will the new residents have access to a range of</p>	YES	The recent review of open space provision for the Bonnyrigg Renewal Area reveals the provision of open space is consistent with the requirements and best practice. However, the review also notes that there may	It is recommended that landscape plans for future open space areas take into consideration the new Greener Places Policy ²² , prepared by the NSW Government Architect, recognising well-designed greener places will make it easier for people

²² NSW Government Architect. 2018. *Greener Places Establishing an urban Green Infrastructure policy for New South Wales*. Draft for discussion.

HEALTH CHARACTERISTIC	KEY ELEMENT	DETAILED CONSIDERATION	RELEVANT TO MOD	COMMENT	RECOMMENDATION
		<p>public open spaces and recreational facilities within the local area?</p> <p>Do parks and open spaces include places to rest, quiet areas, places for gatherings, drinking fountains, shaded areas, public toilet facilities and pathways that connect to the greater area?</p> <p>Is outdoor gym and training equipment provided along pathways to encourage use of pathways for planned recreation?</p>		<p>be a need to continually improve the quality of open space with consideration of the design of these spaces to promote mental health and social interaction.</p> <p>It is clear that given the likely population demographics there is a need to incorporate more outdoor gyms and informal exercise areas to ensure those who cannot afford to, or wish to exercise outdoors, can do so easily.</p>	<p>to be physically and mentally active. With this in mind it is important that the open spaces throughout the Estate support the multifunctional landscape, offering ecological, socio-cultural and economic benefits. Public art should be integrated into the open space areas, with connectivity of the understanding of the history of the area and "sense of place". Playgrounds and outdoor gym areas can be well integrated within the natural landscape, incorporating both barbecue and picnic areas, with materials that complement the natural landscape.</p>
Transport and Physical Connectivity	<p>Transport options and choices impact on our health and well-being. The design and management of the built environment shapes our transport choices.</p> <p>Improve public transport services.</p>	<p>Does the development identify the provision of public transport as a priority?</p> <p>Does the development make provision for public transport routes/services to link the proposed development?</p> <p>Does the development encourage alternate transport system developments, such as car share programs,</p>	YES	<p>The concept design incorporates additional bus stops throughout the Estate with local bus networks connecting residents to the nearby Bonnyrigg Shopping Centre and then consequently other major centres.</p> <p>As identified within the Bonnyrigg Living Communities Project Case Study secure bicycle parking is provided adjacent to sports fields, near rapid bus transit stations and in the new multi-purpose community centre.</p>	<p>It is recommended that the final design of bus stops takes into consideration appropriate shelter, rest opportunities and bicycle parking to ensure active use of public transport is encouraged. It is also recommended that opportunities to encourage informal exercise and innovative play spaces form part of these activity spots throughout the development.</p>

HEALTH CHARACTERISTIC	KEY ELEMENT	DETAILED CONSIDERATION	RELEVANT TO MOD	COMMENT	RECOMMENDATION
		<p>walking/cycling 'bus programs or community bike hire schemes?</p> <p>Are public transport stops located in comfortable walking distance of housing, employment and other local destinations?</p> <p>Are these public transport nodes easily accessible and include places to park and rent bicycles?</p> <p>Are shelter, seating and lighting amenities included?</p>		<p>The majority of residents will remain within 400m walking distance of the existing rapid bus transitway that connects Bonnyrigg with Liverpool and Parramatta. The street network will facilitate improved connections for future public transport services with a bus route operating throughout the centre of the Estate.</p>	
	Encourage telephone and internet connectivity	<p>Does the proposal encourage equitable access to telephone and internet connectivity? With the use of internet in public places (parks, public transport and cafes).</p> <p>Do all areas have access to telephone and high-speed internet?</p>	YES	<p>As identified by NSW Health, the Multi-Purpose community centre would benefit from having Wi-Fi access, inclusive of all residents. In addition it is considered smart city technologies should be adopted to assist in building a more liveable urban environment.</p>	<p>It is recommended that Wi-Fi access is established in public spaces and places to allow residents and visitors access to the internet. It is particularly important given the consideration that many residents may not be able to secure their own individual internet connection.</p> <p>Whilst the management and operation is ultimately the responsibility of Fairfield City Council, it is recommended that the development of the Multi-Purpose Centre investigate access to tablets and devices for users. This would be particularly beneficial for students</p>

HEALTH CHARACTERISTIC	KEY ELEMENT	DETAILED CONSIDERATION	RELEVANT TO MOD	COMMENT	RECOMMENDATION
					<p>seeking to access learning programs after school.</p> <p>Opportunities to develop smart city technologies should be explored, also supporting low cost environmental and social data collection and sharing.</p>
Social Cohesion and Social Connectivity	Urban design can encourage and facilitate social cohesion, creating attractive places where people can meet and gather.	<p>Does the proposal promote and provide an environment that will encourage social interaction and connections amongst people?</p> <p>Does the proposal promote a sense of community and attachment to place?</p> <p>Does the proposal encourage local involvement in planning and community life?</p> <p>Does the proposal minimise social disadvantage and promote equitable access to resources?</p> <p>Does the proposal avoid community severance, division or dislocation?</p>	YES	<p>The proposal to redevelop the Bonnyrigg housing Estate aims to create a more sustainable community, through the creation of a more vibrant, safe, healthy and friendly neighbourhood, removing negative social planning aspects associated with the original 'Radburn' design.</p> <p>To date the redevelopment of the Estate has been successful in encouraging a mix of housing, provision of new public facilities in accessible centres, providing for more opportunities for social interaction and activity.</p> <p>In addition to the local pedestrian and cycle networks, the creation of a public and private housing mix with a variety of housing types, the introduction of a new Multi-Purpose Centre will assist in providing a hub to connect the local community.</p>	<p>It is recommended the final design of the ground level spaces within Superlot B and C provide a vibrant, active space that is flexible and provides opportunity for both informal and formal gatherings, creating an active place that links the Bonnyrigg Estate and Tarlington Reserve, to the nearby Bonnyrigg Shopping Centre.</p> <p>Consideration should be given to opportunities to provide public art, innovative street furniture and lighting in this area, with clear signage and effective landscaping.</p> <p>The final design should align with the new Better Placed design policy making sure the design of the space:</p> <ul style="list-style-type: none"> • Is relevant to the local setting • Is sustainable and durable • Is inclusive, connected and diverse,

HEALTH CHARACTERISTIC	KEY ELEMENT	DETAILED CONSIDERATION	RELEVANT TO MOD	COMMENT	RECOMMENDATION
				<p>Stakeholder engagement undertaken to inform the proposed modification revealed the need to invest in the creation of further “placemaking” opportunities, particularly to enhance the connectivity between the Multi-Purpose Centre and the Bonnyrigg Shopping Centre.</p> <p>Indoor and outdoor transition spaces are important to the community and allow for a variety of community events, including food trucks, markets, pop up cafes and social gatherings.</p>	<ul style="list-style-type: none"> • Is safe and comfortable and liveable, • Is functional and efficient, • Adds value to the Estate, • Is engaging, inviting and attractive.
Healthy Food	Access to fresh, nutritious and affordable food	<p>Will the community have adequate income, resources to buy healthy and fresh food?</p> <p>Are there safe walking routes, footpaths and public transport to healthy food outlets?</p> <p>Are there a range of opportunities for the supply of healthy food including supermarkets, fruit and vegetable shops, and farmers markets?</p>	YES	<p>As identified within the Bonnyrigg Living Communities Case Study, the Concept Plan met the design considerations in the PCAL guidelines. Specifically as higher density dwellings are located closer to the Bonnyrigg Plaza and the Liverpool to Parramatta bus T-way improving accessibility to major centres that supply healthy food, including fresh fruits and vegetables.</p> <p>Safe walking routes are provided throughout, including marked cycle and pedestrian paths, creating connections to healthy food outlets.</p>	<p>It is recommended that the population is assisted in gaining access to fresh nutritious and affordable food by:</p> <ul style="list-style-type: none"> • Ensure opportunities for vertical gardens are explored for residents who may be downsizing and no longer have backyards. • Discourage fast food restaurants within the ground floor retail/commercial opportunities towards the North West of the Estate. • Placemaking opportunities are encouraged to

HEALTH CHARACTERISTIC	KEY ELEMENT	DETAILED CONSIDERATION	RELEVANT TO MOD	COMMENT	RECOMMENDATION
		<p>Is there a discouragement of over abundance of fast food restaurants?</p> <p>Are most homes within a comfortable walking distance of healthy food outlets?</p>		<p>Trends show people in South Western Sydney are not eating recommended levels of fruit, with recent increases in the rates of diabetes and increasing proportions in people who are overweight. Improved access to healthy foods with increased awareness as to healthy choices that individuals can make will contribute to improved health outcomes for the residents of Bonnyrigg.</p> <p>A significant proportion of the community will be on lower incomes (with 900 dwellings allocated or social housing). In addition, the modified dwelling size and shift to apartment living may reduce the capacity for residents to grow their own fresh fruits and vegetables within a private garden setting.</p> <p>The community seeks opportunities for communal gardens, specifically relevant to the development of the Community Precinct, as well as the provision of nursery spaces and opportunities for social enterprise to allow for greater education and fresh produce entrepreneur opportunities.</p>	<p>incorporate the promotion and education of fresh food, through innovative landscaping plans and complementary signage.</p> <ul style="list-style-type: none"> Whilst it is understood the management and operation of the Multi-Purpose Centre is the responsibility of Fairfield City Council it is recommended that the final design and operation of the Multi-Purpose Centre considers opportunities for learning experiences from the growth and production of fresh food to cooking. It is particularly important to engage with the local school network to encourage the use of this space for education purposes.

HEALTH CHARACTERISTIC	KEY ELEMENT	DETAILED CONSIDERATION	RELEVANT TO MOD	COMMENT	RECOMMENDATION
				It is understood the Multi-Purpose Community Centre will provide opportunities to connect the local community to learning experiences in relation to fresh foods and cooking classes.	
Healthy Food cont.	Support for local food production	<p>Does the proposal promote local food production as a viable approach to increasing access to healthy food for residents of Bonnyrigg?</p> <p>Does private open space allow home gardening?</p> <p>Is community gardening supported?</p>	YES	<p>Community gardening is supported within the proposal, specifically relating to the design and operation of the new Multi-Purpose Centre. It is noted that the location of this space is within walking distance of homes.</p> <p>Community interest has been shown for the creation of a nursery space that allows people to socialise and become educated in the production of plants, including fresh herbs, fruits and vegetables.</p>	<p>It is recommended that flexible spaces are incorporated within the Estate to ensure there are opportunities to support community events that promote healthy food choices and local food production, including food trucks, markets, pop up cafes and stores.</p> <p>Vertical gardening opportunities should be enabled for those residents who may have downsized but seek to grow their own fresh produce.</p>

6 Conclusions and Recommendations

Following a review of the proposal it is clear that the community strengths, identified within the original Bonnyrigg Community Renewal Services Plan, 2008, still remain. The Bonnyrigg community is still considered to be:

- Cohesive, between neighbours and cultural groups;
- Culturally diverse;
- Well serviced and accessible within and to surrounding centres;
- Supported by many recreational areas and facilities.

The assessment of key health indicators reveals the population is ageing, with a need to ensure the design of the Estate takes into consideration the needs of older persons and how they may use pedestrian networks and public open spaces. There will also be an increase in the number of lone person and couple only households who may seek different experience and utilize spaces within the Estate differently to those families with children. Given the diversity within the population there will be a continued need to provide culturally and linguistically appropriate facilities and services.

Informed by the results of the University of NSW Australia's City Futures Research Centre the staged internal relocation model has helped to keep the community together. However some of the older residents have been impacted negatively in terms of their mental health associated with the relocation to date. Whilst some have welcomed the increase in opportunities for passive surveillance and improved sense of security, others have felt there is a decrease in privacy due to closer neighbours.

It is clear that people will welcome the addition of the Multi-Purpose Community Centre. However, through discussions with NSW Health and St George Community Housing improved linkages with the Bonnyrigg Shopping Centre can be created towards access points near Superlots B and C. With the recently adopted integrated design policy for the built environment of NSW, *Better Placed* is relevant to the consideration of health impacts. Advocating for good design it is understood that design methods and processes can address many factors impacting upon population health, creating healthier places for people and communities.

Many recommendations are outlined in the Health Impact Evaluation Table and include:

- Continual development and implementation of landscaping, signage and lighting strategies to ensure there are defined legible spaces, that encourage active and safe use throughout the day and night.
- The development of a monitoring program to capture perceptions of safety and security as the development progresses.
- Explore additional transportation services to better connect communities with relevant major centres such as Fairfield and Cabramatta, servicing medical and community service needs.
- Continue the staged internal relocation model with continual updates to residents throughout the development process.
- Support for the development of more 'green gyms' and increase the opportunities for people to exercise outdoors.
- Provision of more bicycle parking stations and areas that would allow pop-up bicycle workshop spaces to assist residents with bicycle maintenance needs.
- Consideration of the Greener Places Policy to ensure well-designed green places are developed and maintained throughout the Estate, encouraging people to be physically and mentally active.
- Encouragement of opportunities for vertical garden systems for residents who have downsized and no longer have access to larger garden spaces. It is important that people are encouraged to make connections with fresh produce, with education programs considered for residents in the growing and preparation of healthy food choices.

- Look at encouraging Wi-Fi access throughout the Estate, in public areas, as well as opportunities to develop smart city technologies.
- Implementation of “placemaking” opportunities within the ground level spaces within Superlots B and C, to provide a vibrant active space, to be used for informal and formal gatherings that link the Bonnyrigg Estate to Tarlington Reserve and the Nearby Bonnyrigg Shopping Centre.

The final design should align with the new Better Placed design policy making sure the design of the space:

- Is relevant to the local setting
- Is sustainable and durable
- Is inclusive, connected and diverse,
- Is safe and comfortable and liveable,
- Is functional and efficient,
- Adds value to the Estate,
- Is engaging, inviting and attractive.

It is recommended that strategies adopted within the Bonnyrigg Community Renewal Services Plan are continued, particularly in relation to the principles that:

- *Change always creates stress and anxiety, particularly for those who have little influence over the options for and timing of change.*
- *Stress and anxiety can be alleviated through initiatives to keep people informed, consult them on the process of change, provide as many choices as possible within the constraints of external factors and generally treat people with respect.*
- *The provision of specific support services to people experiencing significant anxiety will assist in alleviating that anxiety and enabling a successful transition.*

It is recommended the relevant key health and wellbeing initiatives outlined in the Community Renewal Services Plan continue to be implemented:

- A Counselling and Support Service to residents within the Bonnyrigg Living Community Area, to provide a combination of appropriate Stress Management courses and individual and family counselling on coping with the anxiety and stress of change precipitated by the redevelopment.
- Augmenting Mental Health services – mental health is a key service priority, and is likely to increase in importance with the tighter targeting of public housing, as well as potential exacerbation of existing mental health issues and general stress arising from redevelopment and relocation.
- Attracting appropriate service partners to provide outreach services from the Multipurpose Community Centre where this is appropriate, and mitigate social impacts to residents to the greatest extent possible.
- Continuation of service protocols or agreements in place in Bonnyrigg, including the Joint Guarantee of Service between DOH and the Area Health Service/Community Health team; and the Human Services Accord as a framework for coordinated service delivery.

It is recommended that the NSW Land and Housing Corporation continue to work with NSW Health, alongside St George Community Housing in redeveloping the Estate, ensuring good health outcomes are achieved for the existing and future community of Bonnyrigg. Any long term evaluation of the project should look at the effectiveness of the design and redevelopment process.



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