

AUSTRALIAN GOVERNMENT DEPARTMENT OF AGRICULTURE

REGULATIONS FOR ONION LEVY  
INCREASE

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REGULATION IMPACT STATEMENT

OFFICE OF BEST PRACTICE REGULATION ID NO. 14718

NOVEMBER 2013

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## **Section 1: Background**

Onions Australia (OA), the peak industry body for the Australian onion industry, has made a submission to the Australian Government that proposes for hard onions<sup>1</sup> to:

- increase the rate of statutory levy and export charge for research and development (R&D) from \$1.60 per tonne to \$2.90 per tonne to be paid to Horticulture Australia Limited (HAL);
- decrease the statutory levy rate and export charge for the National Residue Survey from \$0.40 per tonne to \$0.00 per tonne;
- introduce a statutory levy and export charge component for marketing and promotion at a rate of \$1.00 per tonne to be paid to HAL;
- establish an Emergency Plant Pest Response levy and export charge set at \$0.00 per tonne; and
- establish a Plant Health Australia (PHA) membership levy and export charge<sup>2</sup> set at \$0.10 per tonne.

HAL is an industry-owned company that provides marketing and R&D services for the benefit of the horticulture industry. The company is declared the industry services body under the *Horticulture Marketing and Research and Development Services Act 2000*.

HAL currently receives statutory levies and voluntary contributions from approximately 40 horticultural industries. The company also receives matching government funding for eligible R&D expenditure up to 0.5 per cent of horticulture's gross value of production (wine grapes excluded). Currently, HAL administers funds from statutory levies for 27 horticultural industries.

HAL's revenue in 2011-2012 was \$101.7 million, with its expenditure on R&D programs \$76.7 million (including Australian Government matching funds) and expenditure on its marketing programs \$17.0 million (Horticulture Australia Limited 2012a). Commonwealth matching funds paid to HAL for R&D in 2011-12 totalled \$42.0 million.

The Australian Government has a long history of co-investing with industry in rural R&D. Continued government support recognises that rural industries mostly consist of a large number of small producers who, individually, may not have the capacity to invest in R&D. Industry-owned companies, such as HAL, provide a way for an industry to invest collectively through levy collections, and matching government funding provides an incentive for industries to do so.

### **1.1 Industry background**

OA is a non-profit, member-based organisation which has represented the interests of the onion industry for over 50 years. There are approximately 244 onion growers in Australia who are existing levy payers. Ninety six of these (39 per cent) are registered individual members of OA. In its submission OA notes that a number of growers are

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<sup>1</sup> Hard onions mean a bulb of the species *Allium cepa*. It includes brown, red and white onions which are grown for their bulb only.

<sup>2</sup> Australian Government legislation enables statutory levies and/or export charges to be imposed on producers of primary industry products. Generically these levies and export charges are referred to as 'levies'. For convenience all future references in this document to 'levy' should be taken to mean 'levy and export charge', unless otherwise stated.

represented in OA by business enterprises (processors/packers), rather than directly through individual membership. Other members of OA include the processors, chemical re-sellers, seed producers, fertilizer companies, transporters, retailers, marketing agents and packers.

Onions are Australia's fourth largest vegetable crop accounting for 9 per cent of total vegetable production. The Australian onion industry supplies both domestic and international markets. Australia's onion growing regions are shown below:

#### GROWING REGIONS



There is no specific data on the structure of the onion industry in terms of scale of production. The ABS collects census data for the category vegetable growing (outdoors) which includes onion growing. The data collected includes estimated value of agricultural operations (EVAO). Table 1 shows the structure of the vegetable growing (outdoors) industry by various categories of EVAO.

**Table 1.1 Structure of the Australia vegetable growing (outdoors) industry based on categories of estimated value of agricultural operation**  
(ABS 2012a).

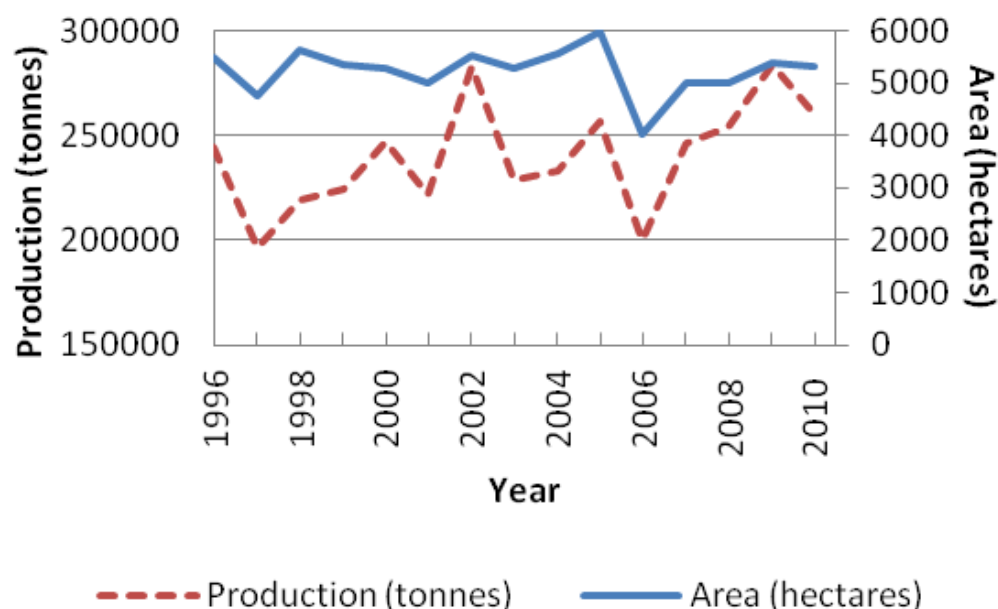
Year (ended 30 June 2011)	Less than \$100,000	\$100,000 to < \$200,000	\$200,000 to < \$500,000	\$500,000 to < \$1,000,000	\$1,000,000+	Total
	<b>Number of establishments</b>					
	1393	481	663	344	482	3363
	<b>Percentage of establishments</b>					
	41%	14%	20%	10%	14%	100%

While it is not possible to know how representative this is of the onion industry it does indicate that the industry is likely to have a large number of relatively small scale producers and a smaller number of large scale producers.

The gross value of production of Australian onions in 2010-11 was \$274 million, with the value of production in South Australia being \$135 million, in Tasmania \$37 million, in Queensland \$35 million, in Western Australia \$29 million, in Victoria \$25 million and in New South Wales \$13 million (ABS 2012b).

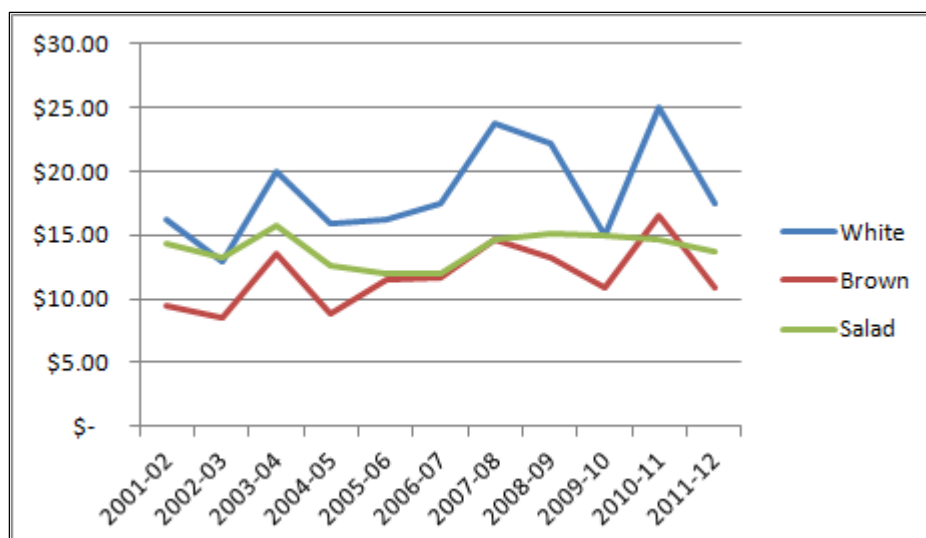
In 2010-11 Australian onion production totalled 331,000 tonnes. On a state basis, South Australia produced 130,000 tonnes, Tasmania 93,000 tonnes, Queensland 37,000 tonnes, Western Australia 29,000 tonnes, Victoria 27,000 tonnes and New South Wales 14,000 tonnes (ABS 2012a). Historical onion production is shown in the chart below.

**Australian onion production 1996 - 2010**



**Chart 1.1: Australian onion production and area planted 1996 - 2010**

In 2011-12 the onion wholesale price at the Sydney market for 20 kg bags was \$17.50, \$10.92 and \$13.71 for white, brown and red salad onions respectively. The historical onion price (Sydney market wholesale price, 20 kg bags) is shown below in Chart 1.2.



Source: Data from Sydney Marketing Reporting Service.

**Chart 1.2 Onion wholesale price – 20 kg bags Sydney markets**

The Australian onion industry exports a significant amount of its total production, with Tasmania the main exporting state. Exports have ranged from 45,000 to 58,000 in the years 2007-08 to 2010-11. Imports of onions and shallots over the same period have ranged from 8.8 to 14.2 tonnes.

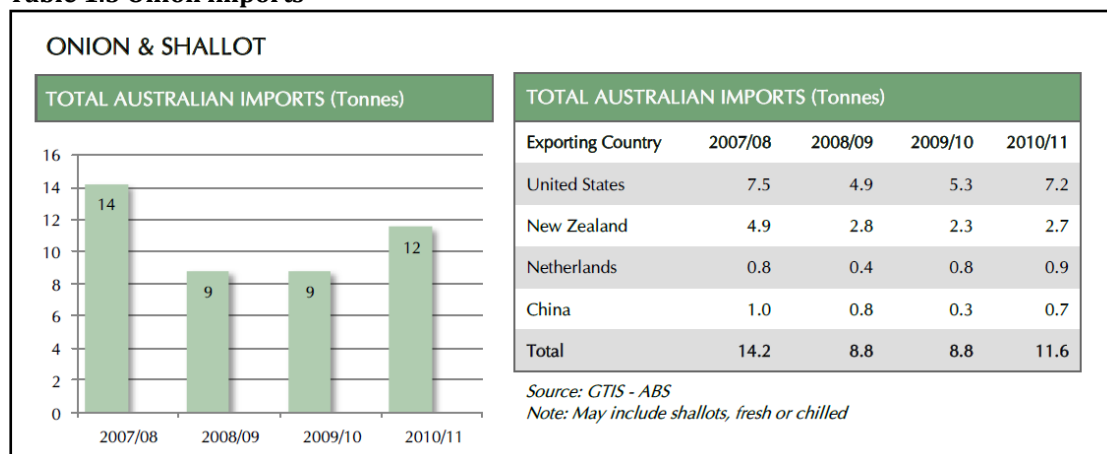
**Table 1.2 Onion exports**

EXPORTS BY STATE (Tonnes)				
	2007/08	2008/09	2009/10	2010/11
Tasmania	41,526.7	45,487.6	42,798.3	52,717.0
South Australia	3,209.3	3,718.7	5,918.0	3,853.7
Victoria	266.3	339.1	277.4	853.1
New South Wales	112.6	119.5	154.3	149.7
Western Australia	1.1	86.2	108.9	107.3
Queensland	535.1	249.2	426.9	356.7
Northern Territory	0.3	0.2	0.1	0.1
<b>Total</b>	<b>45,651.4</b>	<b>50,000.4</b>	<b>49,683.9</b>	<b>58,037.6</b>

Source: GTIS - ABS

Note: Excludes re-export data

**Table 1.3 Onion imports**



Tables sourced from The Australian Horticulture Statistical Handbook 2012 published by HAL.

## 1.2 History of the onion levy

Since 1994 the onion industry has collected a residue testing levy of \$0.40 per tonne of hard onions. It has been directed to the National Residue Survey (NRS) and the industry refers to this portion of the onion levy as the “NRS levy”. The NRS levy is paid on all hard onions.

The NRS levy is paid to the Department of Agriculture and held in the NRS Special Account. The core work of the NRS is to facilitate the testing of animal and plant products for pesticide and veterinary medicine residues, and environmental contaminants. Product testing is done through either random or specifically designed sampling protocols.

Onion R&D activities, until the introduction of the statutory levy for R&D in 2002, were funded by voluntary contributions (VCs). In its submission OA notes that the VC funding was inconsistent, unpredictable, and was contributed by a small numbers of growers, usually for special interest work. It provided little public good and was limited in its utilisation (and reach) by the self-interests and perceived competitive advantage of withholding R&D outputs from the wider onion growing community.

The submission notes the level of total VC funds was too low to allow the industry to cooperatively conduct essential R&D, to progress nationally, or respond to national issues. The pest and disease pressure (white rot, *Botrytis allii*, downy mildew, onion thrips), outbreak and regulation of an exotic disease (onion smut), cold storage and export quality problems, and gaps in the cultivar range and chemical availability, affected the domestic and export markets and the onion industry’s viability. Growers recognised the need for collective support for R&D and the potential benefits for all growers, and provided the impetus to explore the statutory levy option.

In 2002 the current statutory levy was introduced to provide funding for R&D commissioned by HAL and residue testing administered by the NRS. The total hard onion levy was set at \$2.00 per tonne of hard onions. This comprised an R&D component of the levy of \$1.60 per tonne and the NRS component of the levy of \$0.40 per tonne. These rates have not changed since 2002.

The levy (not the export charge) is payable on hard onions that are produced in Australia and sold by the producer, or used by the producer, in the production of other goods. The export charge is payable by the producer (the owner of the product at the time of export) on hard onions produced in and exported from Australia. No export charge is payable if the levy has already been paid on the hard onions to be exported.

The current arrangements are structured so that a producer pays the same amount (on a per tonne basis) in levy or charge irrespective of whether their onions are consumed domestically or go to export.

### **1.3 Plant Health Australia and the Emergency Plant Pest Response Deed**

PHA is the national coordinator of the government-industry partnership for plant biosecurity in Australia. The PHA structure brings governments and industry together as 'members' and co-funders, and provides the mechanism for the partnership to function. The partnership recognises that governments (representing the wider Australian community) together with plant producers and their industries, are beneficiaries of effective biosecurity outcomes, such as improved productivity, product quality, market access, trade, profitability, sustainability and environmental preservation. PHA members benefit from the partnership through the mutually-agreed directions, collective responses and solutions to plant biosecurity challenges.

OA joined PHA in September 2005. OA recognised at this time that membership of PHA was necessary as the industry had insufficient personnel or financial resources to manage biosecurity in isolation.

The Emergency Plant Pest Response Deed (EPPRD) is a legally-binding agreement between PHA, the Commonwealth and state (and territory) governments, and other member industries. It encompasses the management and funding of agreed responses to emergency plant pest incursions. Under the EPPRD, the Australian Government agreed in principle to underwrite an industry's share of the cost of a response to a pest incursion, provided the industry could demonstrate a repayment mechanism.

The OA became a signatory to the EPPRD in 2008.



## Section 2: Assessing the Problem

### *Under- investment in industry good R&D*

The OA submission notes that the failure of the VC system, due to free-riders and the non-excludable nature of the R&D output motivated the introduction of the current statutory onion levy for R&D in 2002, at the current rate of \$1.60 per tonne of hard onions. Although the existing levy has overcome the market failure in the provision of R&D, the OA argues that the capacity of the levy to support R&D into all industry priorities has been significantly eroded. It claims this erosion is due to several reasons, including the lack of inflation adjustments and the decline in co-funding by traditional research providers, such as State government agencies.

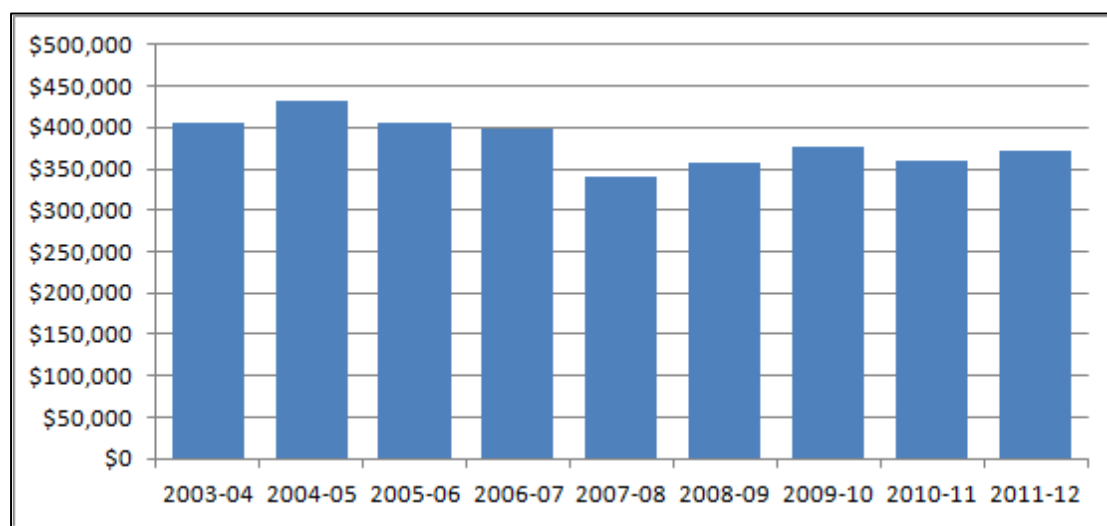
Funds raised by the onion levy for R&D for the period 2003–04 to 2011–12 are shown below table and chart. Expressed in 2011–12 dollars, \$406,100 was raised in 2003–04 compared to \$371,586 in 2011–12.

**Table 2.1 Onion levy for R&D**

Year	R&D revenue	R&D revenue in constant 2011–12 dollars*
2003-04	\$324,800	\$406,100
2004-05	\$354,400	\$431,494
2005-06	\$345,600	\$406,334
2006-07	\$347,200	\$398,924
2007-08	\$308,800	\$340,016
2008-09	\$331,200	\$358,334
2009-10	\$357,486	\$375,806
2010-11	\$354,301	\$360,546
2011-12	\$371,586	\$371,586

*Data source from Levies Revenue Service Report to Stakeholders 2003–04 to 2008–09 and Pers Comm Levies Revenue Service for 2009–10 to 2011–12 data*

*\*Average CPI inflation rate over the period 2003–04 to 2011–12 was 2.8 per cent.*



**Chart 2.1 Onion levy for R&D - constant 2011–12 dollars**

OA's claim of inflation eroding the value of levy funds appears to be, at least partially, supported by CPI data. The value of a dollar in 2002, based on CPI adjustments (average inflation of 2.8 per cent), had declined by 31.5 per cent in 2012. HAL (pers comm.) reports that it uses a 5 per cent standard inflation factor which is built into multi-year

project budgets. Using this inflation factor would show a much larger decline in purchasing power as a result of inflation.

The claim of a decline in co-funding by State government agencies to onion R&D is more difficult to analyse due to a lack of data.

OA believe the current rate of the levy is insufficient to support the pursuit of R&D priorities identified in the industry's strategic plan (Australian Onion Strategic Investment Plan 2012–17). OA claims that key R&D priorities, identified in the industry's strategic plans, that could not be fully funded, or were delayed due to lack of R&D funds include: work on minor use permits and registrations for chemicals, new crop protection product trials (both of these are priorities for growers to assist them cost effectively manage major pest, weed and disease threats and to improve the efficiency of onion production systems), and research on thrips associated with the Iris Yellow Spot Virus (Iris Yellow Spot Virus is transmitted by onion thrips and was first reported in Australia in 2003. Its occurrence in Australian onion crops has not been determined; however it has the potential of causing serious damage to Australian onion production).

Best practices for mild onion production (that would then be extended to growers to ensure production systems were aligned to achieving appropriate quality product and improve the efficiency of production) and market development in the supply chain (to build consumer demand) are also high priorities which have not been adequately funded. OA believe these priorities cannot be adequately funded in the future without increasing the rate of the levy.

#### *Lack of industry wide benefits from the NRS levy and inequities in its collection*

The OA submission proposes that the NRS levy be reduced from \$0.40 to \$0.00 per tonne of hard onions as OA believe the NRS levy no longer provides benefits to all levy payers. OA considers the NRS levy as not equitable because growers who export onions are still required to pay the NRS levy (the NRS levy is paid on all onions irrespective if they are domestically consumed or exported) but OA notes that exporters are not direct beneficiaries of the service as the chemical screens used by the NRS are relevant only for domestic marketplaces.

Exporters paying the NRS levy object to it as no portion of the levy is contributed to or used to satisfy or off-set the GlobalGAP<sup>3</sup> certification that is required by their international customers. The NRS program involves random sampling of the national onion crop. In 2011–12, 100 samples were collected Australia-wide directly from pack-houses and at city markets. Each sample is subjected to a range of chemical screens (insecticides, fungicides, herbicides and environmental contaminants). The NRS program aims to:

- provide an estimate of the occurrence of residues in products (using systems based on sampling and statistical probability)
- confirm (or otherwise) that residues in products are below set limits
- alert responsible government authorities and industry if, and when, limits are exceeded, so that corrective action can be taken.

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<sup>3</sup> GlobalG.A.P is a private sector body that sets voluntary standards for the certification of production processes of agricultural (including aquaculture) products around the globe. This standard is primarily designed to reassure consumers about how food is produced on the farm. GlobalG.A.P serves as a practical manual for Good Agricultural Practice (G.A.P.) anywhere in the world.

#### *Under-investment in industry-wide marketing and promotion of onions*

The industry does not have a funding mechanism for industry-wide marketing activities aimed at increasing the demand for and consumption of onions. The submission notes that further increases in onion production have the potential to reduce per unit prices. Consequently it argues that the proposed increased investment in production and consumer R&D should be accompanied by a parallel investment in marketing/promotions of fresh onions. The 2012–2017 Strategic Plan identifies stagnant demand for onion products domestically and a lack of a strong marketing campaign to drive demand and mitigate oversupply situations as major weaknesses for the industry.

The industry has also made significant advances in the development and production of mild onions (via R&D investment) and believes the product distinction offered is an excellent opportunity for marketing and promotion to increase consumer uptake.

The industry has previously undertaken consumer market research (project VN03019 – Consumer Research) that found “*there is a high correlation between onion promotion and increased industry returns, and ... future opportunities for product differentiation in the Australian onion category*” (Clarke *et al.*, 2010).

#### *Inequitable payment arrangements for the PHA membership*

OA believe that on-going PHA membership is required if biosecurity within the industry is to be enhanced, if documents are to be updated, and if the industry expects assistance in the development of contingency plans and their implementation of biosecurity best practices and incursion responses.

A free-rider problem exists with the current arrangement in meeting the industry’s PHA membership payments. All onion growers are beneficiaries of the membership but only those growers who are members of OA contribute to the cost of membership. The current arrangements are therefore inequitable.

#### *Lack of a mechanism to repay industry debts incurred under the EPPRD*

In March 2008, OA signed the EPPRD to ensure it had a voice in incursion response decisions, and in the timeliness, effectiveness and efficiency of responses, and owner reimbursements, should they be required. Similar to other agricultural industries OA believes it has no potential to respond to incursions in isolation, nor repay the costs of an incursion without the support of governments. OA consider the partnership with government is essential for the future of the onion industry.

The Australian Government may consider its position in underwriting the costs of an emergency response to future disease or pest incursions where the affected industry is not a signatory to the EPPRD.

## **Section 3: Objective of Government action**

The objective is to help maintain and strengthen the viability of the Australian onion industry.

### **3.1 - Options that may achieve the objective**

#### **3.1.1 - Option 1 - Status Quo**

Under this option the levy to fund R&D would remain at its current rate of \$1.60 per tonne; the NRS levy would stay at \$0.40 per tonne; the industry would rely on voluntary contributions to fund generic marketing and promotion of onions; the OA would be responsible for paying PHA membership and there would be no formal mechanism for cost recovery in the event of an emergency plant pest incursion.

#### **3.1.2 - Option 2 - Implement a voluntary contribution system**

Onion growers could be asked to pay a voluntary contribution of \$1.30 per tonne on top of the existing statutory levy to raise the same R&D revenue as proposed by OA. Onion growers could also be asked for annual voluntary contributions to fund:

- a marketing and promotions strategy for onions
- the PHA membership costs
- the development of a pool of funds to act as a reserve to pay for any future EPPR event and to demonstrate that a voluntary contribution is a mechanism capable of raising funds to repay the government in the event of an EPPR event.

#### **3.1.3 - Option 3 - Implement OA's proposal**

The Government could accept OA's proposal to increase the rate of the statutory levy for R&D from \$1.60 to \$2.90; reduce the rate of the NRS levy to \$0.00; and establish statutory levies for marketing (\$1.00 per tonne), PHA membership (\$0.10 per tonne) and EPPR (\$0.00 per tonne).

#### **3.1.4 - Option 4 - Implement an ad valorem levy**

Under this option levies could be enacted based on a set percentage of the price of onions at the point of sale rather than on a per tonne basis.

#### **3.1.5 - Option 5 - Implement 'indexation' of the levy and export charge**

Under this option the operative rate of the levy could be linked to an index such as the Consumer Price Index (CPI).

## **Section 4 – Impact Analysis – Cost, Benefit and Risk**

### **4.1.1 – Option 1 – Status Quo**

#### **Benefits**

The existing levy for R&D, set at \$1.60 per tonne, generated \$371,586 payable to HAL in 2011–12. Commonwealth matching funds for eligible expenditure on onion related R&D totalled \$422,550 in the same year. The NRS levy set at \$0.40 per tonne raised \$98,400 in 2011–12 which comprised revenue plus some interest on reserve funds invested. These are statutory levies and the collection system and operative rates are in place and operating effectively. The statutory levies overcome the ‘free-rider’ problem associated with R&D that is non-rivalrous and non-excludable. Maintaining the status quo will see similar amounts of funding raised in the future for R&D and for national residue surveys.

#### **Costs**

Although the existing levy has overcome market failure in the provision of R&D, the capacity of the levy to support research into industry priorities has been eroded. The submission notes that since 2007, there has been insufficient income for the industry’s R&D priorities to be addressed fully. High priority research has been delayed or only partially-funded. The research areas affected include minor use chemical research to support the introduction of new crop protection products, thrip and ‘white rot’ research, investigations associated with consumer preferences, and the emerging disease threat Iris Yellow Spot Virus. Pest and disease preparedness, research and training on unfamiliar pests, and on exotic pests identified as being present in near neighbour countries, could not be considered due to the funding constraints.

The OA Executive noted that the industry’s future was likely to depend not only on continuation of some existing research but also the undertaking of R&D in new areas, e.g. best practices for mild onion production; the introduction of biological and soft crop protectants; market development for new mild onions; on-farm biosecurity; consumer taste, colour, end use preferences; and virus research. The existing levy cannot support the R&D needed to secure the industry’s future competitiveness, nor meet the imperatives identified in the 2012-2017 Strategic Plan.

In the case of the NRS levy, OA believes that the current system is inequitable in its collections and that growers do not see the value in continuing the current NRS levy (see Problem Definition). The NRS levy collected \$98,400 including interest earned on reserve funds invested in 2011–12, and the submission argues these funds could be better utilised to fund R&D.

Under the EPPRD the onion industry is required to repay to the Australian Government the cost of an emergency response to a post-border pest or disease outbreak. This could be many millions of dollars. Under the status quo it is unlikely that voluntary mechanisms could collect sufficient funds to meet the industry’s EPPRD obligations.

The risk inherent in a volume based levy is that production volumes may vary considerably from year to year. For instance a drought or flood in a key production area could reduce production and hence levy revenue. This unexpected reduction in revenue could impact the industry by it being unable to fund R&D projects as planned. This risk is partly addressed through the geographic spread of the industry (from Tasmania to Queensland) which cushions the production effects of localised floods or drought. The onion industry also receives matching Australian Government funds for expenditure on eligible R&D activities. This matching funding is calculated on a three year rolling average and this again provides some smoothing of R&D revenue.

HAL as the industry owned company is responsible for commissioning R&D for the onion industry. HAL is experienced in the management of levy funds and acknowledges the risk that there could be an unexpected fall in revenue from one industry or region. HAL factors this risk into its forecast revenue. In addition the HAL Board maintains corporate/industry reserves of no less than \$3 million with a targeted level of \$5 million (Horticulture Australia Limited Strategic Plan 2012-2015).

The industry also faces risk from unplanned escalations in the cost of certain elements of marketing or R&D than those forecast by HAL. This risk is common to all levy options and could mean significantly less research being completed and or a loss of faith by levy payers in the ability of HAL to manage and commission priority R&D and marketing projects.

HAL is experienced in commissioning and managing R&D and marketing programs for its respective industries. It is governed by a board of directors, whose functions include approving major strategies, plans and budgets and ensuring business risks are appropriately identified and managed. HAL spends a considerable amount of time and resources in forecasting expenditure and any research or marketing that is commissioned is done via a contract with the provider that specifies all costs.

### **Assessment**

Qualitatively, the weaknesses of the current arrangements outweigh its strengths. The current operative rate of the levy is failing to fully fund industry R&D priorities and the NRS levy is regarded by many levy payers as inequitable. In addition, in the absence of compulsion, it is unlikely that the onion industry could repay the government's costs associated with an emergency response to an onion pest or disease outbreak as required under the EPPRD. This exposes the industry to the risk of an ineffective response to any future pest incursions.

### **4.1.2 – Option 2 – Implement a voluntary contribution system**

#### **Benefits**

Approximately 39 per cent of onion growers are voluntary members of OA. This arrangement provides some scope for the industry to collect VCs. Compared to statutory arrangements, a voluntary levy system generates less government administrative or regulatory burden.

#### **Costs**

A potential free-rider problem exists under the option of voluntary contributions. As a result it is unlikely that an individual producer or group of producers would invest adequately in R&D or meet the industry's Plant Health Australia or Emergency Plant Pest Response Deed obligations.

The onion industry does not have a good track record for attracting support for VCs from across the industry. Onion R&D, until the introduction of the statutory levy in 2002, was funded by VCs. This voluntary mechanism proved inefficient as it allowed for a number of growers to opt-out and 'free-ride' on the contribution of other industry participants. The statutory levy was implemented to address this 'free-rider' problem.

The proposed OA marketing and promotion levy would fund generic marketing, promoting the attributes and benefits of onions as a food rather than individual brands. Therefore, non-contributors to a voluntary scheme would be able to obtain benefits from any marketing activities without contributing to meet the cost. A voluntary system would also provide a commercial advantage in terms of lower costs for those producers that decide not to contribute. A statutory marketing and promotion levy does not preclude any producer from undertaking promotion of its own branded onion product.

In the case of the EPPRD funding obligations, the onion industry could be required to repay the government many millions of dollars as part an emergency response to a post-border pest or disease outbreak. In the absence of statutory compulsion it is unlikely that voluntary mechanisms could collect sufficient funds to meet the industry's EPPRD obligations.

### **Assessment**

Qualitatively, the weaknesses of voluntary arrangements outweigh its strengths. The 'free-rider' problem is apparent and furthermore the voluntary nature of payments increases the risk of variable revenue as levy payers are not locked into making specific payments. This makes predictions of future cash flows more difficult, which has a knock-on effect for funding R&D with a medium or long-term program. In addition, in the absence of compulsion, it is unlikely that the onion industry could repay the government's costs associated with an emergency response to an onion pest or disease outbreak as required under the EPPRD. This exposes the industry to the risk of an ineffective response to any future pest incursions.

### **4.1.3 - Option 3 - Implement OA's proposal**

#### **Benefits**

OA aspires for the Australian onion industry to be a competitive and profitable industry through producing and marketing a product range that meet consumers needs and expectations, in regard to: quality; value; convenience; health and nutrition; food safety; and environmental credentials.

It aims to achieve this through continued investment in R&D, managing biosecurity, developing efficient and effective supply chains, and identifying and capturing new market opportunities (Australian Onion Industry Strategic Investment Plan 2012-17).

OA's proposal to increase the rate of the statutory levy, decrease the NRS levy to zero and introduce levies to fund generic marketing/promotion, PHA membership and EPPR would provide the mechanism that OA believes is needed to fund its strategic plan.

The industry, through OA has listed its current strategic imperatives as:

- Increase the market for onions
- Increase the industry's competitiveness
- Strengthen industry communication and information systems
- Identify and build industry leadership, capability and capacity

The industry already has a statutory levy in place. The establishment and collection costs have already been met and represent an overhead cost. An increased operative rate would see some efficiency in the cost of collection as extra funds would be raised but at the same collection (overhead) cost.

#### *Levy to fund R&D*

The onion levy for R&D has historically provided funding security that allows for planning, allocation, funding and extension of priorities in the onion industry's Strategic Plan. However, the rate has not kept up with increasing costs and OA lists several key R&D priorities that could not be fully funded, or were delayed due to lack of R&D funds. These include: work on minor use permits and registrations (chemicals), new crop protection product trials, and thrips research associated with the Iris Yellow Spot Virus. Best practices for mild onion production and market development in the supply chain are also high priorities which have not been adequately funded. OA believe these priorities cannot be adequately funded in the future without increasing the levy. An

increase to the operative rate of the levy would allow the industry to fund a fuller range of R&D priorities than is possible under the current levy rate.

There has been a review of the benefit:cost ratio (B/CR) of past projects funded under the existing statutory levy to improve industry productivity and profitability (Clarke et al., 2010). B/CRs for agricultural R&D are typically between three and 11 in successful R&D programs. Two project clusters funded by the onion industry: Extension and Communication, and Market and Supply Chain showed B/CR of 3.4 and 12.1 respectively. The technical summary of the review is attached at Appendix 1.

While it is difficult to extrapolate directly, the reported ratios indicate that increasing funding for priority R&D should increase industry productivity and profitability.

OA claim that the benefits of its proposal in the market and supply chain, and extension and communication R&D clusters will be:

- Increased domestic consumption in response to improved market data, consumer awareness and new products (mild onions)
- Increased exports/new markets, in response to improved trade data and new products such as mild onions
- Increased adoption of new technology and production skills for new products
- Increased yields, reduced costs of production
- Improved consistency in onion quality
- Increased effectiveness and efficiency of R&D resources

The increased rate of the statutory levy would capture the same onion producers who pay the existing onion levy, eliminating the potential for “free riders”. The levy would not have a disproportionate impact on a particular group or size of producers, as the rate of levy payable on the sale of onions would be the same for all producers, irrespective of the size of their operation.

The money to be raised by the current statutory levy would be utilised solely for R&D activities assisting the industry as a whole. Hence this R&D should be competitively-neutral in the industry (that is, not favouring or disadvantaging one individual or group in the industry over another). Over time, continuing funding on R&D projects is expected to enhance the viability and profitability of the industry.

Funds for increased onion levies would be obtained from the Australian onion industry as onion growers are the major beneficiaries of the outcomes achieved by R&D work, increased marketing and promotion and enhanced biosecurity preparedness. The Australian Government’s matching payments for eligible R&D activities act as an incentive for these collective R&D investments.

#### *NRS levy*

The proposal to reduce the NRS levy to zero will remove the current situation where OA considers the NRS levy as inequitable because growers who export onions have to pay the NRS levy but are not direct beneficiaries of the service as their export customers require them to use the internationally recognised GlobalG.A.P system. Pack-houses that are domestically focused and who wish to continue with the NRS program can enter into private contracts with NRS. This is a commercial decision for individual pack-houses.

#### *Marketing levy*

The proposed marketing and promotion levy aims to fund activities to increase consumer awareness and, therefore, demand for onions. The industry currently does not have a funding mechanism for industry marketing and promotion activities to increase the demand for and consumption of onions. OA believe that grower and industry profitability is now more reliant on increasing demand for onions than reducing input



costs. The industry has made advances in the development and production of mild onions and OA believe the product distinction offered is an excellent opportunity for marketing and promotion to increase consumer uptake.

The submission notes that the onion industry has supported the introduction of a marketing levy in recognition of:

- Grower/industry profitability today being more reliant on increased onion demand (consumption) than reduced input costs
- Historically slow growth in demand for and consumption of, onions
- Failure to fully realise profits expected from yield increases, due to lack of aligned product marketing to consumers
- Increased benefits from consumer R&D when the knowledge is extended into supply chains, and applied in marketing
- Marketing levies are equitably collected and distributed. A collection mechanism is already established
- HAL is experienced in managing marketing and promotion campaigns.

The submission argues a marketing and promotion levy is necessary to increase consumer demand and absorb increasing levels of onion production. Statutory R&D funds cannot be used for this purpose and VCs suffer from the free-rider problem.

#### *Biosecurity – PHA membership costs and EPPRD*

The OA wants to join a number of other horticultural industries (e.g. wine grapes, citrus, pineapples, potatoes, strawberries) by having a statutory levy to pay its PHA membership fee. A PHA levy would allow funds to be collected from all onion growers.

The legislative review of the *Plant Health Australia Funding Act 2002*, determined that signatories to the EPPRD were entitled to establish a 'biosecurity levy' (or EPPR levy) to raise funds needed to repay the Australian Government for response activities.

The existing levies do not allow the onion industry to meet its obligations in several key biosecurity areas. The Beale Review (2008) highlighted existing gaps nationally and within plant industries in the area of biosecurity and quarantine. The review also determined that governments and plant producers are beneficiaries of enhanced biosecurity and, therefore, biosecurity responsibilities should be shared physically and financially, across natural and commercial plant-growing environments. The identified shared benefits were in safeguarding livelihoods (eg. through gains in productivity, product quality); improved profitability and sustainability (for producers and communities); improved trade (eg. market access assistance, identification of off-shore threats and early detection), and environmental health and protection.

The *National Onion Industry Biosecurity Plan May 2007* provides a robust framework for the implementation of biosecurity risk mitigation measures in the industry. With an EPPR levy (initially set at zero) and a small PHA subscription levy, the onion industry through the OA and PHA will be able to implement the *Onion Industry Biosecurity Plan*.

The introduction of a PHA levy has been supported by onion growers as they recognise they are the beneficiaries of PHA membership and activity. It has potential, in years that the PHA levy income exceeds the subscription, to equitably increase R&D income.

OA support biosecurity levies as an equitable mechanism by which funds needed to repay the Australian Government (for approved eradication activities), may be raised at the time they are needed.

## Costs

Increasing the operative rate of the levy for R&D and establishing a reliable source of funds for onion marketing and industry biosecurity activities is expected to principally affect onion growers, who would pay the levy and thus have reduced net income. The levy would also indirectly affect other businesses located in onion growing communities and on suppliers/customers of producers (for example - farm workers, machinery suppliers, transporters and wholesalers), who depend on the levy payers for their business.

The wholesale price of onions is generally about \$400 per tonne (Onion Annual Investment Plan – 2010/2011). Increasing the total levy from the current \$2.00 per tonne to \$4.00 per tonne represents an increase of 0.5 per cent on the wholesale price if there was 100 per cent pass-through of costs.

It is estimated that technically there would be an annual cost to the Australian Government of around \$280 000 annually through providing additional matching payments for R&D expenditure. However, no actual new government matching payments will be required, as HAL already receives matching government funding for eligible R&D expenditure up to the 0.5 percent gross value of production limit for the horticultural sector. There would be no administrative costs for the Australian Government in collecting and remitting the levy as the DAFF Levies unit of the Australian Government Department of Agriculture operates under full cost recovery.

The cost of the additional levy is likely to be borne by both onion producers and onion consumers. Onion producers support the imposition of the levy as a collective investment in their future. They are willing to bear a medium-term cost for longer-term gain. It is possible that some of the additional cost from new and increased levies will be passed on to consumers through price increases. However, an increase of \$2.00 per tonne under the proposed amendments is assessed to have a very minor impact on the retail price of onions.

As the unit for the imposition of the levy remains on a per tonne basis, there will be no distribution impacts on the burden of the increase in the levy. At a state level, South Australia will pay more in total levy but only because South Australia represent the majority of production by volume. At an individual grower level, a grower in South Australia who produces 1000 tonnes of onions will pay the same rate of levy as a grower in any other part of Australia who produces 1000 tonnes of onions. Similarly while Tasmanian growers export a greater proportion of their production than other states, the cost of a the proposed levy is the same to these growers as to domestically focused growers – the proposed levy is \$4.00 per tonne irrespective of whether the onions are consumed domestically or exported. In terms of the NRS levy all growers currently pay \$0.40 per tonne irrespective of whether the onions are consumed domestically or exported – under the proposed arrangements the NRS levy will be reduced to zero for all growers.

The cost of collecting a statutory levy is greater than the cost of collecting a voluntary levy. A statutory levy imposes an administrative burden on the government to collect the levy, which is in-turn taken from the amount of levy collected to recover the government's costs. These costs are not incurred where industry members voluntarily monitor and pay their levy obligations to the recipient body. The cost recovery charges by the Department of Agriculture for the existing levies are estimated at \$39,174 for 2012–13. As it is the same levy payers and process it is not anticipated that the collection costs will vary significantly under the proposed amendments. This should lead to some efficiency in collection costs as a greater amount collected is spread over the same collection (overhead) costs.

## Assessment

On balance, the qualitative strengths of implementing OA's proposal to increase funding for onion industry R&D, and implement statutory levies to fund generic marketing/promotion and to meet the industries biosecurity obligations are assessed to outweigh the weaknesses. The statutory levy arrangement overcomes the "free-rider" problem associated with voluntary levy arrangements, and provides more certainty in the annual quantum of levy revenue. As it is a volume based levy the risks (and their management) as outlined under option 1 also apply to this option.

This option would raise more funds to invest in additional R&D, undertake marketing and promotion, and to pay PHA membership for the benefit the industry (a net increase of approximately \$432,000 per annum compared to the current system). The increased levy operative rate will also be more administratively efficient as the increase in levy collections will incur the same collection cost.

The Australian Government has a long history of co-investing with industry in rural R&D. Continued government support recognises that rural industries mostly consist of a large number of small producers who, individually, may not have the capacity to invest in R&D. Industry- owned companies, such as HAL, provide a way for an industry to invest collectively through levy collections, and matching government funding provides an incentive for industries to do so.

The Australian Government generally supports the imposition of EPPR and PHA subscription levies as prudent risk management measures to enhance biosecurity preparedness for a future pest or plant disease outbreak. Industry levies enable plant production industries to meet their share of costs for national emergency responses to exotic plant pest incursions undertaken in accordance with the EPPRD.

### 4.1.4 - Option 4 - Implement *ad valorem* levies

#### Benefits

*Ad valorem* levies set at a percentage of the sale price could apply to all onion growers and could ensure adequate investment in R&D, marketing and promotion and meet the industry's PHA or EPPRD obligations. An *ad valorem* levy based system would also have some potential to keep pace with inflation as the price of onions at point of sale may rise over time. Benefits of statutory, volume based levies identified under Option Three above also apply for this option.

#### Costs

The *ad valorem* levy basis was discussed when the levy was introduced in 2002 but growers considered, at the time, that a volumetric rate was more equitable for their industry. The option of imposing an *ad valorem* rate was also discussed at some consultation meetings during this process. At these meetings growers maintained that a volume basis was a more equitable basis on which to pay the levy because onions from different production areas have different value at their first point of sale.

The wholesale price of onions is generally about \$400 per tonne (Onion Annual Investment Plan – 2010/2011). Under these prices an *ad valorem* levy would need to be set at a rate of approximately 1 per cent of the wholesale value to raise a similar quantum of funds as the OA proposal of \$4 per tonne. The costs outlined under Option 3 would also apply for this option, although there would be an additional one-off cost incurred by those collecting the levy to implement a system based on value rather than volume. The magnitude of this is unknown but likely to be relatively small.

The Australian Government's *Levy principles and guidelines* provide that the initiator of the proposal demonstrate that there is agreement by a majority on the levy

imposition/collection mechanism. Before an ad valorem rate could be adopted OA would need to restart the consultation process, including a vote by levy payers, on a proposal that included implementing the levy at an *ad valorem* rate. This would involve considerable time and cost for OA and the industry more generally would delay the introduction of any amended levy by up to two years.

### **Assessment**

The risks and their management as outlined in Option 1 regarding the potential for variability in levy revenue and the risk of cost escalation for R&D and marketing projects would also apply to this option. OA, as the initiator of the proposal, has not demonstrated majority levy payer support for the implementation of an *ad valorem* levy. In accordance with the Australian Government's *Levy principles and guidelines* the implementation of an *ad valorem* levy rate would require the submission process to be restarted, involving considerable delay and direct and indirect costs to OA and levy payers. There is also a risk that levy payers would be critical of OA and government for instigating a new proposal that included the option of an *ad valorem* rate when there is some indication that industry is unlikely to support this option. On balance this option appears to entail more risk than Option Three.

### **4.1.5 - Option 5 - Implement 'indexation' of the levy**

#### **Benefits**

Under this option the operative rate of the levy could be linked to an index such as CPI. The benefits of this would be to ensure the operative rate increased over time and that funds raised for R&D to some extent kept pace with the increasing cost of funding R&D. Benefits of statutory levies identified under Option Three above also apply for this option.

#### **Costs**

The nature of agriculture and the levy system process may present some difficulties in implementing an arrangement to index the levy rate. The terms of trade (farm input prices versus output prices) for Australian agriculture is highly variable from year to year and influenced by many factors including growing conditions and the strength of the Australian dollar. Levy payers are unlikely to look favourably on a system that locks them in to an increasing levy rate while they have no control over the output price of their product. It is likely they would prefer a fixed rate that is reviewed periodically or an *ad valorem* rate to provide some rate adjustment rather than 'locked-in' indexing.

The industry has not considered the option of an indexed levy rate. To comply with the Australian Government's *Levy principles and guidelines* OA would need to undertake another consultation period and provide evidence of industry support (through a voting process) before this option could be implemented. This is an exercise that incurs significant financial costs and considerable time commitments for OA. There are also efficiency considerations arising from indexing if this resulted in periodic (annual) changes to the operative rate of the onion levy. When the operative rate changes every levy payer must be notified. This would incur additional collection costs.

## Assessment

Similar to Option 4, OA as the initiator of the proposal, would need to demonstrate majority levy payer support for an arrangement to index the levy rate. Levy payers have not been consulted on this option and a new submission/process would need to be undertaken by OA. The Levies Finance Section of DAFF advises that there is anecdotal evidence that many levy payers are suspicious of an indexed levy rate because they believe they lose some control of the rate setting process. On balance this option appears to entail more risk than Option Three.

## Section 5 - Competition Policy

The proposal for an increase to the levy for R&D, a decrease in NRS levy and the establishment of marketing/promotion, PHA membership and EPPR levies would be applied equitably to all Australian onion growers on a price per tonne basis. The additional monies raised would be utilised for activities focussed on assisting the industry as a whole. Therefore, the proposed amendments should be competition-neutral by not favouring or disadvantaging one individual producer in the industry over another. Over time, increased industry funding for R&D, marketing/promotion and the biosecurity related issues are expected to enhance the viability and profitability of the industry.

## Section 6 – Consultation

In line with the *Australian Government Levy Principles and Guidelines* (LPGs), OA conducted a thorough consultation campaign with all known existing and potential levy payers. As levy payers, onion growers were encouraged to have considerable input to the development of the industry-preferred amendments. Meetings were conducted in all major onion-producing regions between May and August 2010. A total of 12 meetings were held. At all meetings, OA presented details on the review process, the background to it and the levy options. Comments made at all meetings or provided to members of the OA Executive or Levy review committee were recorded.

OA report that at all meetings throughout the consultation phase, levy payers agreed their industry needed additional funds, and the funds were to be raised equitably. An increased onion levy was accepted as the favoured means of increasing the industry's financial capacity in each area needing increased investment. The total levy amount was generally more important to growers than the rates of the individual levy components. The submission states the consultation phase resulted in wide, informal support for changes to the levy, but no specifically agreed position on the total levy or levy combination.

The 2010 OA Annual General Meeting and the 2010 Annual Onion Levy Payers Meeting were held during the consultation phase. This gave many growers additional opportunities to hear presentations they had previously heard, to ask further questions regarding the levy process, and to provide input to the options.

Throughout the consultation period and up to the voting week, levy payers were made aware of the availability and contact details of several independent parties and industry members familiar with the levy review process, the cases for/against, and the voting format. These people were available to answer questions and provide clarifications where needed.

One week prior to the opening of the voting period the summary case for change (*Overview* document) was sent to growers in hard copy. Growers were again alerted at this time to the forth-coming vote and pertinent information sources, via media releases, direct emails, radio announcements, and the OA website.

The voting paper with instructions for completion was sent by the AEC in hard copy to every known onion grower on 2 May 2011. Each grower had the right to one vote (one vote/levy payer). The number of ballots issued was 248, with no duplicates recorded. Four voting packages were returned unopened.

Those in receipt of voting papers were encouraged to complete them and return them as instructed, to the nominated independent returning officer at the Australian Electoral Commission (AEC). The ballot-return period of 21 days, ended at 10am on 23 May 2011.

Of the 244 known onion growers who received voting papers, 47 (19.3 per cent) returned completed voting forms. Two ballot papers were rejected at Preliminary Scrutiny.

OA provided the following analysis of the vote:

Table 23 : Vote analysis



Question	Subject area	Votes -YES	Votes - NO	Votes - formal	Votes - informal
Question 1 A	R&D $\uparrow$ NRS $\downarrow$	<b>20*</b>	18	38	7
1 B	R&D $\uparrow$ NRS =	11	<b>13</b>	24	21
Question 2	Marketing/promotions	<b>20</b>	15	35	10
Question 3	PHA, Biosecurity	<b>26</b>	11	37	8

\* In bold – majority support

The LPGs state that it is a requirement for industry to achieve a majority (50 per cent plus one) of those that vote if a new levy is to be implemented.

The OA note that the specific proposals *supported*, as indicated by formal votes were:

- Q1A. R&D levy rate increase to \$2.90/tonne *and* NRS levy decreased to \$0.00/tonne - (52.6 per cent)
- Q2. Marketing/promotions levy introduced at rate of \$1.00/tonne - (57 per cent)
- Q3. EPPR levy and PHA subscription levy introduced – (70 per cent)

The proposal *not supported* by a majority of voters was:

- Q1B. R&D levy rate increase to \$2.50 *and* NRS levy remain unchanged at \$0.40/tonne (45.8 per cent)

It is the HAL Board, not OA, which forward submissions to government on any new or amended horticultural levy. Due to the high number of informal votes and the relatively low voter participation the HAL Board directed OA to take further action to confirm the extent of support for its proposal.

On 18 July 2012 the CEO of OA wrote to HAL noting that;

- The high number of informal votes may have been caused by confusion surrounding the way in which some of the ballot questions were phrased.
- After discussions with growers and in a bid to expedite the levy approval OA had collated testimonial letters from growers confirming their support for the proposed levy.

OA noted that the testimonial letters covered approximately 127,900 tonne of onions being approximately 60 per cent of national production of 214,135 tonnes (six years average 2005–06 to 2010–11). OA calculated the national production figure by dividing the yearly statutory levy income raised for R&D by \$1.60.

On 15 November 2012 HAL forwarded OA’s submission to the Department of Agriculture for consideration by the Australian Government. After the formal submission of a levy proposal the LPGs provide for a six week period for industry comment or objections. Due to the Christmas/ New Year holiday period this period was extended. The objection period for the OA proposal commenced on Wednesday 12

December 2012 and ended on 1 February 2013. The objection period was advertised in various media outlets, was published on both the OA and HAL web sites and all OA members were emailed notifying them of the objection period. No dissenting submissions were received by the OA or the government during this period.

## **Section 7 – Conclusion and recommend option**

The recommended option is Option 3 – OA’s proposal to increase the rate of the existing statutory levy for R&D from \$1.60 to \$2.90 per tonne of hard onions; reduce the rate of the NRS levy from \$0.40 per tonne to \$0.00 per tonne ; and establish statutory levies for marketing and promotion (\$1.00 per tonne), PHA membership (\$0.10 per tonne) and an EPPR levy set at zero.

The proposed amendments to the existing levies and the introduction of new levies are regarded as the most effective means of correcting a market failure in funding R&D and marketing and promotion that currently exists in the industry. The proposed amendments are regarded as the most equitable means of raising the funds required to undertake the industry’s R&D and marketing priorities, and fund necessary biosecurity arrangements.

The proposed levies for the onion industry:

- conforms to the Government’s LPGs ;
- would be applied universally across the levy paying population;
- have the potential to benefit the industry; and
- are not expected to impose significant costs on consumers.

## **Section 8 – Implementation and review**

To implement the OA proposal will require amendments to the Primary Industries (Excise) Levies Regulations 1999, Primary Industries (Customs) Charges Regulations 2000 and the Primary Industries Levies and Charges (National Residue Survey Levies) Regulations 1998, made under the *Primary Industries (Excise) Levies Act 1999*, *Primary Industries (Customs) Charges Act 1999*, *National Residue Survey (Excise) Levy Act 1998* and the *National Residue Survey (Customs) Levy Act 1998*.

The onion levies are to be implemented as soon as practicable, depending on the legislative process.

There would be no administrative costs for the government in collecting and remitting the levy as the service is provided by the Department of Agriculture under full cost recovery.

Levy issues can be raised and reviewed at the OA’s Annual General Meeting and the Annual Levy Payers Meeting.

Once implemented, in line with usual practice, the government does not intend to eview the operation of the levy.

### **8.1 – Compliance Costs**

The average annual change in compliance costs of the recommended option compared to business as usual is estimated to be zero. Currently the levy is collected via a standard online or hard copy return form (either quarterly or annual). The levy payer populates the quantity of onions. The online form automatically calculates the levy/charge payable. On the hard copy form the levy payer populates the levy/charge rate and calculates the levy/charge payable. Under the recommended option the form would remain the same and the levy payer would insert \$4.00 rather than \$2.00 for the levy/charge rate. There would be no increase in regulatory burden.

Table 8.1. Regulatory Burden and Cost Offset

<b>Average Annual Change in Compliance Costs (from Business As Usual)</b>				
<b>Sector/Cost Categories</b>	<b>Business</b>	<b>Not-for-profit</b>	<b>Individuals</b>	<b>Total by cost category</b>
Administrative Costs	\$0	\$0	\$0	\$0
Substantive Compliance Costs	\$0	\$0	\$0	\$0
Delay Costs	\$0	\$0	\$0	\$0
<b>Total by Sector</b>	\$0	\$0	\$0	\$0
<b>Annual Cost Offset</b>				
	<b>Agency</b>	<b>Within portfolio</b>	<b>Outside portfolio</b>	<b>Total</b>
Business	\$0	\$0	\$0	\$0
Not-for-profit	\$0	\$0	\$0	\$0
Individuals	\$0	\$0	\$0	\$0
Total	\$0	\$0	\$0	\$0
<b>Proposal is cost neutral?</b> <input checked="" type="checkbox"/> yes <input type="checkbox"/> no <b>Proposal is deregulatory?</b> <input type="checkbox"/> yes <input checked="" type="checkbox"/> no <b>Balance of cost offsets \$0.00</b>				



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Horticulture Policy Section  
Agricultural Productivity Division  
Australian Government Department of Agriculture

November 2013

## Appendix 1 Review of benefit: cost analyses of the onion R&D program

### **Technical Summary**

This report presents the results of economic analyses of investments within the Onion R&D Program of Horticulture Australia Limited (HAL). The Program is funded by statutory levies paid by industry participants, with matching funding provided by the Australian Government up to 0.5 per cent of the industry's gross value of production.

The principal purpose of the economic analyses was to contribute to a process being undertaken for the Council of Rural Research and Development Corporations Chairs (CRRDCC) that aims to demonstrate through examples the outcomes and benefits that have emerged or are likely to emerge from the 15 Rural Research and Development Corporations (RDCs). Valuation of these benefits, along with identification of investment expenditure, is required in order to demonstrate their contribution to Australian rural industry as well as environmental and social benefits to Australia.

Cluster selection satisfied the random selection process of the CRRDCC. This entailed the definition of the population of projects in the program, clustering projects into groups, and a process of random sampling of the clusters so defined.

Information from the original project proposals in each cluster, milestone reports, and other relevant reports were assembled with assistance from Horticulture Australia. Discussions were held with Program Managers or Principal Investigators for each research area as well as horticulture industry personnel as appropriate.

Each of the analyses provides a description of the constituent project backgrounds, objectives, activities, costs, outputs, outcomes, and benefits. The benefits were described in a triple bottom line context. Some of the potential benefits were then valued in monetary terms.

The Present Value of Benefits (PVB) and Present Value of Costs (PVC) were used to estimate investment criteria of Net Present Value (NPV), Benefit-Cost Ratio (B/C Ratio) and Internal Rate of Return (IRR) at a discount rate of 5%. The PVB and PVC are the sums of the discounted streams of benefits and costs. The discounting is used to allow for the time value of money, and the discount rate of 5% is that specified in the CRRDCC guidelines.

Analyses were undertaken for total benefits that included future expected benefits. A degree of conservatism was used when finalising assumptions.

Sensitivity analyses were undertaken in most cases for those variables where there was greatest uncertainty or for those that were thought to be key drivers of the investment criteria.

Some identified benefits were not quantified mainly due to:

- A suspected, weak or uncertain scientific or causal relationship between the research investment and the actual R&D outcomes and associated benefits
- The magnitude of the value of the benefit was thought to be only minor

Table 1 presents the investment criteria for each of the two clusters analysed at a 5% discount rate and expressed in 2008/09 dollar terms.

Given the assumptions made for each evaluation, both cluster investments appear to have produced positive net benefits.

Table 1: Investment Criteria for Two Onion Industry Investments (discount rate = 5%)

<b>Investment Cluster</b>	PVB (\$m)	PVC (\$m)	NPV (\$m)	B/C Ratio	IRR (%)
Market and Supply Chain (8 projects)	10.1	0.8	9.3	12.1	15
Extension and Communication (6 projects)	1.9	0.6	1.3	3.4	20.3

*Source: Economic Assessment Of Hal Investment In Two Project Clusters For The Onion Industry (VN09003) Final Report To Horticulture Australia, 12 April 2010. Prepared by AgEconPlus and Agtrans Research*