



Pacific  
Community  
Communauté  
du Pacifique



## **South Pacific Form Seven Certificate**

# **GEOGRAPHY**

**2017**

***RESOURCE BOOKLET***

## Introduction – Where is Newcastle, Australia?



Location of Newcastle on a map.

Newcastle is a city found in New South Wales, Australia. It is located -32.93 latitude and 151.78 longitude and it is situated at elevation 21 meters above sea level.

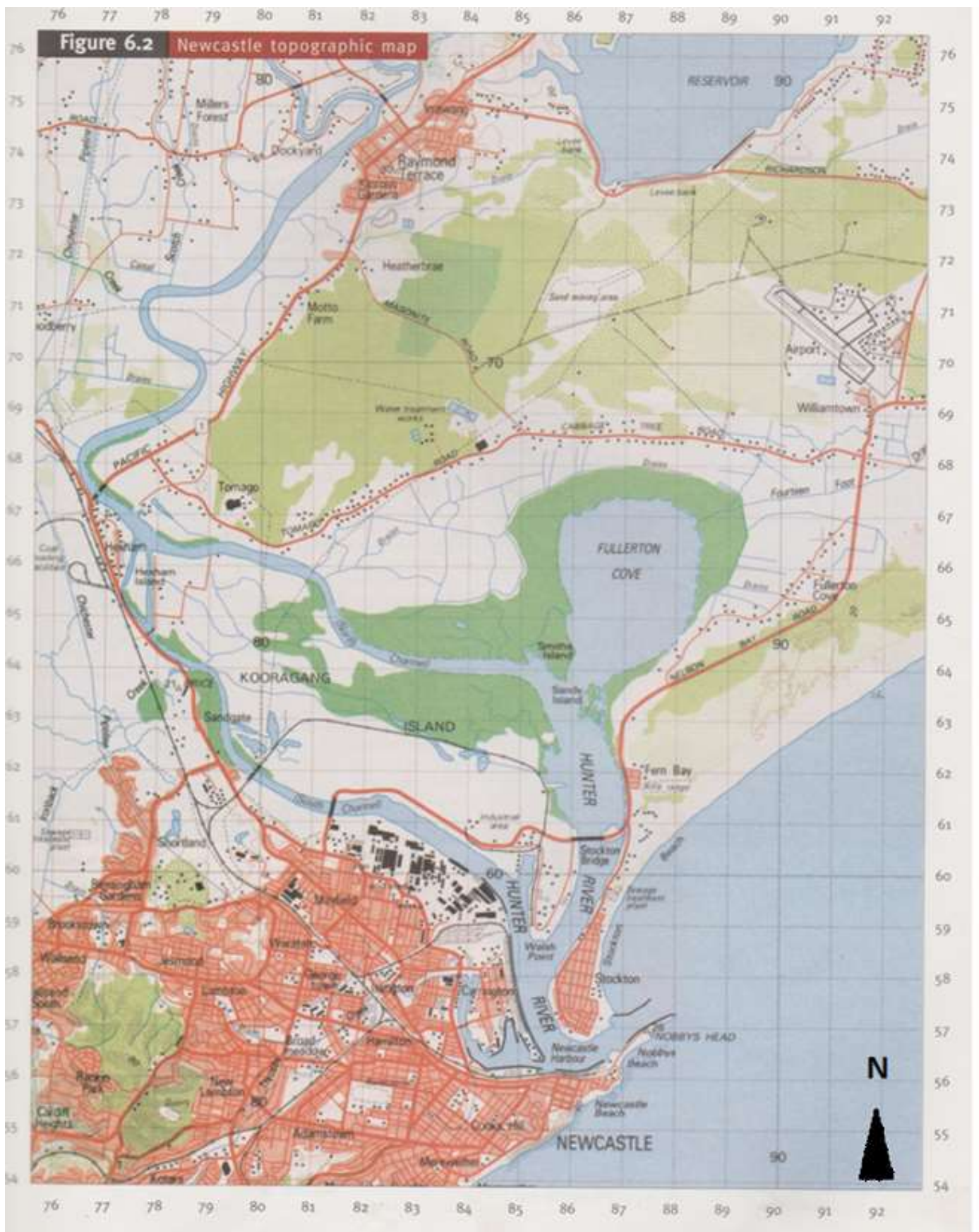
Newcastle has a population of 308,308 making it the 2nd biggest city in New South Wales. It operates on the AEDT time zone, which means that it follows the same time zone as Sydney.

### Resource 1: Excerpt on Kooragang

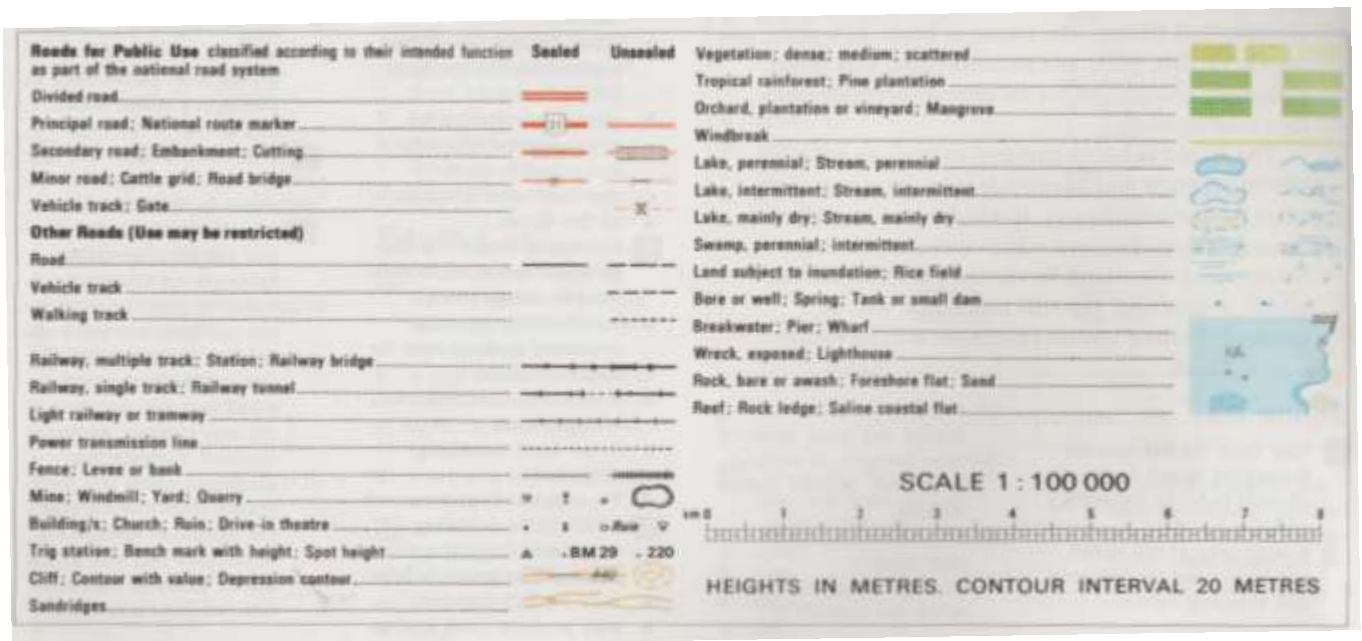
Kooragang Island is an important wetland in the lower Hunter estuary. It contains rainforest and extensive areas of mangroves and salt marsh. Mangroves are important because they produce organic matter for the food chain, provide shelter and food for fish, prawns and crabs. They also act as nurseries for many fish, help prevent bank erosion and reduce water pollution by trapping sediments. The island has been massively degraded with 1800 ha of wetlands drained and filled. The western part of Kooragang Island was once a separate island which has been joined to others by reclamation. One thousand hectares of fisheries habitat have been lost in the Hunter estuary due to draining and filling. The island is home to a wide variety of fish, birds and invertebrates. It is internationally recognised for its importance to migratory wading birds.

The island is being restored to recover valuable wildlife habitat and to provide education and recreation for the community. It will be part of a Hunter estuary Nature Reserve which includes Hexham Swamp and Shortland Wetlands. Fisheries habitat which is degraded but still functional will be restored. Former littoral rainforest will be restored.

**Resource 2: Topographic Map of Newcastle**



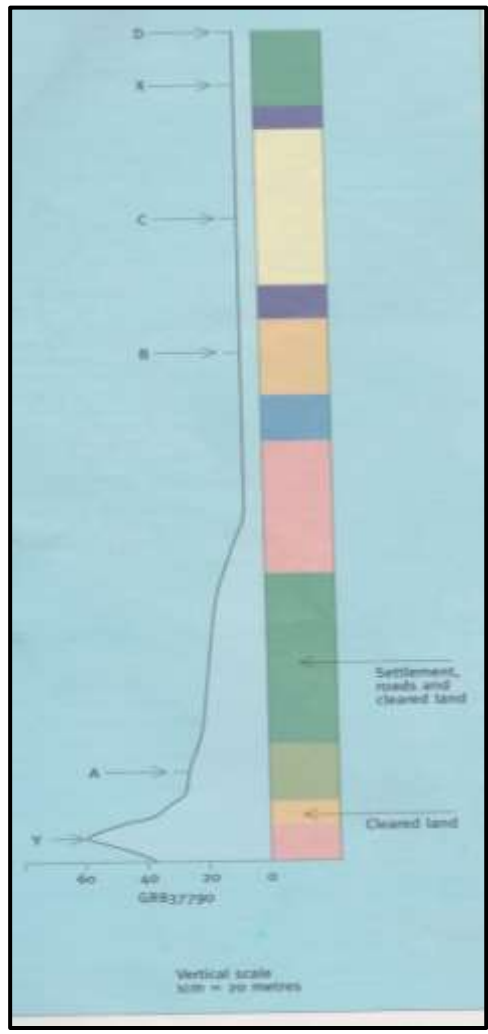
**Key:**



**Resource 3: Aerial Photograph of Newcastle**



**Resource 4: Cross Section of Newcastle**



**Resource 5: Climograph Table of Newcastle**

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Temperature Average °C	25.6	25.4	24.7	22.8	20.0	17.5	16.7	18.0	20.2	22.1	23.5	24.9
Precipitation mm (inches)	88.4	107.9	119.7	116.0	117.3	117.1	94.6	73.6	72.5	72.9	70.5	81.5

## **Resource 6**



Photograph of Newcastle

## **Resource 7**

### **RISING SEA LEVELS COULD DROWN NEWCASTLE**

WATER would be lapping through the streets of Newcastle's CBD, covering Hunter Street and the railway line, if worst-case predictions of sea level rise and flooding happen, federal maps show. Many other areas in the region from Lake Macquarie to Port Stephens could be inundated by 2100, scientists predict.

The latest international climate change research has predicted sea levels will rise even higher than previously thought. Some experts say the rise could be more than a metre by 2100 along the Hunter coast.

Residents fear the new predictions will lead authorities to tighten restrictions on property rights, which could reduce property prices. A Lake Macquarie City Council statement said it was reviewing details of the recently released Intergovernmental Panel on Climate Change report. Environment Minister Robyn Parker told the council the NSW government would also review the report and "provide updated regional-scale advice for affected councils". Lake Macquarie council, which has already planned for worst-case sea-level predictions, said it would consider advice from the government and CSIRO before making policy changes. Lake Macquarie council approved a sea-level rise policy in 2008 but Newcastle City Council said it had not made a policy on the matter.

However, Newcastle council said it would produce a coastal management plan, to be publicly exhibited next year, with recommendations to manage the "effects of coastal processes". "This may include changes to our policy framework for private and public land, as well as physical works," a spokeswoman said. Coastal Residents secretary Pat Aiken urged authorities to plan for

infrastructure, such as levees and seawalls, rather than restricting residents' property rights. Mr Aiken said residents wondered why councils were taking different approaches to the matter. Ms Parker said recently the state government wanted to give councils "more capacity to be involved in what's appropriate for their area".

The latest Intergovernmental Panel on Climate Change report predicted sea levels would rise by a global average of between 26 centimetres and 82 centimetres by 2100, a higher estimate than its previous prediction of 18 centimetres to 59 centimetres. With regional variation and the melting of glaciers and land-based ice sheets, the rise could be 1.1 metres along eastern Australia, scientists predict. However, scientists admit that they have difficulty predicting sea-level rises – particularly at regional levels. Federal maps show a 1.1 metre rise could lead to extensive flooding in Newcastle, Lake Macquarie and Port Stephens, if infrastructure was not built to stem the tide. The maps combine sea-level rise predictions with a high tide.

"They illustrate a flood that could be expected to occur at least once a year, but possibly more frequently, around the year 2100," a statement accompanying the maps said.

Lake Macquarie mayor Jodie Harrison said the council was beginning to talk to residents about ways to adapt to predicted rising waters. "We want to involve residents right around the lake to find out what they want done," Cr Harrison said. Controversy has been building in Lake Macquarie this year over the council's controversial Section 149 property notations for flooding, which affect about 10,000 properties.

Residents are also concerned about council-produced property flood certificates and flood plans, which incorporate sea-level rise risk.

Several hundred people have attended meetings opposing the council's measures, which some say unreasonably restrict property rights. Mr Aiken said notations encoded with sea-level rise risk were misleading and possibly unlawful. In a recent letter to residents, Cr Harrison said the council was "obliged by law to note on property certificates known risks relating to property". Lake Macquarie council said recently it had removed "the specific reference to sea-level rise on Section 149(2) certificates", as this "future risk" was incorporated into flooding hazard references. A Newcastle council spokeswoman said it had not placed notations on properties specifically for sea-level rise, but it had done so for erosion risk on about 80 properties in Stockton. Port Stephens Council's environmental services manager Bruce Petersen said the council had not placed any specific notations regarding sea-level rise on properties. Mr Petersen said the council was "assessing options available" and consulting the insurance industry. Port Stephens council had done a climate change risk assessment and adaptation action plan. "Council has taken into account the predicted elevated ocean levels in flood planning as required by the state government," the spokeswoman said. As well as property, councils are concerned about loss of beaches, parks and other infrastructure and reduced ability to develop land.

## REFERENCES

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