

# 21 Cumulative impacts

**This chapter considers the potential cumulative impacts of the Proposal and its potential interaction with other known and proposed developments and activities in or close to the study area. Cumulative impact assessment requires an assessment of the combined effects of a proposal with the effects of other activities in the region or beyond.**

## 21.1 Introduction

The combined effects that would usually need to be examined as part of a cumulative impact assessment for a major highway proposal include:

- The impact of multiple construction proposals undertaken at the same time, including impacts on traffic and road users and residents of the region.
- Social and economic effects, including impacts on employment and businesses.
- Amenity impacts including noise and vibration, visual quality and air quality.
- Environmental changes including effects on water quality, hydrology, biodiversity, land use and landscape values.
- Transport, including mode of transport, accessibility and traffic.

For this assessment, cumulative impacts were considered in terms of spatial (site, local and regional) and temporal (short, medium and long-term) environmental effects. For the purposes of this assessment the spatial and temporal parameters were defined as:

- Short-term – construction period of the Proposal.
- Medium-term – over the next ten year period from the commencement of operation of the Proposal.
- Long-term – being approximately 30 years (the average life of constructed assets) from the commencement of operation of the Proposal.
- Site – the Proposal's construction work areas.
- Local – the area within approximately one kilometre of the works.
- Regional – the Pacific Highway corridor within the Mid North Coast region.

The draft *Pacific Highway Upgrading Program Strategic Assessment* (Sinclair Knight Merz 2000) concluded that cumulative or strategic assessment was limited at a Proposal level due to the wide scope and to the limited availability of regional baseline information. Cumulative impacts of the proposed upgrade have been considered in terms of other components of the Pacific Highway Upgrade Program and in terms of other major Proposals identified from the Department of Planning's register of major Proposals on the Mid North Coast (<http://www.planning.nsw.gov.au/asp/register2006.asp#mnc>).

## 21.2 Pacific Highway Upgrade Program

The Pacific Highway Upgrade Program was initially a \$2.2 billion, 10 year program to improve the standard of the highway between Hexham and the Queensland border. Following completion of the 10 year program in June 2006, the NSW and Australian governments have agreed to further funding of \$1.3 billion for the three years to mid 2009. Past and planned proposals identified under the Pacific Highway Upgrade Program are shown in Figure 1.5 in Chapter 1.

As of July 2007, there are 263 kilometres of double-lane divided road on the Pacific Highway between the F3 Freeway (near Hexham) and the Queensland border. A further 78 kilometres is under construction or has a construction contract awarded. The remaining sections are either approved for construction or have a preferred route identified.

Other Pacific Highway upgrade projects that may be considered as contributors to potential cumulative construction impacts in conjunction with the Proposal would be categorised as those whose construction could be at or near completion at the time of commencement of construction of the Proposal; or those that are at a similar phase of development as the Proposal (i.e. likely to be under construction simultaneously with the Proposal). Key Pacific Highway upgrade projects where construction could be at or near completion at the time of commencement of construction of the Proposal include:

- Tugan Bypass.
- Ballina Bypass.
- Karuah to Bulahdelah.
- Bonville upgrade.

Key Pacific Highway upgrade projects that would be categorised as having a similar phase of development as Sapphire to Woolgoolga include:

- Warrell Creek to Urunga (approximately 36 kilometres to the south): this project consists of approximately 45 kilometres of dual carriageway from south of Warrell Creek to north of Urunga. The preferred route for this proposed project, which has been identified, includes bypasses of Macksville, Nambucca Heads and Urunga.
- Kempsey to Eungai (approximately 80 kilometres to the south): this project consists of approximately 40 kilometres of dual carriageway highway from south of Kempsey to Eungai. A preferred route for this proposed project has been identified and the planning and approvals process is well advanced.
- Oxley Highway to Kempsey (approximately 120 kilometres to the south): this project consists of approximately 38 kilometres of dual carriageway highway from the Oxley Highway interchange west of Port Macquarie to south of Kempsey. The preferred route for this proposed project has been identified.
- Tintenbar to Ewingsdale (approximately 190 kilometres to the north): this project would link the proposed Ballina Bypass with the existing dual carriageway at the Ewingsdale interchange.
- Banora Point upgrade (approximately 270 kilometres to the north): this project would be approximately 2.5 kilometres in length extending from the completed Chinderah Bypass at the Tweed River north to the Tweed Heads Bypass.

However, it is difficult to determine the timing for construction of Pacific Highway upgrade projects with any certainty. Consequently, it is problematic to consider potential cumulative impacts of future projects where an environmental assessment has not yet been undertaken and a more specific level of detail regarding potential impacts is unknown. Sections of the Pacific Highway Upgrade Program where a preferred route has been identified are not considered in this cumulative impact assessment. Examples of such projects includes:

- Coffs Harbour bypass.
- Woolgoolga to Wells Crossing.
- Wells Crossing to Iluka Road.
- Iluka Road to Woodburn.
- Woodburn to Ballina.

The construction of these proposals may coincide or overlap with the construction of the Sapphire to Woolgoolga Proposal. Cumulative construction impacts could potentially relate to the concept of construction fatigue for residents of the region and for users of the Pacific Highway. Impacts would include traffic delays, including increased travel time, and amenity impacts such as noise, air quality and visual impacts.

Other potential adverse impacts would include:

- Loss of highway related trade in bypassed towns.
- Loss of vegetated land, including reserved areas and areas of fauna habitat and endangered ecological communities.
- Disturbance of sites of cultural heritage significance.

These adverse impacts would be substantially offset by the identified strategic benefits and the implementation of mitigation and management measures including provision of compensatory habitat as well as facilitating logistical and strategic advantages to local businesses involved in inter-regional trade. Completion of the proposed upgrade would improve the consistency of road standard which is one of the key objectives of the Pacific Highway Upgrade Program.

Other major benefits would relate to:

- Increased traffic handling capacity and efficiency.
- Improved safety on the Pacific Highway, through the provision of motorway standard dual carriageway road, and in bypassed towns / residential communities, the removal of heavy vehicles and other through traffic from local roads.
- Reduced travel time; by May 2003, the completed sections of the Pacific Highway Upgrade Program from Hexham to the Queensland border had achieved a travel time saving of 55 minutes. The completed sections included 23 major and 19 minor bypass or road upgrading proposals. Completion of additional sections of upgrading and bypasses would further improve travel times on the highway.
- Travel time savings would also benefit local and regional businesses.
- Improved accessibility to local and regional centres and between Sydney / Newcastle and Brisbane, resulting in improved freight efficiency and reliability on a nationally strategic freight corridor.
- Increased opportunity for tourism development based on improved accessibility to tourist attractors on the Mid North Coast.

Further details on specific cumulative impacts of importance are discussed below.

## 21.3 Transport and freight efficiency

As indicated above the cumulative impacts of the Proposal include significant positive strategic benefits such as improved travel times. This would be largely with respect to the increase infrastructure handling capacity and efficiency, improvements to safety and security; improvements to transport productivity on a nationally strategic freight corridor and improving the reliability of travel on this key interstate and inter-regional corridor.

This Proposal and the other road proposals described in Section 21.2 would have positive cumulative benefits in terms of improving traffic conditions on the Pacific Highway. Any negative

impacts, including an increase in traffic on the Pacific Highway would also be offset with the net positive cumulative benefits of reduced traffic on other roads as well as benefits of any transferred traffic travelling on a safer road and associated travel time and travel cost savings. Completion of this Proposal would ensure a consistency in road standard, particularly with respect to overtaking provisions and road geometry. With the completion of the other proposals on the Pacific Highway, the sections of road forming this Proposal would be, without improvement, serious road network black-spots with expected increases in crash rates and poor level of service.

Completion of the Proposal would also ensure maximum utility from the other proposals either planned or under construction. Completion of these proposals would in many ways ensure that any cumulative impact from this Proposal would not cause any deleterious effects nor exacerbate existing problems.

## 21.4 Rail infrastructure proposals

In February 2006, a \$450 million upgrade for the rail line between Sydney and Brisbane was announced. The proposed upgrade includes the installation of concrete sleepers, signalling works and the extension and upgrading of crossing loops. This would enable the amount of freight using the railway line to double and cut train transit times by up to four hours. In so doing, the rail upgrade proposal aims to provide a more efficient service in transporting freight, which could take some freight traffic off the road network, particularly the Pacific Highway and help to reduce any cumulative impacts of the Proposal in the context of the upgrade program identified elsewhere in this section.

In June 2007 the Australian Government announced its decision to take the next step in the planning process for the proposed inland railway from Melbourne to Brisbane. It has been identified that Australia's strong economic growth means that the amount of freight is forecast to double by 2020. "The inland railway will increase rail's share of the freight between Melbourne and Brisbane from 30 per cent to about 73 per cent. It will also reduce the growth in the number of trucks on our roads, because every double-stacked container train is equivalent to 276 semi-trailers (Media release, the Hon Mark Vaile 15 June 2007, <http://www.ministers.dotars.gov.au/mv/releases/2007/june/096mv2007.htm>).

## 21.5 Other major proposals

A search (on the 21 June 2007) of the Department of Planning's register of major projects on the Mid North Coast (<http://www.planning.nsw.gov.au/asp/register2006.asp#mnc>) yielded 30 major projects across five local government areas. The 30 major projects are shown in Table 21.1.

Cumulative construction impacts could potentially occur should any of these projects be constructed at the same time as the Proposal. These impacts would be similar in nature to those discussed for the Pacific Highway Upgrade Program in Section 21.2.

The operational cumulative impacts of the proposed upgrade and the identified major projects are expected to be minor and manageable through the environmental planning and approvals process.

**TABLE 21.1** MAJOR PROJECTS IN THE REGION (AS AT 21 JUNE 2007)

MAJOR PROJECT	LOCAL GOVERNMENT AREA					
	Greater Taree	Port Macquarie – Hastings	Kempsey	Coffs Harbour	Clarence Valley	Bellingen
Residential subdivision	2	3	3	9	1	
Residential development					1	
Tourism facility / accommodation development	1		2		3	
Shopping centre upgrade		1				
Highway upgrade			1	1		
Water treatment plant						
Constructed corridor / wetlands		1				
Community facility (school, aged care)						1
<b>Total</b>	<b>3</b>	<b>5</b>	<b>6</b>	<b>10</b>	<b>5</b>	<b>1</b>

## 21.6 Assessment of other potentially key cumulative impacts

### 21.6.1 Land use changes

The Mid North Coast is recognised as a region where there is significant pressure for population expansion, particular generated by the baby-boomer retirees and from people seeking lifestyle changes – the so called "sea-changers". The region is predicted to have a substantial increase in population over the next 25 years. The Department of Planning's *Draft Mid North Coast Regional Strategy 2006-31* for example, identifies a potential population growth of over 90,000 people by 2031 with the Coffs Harbour area identified as having the highest growth.

At the broad strategic level, the completion of the Proposal, together with the upgrading of the overall Pacific Highway corridor, would result in improved accessibility to and within the NSW Mid North Coast and would facilitate the transport needs arising from the increase in development as forecast in the Strategy. Impacts of these broader land use changes would be addressed at the strategic level through the regional strategy and associated processes. In this regard, the Proposal responds to the land use changes envisaged through State Government regional planning strategies by ensuring that the road system is safe and efficient for the existing and future population.

At the more local level, land use changes would be subject to statutory and strategic planning and assessment by Coffs Harbour City Council and in the case of larger projects, the State Government. It is assumed that these assessments would also need to consider cumulative impacts including those in relation to the impacts of this Proposal. The Proposal would not in itself result in any cumulative land use impacts, rather it provides a strategic and integrated response to land use changes to ensure an efficient and safe road system for existing and future generations. Without the Proposal there would still be similar land use pressures, as a result of continued and increasing pressure on infrastructure, such as roads with corresponding increases in traffic congestion, growing populations, reduced accessibility and a reduction in road safety.

## 21.6.2 Noise

As the Pacific Highway Upgrade program progresses, the improved road conditions on the highway could potentially attract through traffic from other routes and particularly the New England Highway. This increase in traffic (including heavy vehicle traffic) could potentially impact on the overall noise environment and hence, the veracity of the noise impact assessment.

As indicated in Chapter 11, a sensitivity factor of 1dBA has been added to all predicted noise levels for the 2021 design noise model. This directly resulted in noise barriers being required for many areas where otherwise there would be no such requirement. In this regard, the noise sensitivity assessment is considered sufficient to address any potential cumulative noise impact from transfer of traffic from other routes. It is noted that noise levels from truck traffic (a significant factor at night) could potentially reduce with any reduction in freight traffic associated with the current upgrade of the Sydney to Brisbane rail line.

Any potential transfer of traffic (and in particular truck traffic) from other routes such as the New England Highway, would also be expected to result in a net improvement to the road noise environment along those road corridors.

## 21.6.3 Biodiversity

The Proposal would result in a number of potential biodiversity impacts including vegetation loss, indirect vegetation impacts (including edge effects), habitat fragmentation and / or loss, direct fauna mortality during construction and risk of fauna mortalities during operation. These specific issues are addressed in Chapter 17.

The Proposal has been developed and designed through the route option identification and selection process to minimise the impacts on biodiversity as far as practicable. Those steps of the process are the most effective in reducing impacts as it essentially relates to avoidance rather than responding with mitigation and management measures. Notwithstanding that process, residual flora and fauna impacts have been identified including impacts on threatened species and endangered ecological communities and they are addressed in Chapter 17. It is acknowledged that these impacts would cumulate with other proposals in the vicinity. However these have been minimised to the greatest extent practicable and hence cumulative impacts have been similarly minimised. Furthermore, it is not considered that the extent of loss / impact would be a trigger for increasing the relative vulnerability for any of the species affected.

A compensatory habitat agreement would be developed prior to or during construction and would further minimise any overall cumulative losses. A number of the important vegetation communities impacted are located in the Wedding Bells State Forest. Compensatory habitat provided in areas with higher conservation status would provide greater assurance to long term protection of those communities.

With particular reference to impacts on fauna, it is noted that the existing highway has very little, if any, provision for fauna protection. The Proposal would include considerable fauna protection measures (fauna underpasses, fauna exclusion fencing) both along the upgrade section and along the bypass section. Consequently, the Proposal would result in a reduction to the existing level of risk of fatality along the upgrade section compared to the current situation and, because the bypass section would attract through traffic from the existing highway through Woolgoolga, reduce the risk of fauna mortalities on that section between south Woolgoolga and Arrawarra.

### 21.6.4 Other impacts

Although minor, there would be the potential for a degree of cumulative impacts on a number of other issues associated with the Proposal during the construction stage. In some cases these would be dependent upon the timing / staging of the construction of other road proposals. Potential impacts would include construction traffic management and an increasing need for resources (ie. construction materials and water use). Co-ordinated traffic management and construction planning for each section of the Pacific Highway Upgrade Program, including consultation with relevant government agencies and stakeholders, would ensure minimal cumulative disruption to traffic, particularly during peak periods including school and public holidays.

Overall, the cumulative impacts of this and other proposals are expected to be minor in nature and are not expected to result in, any particular secondary actions or impacts.

## 21.7 Proposed mitigation and management measures

A general principle of management and mitigation of environmental impacts is that where possible the identified impacts should be managed and mitigated to the greatest extent possible within the boundaries of the Proposal and, where necessary within the immediate vicinity of the Proposal.

The issues identified above that give rise to potential cumulative impacts will therefore be principally and most effectively addressed at the individual proposal level through the application of management and mitigation measures as identified throughout this environmental assessment and in particular, in the draft Statement of Commitments (refer Appendix A). In addition, the environmental assessment has taken a precautionary approach and identifies management and mitigation measures and associated decision-making processes (eg. consultation with stakeholders) that provide sufficient mitigation to offset both immediately identified impacts and potential additional or cumulative impacts that may arise. As a result, the consolidated draft Statement of Commitments is considered complete and sufficient to address both the impacts identified at their source and the potential cumulative effect that these impacts may have in conjunction with similar issues arising on other Proposals and activities in the region. Therefore, no new commitments are identified as necessary for the management and mitigation of cumulative impacts.