

LOCHINVAR STRUCTURE PLAN

OCTOBER 2007

Lochinvar Structure Plan

Produced by:

City Strategy Division
Maitland City Council

and



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Department of Planning

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LOCHINVAR STRUCTURE PLAN

MAITLAND CITY COUNCIL

ADOPTED:
9 OCTOBER 2007

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1.0 Introduction

1.1 What is the Lochinvar Structure Plan? And what does it do?

The Lochinvar area represents an opportunity for an expansion of an existing community in the Lower Hunter. It is one of a few remaining areas considered suitable for significant urban development potential in the west of Maitland local government area. Lochinvar has also been identified in the Lower Hunter Regional Strategy as a priority area to accommodate regional population growth.

Maitland City Council is committed to creating opportunities for the expansion of Lochinvar that are well planned from the outset. It is the intention of the Lochinvar Structure Plan to provide a broad framework for development in the Lochinvar area and to act as a guide for future investigations and decisions by Council and the community.

The objective of the Structure Plan is to ensure that any growth takes place in a coordinated and sustainable manner, in response to the character of Lochinvar. Consultation with the local community, government bodies and service providers will also inform the framework of the urban release area.

It is envisaged that the Structure Plan will provide for expanded urban development and associated facilities and services consistent with the principles of sustainable liveable neighbourhoods. That is, to provide for an urban structure of walkable neighbourhoods clustered to form towns of compatibly mixed uses that have access to services and facilities.

1.2 Why Lochinvar?

1.2.1 Regional Context

Lochinvar is located along the New England Highway in the Lower Hunter Valley to the west of Maitland. Located in close proximity to the New England Highway, the Great Northern rail corridor and the future F3 link, Lochinvar has a strategic position in the region for urban development. Significant employment areas are also located close to the village.

The Lower Hunter Regional Strategy aims to provide for 115,000 new dwellings by 2031, in locations that have access to quality infrastructure and services, protect and enhance ecological and culturally significant landscapes and foster a sense of community. Maitland City Council aims to make provision for 26,500 of those during the life of the Regional Strategy.

Lochinvar has been identified in the Regional Strategy as a key land resource, being one of the largest remaining sites that has relatively few and manageable development constraints. Regionally, the Lochinvar area is also considered to have the function of a transport and service centre for the northern end of the Lower Hunter.

1.2.2 Local Context

The Maitland Urban Settlement Strategy identifies Lochinvar as a key area for urban expansion over the next 20 years.

This land use strategy aims to provide an adequate supply of land and sites for residential development in areas with minimal environmental constraints and where infrastructure can be efficiently and affordably provided.

The study area supports cleared, slightly undulating land where development can be contained within a defined landscape without the need to sprawl into visually and agriculturally significant areas. Consideration of the character and environment of Lochinvar has determined the boundaries of the investigation area, comprising approximately 645 hectares of land.

Lochinvar is also in close proximity to the expanding industrial area of Rutherford providing an employment area accessible by public transport. Similarly, a number of regional transport corridors converge in the Lochinvar area, making opportunities for inter and intra-regional commuting.

The presence of existing facilities and services and the ability to extend these into suitable adjoining areas is a key feature of Lochinvar resulting in cost-effective and resource-efficient development to promote affordable housing.

1.3 Why a Structure Plan?

A Structure Plan is a useful strategic planning tool to ensure that a new community is well planned. It provides a logical framework for development and allows the attributes of the study area, including the natural environment and special features of the area, to determine the most appropriate locations for future development. It supports a proactive approach allowing Council to control future development by providing clear long term guidance to landowners and developers.

The Structure Plan will encourage the forward planning and implementation of infrastructure such as roads, services and community facilities, which are integrated with existing services and facilities and coordinated with the growth and release of new residential areas.

1.4 The Study Area

The study area for the Lochinvar Structure Plan is defined by the natural topography and culturally significant features. Generally, the study area lies within a basin between the ridges formed by Old North Road, Winders Lane and high ground adjacent to St Helena house. The north-western extent of the study area is delineated by the floodplain and partly by the New England Highway, while the southern boundary is formed by the rail corridor.

Other natural features of the study area include the gentle undulating hills with shallow gullies, extensively cleared and grazed landscape and pockets of remnant native vegetation.

Culturally significant features of the Lochinvar study area include the convent of the Sisters of Saint Joseph, Airds of Lochinvar, locally and regionally listed heritage items and the visual setting and approaches into the village of Lochinvar. The township of Lochinvar is characterised by landscape plantings associated with gardens and civic buildings, such as “St Helena” and “Clifton”.

The study area is identified in the following figure, and comprises the existing village area and community facilities such as recreation areas, schools, public hall, convenience shops, hotel, emergency services, churches and adjoining rural activities.



Fig. 1: Lochinvar Structure Plan area

2.0 Structure Plan Development

The preparation of the Draft Lochinvar Structure Plan has involved analysis of the study area with additional information gathered and assessed from the local community, development industry and government agencies.

Identification of opportunities and constraints from site investigations and specialist reports has identified the following key areas for consideration:

- Biodiversity
- Bushfire hazard
- Soils
- Topography
- Flooding and drainage
- Lot structure
- Scale of development
- Transport and traffic
- Visual environment
- Services and infrastructure
- Community facilities
- Heritage

The investigation into the above key issues has provided for the framework of the Structure Plan basing guidelines on the attributes of the site and appropriate management of sensitive areas. Using such a framework the Structure Plan identifies the most appropriate locations and form of future development resulting in the ability to provide cost effective and resource efficient development.

A Town Vision was developed based on Neighbourhood Planning principles as defined in the Lower Hunter Regional Strategy 2006. Other strategic documents like the Sustainable Transport in the Lower Hunter Region Issues Paper 2003 and the Maitland Greening Plan 2002 were also considered.

The Lochinvar Structure Plan and Urban Design Guidelines provide important guidance on how to implement these principles and achieve the developed vision. The Urban Design guidelines are based on best practice Australian and international examples.

3.0 Key Opportunities and Constraints

3.1 Biodiversity

The Lochinvar study area consists of undulating rural land draining north towards the Hunter River floodplain.

Significant clearing for agricultural practices (predominantly grazing) in the past has reduced the natural landscape to open grassland with a few isolated pockets of vegetation. The remaining stands of vegetation have been identified as Hunter Lowland Red Gum Forest, an ecological endangered community (EEC).

Cultural plantings at “St Helena” and “Clifton” provide a point of interest and are significant in that they occur in limited numbers and areas.

There are no recordings of threatened fauna within the study area, however Hunter Lowland Red Gum Forest can provide support for some species, including grey crowned babblers and squirrel gliders.

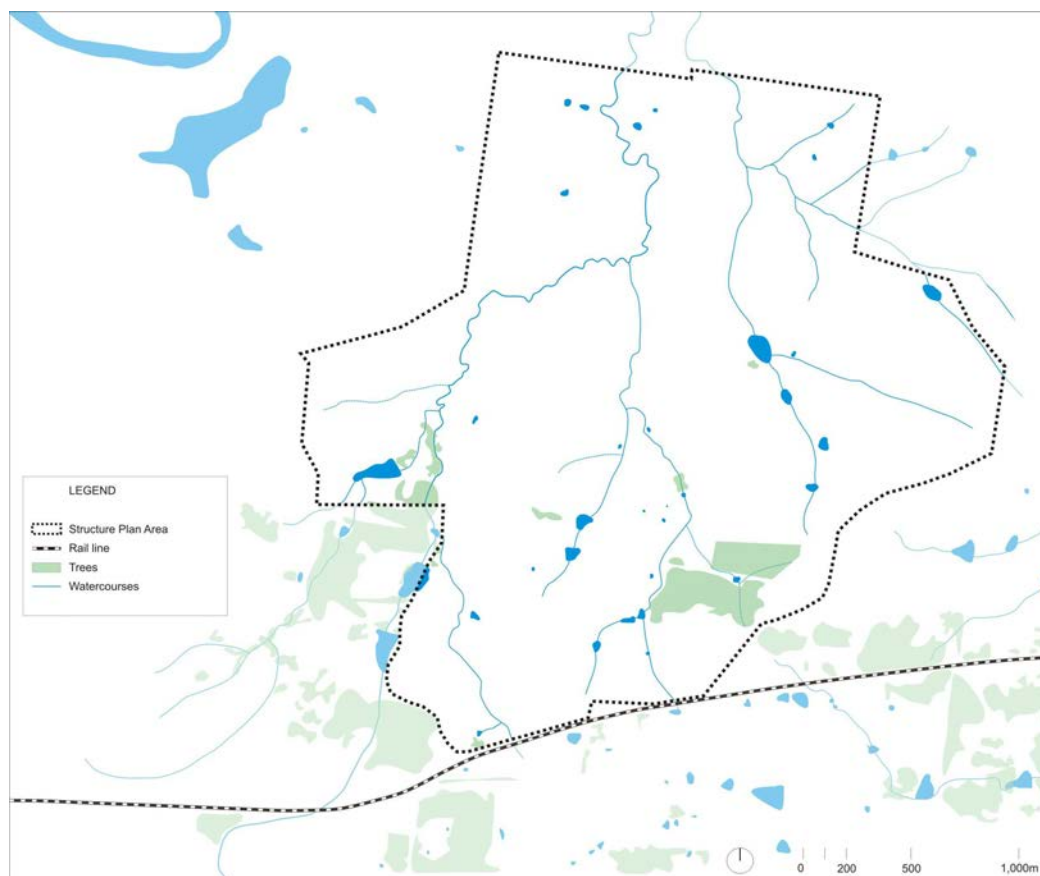


Fig. 2: Natural environment of Lochinvar study area

The lack of vegetation and supporting habitat for fauna species places greater emphasis on the importance of retaining what is left and creating future links to larger vegetation communities outside the study area. This is supported by the Maitland Greening Plan which identifies “opportunity corridors” within the Maitland area and identifies sections of the study

area as potential wildlife corridors and drainage line corridors. The vision of the Greening Plan in terms of revegetation is to *“increase the presence of native vegetation in the landscape so as to improve habitat for biodiversity in the local area and begin the process of reducing the impact of land degradation”*.

The provision of native vegetation links will:

- Connect areas of existing vegetation, increasing biodiversity;
- Recreate vegetated vistas to add to visual amenity for the locality;
- Stabilise drainage lines; and
- Provide for recreation opportunities.

The Department of Natural Resources identifies all remaining native vegetation within the Structure Plan area as Protected Regrowth under section 10(1)(b) of the Native Vegetation Act 2003. The retention of the remaining remnant vegetation will help to ensure that any further loss for development is offset by additional revegetation and conservation activities.

Opportunity corridors and other significant natural environmental features are identified in the following figure. Detailed planning investigations for any future development within the study area are to address the constraints and opportunities of the area.

3.2 Bushfire Hazard

Bushfire mapping for the Maitland LGA indicates that a small portion of land in the southeast of the study area is designated as high bushfire hazard under the State Government bushfire provisions. The vegetation community in this location has been categorised as relatively mature Hunter Lowland Red Gum Forest with no understorey due to continuous grazing practices.

Any subdivision and development in close proximity to these areas is to be designed in accordance with the NSW Planning for Bushfire Regulations.

3.3 Soils

The study area is identified as being susceptible to salinity. Protection and enhancement of riparian vegetation can be used to minimise soil erosion and the expansion of salinity within the study area.

Areas of cracking black soil that could present limitations to road and building foundation design are also expected to occur within the study area.

Further investigations of soil types within the study area will be required in the next phase of development planning.

3.4 Topography

The topography of the study area is one of the most important natural elements to determine the future character of the town. The topography has implication on water flows, wind distribution, soil humidity, pedestrian and cycle movement, solar access and visual connections.

Developing a town structure which responds to the natural topography of the area is of key significance in achieving a sustainable urban environment.

A road network which follows the natural terrain has the advantage of providing legible routes, and comfortable movement for pedestrians and cyclists.

The town centre as well as the neighbourhood centres will be located on ridgelines to enable visibility and facilitate orientation according to their communal usage.

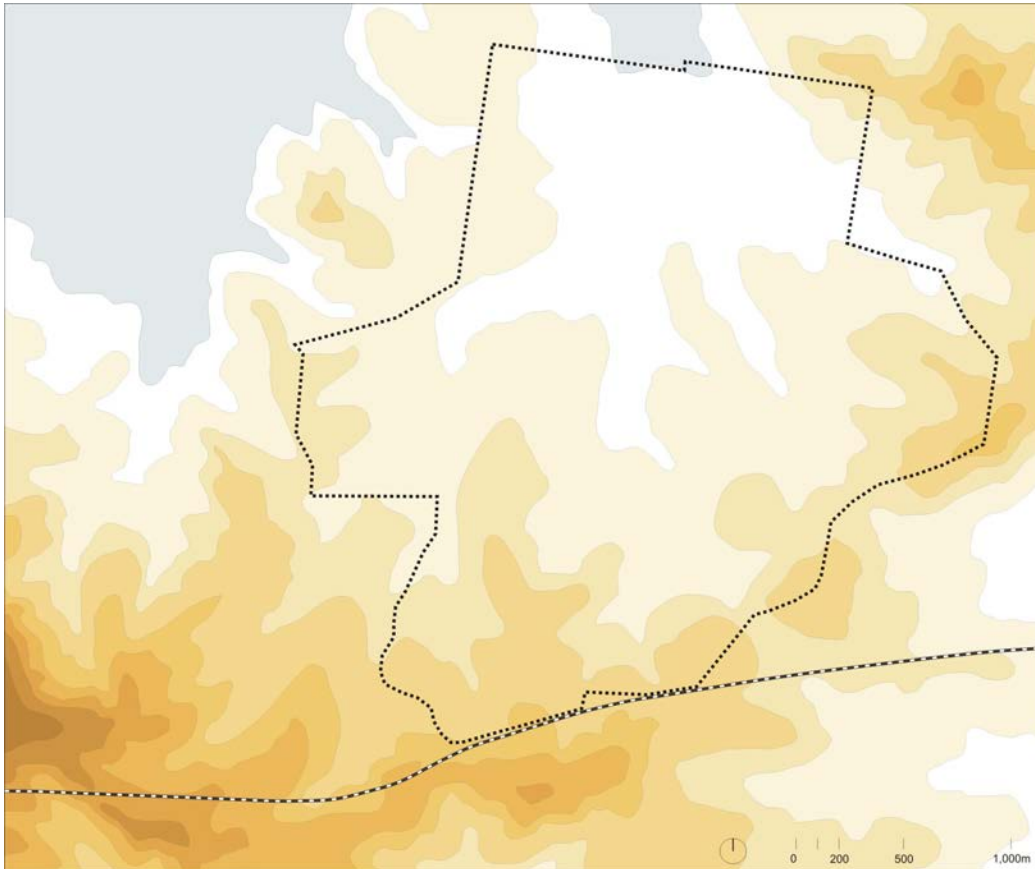


Fig. 3: Topography of Lochinvar study area (10 metre contours)

3.5 Flooding and Drainage

A small portion of the study area has been identified as being affected by the 1% flood event, based on the current known flood information. This area is subject to inundation from Lochinvar Creek, or overland flows from the Hunter River. Localised flooding in Lochinvar Creek and its tributaries occurs during peak storm events, in particular in the existing residential area adjacent to Lochinvar Creek in Freeman Drive and Hunter Close.

Drainage within the study area occurs via a number of well defined channels to the Hunter River through Lochinvar Creek. Management of drainage lines is important to achieve effective stormwater flows, and the linkage of vegetation from south of the rail corridor to the floodplain in the north.

Riparian buffer widths ranging from 10m to 30m either side of minor streams, creeks, rivers and wetlands are to be identified and established in the future planning investigations and development of the area.

Flooding and drainage characteristics of the study area are shown in the following figure.

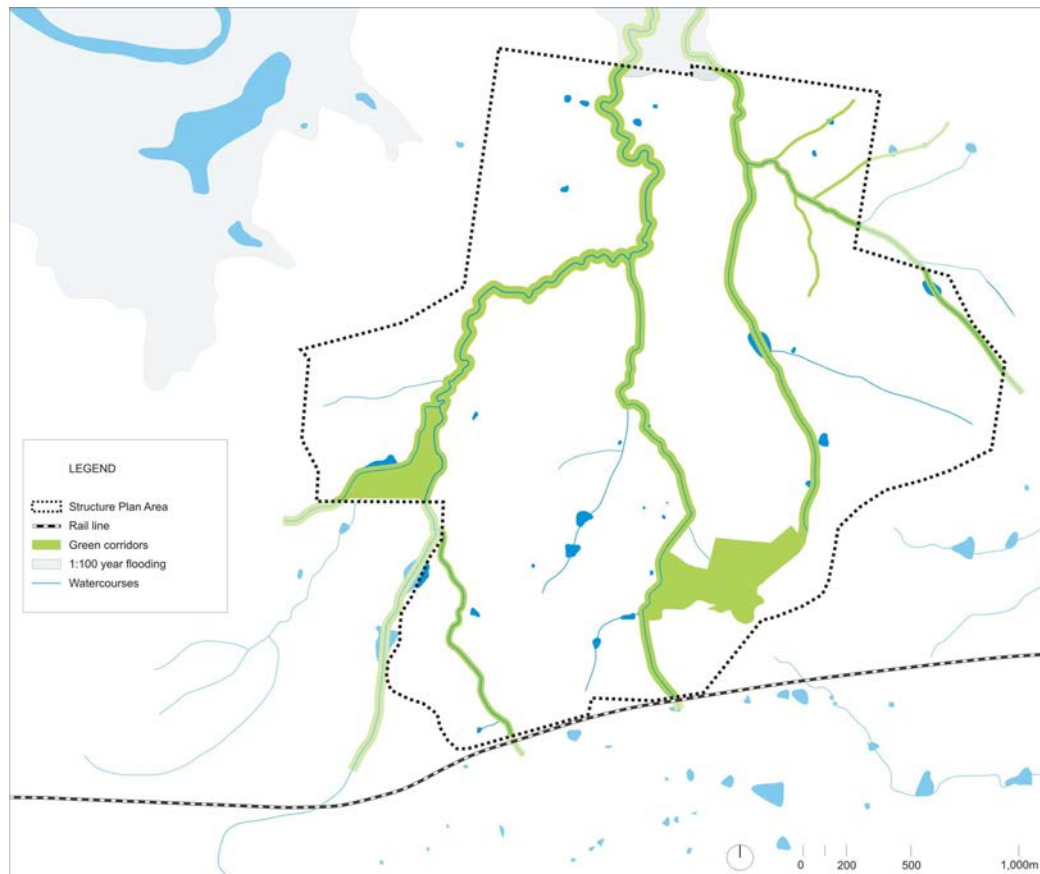


Fig. 4: Flooding and drainage

3.6 Lot Structure

The existing subdivision pattern (see figure below) has important implications regarding the potential implementation of the Structure Plan. Road reserves provide opportunities for extending the existing road network without legal constraints. Large land holdings (yellow) provide the opportunity for relatively easy implementation of a new street and subdivision pattern.

In contrast, areas where land is subdivided into many small lots (red) constitute a significant constraint for future redevelopment, as new street and subdivision patterns could be only implemented in small steps or upon land consolidation implying the agreement of a large number of land owners.

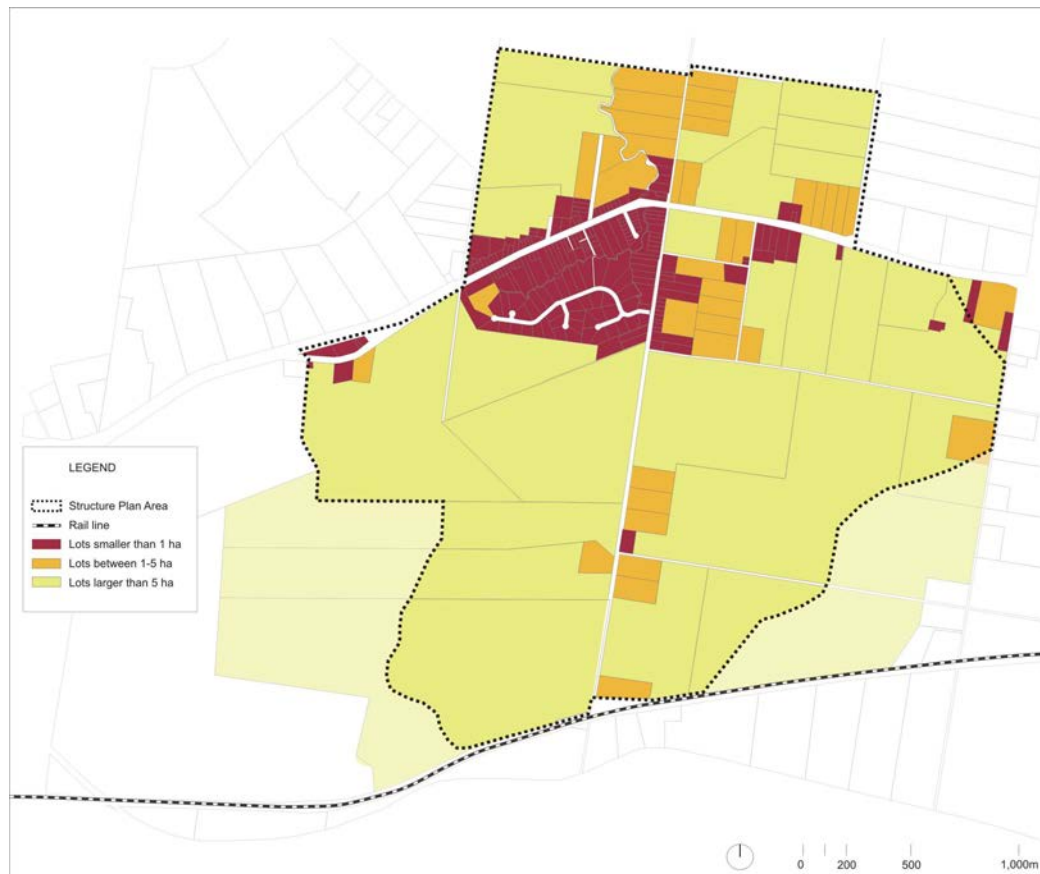


Fig. 5: Lot structure

3.7 Scale of Development

A basic method to explore the number of inhabitants or dwellings able to be accommodated within the study area is by comparing footprints of localities of similar size to the boundary of Lochinvar Structure Plan. The figure below illustrates two distinct urban types. Regional centres in NSW like Mudgee, Bathurst, Cessnock (left column) have large footprints as a result of low -car based- built densities and predominance of detached dwellings. With a similar land use pattern, Lochinvar could accommodate a maximum of 6-7,000 inhabitants. The examples of Bolsward, Bathmen and Vorden in the Netherlands (right column) illustrate that if the predominant dwelling types are medium density (semi-detached and attached dwellings), a population of 10,000 - 12,000 - the target population for the town - inhabitants could be accommodated in Lochinvar, while preserving significant parts of the land as green space. Medium density would also provide better opportunities for sustainable transport modes (walking & cycling).

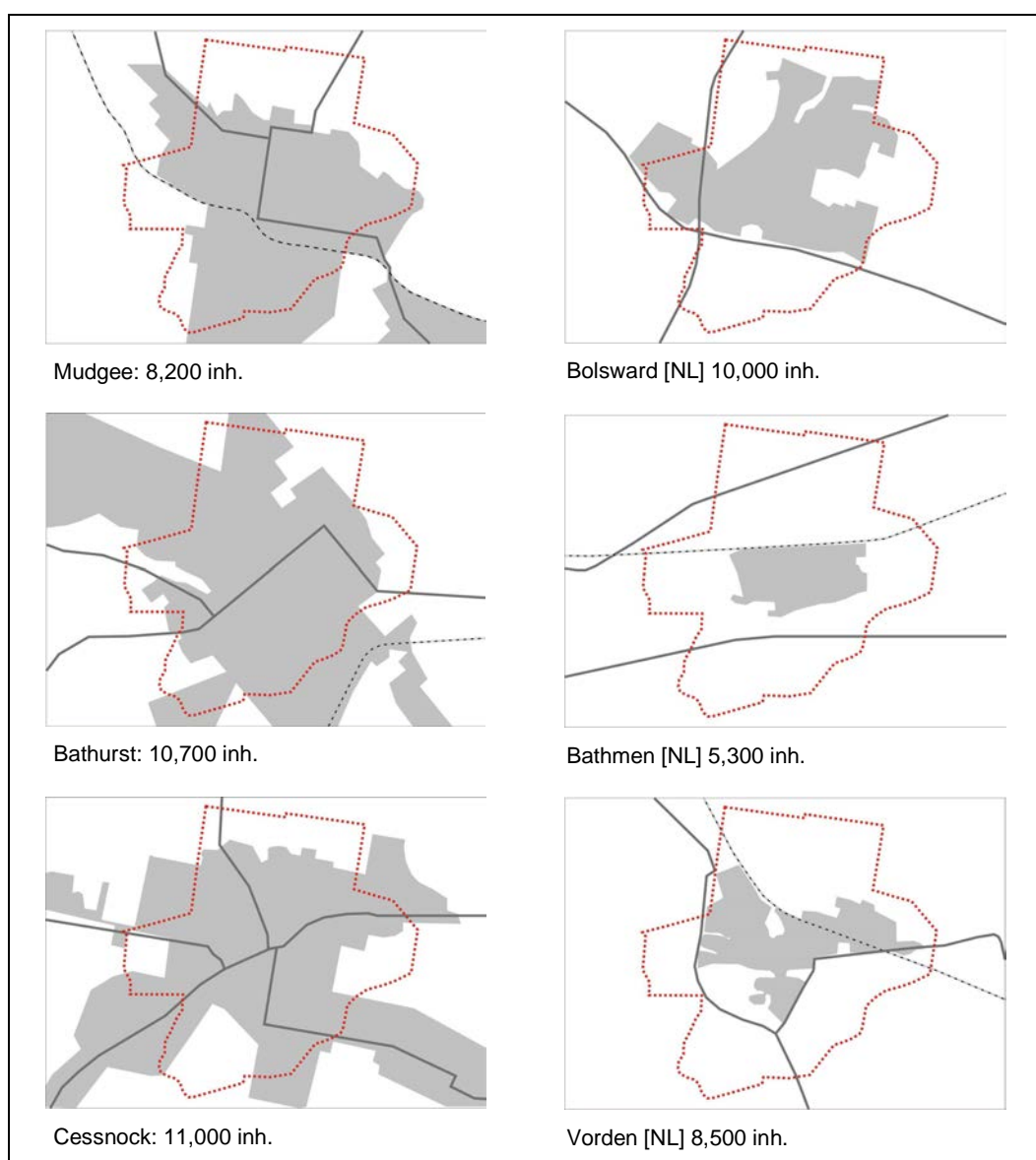


Fig. 6: Scale of development

3.8 Traffic and Transport

The traffic in Maitland LGA is presently car dominated: 93% of trips to work are made by car, compared to the NSW average of 77% (ABS Census 2001). The *Sustainable Transport in the Lower Hunter Region Issues Paper* (2003) aims for a 20% reduction of trips made by car. Lochinvar as a major new urban development has the potential to make a major contribution to achieve this sustainability aim.

3.8.1 Roads

The New England Highway is the central spine through the existing village of Lochinvar and is expected to remain the key link between the City of Maitland and the northern regions of the Hunter Valley.

The F3 Seahampton to Branxton link is likely to be constructed in the next 5-10 years, with Allandale Road just north of the Structure Plan boundary providing the closest link to the future urban centre.

The existing road network identified in the figure below shows a number of unformed roads. These Crown roads have been mapped in Lochinvar in the earliest plans of the area.



Fig. 7: Existing Road network

Traffic growth has been identified in the Lower Hunter Regional Strategy at 3.4% per annum. Whilst the extension of the freeway may provide an initial reduction in through traffic volumes, it is not expected that traffic utilising the New England Highway (NEH) between Maitland and Lochinvar will be substantially affected with the construction of this F3 Freeway link.

The adjacent photograph shows the current formation of the New England Highway through Lochinvar.



Pic.1: New England Highway north of Lochinvar Creek



Pic. 2: An aerial photo of the Lochinvar township along New England Highway west of Lochinvar Creek

Traffic studies will be undertaken in conjunction with the next planning phase for the development of Lochinvar and will indicate the expected level of upgrading works required to accommodate the increase in traffic on the NEH. Intersections with the highway will be required to be improved to service additional urban traffic accessing areas to the north and south.

Old North Road (south of the rail line) provides an important opportunity to investigate an alternative connection between Lochinvar and Maitland, and potentially a link to the F3.

Local roads within the study area, such as Station Lane shown in the adjacent photograph, will need to be reviewed to determine their suitability for new urban development. It is expected that the narrow road corridors and unformed/ unsealed pavements will require upgrading in conjunction with any future development.

The New England Highway provides good access to the Rutherford employment area and employment, services and facilities within Rutherford, Maitland, Newcastle, Cessnock, Greta, Braxton and Singleton and beyond.



Pic.3: Station Lane looking north towards town

3.8.2 Public Transport

Lochinvar Railway Station lies at the southern boundary of the Structure Plan area. There is a small unmanned platform existing on the rail line to the west of Station Lane, as identified in the following photograph, with a very limited informal parking area available.

A signal crossing exists on Station Lane over the rail line. Two to four (2-4) passenger trains per day pass through the Lochinvar Railway Station commuting between Scone and Newcastle via Maitland.

Improvements to the Lochinvar train station and increased passenger train services would enhance Lochinvar's position to provide for the Region's population growth, with urban housing, recreational, civic and educational facilities easily accessible to the wider community



Pic.4: Lochinvar Railway Station

Lochinvar is currently served by both school and public bus services, with routes along the New England Highway. Services run between Lochinvar and Woodberry in the south east and Singleton Heights to the north-west. This bus service is frequent enough to make it possible to commute to Rutherford or Maitland.

There are also five (5) school buses which currently service the area.

3.8.3 Transport Noise

Lochinvar is significantly affected by noise from the New England Highway and the railway corridor.

In 1999 the NSW Government produced guidelines for Environmental Criteria for Road Traffic Noise which sets out criteria for proposed residential and other noise sensitive developments. The Australian Standard AS2107-2000 defines acceptable internal noise levels for different activities within a residential building. Australian Standard AS3671-1989 provides guidelines on the type of construction required to achieve acceptable internal noise levels (categ. 1-4).

Rail noise standards are defined by the Rail Infrastructure Corporation and State Rail Authority in their guide: "Consideration of Rail Noise and Vibration – Guidelines for Councils".

As part of the development of the Structure Plan, Council engaged noise consultants to undertake acoustic modelling for the study area. The impacts of road and rail noise up to 2016 have been modelled for residential, educational and other sensitive noise receivers.

Land adjoining the New England Highway and along the rail corridor is subject to the highest level of noise impact. Noise sensitive developments are primarily restricted from these areas.

Areas not recommended for residential development without Category 3 construction are within 60m of both the New England Highway and the rail corridor. Similarly, recreational land, schools, hospitals or places of public worship are restricted from these areas.

Land within 500m of the highway and rail corridor are not suitable for the development of classrooms however open space associated with schools can be positioned within this area.

Hospital wards or places of public worship are also restricted from this area. Given the location of existing churches and educational facilities within this area, consideration may be given to the expansion of such facilities with appropriate noise amelioration treatments.

The proposed built structure has an important potential to mitigate the spread of noise from the above mentioned main sources. Therefore during the master plan process of each precinct of the Lochinvar Structure Plan, acoustic modelling should be considered to inform the design process.

3.9 Visual Environment

3.9.1 Town Identity and Setting

The township of Lochinvar is surrounded by rural land and farming practices which create a rural village setting. Lochinvar is also easy to identify from elevated positions around the valley due to the cultural plantings associated gardens and civic buildings.

The study area has been categorised into four distinctive areas supporting different visual and physical characters. These areas are: the cleared central portion, eastern town centre, western town centre and northern portion.

The most visually prominent buildings occur in the eastern part of Lochinvar. The proximity of these buildings to each other creates a precinct within Lochinvar that is distinctly different from the western part of the township. The cluster of buildings creates an attractive entry to the town from the east.



Pic.5: Convent of the Sisters of St Joseph

The following figure (Fig.8.) identifies visually significant features of the existing Lochinvar village and surrounds.

The lack of significant stands of native vegetation is also considered to be a special feature of the landscape. Emphasis on retaining the remaining vegetation will provide visual breaks and amenity improvements.

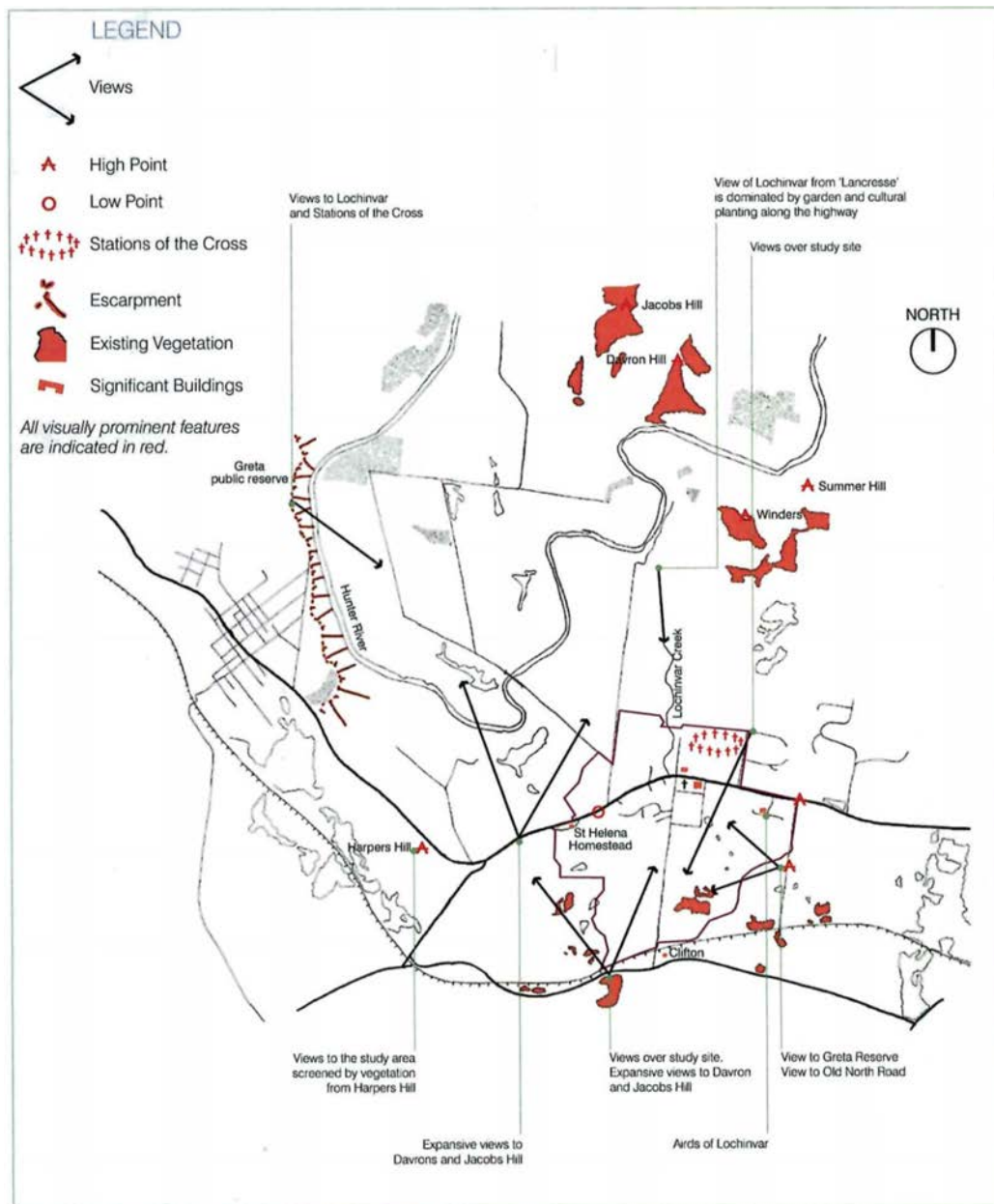


Fig. 8: Visually prominent site features

3.9.2 Special Features and Local Icons

Lochinvar supports a number of iconic buildings contributing to the village character. Visually prominent site features from the highway include:

- Airds outdoor clothing building;
- St Helena homestead and cultural tree plantings;
- All Saints College St Josephs Campus;
- Stations of the Cross;
- St Patrick's Church;
- Holy Trinity Church;

- Davron Hill / Jacobs Hill / Winders Hill / Summer Hill;
- Greta Reserve

Other local icons not visible from the highway but contributing to the character and identity of Lochinvar include:

- 'Clifton' (home adjoining Lochinvar Railway Station);
- 'Lochinvar House' (western outskirts of the village);
- Police Station (heritage listed).

3.9.3 View Corridors

The natural topography of Lochinvar provides a buffer to the proposed development areas of the Structure Plan which are placed below surrounding ridgelines reducing the visibility of developing areas from the New England Highway.

Distant views to the site are available from a few selected elevated positions being Greta Reserve, Winders Lane and Old North Road ridge line. The undulating topography of the site inhibits views into the study area from closer proximity, however a number of key roads traverse the interior of the study area and there are some low rises within the site which permit views.



Pic.6: View of study area, looking west from Wyndella Rd

Future development should consider the importance of low rises within the study area and use them to locate roads as this will provide the opportunity for associated street trees to be at the high points of the development and provide a backdrop for housing. Consideration of the regional views across the valley that has a rural character interspersed with native vegetation should also be made.

3.10 Infrastructure

3.10.1 Water

Town water connections are available to the Lochinvar township. Consultation is required to be undertaken with the Hunter Water Corporation to ensure that the proposed development area can be adequately serviced.

3.10.2 Wastewater

Lochinvar is not presently serviced by reticulated sewerage facilities. Hunter Water Corporation is nearing completion of works in Lochinvar to replace the existing on-site wastewater treatment system.

The sewerage system for Lochinvar will consist of gravity pipelines, a pumping station and associated pressure pipelines and gravity mains. The gravity mains will collect wastewater

from individual households and drain to the pumping station. Some sites located to the east of Lochinvar Creek will be serviced with a pressure sewer system.

The pump station is to be located in a Crown land reserve off the New England Highway. From the pump station a pressure main (rising main) will discharge to a gravity main nears Winders Lane. This gravity main will then extend to the existing sewerage system in the Rutherford Industrial Area.

The initial infrastructure provided for the pumping station, rising main and gravity main will have the capacity of approximately 1,200 lots. The infrastructure has the potential to be amplified to a capacity of 2,500 lots with provision of new pumps and an additional pressure main and gravity main.

The design and provision of this infrastructure, in consultation with Hunter Water Corporation, will assist to establish the staging structure for the future development and release of land in Lochinvar.

3.10.3 Wastewater Treatment

Wastewater from the Lochinvar township will be transported to the Farley Wastewater Treatment Works. Sufficient capacity exists at Farley to treat effluent from the early stages of development, with upgrades of the Treatment Plant required as development progresses.

3.10.4 Services

Energy Australia have advised that augmentation of the existing high voltage electricity supply will be required. The distribution network requirements will be set by Energy Australia (11,000 volts, low voltage and street lighting) and will be designed and established as development progresses in the area.

Discussions with Energy Australia, AGL and Telstra will continue to ensure that all facilities will be provided to the whole of the Structure Plan Area.

3.11 Community Facilities

Community facilities and services currently provided in Lochinvar include:

- Ecclesiastical buildings
- Public Primary School
- Non-Government Schools
- Sports Ground (see photo)
- Passive open space
- Police Station
- Rural Fire Service
- Community Hall
- Tennis courts
- Hotel
- Convenience store/takeaway shop
- Post office



Pic.7: Lochinvar Sportsground

The proposed expansion of Lochinvar has the potential to increase the level of services and facilities provided and include additional facilities and services such as professional consulting rooms, childcare centre, aged/disability centre, preschool, library, ambulance, community health centre, specialised recreation centre, and a supermarket and range of speciality shops.



Pic.8: Existing local commercial services

3.12 Heritage

3.12.1 European Heritage

Lochinvar supports many examples of the Hunter Valley's early settlement by Europeans. The earliest land grant in the district was to Leslie Duguid in 1823 with the village of Lochinvar being laid out in 1840 on part of Duguid's land.

The current heritage items within Lochinvar are listed below:

- Victoria House, Cantwell Rd (local)
- St Helena cottage, New England Highway (regional)
- Holy Trinity Church, New England Highway (regional)
- Catholic Cemetery, New England Highway (regional)
- Police Station, Railway Lane (local)
- Clifton, Station Lane (local)
- Government railway (regional)

3.12.2 Indigenous Heritage

The study area is located within the boundary area of the Wonnarura Aboriginal language group represented by the Mindaribba Local Aboriginal Land Council (LALC) and Lower Wonnarua Tribal Council.

Little is known of the Structure Plan Area historically. The NSW Department of Environment and Conservation (DEC) Aboriginal Information Management System has registered 27 Aboriginal sites within 5km of Lochinvar. The sites are a combination of open camp sites, isolated finds and one grinding groove at Greta.

A previous archaeological survey over land located in the study area has recorded three (3) sites, being two (2) isolated finds and one (1) artefact scatter at the corner of Christopher Road and Robert Road.

Further archaeological surveys will be required to be prepared prior to any further development investigations of the area, in consultation with the Mindaribba LALC and the Lower Wonnarua Tribal Council Inc.

4.0 Developing a Vision for Lochinvar

Lochinvar will be a regionally accessible town, respectful of the character of the established urban fabric and responsive to the landscape, supported by a vibrant centre and community focused neighbourhoods.

The identity of Lochinvar will be inspired by the existing natural and built elements and will be further formed by its residents through civic participation in the design process of public spaces and communal facilities.

It is envisaged that the future Lochinvar township will provide a range of housing choices and lot sizes for residents. These will include small lots and unit developments in close proximity to community services and facilities, medium house and land developments on relatively constraint free land, and larger lot sizes in sensitive locations throughout the town.

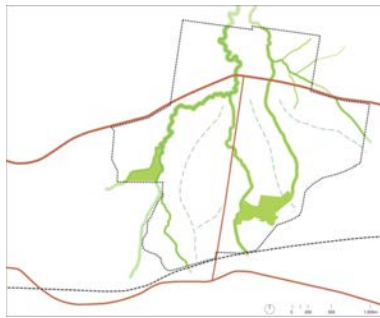
Local facilities to service each neighbourhood are to be available within a 400m or 5 minute walking distance, and linked to all other neighbourhoods by a multiuse corridor to enable easy pedestrian access to the urban centre, railway station, and all community landuses.

The future land use mix, dwelling densities and street network will aim to achieve a framework which allows the development of a socially, economically and environmentally sustainable community. Walking, cycling and public transport will constitute the predominant form of movement, contributing to a healthy and sociable lifestyle.

The urban form will follow the Neighbourhood Planning Principles as defined in the Lower Hunter Regional Strategy by implementing following principles:

- street network: connectivity, complexity, legibility
- mix of uses both horizontal and vertical (shop top housing)
- built density to reduce the localities footprint
- legibility: - defining entrance, edge and centre.

The development process of the Lochinvar Structure Plan (LSP) is illustrated below by explaining the main steps in the process:



a). Natural elements

The analysis of the existing natural environment helped identify some of the major elements of the plan: watercourses determined the location of green corridors, existing stands of trees determined the location of reserves and recreation areas, the topography determined the location of major streets, as well as the location of neighbourhood centres on the ridgelines.



b). Infrastructure and built elements

The existing infrastructure, lot structure and built elements together with the above described natural elements determined the best location for the town centre as being along Station Lane, close to the railway station and adjacent to a large recreation space. Historic buildings and precincts constitute the "gates" to the town.



c). Neighbourhoods & community

The town of Lochinvar will be structured in walkable neighbourhoods, each with a local centre. Community facilities are provided on neighbourhood and local centre levels.

A train station precinct in the southern part of the study area will include land uses that benefit from proximity to the station and can tolerate rail noise.



d). Street network / pattern

The street network provides easy connectivity between the neighbourhood centres, is legible and follows the topography of the area.

Fig. 9: Design development

5.0 Structure Plan Guidelines

The Lochinvar Structure Plan aims to achieve an urban structure based on a walkable, mixed use town, with capacity for up to 5,000 residential dwellings. It is envisaged the Lochinvar town centre will act as a district level community focus with a compatible mix of uses providing a range of weekly shopping needs, community facilities and a level of employment.

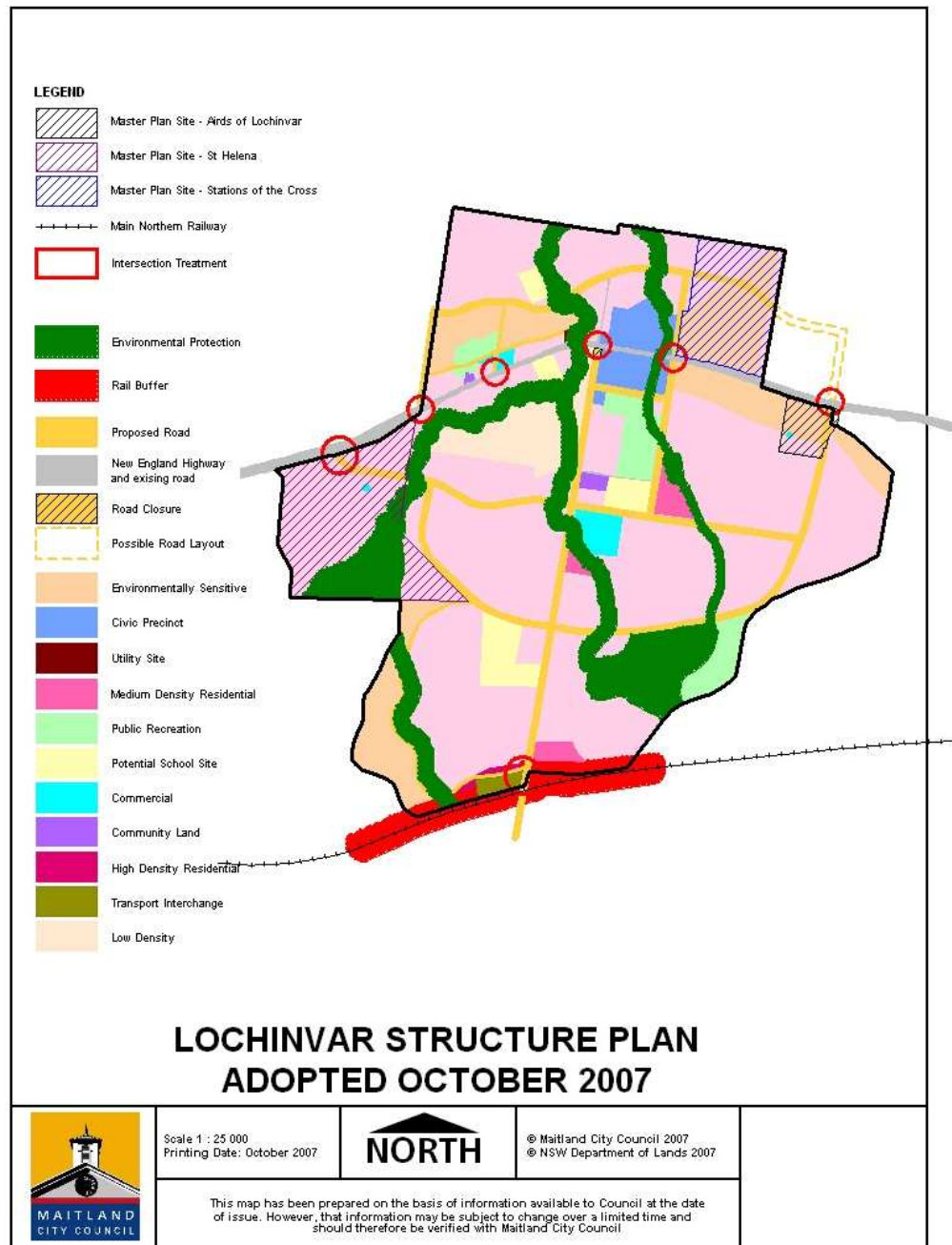


Fig.10: Lochinvar Structure Plan

These guidelines establish frameworks for the new urban area, and make recommendations about development and land use responses to achieve logical and efficient use of resources and infrastructure. Management and protection of natural features will also improve the local environment and create a pleasant amenity.

Utilisation of existing facilities, including transport linkages, wastewater provisions and community services, will also assist in creating an affordable urban area. Opportunities for public transport commuting, and ready access to local employment areas will reduce travel demands on families.

A range of development outcomes are proposed, with a variety in dwelling type ranging from rural lifestyle, separate dwellings for families and more compact urban living in areas of high amenity. Consideration of the local environment and specific treatment of constrained land will enhance the character and sense of community in Lochinvar.

The boundaries of the Structure Plan generally correspond with topographical features of the Lochinvar area. A catchment-based approach has been used to capture land suitable for urban development. Boundaries should follow ridgelines, rather than drainage lines as the natural elements. The precise location of the urban area is subject to detailed studies and survey.

Key Urban Design Principles:

1. Street network

The proposed street network will have to consider the following principles:

- **Connectivity:** easy connectivity for walking and cycling. Urban block dimensions of maximum 80-100m are considered optimal. In the town centre smaller blocks are desirable.
- **Complexity:** multiple connections between any two points in town provide a complex and pleasant environment. In contrast cul-de-sac (dead-end) streets provide no multiple movement options between two points, are monotonous and inflexible. Therefore cul-de-sacs are not desirable.
- **Legibility:** streets should be defined by appropriately scaled buildings and trees so that they are legible. Landmarks will define focal points such as the town centre and neighbourhood centres. Vistas will permit the recognition of these focal points from the distance.
- **Environmental response:** the layout of streets should consider the natural topography. This will improve the legibility of movement paths, and facilitate easy walking and cycling.

2. Master Plan for each precinct

Each precinct will be developed based on a Master Plan (see Fig.12). The Master Plans will provide detailed design guidance for each neighbourhood. The Master Plans are to be consistent with the Vision and Guidelines described in the Lochinvar Structure Plan.

3. Street definition

Streets to be defined by appropriately scaled buildings and/or trees fronting onto them.

4. Densities

The benefits of higher densities are:

- enhances economic viability of development

- provides economies of infrastructure
- supports public transport
- reduces car travel and parking demand
- decreases resource consumption
- reduces overall demand for development land- avoiding sprawl
- social proximity encourages positive interaction
- improves viability and access to community services

5. mix of dwelling types

The town should include a wide range of dwelling size & type. One advantage of having diversity in housing is the capacity for aging in place. By creating different size and types of houses people can pass through different stages of life with different needs and remain within their community. A wide range of housing prices accommodates a wide range of budgets. This supports social equity and creates more diverse community. This mix of dwelling types will be achieved through creating a diversity of lot sizes and permitting different dwelling and gross floor density in different parts of the town.

5.1 Key Elements

5.1.1 Lochinvar Town Centre

There is very limited commercial development existing within Lochinvar at present comprising of three businesses located along the New England Highway frontage. A combined takeaway/general store/post office and a second takeaway shop is currently located on the southern side of the highway, with the Lochinvar Hotel located on the northern side adjacent to Harper Street.

The use of land located along the highway is limited and constrained by way of noise, the width and unfriendly characteristics of the roadway, the volume of traffic using the highway, the lack of a sense of “place” of Lochinvar, and flooding from Lochinvar Creek.

The existing properties along the western stretch of the New England Highway through Lochinvar, with the exception of the few commercial operations, are primarily used for residential housing. It is proposed that the current land uses in this location will continue with potential upgrade works to the New England Highway to improve the accessibility to properties. Land may be redeveloped for new residential purposes if requested subject to the current building and development policies that apply. The existing commercial operations can also continue to operate within the boundaries of the consents issued for such activities.

Following a review of the draft plan and consultation with the residents of Lochinvar, the new town centre precinct is proposed in the southern sector of the new development area central to Station Lane and within walking distance to the railway station, the existing residential properties, sporting, community and school precincts. The proposed location of the town centre is in the area least constrained by existing subdivision patterns.

The town centre precinct serves to provide a hub for the future town linking the existing established village with the new urban development fronts. Based on an expected population of around 12,000 people, the town centre will comprise a mix of uses including community uses, retail, commercial, and residential uses. There will be a wide range of retail outlets

including a supermarket, speciality shops, newsagent, medical centre, and service station. Sufficient car parking areas will be provided to encourage local shopping.

It is envisaged that an area of at least 5 -10 hectares are to be provided to cater for the provision of sufficient retail/commercial facilities within the central town precinct.

Additional commercial area will be required to accommodate support service and business offices associated with such precincts.

The size of this precinct may vary depending on commercial and retail studies to be developed in conjunction with the future planning of the release area. However the precinct will continue to remain in the greenfield developable area, in close proximity to the community and educational precincts, on a main transport route, and as a visible and attractive precinct set amongst residential housing.

5.1.2 Neighbourhoods

The residents of Lochinvar will be located in neighbourhoods with populations of around 1,500 - 2,000 people. The size of each neighbourhood will be around 50 hectares (radius of 400 metres). Each of these communities can sustain a few local shops. Pre-schools, primary schools, community centres, recreation areas will be located in these neighbourhood centres.

The neighbourhood centres will provide a sense of identity for each local community. It is desirable that the community participates in the design and construction of public facilities and public space.

This polynodal structure will ensure that most trips made for recreation and education as well as many trips for shopping, social purposes and work can be done by walking, cycling or public transport.

Urban Living

Due to the proximity of the New England Highway (NEH) and the Great Northern Railway running through the study area, the impacts of noise plays a key role in determining the most appropriate location for urban development in this area.

Residential development is to be directed away from the noise sensitive locations along the New England Highway and the Great Northern Railway line unless satisfactory consideration has been given and arrangements have been made for acoustic treatment. Any new development on land within approximately 800m of the rail line and 120m of the NEH will require individual acoustic assessment.

A key outcome of the Lower Hunter Regional Strategy is to set dwelling targets which are consistent with infrastructure and environmental capabilities for each area.

a.) Residential Lots

Land to the north and through the centre of the southern portion is ideally suited to residential development with no or minimal noise attenuation requirements. As a greenfield development area, it is envisaged that lot yields can accommodate in average around 12 lots per hectare in these areas.

Land is to be developed in walkable distances of up to 400m to a bus route, pedestrian network and local park. Consideration should also be given to the design of residential

precincts around a specific focus such as proximity to a school, shop, or sporting facility to provide choice for residents in selecting a preferred location.

Future development is to consider the regional views across the valley which has a rural character interspersed with native vegetation, the Hunter River and its tributaries. The New England Highway allows views across the landscape and each township is separated from the other by rural landscapes, vegetation and topography which contribute to the driving experience.

It is desirable that in conjunction with the design and redevelopment of the Lochinvar Station, high density urban development will be incorporated into the design of the transport interchange, small commercial support precinct and noise attenuation barriers may be required to support the development.

b.) Compact Urban Form – Medium and High Density Residential

To achieve a range of housing choice and meet the residential targets determined for the region, precincts for medium and higher density residential developments have been identified. It is necessary that such precincts are located in close proximity to services and facilities offered in the township and adequate public transport options are available. Development of such areas should ideally be designed to be integrated with the provision of community infrastructure to encourage high quality design, market acceptance, and suitable site selection.

Development designs are expected to meet a residential density target of around 25-40 dwellings per hectare.

Medium to high density residential development is encouraged in the Town Centres, in the Railway precinct and in the Neighbourhood centres.

New residential development in the Railway Precinct is to be designed as a whole incorporating the urban design of the station upgrade, the transport interchange, provision of passive open space, and provision of acoustical treatment using both building design, landscaping and an acoustic barrier where required.

Town Centre Precinct

A medium density development precinct is identified to be developed on land adjoining and in close proximity to the core commercial and business precinct. Whilst the exact location and size of this commercial strip is still to be determined, the medium density development area is to be located within a maximum distance of 200 metres from the precinct and easily accessible to public transport networks.

The use of buffer areas associated with the creek lines and revegetation corridors can assist to provide both visual interest and open space buffers between adjoining land uses.

c.) Low Density Residential and Environmentally Sensitive Precincts

The Lower Hunter Regional Strategy seeks to minimise the identification of additional land for rural residential development, based on the objectives of minimising urban sprawl and the uneconomic extension of services to remote or isolated areas, and the inefficient subdivision of land suitable for residential development.

Preferred areas of rural residential development have been identified in this study which are determined to be most suited to lower urban density for reasons such as visual impact, acoustic impacts, and environmental constraints.

The inclusion of rural residential development along the highway frontage on both the eastern and western sides of the township, is considered necessary to avoid strip development along the highway and maintain the sense of township for Lochinvar. These locations have been established as environmentally sensitive areas.

In locations fronting the New England Highway, development is encouraged to be staggered to provide visual relief rather than maintaining a uniform building line setback. Lot sizes may range from a minimum of 10,000m² to provide a variety of choice for future residents and will generally be located to provide a transition between the more sensitive locations and the more intensely developed areas on relatively unconstrained land. Open rural style fencing only will be permitted along the highway with a minimum building line setback of 60m for all structures to preserve the rural amenity and entrance into Lochinvar, and ensure all development is outside of the high noise environment of the highway. Driveway access to these properties must consider the function of the highway.

The land to the east and north east of the Convent rising to the Stations of the Cross is to be the subject of individual investigations addressing noise, potential school extensions and aged car housing developments, heritage and visual impacts. It is likely that part of this land may also be considered for large rural residential allotments.

Land to the east of Windemere Road stretching to Lochinvar Creek has been identified as a visually sensitive area and future land uses should address and reflect this. Similarly, land in the south western corner of the study area is significantly affected by noise constraints and buffer requirements for both bushfire and drainage corridors. Larger lot development could ensure that the constraints of the area are addressed whilst allowing some development in that location.

It is envisaged that by identifying preferred areas for rural residential living, development will be successfully integrated into the long-term settlement patterns of the Lochinvar township and the City of Maitland, and enable a higher target of density to be designed for in the less constrained parts of the study area.

Freeman Drive Precinct

The established rural residential area surrounding Lochinvar Creek is currently zoned for residential development, but due to the absence of any reticulated sewerage services has developed to date as a semi-rural residential area. The precinct currently occupies an area of approximately 25 hectares, with lot sizes in the order of 1,000m² - 2,000m² with some larger lots along the creek ranging from around 8,000m² to 1 hectare.

Hunter Water Corporation has now completed upgrading works in the area and residents are able to connect to the reticulated sewerage servicing arrangements. During consultation with the local community, concerns were expressed with the redevelopment of the land for a more intense land use. Whilst the opportunity exists at present for the redevelopment of the land into smaller holdings consistent with a residential zone, the Structure Plan map identifies the land as a low density residential precinct. It is intended to retain the area in a residential zoning given the servicing available but as a Large Lot Residential precinct which aims to limit the subdivision and redevelopment potential of the area. In this regard, the objective is to

retain the existing character and lot sizes where possible and as such resubdivision may not be appropriate.

A second commercial precinct is identified on the northern side of the New England Highway adjoining the existing Lochinvar Hotel Motel. It is envisaged that this area would provide a small mixed business precinct to service the needs of the travelling public. It is likely that development such as a service station and rest stop area could be incorporated into this precinct.

It is proposed to provide intersection treatment works on the highway to allow for vehicles to access the hotel along an existing road alignment (Harper Street). The road network would link through to the proposed sportsground and local community centre and back to Windemere Road.

5.1.3 Community Facilities

Additional community facilities and the enhancement of existing facilities will be provided to cater for the future population of the township. It is envisaged that two (2) to three (3) multipurpose centres will be constructed, in close proximity to the schools and sporting facilities and easily accessible to the residential neighbourhoods. The multipurpose centres will cater to the needs of the general community by providing a public facility capable of being used for meeting rooms, functions, indoor sports (such as basketball, dance, gymnastics), and school concerts.

Lochinvar currently supports a government primary school, and a non-government primary and secondary school. The increase in population envisaged for the next 25 years generates the need for the provision of approximately four (4) preschools, and an additional infants/primary school in Lochinvar.

The Structure Plan provides for two (2) Primary School sites on collector roads close to the town centre and community facilities with direct access to active open space areas.

It is envisaged that the existing public primary school located on the New England Highway could relocate to another site. The existing school site is significantly affected by noise constraints, and potential for the expansion of the school is limited by the close proximity of Lochinvar Creek. An alternative site has been identified which would improve the amenity of the school. Consultation with the Department of Education will continue to occur throughout the following planning phases.

The future development of Lochinvar is expected to trigger the threshold for the development of a secondary school within the region. The site should provide for an area of approximately 5-10 hectares, and be located within an 800m walking distance of the transport interchange, on a major collector road and bus route through the area, with safe and easy access pedestrian / cycleway access to the residential and commercial precincts.

It is not expected that a hospital facility will be required to be provided as Maitland Hospital provides a district level facility for the Hunter Region. However local medical centres and associated services will be required to service the needs of the residents.

Given present aging trends it is possible that there will be demand for an aged care facility. However, sustainable built form will take in consideration "aging in place".

5.1.4 Existing Village and Ecclesiastic Buildings

The precinct is defined by the collection of buildings and open space areas primarily associated with the Catholic Church and Church of England Church within the main village of Lochinvar. It is a distinct part of the existing township and a large part of the history of the village. Whilst a number of buildings are listed on the NSW Heritage Register it is also the proximity of these stone buildings to each other and their surrounds which create an attractive entry to the town.

The precinct is classified as having high scenic quality due to the built elements of the urban environment. As such it has a low visual absorption capacity indicating that it is unable to absorb new development without a high degree of obstruction to significant views or amenity.

The retention of these buildings as a cluster is significant to the sense of arrival and sense of grandeur associated with the buildings. The streetscape and building curtilages are to be protected to maintain the views on the approach into the town. Similarly, the rise to the Stations of the Cross on the eastern side of the civic precinct is visually significant and requires protection or sensitive treatment should it be identified for future development. Additional urban design assessment is to be undertaken to determine the extent and type of any potential development in this location.

Potential exists for the expansion of The Convent school grounds or the development of additional uses to complement the church activities such as aged housing. The land however is identified as being affected by noise from the New England Highway and is not identified as being suitable for noise sensitive land uses such as classrooms, hospital wards, or a place of public worship. The majority of the land away from the highway is identified as being suitable for either passive or active recreational use or residential housing with acoustic treatment.



Pic.9: The grounds adjoining The Convent

Retention of the building silhouettes is important to the iconic status and architectural style of the buildings. Future development of the site may be integrated with the existing buildings having regard to design measures to minimise the acoustic impacts on the intended users of the development. Adjoining developments should be lower than the sandstone buildings

however it may be possible to increase the height and scale of new developments towards the rear of the heritage buildings with appropriate architectural and landscape treatments.

Consideration should be given to the future of the Station Lane intersection, informed by a detailed urban design assessment and traffic study.



Pic.10: Station Lane intersection with the NEH

5.2 Local Icons

Lochinvar has a number of significant features which relate to its cultural and rural heritage. The creation of scenic amenity buffer areas around visually prominent landscape features, heritage precincts and key features to ensure the integrity of these icons is a key objective of the Structure Plan.

Scenic amenity buffers allow for landuses that complement the character of the surrounding landscape whilst screening the more dense urban development proposed in the Structure Plan. These sensitive areas have been identified on the Structure Plan map as environmentally sensitive locations.

Each of the locations identified is to be the subject of an integrated master planned approach to determine the level and extent of any potential development having regard to the site specific issues associated with each location.

The identification of development principles in the future planning stages will ensure that ribbon development along the New England Highway is avoided and that the sense of arrival into Lochinvar is improved.

5.2.1 St Helena



St Helena is located on a high point at the western extent of the study area. St Helena Estate was built in 1869 by French wine-maker Philbert Terrier, whose experience in wine-blending was sought by wine growers from across the country. The house is now used as a bed and breakfast, restaurant and gallery.

The St Helena site identified on the map is currently the subject of a development proposal for the establishment of a French-themed village. It comprises a small scale commercial / tourist development

surrounded by a community title residential component.

An intersection and road link from the New England Highway through the site to the study area in the south has been identified. The creek line identified within the St Helena site is to be revegetated and will filter views of the proposed development areas south of the New England Highway.

A 40m – 60m wide buffer area is to be provided along the creek line in this location to provide a vegetation link from Lochinvar Creek through to the significant stands of vegetation communities in the south west of the site, and a visual and multiuse corridor through to the Lochinvar Railway Station.

The proposed development is not expected to have a significant impact on the redevelopment of the remaining part of the study area.

5.2.2 Airds of Lochinvar



Airds of Lochinvar

The visual impact assessment identifies Airds of Lochinvar as an iconic building and business associated with the identification of Lochinvar. The building sits well within the landscape and the generous setback to the highway is appropriate to the scale of the building and its function as a supplier of rural clothing.

The building containing 'Airds' is iconic and its retention along with the front setback is to be considered as part of the development of Lochinvar.

The building has a functional design and layout with parking and therefore would be suitable for refurbishment as a community facility or other compatible

business. It is not proposed to identify the Airds site as a specific retail/commercial precinct.

Consideration needs to be given to the visual significance of both the building and the site in any redevelopment proposal, and its significance as the eastern gateway to Lochinvar and the entry point to the new urban release area.



Convent

5.2.3 The Convent and Stations of the Cross

The Convent is visually significant given the stately buildings that adorn the New England Highway frontage as well as the series of large white crosses placed in the open grasslands of the rising hillside behind The Convent. The site is a

local icon and a visual landmark for travellers.

This site and in particular the Stations of the Cross provide views to the south over the study area, and are a significant feature on the approach to Lochinvar from the east along the New England Highway.

Potential future development in this location is to consider the visual impact on the established cluster of buildings from the highway and on the views to the heritage buildings from the east looking west, the heritage character and uniqueness of the individual buildings, the retention of the view corridor towards the Stations of the Cross and the recreational and cultural use of the walk.

The location of the “Stations of the Cross” is clearly visible from the wider area of Lochinvar and its approaches. It is shown in the following picture looking east from Windermere Road, with the vegetation surrounding Lochinvar Creek providing visual interest in the middle. Development of this area should be considered in a separate site specific master plan to ensure management of the amenity of this area is suitably addressed.



Pic.11: Stations of the Cross as viewed from Windemere Road

5.4 Traffic Improvements

5.4.1 Sustainable Transport

The traffic in Maitland LGA is presently car dominated: 93% of trips to work are made by car. The multiple benefits of alternative transport modes are largely discussed in state and regional planning policies, including the *Sustainable Transport in the Lower Hunter Region (STLHR) Issues Paper 2003*. The most important of these benefits are:

- reduced road costs;
- lower congestion;
- reduced greenhouse gas emissions;
- reduced use of non-renewable energy;
- lower air pollution;
- lower noise pollution;
- fewer accidents;
- health benefits from more physical activity;
- increased opportunities for social interaction;

The STLHR discusses in detail the importance of sustainable transport, and outlines general policies and actions to achieve this. It also sets an indicative target to reduce the share of trips made by car by 20%. This would be achievable if the share of sustainable transport modes in Maitland LGA would be increased from presently only 6% (ABS Census 2001 - trips to work) to 25%. A similar Policy in the ACT (Sustainable Transport Plan for the ACT 2004) sets a target of 30%.

It is considered that in the case of a development made largely on "greenfield" like Lochinvar, a higher target could be set as there are no structural constraints resulting from existing low densities or car oriented street patterns.

Sustainable transport modes will need to be encouraged by the provision of pleasant and safe pedestrian and cycle links. In this sense off-street cycle paths will be preferable to on-street paths. Intersection treatments will have to consider the same priorities. This will imply that in most cases roundabouts are not preferable given that these present major problems to pedestrians, cyclists and buses.

5.4.2 Road Hierarchy

The circulation network illustrates the main collector roads to service the future urban release areas. The road network will provide a clear hierarchy and allow for easy movement within the new residential areas. Where possible, roads will follow rises and ridgelines to minimise the visual impacts of new development on the landscape. This will provide the opportunity for the associated street trees to be at the high points of the development and provide a backdrop to housing.

Station Lane is to be designed as a main collector road south of Christopher Road linking the village precinct with Lochinvar railway station. This will connect with the collector road carrying traffic into the southern urban release areas from the New England Highway in the east and west.

Roads should be designed to encourage accessibility for bus transport and subsequent use by residents, with at least 85% of residences located within an easy walking distance of bus stops.



Fig.11: Indicative road network

5.4.3 Traffic Links

The key intersections with the New England Highway and the associated road upgrades are identified in the following locations:

- Northern links:
 - Windella Road
 - Windemere Road
- Southern links:
 - Airs intersection upgrade
 - St Helena Close

Various highway treatment options for the NEH through Lochinvar will be considered by Council with further investigation and consultation with the RTA and community to be undertaken.

An additional local intersection to the southern precinct can be investigated at Robert Road if necessary during the Area Plan investigations for the study area. The existing intersection at Station Lane / Cantwell Road with the New England Highway is proposed to be closed to the south and temporarily remain open to the north. Alternatively, future traffic studies may identify the intersection as remaining open but is not likely to be considered for any upgrading due its visually sensitive location within the heritage precinct of the existing village. It is likely to be limited to left in and left out in this location and as such, local roads should be designed to direct traffic flows away from Station Lane north of Christopher Road.

5.4.4 New England Highway Treatment

On the western approach to Lochinvar the New England Highway is very wide with residences and their driveways fronting the highway and minimal vegetation. To avoid strip development along the New England Highway to the west of Lochinvar Creek, whilst encouraging the redevelopment of land in this location, a service road or dual lane upgrade is being considered and will be further investigated as part of future traffic studies for the locality. An intersection is to be provided to access the support business precinct to the north of the highway.

A separating median down the centre of the highway is being considered to be provided and landscaped to reinforce the sense of arrival into the township, between the intersection of the highway with Windemere Road and Lochinvar Creek.

From the western approach into Lochinvar, avenue type plantings are to be provided on the approach to the St Helena intersection and on towards Windemere Road intersection. On the eastern approach, it is recommended that avenue type plantings be provided from the Airds intersection, representing the gateway into Lochinvar from Rutherford, through to the civic precinct, taking care not to screen the buildings or their visual catchment.

5.4.5 Transport Interchange

Lochinvar Railway Station lies at the southern boundary of the Structure Plan area. Station Lane provides a direct link from the urban centre of Lochinvar to the station.

With the expansion of passenger rail services along the Great Northern Rail Line over the next decade, the location and redevelopment of Lochinvar Station will provide an integral transport link for the future urban centre.

Central to the development of the railway station is the design of a transport interchange. A bus setting, pick-up and turning area with direct undercover pedestrian links to the rail station is to be provided to encourage local residents to utilise the facility. The interchange will also provide ample cycle parking facilities to further facilitate inter-modal change.

Due to the high levels of noise associated with rail lines, all land within 60m of the rail line will require individual acoustic assessment. The topography of the study area lends itself to the construction of noise barriers adjacent to the rail line. Where noise attenuation measures are necessary they should be integrated into the development of the transport interchange and any high density urban development associated with it.

5.4.6 Car Parking

An integrated car parking strategy for the town centre which addresses the provision of consolidated car parking structures on larger sites will be part of a Town Centre Master Plan. This will provide flexibility to the owners of commercial buildings and a market for parking that is separable from the market for commercial office space.

5.5 Open Space Network

5.5.1 Conservation

Corridors for the retention and enhancement of existing stands of significant vegetation types are identified along with opportunities for revegetation of creek and drainage lines through the study area. Vegetation in these areas will act to reduce soil erosion, salinity, and environmental degradation. These areas will also contribute to the visual relief of urban development and provide attractive locations for multiuse corridors linking natural features with the community assets of the township.

Future subdivision design is to incorporate the areas of native vegetation into the character and design of the development, and provide for links between areas of remnant vegetation creating improved habitat value and filter strips along water courses.

Cultural plantings located at St Helena, along the New England Highway, and Clifton provide a point of interest and are significant in that they occur in limited numbers and areas. Future development and landscaping is to recognise these plantings and where necessary designed to complement rather than compete with the established features.

5.5.2 Active/Passive Recreational Land and Links

Councils Section 94 Contributions Plan (Citywide) 2006, identifies three (3) categories for the provision of active and passive open space facilities for urban development. The Structure Plan reflects the requirements of these categories throughout the study area.

The existing sportsground will be enhanced and embellished as a district facility to cater for the future population of the township. It is centrally located to the future urban and community precincts with pedestrian links directly available to the proposed commercial precinct. The proximity to the Catholic Schools and potential for the relocation of the existing public school to a nearby site will ensure it is fully utilised and provide a noise and visual buffer between the highway and the community / civic precinct, and the new residential release areas in the south. The facility will require an area of approximately 10 hectares and be designed to incorporate district level sporting fields, car parking, amenities, picnic tables, playground equipment, and landscaping.

A neighbourhood sportsground facility will be provided in the north of the study area to cater for the needs of the neighbourhood in this location, in conjunction with the upgrade of the existing School of Arts Hall and tennis courts, and the potential location of a primary school.

It is expected to require an area of 6 hectares and be capable of accommodating a multipurpose sporting field for local teams, car parking, picnic tables, amenities, and playground equipment.

A second neighbourhood sportsground facility is to be provided in the southern part of the study area, centrally located within walking distance of residents that are not serviced by the location of the district sporting grounds. The proposed site has been identified on the main collector road on the eastern boundary of the study area. It is envisaged that the sportsground will provide a buffer to the adjoining revegetation corridor whilst also protect the ridgeline from visually intrusive development.

A series of local parks and passive recreation areas provided in conjunction with the shared pathway network will be provided within walkable distances of each residential precinct. The local parks are expected to provide a passive open space area of around 0.5 hectare and be centrally located within each community.

A passive open space link is identified along the western boundary of the study area running south east from the New England Highway to Lochinvar Railway Station. The existing vegetation is to be retained and reinforced in this location to enhance the visual link between the township to the station, and a multiuse corridor incorporated along it to facilitate easy pedestrian and cycleway access to the station.

A similar link is to be provided from Station Lane south to link with the existing native vegetation stands in the south eastern corner of the study area, linking with the commercial, schools and back through to the station.

In accordance with the draft Review of Open Space and Recreation (April 2007), the indicative provision of recreation facilities for a similar population target of 12,500 is specified as follows:

- 18.8ha sporting open space:
 - 1 District sportsground and 3 neighbourhood sportsgrounds – ie. 4 cricket ovals (summer) and 8 single fields (winter)
 - 6 tennis courts
 - 4 netball courts (training)
 - 6 netball courts (competition)
- 30ha of informal parkland:
 - 13 playgrounds
 - 3 neighbourhood parks
 - 8.8ha natural areas
 - Open space that supports walking and cycling (connections and trails)
- Contribution towards aquatic facilities (citywide)

Active and passive open space will be assessed and is to be provided in accordance with Council's Section 94 Plan requirements at the time of application, and is to be consistent with the staging, release and development of the land to satisfy the population growth and demand.

5.5.3 Multiuse Corridors

In association with the design of the road layout and bus routes, a shared pedestrian and cycleway network will be provided to link the residential areas with the transport interchange, the township and the community spaces.

The multiuse corridors shall reinforce the protection of the natural environment and follow creek and drainage lines and revegetation corridors.

A cycleway corridor adjoining the proposed collector road has been identified running north/south along Station Lane to link the township with Lochinvar Railway Station, and also adjoining the collector road running east/west through the southern portion of the study area and linking back to the New England Highway.

In the northern portion of the study area, a multiuse corridor is provided from the township north through the site to link with the sporting facilities, community buildings and primary school, in addition to corridors provided along the collector roads in this location.

5.6 Utilities

5.6.1 Water

The land to be developed within the Structure Plan area is to be connected to reticulated water where possible in consultation with the Hunter Water Corporation. Rainwater collection tanks are to be provided and incorporated into the design of developments to assist with the management of the region's resources.

Water sensitive urban design principles are to be adopted for all future developments.

5.6.2 Waste Disposal

All development within the study area will be required to be connected to reticulated sewerage facilities.

It is estimated that 2,500 lots can be serviced with the initial construction phase of the sewerage system. Further investigations and continued consultation with Hunter Water will be required to determine servicing sequences for the remaining estimated 2,500 lots. Staging of the release of lots will be dependant on the satisfactory provision of reticulated water and sewerage.

5.7 Staging

A key principle of the strategy is to ensure that new development is sequenced such that the release areas are in close proximity to existing urban areas and satisfactory urban infrastructure is provided sufficient to service the future residents.

The logical progression of developable areas will ensure the provision of services and facilities such as open space areas, community buildings, public transport opportunities, and schools, are made available to the residents as the demand is generated by the population growth.

6.0 Strategy Outcomes

A range of actions will be required by a number of stakeholders to implement the Structure Plan. Some of the steps needed to encourage a successful outcome include:

- Preparation of an urban design strategy to address the visual amenity of the highway and approaches to Lochinvar, and the enhancement of the civic precinct;
- Preparation of a commercial design plan identifying the town centre and retail precinct incorporating open space and pedestrian networks, carparking areas, and support retail and business opportunities;
- Development of an infrastructure funding strategy, addressing rail, water and sewer servicing upgrades;
- Liaison with state rail agencies for the upgrade of Lochinvar Station and rail service;
- Preparation of site specific Master Plans for each precinct;
- Preparation of a detailed Stormwater Management Plan;
- Preparation of a Vegetation Management Plan addressing drainage lines, revegetation corridors and open space linkages.
- Public participation in design and construction of community facilities and public space features