

University of
Western Sydney



URBAN RESEARCH CENTRE

THE ORIGINS AND DESTINATIONS
OF PRODUCE FLOWS THROUGH
SYDNEY MARKETS LIMITED
FLEMINGTON SITE

MAY 2013

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OF PRODUCE FLOWS THROUGH
SYDNEY MARKETS LIMITED
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LIST OF ABBREVIATIONS

ABS	Australian Bureau of Statistics
CPC	Central Product Classification (United Nations)
GIS	Geographic Information Systems
SML	Sydney Markets Limited

ABOUT THE AUTHORS

The study has been conducted by the Urban Research Centre at the University of Western Sydney. The Urban Research Centre is located administratively within the School of Social Sciences and Psychology.

The study's analysts and authors are Professor Phillip O'Neill and Mr Borce Dimeski.

Professor Phillip O'Neill is Professorial Fellow in Economic Geography at the Urban Research Centre. He is a major contributor to international scholarship in the general area of urban and economic development. This is recognised in his appointments to a number key international editorial boards and the frequent award of Australian Research Council grants. Phillip has held visiting research fellowships at the Universities of Bristol, Massachusetts, Singapore (NUS) and Oxford.

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Fresh fruit and vegetable markets have always been crucial to the prosperity of urban life. The author Michael Christie captures the colourful history of fruit and vegetable markets in Sydney in his book *Sydney Markets 1788 to 1988*. Christie's description of the moves by Governor Macquarie to establish an orderly markets in Sydney in 1810 provide a valuable insight into the ways fresh food markets are locked inextricably into the life of a city.

Faced with the noise, smell and disorder of a number of poorly organised market events concentrated on the Rocks and Sydney Cove (now the Circular Quay area), Governor Macquarie established regulated markets on the site now occupied by the Queen Victoria Building, opposite Sydney Town Hall on George Street. The site was chosen for good reasons.

- The site had easy access to good wharf facilities immediately to the west at Cockle Bay (now Darling Harbour). This enabled water-borne craft from the up-reaches of the Parramatta River to bring fresh produce to markets and not have to confront the daily confusion around the Rocks and Sydney Cove areas.
- Produce and livestock heading into town along Parramatta Road could access the markets without disturbing residents, commerce and government business in the downtown and Sydney Cove areas.
- There was flat, available land suitable for the assembly and sale of livestock, poultry and fresh produce.

An innovation by Governor Macquarie at the time was the issuance of market regulations. These regulations set opening and closing times, levied fees on market users for the upkeep of facilities, and imposed a rule which prohibited fresh produce from being sold en route to the markets. Governor Macquarie had a keen understanding of the importance of markets in generating adequate supplies of fresh food. He was also aware of the need to protect the primacy of the markets from being undermined by non-market players.

Christie's story of the establishment of the colony's markets in upper George Street by Governor Macquarie carries important lessons for the distribution of fresh fruit and vegetables in Sydney two centuries later. One lesson is that markets need an expansive, dedicated, accessible location. A second is that markets need to be linked to the wider world by quality transport infrastructure with dedicated connections direct to a market's front door. A third is that freely-operating markets are the most efficient way to bring quality produce to a city in sufficient quantity so that buyers can satisfy their customers' needs. And

a fourth is that the primacy of freely-operating markets can be undermined by non-competitive supply chains operating outside the distributional mechanisms of the market.

Christie's history of Sydney's markets shows that these lessons have had to be re-learned on many occasions, even though their relevance remains strong though time.

The study

The study which is reported on in this document intersects with the ongoing aspiration of Sydney Markets Limited as stated in its corporate mission statement: "To provide the best environment that supports competitive trade and effective distribution."

In this context, the study sought to trace the supply chain of fresh fruit and vegetables from its agricultural origins to its buyer destinations. Knowing the journeys of fresh fruit and vegetables, and the key role of Sydney Markets Limited in these journeys, is important for a number of reasons. These are expressed in the objectives of this study:

1. To improve wider understanding of the role played by Sydney Markets in the supply of fresh fruit and vegetables to Sydney's urban communities and beyond.
2. To better identify the origins of fresh fruit and vegetables by specific categories.
3. To ascertain the nature and extent of diversity and concentration in Sydney's fresh fruit and vegetable supply chain.
4. To provide a basic understanding of the distances involved in the transportation of Sydney's fresh fruit and vegetables in the context of rising freight costs, including congestion costs, and of concerns for the sustainability of long-distance food supply chains.

Sustainability concerns arise from rising fuel prices over the longer term; the contribution of road freight transportation to rising levels of greenhouse gas emissions; and the vulnerability of agricultural regions to rising global temperatures and the increased incidence of extreme weather events.

Following this introductory section, this report presents its findings over the following sections. Section 2 provides a description of the operation of Sydney Markets at Flemington. Section 3 then uses key government reports to show the argument for major cities like Sydney to have a raised

consciousness about the need for secure flows of quality fresh fruit and vegetables.

Section 4 outlines the methods used in data collection and analysis in the study.

Then the study's main findings follow. Section 5 provides a detailed account of the origins and relative sizes of flows of produce to the Sydney Markets and section 6 discusses the issues surrounding this account. Section 7 then analyses the flows of fresh fruit and vegetables to the various destinations in Sydney and beyond, and discussed the implications.

Section 8 provides a summary and commentary on the report's main findings. This section also draws attention to some key issues potentially affecting Sydney's food supply chain as Sydney Markets confronts the many ongoing challenges of operating in an expanding, complex 21st century Sydney. Finally, section 9 lists the study's main references.

Sydney is a large and growing city. It is currently home to 4.4 million people and is predicted to grow by a further 1.3 million people by 2031 (New South Wales Government 2012). Sydney is also a wealthy city by world standards with a large proportion of its residents enjoying very high standards of living. Together these characteristics mean that Sydney must be supplied with large quantities of fresh fruit and vegetables on a daily basis as part of Sydney's very large food supply budget.

The demand for fresh fruit and vegetables comes from many sources. Households still rely on fruit and vegetable retailers and supermarkets for the direct purchase of fresh fruit and vegetables for basic consumption. Fresh fruit and vegetables are also demanded by cafes, restaurants, providores, food processors and a growing range of food service providers as new ways of delivering to Sydney's food needs are invented and developed. This demand diversity is also driven by Sydney's rich multicultural make-up and thereby a push for varieties of fruit and vegetable varieties unseen in Sydney's greengrocer trade a generation ago.

As discussed in section 1, fresh fruit and vegetable markets have always been central to meeting Sydney's food needs. Sydney Markets moved to its present-day 43 hectare Flemington location in 1975 (figure 1.1). This site has become one of the most operationally efficient and well-constructed markets in the world. Situated on Parramatta Road, Sydney's traditional east-west thoroughfare, halfway between the Sydney CBD and Parramatta (Sydney's second CBD), the markets are located in the geographic centre of millions of daily commuter journeys. Up to 500 trucks unload at Sydney Markets on any

given weeknight. In total, the markets generate approximately 70,000 vehicle movements per week. The nearby Flemington railway station brings even more people into the markets especially at weekends.

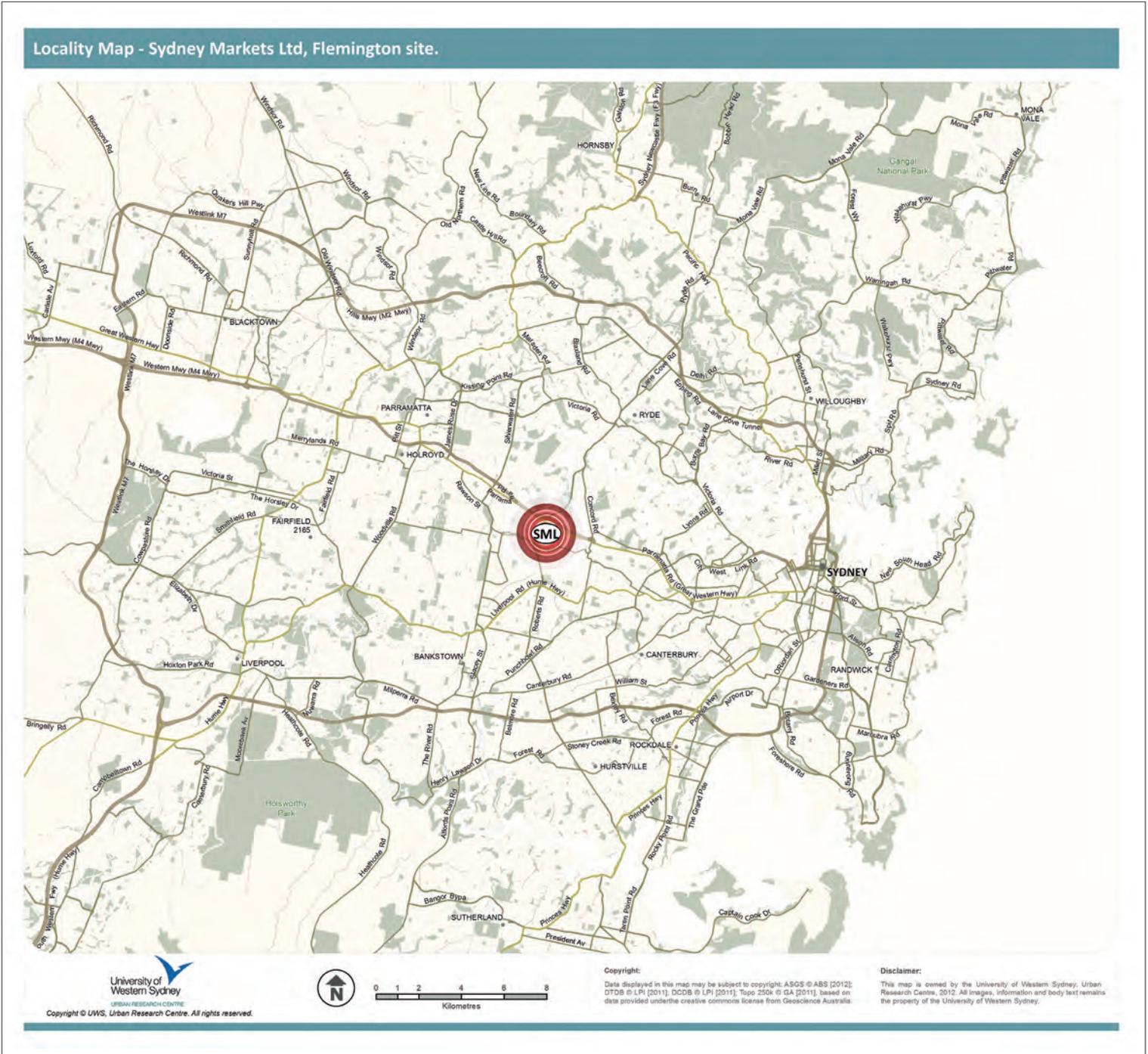
Sydney Markets is also Sydney's premier distribution centre for fresh produce and flowers, servicing the needs of almost one third of Australia's population.

Sydney Markets is a major jobs generator with about 5000 people employed on site. In one way or another, these workers are responsible for transactions valued at around \$3 billion annually.

As the supplier of Australia's largest and wealthiest city, Sydney Markets is the nation's leading growers market, indeed the largest produce market in the southern hemisphere. The markets are busy and flow-through is rapid. Around 2000 regular buyers from supermarkets, restaurants, independent green grocers, hospitality and catering businesses, alongside over 120 fresh produce wholesalers (and 394 produce growers), negotiate their trades at the markets Monday through Friday. About 20,000 growers throughout Australia contribute to the markets. Their produce is handled by 800 forklifts in operation across 200,000 cubic metres of cool rooms on the premises.

The markets are open seven days a week, 24 hours a day. As the wholesale business comes to a close on Friday morning, Sydney Markets transforms into Paddy's Markets for the weekend. Adjacency to Flemington railway station helps in this transformation.

Figure 1.1 - The location of Sydney Markets at Flemington



Source: Compiled by Urban Research Centre

Fruit and vegetables in Australia

Australia is very proud of the close links between the Australian farmer and the Australian dinner table. The nation's fresh fruit and vegetable supply chain is overwhelmingly based on a domestic agriculture industry which supplied on average over the last five years a total of 1,727,000 tonnes of fruit and 3,327,000 tonnes of vegetables (Spencer, S & Kneebone, 2012, p.51). Australia is also a significant exporter of fresh fruit and vegetables, comprising an annual average over the last five years of 222,000 tonnes of fruit and 525,000 tonnes of vegetables (ibid).

Australian fruit and vegetable agriculture is characterised by diversity in climatic zone, producer type and size, and in produce type. This diversity ensures a balanced supply of quality fruit and vegetables through the seasons of the year and enables producers to respond to shifting demand due to special events like Easter and Christmas and to longer term variations in consumer tastes and demand.

Australian fruit and vegetable production is also characterised by high quality, which gives the growers of Australia's fresh produce strong arguments for protection against low-cost imports. The availability of high quality at competitive prices also gives domestic production a strong market position in competition with processed and snack food products.

A high proportion of Australia's fruit and vegetable production is sold direct to consumers and other end-users. On average over the last five years, only 15% of fruit and 32% of vegetables (by weight) were diverted into processing (Spencer, S & Kneebone, 2012, page 51).

Supermarkets play a dominant role in the supply of fresh fruit and vegetables in Australia. The control of fresh fruit and vegetables markets by supermarkets is estimated to be 55% of total fresh fruit and vegetables sales (Spencer, S & Kneebone, 2012, page 53), a rise from 39% two decades previously (Urbis JHD 2004). The effect of this growth of market power by the supermarket chains is the subject of much debate in Australia with concerns for the rise of anti-competitive practices, the distortion of food supply chains, and the by-passing of fair and open market trading systems (see for example Australian Broadcasting Commission 2008). As we see below, the existence of well-supplied, well-patronised markets generates major economic benefits to both Australian food producers and the nation's fresh food consumers.

Role of markets

Markets play a fundamental role in driving the growth and efficiency of modern economies. Economic theory demonstrates the three important roles of efficient markets.

First, markets ensure that productive resources flow to the best producers. In the case of fruit and vegetable industries, because the best producers will sell more produce with better returns than their competitors, these producers will be better placed to secure more productive land, labour and other necessary inputs. This is called the *productive efficiency* role of markets.

Second, markets steer resources into the production of items that are in most demand. If, for example, there are unsold quantities of cabbages in the market over a long time period yet ongoing shortages of brussel sprouts, then the market sends signals (especially through price changes) to producers to shift away from the production of cabbages and into the production of brussel sprouts. This is called the *allocative efficiency* role of markets.

Third, markets provide the best mechanism for encouraging innovation. For example, markets are the perfect place to trial new fruit and vegetable products, such as Asian star fruit (carambola) or celeriac, with successful innovators being encouraged by good prices and high rates of market clearance. This is called the *dynamic efficiency* of markets.

Awareness of the importance of a secure supply of high quality fresh food

The Australian government recently released a comprehensive study into the importance of ensuring access to quality unprocessed fresh foods by all Australian households. Called *Issues Paper to Inform Development of a National Food Plan* (Australian Government 2011), the study draws attention to a number of considerations about Australians' health and well being and the importance of quality fresh food. These are summarised in the following six points.

1. The supply of high quality food is essential to meet the nutritional requirements of the population while helping in the fight against obesity and diet-related disease.

The paper reports that poor nutrition is responsible for around 16% of 'the disease burden' in Australia and contributes in some way to over 56% of all deaths. Yet Australia is arguably the world's most self-sufficient fresh food nation. One problem

is that the simple presence of food production does not ensure its availability. The study notes the desirability of making the nation's fresh produce available to consumers with a three to five days turnaround on a consistent basis. This involves intersecting with vast transportation networks across all states and jurisdictions. The report argues that markets are the most effective means of getting this produce into the hands of consumers quickly and at the right price.

2. While Australia has one of the safest food supply chains in the world, there is an ongoing need for vigilance given the risk of disease and illness from unsafe foodstuffs or inappropriate handling practices.

The study notes that food-borne illnesses are a significant public health problem with over five million cases estimated to occur nationally each year. The study finds that the best way to ensure bio-security along the fresh food supply chain is to encourage maximum visibility and surveillance of handling processes. A freely-operating, open-market trading system, like at Sydney Markets, is a powerful way to ensure openness and visibility as produce passes from producer, to distributor, to consumer.

3. The most effective way of ensuring quality, safe food is to empower consumer choice.

While there is a real place for regulations and government interventions, these are most effective when they have the force of educated consumer demand and sentiment behind them. Open markets send unambiguous quality and price signals to producers; in effect, bringing to every morning market millions of individual consumer purchase preferences for quality, safe food.

4. Competition in the Australian food sector is the best way to ensure the efficient use of resources and the uptake of new technologies.

Australia has witnessed a major shift in market power in the food supply chain over the past 30 to 40 years. Food industry expert, David McKinna (*Australian Financial Review*, 20 July 2011, page 59) argues that this shift has been away from farmers who held market power in the 1970s, and processors, who held major power in the 1980s, to supermarkets who now dominate. The study referred to here (Australian Government 2011) finds that sales from major supermarkets in Australia account for about half of fresh produce market revenue, including meat and dairy products as well as fruit and vegetables. Yet while supermarkets engage in large-budget advertising campaigns claiming vigorous price competitiveness, the study notes that food prices in Australia since 2001 have been rising at a higher rate than the prices of goods and services as a whole. Moreover, the study finds that prices across fresh, unprocessed food categories are rising at a significantly higher rate than the prices of processed, relatively nutrient-poor foods. The role of supermarkets and their sales strategies are heavily implicated in these price and product trends. In contrast, the study notes that central markets, as well as community and farmers markets are crucial to the

propagation of price competitiveness and food quality along fresh produce supply chains.

5. Investments in infrastructure to facilitate food supply chains are critical to the Australian food industry.

The study finds that the productivity of the food supply industry depends to a large degree on private and public investment in transport and logistics facilities and freight corridors. Demand for these will rise rapidly over the coming decades especially across the high population growth belts along Australia's east coast. The food supply chain will be forced to compete with other users of freight transport as pressures in all supply chains build.

6. Food production and supply chains are expected to evolve in ways that are environmentally sustainable over the longer term.

Open-trading markets located within the heart of Australia's largest metropolitan region provide an important, daily, material link between Australia's rural heartlands and the nation's urban communities. Sydney Markets thus draws public attention to the common sense not just of the need to maintain a guaranteed supply of fresh fruit and vegetables but for these to be produced in environmentally sustainable ways.

The complexity of Australia's food distribution channels

Not only is there growing awareness of the importance to households of secure, durable access to fresh food, and of the role of competitive markets in ensuring this access, the report by the Department of Agriculture Fisheries and Forestry, called FOODmap (Spencer and Kneebone, 2012), which is referred to above, draws attention to the need for better knowledge and understanding of Australia's food distribution channels. FOODmap was motivated by the need for better knowledge of Australia's food sources in the face of changing consumer preferences, pressures from global food markets and the rising market power of major food manufacturing and retailing corporations. FOODmap contains the following findings of relevance to this study:

- Competitive market considerations are the most appropriate way to respond to changing household demographics, lifestyle preferences, personal aspirations and technologies.
- While there is a worrying level of control over fresh food marketing by major supermarkets, independent, market-based wholesalers and retailers continue to be responsible for a significant share of food transactions.
- In spite of these findings, Australia's food distribution systems are seen as not adequately promoting fresh food supply chains. FOODmap notes that fresh food supply chains have "...limited visibility to suppliers and other downstream supply chain participants" and that a "...

significant opportunity exists to better meet demands through developing better information systems and tailoring service provision.”

The study we report on here can be seen as a response to the need to promote greater visibility for a key part of the fresh food chain, notably its fresh fruit and vegetable components.

Ongoing challenges

The structure of the food market has been altered in recent years by the effects of cautious consumer spending following the global financial crisis and the impact of global economic forces on exchange rates, placing greater competitive pressure on supply chains in a number of categories. Yet while consumers have changed their purchasing behaviour—and in many cases have reduced their spending—they have maintained strong preferences for food products that save time in meal preparation, and for ‘eating out’; while continuing to express concern for the environment and the integrity of food production systems.

In this context, the FOODmap study points to these issues:

- Studies indicate that shoppers are willing to exercise their buyer power when they can see that their decisions will make a difference, such as when the direct market purchase of fresh, organic food leads to substantial improvement in quality.
- At the same time, slow growth in the overall food market since 2008 has intensified the competition between food retailers and foodservice operators, as tighter consumer spending has seen more meals eaten at home and a greater share of food sales taken by the large grocery retailers.
- This spending pattern may change, however, if improved consumer sentiment results in greater spending on meals, whether eaten at home or ‘out’; however, value for money will remain a strong priority.
- The pressures of performance and increasing competition will continue to compel food retailers and their suppliers to streamline costs; improve the effectiveness of investment in innovation; and optimise the performance of their categories by responding to consumer preferences for value and convenience as well as for wider social and environmental benefits.
- Volatility in prices and supply has increased in the food industry, due to both weather events and economic conditions. Volatility is expected to increase in the future as a result of the interdependency of commodity markets, and the expected increased impact of climate change on the stability of global food supplies and the operating environment for food producers.

Clearly, each of these observations bears on the need for efficient, high-volume market trading of fresh fruit and vegetables in our capital cities, especially in Sydney. Open trading markets are proven historically as the most efficient devices for satisfying the demands of consumers both in terms of quality supplies and for meeting consumers’ broader concerns and aspirations.

The CPC Classification system

An initial task for this study was to find a way of grouping the vast array of fruit and vegetable products that flow through the markets into a user-friendly set of categories. Unfortunately, Australia lacks a comprehensive classification of fruit and vegetables that uses standard categories across agriculture, wholesaling and retailing segments of the supply chain. This study trialed a number of classification schemes including the Australian Bureau of Statistics (ABS) index of agricultural commodities, and the ABS ANZSIC index of industrial activity. These classification systems either fail to contain sufficient sub-divisions to capture the variety of fruit and vegetable items distributed in a markets setting or else relate more to an economic activity (e.g. driving a truck) rather than to the actual commodity involved (e.g. transporting bananas).

This forced us to look internationally for a suitable classification system, a search which proved successful. The classification used, then, is known as CPC Version 2. CPC refers to 'Central Product Classification.' The CPC has been developed by the United Nations Statistics Division as a common classification scheme to enable easy identification of products as they move domestically and internationally. The CPC also assists in the development of international standards. Our use of the CPC acknowledges these advantages. In our view the CPC is also an easy-to-understand classification system with good coverage of popular Australian fruit and vegetable items and whose groupings are compatible with the nation's vast range of growing conditions. Details of the CPC can be found at <http://unstats.un.org>

Raw data collected from Sydney Markets agents were found to contain 222 separate fruit and vegetable items. These were grouped into the 15 primary categories identified in the CPC.

Data collection

Data collected for this study are for the 2010 calendar year. This was the most appropriate year given the time period for data collection and the resources available to the project. 2010 was also a relatively normal year being largely free of those heightened flooding, storm and drought events which can have a significant impact on the availability of horticultural produce from Australia's agricultural regions.

The origins of produce

The major data on origins of produce for Sydney Markets are held by the unloading service companies at Flemington. These data include details of pallet drops, agent names and grower names. Securing these data for the study required the trust and confidence of the unloading companies especially in assuring them that data would be processed in ways that ensured confidentiality and privacy were protected. Hence data collection methods required security in the collection, processing and storage of unit record data. Established procedures within the offices of the Urban Research Centre for geo-coding and analysis through Geographic Information Systems (GIS) were important in ensuring the integrity and security of the data collection exercise.

Unfortunately, most of the unloading companies do not hold records in digital formats. This meant the translation of many paper transactions into digital format. Fortunately, though, the largest unloading company did have digital records for 2010 although their format was not directly compatible with the category fields required for the project. In summary, then, a completely new data base of origin information was required to be assembled before data analysis could commence.

The study examined over one million delivery transactions in total to secure data on about 850,000 pallets delivered during the 2010 calendar year.

In addition to produce entering Sydney Markets from major trucking companies, there is also produce transported by large numbers of individual growers, mostly originating from within the Sydney basin or nearby. Neither written nor digital records are available from this group of suppliers. Consequently, a growers' survey was conducted. This was delivered in person to all contactable local growers and stand holders. Questions sought information relating to quantity, type and location of produce grown for sale at the markets. Of a possible total of 394 local growers registered as stand holders in the market in 2010, 330 were located during the time of our investigation, and 250 returned completed surveys. This is considered an excellent sample of local growers, a success rate of 76%. The majority of local growers grow what many call 'Chinese vegetables'.

Data collection on the origins of produce thus enabled designation and calculation of the following:

- The nature of the produce, classified using the CPC classification system (see above).

- The total weight of each category of produce.
- The postcode origin of the produce.
- The distance between the postcode of origin and Sydney Markets at Flemington.

The calculation of the following indicators was also undertaken:

- **Index of concentration.** This refers to the contribution of the four largest supply postcodes to the total supply of produce in a particular category, calculated as a ratio (per cent). Thus an index of concentration equal to 75.0 means that 75% of produce in a category is attributable to the four largest postcode origins.
- **Payload.** This refers to the distance over which each kilogram of produce is transported as measured in kilogram-kilometres. For example, 500 kilograms of bananas trucked over a distance of 20 kilometres converts to a total payload of 10,000 kilogram-kilometres (that is, 500 x 20).

The study reports on these calculations and indices for each of the study's 15 categories of analysis.

The destinations for produce

Data on destinations of produce sold from Sydney Markets were also difficult to secure. The data collection problem for destinations was compounded by the very large numbers of buyers, hence destinations, involved.

Here we relied on a novel data source. Sydney Market Credit Services (SMCS) operates a credit scheme for transactions within the markets. Transactions totalling over \$1 billion were processed through SMCS in 2010. It is estimated that businesses at Sydney Markets handle approximately \$3 billion in produce transactions per annum, meaning SMCS captures around 33% of total market movement at Flemington by value. A spreadsheet was obtained from SMCS showing sales data from 2007, 2008, 2009 and 2010 broken down by value and destination postcode, with analysis concentrating on the 2010 data due to their match with origin data, as described above. A total of 202 different postcode destinations were uncovered. The dataset captures the flow of fresh produce to local restaurants, fruit shops and independent grocers as well as shipments of some produce to large wholesale and supermarket distribution centres within the immediate vicinity of the markets and along the M4 and M7 logistics corridors.

Geo-coding and GIS processing

Both origins and destinations data were processed using geo-coding and geographical information systems.

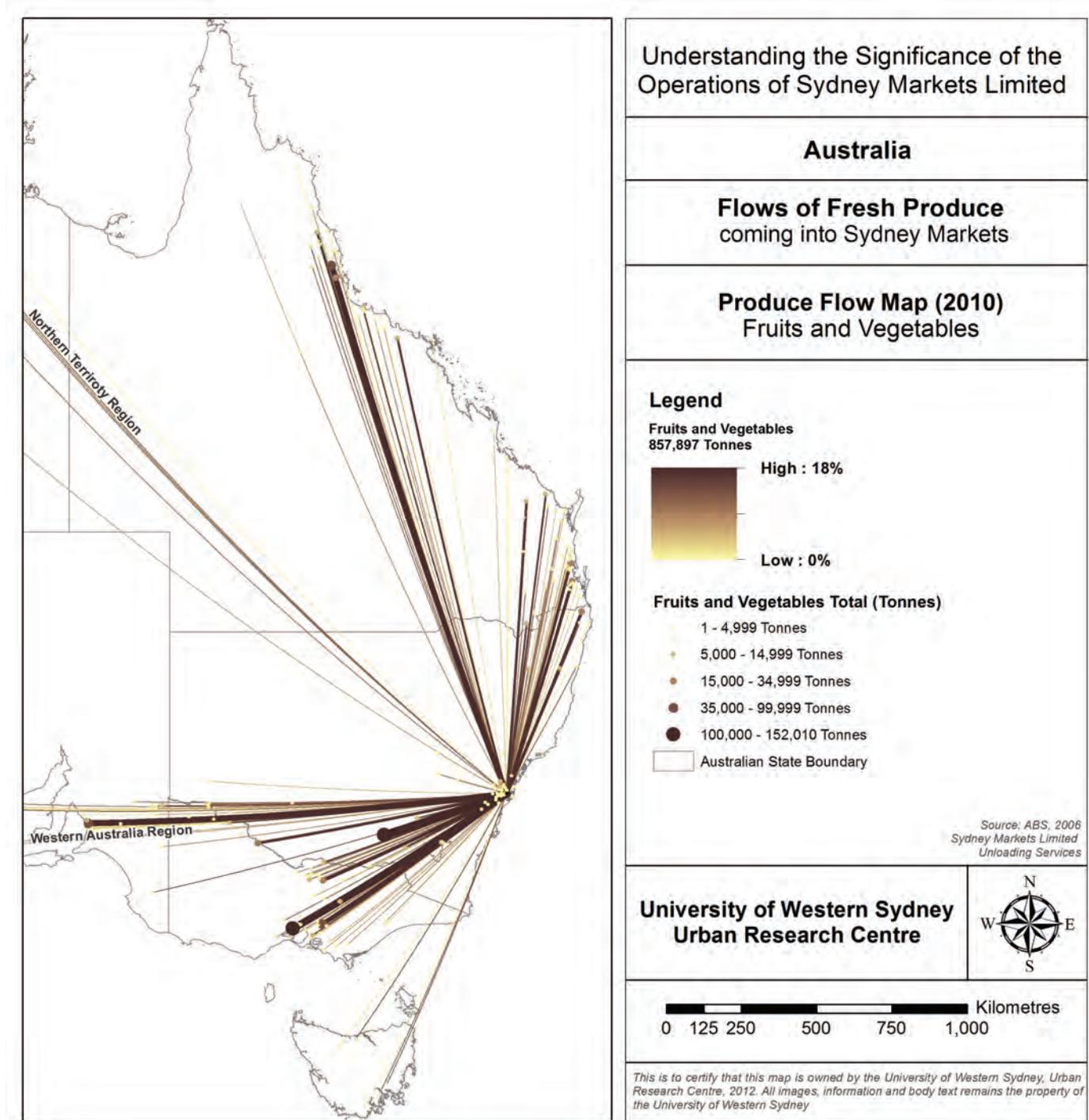
Geo-coding involves assigning a digital address to each transaction in the data set so that the actual journey undertaken can be represented within a spatial model, called a Geographical Information System (or GIS). The GIS can then be interrogated to reveal patterns and trends. Output from the GIS underpins the maps and associated analysis shown in section 5.

This section presents the findings of analysis of the data collection and processing described in section 4. The section commences with details of the total volume of produce supplied to Sydney Markets from across Australia. Then follows a detailed account of the origins of each category of fresh fruit and vegetables, as per the methods described in Section 4.

Figure 5.1 shows the origins of all fruit and vegetables supplied to Sydney Markets in 2010. A number of features of the map are important since they are reproduced in most of the maps included in this report.

- The lines on the map connect Sydney Markets, at Flemington in Sydney, to the postcodes where produce is sourced.
- These lines are coloured and weighted to give the viewer a sense of their relative importance. Darker, thicker lines indicate higher volumes of supply, measured in tonnes, while lighter coloured, thinner lines indicate lower supply volumes.
- A formal key to the colours and thickness of lines is shown in the map's legend. The reader should be wary of using this representation for anything other than general representation. There are obvious problems in aggregating across categories using only measurements of volume in tonnes. A tonne of oranges from the Riverina in New South Wales, for instance, would not equate in money value to a tonne of rocket lettuce from the Yarra Valley in Victoria.
- The representation also contains some distortion due to the ways our origin data have been collected. In some cases, a trucking company delivering to Sydney Markets may have set out from its state's capital city market or from a transport and logistics re-distribution centre rather than from the actual district of agricultural origin. We make observations about this variance in the discussion accompanying each fruit and vegetable category.
- The map is truncated to enable better visibility of the eastern portion of Australia where the overwhelmingly majority of produce is sourced. Where appropriate, though, lines referring to interstate origins lying outside the portion of the map shown are labelled with their actual place of origin.

Figure 5.1 Total flows of fresh produce to Sydney Markets



Source: Processed from data supplied by SML and from direct survey

Table 5.1 Total flows of fresh produce to Sydney Markets, by state of origin, 2010

State	Quantity of supply (tonnes)	Percentage of total
Victoria	236,827	27.5%
New South Wales	302,820	35.2%
Queensland	178,171	20.7%
South Australia	127,769	14.9%
Tasmania	4,047	0.5%
Northern Territory	3,126	0.4%
Western Australia	5,560	0.7%
New Zealand	1,737	0.2%
Total	860,057	100.0%

Source: Processed from data supplied by SML and from direct survey

Table 5.2 Total flows of fresh produce to Sydney Markets, by distance shipped, 2010

Distance band	Quantity of supply (tonnes)	Percentage of Total
0 to 150 kms	28,622	3.3%
150 to 500 kms	205,791	23.9%
500 to 1000 kms	376,603	43.8%
1000 to 2000 kms	230,693	26.8%
More than 2000 kms	18,348	2.1%
Total	860,057	100.0%

Source: Processed from data supplied by SML and from direct survey

In 2010, Sydney Markets processed over 860,000 tonnes of fresh fruit and vegetables. This equates to approximately 200 kilograms for every man, woman and child resident in the metropolitan area.

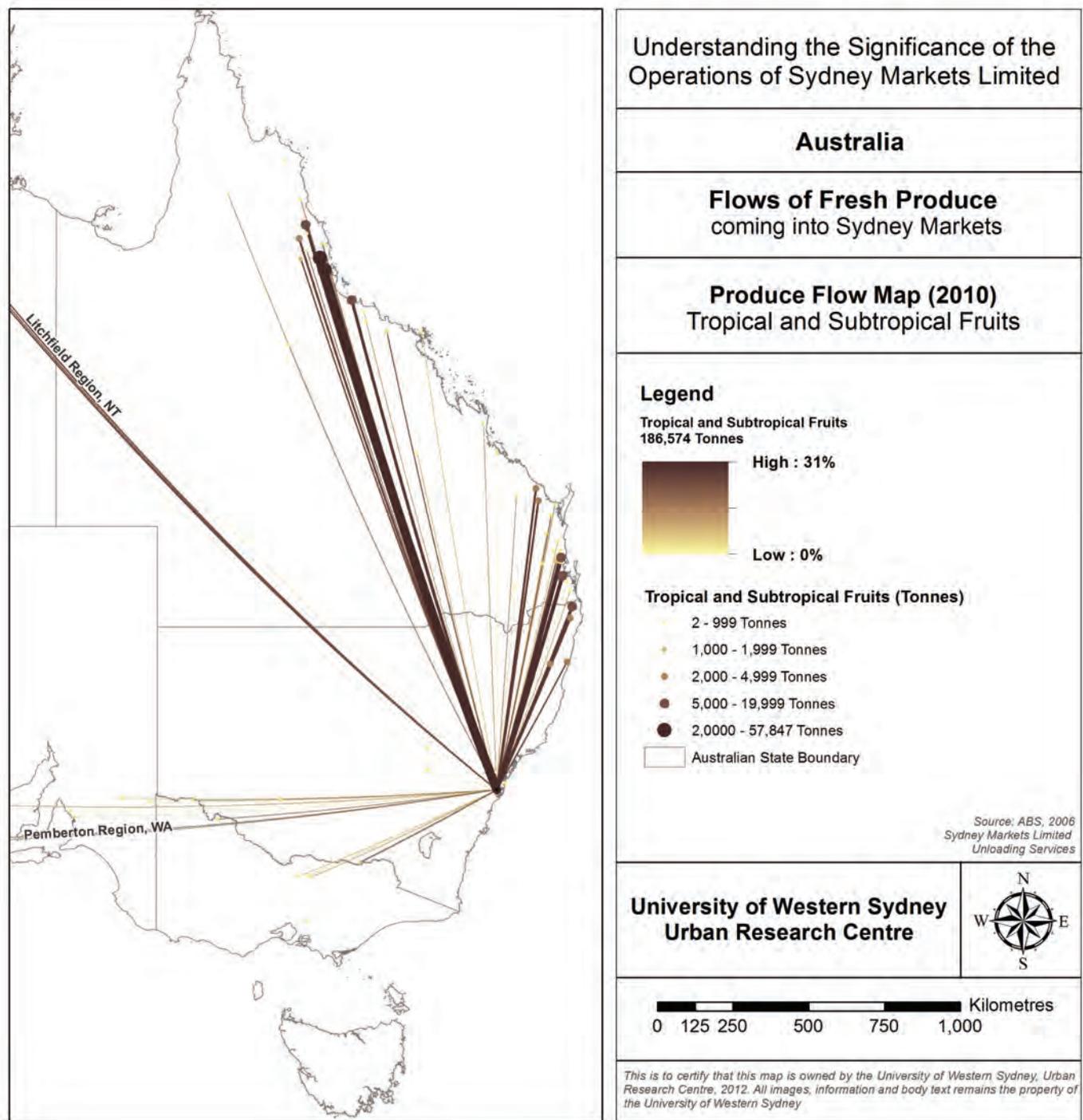
Tables 5.1 and 5.2 provide important background information for the specific categorical analysis which follows below. Table 5.1 shows that Sydney's home state, New South Wales, supplies barely a third of the produce that is distributed through Sydney Markets, even though the home state is Sydney Markets largest supply state. Table 5.1 shows the very important role played by Victoria and Queensland in the fresh fruit and vegetable supply chain and the significant though lesser role played by South Australia. Interestingly, Tasmania, Northern Territory, Western Australia and our near neighbour, New Zealand, each fail to contribute one percentage point of volume (by weight) to total supply.

Reflecting the role of Victoria and Queensland as food suppliers, table 5.2 shows that most food supplied to Sydney Markets (by weight) travels between 500 and 1000 kilometres. Just 3.33% of fruit and vegetables, as a proportion of total weight, originates within 150 kilometres of Sydney Markets. Readers may be aware of the various pleas for consumers to give preference to food sources within a 150 kilometre (or about 100 miles) radius of their home city (for example Roosevelt 2006). If this were applied to the Sydney Markets fresh food chain, then more than 96% of food sourced (by weight) would originate outside such a tributary area.

We now move to a systematic analysis of each of 15 food categories. Because of their important and distinct supply characteristics, additional analysis is undertaken for the banana and tomato items.

TROPICAL AND SUB-TROPICAL FRUITS

Figure 5.2 Total flows of tropical and sub-tropical fruits to Sydney Markets



Source: Processed from data supplied by SML and from direct survey

TROPICAL AND SUB-TROPICAL FRUITS

This category includes avocados, bananas, dates, figs, mangos, papayas and pineapples. Because of their significance bananas are also analysed as a separate item.

Table 5.3 Geographic origins of tropical and sub-tropical fruits, 2010

Rank	Origin (postcode)	Distance (kms)	Quantity (tonnes)	Quantity from postcode (%)
1	4854	1,831	57,847	31.0
2	4849	1,789	33,293	17.8
3	4518	790	18,379	9.9
4	4000	732	12,480	6.7
5	4880	1,948	9,195	4.9
6	4810	1,674	8,723	4.7
7	2484	640	8,424	4.5
8	4670	1,008	3,985	2.1
9	2480	602	3,752	2.0
10	2450	441	3,328	1.8
TOTAL (ALL POSTCODES)			186,574	

Source: Processed from data supplied by SML and from direct survey

Commentary

The most important sources of tropical and sub-tropical fruits are postcodes:

- 4854 which is the Tully district in northern Queensland, Australia's most famous banana growing area.
- 4849 which centres on the town of Cardwell, just 60 kilometres south of Tully.
- 4518 which is around the Glass House Mountains area west of Noosa Heads in Queensland.
- 4000 which probably records tropical and sub-tropical fruits transhipped within Brisbane, or by Brisbane-registered trucking companies.
- 4880 which is the Mareeba district near Cairns.
- 4810 which is the Townsville district.
- 2484 which is the Murwillumbah district in northern New South Wales.
- 2450 which is Coffs Harbour.

There were 187,000 tonnes of tropical and sub-tropical fruits shipped to the Sydney Markets in 2010.

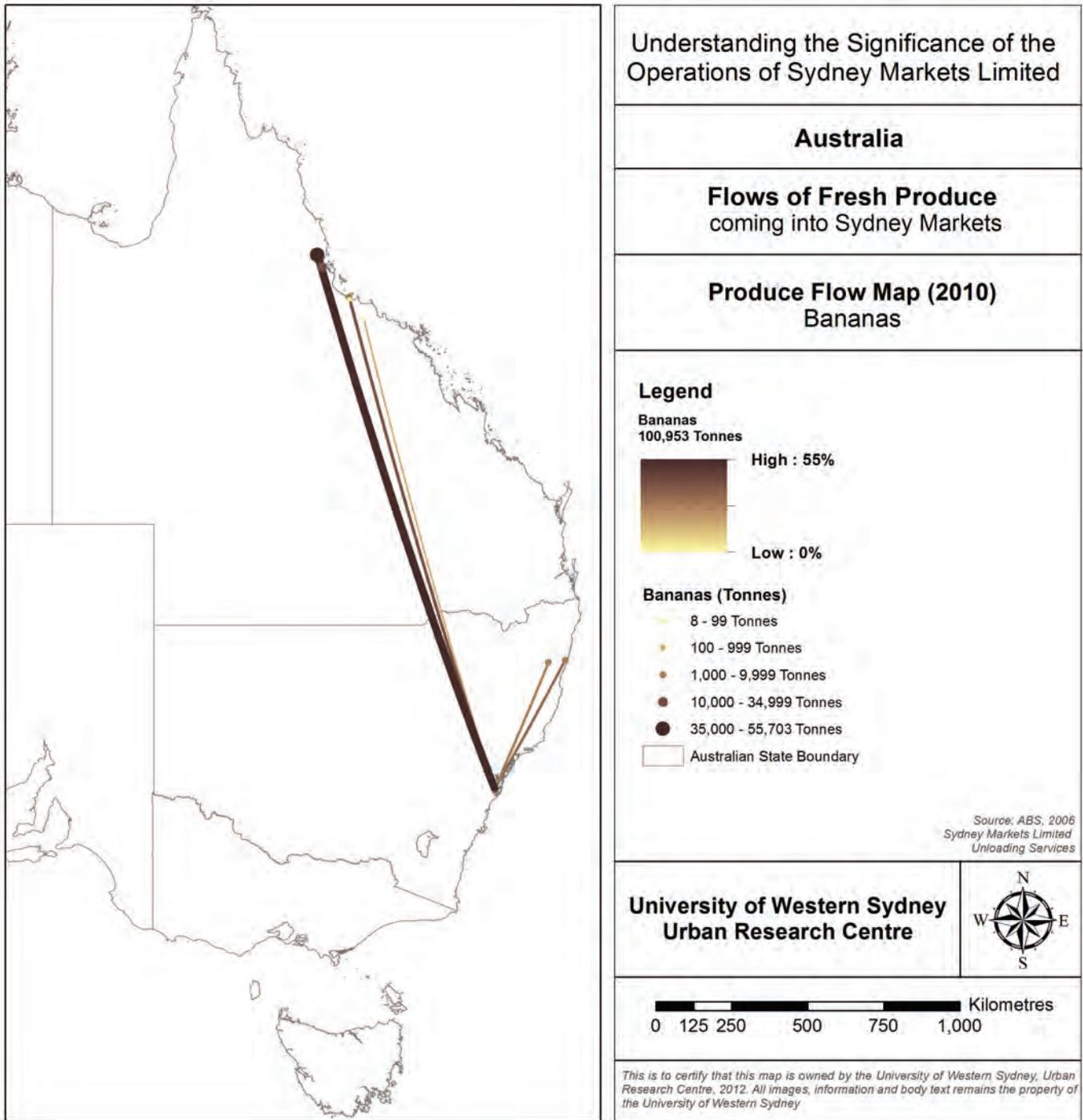
By weight, this is the largest of the 15 categories of fruit and vegetables received at the markets.

The concentration index for this category is 65.4. This is the lowest level of concentration for the 15 categories, indicating the diverse geographic origins of tropical and sub-tropical fruits, as shown on the map.

This category was a responsible for 281 billion kilogram-kilometres of payload to the Sydney Markets in 2010.

BANANAS

Figure 5.3 Total flows of bananas to Sydney Markets



Source: Processed from data supplied by SML and from direct survey

BANANAS

This item is also represented in the category 'Tropical and sub-tropical fruits'.

Table 5.4 Geographic origins of bananas, 2010

Rank	Origin (postcode)	Distance (kms)	Quantity (tonnes)	Quantity from postcode (%)
1	4854	1,831	55,703	55.2
2	4849	1,789	33,293	33.0
3	4810	1,674	8,692	8.6
4	2456	462	2,059	2.0
5	2450	441	1,144	1.1
6	4807	1,596	54	0.1
7	4812	1,668	8	0.0
TOTAL (ALL POSTCODES)			100,953	

Source: Processed from data supplied by SML and from direct survey

Commentary

Bananas are part of the tropical and sub-tropical fruits category. They are an important item at the Sydney Markets in their own right so we analyse bananas separately here.

The most important sources of bananas are postcodes:

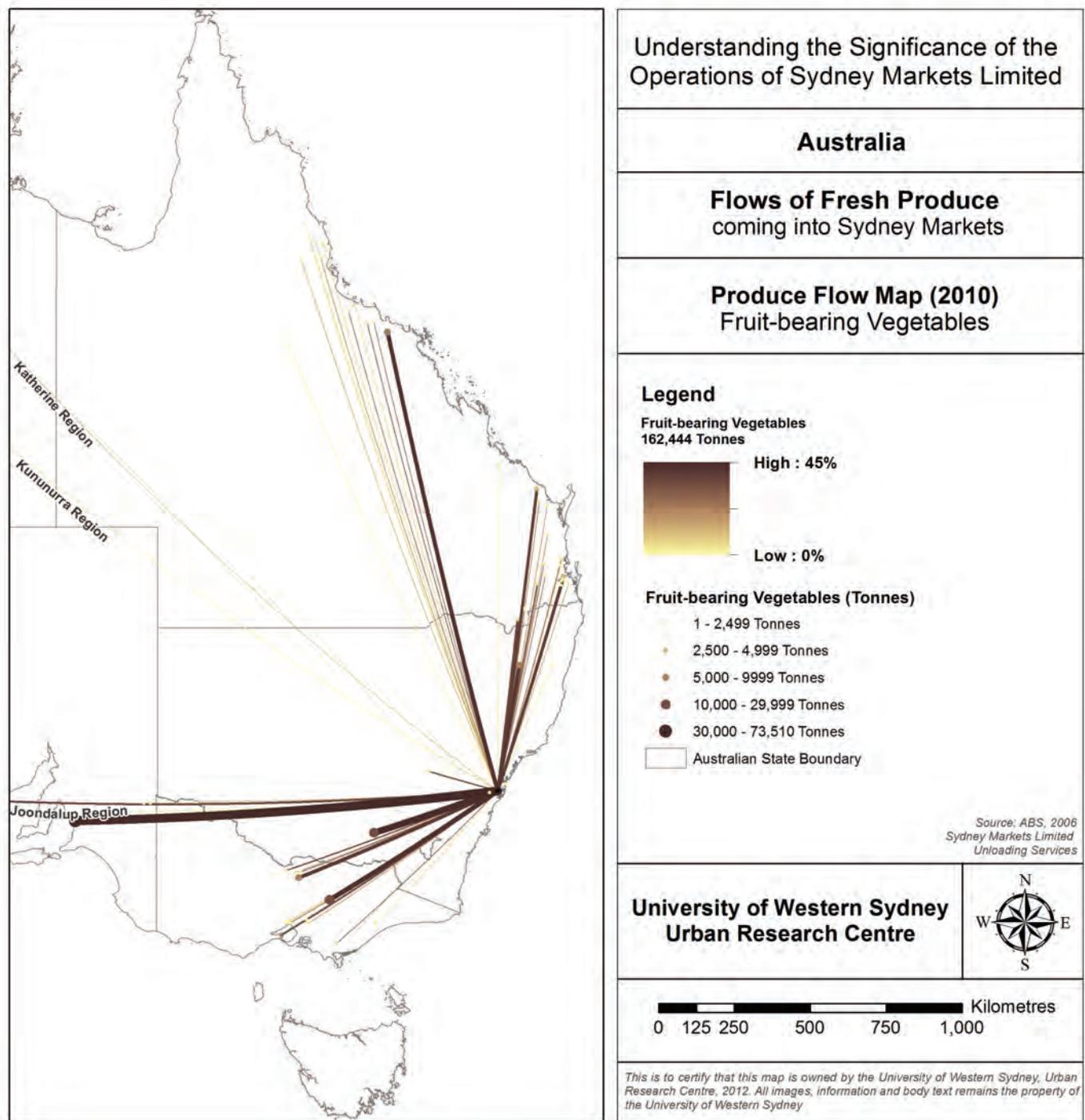
- 4854 (Tully), 4849 (Cardwell), 4810 (Townsville), 4807 (Ayr) and 4812 (Millgrave) which form Australia's major banana growing region along Queensland's far north tropical coastline.
- 2456 (Woolgoolga) and 2450 (Coffs Harbour) which form a specialist banana growing region along the mid north coast of New South Wales.

In total, there were 100,000 tonnes of bananas shipped to the Sydney Markets in 2010. This total was significantly reduced the year after following the devastation caused to the Queensland banana crop by cyclone Yasi in February 2011.

The transportation of bananas to Sydney Markets was a responsible for 177 billion kilogram-kilometres of payload in 2010.

FRUIT-BEARING VEGETABLES

Figure 5.4 Total flows of fruit-bearing vegetables to Sydney Markets



Source: Processed from data supplied by SML and from direct survey

FRUIT-BEARING VEGETABLES

This category includes capsicums, cucumbers, eggplants, tomatoes and pumpkins. Because of their significance tomatoes are also analysed as a separate item.

Table 5.5 Geographic origins of fruit-bearing vegetables, 2010

Rank	Origin (postcode)	Distance (kms)	Quantity (tonnes)	Quantity from postcode (%)
1	5110	1,056	73,510	44.6
2	2650	337	27,720	16.8
3	3722	549	10,608	6.4
4	4805	1,553	9,510	5.8
5	5120	1,059	6,116	3.7
6	2365	421	5,616	3.4
7	3616	569	5,346	3.2
8	4000	732	4,617	2.8
9	4670	1,008	3,474	2.1
10	NZ	2,333	2,496	1.5
TOTAL (ALL POSTCODES)			164,940	

Source: Processed from data supplied by SML and from direct survey

Commentary

The most important sources of fruit-bearing vegetables are postcodes:

- 5110 which is the Burton trucking centre near Elizabeth in northern Adelaide, South Australia. This is a major logistics centre for South Australian produce.
- 2650 which is Wagga Wagga and refers to the major trucking firms servicing the Riverina area of New South Wales.
- 3722 which is the town of Mansfield in central Victoria.
- 4805 which is the Bowen area of northern Queensland, Australia's most famous tomato growing district.
- 5120 which is the Virginia area, adjacent to Burton in Adelaide's north, a district which performs a major transport and logistics role.
- 2365 which is the town of Guyra in New South Wales, probably reflecting the home base of trucking companies servicing a variety of Queensland horticultural districts and supply points.

- 3616 which is the town of Tatura near Shepparton.
- 4000 which probably records vegetables in this category transhipped within Brisbane, or by Brisbane-registered trucking companies.
- 4670 which is Bundaberg on Queensland's central coast.

There were also 2,500 tonnes of vegetables in this category shipped from New Zealand.

In total, there were 164,940 tonnes of fruit-bearing vegetables shipped to the Sydney Markets in 2010.

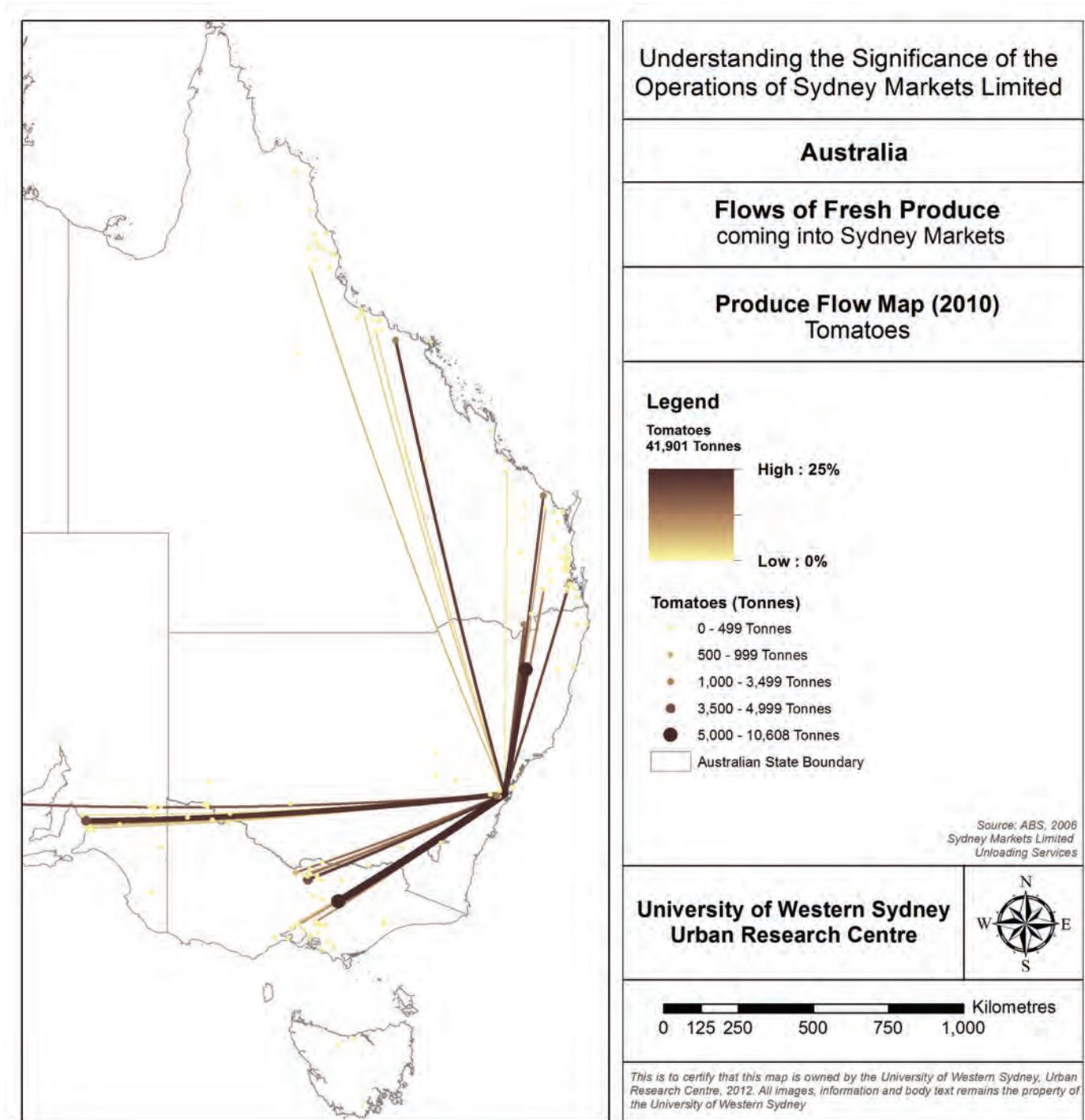
By weight, this is the second largest of the 15 categories of fruit and vegetables received at the markets.

The concentration index for this category is 73.6. This is the fourth lowest level of concentration for the 15 categories indicating relative diversity of supply within the category which ranges between tropical and sub-tropical origins for tomatoes to temperate region products like capsicum and cucumbers.

This category was responsible for 147 billion kilogram-kilometres of payload to the Sydney Markets in 2010.

TOMATOES

Figure 5.5 Total flows of tomatoes to Sydney Markets



Source: Processed from data supplied by SML and from direct survey

TOMATOES

This item is also represented in the category 'Fruit-bearing vegetables'.

Table 5.6 Geographic origins of tomatoes, 2010

Rank	Origin (postcode)	Distance (kms)	Quantity (tonnes)	Quantity from postcode (%)
1	3722	549	10,608	25.3
2	2365	421	5,616	13.4
3	5120	1,059	4,547	10.9
4	3616	569	4,207	10.0
5	4805	1,553	3,491	8.3
6	4000	732	2,808	6.7
7	4670	1,008	2,443	5.8
8	2171	20	2,080	5.0
9	6033	3,041	1,737	4.1
10	4380	572	1,201	2.9
TOTAL (ALL POSTCODES)			41,901	

Source: Processed from data supplied by SML and from direct survey

Commentary

Tomatoes are sourced from a variety of postcodes. Note that this list includes postcodes such as those from Mansfield (Victoria), Guyra (New South Wales), Virginia (South Australia) and Brisbane (Queensland) which are not tomato growing districts. Their presence on the list probably reflects the presence in these areas of trucking companies that specialise in the transshipment of tomatoes. For this reason, the table and accompanying map do not provide a true representation of the agricultural source of tomatoes, rather the location of the trucking companies servicing this agricultural product. In any event, the key postcodes are:

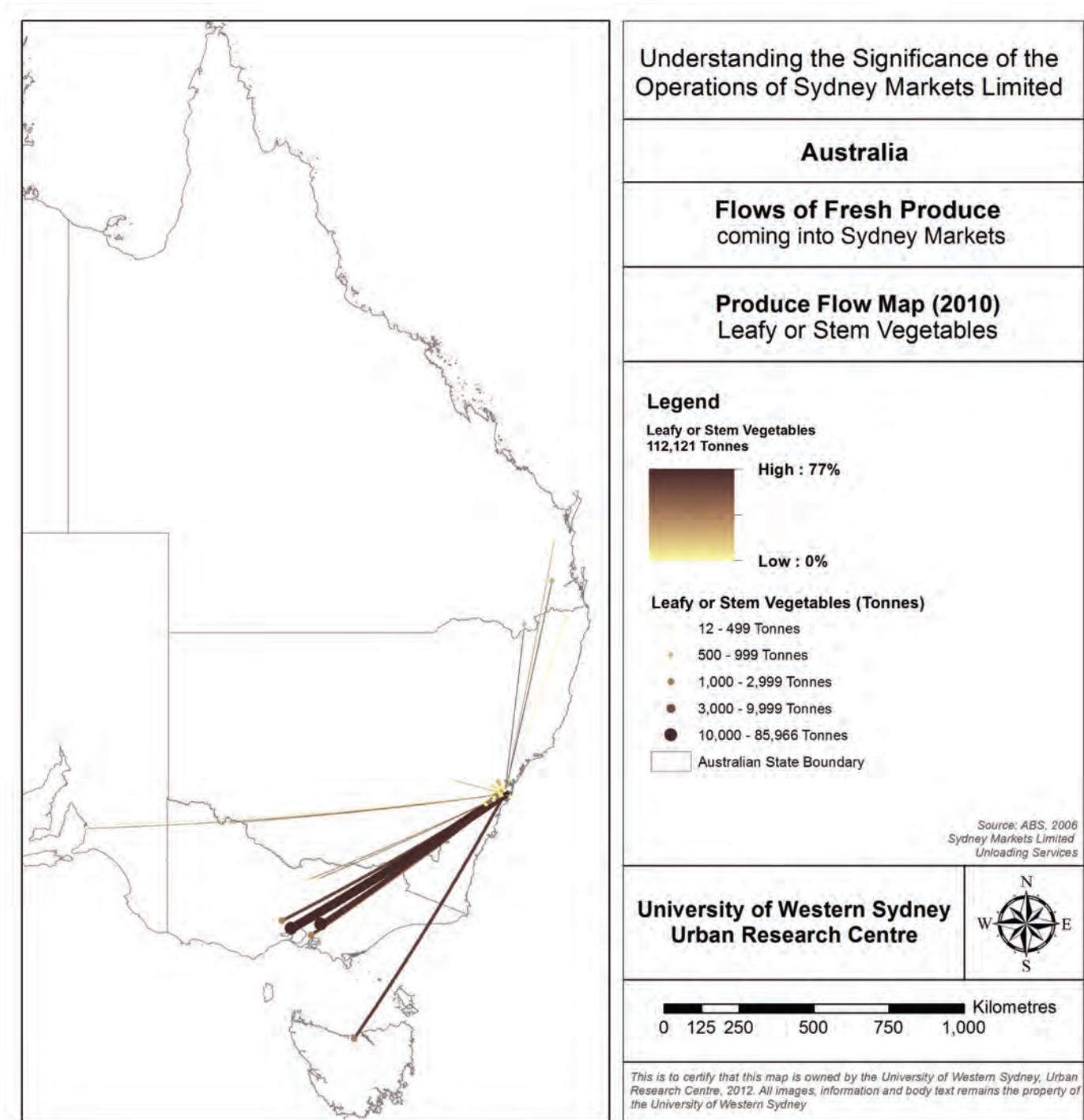
- 3722 which is the township of Mansfield in Victoria, probably reflecting its role as a transportation hub for central and eastern Victoria
- 2365 which is the township of Guyra in the New England tablelands in New South Wales, probably reflecting its role as a home base for trucking companies servicing northern New South Wales and Queensland.
- 5120 which is the township of Virginia, near Elizabeth north from Adelaide. Like Mansfield and Guyra, Virginia is a hub for companies involved in the transportation of regional produce.
- 3616 which is the Tatura township in the centre of the Shepparton fruit growing district in northern Victoria.
- 4805 which is Bowen in northern Queensland, Australia's most famous tomato growing district.
- 4000 which is the home base postcode for Brisbane-based trucking firms. These could be responsible for transporting product from anywhere in Queensland or northern New South Wales; in the case of tomatoes, probably produce from the Bowen basin.
- 4670 which is the Bundaberg district on Queensland's central coast.
- 2171 which is Hoxton Park in south west Sydney, a market gardening area as well as a major transportation base.
- 6033 which is the transportation hub area in northern Perth.
- 4380 which is a transportation hub in Queensland's Darling Downs.

There were 41,901 tonnes of tomatoes shipped to the Sydney Markets in 2010.

The transportation of tomatoes to Sydney Markets was responsible for 34 billion kilogram-kilometres of payload in 2010, although this value could well have been higher if the origin postcodes which represent the home base of trucking companies were discarded in favour of more distant agricultural districts.

LEAFY OR STEM VEGETABLES

Figure 5.6 Total flows of leafy or stem vegetables to Sydney Markets



Source: Processed from data supplied by SML and from direct survey

LEAFY OR STEM VEGETABLES

This category includes asparagus, cabbages, cauliflowers, broccoli, lettuce, spinach and artichokes.

Table 5.7 Geographic origins of leafy or stem vegetables, 2010

Rank	Origin (postcode)	Distance (kms)	Quantity (tonnes)	Quantity from postcode (%)
1	3030	675	85,966	76.7
2	3139	631	13,104	11.7
3	3977	624	2,820	2.5
4	7307	899	2,247	2.0
5	3340	697	1,872	1.7
6	2179	24	1,196	1.1
7	2756	43	898	0.8
8	4311	726	840	0.7
9	4380	572	710	0.6
10	2171	20	456	0.4
TOTAL (ALL POSTCODES)			112,121	

Source: Processed from data supplied by SML and from direct survey

Commentary

The most important sources of leafy or stem vegetables are postcodes:

- 3030 which centres on the transport hub of Werribee–Point Cook south west of Melbourne in Victoria.
- 3139 which is the Woori Yallock township at the head of the Yarra Valley east of Melbourne.
- 3977 which is the Cranbourne township in south east Melbourne.
- 7307 which is Devonport in northern Tasmania.
- 3340 which is the Bacchus March district north west of Melbourne.
- 2179 which is the Austral–Leppington market growing area in Sydney's south west.
- 2756 which is the Richmond–Hawkesbury market gardening district in Sydney's north west.

- 4311 which is the Somerset region, north west of Ipswich in southern Queensland.
- 4380 which is centred on the Darling Downs in south western Queensland.
- 2171 which is Hoxton Park, another market growing area in Sydney's south west as well as a transportation hub.

In total, there were 112,000 tonnes of leafy or stem vegetables shipped to the Sydney Markets in 2010. The three Sydney postcode sources contributed only 2.3% of this total.

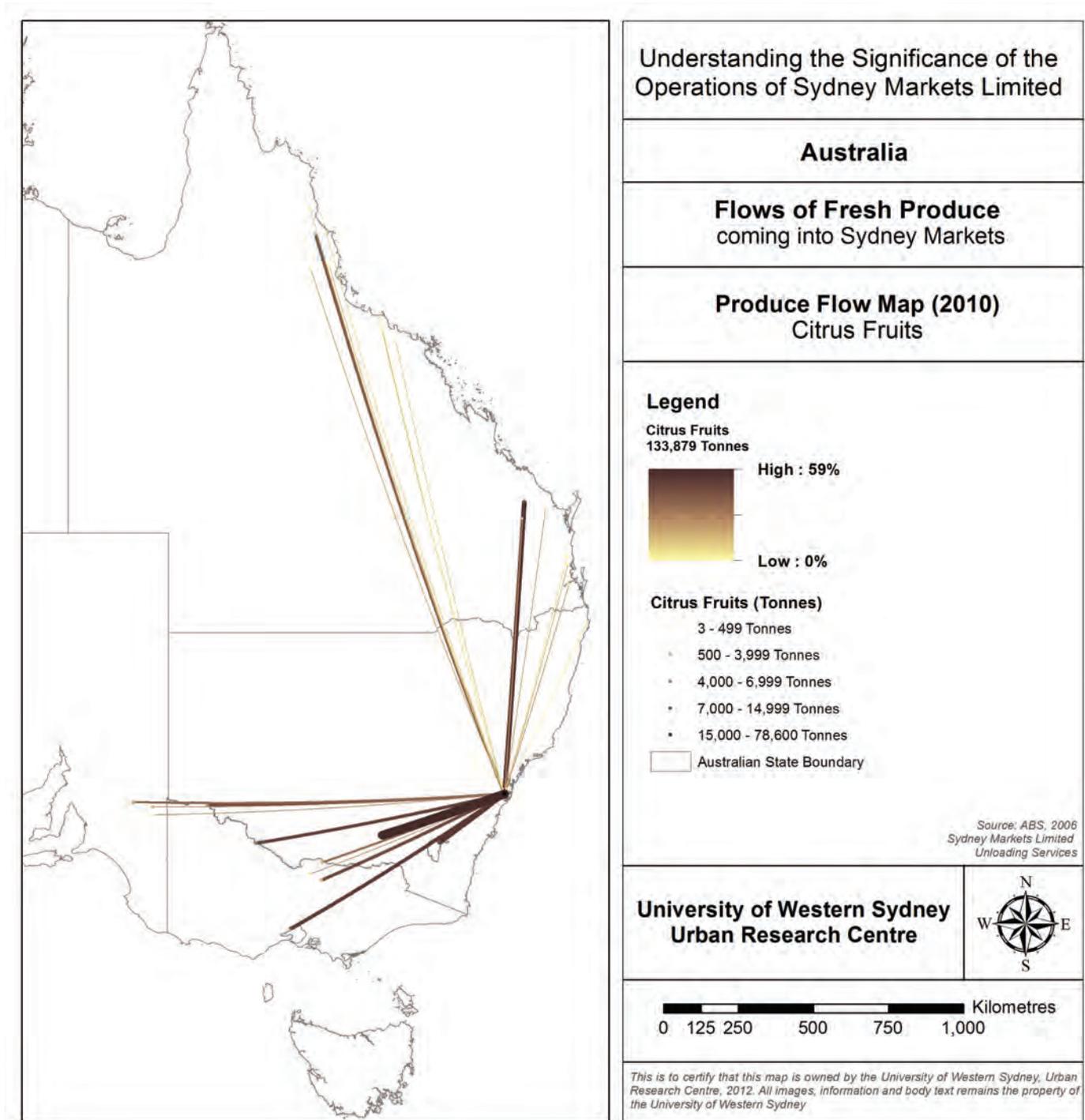
By weight, leafy or stem vegetables is the fourth largest of the 15 categories of fruit and vegetables received at the markets.

The concentration index for this category is 92.9. This is the equal third highest level of concentration for the 15 categories, reflecting the very high degree of dependency on two Victorian sources.

This category was a responsible for 73 billion kilogram-kilometres of payload to the Sydney Markets in 2010.

CITRUS

Figure 5.7 Total flows of citrus to Sydney Markets



Source: Processed from data supplied by SML and from direct survey

CITRUS

This category includes oranges, mandarins, lemons and grapefruit.

Table 5.8 Geographic origins of citrus, 2010

Rank	Origin (postcode)	Distance (kms)	Quantity (tonnes)	Quantity from postcode (%)
1	2650	337	78,600	58.7
2	4671	982	12,890	9.6
3	2603	230	10,950	8.2
4	3030	675	7,020	5.2
5	3585	665	4,000	3.0
6	3630	541	3,550	2.7
7	3500	753	3,276	2.4
8	2250	62	3,174	2.4
9	4880	1,948	2,612	2.0
10	5330	938	2,140	1.6
TOTAL (ALL POSTCODES)			133,879	

Source: Processed from data supplied by SML and from direct survey

Commentary

The most important sources of citrus are postcodes:

- 2650 which is Wagga Wagga in south western New South Wales, and refers to the major trucking firms serving the Riverina.
- 4671 which is Gin Gin near Bundaberg in Queensland.
- 2603 which is probably the Canberra address of a transport company also servicing south western New South Wales.
- 3030 which centres on the transport hub of Werribee–Point Cook south west of Melbourne in Victoria.
- 3585 which is the Swan Hill district along the Murray River in north western Victoria.
- 3630 which is Shepparton in the Goulburn River Valley in northern Victoria.

- 3500 which is Mildura, also in north western Victoria.

- 2250 which is the Somersby area on the Hawkesbury plateau north of Sydney.

In total, there were 133,879 tonnes of citrus shipped to the Sydney Markets in 2010.

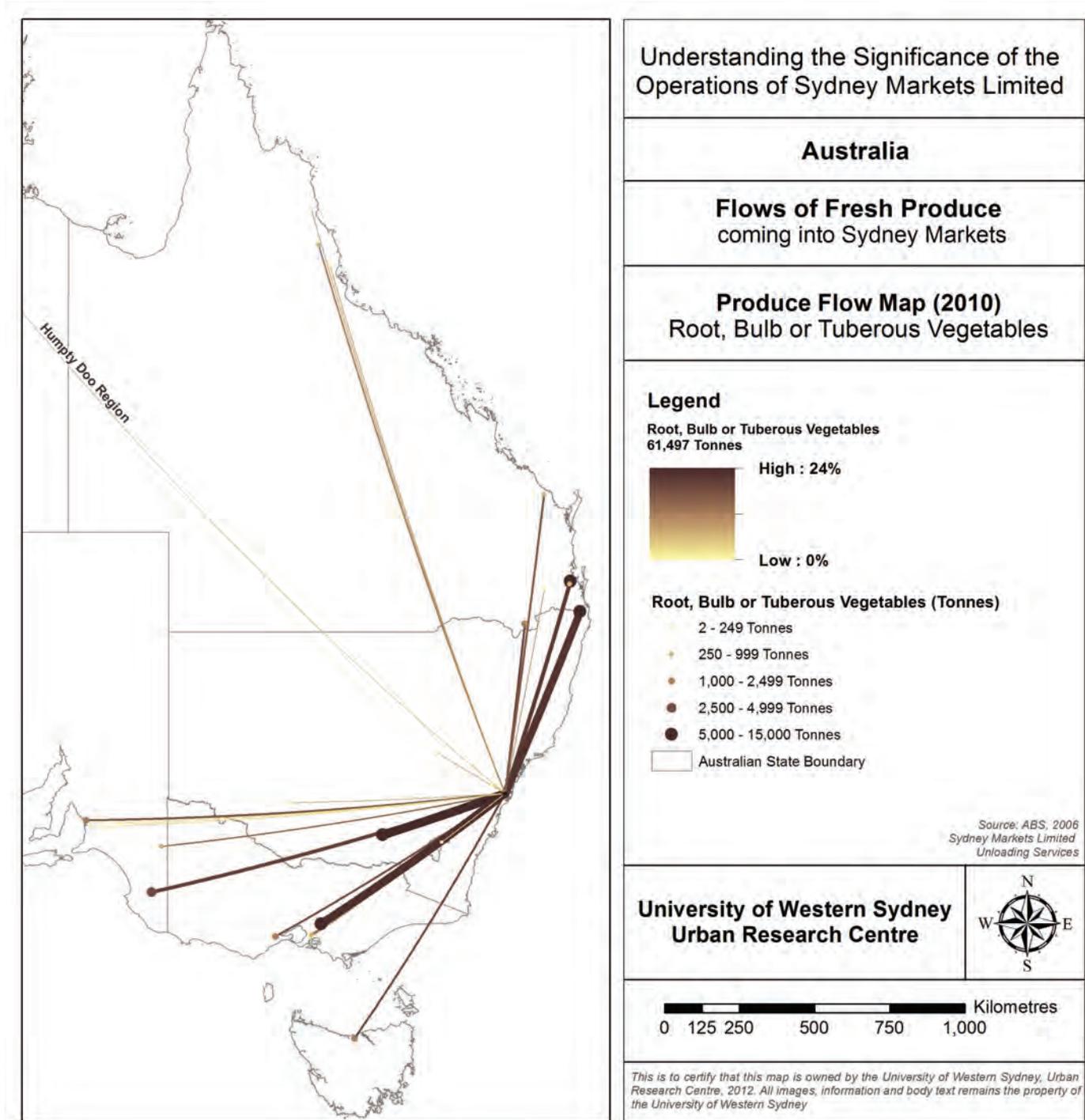
By weight, this is the third largest of the 15 categories of fruit and vegetables received at the markets.

The concentration index for this category is 81.8. This is the eighth highest level of concentration for the 15 categories.

This category was a responsible for 65 billion kilogram-kilometres of payload to the Sydney Markets in 2010.

ROOT, BULB OR TUBEROUS VEGETABLES

Figure 5.8 Total flows of root, bulb or tuberous vegetables to Sydney Markets



Source: Processed from data supplied by SML and from direct survey

ROOT, BULB OR TUBEROUS VEGETABLES

This category includes carrots, turnips, onions, leeks and potatoes

Table 5.9 Geographic origins of root, bulb or tuberous vegetables, 2010

Rank	Origin (postcode)	Distance (kms)	Quantity (tonnes)	Quantity from postcode (%)
1	2650	337	15,000	24.4
2	3139	631	13,728	22.3
3	2484	640	11,700	19.0
4	4000	732	5,537	9.0
5	5271	941	4,855	7.9
6	4380	572	2,247	3.7
7	7307	899	2,247	3.7
8	3221	743	1,342	2.2
9	5120	1,059	1,328	2.2
10	4670	1,008	921	1.5
TOTAL (ALL POSTCODES)			61,497	

Source: Processed from data supplied by SML and from direct survey

Commentary

The most important sources of root, bulb or tuberous vegetables are postcodes:

- 2650 which is Wagga Wagga and refers to trucking firms servicing the Riverina agricultural district in south western New South Wales.
- 3139 which is the Woori Yallock township in the Yarra Valley east of Melbourne.
- 2484 which is the Murwillumbah district in the Tweed River Valley in northern New South Wales.
- 4000 is Brisbane, reflecting product sourced from that city's markets or logistics companies.
- 5271 which is the Naracoorte district along South Australia's Limestone Coast.
- 4380 which is the township of Stanthorpe in Queensland's Darling Downs.
- 7307 which is Devonport in northern Tasmania.
- 3221 which is the Geelong district south west of Melbourne.
- 5120 which is the logistics township of Virginia near Elizabeth north of Adelaide.
- 4670 which is Bundaberg on Queensland's central coast.

In total, there were 61,000 tonnes of root, bulb or tuberous vegetables shipped to the Sydney Markets in 2010.

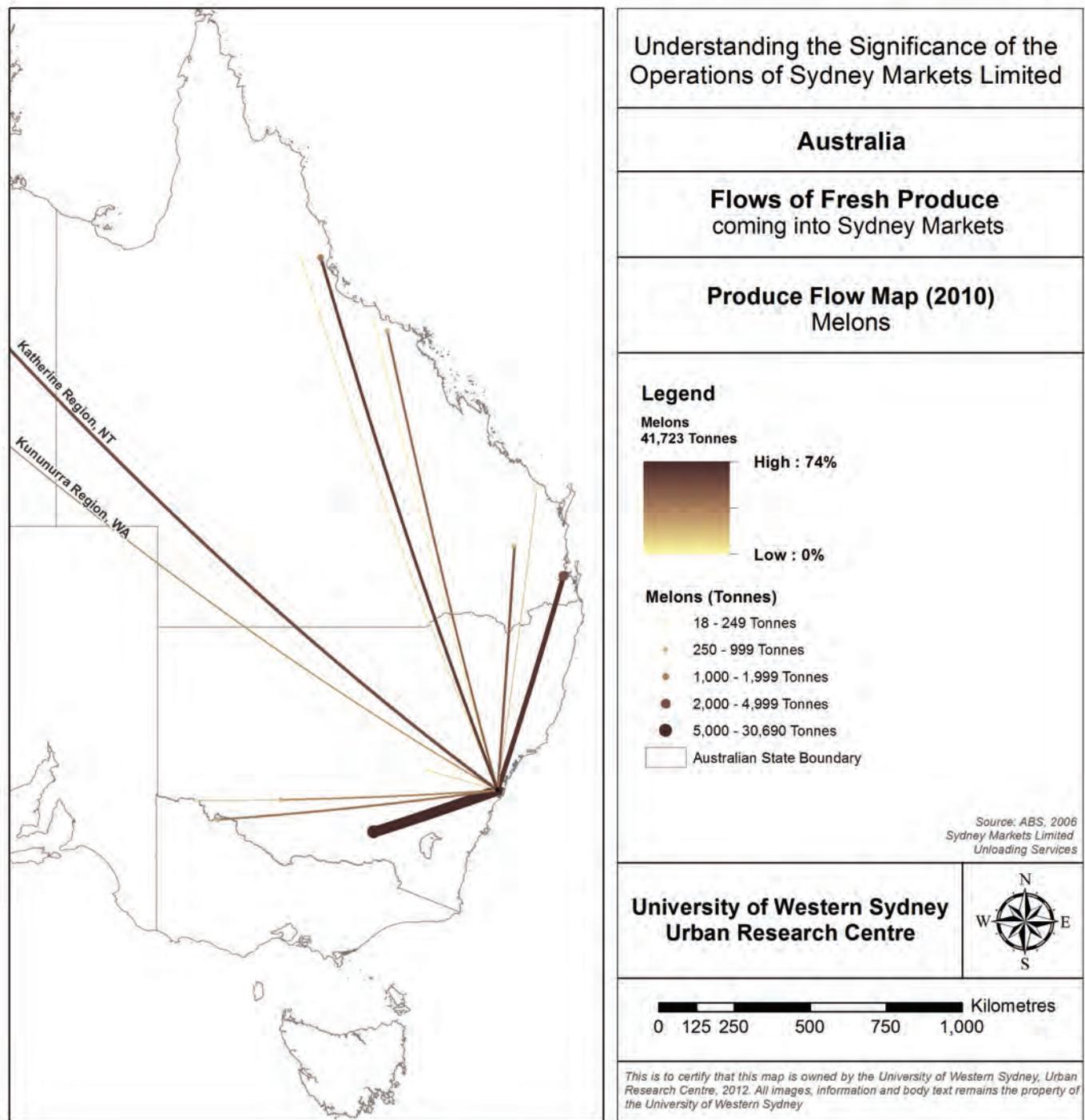
By weight, this is the fifth largest of the 15 categories of fruit and vegetables received at the markets.

The concentration index for this category is 74.7. This is the fifth lowest level of concentration for the 15 categories and shows the wide range of sources for this category of vegetables.

This category was a responsible for 39 billion kilogram-kilometres of payload to the Sydney Markets in 2010.

MELONS

Figure 5.9 Total flows of melons to Sydney Markets



Source: Processed from data supplied by SML and from direct survey

MELONS

This category includes watermelons and cantaloupes.

Table 5.10 Geographic origins of melons, 2010

Rank	Origin (postcode)	Distance (kms)	Quantity (tonnes)	Quantity from postcode (%)
1	2650	337	30,690	73.6
2	4000	732	4,633	11.1
3	4854	1,831	1,780	4.3
4	0852	2,596	1,637	3.9
5	4610	812	786	1.9
6	4805	1,553	485	1.2
7	3549	704	480	1.2
8	2711	541	428	1.0
9	6743	2,650	253	0.6
10	2739	751	234	0.6
TOTAL (ALL POSTCODES)			41,723	

Source: Processed from data supplied by SML and from direct survey

Commentary

The most important sources of melons are postcodes:

- 2650 which is Wagga Wagga and captures the trucking firms servicing the Riverina irrigated agricultural district in south western New South Wales.
- 4000 which reflects the sourcing of produce from the Brisbane markets and associated transportation firms.
- 4854 which is Tully in northern Queensland.
- 0852 which is the Katherine area in the Northern Territory. This area specialises in the supply of rockmelons (cantaloupes) and watermelons especially during Australia's winter months.

In total, there were 42,000 tonnes of melons shipped to the Sydney Markets in 2010.

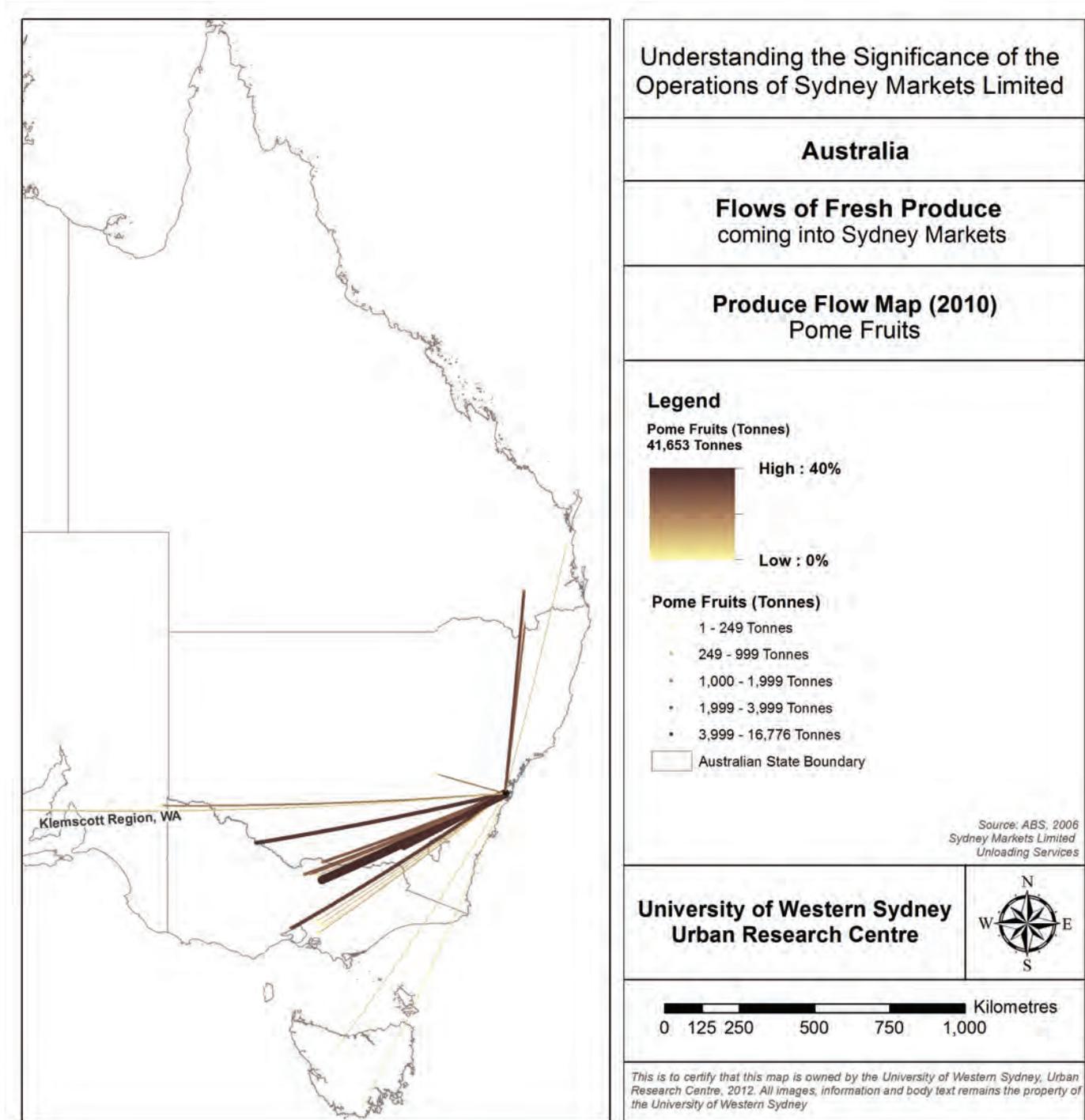
By weight, this is the sixth largest of the 15 categories of fruit and vegetables received at the markets.

The concentration index for this category is 92.9. This is the equal third highest level of concentration for the 15 categories.

This category was a responsible for 24 billion kilogram-kilometres of payload to the Sydney Markets in 2010.

POME FRUITS

Figure 5.10 Total flows of pome fruits to Sydney Markets



Source: Processed from data supplied by SML and from direct survey

POME FRUITS

This category includes apples and pears.

Table 5.11 Geographic origins of pome fruits, 2010

Rank	Origin (postcode)	Distance (kms)	Quantity (tonnes)	Quantity from postcode (%)
1	3630	541	16,776	40.3
2	2730	312	10,152	24.4
3	3585	665	4,000	9.6
4	3030	675	3,120	7.5
5	4352	679	1,987	4.8
6	3620	569	1,685	4.0
7	3644	511	1,344	3.2
8	3629	555	1,044	2.5
9	4380	572	707	1.7
10	5341	868	237	0.6
TOTAL (ALL POSTCODES)			41,653	

Source: Processed from data supplied by SML and from direct survey

Commentary

The most important sources of apple and pears are postcodes:

- 3630 which is Shepparton, on the Goulburn River in northern Victoria.
- 2730 which is the Batlow district in the Southern Highlands south of Sydney.
- 3585 which is the Swan Hill area on the Murray River in north western Victoria.
- 3030 which centres on the transport hub of Werribee–Point Cook south west of Melbourne in Victoria.
- 4352 which centres on Toowoomba west of Brisbane.
- 3620 which is the Kyabram district in Victoria west of Shepparton.

- 3644 which is the Cobram district along the Murray River in northern Victoria.
- 3629 which is the Mooroopna part of the Shepparton fruit growing district in northern Victoria.

In total, there were 42,000 tonnes of pome fruits shipped to the Sydney Markets in 2010.

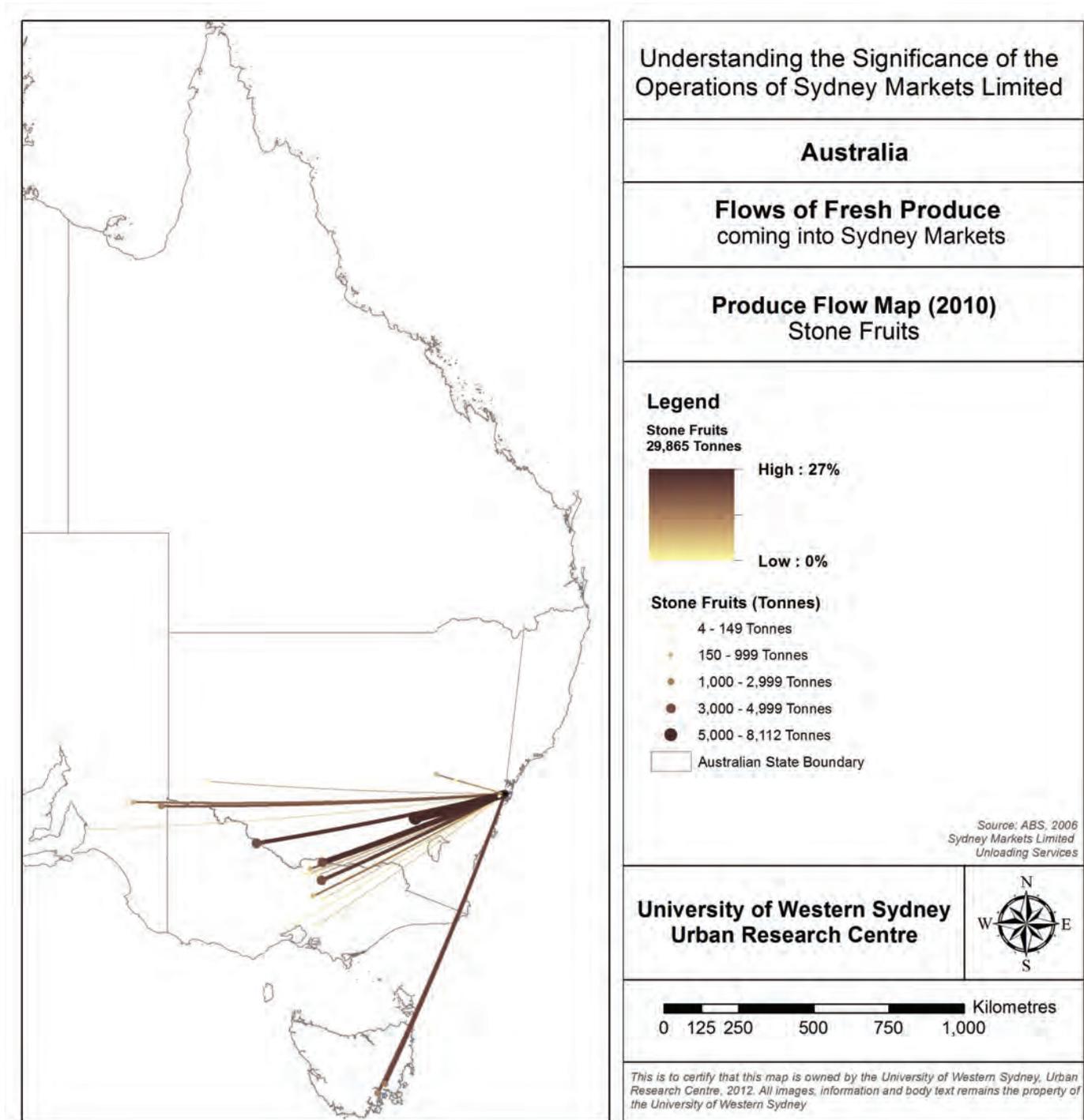
By weight, pome fruits is the seventh largest of the 15 categories of fruit and vegetables received at the markets.

The concentration index for this category is 81.7. This is the ninth highest level of concentration for the 15 categories.

This category was responsible for 22 billion kilogram-kilometres of payload to the Sydney Markets in 2010.

STONE FRUITS

Figure 5.11 Total flows of stone fruits to Sydney Markets



Source: Processed from data supplied by SML and from direct survey

STONE FRUITS

This category includes apricots, cherries, peaches, nectarines and plums.

Table 5.12 Geographic origins of stone fruits, 2010

Rank	Origin (postcode)	Distance (kms)	Quantity (tonnes)	Quantity from postcode (%)
1	2587	240	8,112	27.2
2	3644	511	4,778	16.0
3	3585	665	4,000	13.4
4	3630	541	3,640	12.2
5	7026	1,015	2,808	9.4
6	7000	1,050	2,496	8.4
7	5341	868	1,669	5.6
8	3635	548	600	2.0
9	5330	938	428	1.4
10	3664	587	316	1.1
TOTAL (ALL POSTCODES)			29,865	

Source: Processed from data supplied by SML and from direct survey

Commentary

The most important sources of stone fruits are postcodes:

- 2587 which is the Harden fruit growing district in southern New South Wales.
- 3644 which is the district based around Cobram on the Murray River in northern Victoria.
- 3585 which is the Swan Hill horticultural district on the Murray River in north western Victoria.
- 3630 which is the Shepparton fruit growing district on the Goulburn River in northern Victoria.
- 7026 and 7000 which are within the Hobart area and probably represent transshipment agents for Tasmania growers and marketers.
- 5341 which is the Renmark fruit growing district in South Australia.

In total, there were 30,000 tonnes of stone fruit shipped to the Sydney Markets in 2010.

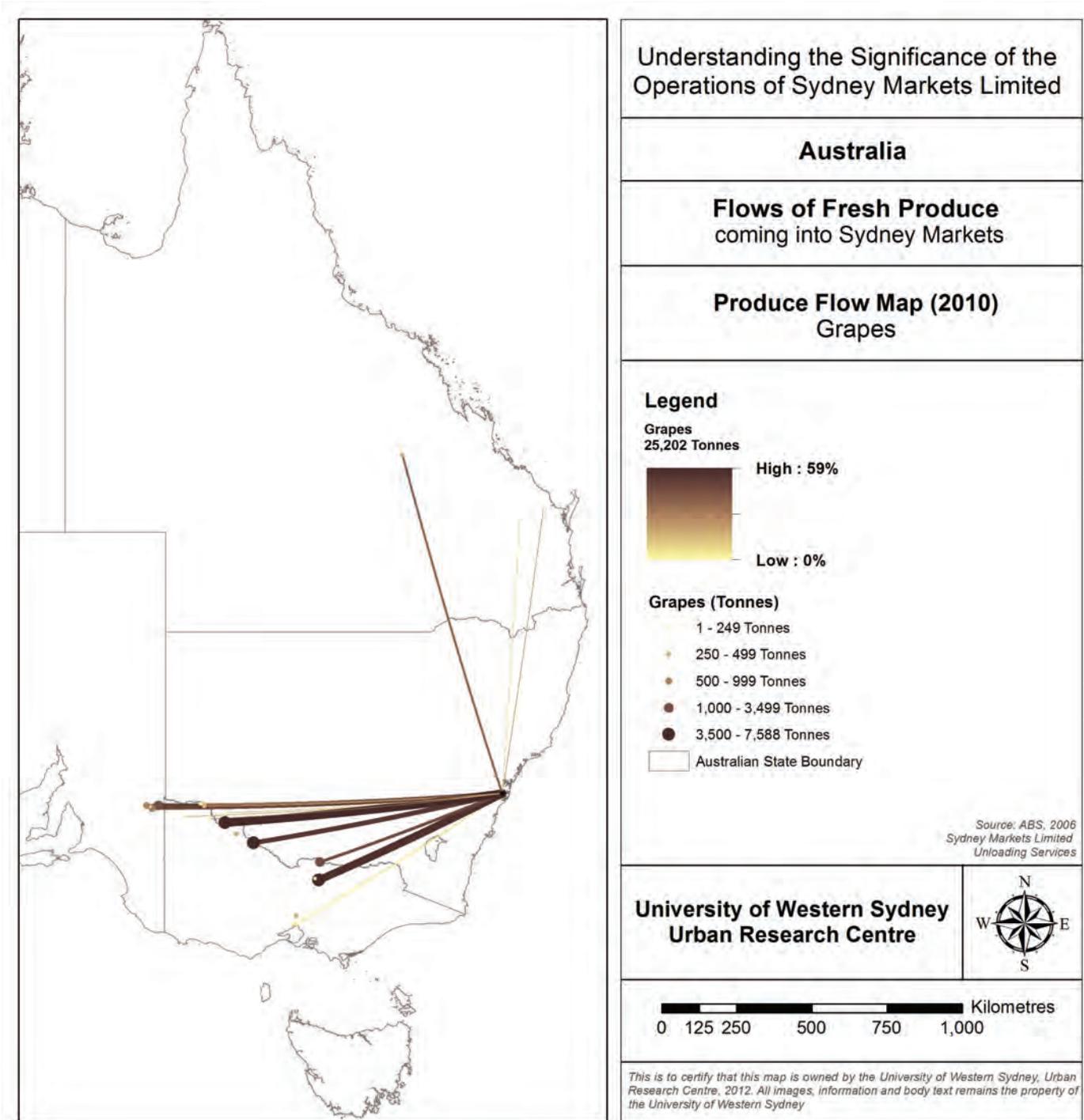
By weight, this is the eight largest of the 15 categories of fruit and vegetables received at the markets.

The concentration index for this category is 68.7. This is the second lowest level of concentration for the 15 categories reflecting a diversity of supply regions for the stone fruit category.

The stone fruit category was a responsible for 18 billion kilogram-kilometres of payload to the Sydney Markets in 2010.

GRAPES

Figure 5.12 Total flows of grapes to Sydney Markets



Source: Processed from data supplied by SML and from direct survey

GRAPES

This category includes predominantly table grapes.

Table 5.13 Geographic origins of grapes, 2010

Rank	Origin (postcode)	Distance (kms)	Quantity (tonnes)	Quantity from postcode (%)
1	3549	704	7,588	30.1
2	3630	541	6,814	27.0
3	3585	665	3,500	13.9
4	5341	868	2,829	11.2
5	3644	511	1,000	4.0
6	5343	885	630	2.5
7	5345	898	500	2.0
8	4720	1,165	480	1.9
9	3064	695	315	1.2
10	3597	645	315	1.2
TOTAL (ALL POSTCODES)			25,202	

Source: Processed from data supplied by SML and from direct survey

Commentary

The most important sources of grapes are postcodes:

- 3549 which is Robinvale on the Victorian side of the Murray River between Mildura and Swan Hill.
- 3630 which is Shepparton in the heart of Victoria's Goulburn River Valley fruit growing region.
- 3585 which is Swan Hill on the Murray River in north western Victoria.
- 5341 which is the Renmark area, also on the Murray River as it enters South Australia.
- 3644 which is the Cobram district on the Murray River in northern Victoria.

In total, there were 25,000 tonnes of grapes shipped to the Sydney Markets in 2010.

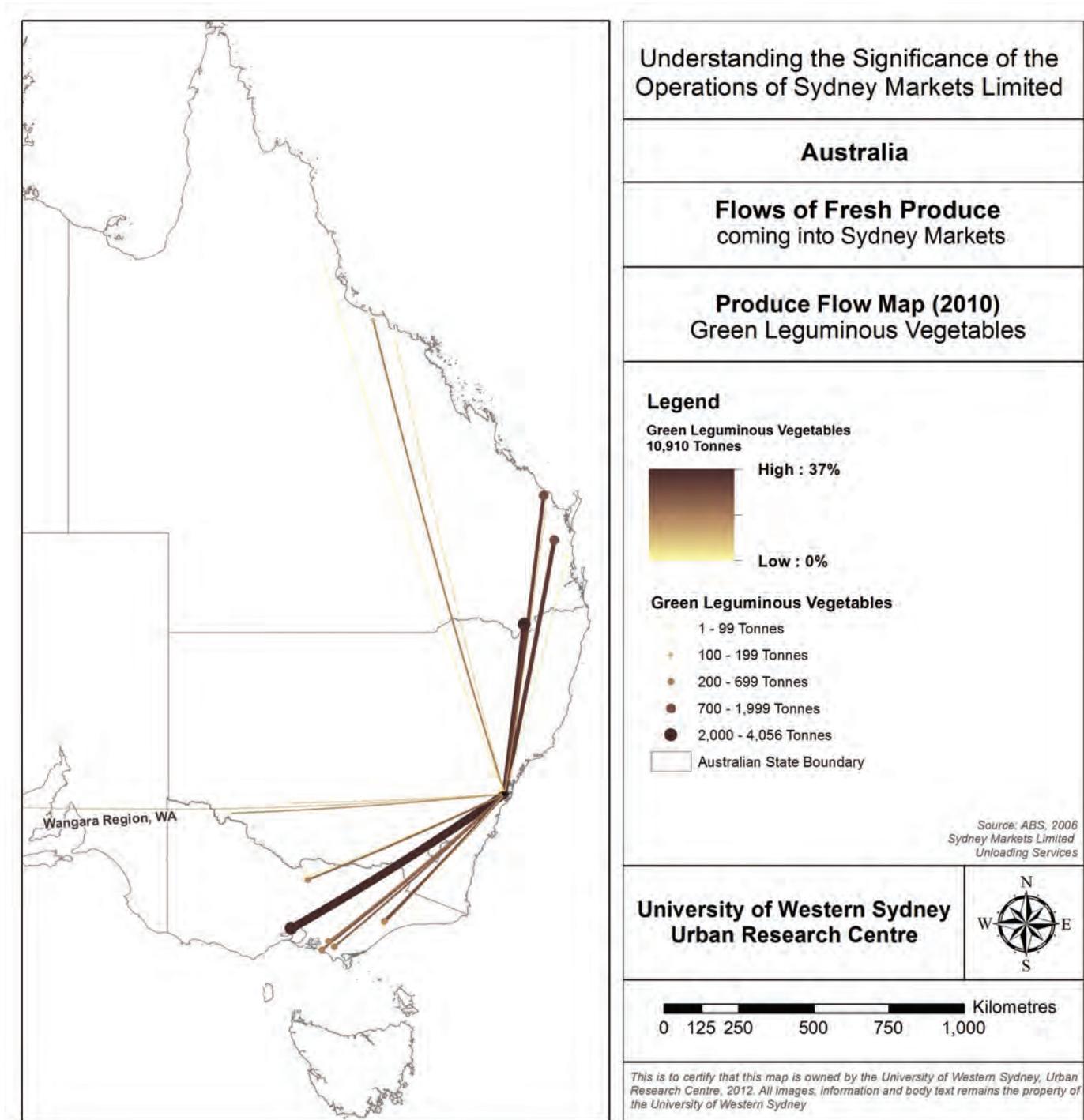
By weight, this is the tenth largest of the 15 categories of fruit and vegetables received at the markets.

The concentration index for this category is 82.3. This is the sixth highest level of concentration for the 15 categories. The accompanying map shows the importance of irrigated districts along the Murray River basin for sourcing of grapes for the Sydney Markets.

This category was a responsible for 17 billion kilogram-kilometres of payload to the Sydney Markets in 2010.

GREEN LEGUMINOUS VEGETABLES

Figure 5.13 Total flows of green leguminous vegetables to Sydney Markets



Source: Processed from data supplied by SML and from direct survey

GREEN LEGUMINOUS VEGETABLES

This category includes beans and peas.

Table 5.14 Geographic origins of green leguminous vegetables, 2010

Rank	Origin (postcode)	Distance (kms)	Quantity (tonnes)	Quantity from postcode (%)
1	3030	675	4,056	37.2
2	4380	572	2,891	26.5
3	4570	863	1,248	11.4
4	4670	1,008	737	6.8
5	3875	521	576	5.3
6	3995	691	278	2.5
7	3953	663	258	2.4
8	3616	569	242	2.2
9	3988	660	200	1.8
10	4809	1,631	146	1.3
TOTAL (ALL POSTCODES)			10,910	

Source: Processed from data supplied by SML and from direct survey

Commentary

The most important sources of green leguminous vegetables are postcodes:

- 3030 which is the Werribee–Point Cook transport hub south west of Melbourne.
- 4380 which centres on Stanthorpe in Queensland's Darling Downs.
- 4570 which is the Gympie district in the Wide Bay–Burnett region about 160 kilometres north from Brisbane.
- 4670 which centres on Bundaberg on Queensland's central coast.

- 3875 which is the Bairnsdale area in Victoria's Gippsland region, east of Melbourne.

In total, there were 11,000 tonnes of green leguminous vegetables shipped to the Sydney Markets in 2010.

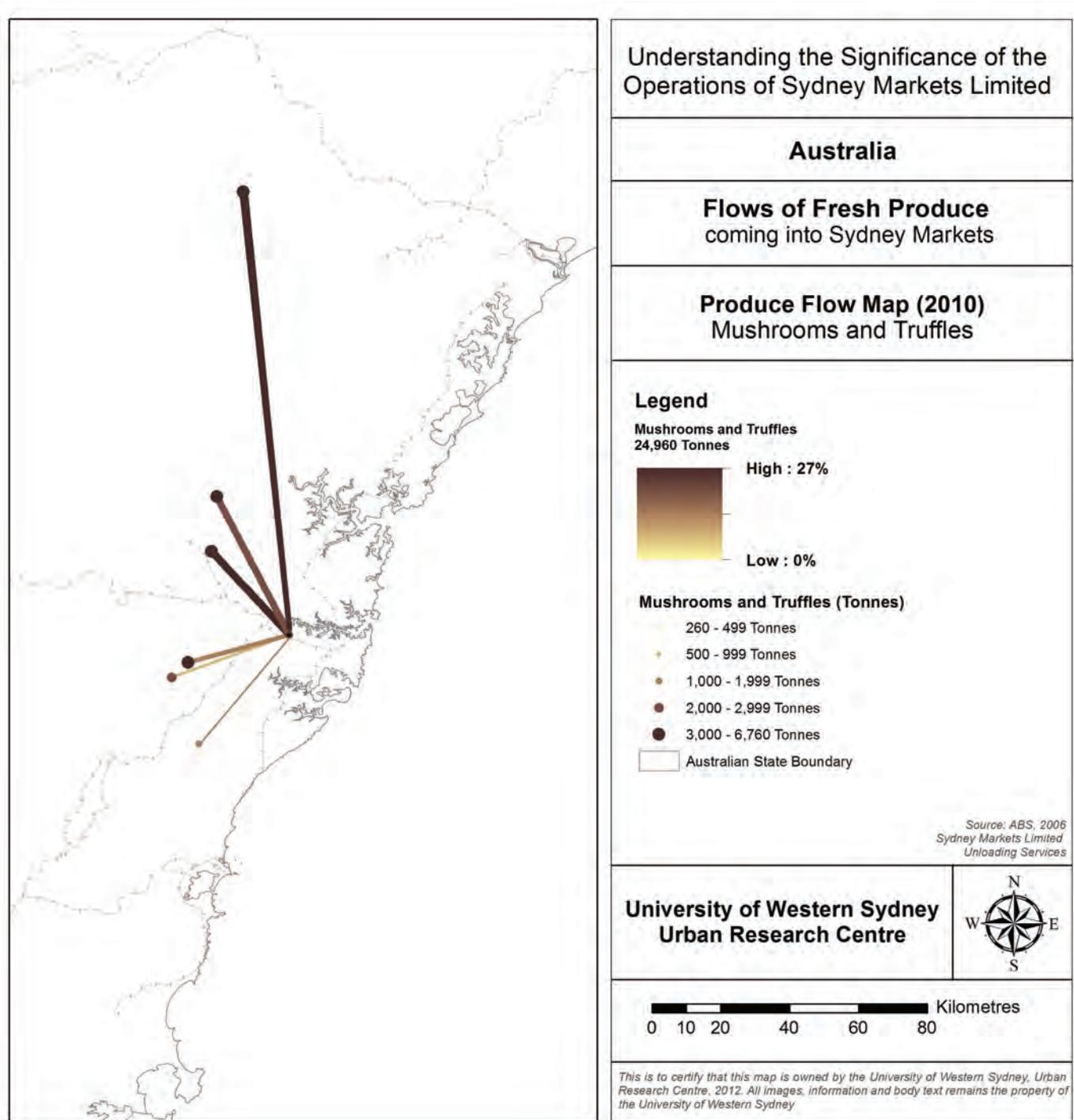
By weight, this is the twelfth largest of the 15 categories of fruit and vegetables received at the markets.

The concentration index for this category is 81.9. This is the seventh highest level of concentration for the 15 categories.

This category was a responsible for 7.6 billion kilogram-kilometres of payload to the Sydney Markets in 2010.

MUSHROOMS AND TRUFFLES

Figure 5.14 Total flows of mushrooms and truffles to Sydney Markets



Source: Processed from data supplied by SML and from direct survey

MUSHROOMS AND TRUFFLES

Table 5.15 Geographic origins of mushrooms and truffles, 2010

Rank	Origin (postcode)	Distance (kms)	Quantity (tonnes)	Quantity from postcode (%)
1	2765	30	6,760	27.1
2	2756	43	5,720	22.9
3	2179	24	3,120	12.5
4	2330	183	3,120	12.5
5	2557	29	2,080	8.3
6	2560	42	1,300	5.2
7	4000	689	1,300	5.2
8	3825	656	780	3.1
9	2315	202	520	2.1
10	2575	91	260	1.0
TOTAL (ALL POSTCODES)			24,960	

Source: Processed from data supplied by SML and from direct survey

Commentary

The most important sources of mushrooms and truffles are postcodes:

- 2765 and 2756 which cover the areas in and around Riverstone, Vineyard and Windsor in north west Sydney.
- 2179, 2557 and 2560 which cover the areas in and around Austral-Leppington, Catherine Field and Campbelltown in south west Sydney.
- 2330 which centres on Singleton in the Hunter Valley, New South Wales.
- 4000 which seems to represent mushroom produce sent to Sydney via handlers in Brisbane.

In total, there were 25,000 tonnes of mushrooms and truffles shipped to the Sydney Markets in 2010.

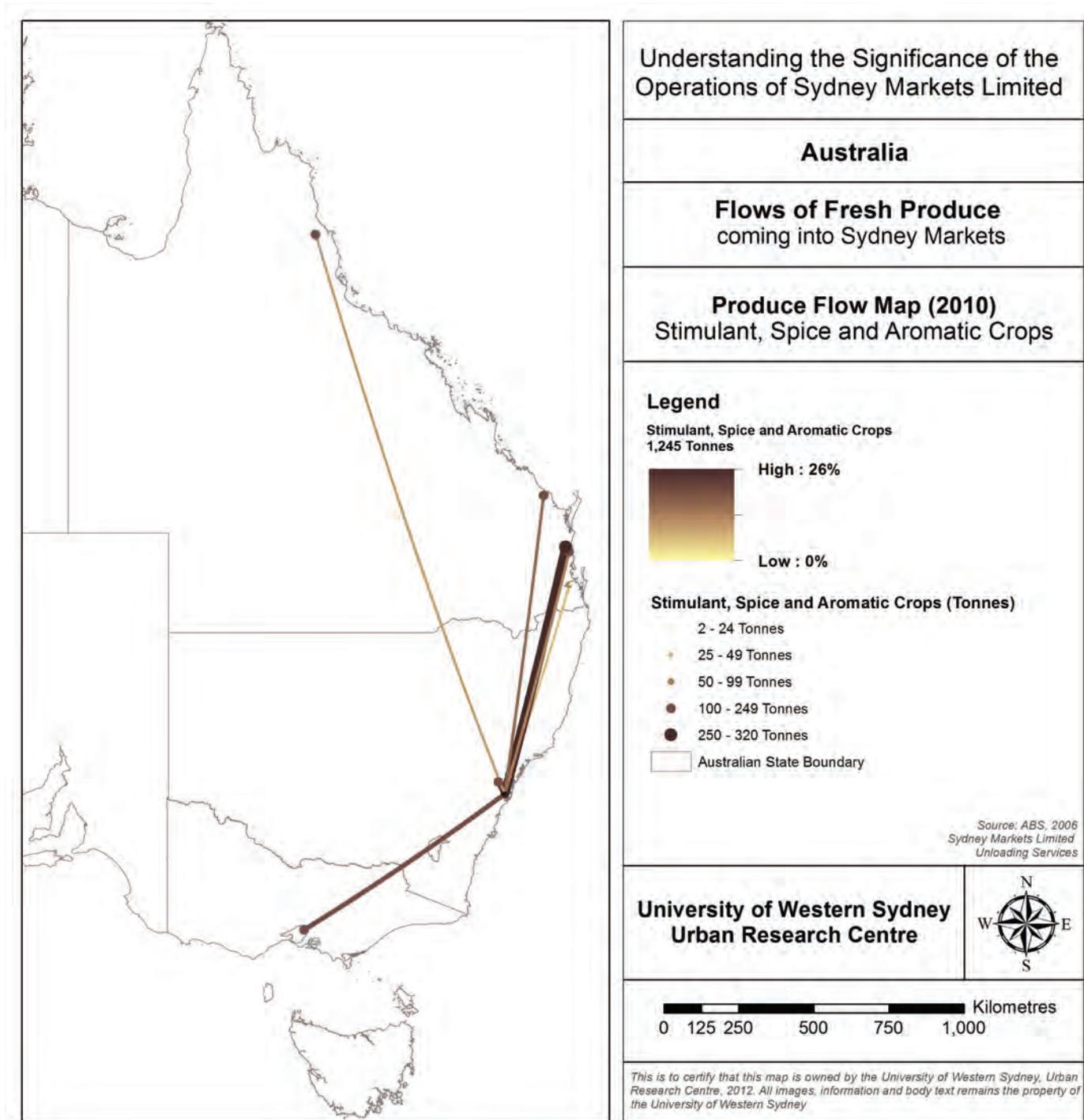
By weight, this is the eleventh largest of the 15 categories of fruit and vegetables received at the markets.

The concentration index for this category is 75.0. This is the sixth lowest level of concentration for the 15 categories, although the index fails to capture the high concentration of sourcing from within the Sydney basin area.

This category was a responsible for nearly three billion kilogram-kilometres of payload to the Sydney Markets in 2010.

STIMULANTS, SPICES AND AROMATICS

Figure 5.15 Total flows of stimulants, spices and aromatics to Sydney Markets



Source: Processed from data supplied by SML and from direct survey

STIMULANTS, SPICES AND AROMATICS

This category includes coffee, tea, mate, cocoa, pepper, dry chillies and other spices

Table 5.16 Geographic origins of stimulants, spices and aromatics, 2010

Rank	Origin (postcode)	Distance (kms)	Quantity (tonnes)	Quantity from postcode (%)
1	4563	844	320	25.7
2	2756	43	248	19.9
3	3192	674	204	16.4
4	4670	1,008	192	15.4
5	4561	831	118	9.5
6	4880	1,948	100	8.0
7	4106	722	60	4.8
8	4121	726	2	0.2
9	2129	-	1	0.1
TOTAL (ALL POSTCODES)			1,245	

Source: Processed from data supplied by SML and from direct survey

Commentary

This category has an exotic title reflecting the various specialised types of produce grouped within it. The most important sources of stimulant, spice and aromatic plants and plant materials are postcodes:

- 4563 which is the Cooroy township inland from Noosa Heads on Queensland's Sunshine Coast.
- 2756 which is the Windsor area on the Hawkesbury River in north west Sydney.
- 3192 which centres on Cheltenham in south east Melbourne.
- 4670 which is Bundaberg on Queensland's central coast.
- 4561 which is the township of Yandina, adjacent to the Cooroy district, on the Maroochy River north from Brisbane.

- 4880 which is the township of Mareeba, inland from Cairns in Queensland.

In total, there were only 1,245 tonnes of stimulant, spice and aromatic plants and plant materials shipped to the Sydney Markets in 2010.

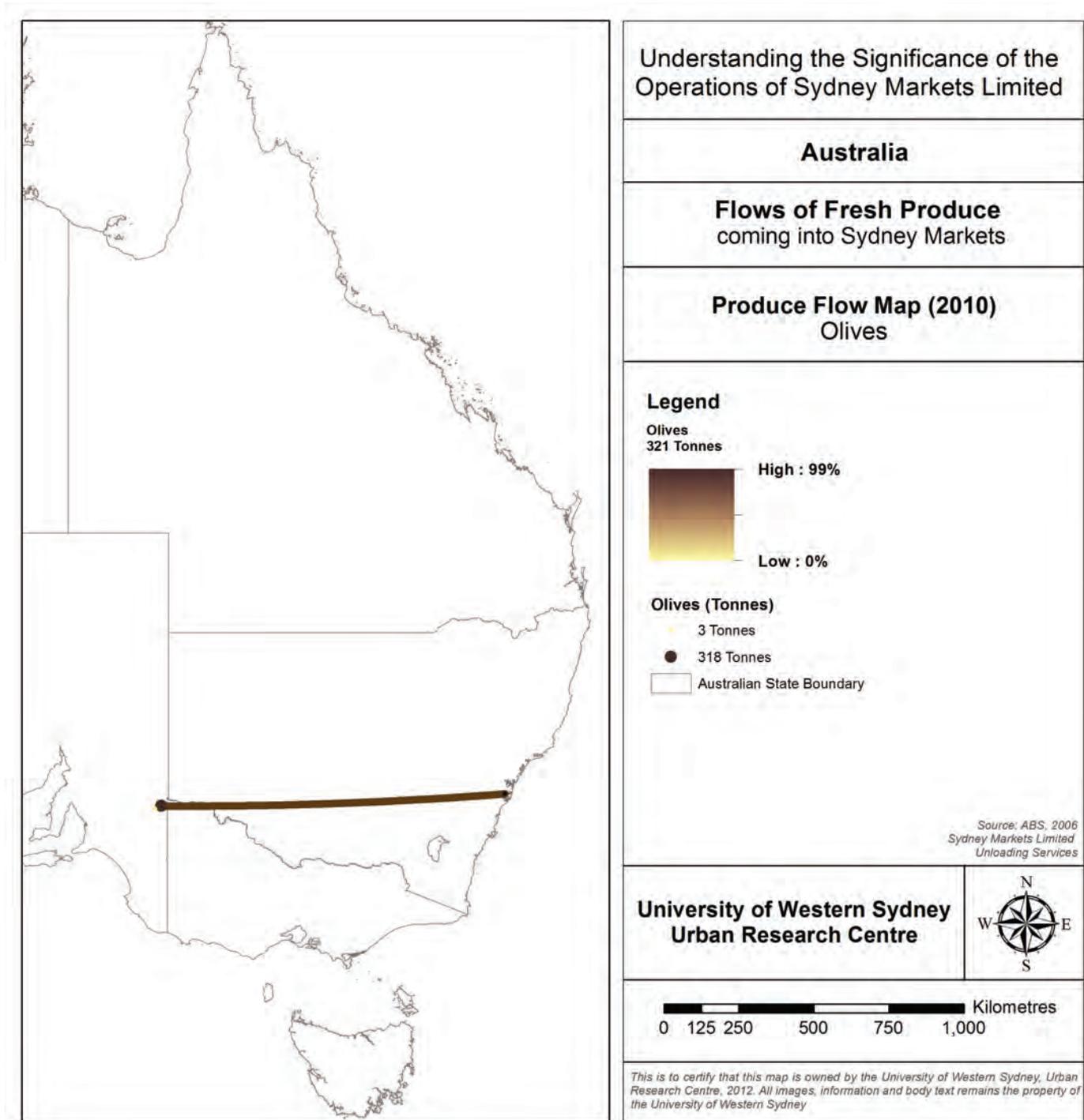
By weight, this is the third lowest of the 15 categories of fruit and vegetables received at the markets. Only the very small category of olives and nuts are less significant by weight.

The concentration index for this category is 77.4. This is a mid-range concentration level among the 15 categories.

This category was a responsible for slightly less than 1 billion kilogram-kilometres of payload to the Sydney Markets in 2010, which is a very minor payload total.

OLIVES

Figure 5.16 Total flows of olives to Sydney Markets



Source: Processed from data supplied by SML and from direct survey

OLIVES

Table 5.17 Geographic origins of olives, 2010

Rank	Origin (postcode)	Distance (kms)	Quantity (tonnes)	Quantity from postcode (%)
1	5341	868	318	99.1
2	5343	885	3	0.9
TOTAL (ALL POSTCODES)			321	

Source: Processed from data supplied by SML and from direct survey

Commentary

The only sources of olives for the Sydney Markets in 2010 were the towns of Renmark and Berri, in the heart of the South Australia's Murray River irrigated horticultural district.

In total, there were 321 tonnes of olives shipped to the Sydney Markets in 2010.

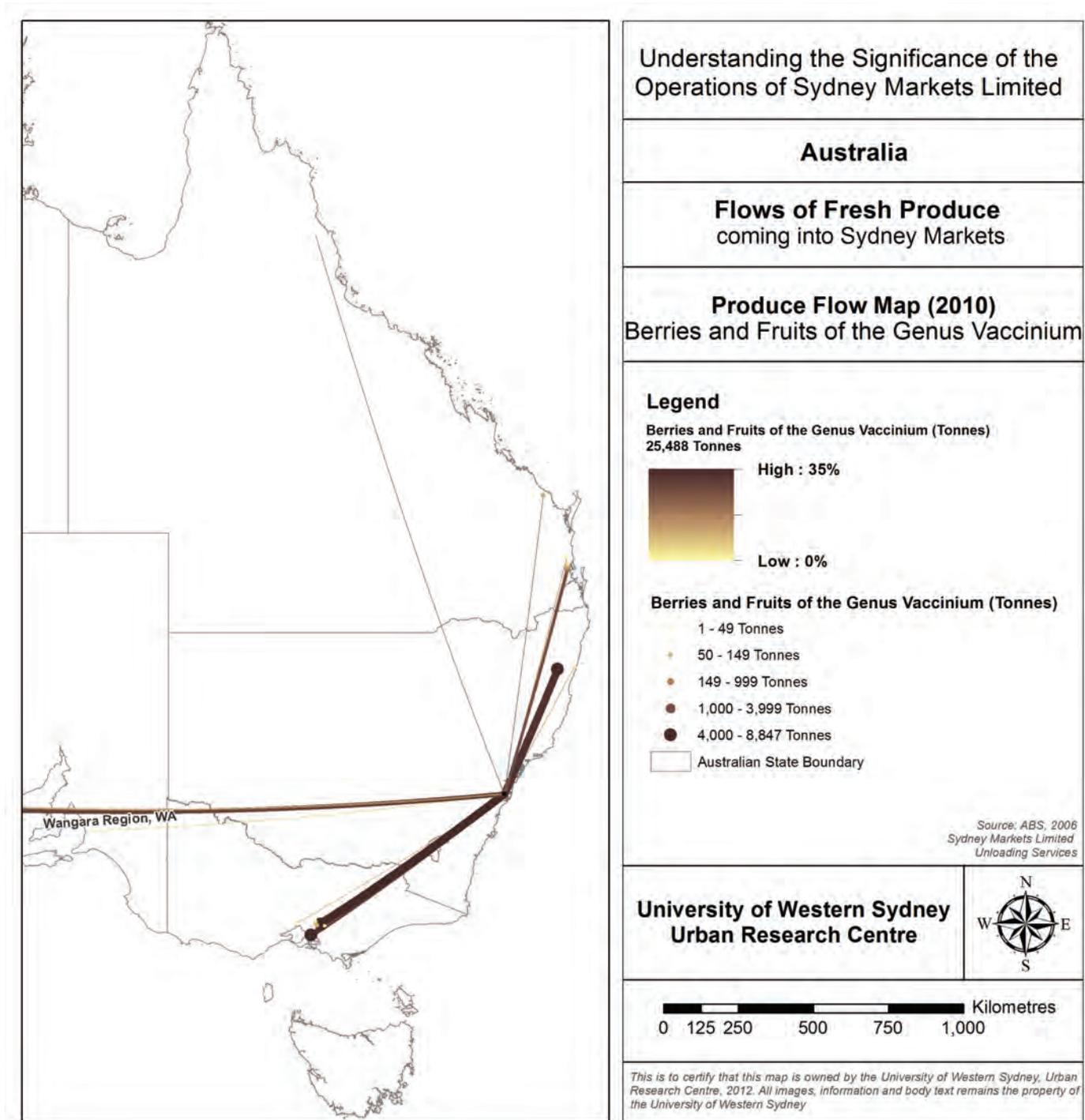
By weight, this is the second lowest of the 15 categories of fruit and vegetables received at the markets.

The concentration index for this category is 100.0. Alongside nuts, this is the equal highest level of concentration for the 15 categories, a reflection of the product's single origin.

This category was a responsible for 280 million kilogram-kilometres of payload to the Sydney Markets in 2010.

BERRIES AND FRUITS OF THE GENUS VACCINIUM

Figure 5.17 Total flows of berries and related fruits to Sydney Markets



Source: Processed from data supplied by SML and from direct survey

BERRIES AND FRUITS OF THE GENUS VACCINIUM

This category includes currants, kiwifruit, raspberries, blackberries, mulberries, loganberries and strawberries.

Table 5.18 Geographic origins of berries and related fruits, 2010

Rank	Origin (postcode)	Distance (kms)	Quantity (tonnes)	Quantity from postcode (%)
1	3139	631	8,847	34.7
2	2450	441	7,806	30.6
3	3977	624	4,056	15.9
4	6155	3,013	2,863	11.2
5	4510	774	892	3.5
6	6970	2,850	584	2.3
7	3795	640	142	0.6
8	4516	781	117	0.5
9	4670	1,008	59	0.2
10	4880	1,948	46	0.2
TOTAL (ALL POSTCODES)			25,488	

Source: Processed from data supplied by SML and from direct survey

Commentary

The most important sources of fruits in this category are postcodes:

- 3139 which refers to the Woori Yallock township in the Yarra Valley east of Melbourne.
- 2450 which is the Coffs Harbour district in northern New South Wales.
- 3977 which includes the townships of Cranbourne and Frankston on the Mornington Peninsular south east of Melbourne.
- 6155 which is Canning Vale near Fremantle in Western Australia. Canning Vale is a trucking assembly point for that state's south western agricultural regions.

In total, 25,000 tonnes of fruit in this category were shipped to the Sydney Markets in 2010.

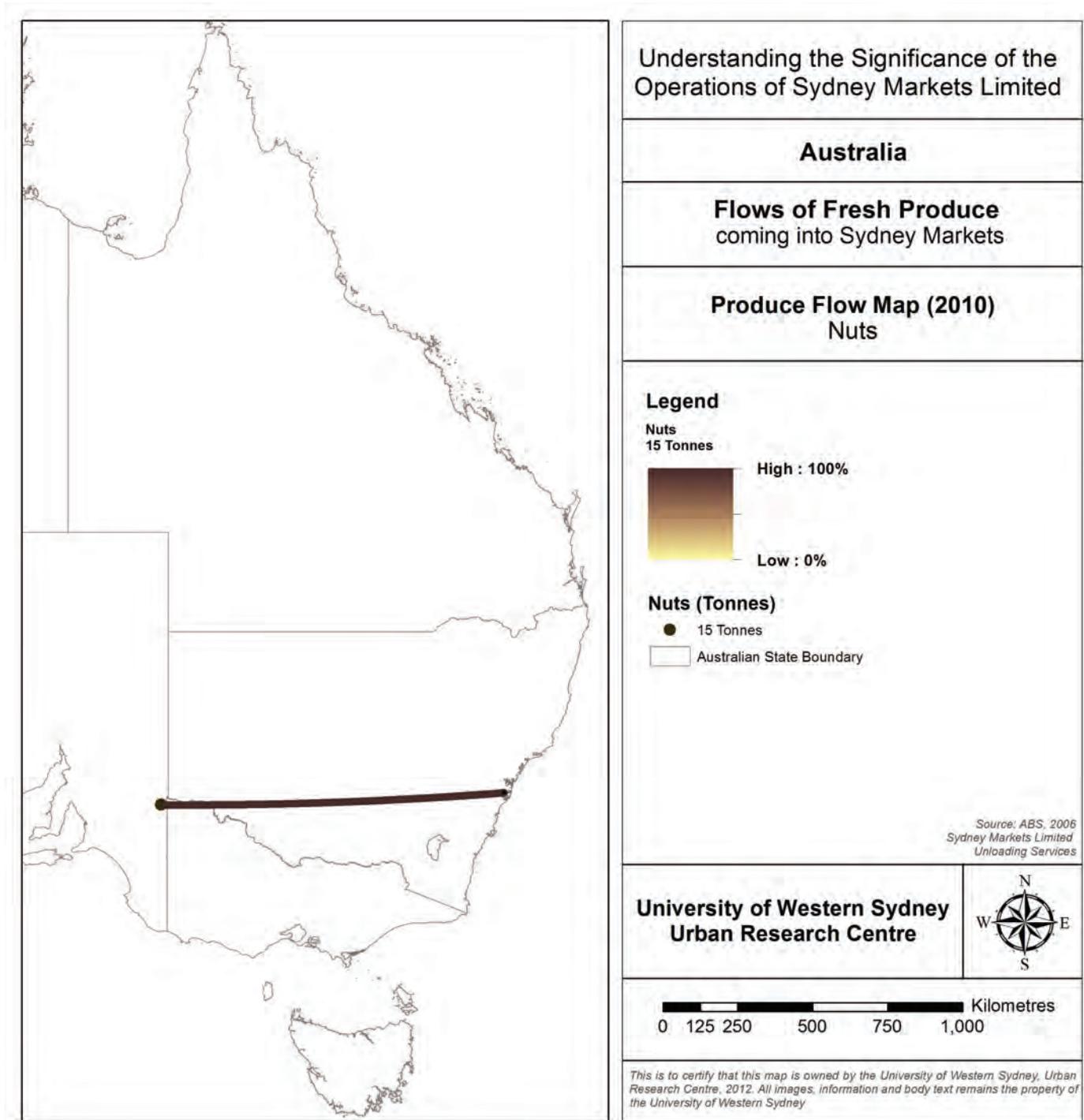
By weight, this is the ninth largest of the 15 categories of fruit and vegetables received at the markets.

The concentration index for this category is 92.5. This is the fifth highest level of concentration for the 15 categories reflecting a relatively high level of reliance on a few specialist sources.

This category was a responsible for only 51 million kilogram-kilometres of payload to the Sydney Markets in 2010. This low payload is due to the high value, low weight nature of berry fruits.

NUTS

Figure 5.18 Total flows of nuts to Sydney Markets



Source: Processed from data supplied by SML and from direct survey

NUTS

This category includes almonds, cashews, chestnuts, hazelnuts, pistachios, walnuts and brazil nuts.

Table 5.19 Geographic origins of nuts, 2010

Rank	Origin (postcode)	Distance (kms)	Quantity (tonnes)	Quantity from postcode (%)
1	5341	868	15	100
TOTAL (ALL POSTCODES)			15	

Source: Processed from data supplied by SML and from direct survey

Commentary

The only source of nuts for the Sydney Markets in 2010 was South Australia's Renmark district, along the Murray River.

In total, there were 15 tonnes of nuts shipped to the Sydney Markets in 2010.

By weight, this is the lowest of the 15 categories of fruit and vegetables received at the markets.

The concentration index for this category is 100.0. Alongside olives, this is the equal highest level of concentration for the 15 categories, a reflection of the product's single origin.

This category was a responsible for 13 million kilogram-kilometres of payload to the Sydney Markets in 2010.

This section makes observations about the origins of produce for Sydney Markets. The analysis is based on aggregate figures derived from the data analysis described in the previous section. The material presented here focuses on comparisons of:

- geographic sources;
- fruit and vegetable categories;
- payloads; and
- concentration indices.

These are dealt with in turn.

A comparison of geographic sources

Table 6.1 lists the leading postcode sources of produce for Sydney Markets. The table shows the diversity of supply sources for the Sydney Markets. It also confirms the long distances over which produce is transported. Notably, just five postcode sources contribute 49% by weight of all Sydney Markets supply of fresh fruits and vegetables:

- Postcode 2650 – which centres on Wagga Wagga and refers to the trucking firms servicing the Riverina district in south western New South Wales – is the leading source of produce by weight.
- The second most significant supplier is postcode 3030 which centres on the transport hub of Werribee–Point Cook south west of Melbourne in Victoria.
- The third most significant supplier is postcode 5110 which centres on Burton in South Australia, a part of the Elizabeth–Salisbury industrial and transportation concentration in northern Adelaide.
- The fourth most significant postcode is 4854, which is Tully in north Queensland. This prominence reflects Tully's role as a major supplier of bananas to Sydney Markets.
- The fifth largest supplier is postcode 3130. This is the Wandin–Woori Yallock area in the Yarra Valley east of Melbourne.

Table 6.1 Origins of produce shipped to Sydney Markets, ranked by weight, 2010

Rank	Postcode	Distance from SML (kms)	Value (tonnes)	Percentage of grand total
1	2650	337	152,010	17.7
2	3030	675	100,162	11.6
3	5110	1,056	73,515	8.5
4	4854	1,831	59,834	7.0
5	3139	631	35,727	4.2
6	4849	1,789	33,293	3.9
7	3630	541	30,836	3.6
8	4000	732	27,267	3.2
9	2484	640	20,124	2.3
10	4518	790	18,429	2.1
11	3585	665	15,500	1.8
12	4671	982	13,130	1.5
13	4880	1,948	11,956	1.4
14	2450	441	11,136	1.3
15	4805	1,553	10,990	1.3
16	2603	230	10,950	1.3
17	3722	549	10,608	1.2
18	2730	312	10,152	1.2
19	4670	1,008	9,565	1.1
20	3644	511	9,256	.1

Source: Processed from data supplied by SML and from direct survey

A comparison of fruit and vegetable categories

Table 6.2 shows the contribution by weight of each of the 15 fruit and vegetable categories supplied to Sydney Markets. Figure 6.1 shows these data in a graph. Note that bananas and tomatoes are listed in table 6.2 because they are significant supply items in their own right.

Analysis of the table and figure shows the following:

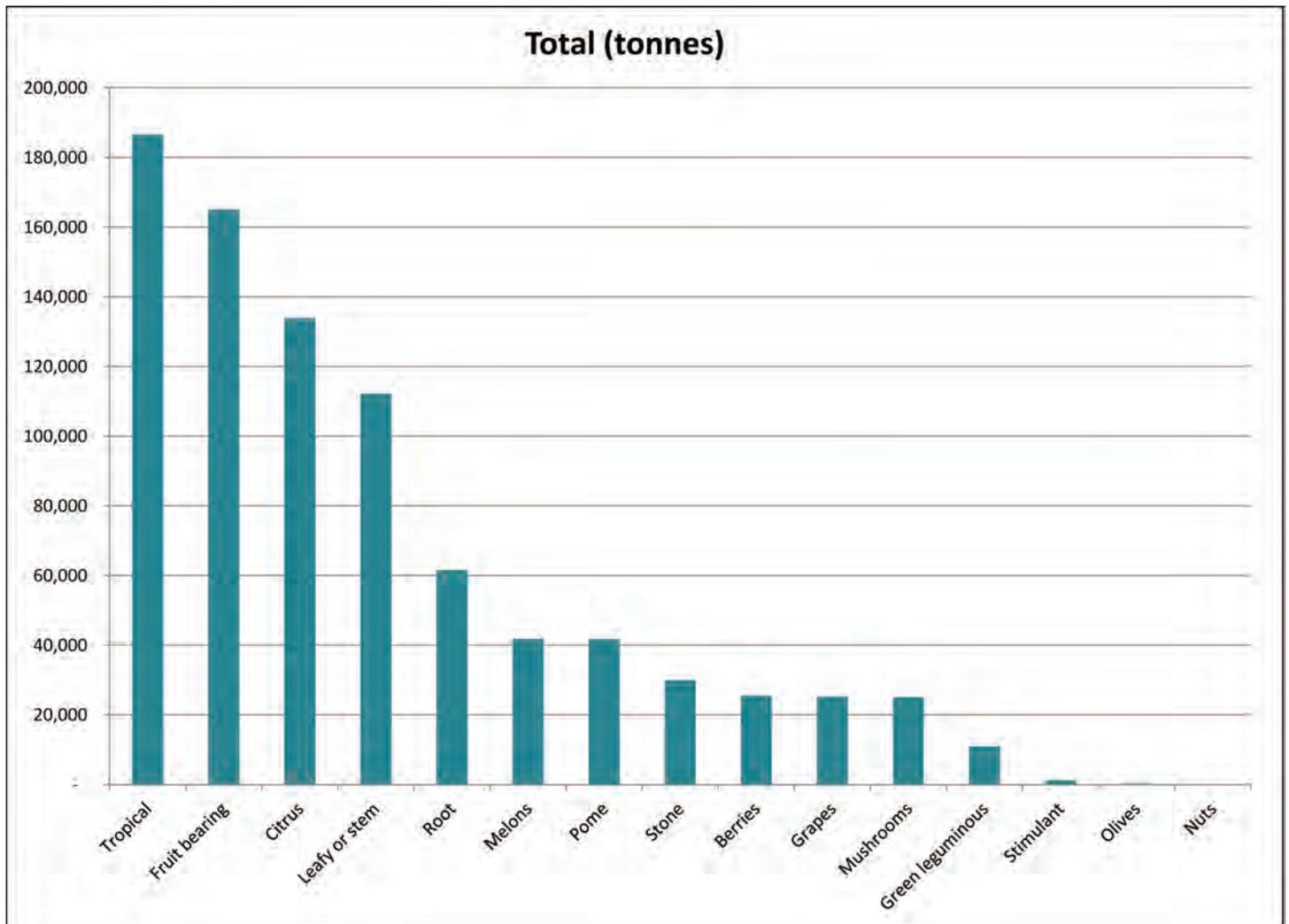
- A small number of categories is responsible for a high proportion of shipped produce.
- On their own, tropical and sub-tropical fruits and fruit bearing vegetables compromise 40.9% by weight of all produce delivered to Sydney Markets.
- The top four categories – tropical and sub-tropical fruits, fruit bearing vegetables, citrus, and leafy or stem vegetables – make up 69.5% of the total weight of fruits and vegetables freighted to the markets.
- This means that the other eleven categories contribute barely 30% by weight of Sydney Markets incoming produce supplies.

Table 6.2 Categories of produce shipped to Sydney Markets, ranked by weight, 2010

Rank	Category	Total (tonnes)	Per cent
1	Tropical and sub-tropical	186,574	21.7
	- Bananas	100,953	11.7
2	Fruit bearing	164,940	19.2
	- Tomatoes	41,901	4.9
3	Citrus	133,879	15.6
4	Leafy or stem	112,121	13.0
5	Root	61,497	7.2
6	Melons	41,723	4.9
7	Pome	41,653	4.8
8	Stone	29,865	3.5
9	Berries	25,488	3.0
10	Grapes	25,202	2.9
11	Mushrooms	24,960	2.9
12	Green leguminous	10,910	1.3
13	Stimulant	1,245	0.1
14	Olives	321	0.0
15	Nuts	15	0.0

Source: Processed from data supplied by SML and from direct survey

Figure 6.1 Total weight of produce shipped to Sydney Markets, by category, 2010



Source: Processed from data supplied by SML and from direct survey

A comparison of payloads

As noted in section 4, payload refers to the distance over which a kilogram of produce is transported. Payload is measured in kilogram-kilometres.

Table 6.3 shows the contribution by payload of each of the 15 fruit and vegetable categories supplied to Sydney Markets. Figure 6.2 shows these data in a graph. Again, bananas and tomatoes are listed in table 6.3 because they are significant supply items in their own right.

Analysis of the table and figure shows the following:

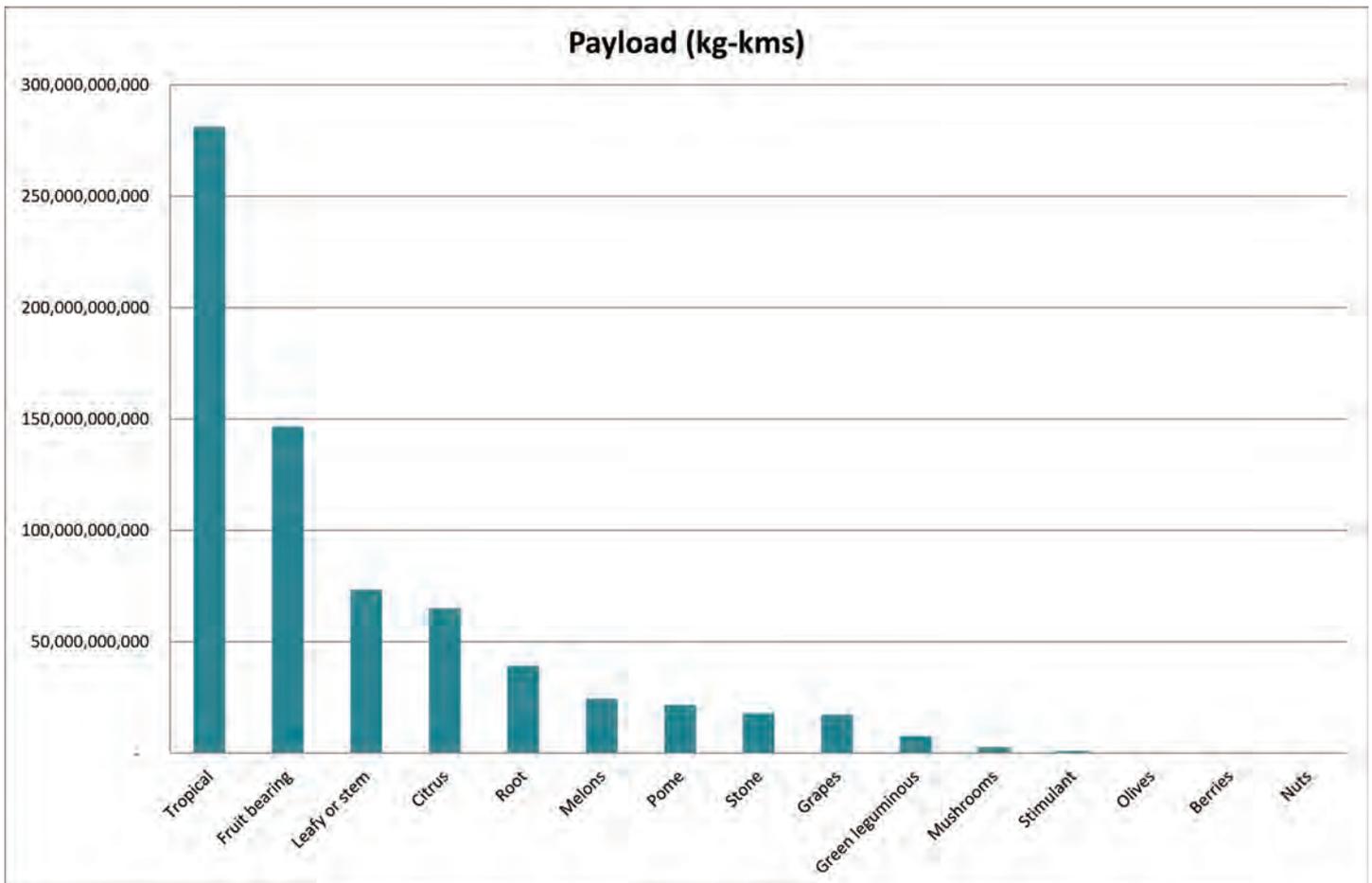
- The leading two categories—tropical and sub-tropical fruits, and fruit bearing vegetables—are responsible for over 61% of shipped produce. This high contribution reflects the long distances over which these fruit and vegetable varieties are transported.
- On their own, bananas make up 25.4% of the total payload generated by Sydney Markets.

Table 6.3 Categories of produce shipped to Sydney Markets, ranked by payload, 2010

Rank	Category	Total tonnes	Total tonnes per cent	total kg-kms	Total kg-kms per cent
1	Tropical and sub-tropical	186,574	21.7	281,202,737,259	40.3
	- Bananas	100,953	11.7	177,641,502,630	25.4
2	Fruit bearing	164,940	19.2	146,519,472,004	21.0
	- Tomatoes	41,901	4.9	33,802,063,461	4.8
3	Leafy or stem	112,121	13.0	73,388,174,985	10.5
4	Citrus	133,879	15.6	65,055,147,536	9.3
5	Root	61,497	7.2	39,191,654,343	5.6
6	Melons	41,723	4.9	24,337,416,885	3.5
7	Pome	41,653	4.8	21,643,191,836	3.1
8	Stone	29,865	3.5	17,793,147,255	2.5
9	Grapes	25,202	2.9	17,204,686,723	2.5
10	Green leguminous	10,910	1.3	7,644,467,365	1.1
11	Mushrooms	24,960	2.9	2,744,508,446	0.4
12	Stimulant	1,245	0.1	949,574,129	0.1
13	Olives	321	0.0	278,792,988	0.0
14	Berries	25,488	3.0	50,976,000	0.0
15	Nuts	15	0.0	13,025,421	0.0
	Grand total	860,057	100	698,016,973,175	100

Source: Processed from data supplied by SML and from direct survey

Figure 6.2 Total payload shipped to Sydney Markets, by category, 2010



Source: Processed from data supplied by SML and from direct survey

A comparison of concentration indices

As noted in section 4, a concentration index refers to the contribution of the four largest supply postcodes to the total supply of produce in a particular category, calculated as a ratio (per cent). Thus an index of concentration equal to 75.0 means that 75% of produce in that category is attributable to the four largest postcode origins.

Table 6.4 shows the concentration indices for each of the 15 fruit and vegetable categories supplied to Sydney Markets. Figure 6.3 provides a pictorial representation of these indices.

Bananas and tomatoes are also listed in table 6.4 in order to continue the data series contained in tables 6.2 and 6.3.

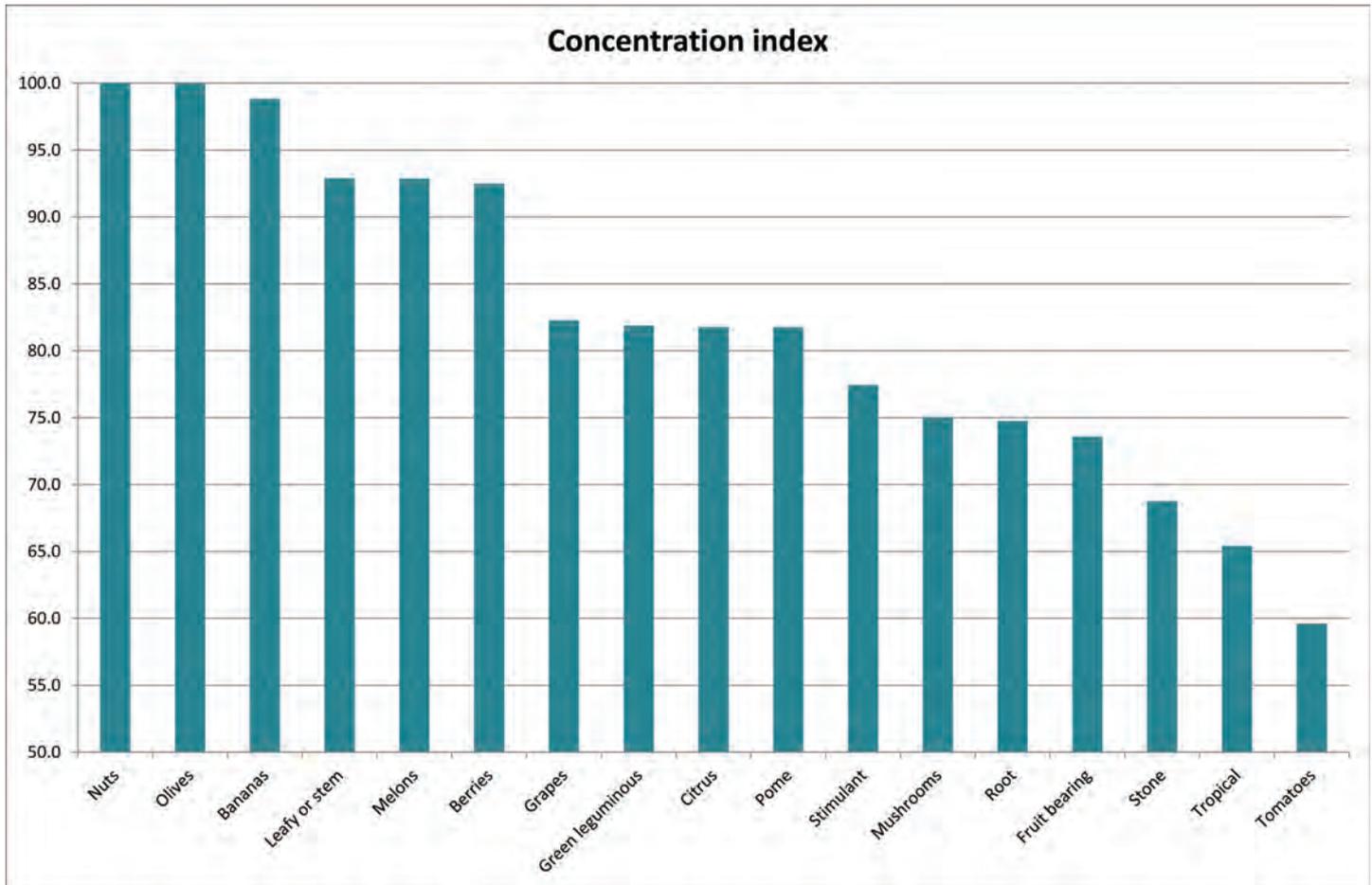
An overall observation is that concentration of supply appears to be high across all categories of fruit and vegetables. Where lower (although still relatively high) indices are recorded – for example in the stone fruit (68.7%) and tropical and sub-tropical fruits categories (65.4%) – these may be explainable by the variety of items within these categories rather than by a genuine diversity in supply sources.

Table 6.4 Concentration indices for produce categories, Sydney Markets, 2010

Category	Total tonnes	Concentration index
Nuts	15	100.0
Olives	321	100.0
- Bananas	100,953	98.8
Leafy or stem	112,121	92.9
Melons	41,723	92.9
Berries	25,488	92.5
Grapes	25,202	82.3
Green leguminous	10,910	81.9
Citrus	133,879	81.8
Pome	41,653	81.7
Stimulant	1,245	77.4
Mushrooms	24,960	75.0
Root	61,497	74.7
Fruit bearing	164,940	73.6
Stone	29,865	68.7
Tropical	186,574	65.4
- Tomatoes	41,901	59.6

Source: Processed from data supplied by SML and from direct survey

Figure 6.3 Concentration indices for produce categories, Sydney Markets, 2010



Source: Processed from data supplied by SML and from direct survey

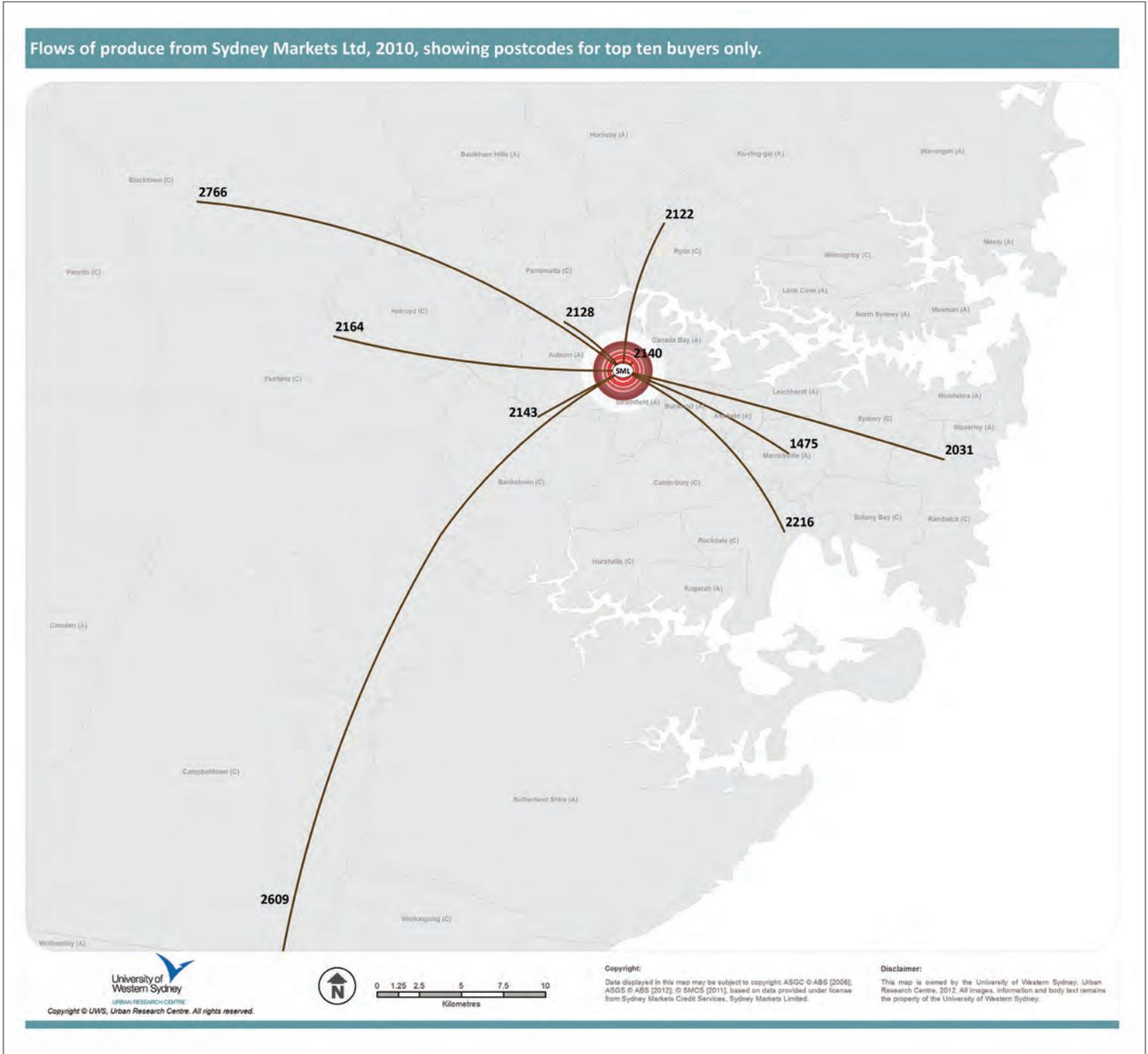
As explained in section 4, data for the analysis of outflows of produce from Sydney Markets was provided by Sydney Market Credit Services (SMCS). SMCS operates a credit scheme for transactions between merchants and purchasers within the markets. Unfortunately, data to show actual outward movements of fruit and vegetables by categories are not available from any source. Nevertheless, the SMCS data provide a rich representation of the flow of fresh produce to local restaurants, fruit shops and independent grocers, as well as shipments of produce to wholesalers, providores and supermarket distribution centres.

The leading destinations for produce are shown in figures 7.1, 7.2 and 7.3. These figures provide the important background material for the discussion below.

The discussion is broken into four sections:

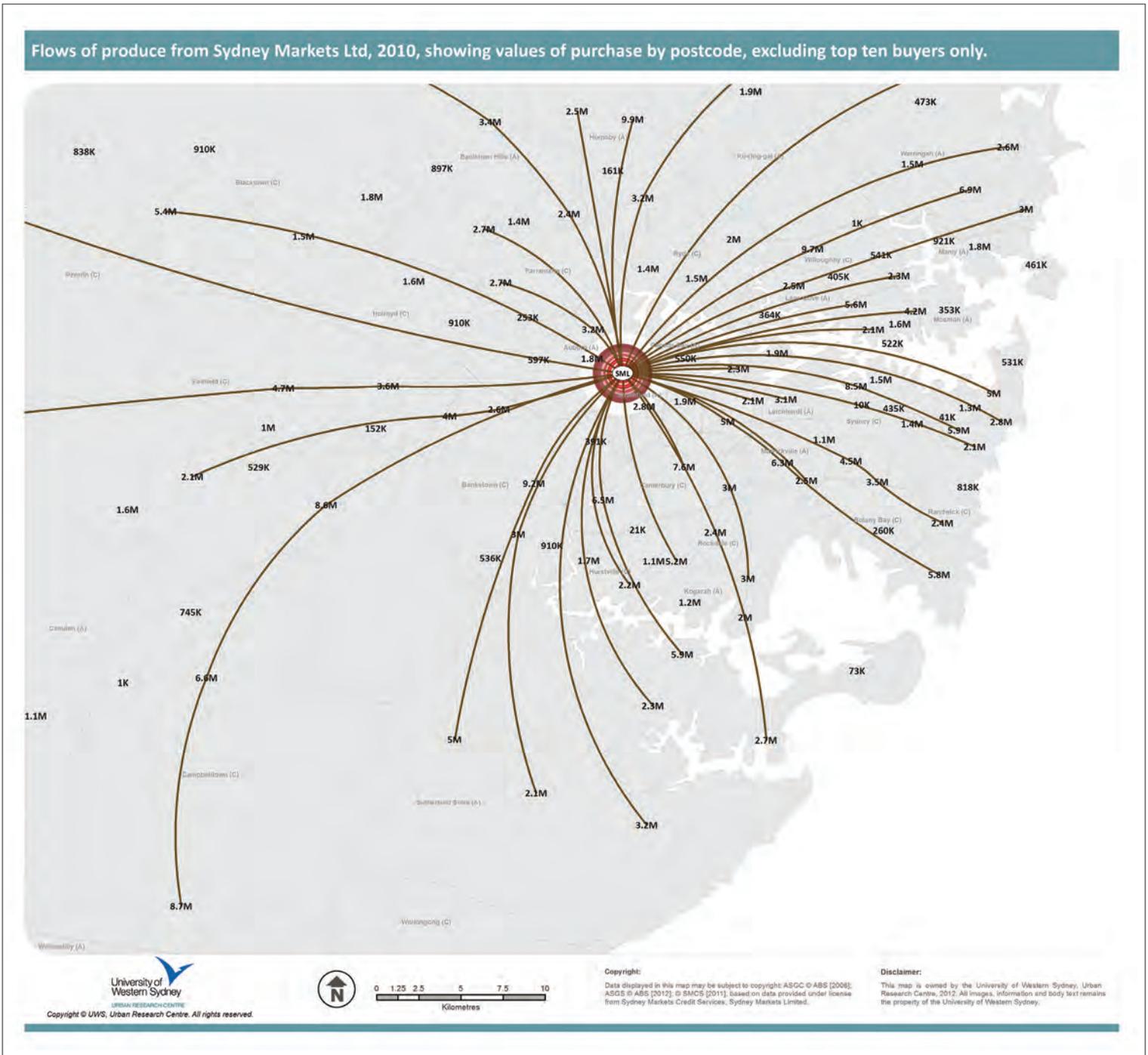
- i. The Sydney region
- ii. The Central Coast and Hunter regions
- iii. Wollongong and the Illawarra
- iv. Canberra and the ACT.

Figure 7.1 Destinations for produce from Sydney Markets to supermarket distribution centres, and major wholesalers and providers, 2010



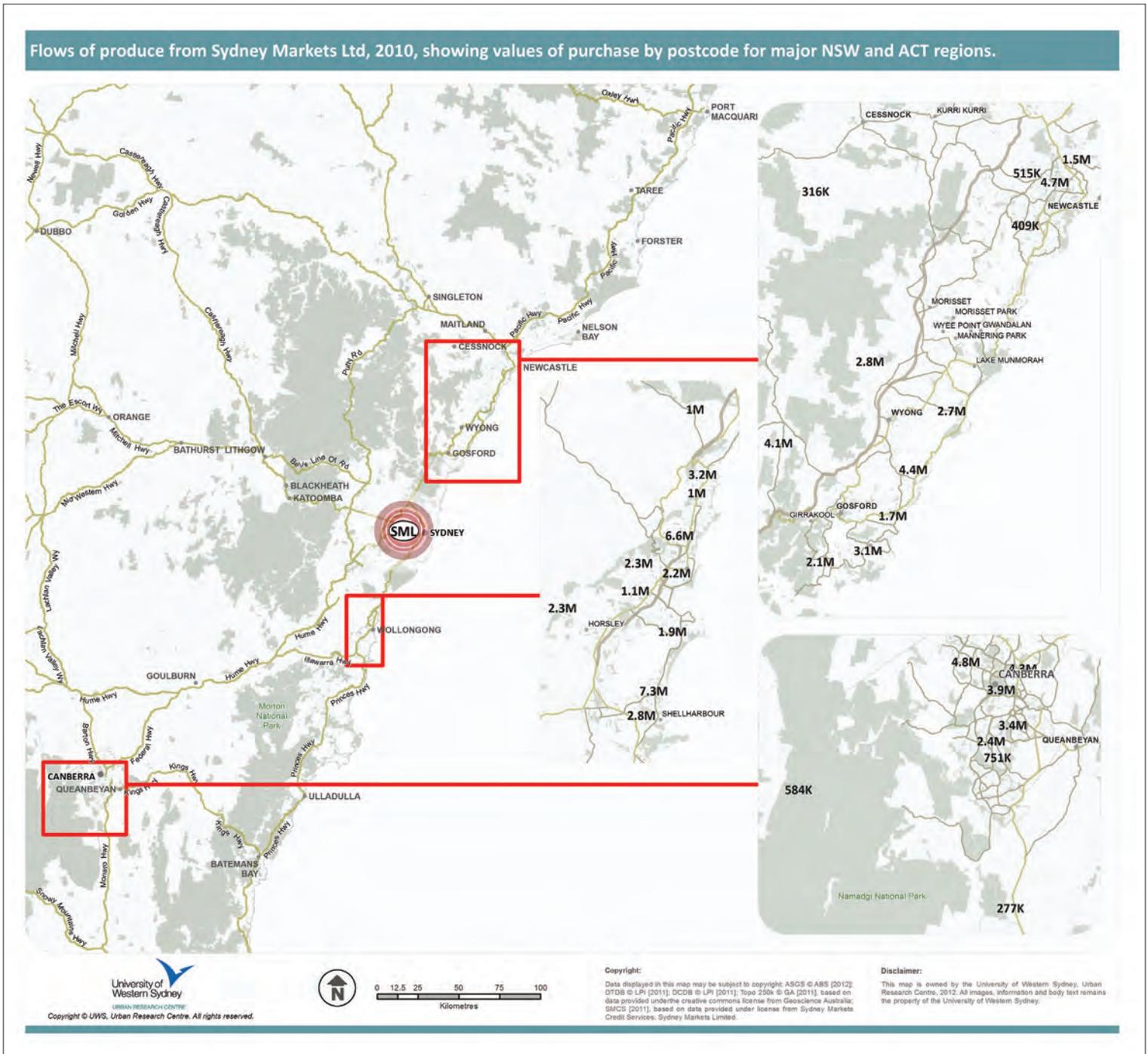
Source: Processed from data supplied by SML and from direct survey

Figure 7.2 Destinations for produce from Sydney Markets to greengrocers, cafes and restaurants, and independent grocers, aggregated by postcode, 2010



Source: Processed from data supplied by SML and from direct survey

Figure 7.3 Destinations for produce from Sydney Markets within major New South Wales regions, measured by transactions value, 2010



Source: Processed from data supplied by SML and from direct survey

The Sydney region

Research conducted by the Urban Research Centre shows that unlike many other forms of retailing, the intensity of food retailing in Sydney seems to be unrelated to matters such as socio-economic class, housing type and geographic location. Of course, the nature of food purchases and prices paid do vary from suburb to suburb across Sydney. These differences aside, households in each and every Sydney suburb are active purchasers and consumers of food.

Three significant patterns in fresh food destinations from Sydney Markets can be observed from Figures 7.1 and 7.2.

First, it can be seen from Figure 7.1 that Sydney Markets is located at a prime location for the supply of fresh fruit and vegetables to its major ten customers. These customers include warehouses for major supermarkets chains, distributors and providores. In turn these become secondary distribution sites for deliveries to fresh fruit and vegetable outlets such as supermarkets and for supply to the restaurant and café trade.

Second, as is apparent from Figure 7.2, the flows of fresh produce from Sydney Markets is multi-directional indicating the central location of the Flemington site in its distribution network and the widespread demand for Sydney Markets produce. The figure shows that Sydney Markets sits at the centre of an intense supply chain of fresh fruit and vegetables that reaches the length and breadth of the Sydney basin.

Third, that said, there are indications of stronger outward flows from Sydney Markets to Sydney's older established urban regions and less-strong flows to Sydney's newer suburbs. This could be explained by a domination of retailing by supermarkets in the newer suburbs in contrast to the survival of independent fruit and vegetable wholesalers and retailers in the older suburbs.

The Central Coast and Hunter regions

Figure 7.3 shows the destinations of Sydney Markets produce in the Central Coast and Hunter regions. There are substantial flows of produce to a number of Central Coast postcodes. The major destination north of these Central Coast destinations appears to be the Newcastle City Markets at Sandgate, north of the Newcastle CBD.

Wollongong and the Illawarra

There are similarly very strong flows to destinations in the Wollongong area and its immediate south.

Canberra and the ACT

Likewise, Canberra and the ACT are important destinations for produce from Sydney Markets.

Six significant conclusions can be drawn from the study.

First, Sydney Markets plays a highly significant and enduring role in attracting produce from distant agricultural regions. The main supplier states are New South Wales, Victoria and Queensland. South Australia is a lesser though still significant source of fruit and vegetable produce. The other states and the territories are not significant suppliers.

Second, a major function of Sydney Markets is the generation of diverse sources of supply. This ensures that buyers at Sydney Markets have access to a wide range of fruit and vegetable produce sourced from a multitude of regions with varying climates and growing conditions. This diversity underpins the quality of fresh fruit and vegetables contributed by Sydney Markets to Sydney's food supply system. It means that the food supply chain reaches into tropical, sub-tropical, temperate and cooler growing regions, as well as to regions with a range of different agricultural assets. The chain also accesses the remnant horticultural districts in and around the Sydney basin, although these are no longer of great significance, at least in total volume terms.

Third, the Sydney Markets supply chain is highly visible. The data collection exercises conducted for this study show that the movement of produce into the Sydney Markets is observable and traceable. Even though food origins are not yet explicitly recorded in Australia, the exercise conducted for this study shows that there is a paper trail that links the produce sold in Sydney Markets to agricultural producers, transport and logistics companies, and wholesalers responsible for its supply. Importantly, the visibility and traceability of produce flows conducted within a competitive market environment ensures that suppliers are conscious of the need to maintain quality of the highest standards. Other consumer supply arrangements not based on open market operations cannot claim such an innate, observable, quality control system.

Fourth, the Sydney Markets supply chain is long and involves substantial payload. As noted, local supply sources contribute minimally to the supply chain. The supply of produce from within the Sydney basin is less than 1% by weight. And in the leafy or stem vegetables category, where Sydney basin farmers are seen to specialise, the local region supplies only 2.3% of produce (by weight) to the Flemington markets.

Moreover less than 4% of all produce supplied to Sydney Markets is sourced from within 150 kilometres, or roughly within a 100 miles food radius, which is the yardstick used commonly by those seeking to set targets for minimising 'food miles' (the distance food is shipped to market).

Of course, Sydney Markets is a market environment that places few restrictions on access. Growers and other suppliers, near and far from Flemington, are free to trade their output at Sydney Markets. The point to be noted is that the opportunities for reducing food miles are best available through a markets-based distribution system. Tropical fruits, obviously, will be sourced from tropical regions, unless artificial growing conditions are employed. Where growing conditions are relatively constant geographically, for instance for growing lettuce or tomatoes, then there should be a close relationship between land costs and distance to markets. This should mean that growers trade off lower freight costs against higher land costs as they move nearer or within the Sydney metropolitan area. Cheap efficient freight services, however, mean that high volume producers of tomatoes can enjoy the year round productivity of the Bowen Basin region in Queensland and still supply Sydney Markets at competitive prices. One suspects, then, that payload does not contribute in a highly significant way to producer costs in certain high-volume market segments. Clearly there is a need for major study into the environmental costs of high payloads versus the efficiencies and productivity gains – and perhaps the environmental gains – that are generated by high volume production in appropriate climate and geographic regions.

Fifth, the Sydney Markets supply chain is extraordinarily diverse in both composition and origin. This is the sign of a successful market, that it attracts a wide range of participants and thereby ensures the supply of high volumes of quality produce from a variety of origins. As we note in section 3, the superiority of markets over other distributional systems gives rise to three important types of efficiency. *Productive* efficiencies arise from market forces which reward those producers which make best use of key inputs like land, labour and water. *Allocative* efficiencies arise from the signals given to producers in terms of price and quantity demanded. These signals ensure the best match between the type and quality of produce offered within a market and the demand patterns of buyers. And *dynamic* efficiencies are created when new products are given an opportunity to be successful in competition with pre-existing products, and so innovative producers are rewarded. The study of markets through time confirms them as the ideal way to generate productive, allocative and dynamic efficiencies. A consequence, which is confirmed in this study, is a growth in the diversity of product in the market's supply chain and a rise in market volumes across the range of product categories.

Finally, while the study's access to destination data is limited, the study has shown a substantial level of connection between Sydney Markets and the range of buyers that seek fresh fruit and vegetables on a daily basis. This buyer group is predominantly Sydney-based, but also extends to the Central

Coast and Newcastle regions in the north, to Wollongong and the Illawarra to the south and then to Canberra and the ACT to the south west. The geographical location of this buyer base shows the close link between Sydney Markets and the growing metropolitan communities in and around Sydney. Fresh food is both a need and a highly desired commodity for Sydney households as well as for nearby urban and regional residents. Fresh fruit and vegetables are also crucial for food processing and for cafe and restaurant operators. Markets that supply a range of produce to a diverse buyer group are a major urban asset. More than this, though, there is a great appreciation for a market system that can innovate and adjust as buyer needs and demands change. The evidence from this study is that Sydney Markets provides such a dynamic market environment.

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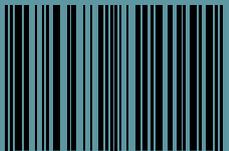
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