

# DAKOTA WOOLSTORE TENERIFFE – ITS INTERNAL STRUCTURE

An article focused on the details of construction inside the walls of this 1930s woolstore

## THE HISTORY



Queensland's wool industry was booming in the early nineteenth century and was dominated by a number of companies who established their Queensland centres of activity along the Brisbane River waterfront at Teneriffe. Like the other companies, Goldsbrough Mort built a large rectangular brick building on Macquarie Street. It is named Dakota and was officially opened in 1934.

Wool was delivered in bales by road, rail or the opposite wharves to be stored, displayed, sold, and then forwarded.



The building itself is about 110 metres long and 38 metres deep extending over four levels and surmounted by an impressive parapet displaying the company name and containing sculptured ram sheep heads. Its main entrance was at the southern end and a vehicle entrance was built at the northern. The four walls are solid, red brick and three bricks deep along with brick support columns behind. It is also distinguished by slight protrusions of the front wall towards each end. The façade is heritage protected.



The front, rear and southern walls are penetrated by windows and a ventilator for the upper level and the roof is sawtooth aligned so that the vertical glass faces south to better illuminate the wool displayed on the top level.

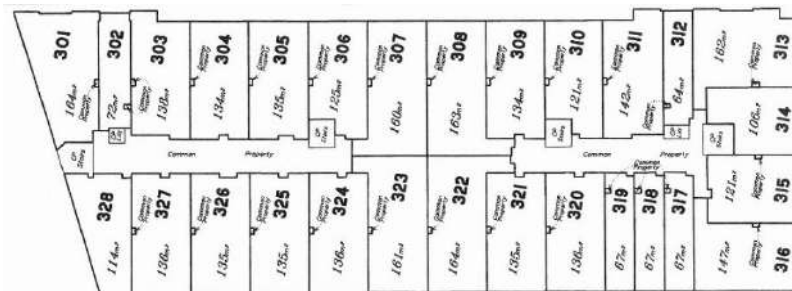
## REFURBISHMENT

By the 1990s the wool industry had moved on from Teneriffe and the area became saved from dereliction by Queensland Government's urban renewal project of the area.

By 2001, using architects Bureau Proberts, Dakota's exterior was cleaned up and a new entrance/foyer created at the northern end.



Internally, the use of space completely changed the building into 91 apartments and 4 commercial spaces. To illustrate, the new arrangement on level 3 is shown.



The foyers and internal corridors were designed and decorated in the fashion style of the year 2000 when the conversion was completed.

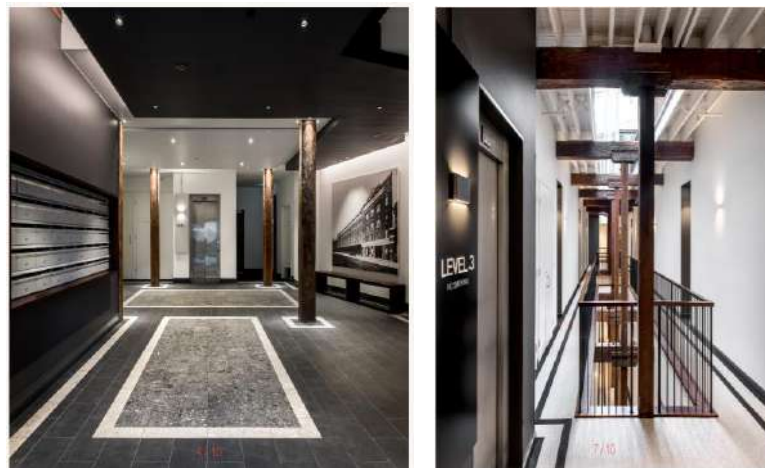


The internal arrangements of the newly created apartments were built around the existing internal structures in a way which fully protected the heritage features of the building. The art-deco look of the internal face of the brick wall became a feature and, in many cases, the rafter structure of the floor above was kept visible. Kitchens and bathroom design and fittings were typical of the time.

Over the years, individual apartment owners undertook their own renovations and interior design. As an example, the photos below show how unit 311 looked when it was sold in 2016.



In 2017, architects Maytree Studios were engaged to re-furbish the foyers and corridors to the current contemporary design.



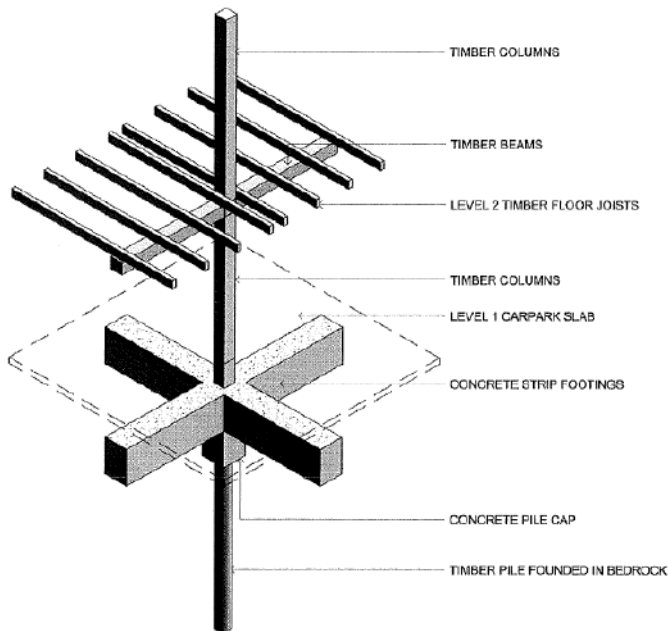
### THE INTERNAL WOODEN STRUCTURE

The internal structure is entirely of wood, consisting of wooden columns, beams, and orthogonal rafters, then surfaced with wooden flooring. As the photos reveal, columns are spaced at about every 4 metres across the entire internal area and repeated for the floors above. The resultant placement of the columns within apartments is illustrated by unit 311.



311/88 Macquarie Street, Teneriffe  
142m<sup>2</sup>

In more detail:



## THE TIMBER

Queensland has been blessed with abundant timber, a source for much of the construction of nineteenth and early twentieth century housing and industrial space. Government-owned forests and timber mills were complemented by logging on private land. Timbers from State forests, as are all the columns in Dakota, are each marked with a government mark as shown.



In the earlier part of the nineteenth century, logging was a very labour-intensive industry with trees sawn down and then hewed by hand on-site or taken to a sawmill as shown in the examples below from Victoria.



Colonial slaughter of native forests (National Museum of Australia)

CLOSE X



A contemporary example of hewing is shown below of one of the 1200 oak trees being used to renew the fire-ravaged roof of Notre Dame in Paris. It is being hewn using the same broad, flat axes as in the 13<sup>th</sup> century.



Given this information above, it is possible to quantify the amounts of timber in each of the elements of the structure inside Dakota.

#### COLUMNS

There are seven hand-hewn columns across the building on each floor between the outside walls. Each is about 3.25 metres long and is about 24 by 24 centimetres square.

(Of course, at the time of the building and when I grew up the measurements were good imperial ones making the columns about 10 inches square, 11 feet high and separated by 5 yards.)

There are approximately 26 rows of 7 columns and 3 identical floors inside the brick walls.

So total number of columns is 26 by 7 by 3 equals **550**.

***Aligned end-to-end, this makes about 1,800 metres of hewn square wood of 25 by 25 centimetres.***

#### BEAMS

To lock the vertical columns to each other and to the front and back walls, requires 8 beams across the building.

Given the enormous weight of wool bales they needed to support, these are of slightly larger square section of about 34 by 34 centimetres and average length of 4.5 metres to stretch between adjacent columns.

So the total number is 8 across by 26 bays along the building by 3 floors or about **625**.

***Aligned end-to-end, this makes about 2,800 metres of hewn square wood of 34 by 34 centimetres.***

#### JOISTS

To hold it all together along the length of the building and to provide a support for the floorboards to go above, quite large sawn joists are laid. Their size is 240mm high by 65mm wide. (Or 9.5 x 2.5 inches.)

They stretch the 385cm between adjacent beams along the whole 110 metre length of the building.

Separated by 44cm, there are 82 between adjacent beams across the 36m width in each of the 26 bays along the building.

The total number of joists is then 82 by 26 bays by 3 floors or **6,396**.

***Aligned end-to-end, this makes about 24 and a half kilometres of sawn timber 240 by 65 millimetres.***

#### FLOORBOARDS

Nailed onto the tops of the joists are floorboards which make a continuous floor covering the whole 110 metres by 36 metres.

Each floorboard width is 10cm. So along the length of the building there are about 1100 boards. The total length of floorboarding is 1100 by 36 metres by 3 floors.

This comes to a total length of about **120 kilometres** (!!).

***So if placed end to end, the floorboards could run west from Brisbane to Toowoomba or south to Noosa.***

#### NAILING

The floor boards are nailed to every joist they cross with two nails, hammered in by hand.

The joists are spaced 44 cm so the number of nails is 120 km divided by 44 cm times 2 nails at each crossing.

#### **THE NUMBER OF NAILS IS ABOUT 500 THOUSAND**

After nailing, the tops of the nails have been punched so that they do not protrude above the surface of the floor. It leads me to wonder how many cases of RSI – ‘repetitive strain injury’ - there were amongst the carpenters.

No estimate has been made of how many trees were required for the building but it can be estimated that each tree would have to be between 50 and 100 years old. There is no doubt that, together, they would make up a quite respectable area of forest.

#### MY ORDER TO BUNNINGS

In summary, my order for material to make Dakota would be as follows:

- Squared timber for columns                      1.8 kilometres
- Squared timber for beams                        2.8 kilometres
- Sawn rectangular joists 24 x 6.5cm            24.5 kilometres
- Floor boards 10 cm wide                         120 kilometres
- Nails                                                     500 thousand

**Oh, and not to forget the 700,000 bricks!**

***Emeritus Professor Trevor Cole***