



**FOOD STANDARDS**  
Australia New Zealand  
Te Mana Kounga Kai – Ahitereiria me Aotearoa

**2-05**  
**23 March 2005**

## **FINAL ASSESSMENT REPORT**

### **APPLICATION A464**

### **DEFINITION OF ‘WHOLEGRAIN’**

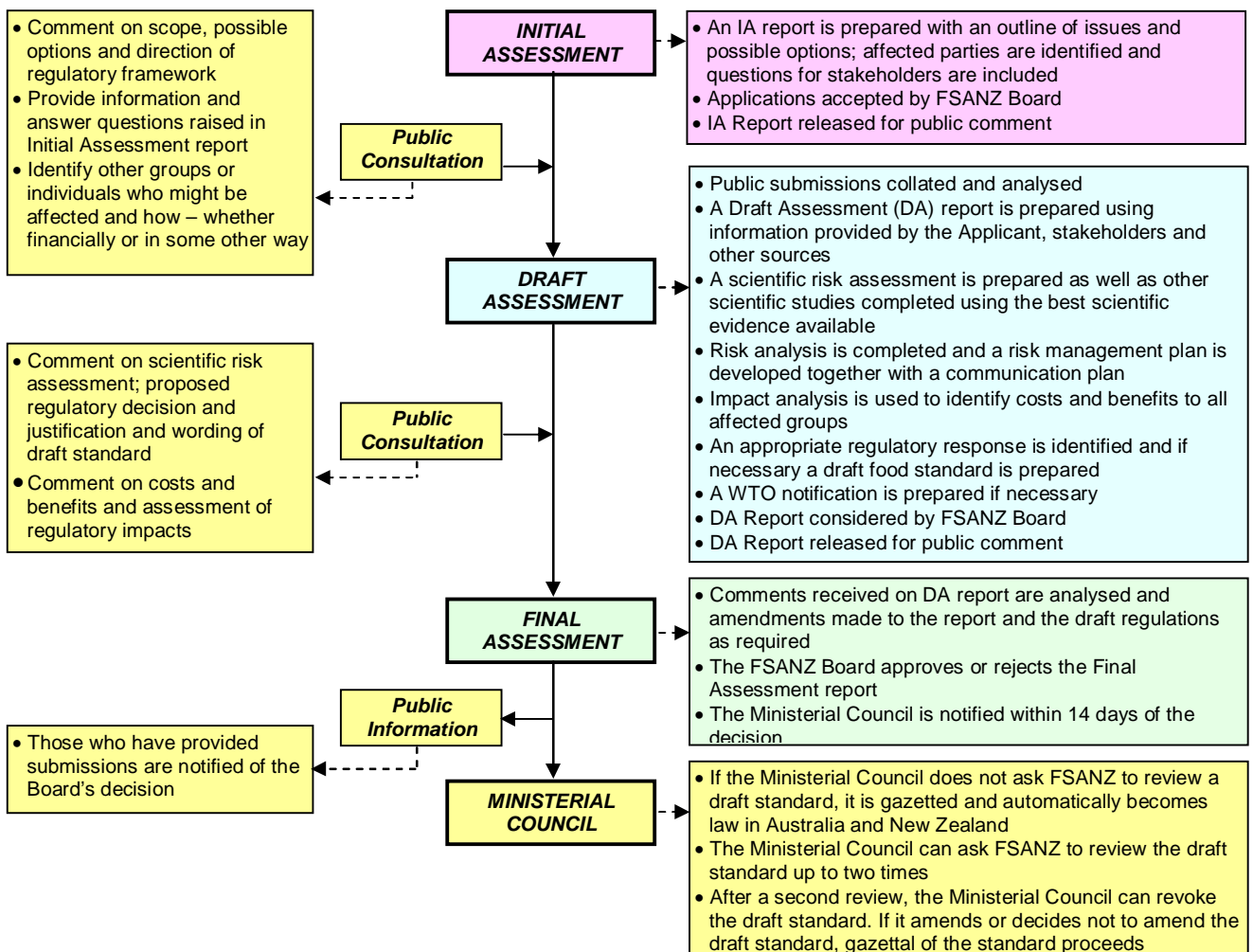
## FOOD STANDARDS AUSTRALIA NEW ZEALAND (FSANZ)

FSANZ's role is to protect the health and safety of people in Australia and New Zealand through the maintenance of a safe food supply. FSANZ is a partnership between ten Governments: the Commonwealth; Australian States and Territories; and New Zealand. It is a statutory authority under Commonwealth law and is an independent, expert body.

FSANZ is responsible for developing, varying and reviewing standards and for developing codes of conduct with industry for food available in Australia and New Zealand covering labelling, composition and contaminants. In Australia, FSANZ also develops food standards for food safety, maximum residue limits, primary production and processing and a range of other functions including the coordination of national food surveillance and recall systems, conducting research and assessing policies about imported food.

The FSANZ Board approves new standards or variations to food standards in accordance with policy guidelines set by the Australia and New Zealand Food Regulation Ministerial Council (Ministerial Council) made up of Commonwealth, State and Territory and New Zealand Health Ministers as lead Ministers, with representation from other portfolios. Approved standards are then notified to the Ministerial Council. The Ministerial Council may then request that FSANZ review a proposed or existing standard. If the Ministerial Council does not request that FSANZ review the draft standard, or amends a draft standard, the standard is adopted by reference under the food laws of the Commonwealth, States, Territories and New Zealand. The Ministerial Council can, independently of a notification from FSANZ, request that FSANZ review a standard.

The process for amending the *Australia New Zealand Food Standards Code* is prescribed in the *Food Standards Australia New Zealand Act 1991* (FSANZ Act). The diagram below represents the different stages in the process including when periods of public consultation occur. This process varies for matters that are urgent or minor in significance or complexity.



## **Final Assessment Stage**

FSANZ has now completed two stages of the assessment process and held two rounds of public consultation as part of its assessment of this Application. This Final Assessment Report and its recommendations have been approved by the FSANZ Board and notified to the Ministerial Council.

If the Ministerial Council does not request FSANZ to review the draft amendments to the Code, an amendment to the Code is published in the *Commonwealth Gazette* and the *New Zealand Gazette* and adopted by reference and without amendment under Australian State and Territory food law.

In New Zealand, the New Zealand Minister of Health gazettes the food standard under the New Zealand Food Act. Following gazettal, the standard takes effect 28 days later.

## **Further Information**

Further information on this Application and the assessment process should be addressed to the FSANZ Standards Management Officer at one of the following addresses:

**Food Standards Australia New Zealand**  
**PO Box 7186**  
**Canberra BC ACT 2610**  
**AUSTRALIA**  
**Tel (02) 6271 2222**  
**[www.foodstandards.gov.au](http://www.foodstandards.gov.au)**

**Food Standards Australia New Zealand**  
**PO Box 10559**  
**The Terrace WELLINGTON 6036**  
**NEW ZEALAND**  
**Tel (04) 473 9942**  
**[www.foodstandards.govt.nz](http://www.foodstandards.govt.nz)**

Assessment reports are available for viewing and downloading from the FSANZ website [www.foodstandards.gov.au](http://www.foodstandards.gov.au) or alternatively paper copies of reports can be requested from FSANZ's Information Officer at [info@foodstandards.gov.au](mailto:info@foodstandards.gov.au) including other general enquiries and requests for information.

# CONTENTS

<b>EXECUTIVE SUMMARY AND STATEMENT OF REASONS .....</b>	<b>5</b>
STATEMENT OF REASONS .....	6
<b>1. INTRODUCTION.....</b>	<b>8</b>
<b>2. REGULATORY PROBLEM.....</b>	<b>8</b>
2.1 CURRENT REGULATIONS.....	8
2.1.1 <i>International</i> .....	9
2.1.2 <i>United States</i> .....	9
<b>3. OBJECTIVE.....</b>	<b>9</b>
<b>4. BACKGROUND.....</b>	<b>10</b>
4.1 HISTORICAL BACKGROUND.....	10
<b>5. RELEVANT ISSUES.....</b>	<b>10</b>
5.1 NARROWNESS OF CURRENT DEFINITION .....	10
5.1.1 <i>Evaluation</i> .....	10
5.2 IMPLICATIONS OF AN EXPANDED ‘WHOLEGRAIN’ DEFINITION .....	13
5.2.1 <i>Evaluation</i> .....	13
5.3 ISSUES RAISED IN SUBMISSIONS TO THE DRAFT ASSESSMENT REPORT.....	14
5.3.1 <i>Glycaemic Index (GI) is lower for whole, intact grains</i> .....	14
5.3.2 <i>Consumer confusion</i> .....	15
5.3.3 <i>Management of medical conditions</i> .....	15
5.3.4 <i>Changes to the proposed definition</i> .....	16
5.3.5 <i>Labelling Issues</i> .....	17
<b>6. REGULATORY OPTIONS.....</b>	<b>18</b>
<b>7. IMPACT ANALYSIS .....</b>	<b>19</b>
7.1 OPTION 1 .....	19
7.2 OPTION 2 .....	19
7.3 OPTION 3 .....	20
7.4 IMPACT ANALYSIS .....	20
<b>8. CONSULTATION .....</b>	<b>21</b>
8.1 PUBLIC CONSULTATION .....	21
8.1.1 <i>Initial Assessment</i> .....	21
8.1.2 <i>Draft Assessment</i> .....	21
8.2 WORLD TRADE ORGANIZATION (WTO) .....	22
<b>9. CONCLUSION AND RECOMMENDATION .....</b>	<b>22</b>
<b>ATTACHMENT 1 -DRAFT VARIATION TO THE AUSTRALIA NEW ZEALAND FOOD STANDARDS CODE .....</b>	<b>23</b>
<b>ATTACHMENT 2 - NUTRITION ASSESSMENT .....</b>	<b>24</b>
<b>ATTACHMENT 3 - FOOD TECHNOLOGY REPORT .....</b>	<b>32</b>
<b>ATTACHMENT 4 - SUMMARY OF SUBMISSIONS.....</b>	<b>37</b>
<b>ATTACHMENT 5 - CONSUMER RESEARCH STUDIES RELEVANT TO CONSUMER UNDERSTANDING OF ‘WHOLEGRAIN’ .....</b>	<b>46</b>

## Executive Summary and Statement of Reasons

This is the Final Assessment Report and is based on information provided by the Applicant together with comments received from the public on the Draft Assessment Report.

BRI Australia Ltd submitted an Application on 6 December 2001 to amend the definition of the term 'wholegrain'. This Application may require amendment to Standard 2.1.1 – Cereals and Cereal Products, of the *Australia New Zealand Food Standards Code* (the Code).

The Applicant considers that the definition in the Code of 'wholegrain' is too narrow, inconsistent with international practice and severely limiting for food manufacturers and potentially misleading for consumers. The Applicant also claims that the current definition is inconsistent with common usage and public health documents such as the Dietary Guidelines for Australians and the Australian Guide to Healthy Eating.

The Applicant suggests that the definition of the term 'wholegrain' in Standard 2.1.1 – Cereals and Cereal Products, which is:

**'wholegrain** means the unmilled products of a single cereal or mixture of cereals'

be amended to –

'wholegrain is intact, dehulled, ground, cracked or flaked grains where the components - endosperm, germ and bran are present in substantially the same proportions as they exist in the intact grain'.

FSANZ received twenty submissions in response to the Initial Assessment Report. Six of the submitters supported option 1 to reject the application. Thirteen submissions supported option 2, to provide a different definition for 'wholegrain'. One submitter reserved providing comments until after the Draft Assessment.

Fourteen submissions were received in response to the Draft Assessment Report. Two submissions supported option 1 to reject the Application. The other twelve submissions supported option 2. There was no support for option 3, to delete the definition of 'wholegrain' from the Code.

It has been accepted by most submitters that the current definition of wholegrain in the Code needs to be amended to reflect commercial grain processing techniques that retain all of the original grain components, and to be more consistent with international terminology.

The current definition for 'wholegrain' in Standard 2.1.1 leaves little, if any, cereal or bread formulation that could be counted as 'wholegrain' and means that a few breakfast cereals and crispbreads but virtually no breads, would qualify as 'wholegrain foods' no matter what criteria are used.

The draft definition of 'wholegrain' would widen the meaning of the term so that it would encompass the intact grain, dehulled grain, ground grain, cracked grain or flaked grains and include wholemeal. The current definition of 'wholemeal' would be retained.

The definition of ‘wholegrain’ in the Code is consistent with the false/misleading/deceptive conduct provisions of the *Trade Practices Act 1974* (TPA) and Fair Trading Laws. The Australian Competition and Consumer Commission (ACCC) advised that the descriptor ‘wholegrain’ has not been specifically considered. Whether the revised definition proposed for ‘wholegrain’ under Standard 2.1.1 Cereals and Cereal Products, is considered inconsistent with the fair trading provisions or, for that matter, likely to result in a breach of the TPA, will ultimately depend on the circumstances of each case.

The Nutrition Assessment report makes two conclusions:

- it is appropriate that the definition of ‘wholegrain’ be expanded to reflect processing techniques that retain all of the original grain components; and
- any regulatory amendment to the definition of ‘wholegrain’ should prevent the development of a situation where ‘wholemeal’ products are required or encouraged to label as ‘wholegrain’ foods.

Retaining the definition of ‘wholemeal’ in the Code provides manufacturers with an option to select the term which best reflects the true nature of the food, which is not misleading and which meets consumer expectations. This amendment in conjunction with the naming requirements of Standard 1.2.2 and the provisions of the Commonwealth *Trade Practices Act 1974*, the New Zealand *Fair Trading Act 1986* and the Australian State and Territory Food Acts and Fair Trading Acts, operate as a disincentive for predominantly ‘wholemeal’ foods to use ‘wholegrain’ in the product name. These laws are carried through to the ingredient labelling requirements of the Code.

In addition when the term ‘wholegrain’ is used on the label, in the majority of cases it would trigger percentage labelling. Where percentage labelling is triggered for ‘wholegrain’ products, the percentage declaration can appear anywhere on the label, but is most commonly declared in or near the ingredient list or near the name of the food.

Inclusion of the proposed amended definition of ‘wholegrain’ in the Code is concluded to provide overall benefits to stakeholders that outweigh the costs of making the change.

The Final Assessment Report supports the recommendation to amend the definition of wholegrain.

### **Statement of Reasons**

- It is appropriate that the definition of ‘wholegrain’ be amended to reflect processing techniques that retain all of the original grain components.
- Inclusion of the proposed definition for ‘wholegrain’ in the Code is consistent with the growing awareness of the positive nutritional benefits that can be achieved through increased consumption of wholegrains and their milled products, and the range of foods that can be included in the diet to obtain these potential benefits.

- Notwithstanding the inclusion of ‘wholemeal’ in the definition of ‘wholegrain’, the definition of ‘wholemeal’ has been retained. This amendment provides an identity for wholemeal that, in conjunction with the naming requirements of Standard 1.2.2 and the provisions of the Commonwealth *Trade Practices Act 1974*, the New Zealand *Fair Trading Act 1986* and the Australian State and Territory Food Acts and Fair Trading Acts operate as a disincentive for predominantly ‘wholemeal’ foods to use ‘wholegrain’ in the product name.
- None of the section 10 objectives of the FSANZ Act would be compromised by making this change.

## 1. Introduction

FSANZ received a non cost-recovered Application from BRI Australia Ltd on 6 December 2001 to amend if necessary, the definition of the term ‘wholegrain’ in Standard 2.1.1 – Cereals and Cereal Products of the Code.

This Application is at the Final Assessment stage under section 15 of the FSANZ Act.

A 6-month extension to the statutory time was requested and granted at the FSANZ13 Board meeting in October 2004, with the Application to now be finalised by 16 April 2005.

## 2. Regulatory Problem

The Applicant considers that the definition of ‘wholegrain’ in Standard 2.1.1- Cereals and Cereal Products, in the Code is too narrow, inconsistent with international practice and severely limiting for food manufacturers and potentially misleading for consumers. The Applicant also claims that the current definition is inconsistent with common usage and public health documents such as the Dietary Guidelines for Australians and the Australian Guide to Healthy Eating.

The Applicant suggests that the definition of the term ‘wholegrain’ in Standard 2.1.1 – Cereals and Cereal Products, be amended to –

‘wholegrain is intact, dehulled, ground, cracked or flaked grains where the components – endosperm, germ and bran are present in substantially the same proportions as they exist in the intact grain’.

The Application relates to any foods made from grains such as breads, breakfast cereals, pasta, biscuits, oats, rice and grain-based snack foods.

The Applicant claims that most grain-based foods are nutritious and there is increasing evidence that consumption of wholegrain foods is associated with a range of health benefits not associated with consumption of refined foods. The Applicant contends that consumers need to be provided with sufficient information to enable them to make an informed choice in line with FSANZ’s objective ‘to provide adequate information relating to food to enable consumers to make informed choices and to prevent fraud and deception’.

### 2.1 Current Regulations

The current definition of the term ‘wholegrain’ in Clause 1 to Standard 2.1.1 – Cereals and Cereal Products, is:

‘**wholegrain** means the unmilled products of a single cereal or mixture of cereals’.

Clause 1 also defines the term ‘wholemeal’ as:

‘**wholemeal** means the product containing all the milled constituents of the grain in such proportions that it represents the typical ratio of those fractions occurring in the whole cereal’.



### 2.1.1 *International*

There is no international standard to define the term ‘wholegrain’.

### 2.1.2 *United States*

The US Food and Drug Administration (FDA) and the United States Department of Agriculture (USDA) do not define wholegrain.

The FDA permits food manufacturers to make the following health claim on wholegrain food products, as possibly reducing the risk of coronary heart disease:

‘Diet rich in wholegrain foods and other plant foods and low in total fat, saturated fat and cholesterol may reduce the risk of heart disease and some cancers’.

For the purpose of this health claim wholegrain foods must contain 51% or more of wholegrain ingredients (bran, germ and endosperm) by weight per reference amount, with dietary fibre 2.3g per 50g or 1.7g per 35g and the food must be low in fat.

A definition is provided by The American Association of Cereal Chemists (AACC) as follows:

‘Wholegrains shall consist of the intact, ground, cracked or flaked caryopsis, whose principal anatomical components –the starch endosperm, germ and bran are present in substantially the same relative proportions as they exist in the intact caryopsis’.

The definition was subsequently amended in March 2004 by the AACC as follows:

‘Whole cereal grains and foods made from them consist of the entire grain seed usually referred to as the kernel. The kernel is made of three components – the bran, the germ and the endosperm. If the kernel has been cracked, crushed or flaked, then in order to be called whole grain, it must retain nearly the same relative proportions of bran, germ and endosperm as the original grain.

Whole grain ingredients may be used whole, cooked, milled into flour and used to make breads and other products, or extruded or flaked to make cereal products.’

This definition does not have a regulatory status in the United States or in Australia and New Zealand.

## **3. Objective**

In developing or varying a food standard, FSANZ is required by its legislation to meet three primary objectives, which are set out in section 10 of the FSANZ Act. These are:

- the protection of public health and safety;
- the provision of adequate information relating to food to enable consumers to make informed choices; and
- the prevention of misleading or deceptive conduct.

In developing and varying standards, FSANZ must also have regard to:

- the need for standards to be based on risk analysis using the best available scientific evidence;
- the promotion of consistency between domestic and international food standards;
- the desirability of an efficient and internationally competitive food industry;
- the promotion of fair trading in food; and
- any written policy guidelines formulated by the Ministerial Council.

## **4. Background**

### **4.1 Historical Background**

Proposal P180 (the review of Australian and New Zealand regulations to develop Standard 2.1.1 – Cereal and Cereal Products) included discussions and consultations relating to definitions, including ‘wholegrain’ and ‘wholemeal’. A number of submissions were received including those from the Dietitians Association of Australia and Goodman Fielder that supported the proposed definition of ‘wholegrain’, which was eventually gazetted as the current definition. The former Australia New Zealand Food Authority (ANZFA, predecessor authority to FSANZ) recommended the definition of ‘wholegrain’, noting in the Inquiry Report that manufacturers can still use the terms ‘kibbled’, ‘cracked’ and ‘multigrain’ provided that the terms are not false, misleading or deceptive. ANZFA did not define these terms in line with the general policy of minimizing unnecessary prescriptiveness.

Definitions for the terms ‘wholegrain’ and ‘wholemeal’ were included by ANZFA as it was considered that there was potential for misleading practices to occur if the terms were not distinguished.

## **5. Relevant Issues**

### **5.1 Narrowness of current definition**

The Applicant claims that the current definition for ‘wholegrain’ in Standard 2.1.1 leaves little, if any, cereal or bread formulation that could be counted as ‘wholegrain’ and means that a few breakfast cereals and crispbreads but virtually no breads, would qualify as ‘wholegrain foods’ no matter what criteria are used.

#### *5.1.1 Evaluation*

The current definition for term ‘wholegrain’ (refer to figure 1-A.) limits the term to apply only to the intact grain. Standard 2.1.1 currently defines ‘wholegrain’ to mean the unmilled products of a single cereal or mixture of cereals.

The draft definition of ‘wholegrain’ is:

**wholegrain** means the intact grain or the dehulled, ground, milled, cracked or flaked grain where the constituents – endosperm, germ and bran – are present in such proportions that represent the typical ratio of those fractions occurring in the whole cereal, and includes wholemeal.

The draft definition of ‘wholegrain’ would widen the meaning of the term so that it would encompass the intact grain, dehulled grain, ground grain, cracked grain or flaked grains and include wholemeal (refer to figure 1- B.). The current definition of ‘wholemeal’ would be retained.

The definition of the term ‘wholemeal’ would still be distinct from the definition of the term ‘wholegrain’. The term ‘wholemeal’ would be a subset member of the broader term ‘wholegrain’. The draft definition for ‘wholegrain’ does not alter the integrity of the existing definition for ‘wholemeal’.

The draft definition of the term ‘wholegrain’ and the current definition of the term ‘wholemeal’ would still distinguish between the two terms but broaden ‘wholegrain’ to include a wider range of particle sizes (providing same proportions of components present) and allow for dehulling (e.g. oats) (refer to Attachment 3 – Food Technology Report).

Submissions received on the Initial Assessment Report (Attachment 4) commented that a change in definition for ‘wholegrain’ could be confusing to consumers who could expect visible whole grains present in or on a product. FSANZ requested from the Applicant further information on consumer understanding of the terms ‘wholegrain’ and ‘wholemeal’ when used on food labels that would support an amendment to the current definition of ‘wholegrain’. In addition, FSANZ also requested information on whether consumers identify the terms ‘wholegrain’ and/or ‘wholemeal’ as characterising ingredients of food products. In response, the Applicant provided consumer research studies relevant to consumer understanding of the term ‘wholegrain’ (Attachment 5).

The current definition does not take into account the different contextual uses of the word ‘wholegrain’; rather, it defines whole grain not ‘wholegrain’. Very few foods truly comply as ‘intact grain’ or ‘whole grain’ foods under the present definition. The effect of the current definition is too narrow and means that few, if any, cereal or bread formulations could be counted as ‘wholegrain’. The effect of the current definition of ‘wholegrain’ is that a few breakfast cereals and crispbreads but virtually no breads, could be identified as ‘wholegrain foods’ by consumers.

It is important that in providing a definition of ‘wholegrain’ in the Code it is consistent with the false/misleading/deceptive conduct provisions of the Trade Practices Act (TPA) and Fair Trading Laws. The Australian Competition and Consumer Commission (ACCC) advised that the descriptor ‘wholegrain’ has not been specifically considered in the past or in the context of any investigation. Whether the revised definition proposed for ‘wholegrain’ under Standard 2.1.1 Cereals and Cereal Products, is considered inconsistent with the fair trading provisions or, for that matter, likely to result in a breach of the TPA, will ultimately depend on the circumstances of each case.

The Applicant’s request to incorporate criteria for ‘whole grain’ labelling claims of ‘Good source of whole grains’ and ‘Source of whole grains’ that were previously provided in submissions to Proposal 234 – Nutrient Content and other related claims, were considered to be beyond the scope of Application A464.

The current definition for ‘wholegrain’ is inconsistent with Australian, New Zealand and international usage of the word. The Macquarie dictionary defines ‘wholegrain’ as – *adjective* - wholemeal.

It was submitted that the ‘Westminster’ (sic, Webster?) dictionary defines whole as ‘entire, not defective or imperfect, the entire thing, a complete system. The proposed draft definition of the term ‘wholegrain’ would ensure that the entire grain or complete system of components of the grain is included in the food.

The definitions for ‘wholegrain’ and ‘wholemeal’ in Standard 2.1.1 - Cereals and Cereal Products and the draft definition for ‘wholegrain’, are not prescribed names so use of terms such as ‘multigrain’, ‘full’, ‘kibbled’ and ‘cracked’ could continue to be used on labels to describe food products appropriately.

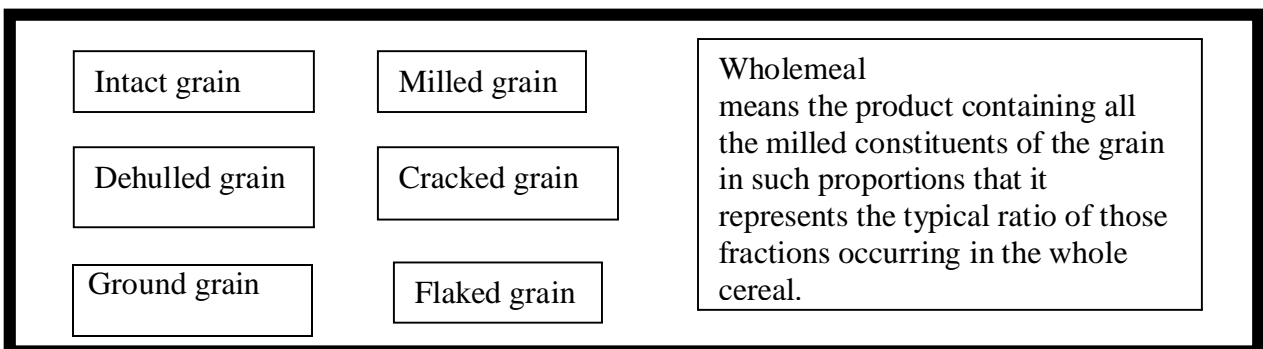
**A. CURRENT DEFINITION**

**WHOLEGRAIN** means the unmilled products of a single cereal or mixture of cereals.

**WHOLEMEAL** means the product containing all the milled constituents of the grain in such proportions that it represents the typical ratio of those fractions occurring in the whole cereal.

**B. DRAFT DEFINITION**

**wholegrain** means the intact grain or the dehulled, ground, milled, cracked or flaked grain where the constituents – endosperm, germ and bran – are present in such proportions that represent the typical ratio of those fractions occurring in the whole cereal, and includes wholemeal.



**Figure 1. A comparison of the current and proposed draft definitions for the term ‘wholegrain’.**

## 5.2 Implications of an expanded ‘wholegrain’ definition

The Applicant states that the common usage of the term ‘wholegrain’ refers to grain-based foods that contain all the components of the grain (bran, germ, and endosperm). This interpretation is reflected in The Dietary Guidelines for Australians, which encourage consumers to -

‘Eat plenty of breads and cereals (preferably wholegrain), vegetables (including legumes) and fruits’.

and the Australian Guide to Healthy Eating recommends consumption of -

‘Wholegrain breads, breakfast cereals, brown rice and wholemeal pasta more often than white or refined varieties’.

The Applicant claims that the intent of these documents is not to direct consumers only to foods made from intact grains but to encourage consumption of foods that contain all the components of the grain.

### 5.2.1 Evaluation

In describing desirable groups of foods, the Australian Dietary Guidelines and the Australian Guide to Healthy Eating<sup>1</sup> apply *wholegrain* respectively to breads and cereals, or to breads and breakfast cereals, but not to brown rice or ‘wholemeal’ pasta. While *wholegrain* has been generically applied to the cereal-based food group as a simple description in these documents, the term *wholemeal* has also been used but confined to products made from ‘wholemeal’ flour. There is no clear understanding of the reference foods that the authors intended the term *wholegrain* to encompass in these dietary recommendations; in some cases ‘wholemeal’ is included, and in other cases it is not. In all cases though, the authors apply similar public health connotations to the different terms, that is, wholemeal or wholegrain foods are recommended as desirable foods to include in a balanced diet.

As mentioned in the Nutrition Assessment Report (Attachment 2), inclusion of an expanded definition of ‘wholegrain’ in the Code would be consistent with growing awareness of the positive nutritional benefits that can be achieved through increased consumption of whole grains, and the range of foods that can be included in the diet to obtain these benefits.

FSANZ therefore considers the expansion of the ‘wholegrain’ definition to reflect processing techniques that retain all of the original grain components to be consistent with current public health opinion.

---

<sup>1</sup> Copies of these documents can be obtained by contacting the Australian Department of Health and Aging on +61 2 6289 1555 or from the internet at <http://www.health.gov.au/publth/strateg/food/index.htm>.

### 5.3 Issues raised in submissions to the Draft Assessment Report

#### 5.3.1 Glycaemic Index (GI) is lower for whole, intact grains

The Environmental Health Unit of Queensland Public Health Services stated that the processing of grains leads to their different physiological handling by the body, with a lower glycaemic response (change in blood glucose level) for whole grains than for wholemeal. The Heart Foundation of New Zealand also acknowledged that breaking down grains into smaller particle sizes increases the GI of grain-based foods.

Both of these submitters also clarified their comments by stating that they recognise the nutritional and health benefits of foods containing intact grains. The Dietitians Association of Australia (DAA) also mentioned that consumers should be encouraged to include more 'wholegrain foods' in their diets as a way to follow Dietary Guidelines, increase fibre and lower the GI.

##### 5.3.1.1 FSANZ consideration

The Nutrition Assessment Report (Attachment 2) has indicated that there is a significant positive influence on health outcomes from the consumption of foods containing all of the components found within cereal grains. However, it is also mentioned that as the size of the cereal grain particle decreases, the GI value of foods containing those particles increases. In particular, the processing of whole grains to a particle size consistent with 'wholemeal' flour will significantly increase a product's GI value in comparison with the intact, whole grain<sup>2</sup>.

The Nutrition Assessment Report makes two conclusions:

- it is appropriate that the definition of 'wholegrain' be expanded to reflect processing techniques that retain all of the original grain components; and
- any regulatory amendment to the definition of 'wholegrain' should minimise or eliminate the development of a situation where 'wholemeal' products are required or encouraged to label as 'wholegrain' foods.

The above outcomes were detailed at Draft Assessment and were incorporated into further considerations on the drafting of a definition of 'wholegrain'. It was determined that to best maintain an appropriate relationship between 'wholemeal' and 'wholegrain' foods, the current definition of 'wholemeal' would be retained within Standard 2.1.1. The definition of 'wholegrain' proposed at Draft Assessment also encompassed wholemeal foods, as current requirements under the *Trade Practices Act 1974* would ensure the maintenance of the correct identity of grain-based foods in conjunction with a separate 'wholemeal' definition.

Further discussions on submitter comments relating to the inclusion of 'wholemeal' in the proposed 'wholegrain' definition can be found in Section 5.3.4 below.

As submitters have provided no additional evidence or arguments on the GI to those considered at Draft Assessment, the findings of the Nutrition Assessment Report and their application remain unaltered at Draft Assessment.

### 5.3.2 *Consumer confusion*

The Environmental Health Unit of Queensland Public Health Services stated that there is the potential for consumer confusion over the labelling of both wholegrain and wholemeal products as ‘wholegrain’. The Victorian Department of Human Services stated that there is no consumer confusion at present.

The Applicant provided industry research findings for the Draft Assessment indicating current widespread consumer confusion with the identification of wholegrain foods.

#### 5.3.2.1 FSANZ Consideration

FSANZ is persuaded that consumer confusion does exist, especially with breads made from whole grains. Bread is defined in Standard 2.1.1 as being prepared from one or more cereal flours or meals, and it is not possible to manufacture bread simply through binding intact grains together. Many breakfast cereals do not contain all the components of the original grains and many contain added salt and sugar. The Food Technology Report describes basic milling processes and various cereal products, and mentions that there are few foods prepared solely from intact grains.

The Nutrition Assessment Report also identifies the difficulty consumers have with distinguishing between ‘wholegrain’ food and other cereal products. In particular, consumers have difficulty with the relationship between ‘wholemeal’ and ‘wholegrain’, and it is concluded that any change to the definition of ‘wholegrain’ must ensure that ‘wholemeal’ foods remain identifiable at a retail level.

Therefore, to minimise/prevent consumer confusion, it is preferable that manufacturers of grain-based foods have the option to select the product identity that is most meaningful for consumers, supports nutrition education, and does not contribute to confusion at a retail level. The requirements for the appropriate identification of grain-based foods are maintained by the proposed draft definition for ‘wholegrain’ and the retained definition of ‘wholemeal’. The labelling requirements for ‘wholegrain’ and ‘wholemeal’ products that should prevent misleading and deceptive conduct are discussed under section 5.3.5.

FSANZ proposes to provide information for consumers concerning the requested change to the definition of wholegrain on the FSANZ website and in a fact sheet.

### 5.3.3 *Management of medical conditions*

The Environmental Health Unit of Queensland Public Health Services states that there is a need to distinguish between ‘wholegrain’ and ‘wholemeal’ foods in the management of medical conditions such as diverticulitis and irritable bowel conditions. The Queensland submission states that evidence supports the consumption of wholegrain foods (i.e. intact structure) in the management and prevention of type 2 diabetes, coronary heart disease and obesity.

The Heart Foundation of New Zealand notes that the proposed definition would provide greater use of the term ‘wholegrain’ on foods, which possibly have health benefits.

The South Australian Department of Health notes that there is potential to link the term ‘wholegrain’ to health claims.

#### 5.3.3.1 FSANZ Consideration

The issue of the impact of wholegrains on health, and on specific illnesses, was addressed at Draft Assessment as part of the Nutrition Assessment Report in response to a submission. The Nutrition Assessment Report determined that positive health benefits could be achieved by the consumption of foods containing all the components found within cereal grains, and that the inclusion of an expanded ‘wholegrain’ definition was consistent with the growing awareness of these positive health benefits. In respect to specific illnesses that may be adversely affected by the consumption of intact grains (e.g. irritable bowel disease), the Nutrition Assessment Report mentions that these conditions require ongoing medical supervision, which already ensures a level of assistance for patients when selecting grain-based foods appropriate to their condition.

The regulation of health claims is currently the subject of Proposal P293 – Nutrition Health and Related Claims. Application A464 relates only to the definition of wholegrain and has no direct influence on the outcomes of Proposal P293.

Proposal P293 has already indicated that one high-level claim involving ‘wholegrain’ foods (the consumption of fruit, vegetables and wholegrain foods and the associated risk of coronary heart disease) could be assessed for approval. Although the proposed amendments of Application A464 may influence the scope of foods considered within these claims, any criteria for such claims will still remain as part of the considerations made under Proposal P293.

#### *5.3.4 Changes to the proposed definition*

The New Zealand Food Safety Authority (NZFSA) suggested omitting the word ‘milled’, but leaving ‘ground’ and adding an editorial note excluding milling and wholemeal from the definition. NZFSA however agrees that the definition of ‘wholegrain’ should be amended to reflect processing techniques that retain all the original grain components and allow for dehulling.

The South Australian Department of Health suggested modifying the definition to refer to the components of the original intact grains.

The Applicant suggested splitting the phrase ‘and includes wholemeal’ from the proposed definition and adding a separate sentence to the effect that the definition includes wholemeal, as this may be clearer and easier to interpret.

The AFGC finds the proposed definition consistent with the AACC and USFDA definitions. The other industry submissions all support the proposed definition.

The Queensland Public Health Services submission opposes changing the definition and reiterates their previous comment requesting reinstatement of compositional requirements for bread, as it is an icon food.



#### 5.3.4.1 FSANZ consideration

Establishing agreed definitions within Standard 2.1.1 – Cereals and Cereal Products, is a difficult task. There were 18 suggested changes to the draft definition of bread during the review of the Standard.

The proposed definition has general support but there are some concerns about including wholemeal flours and meals within the definition, without qualification. These concerns were also raised at Draft Assessment and are linked to the next discussion point on labelling and the future consideration of possible health claims.

#### *5.3.5 Labelling Issues*

Queensland Public Health Services stated that under the new Code, the manufacturer could choose to make bread with whatever percentage of the relevant flour they want. As a result the onus is now on the consumer to note the percentage labelling to establish how much wholegrain /whole meal flour is used in bread.

The Heart Foundation of New Zealand noted that under the proposed definition there is potential for more processed foods to be labelled as wholegrain. They support percentage labelling being triggered by the term ‘wholegrain’ but they recommend that foods labelled as ‘wholegrain’ have a minimum percentage of wholegrain ingredients (e.g. 25%). As well they recommend that dietary fibre content be listed within the nutrition panel.

New Zealand Food Safety Authority (NZFSA) wants the wholegrain term qualified by an editorial note so that if the wholegrain is ground and the resultant particle size is not discernable the ingredient should be described as ‘ground wholegrain’ or ‘wholegrain flour’.

#### 5.3.5.1 FSANZ Consideration

While minimum compositional standards set minimum levels or ‘benchmarks’ for key or characterising ingredients, they do not guarantee a standardised composition. A food that was standardised under the old Code such as ice cream, while made to a minimum standard could be variable in composition. Percentage labelling provides consumers with information on the composition of characterising ingredients or components in food and allows consumers to exercise consumer choice. The naming requirements of the Code in addition to the general provisions in food law and fair trading law regarding misleading and deceptive conduct provide an appropriate level of protection for consumers.

Clause 1 of Standard 1.2.2 of the Code requires that where the name of the food is not prescribed as is the case for the terms ‘wholemeal’ and ‘wholegrain’, the name or description of the food must be sufficient to indicate the food’s true nature. In addition the Commonwealth *Trade Practices Act 1974*, the New Zealand *Fair Trading Act 1986* and the Australian State and Territory Food Acts and Fair Trading Acts create offences in relation to a wide range of conduct, including labelling and representations about food which is misleading or deceptive. These laws apply to all food regardless of any specific labelling requirements in the Code. These provisions are carried through to the ingredient labelling provisions of the Code.

It is preferable that manufacturers have the option to select the product identity that is most meaningful for consumers, supports nutrition education, and does not contribute to confusion at a retail level.

The requirements for the appropriate labelling of the identity of the food are maintained by the draft definition for 'wholegrain' and the retained current definition of 'wholemeal'. Retaining the definition of 'wholemeal' in the Code provides manufacturers with an option to select the term which best reflects the true nature of the food, which is not misleading and which meets consumer expectations.

A food product that was labelled for identity, as for example 'wholemeal bread', would also be able to be considered as a source of wholegrain ingredients provided that all the components of the grain were present in substantially the same proportion, as they exist in the intact grain as specified in the definition. The naming provisions of the Code, the fair trading provisions in relation to misleading and deceptive conduct and the retained definition of 'wholemeal' should ensure that a food that contains very little wholegrain ingredients is not labelled or represented as wholegrain.

Given the above requirements, percentage labelling is not the singular means to prevent false and misleading conduct in relation to the naming and representation of 'wholemeal' and 'wholegrain' foods. Nevertheless, percentage labelling will be triggered for the term 'wholegrain', when it is considered to be a characterising ingredient, this will occur where 'wholegrain' is:

- mentioned in the name of a food; or
- emphasised on the label of a food in words, pictures or graphics; but
- will not apply where the term 'wholegrain' which, while mentioned in the name of the food, is not such as to govern the choice of the consumer, because the variation in the quantity is not essential to characterise the food, or does not distinguish the food from similar foods.

Therefore, when the term 'wholegrain' is used on the label, in the majority of cases it would trigger percentage labelling. Where percentage labelling is triggered for 'wholegrain' products, the percentage declaration can appear anywhere on the label, but is most commonly declared in or near the ingredient list or near the name of the food.

The change to the definition of 'wholegrain' will allow for greater use of the term wholegrain in labelling of foods containing wholegrain ingredients, provided that the total representation of the product is not misleading. FSANZ is preparing a fact sheet to explain the change and labelling implications if the Application is approved.

## **6. Regulatory Options**

Options available are:

- Option 1. Reject the Application pursuant to section 15A(1)(b) of the *Food Standards Australia New Zealand Act 1991*;
- Option 2. Accept the Application and amend Standard 2.1.1 – Cereal and Cereal Products, to provide a different definition for 'wholegrain'.

Option 3. Accept the Application and amend Standard 2.1.1 – Cereal and Cereal Products, by removing the definition for ‘wholegrain’.

## 7. Impact Analysis

Parties affected by the options outlined above include:

1. Those sectors of the food industry manufacturing and selling foods made from grains such as breads, breakfast cereals, pasta, biscuits, oats, rice and grain-based snack foods. Changes to the definition of ‘wholegrain’ may result in labelling changes to grain based foods offered for sale to consumers.
2. Consumers of foods containing wholegrain ingredients.
3. Government agencies enforcing the food regulations.

### 7.1 Option 1

Reject the Application pursuant to section 15A(1)(b) of the FSANZ Act.

<b>AFFECTED PARTY</b>	<b>BENEFITS</b>	<b>COSTS</b>
<b>Government</b>	No perceived benefits	No perceived costs.
<b>Industry</b>	No perceived benefits	Cost to industry in not having a wider definition of ‘wholegrain’ that includes kibbled, cracked and wholemeal. Foods that are considered by nutritionists to be good sources of ‘wholegrains’ may not be permitted to be labelled appropriately.
<b>Consumers</b>	No perceived benefits	Consumers may potentially be misled or confused when identifying ‘wholegrain’ foods. This may impact on public health as dietary guidelines recognise the importance of wholegrain food in the diet.

### 7.2 Option 2

Option 2. Accept the Application and amend Standard 2.1.1 – Cereal and Cereal Products to provide a different definition for ‘wholegrain’.

<b>AFFECTED PARTY</b>	<b>BENEFITS</b>	<b>COSTS</b>
<b>Government</b>	No perceived benefit.	No perceived cost other than the cost of amending the Code.
<b>Industry</b>	A change in definition may allow a wider range of food produced by manufacturers to meet the definition of 'wholegrain'.	No perceived costs.
<b>Consumers</b>	Consumers may have an improved public health benefit of being able to identify 'wholegrain' foods by a more appropriate definition.	Some submissions were concerned that there would not be a distinction maintained between 'wholemeal' and 'wholegrain' and this could have health costs eg in relation to Glycaemic Index. Notwithstanding the amendment bringing 'wholemeal' into the definition of 'wholegrain', the definition of 'wholemeal' has been retained and presents no perceived health costs to consumers. This prevents the situation where 'wholemeal' products are required or encouraged to label the name of the product as a 'wholegrain' food.

### 7.3 Option 3

Option 3. Accept the Application and amend Standard 2.1.1 – Cereal and Cereal Products by removing the definition for 'wholegrain'.

<b>AFFECTED PARTY</b>	<b>BENEFITS</b>	<b>COSTS</b>
<b>Government</b>	No perceived benefits	No perceived cost other than the cost of amending the Code.
<b>Industry</b>	No perceived benefits.	Industry would be restricted by not having a clear and broader definition of 'wholegrain' and this may impact on public health as dietary guidelines recognise the importance of wholegrain food in the diet.
<b>Consumers</b>	No perceived benefits	Consumers may not be informed of a clear definition of 'wholegrain'. This may impact on public health as dietary guidelines recognise the importance of wholegrain food in the diet.

### 7.4 Impact Analysis

Maintaining the *status quo* (Option 1) appears to provide no benefit to the government, industry and consumers. Option 1 maintains the current definition for 'wholegrain', which excludes wholemeal flour, kibbled or cracked grains and dehulled grains to be considered as wholegrain.

The current definition is narrow, inconsistent with international use and potentially misleading to consumers.

Option 2, which proposes to amend the definition for ‘wholegrain’, provides benefits to both consumers and industry in Australia and New Zealand. Some submissions were concerned that there would not be a distinction maintained between ‘wholemeal’ and ‘wholegrain’ and this could have health costs eg in relation to Glycaemic Index. Notwithstanding the amendment bringing ‘wholemeal’ into the definition of ‘wholegrain’, the definition of ‘wholemeal’ has been retained. Retaining the definition of ‘wholemeal’ in the Code provides manufacturers with an option to select the term which best reflects the true nature of the food, which is not misleading and which meets consumer expectations. It presents no perceived health cost to consumers.

Option 3, which proposes to delete the current definition of ‘wholegrain’, would still allow industry permission to use the term ‘wholegrain’ on food labels. There is less potential for consumers to be misled or deceived by labelling of wholegrain foods if the term is clearly defined in Standard 2.1.1 Cereal and Cereal Products. Industry is guided by the provision of a broad definition of ‘wholegrain’ in the Code, which still distinguishes the term from ‘wholemeal’ so as to reduce the potential for misleading practices and to comply with the Trade Practices Act and Fair Trading Laws.

Assessment of the costs and benefits of Options 1, 2 and 3 indicates that there would be a net benefit in amending the definition of ‘wholegrain’. Therefore, option 2 is the preferred option.

## **8. Consultation**

### **8.1 Public Consultation**

#### *8.1.1 Initial Assessment*

FSANZ received twenty submissions in response to the Initial Assessment Report.

Six of the submitters supported option 1 which was to reject the application pursuant to section 15 A (1) (b) of the *Food Standards Australia New Zealand Act 1991*. Thirteen submissions supported option 2, to provide a different definition for ‘wholegrain’. One submitter reserved providing comments until after the Draft Assessment. A summary of submissions is provided in Attachment 4 of this report.

#### *8.1.2 Draft Assessment*

Fourteen submissions were received in response to the Draft Assessment Report (see Attachment 4 for the Summary of Submissions). Of those received, two submissions supported option 1 whilst the remaining twelve submissions supported option 2. The Dietitians Association of Australia (DAA) supports the retention of the separate definition of ‘wholemeal’. Issues raised in submissions have been addressed in section 5.3 of this report.

Following both the Initial Assessment report and the Draft Assessment report there was no support for option 3, to accept the application and remove the definition of ‘wholegrain’.

## 8.2 World Trade Organization (WTO)

As members of the World Trade Organization (WTO), Australia and New Zealand are obligated to notify WTO member nations where proposed mandatory regulatory measures are inconsistent with any existing or imminent international standards and the proposed measure may have a significant effect on trade.

Amending the Code to change or remove the definition for ‘wholegrain’ is unlikely to have a significant effect on trade. Therefore no notification was made under either the WTO Technical Barrier to Trade (TBT) or Sanitary and Phytosanitary Measure (SPS) agreements.

## 9. Conclusion and Recommendation

The Final Assessment Report supported the recommendation to amend the definition of wholegrain (Attachment 1) for the following reasons.

- It is appropriate that the definition of ‘wholegrain’ be amended to reflect processing techniques that retain all of the original grain components.
- Inclusion of the proposed definition for ‘wholegrain’ in the Code is consistent with the growing awareness of the positive nutritional benefits that can be achieved through increased consumption of wholegrains and their milled products, and the range of foods that can be included in the diet to obtain these potential benefits.
- Notwithstanding the inclusion of ‘wholemeal’ in the definition of ‘wholegrain’, the definition of ‘wholemeal’ has been retained. This amendment provides an identity for wholemeal that, in conjunction with the naming requirements of Standard 1.2.2 and the provisions of the Commonwealth *Trade Practices Act 1974*, the New Zealand *Fair Trading Act 1986* and the Australian State and Territory Food Acts and Fair Trading Acts operate as a disincentive for predominantly ‘wholemeal’ foods to use ‘wholegrain’ in the product name.
- None of the section 10 objectives of the FSANZ Act would be compromised by making this change.

## ATTACHMENTS

1. Draft variation to the *Australia New Zealand Food Standards Code*
2. Nutrition Assessment Report
3. Food Technology Report
4. Summary of issues raised in public submissions
5. Consumer Research Studies relevant to consumer understanding of ‘wholegrain’

**Draft variation to the *Australia New Zealand Food Standards Code***

**To commence: On gazettal**

[1] *Standard 2.1.1 of the Australia New Zealand Food Standards Code is varied by –*

[1.1] *omitting from clause 1 the definition of wholegrain, substituting –*

**wholegrain** means the intact grain or the dehulled, ground, milled, cracked or flaked grain where the constituents – endosperm, germ and bran – are present in such proportions that represent the typical ratio of those fractions occurring in the whole cereal, and includes wholemeal.

### Nutrition Assessment

Application A464 seeks to amend the definition of ‘wholegrain’ in Standard 2.1.1 – Cereals and Cereal Products in the Code from –

‘**wholegrain** means the unmilled products of a single cereal or mixture of cereals’.  
to –

‘**wholegrain** means the intact grain or the dehulled, ground, milled, cracked or flaked grain where the constituents – endosperm, germ and bran – are present in such proportions that represent the typical ratio of those fractions occurring in the whole cereal, and includes wholemeal’.

A definition of ‘wholemeal’ is also given in Standard 2.1.1:

‘**wholemeal**’ means ‘the product containing all of the milled constituents of the grain in such proportions that it represents the typical ratio of those fractions occurring in the whole cereal’.

The Application has sought no specific amendment to the definition of ‘wholemeal’, instead requesting that ‘wholemeal’ be considered a subset of the definition for ‘wholegrain’ as shown above.

Throughout this assessment, the meaning of the terms ‘wholegrain’ and ‘wholemeal’ will be used as currently defined in Standard 2.1.1 of the Code. Other forms such as italics or without the punctuation marks take their meaning from the surrounding context.

#### *Scope of the Nutrition Assessment*

The processing techniques encompassed by this Application are unlikely to have a negative impact on the general nutrient profile of grain-based foods, as these processing methods do not involve the removal and extraction of a grain’s bran layer. It is only when the bran layer has been partially or completely separated out that the resultant grain will contain a reduced micronutrient and fibre content (Reddy and Love, 1999, Slavin et. al., 2001). Therefore, further consideration has not been given in this assessment to the impact of processing methods on the general nutrient composition of cereal grains.

The main focus of nutrition assessment will instead be to review the proposed amendment and its implications for public health, including the impact on nutrition education. Particular attention has been given to:

- the scientific literature on nutritional and health implications from consuming grains of differing particle sizes, and from consuming *wholegrain* foods in general;
- whether certain medical conditions will be contraindicated by the changes proposed in the Application; and
- how consumers perceive the term *wholegrain*.



## Scientific Literature Associated with the Consumption of Grain-Based Foods

When reviewing the literature on grain-based foods, three issues emerge that are of relevance to this Application:

- Interpretation of the term *wholegrain* throughout available scientific literature;
- The influence of *wholegrain* foods on the risk of developing various chronic illnesses.
- How variations in the particle size of grains influences their digestion, particularly the impact on the GI. The findings on the GI are relevant for this application, as the proposed definition for ‘wholegrain’ encompasses all grain-based foods where the original grain components are present at any particle size, including ‘wholemeal’ foods.

### *The Definition of Wholegrain Used Within Scientific Literature*

The health outcomes observed with the consumption of *wholegrain* foods are generally identified as applying to foods containing all the components of a cereal grain. However, ambiguity exists within this research as to the intended definition of *wholegrain*, and to the exact nature of the foods to which the identified health outcomes are attributed.

Often the term *wholegrain* is applied as broadly as possible in scientific literature, and most commonly refers to unrefined cereal and cereal products irrespective of their grain particle size. In some studies, grains containing separated components such as the bran or germ are included within the category of *wholegrain* (Jacobs et. al. 1998a, Jacobs et. al. 1998b, Slavin 2000). No studies have been identified that assess whole intact grains in isolation, nor have any studies been identified where a comparison has been made between diets containing different amounts of whole intact grains and whole grains of a smaller particle size.

The ambiguity existing in the literature creates difficulty in the interpretation of results. Venn and Mann 2004 state: ‘the fact that grain structure is seldom taken into account in epidemiological and dietary intervention studies makes interpretation of results imprecise’. Therefore, FSANZ considers the most reliable means of assessing the scientific literature on this subject is to categorise *wholegrains* as encompassing products of all particle sizes, unless further clarification had been provided within the literature.

### **Wholegrain Consumption and Chronic Illness**

Over the last ten years, a growing body of evidence has developed in support of a link between intake of *wholegrain* foods (however defined) and a reduction in the risk of developing certain chronic illnesses.

The greatest volume of research in this area relates to the impact of *wholegrain* consumption on coronary heart disease (CHD). It is well documented that the rates of death from, and risk of developing CHD can be reduced with an increased consumption of wholegrain foods (Anderson et. al. 2000, Liu et. al 1999, Liu et. al. 2003, Truswell 2002). Of particular note are the results of the Iowa Women’s Health Study conducted between the period 1986 -1995 (Jacobs et. al. 1998a). The results of this study on 34492 postmenopausal women demonstrated that there is an inverse relationship between wholegrain intake and the risk of death from CHD, and that the results were not attributable to the intake of specific grain constituents such as dietary fibre.

Significant findings have also been identified with the intake of *wholegrain* foods and the risk of developing cancer. Positive benefits have been predominantly observed with the risk of developing colorectal cancer, although limited evidence has demonstrated that the risk of developing prostate and breast cancer may be reduced through increased *wholegrain* intake (Jacobs et. al. 1995, Jacobs et. al. 1998b, Livesey et. al. 1995, McIntosh 2001).

The findings on other chronic illnesses are not as strong as those for CHD and cancer. Some literature is available indicating that an increased *wholegrain* intake may decrease the risk of developing Type II diabetes, however, these studies have not controlled for the GI or for grain particle size (see below) and this area of research is still progressing (Liu 2000, Meyer et. al 2000, Venn and Mann 2004, Willet et. al. 2002).

### *Grain Particle Size and Impact on Nutrient Digestibility*

Changes in particle size that occur from various processing methods do not impact on the nutrient composition of a cereal, so long as all constituents of the original grain are present. However, physical characteristics can affect the digestion of a cereal, and will therefore have an impact on its GI value (Venn and Mann 2004).

The GI is a relative measure of the change in blood glucose levels following the consumption of a meal, food or single ingredient containing carbohydrate in an amount equivalent to the carbohydrate in a reference food (either glucose or white bread). Two hours after consumption, a higher GI food will produce a higher peak in blood glucose than a lower GI food (Foster-Powell et. al., 2002). Consumption of low GI foods has been strongly associated with improved clinical outcomes for a number of chronic illnesses, especially for diabetes (Augustin et. al. 2002, Jenkins et. al. 2002, Rizkalla et. al. 2002, Willet et. al. 2002).

Whole intact grains are typically considered to have a low GI, and the term *wholegrain* is commonly used to describe those cereals that are recommended for inclusion a low GI diet, particularly for the diet of diabetics (Katsilambros 2001).

The most recent published literature (see Table 1) reports that the majority of whole intact grains have low GI values, and that processing methods such as rolling increases the GI.

Although the data varies between cereal types and according to different processing techniques, a relationship between particle size and the GI value can be discerned (Foster-Powell et. al., 2002, Jenkins et. al., 1988, Venn and Mann 2004). If a cereal product contains grains only in the form of a flour or meal (including both white and wholemeal forms), there is a substantial and consistent increase in GI values across all cereal types when compared to the GI value of the intact, unprocessed cereal grain. Mixtures of flour and intact grains typically have GI values in between the values of each of the individual components. It should be noted that this relationship to the GI is not uniform, and that not all foods consisting exclusively of intact grains – such as some breakfast cereals – have a low GI value.

While recognising that the data is inconsistent in some areas, it is concluded that in general, the smaller the cereal grain particle derived from whole grains, the higher the GI value of foods containing or comprising of those particles.

**Table 1: The Glycaemic Index (GI) of various Cereals and Cereal Products (Foster-Powell et. al., 2002)**

Cereal Product *	GI (glucose = 100)	GI (bread = 100)
<i>Unprocessed grains (listed by increasing GI)</i>		
Rye	34 ± 3	42 ± 7
Wheat	41 ± 3	59 ± 3
Barley: <i>Hordeum vulgare</i>	43 ± 6	61 ± 8
Sweet corn	53 ± 4	78 ± 6
Brown rice	55 ± 5	79 ± 6
<i>Processed - unrefined grains (listed by increasing GI)</i>		
Cracked grains - wheat	48 ± 2	68 ± 3
- barley	50	72 ± 7
Rolled grains - rye	66 ± 5	94
<i>Processed - refined grains (listed by increasing GI)</i>		
Pearled barley	25 ± 1	36 ± 2
White rice	64 ± 7	91 ± 9
Cornmeal	69 ± 1	98 ± 1
<i>Bread (listed by increasing GI)</i>		
With - 75-80% whole barley kernels, 20-25% and white wheat flour	34 ± 4	48 ± 9
- 50% whole barley kernels **	43	62 ± 4
- 50% kibbled barley **	48	69 ± 7
- 80% rye kernels, 20% white flour	50 ± 4	71 ± 7
- 80% whole wheat kernels, 20% white flour	52	74 ± 7
- 50-75% cracked wheat kernels (bulgur) **	53 ± 3	76 ± 4
Multi-grain - spelt wheat	54 ± 10	77 ± 14
Wholemeal - rye	58 ± 6	83 ± 8
- spelt wheat	63	91
- barley	70	100
White - wheat	70	101
Wholemeal - wheat	71 ± 2	101 ± 3
<i>Grain-only Breakfast Cereals (listed by increasing GI)</i>		
Barley Porridge (flour:water = 1:1)	55	78 ± 8
Rolled Oats Porridge	58 ± 4	83 ± 5
Vita-Brits	61	87 ± 14
Weet-Bix	70 ± 2	96 ± 4
Puffed Wheat	74 ± 7	105 ± 9

\* Other cereal types have not been included due to the lack of data on differentially processed forms.

\*\* The percentage and type of flour used in these breads is unspecified.

## *The Overall Trend Within the Scientific Literature*

Available scientific literature indicates that there is a significant positive influence on health outcomes from consuming foods containing all of the components found within cereal grains. This influence should be qualified, as recent advances in knowledge on the GI have demonstrated that including grains in a food at a particle size consistent with ‘wholemeal’ flour increases the product’s GI value in comparison to the original, whole grain. However, *wholegrains*, in all their forms, produce benefits beyond considerations of glycaemia (Venn and Mann 2004), and are recognised within the literature as conferring positive health benefits when consumed regularly within a diet.

### **The Impact of *Wholegrain* Consumption on Certain Medical Conditions**

The New Zealand Dietetic Association raised the issue in their submission that whole grains are contraindicated for irritable bowel disease (IBD), and that only grains processed to the particle size of flour are suitable for these conditions. There is evidence in support of this argument (IDF 2003), and thus changing the current regulatory distinction between ‘wholemeal’ and ‘wholegrain’ may potentially affect the management of these conditions.

However, in considering the impact on IBD, the necessity to have professional dietary management and advice has also been taken into account. It is recognised that, as part of current treatment practices, individuals with IBD or similar conditions need to become familiar with available food products that are suitable for their condition, and be able to effectively identify safe ingredients from an ingredient list. Professional supervision will assist in the development of these skills, and thus mitigate the risk from inappropriate intakes of unsuitable foods.

### **The Term *Wholegrain* and Nutrition Education**

The Application provided supporting evidence for the use of the term *wholegrain* in authoritative government dietary guidance, specifically the Australian Dietary Guidelines and the Australian Guide to Healthy Eating<sup>2</sup>. In describing desirable groups of foods, these documents apply *wholegrain* respectively to breads and cereals, or to breads and breakfast cereals; but not to brown rice or ‘wholemeal’ pasta. While *wholegrain* has been generically applied to the cereal-based food group as a simple description, the term *wholemeal* has also been used but confined to products made from ‘wholemeal’ flour. There is no clear understanding of the reference foods that the authors intended the term *wholegrain* to encompass in these dietary recommendations; in some cases ‘wholemeal’ is included, and in other cases it is not.

Consumers appear to be confused as to the identity of *wholegrain* foods and ingredients. The Application cites two Australian consumer surveys in support of this view. In a 1999 study, 720 of 1200 subjects could not identify any physical differences between *wholegrain* and refined cereals; and in market research conducted in 2000, only 24% of 700 respondents could name a *wholegrain* food without prompting<sup>3</sup>.

---

<sup>2</sup> Copies of these documents can be obtained by contacting the Australian Department of Health and Aging on +61 2 6289 1555 or from the internet at <http://www.health.gov.au/pubhlth/strateg/food/index.htm>.

<sup>3</sup> Information on this research is available from the internet at <http://www.gograins.grdc.com.au/grainsnutrition/ie/16frame.html>.

Historically, the term *wholegrain* has not been widely used in Australian and New Zealand general parlance, whereas *wholemeal* is a considerably more familiar term, usually applied in relation to foods made solely from whole grains processed into a flour.

Consumer confusion with the term *wholegrain* has also been recognised in the United States, as illustrated by Kantor et. al. 2001:

Assessment of wholegrain intakes is also hampered by the variety of terms used to describe wholegrain foods. Labelling of wholegrain ingredients is often unclear and inconsistent. As a result, many consumers are unable to correctly identify wholegrain foods in the marketplace or accurately report consumption of wholegrain foods in food intake surveys.

Some foods, such as brown rice or whole-wheat [i.e. wholemeal] spaghetti, may be fairly easily identified by consumers as wholegrain foods, but processed products with multiple ingredients, such as breads, crackers and other baked goods, may cause confusion. For example, breads labelled 'multigrain', 'nine-grain' or 'made with wholegrain' may contain some wholegrain ingredients, but typically are made primarily with enriched wheat flour and do not offer the same fibre and other health benefits available from products made mostly from whole grain. Also, many consumers mistakenly believe that a dark or brown colour, such as that found in pumpernickel and rye breads, denotes a wholegrain product, when, in fact, these breads are made mostly with enriched wheat flour and caramel or other added colouring.

Contributing further to community confusion has been the recent use of the term 'grain' in bread-type products such as multi-grain bread, which lends support to the idea that consumers expect a food described as *wholegrain* to contain discernable grain pieces. These consumer expectations have the potential to create a discrepancy between regulation and the intended outcome at a retail level, if the definition of 'wholegrain' is structured in a manner that requires or encourages the labelling of grain-based foods of a uniform consistency (i.e. 'wholemeal' foods) as *wholegrain*. For example, 'wholemeal' pasta uses flour produced from the entire wheat kernel; the promotion of this food as *wholegrain* pasta may be inappropriate, as such a product contains no visible grain, nor would consumers expect this to be the case.

The inability for consumers to distinguish between 'wholemeal' and *wholegrain* products also has implications for public health. As discussed above, 'wholemeal' foods are associated with increasing the GI value of the foods to which they are added. Any negative impact on public health from associating high GI foods with the term *wholegrain* can be offset, if this association were to also promote an overall shift in consumption to a generic range of *wholegrain* foods. However, nutrition education strategies that promote such a shift will achieve the most beneficial results in an environment where consumers are still able to identify high GI 'wholemeal' products from lower GI grain-based foods.

Therefore, to prevent consumers from misconstruing the true nature of foods referred to as *wholegrain*, and to encourage the most appropriate public health and nutrition practices within the community; any change to the definition of 'wholegrain' must ensure that 'wholemeal' foods can continue to remain identifiable at a retail level.

The Application has also referred to the possible future development of claims for 'source' and 'good source' of total ingredients derived from whole grains, or the possible development of a health claim on *wholegrain* foods.

Although it is not in the scope of this assessment to address the subject of claims on food labels, it is recognised that any definition provided in Standard 2.1.1 will influence the development of future criteria (including nutritional and compositional criteria) for any permission to place a wholegrain related claim on food labels.

## Conclusion

Inclusion of the proposed amendment to the definition of ‘wholegrain’ in the Code is consistent with the growing awareness of the positive nutritional benefits achieved through increased *wholegrain* intake (of all particle sizes), and the range of foods that can be included in the diet to obtain these benefits.

From a nutritional perspective, the definitions in Standard 2.1.1 should encourage *wholegrain* consumption in the community rather than place barriers to such dietary practices. Manufacturers should also have the option within food regulations to select an identity for their product that is most meaningful for consumers, supports nutrition education, and does not contribute to confusion at a retail level.

Therefore, it is appropriate that the definition of ‘wholegrain’ be expanded to reflect processing techniques that retain all of the original grain components. However, the widespread promotion of ‘wholemeal’ foods as ‘wholegrain’ would have the potential to create consumer confusion and the development of some adverse nutritional outcomes (i.e. an increased consumption of high GI foods). Ideally, the proposed amendment should address the full spectrum of particle sizes into which whole grains can be processed, as well as preventing the situation where ‘wholemeal’ products are required or encouraged to label as *wholegrain* foods.

## References

Anderson J, Hanna T, Peng X, Kryscio RJ (2000); *Wholegrain’ foods and Heart Disease Risk*; J American College of Nutrition, 19(3): 291S-299S.

Augustin LS, Franceschi S, Jenkins Dj, Kendall CW, La Vecchia C (2002); ‘*Glycaemic index in chronic disease: a review*’; European J Clinical Nutrition 56(11): 1049-1071.

Foster-Powell K, Holt SHA, Brand-Miller JC (2002); *International table of glycaemic index and glycaemic load values: 2002*; AJCN, 76(1):5-56.

Intestinal Disease Foundation (IDF) (2003); *Diverticular Disease (Diverticulosis & Diverticulitis)*; <http://www.intestinalfoundation.org/library/diverticular.shtml>.

Jacobs DR, Slavin J, Marquart L (1995); *Whole grain intake and cancer: a review of the literature*; Nutr Cancer, 24(3): 221-229.

Jacobs DR, Meyer KA, Kushi LH, Folsom A (1998a); *Wholegrain intake may reduce the risk of ischemic heart disease death in postmenopausal women: the Iowa Women’s Health Study*; AJCN, 68(2): 248-257.

Jacobs DR, Marquart L, Slavin J, Kushi LH (1998b); *Wholegrain intake and cancer: an expanded review and meta-analysis*; Nutr Cancer, 30(2): 85-96.

- Jenkins DJ, Wesson V, Wolever TM, Jenkins AL, Kalmusky J, Guidici S, Csima A, Josse RG, Wong GS (1988); *Wholemeal versus wholegrain breads: proportion of whole or cracked grain and the glycaemic response*; BMJ, 297:958-960.
- Jenkins DJ, Kendall CW, Augustin LS, Franceschi S, Hamidli M, Marchie A, Jenkins AL, Axelsen M (2002); *Glycemic index: overview of implications in health and disease*; AJCN, 76(1): 266S-273S.
- Kantor LS, Variyam JN, Allshouse JE, Putnam JJ, Lin B (2001); *The Dietary Guidelines: surveillance issues and research needs*; J Nutr 131: 473S-486S.
- Katsilambros NL (2001); *Nutrition in diabetes mellitus*; Exp Clin Endocrinol Diabetes, 109(Suppl 2): S250-S258.
- Liu S, Stampfer MJ, Hu FB, Giovannucci E, Rimm E, Manson J, Hennekens CH, Willet WC (1999); *Whole-grain consumption and risk of coronary heart disease: results from the Nurses' Health Study*; AJCN, 70(3): 412-419.
- Liu S, Manson J, Stampfer MJ, Hu FB, Giovannucci E, Colditz GA, Hennekens CH, Willet WC (2000); *A prospective study of whole-grain intake and risk of type 2 diabetes mellitus in US women*; American J of Public Health, 90(9): 1409-1415.
- Liu S, Sesso HD, Manson JE, Willett WC, Buring JE (2003); *Is intake of breakfast cereals related to total and cause-specific mortality in men?*; AJCN, 77(3):594-599.
- Livesey G, Wilkinson JA, Roe M, Faulks R, Sybil C, Brown JC, Kennedy H, Elia M (1995); *Influence of the physical form of barley grain on the digestion of its starch in the human small intestine and implications for health*; AJCN, 61(1): 75-81.
- McIntosh GH (2001); *Cereal foods, fibres and the prevention of cancer*; Australian J Nutrition and Dietetics, 58(Suppl 2): S37-S42.
- Meyer KA, Kushi LH, Jacobs DR, Slavin J, Sellers TA, Folsom AR (2000); *Carbohydrates, dietary fiber, and incident type 2 diabetes in older women*; AJCN, 71(4): 921-930
- Reddy MB and Love M (1999); *The impact of food processing on the nutritional quality of vitamins and minerals*; Adv Exp Med Biol, 459: 99-106.
- Rosenberg IH and Mason JB, *Inflammatory Bowel Disease*; in Shils ME, Olson JA, Shike M (1994) 8<sup>th</sup> Ed.; *Modern Nutrition in Health and Disease*; Lea and Febiger, Philadelphia; p1045.
- Slavin JL (2000); *Mechanisms for the Impact of Whole Grain Foods on Cancer Risk*; J American College of Nutrition, 19(3): 300S-307S.
- Slavin JL, Jacobs D, Marquet L (2001); *Grain processing and nutrition*; Crit Rev Biotechnology, 21(1): 49-66.
- Truswell AS (2002); *Cereal grains and coronary heart disease*; Eur J Clin Nutr 56(1): 1-14.
- Venn BJ and Mann JI (2004); *Cereal grains, legumes and diabetes*; EJCN, 58(11): 1443-1461.
- Willet W, Manson J, Liu S (2002); *Glycaemic index, glycaemic load, and risk of type 2 diabetes*; AJCN, 76(1): 274S-280S.

### Food Technology Report

#### Structure of cereals

In Australia and New Zealand the most commonly consumed cereal is wheat. Other cereals of importance include barley, oats, maize, rye, millet, and rice.

In most cereals a single layer of square, thick-walled aleurone cells encase the endosperm, except between the scutellum (part of the wheat germ) and the endosperm (Figure 1). Intact aleurone cells can easily be detected under the microscope in white flour because of their characteristic shape. Botanically, the aleurone layer is the outer layer of the endosperm but, as it tends to remain attached to the bran layers during milling, it is considered by the miller as part of the bran.

The outer bran layers include the cuticle, mesocarp, cross layers, tub cells and testa (Figure 1). The bran layers function to protect the grain. They are rich in dietary fibre and minerals.

The germ consists of two parts, the embryo, which is made up of a rudimentary root and shoot, and the scutellum, which stores food for the embryo. When germination occurs, the scutellum becomes an organ for absorbing and digesting food from the endosperm and transferring it to the growing plant. The embryo, being a separate and distinct structure, can be readily separated from the rest of the grain but there appears to be a 'cementing layer' between scutellum and endosperm.

Although less than 3% of the whole grain by weight, the germ is a concentrated source of oils or lipids, which amount to about 10% of the germ and include a high proportion of unsaturated fatty acids. It also contains about 14% sugars, chiefly sucrose and raffinose. The scutellum is similar in composition to the embryo but the scutellum contains virtually all the thiamin present in the germ and much of the minerals, especially phosphorous.

The adherent husk of the oat grain, like that of the barley grain, is tough and fibrous, and quite inedible. It must therefore be removed in a special shelling process during the manufacture of edible products, for which the kernel is required. The chaff of wheat, which corresponds morphologically with the husks of oats, comes away easily during threshing. Similarly the commercial milling of rice comprises cleaning, shelling or dehulling, and a process in which the bran and germ are partially or wholly removed by an abrasive scouring or pearling process.

#### Milling process

The main aim of the milling process is to separate the maximum amount of endosperm (flour) from the non-endosperm material (bran and germ). The amount of non-endosperm material included in flour influences not only its colour, visual appearance and ash content but also its functional properties for end users due to a complex series of physical and chemical interactions. Flour produced from an entire wheat kernel is also known as 'Graham Flour'. The milling system of cereals differs according to the differences in anatomical structure of the cereal. The steel roller milling system for the production of flour aims to open up the grain, remove the bran layers and the germ and to grind the pure endosperm into flour.

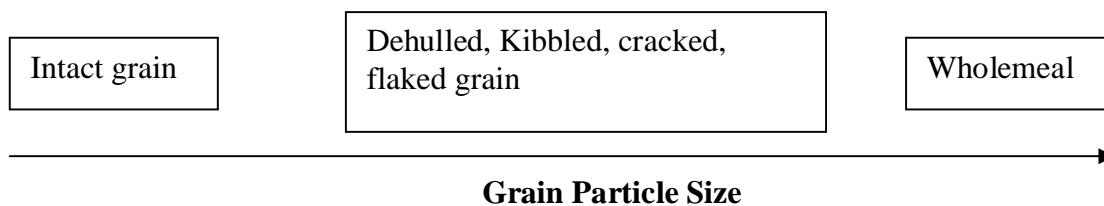


To achieve this a series of grindings and separations are employed, the gradual nature of which is designed to produce white flour having a minimum of bran and germ content. The milling system can be divided into three distinct stages (1) a breaking operation; (2) a series of separations of the ground components by means of both particle size and density; and (3) a size reduction system.

The milling system contains two types of rolls, break rolls, which are fluted, and reduction rolls, which are smooth. The break rolls function to open up the structure, whereas the reduction rolls reduce the particle size.

Each grinding stage yields a 'grind' consisting of a mixture of course, medium, and fine particles, including a proportion of flour. The different size particles are sorted by sifting. Some of the course particles are potentially flour yielding: they are conveyed to a subsequent grinding stage; others can yield no useful flour; these are removed from the milling system and contribute to the milling by-products.

To describe how much of the wheat grain is found as flour after the milling the term 'extraction rate' is used. An extraction rate of 100% signifies that 100% of the wheat grain is delivered as flour; this flour could be described as a whole wheat meal. The bulk product from the mill, the straight-grade flour, generally represents an extraction of around 70%.



## **Cereal Products**

Grains, flour and other milling products are used to produce a very wide range of food products, including bread, cakes, pastries, biscuits, pasta, noodles, breakfast cereals, cereal bars, snack foods etc. A few examples of these product processes are briefly described below.

### Bread

White bread is made from white wheat flour, which has been milled at a high extraction rate. Wholemeal bread (also labelled wheatmeal or wholewheat) is baked from wholemeal flour. Brown bread is usually made from a mixture of wholemeal flour and white flour. Mixed grain bread (multigrain) is made with a mixture of wholemeal and/or white flour, rye meal and/or flour with cracked or kibbled grains, which stand out in the slice. Fibre increased breads have extra fibre (in the form of wheat, oat bran, or soy hulls) to increase the fibre content of the bread.

### Breakfast cereals

These products may include flaked, puffed, shredded and granular products. They are generally made from wheat, maize, or rice, although oats and barley are also used. Some breakfast cereals are prepared by processes that tend to cause dextrinisation of the starch.

For flaked products, wheat, maize (corn flakes) or rice are generally used. The whole wheat or rice grain is cleaned and conditioned to a suitable moisture content, and lightly rolled between smooth rolls to fracture the outer layers. The preparation is then cooked often at elevated temperatures. The conditioned grain is flaked on heavy flaking rolls and may be baked or toasted.

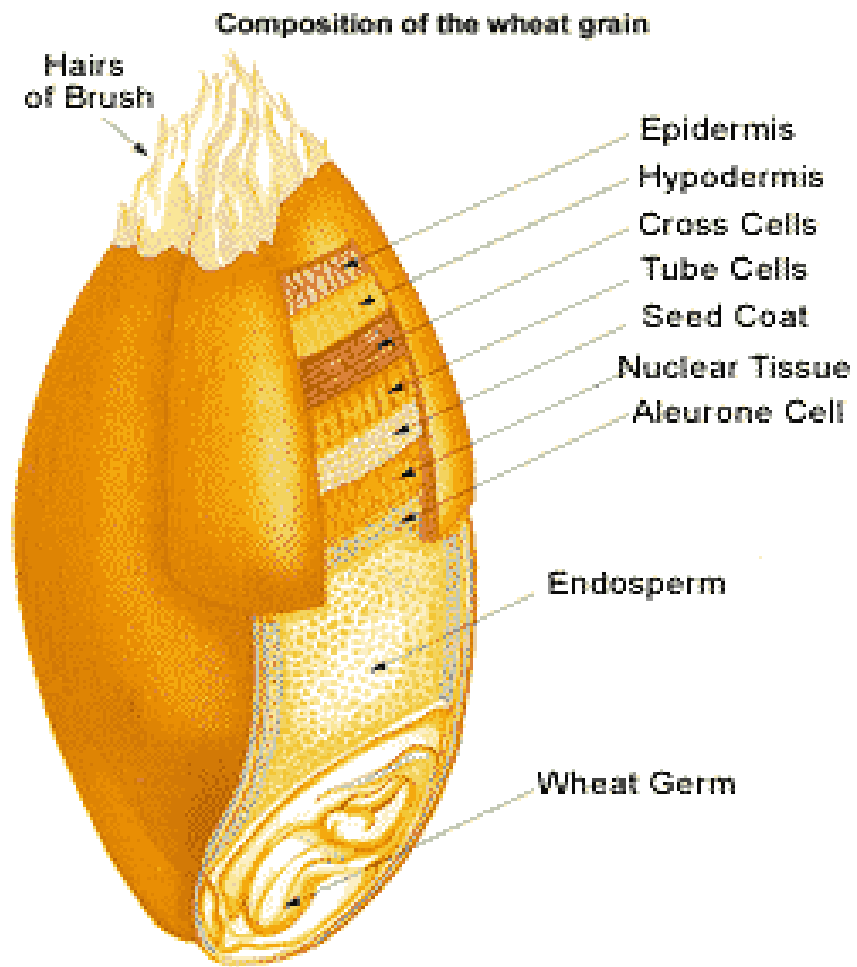
For puffed products wheat, rice or oat grains are prepared by cleaning, conditioning and depericarping (by a wet scouring process). Alternatively, a dough made from the flour is cooked under pressure and extruded through a die. A batch of the prepared dough is fed into a pressure chamber, sealed and heated by steam so that the internal pressure rapidly builds up. The pressure is then rapidly released resulting in a puffed product.

For shredded products a grain such as wheat is cleaned and then cooked with water. The cooking conditions are such that the cooked grain is soft and rubbery and the starch is fully gelatinized. The cooked grain is cooled and fed to shredders consisting of a pair of metal rolls. The shreds are then baked.

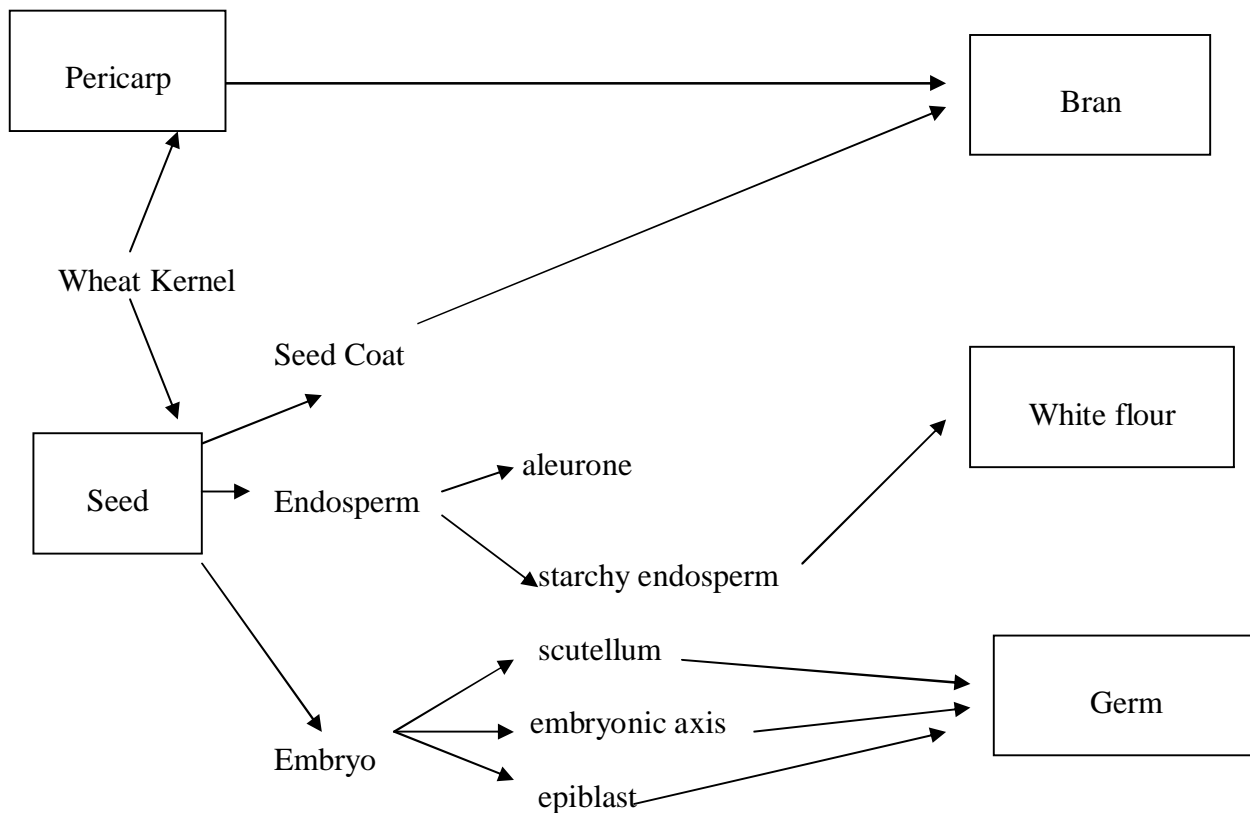
For granular products a yeasted dough is made from wholemeal flour and/or white flour. The dough is fermented and baked. The loaves are broken up, dried and ground to a standard fineness.

#### Pasta and noodles

Pasta generally refers to 'Italian style' extruded products such as spaghetti and macaroni, which are made from coarse semolina milled from durum wheat. Noodles are generally made from bread wheat flour (with finer particle sizes than semolina) by a process of sheeting and cutting. There are a wide range of noodles and pasta that have different wheat quality requirements. Noodles are also made from a variety of other cereals.



**Figure 1. Structure of wheat grain**



**Figure 2: The relationships between the physiological and technological parts of the wheat kernel.**

**References:**

BRI Australia Ltd. 1998. Wheat Quality.

Eliasson, Ann-Charlotte, Larsson Kare. Cereals in Breadmaking. Marcel Dekker, Inc. 1993.

Kent, N.L. Technology of cereals. 2<sup>nd</sup> Ed. Pergamon Press. 1975.

## Summary of submissions

### 1st Round – following Initial Assessment

A total of 20 submissions were received in response to the Initial Assessment Report. Six submissions supported Option 1 to ‘reject the Application’. Thirteen submissions supported option 2, that is, to change the definition of wholegrain. One submitter reserved the right to provide comments until after the Draft Assessment.

Submitter	Comments
Food Technology Association of Victoria Inc.	<ul style="list-style-type: none"> <li>• Supports Option 1 – reject Application;</li> <li>• current definitions of ‘wholegrain’ and ‘wholemeal’ are satisfactory;</li> <li>• rejection of Application does not diminish the choice available to consumers;</li> <li>• a change in definition could be confusing to consumers who could expect to see actual whole grains present in or on a product;</li> <li>• what is the difference between ‘ground’ wholegrain and ‘wholemeal’ as currently defined;</li> <li>• the adoption of one of either Option 2 or 3 would remove the word ‘wholemeal’ from the Standards and current ‘wholemeal’ products would be left without a definition;</li> <li>• the word ‘wholegrain’ tends to indicate that ‘whole’ grains are actually present/visible;</li> <li>• ‘wholegrain’ pasta would be a misnomer as it would only contain ground wholegrain;</li> <li>• a manufacturer who wished to use the descriptor ‘wholegrain’ on a product that actually contains ground wholegrain would have to describe this use in the ingredient list or elsewhere on the label to obviate a false description;</li> <li>• the current definition permits innovation, variety and flexibility without hindrance or loss;</li> <li>• traditional ‘wholemeal’ products would be disadvantaged; and</li> <li>• there is no perceived loss to manufacturers by rejecting the Application.</li> </ul>
Peter N. Ness	<ul style="list-style-type: none"> <li>• supports Option 1 to reject Application;</li> <li>• the current definition is self-explanatory to consumers;</li> <li>• an exclusively wholegrain product means that it does not contain milled grains;</li> <li>• to permit ‘wholegrain’ to be synonymous with ‘wholemeal’ would mislead the consumer; and</li> <li>• wholemeal products usually have a lower Glycemic Index (GI) than wholemeal products, which has implications for diabetics and others who need to control their blood glucose levels.</li> </ul>

National Council of Women of Australia	<ul style="list-style-type: none"> <li>• supports Option 1 – reject Application;</li> <li>• Westminster dictionary defines whole as ‘entire, not defective or imperfect, the entire thing, a complete system. Similarly defines wholemeal as pertaining to flour which contains the whole of the grain, including the ‘germ’ the vital structure from which a new plant will grow under favourable conditions;</li> <li>• proposed definition indicates some degree of process and this runs counter to the definition of wholegrain which is the unmilled product; and</li> <li>• altering the definition will mislead or deceive the consumer into believing they are purchasing a wholegrain product when in fact they are purchasing something less than that.</li> </ul>
Queensland Public Health Services	<ul style="list-style-type: none"> <li>• supports Option 1 reject Application;</li> <li>• the term ‘wholegrain’ is adequately defined in the current definition;</li> <li>• consumers in general understand that ‘wholegrain’ relates to the unmilled products of a single cereal or mixture of cereals.</li> <li>• compositional standards for bread need to be replaced within the Code; and</li> <li>• nutritionists recommend the consumption of wholegrain products because they contain more of the original vitamins and minerals of the cereal grain, and because they are higher in dietary fibre, less energy dense and more filling than processed varieties. Thus they limit the possibility of excess consumption and promote overall good health.</li> </ul>
New Zealand Dietetic Association	<ul style="list-style-type: none"> <li>• supports Option 1 reject Application;</li> <li>• wholegrains and foods made from wholegrains have lower Glycemic Index (GI) values than wholemeal or foods made from wholemeal;</li> <li>• wholegrains appear to offer protection against colon cancer when compared to processed grains;</li> <li>• wholegrains as part of a whole diet are consistently associated with lower rates of major chronic disease risk in epidemiological studies; and</li> <li>• wholegrain and wholemeal products are recommended or contraindicated independently of each other for a variety of common gastrointestinal disorders.</li> </ul>
John Ward	<ul style="list-style-type: none"> <li>• supports Option 1 reject Application;</li> <li>• current definitions of ‘wholegrain’ and ‘wholemeal’ are clear and concise and provide more flexibility and innovation;</li> <li>• the proposed definition falls somewhere between the above two definitions and therefore would create uncertainty;</li> <li>• if the wholemeal definition disappears, we would be left with a nonsensical definition of ‘wholegrain’ that was not ‘whole of the grain’ as the name has and always should represent;</li> <li>• misleading practices could occur in the absence of the two definitions;</li> <li>• there has never been a problem with the use of the qualified term wholegrain eg. ground wholegrain, cracked wholegrain, or even manufactured from wholegrain. This was in part recognised in Volume 1 of the Food Standards Code under B1 (15A) which regulated bread which included the terms ‘wholegrain’ or ‘full grain’ in the name.</li> <li>• rejection of the Application means that consumers will still find ‘wholegrains’ in a product describes as such and will still be able to buy ‘wholemeal’ pasta (or ground wholegrain pasta) rather than the nonsensical ‘wholegrain’ pasta.</li> <li>• this together with % characterising ingredient labelling provides for greater truth in labelling.</li> <li>• the use of ‘wholegrain’ in dietary guidelines (keeping in mind that they also include reference to wholemeal) is to give a clear message of the benefits derived from the whole of the grain, as opposed to ‘white or refined varieties’.</li> </ul>

<p>BRI Australia Ltd and Member Organisations of the Go-Grains Advisory Committee</p>	<ul style="list-style-type: none"> <li>• supports Option 2 to accept the Application;</li> <li>• the success of this Application is necessary in order for food manufacturers to be able to provide consumers with meaningful information on food labels that will assist them to identify wholegrain foods;</li> <li>• public health policy in Australia encourages consumption of grain-based foods, with some emphasis on choosing whole grains;</li> <li>• scientific research studies show a positive association between consumption of wholegrain foods and reduced risk of lifestyle diseases such as heart disease, diabetes and some cancers;</li> <li>• consumer research confirm that most people have difficulty identifying grain-based foods;</li> <li>• labelling information identifying ‘wholegrain’ foods could help consumers to make informed choices about healthy diet; and</li> <li>• the current definition of ‘wholegrain’ in the Code precludes most foods from meeting the suggested labelling criteria, even though functionally, those foods meet the ‘wholegrain’ criteria.</li> </ul>
<p>Dietetic Training Programme University of Otago</p>	<ul style="list-style-type: none"> <li>• supports Option 2 to accept the Application;</li> <li>• misleading for the consumer: Present definition is too narrow and means that few, if any, cereal or bread formulations could be counted as ‘wholegrain’ and means that a few breakfast cereals and crispbreads but virtually no breads, would qualify as ‘wholegrain foods’ no matter what criteria is used;</li> <li>• inconsistent with international practice and research studies such as the Nurses Cohort study which consider wholemeal foods the same as wholegrain foods; and</li> <li>• limiting food manufacturers as very few foods truly count as wholegrains under the present definition. Changes to the definition would cause labelling changes and allow manufacturers to potentially make health claims.</li> </ul>
<p>Australian Consumers’ Association</p>	<ul style="list-style-type: none"> <li>• supports Option 2 to accept the Application;</li> <li>• provides greater consistency with the definition of ‘wholegrain’ internationally (eg US and UK) and with the Dietary Guidelines for Australians and the Australian Guide to Healthy Eating;</li> <li>• increase the number of products labelled as ‘wholegrain’, improving the consumers’ ability to identify wholegrain products and therefore incorporate them in their diet; and</li> <li>• be in line with recent research that suggests that a positive association between consumption of ‘wholegrain’ foods (as per the proposed definition) and reduced risk of lifestyle diseases such as heart disease, diabetes and some cancers;</li> <li>• ACA is cautious about the practical implications of this definition; and</li> <li>• it is unclear what implications the proposed ‘wholegrain’ definition will have on the current definition of ‘wholemeal’.</li> </ul>
<p>The Flour Millers’ Council of Australia</p>	<ul style="list-style-type: none"> <li>• supports option 2 to accept the Application;</li> <li>• the proposed change does not alter the integrity of the existing definition and provides for broader application which is in keeping with many applications in the food manufacturing industry; and</li> <li>• the proposed change is consistent with creating the opportunity for more food products to be identified as wholegrain &amp; contribute to availability of products within recognised dietary guidelines and health eating.</li> </ul>

Goodman Fielder	<ul style="list-style-type: none"> <li>• supports option 2 accept Application;</li> <li>• the broadened definition that includes milled as well as unmilled grains is important for both manufacturers and consumers;</li> <li>• consumers need to be able to recognise what foods are wholegrain foods and manufacturers need to be able to communicate the wholegrain message on a product label; and</li> <li>• currently there are very few products on the market that communicate that they contain wholegrains as most grains used in retail products are kibbled, milled or cracked.</li> </ul>
Sanitarium Health Food	<ul style="list-style-type: none"> <li>• supports option 2;</li> <li>• claims regarding the wholegrain content of foods be allowed on foods that contain both intact as well as those made from ground, cracked or flaked grains where all the components of the grain are present in substantially the same proportions as found in the original grain;</li> <li>• wholegrain foods that have been linked to health outcomes in research are not limited to foods with intact grains but include foods like dark bread, wholemeal flour, and wholewheat spaghetti; and</li> <li>• also support the development of criteria for ‘source’ and ‘good source’ of wholegrains nutrition claims.</li> </ul>
National Heart Foundation of Australia	<ul style="list-style-type: none"> <li>• supports option 2 – accept the Application and provide a different definition of ‘wholegrain’;</li> <li>• assisting consumers to choose healthier grain-based foods is likely to have a public health benefit; and</li> <li>• most of the nutritional benefits of whole grains are not diminished by chopping, grinding or flaking.</li> </ul>
Australian Food and Grocery Council	<ul style="list-style-type: none"> <li>• supports option 2 accept Application;</li> <li>• the current definition does not take into account the different contextual uses of the word ‘wholegrain’; rather, it defines ‘whole grain’ not ‘wholegrain’;</li> <li>• the current definition for ‘wholegrain’ is inconsistent with both Australian and international usage of the word; and</li> <li>• the benefits of changing the definition will outweigh the costs.</li> </ul>
George Weston Foods Limited	<ul style="list-style-type: none"> <li>• supports option 2 accept the Application;</li> <li>• supports the recommendations made by AFGC and BRI and provided input to their submissions.</li> </ul>
National Heart Foundation of New Zealand	<ul style="list-style-type: none"> <li>• supports Option 2 to accept the Application;</li> <li>• encourages the development of a ‘wholegrain’ definition that provides consumers with adequate information to make healthy choices in line with food and nutrition guidelines.</li> <li>• chopping, grinding or flaking does not diminish most of the nutritional benefits of ‘wholegrains’;</li> <li>• replacing the current definition of ‘wholegrain’ with the definition proposed would enable manufactures of ‘wholegrain’ products to market a greater number of ‘wholegrain’ products to consumers.</li> </ul>
Arnott’s	<ul style="list-style-type: none"> <li>• supports option 2 accept the Application;</li> <li>• Arnott’s supports the recommendations made by AFGC; and</li> <li>• kibbled grains which are more palatable (chewable) than whole grains have the same nutritional characteristics as whole grains. However, whole grains in biscuits and other baked products are much harder to chew and have led to consumer complaints and possible reimbursement for dental repair.</li> </ul>



New Zealand Nutrition Foundation	<ul style="list-style-type: none"> <li>• supports option 2 accept the Application;</li> <li>• Government Food and Nutrition Guidelines stress the importance of including whole grains in the daily diet;</li> <li>• research shows an association between consumption of whole grain/wholemeal foods and health benefits;</li> <li>• whole grains not intact are a valuable and bioavailable source of silicon which has been shown to play an important developmental role; and</li> <li>• any new definition needs to be accompanied by a consumer education campaign.</li> </ul>
Australian Quarantine and Inspection Service	<ul style="list-style-type: none"> <li>• defers comment until Draft Assessment Report available.</li> </ul>
New Zealand Food Safety Authority	<ul style="list-style-type: none"> <li>• supports Option 2 to accept the Application</li> <li>• supports the wholegrain definition proposed by the Applicant</li> <li>• considers that the components of the wholegrain, if present in substantially the same proportions as the intact grain, should also qualify for the descriptor 'wholegrain'. A change of definition will widen the number of foods that can be described as wholegrain, which could help consumers make healthy food choices in line with food and nutrition guidelines.</li> </ul>

## 2nd Round – Following Draft Assessment

A total of 14 submissions were received at the Final Assessment with two submissions supporting option 1 ‘to reject the application’ whilst the remaining 12 submissions supported option 2 ‘to amend the definition of wholegrain’.

Submitter	Comments
George Weston Foods Ltd	<ul style="list-style-type: none"> <li>• Supports option 2 – to accept the Application with changes to the definition.</li> <li>• Considers the amendment to the definition of ‘wholegrain’ to be beneficial to all stakeholders including consumers, industry, and government.</li> <li>• Industry will be able to make positive claims, while consumers will be provided with consistent information.</li> <li>• Does not foresee any impact on enforcement agencies and health departments.</li> <li>• It is important that the proposed definition for wholegrain is adopted to give clarity to industry, regulators and consumers.</li> <li>• Industry and other stakeholders recently participated in a consultation regarding a new standard for nutrition, health and related claims and wholegrain/cholesterol, heart disease was one of the short listed claims.</li> <li>• It is acknowledged that the claims on the short list have potential to have a significant public health impact and are consistent with the Australian / New Zealand dietary guidelines.</li> </ul>
Sanitarium, the Health Food Company	<ul style="list-style-type: none"> <li>• Supports option 2 - to accept the Application with changes to the definition.</li> <li>• Sanitarium previously commented on A464 and following draft assessment report continues to support modification of the current definition.</li> <li>• Changes will allow a wider variety of foods that contain all the components on the grain to be referred to as ‘wholegrain’.</li> <li>• Supports the retention of the definition of ‘wholemeal’, as it will allow consumers easier identification of different products in store.</li> </ul>
Dietitians Association of Australia	<ul style="list-style-type: none"> <li>• Supports option 2 by providing a revised definition of ‘wholegrain’.</li> <li>• Dietitians are encouraging clients to include ‘more wholegrain foods’, in their diets to follow Dietary Guidelines, increase fibre and lower the Glycaemic Index.</li> <li>• Consumers have difficulty in identifying ‘wholegrain’ foods in supermarkets.</li> <li>• Supports the retention of the definition of ‘wholemeal’.</li> <li>• Supports an education strategy, incorporating health professionals and consumers.</li> <li>• This should include:               <ol style="list-style-type: none"> <li>1. what constitutes a wholegrain food;</li> <li>2. impact of the change in the definition of wholegrain; and</li> <li>3. how consumers identify wholegrain foods in store.</li> </ol> </li> </ul>
BRI Australia Ltd representing BRI Australia and Go Grains	<ul style="list-style-type: none"> <li>• Supports option 2 with the definition of ‘wholegrain’ meaning the intact grain of the de-hulled, ground, milled, cracked or flaked grain where the constituents - endosperm, germ and bran – are present in such proportions that represent the typical ratio of those fractions occurring in the whole cereal and includes wholemeal.</li> <li>• Acknowledges that the inclusion of wholemeal makes the definition difficult to interpret and suggests amending the definition to include ‘wholemeal’ in a separate sentence.</li> <li>• The new definition would be consistent with the public health policy in Australia encouraging higher consumption of grain-based foods and by USFDA in 2000 (accepted wholegrain health claim) and now also recognised in Europe.</li> </ul>

	<ul style="list-style-type: none"> <li>• Feels option 3 (removing the definition) would not be consistent with FSANZ’s primary objectives.</li> <li>• To leave the definition as is would preclude most foods from meeting labelling criteria even though functionally those foods meet the ‘wholegrain’ criteria.</li> </ul>
--	---

Food Technology Association of Victoria Inc.	<ul style="list-style-type: none"> <li>• Supports option 2 – to accept the Application and prepare a Draft Assessment Report to consider a different definition for ‘wholegrain’.</li> <li>• Considers that if the grain was physically ‘ground’ or ‘milled’ prior to addition to a product then the label should qualify the term ‘wholegrain’ with a relevant descriptor on the label such as ‘ground’ or ‘milled’.</li> </ul>
The Heart Foundation of New Zealand	<ul style="list-style-type: none"> <li>• Supports the development of a wholegrain definition that may increase information about foods so that consumers have adequate information to make healthier food choices in line with food and nutrition guidelines.</li> <li>• Would provide a greater use of the term ‘wholegrain’ and that chopping, grinding or flaking would not affect many of the nutritional benefits.</li> <li>• Breaking down of the grain will increase the glycaemic index of grain-based foods.</li> <li>• Recommends that people choose a variety of carbohydrate-based foods, and states that foods with a low glycaemic index may provide added health benefits.</li> <li>• Also recommends that FSANZ factor the extent of processing and structure of the grain into the definition proposed within A464.</li> <li>• Supports percentage labelling of wholegrain ingredients eg. (25%) and dietary fibre content listed within the nutritional panel.</li> </ul>

<p>Australian Wheat Board Ltd</p>	<ul style="list-style-type: none"> <li>• Supports option 2 being wholegrain means the intact grain or the de-hulled, ground, milled, cracked or flaked grain where the constituents- endosperm, germ and bran – are present in such proportion that represent the typical ratio of those fractions occurring in the whole cereal, and includes wholemeal.</li> <li>• There are many ways to process wheat including, mills, splitters, and mills producing a range of products and on frequent occasions and produce a product similar to an entire intact wheat kernel.</li> <li>• Many of the processes should only be considered as ones that minimally process wheat.</li> <li>• Their research shows that minimally processed wheat with the same proportion of bran, germ, and endosperm as the intact kernels can be used for the production of end-products with minimal impact on quality.</li> </ul>
<p>Nestlé Australia Ltd</p>	<ul style="list-style-type: none"> <li>• Nestle supports the proposed change to the definition of ‘wholegrain’ and its inclusion within standard 2.1.1.</li> </ul>
<p>Flour Millers’ Council of Australia</p>	<ul style="list-style-type: none"> <li>• Supports option 2 by providing a different definition of ‘wholegrain’.</li> <li>• The proposed changes do not alter the integrity of the existing definition and provides for broader application.</li> <li>• Consistent with creating the opportunity for more food products to be identified as wholegrain within recognised dietary guidelines and healthy eating.</li> <li>• The change will be consistent with changes in technology, which will enable more wholegrain products to be made available to the consumer.</li> <li>• The change in legislation will assist in facilitation of this supply/ demand interface without compromise on nutritional integrity.</li> <li>• Provides consistency with international practices and consumer information is adequately provided for with existing labelling standards.</li> </ul>
<p>Australian Food and Grocery Council</p>	<ul style="list-style-type: none"> <li>• Supports option 2</li> <li>• USFDA requires foods for which a wholegrain health claim is made to contain 51% of wholegrain ingredients (bran, germ and endosperm).</li> <li>• Notes that the American Association of Cereal Chemists (AACC) definition was amended in March 2004 to allow wholegrain ingredients to be milled into flour.</li> <li>• Considers that the 2<sup>nd</sup> option in addition to providing benefits to industry and consumers also has a potential for long-term benefits for government.</li> <li>• AFGC supports the FSANZ recommendation to change the definition of ‘wholegrain’ and agrees that the current definition is too narrow, resulting in the inability of industry to use it to describe products.</li> <li>• Present definition does not take into account the different contextual uses of the word.</li> <li>• Suggests the view that dietary guidelines and advice to encourage consumption of foods that contain all the components of the grain.</li> <li>• Notes that results of research into consumer understanding of wholegrain clearly demonstrates the considerable benefit in broadening the definition of wholegrain.</li> </ul>
<p>New Zealand Food Safety Authority (NZFSA)</p>	<ul style="list-style-type: none"> <li>• NZFSA supports option 2.</li> <li>• However would like to see the proposed changes omit milled grain from the definition and add an editorial note.</li> <li>• Wholegrain may only be used when the wholegrain particles are still discernable / visible.</li> <li>• When the wholegrain is ground, the ingredients should be described as ‘ground wholegrain’ or ‘wholegrain flour’.</li> <li>• NZFSA agrees that the definition of ‘wholegrain’ should be amended to reflect processing techniques that retain all of the original grain components and to allow for de-hulling.</li> </ul>

	<ul style="list-style-type: none"> <li>• Does not support milled products (i.e. wholemeal flour) being classified as a subset of wholemeal (believe they mean wholegrain).</li> <li>• The AACC definition does not include wholemeal flour.</li> </ul>
South Australian Department of Health	<ul style="list-style-type: none"> <li>• Supports proposed definition (option 2) with some amendments.</li> <li>• Concerned that there is a possibility to have the term ‘wholegrain’ linked to health claim leading to a chance of misinterpretation.</li> <li>• Claims relating to ‘regularity’ could be used on wholegrain products.</li> <li>• It is important that wholegrain relates to the amount and proportion of endosperm, germ and bran from the original grain i.e. not from mixing other ingredients with the same chemical composition.</li> <li>• It is currently undetermined which components of the wholegrain afford protection of diseases such as cardio vascular disease.</li> <li>• Could be some risk that manufacturers using a mix of components from different sources, which would result in a product that does not give the same qualities as that obtained from the intact grain.</li> </ul>
Department of Human Service – Victoria	<ul style="list-style-type: none"> <li>• Supports option 1 as it is considered that at present there is no consumer confusion.</li> <li>• The current definitions of ‘wholegrain’ and ‘wholemeal’ in the Code are consistent with consumer understanding of the terms.</li> <li>• Recognises that there is little difference in nutrient and fibre value if the product is wholemeal or wholegrain.</li> <li>• Application does not provide a benefit, but is designed to increase flexibility for marketers of food.</li> <li>• There is sufficient flexibility in the Code as it stands.</li> </ul>
Queensland Public Health Services	<ul style="list-style-type: none"> <li>• Supports option 1, to reject the application.</li> <li>• The term ‘wholegrain’ is adequately defined in the current definition.</li> <li>• Consumers in general understand that ‘wholegrain’ relates to un-milled products of single cereals or a mixture of cereals.</li> <li>• States that nutritionists recommend the consumption of wholegrain products because they contain more of the original vitamins and minerals of the cereal grain, and because they are higher in dietary fibre, less energy dense and more filling than processed varieties. Thus they limit the possibility of excess consumption and promote overall good health.</li> <li>• While it is recognised that wholegrain and wholemeal foods that include all the components of the natural grain are similar in their nutrient composition, the processing of the grain leads to different physiological handling in the body. Most notably is the glycaemic response (change in blood glucose level), which is low for wholegrain than for wholemeal.</li> <li>• There is a need to distinguish between wholegrain and wholemeal foods in the management of medical conditions such as diverticulitis and irritable bowel disease.</li> <li>• The support of Option 1 to retain the current dual definitions of wholegrain and wholemeal will not restrict the intake of ‘wholegrain’ foods but will allow for more informed food purchasing.</li> <li>• Option 2 will allow for manufactures to choose to label products ‘wholegrain’ without containing any intact grains making it confusing to consumers.</li> <li>• The present standard is lacking and that the new Code no longer has a requirement for the composition of bread like wholegrain/wholemeal.</li> <li>• Manufacturers can choose to make bread with whatever percentage of the relevant ingredient they desire.</li> <li>• Onus on consumer to note percentage labelling to establish wholegrain/wholemeal has been used in bread-making.</li> <li>• Strongly believes that bread is an icon food and as such compositional standards for bread need to be replaced within the Code.</li> </ul>

## **Consumer Research Studies relevant to consumer understanding of 'wholegrain'**

The following consumer research findings were referred to in Application A464:

1. National Newspann Omnibus of 1200 Australians (18 years and over) commissioned by the Sanitarium Health Food Company (August 1999).

Respondents were selected by means of a stratified random sample process and interviews were conducted by telephone over the period 6-8 August 1999.

This survey indicated widespread confusion in identifying wholegrain foods. While 85% of the survey claimed to know the difference between wholegrains and refined grains, 60% could not identify any physical differences and more than half (53%) could not mention any nutritional difference between wholegrains and other grains. In regard to sources of wholegrains, 30% of people incorrectly identified white rice to be wholegrain, while white bread and white pasta were also incorrectly identified as wholegrain by 18% and 14% of respondents respectively. A further 88% of consumers believed breakfast cereals to be wholegrain, despite wide ranging differences between different cereals.

When asked how they select foods containing wholegrains about 1 in 2 people (52%) say they read the label. Twenty-nine per cent claim they guess when they select wholegrain foods.

Ninety-two per cent of respondents in this survey believe they would find it either very helpful or somewhat helpful if information about the wholegrain content of food was included on the label.

2. National Newspann Omnibus of 700 Australians living in Sydney, Melbourne, Adelaide, Brisbane and Perth. Commissioned by Kellogg (Aust) Pty. Ltd (2000).

This survey confirmed the general low awareness amongst consumers of wholegrains:

- Just 24% of respondents could name a wholegrain food without prompting.
- Fifty-seven per cent did not know that breakfast cereals contain wholegrains.

Awareness of the health benefits of wholegrains was somewhat higher. Fifty-three per cent said they helped the bowel and digestion, 37% listed benefits like 'keeps you regular' and prevents constipation and 39% said wholegrains are a good source of fibre. About 23% didn't have an answer when asked about health benefits.