

INDUSTRY SKILL NEEDS REPORT



Primary Skills Victoria

December 2009

AGRICULTURE • HORTICULTURE • CONSERVATION • ANIMAL MANAGEMENT • SEAFOOD

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Major change drivers affecting a broad range of industries.

1. Planning, Enterprise, selection, Climate Change and Variability

A drier climate means all rural industries fed by rainfall will experience more frequent and lower production cycles.

Forward planning will become more difficult and extreme measures may need to be taken to ensure economic survival and minimisation of negative environmental impacts. (Such as destocking.)

The boundaries of climatic enterprise norms will shift and cropping may become possible in certain districts considered to have too high rainfall previously. Eg. Western District. There will be a greater need for sophisticated technology, such as climate models, global positioning systems (GPS) and programmed drip irrigation, to mitigate enterprise and environmental risk and make better use of scarce resources.

Enterprise diversification will become more widespread in order to reduce risks. Eg. East Gippsland farmers are being encouraged to become engaged in cropping. Enterprise size continues to increase with many farmers employing skilled labour for the first time. Farmers are increasingly managers of labour rather than farm workers. Only 19 % of grain businesses have a written business plan at a time where greater emphasis will be placed on the sustainability of profits and preservation of the environment.

2. Carbon Pollution Reduction Scheme (CPRS), Emissions Trading Scheme (ETS).

Businesses further up the input supply chain will pass on increased costs to farmers, commencing 2011, with significant cost increases including energy and processing. Dairy and beef will be most significantly affected from an emissions perspective. Originally, effective 2015, the federal government indicated that it either intended to require farm businesses to be involved in the CPRS or it would apply cost- equivalent regulations on farms to reduce greenhouse emissions. In mid November it decided to leave agriculture out of a CPRS and offer offsets, however, there no guarantee what offsets will be available to farmers, and the possibility of some alternative tax or regulation on agriculture outside the CPRS to lower farm emissions remained open. It was anticipated that a Productivity Commission Review would be undertaken. Recent changes in opposition political leadership have seen the government's brokered bipartisan CPRS legislation rejected in the senate, creating extreme uncertainty for primary industries.

Irrespective, scientists and policy makers are struggling to develop credible approaches to carbon measurement & accounting due to gaps in knowledge (especially carbon sequestration from soils). If a carbon penalty is applied in any form, the rural sector will need to respond to additional direct and indirect costs from carbon emissions. This will occur either by them seeking to become more efficient and profitable, reducing carbon generation, generating more carbon credits (eg. through sequestration) or producing green energy wherever it is economical to do so. Some examples of this may include engaging in farm forestry, reduced and no till practices, the sale of electricity from methane digestion, solar and wind generated electricity, sale of biomass associated with biological energy production (eg. ethanol). Even if agriculture remains uncovered, an almost immediate 3%-8% reduction in average cash margin will occur across most enterprises.

Leading Japanese, European and U.S companies report they will label products with carbon footprints. 90% of Japanese consumers want to know the carbon cost the food they are being offered. Wal-Mart has declared it will no longer purchase products from suppliers that do not declare carbon footprint, water use and other items of environmental significance. Some countries have already moved to label products in this manner.

Carbon budgeting could become a significant part of overall enterprise plans. Some industries, including Conservation & Land Management, may be immediate net generators of carbon credits. Previously 'marginal' land may be used for the production and potential sale of excess carbon credits (BP has planted Mallee trees on marginal land for generation of carbon credits). At a carbon price of \$30 per tonne, it is estimated that carbon forestry would be competitive over 26 million ha nationally. The current price is \$20 per tonne. It has been suggested that serious deforestation issues may occur and that carbon forests could be managed by Catchment Management Authorities. One estimate suggests that farm forestry could account for 10% of Australia's emissions without greatly affecting on-farm productivity.

In summary all industries within PSV coverage will at some stage be affected by a CPRS with most suffering increased costs as a result. Considerable understanding and appropriate action will be required to mitigate or capitalise on the effects of a CPRS. Primary Industries who are engaged in a CPRS, by compulsion or voluntarily will need to report carbon emissions from their enterprises each year and companies that participate in the CPRS will need to surrender Australian Emission Units (AEUs) each year, equivalent to the total tonnes of greenhouse emissions that the organisation generates. An increasingly sophisticated carbon economy* will develop and it is therefore not unreasonable to imagine primary industries in future submitting carbon accounts alongside annual financial accounts.

3. International commodity supply and demand, trade policies and practices, input costs, exchange rates, global competitiveness, world economy

Some sectors such as dairy have been affected by severe trade imbalances caused by tariffs and subsidies, as well as fluctuations in supply and demand. Differences between national CPR schemes will favour some of the nations' farmers and enterprises over others' leading to further international pricing distortions. The cost-price squeezes will continue, as a result of higher prices for major inputs long term, such as fertilisers, chemicals and fuel, coupled with a higher \$A. This will result in larger and fewer farms with only the most efficient operators being able to prosper long term. Best practice in each sector needs to be defined and adopted.

Consumer disposable income has been reduced by the Global Financial Crisis (GFC) and more lately, rising interest rates. This has had varying effects; for example, a reduction in the consumption of red meat but no major effect on the nursery and garden industries.

Competition from imports and local overproduction threatens the viability of some sectors of local industry including wine and citrus. Others such as the apple industry would come under intense pressure without biosecurity protection against epidemics such as fire blight.

Global over-production poses an imminent threat to some commodities such as pork. Asian and Brazil Russia India China (BRIC) countries continue to develop as export markets with their growing middle classes.

4. Water policy and availability, catchment management

Government investment in infrastructure will increase efficiency of water delivery. Low rainfall and significant demand for water by government (\$3 billion targeted for water buybacks and environmental restoration) and the farming community will increase water prices, redraw the map of arable land and change land values.

Urban use of water is outpacing that of rural production for the first time ever. Great uncertainty about water security is of major concern to all stakeholders especially where water quality is difficult to maintain during periods of low flow, resulting in increased salinity and algal

* Nitrous oxide emissions have also to be accounted for under the Kyoto Protocol and these are significant in many primary industries, particularly those which are animal based.

blooms.

Farmers and farmer groups require regional scale maps of conservation priorities from catchment management authorities so local efforts can be effective. E.g. deflection of saline drainage through such measures as contours, tree planting, weed control. Farmers will need to invest more in drought proofing measures.

5. World population growth, food and fibre supply and demand

World demand for food is expected to double by 2050 and food security will intensify as an international issue. Availability of suitable arable land (adequate rainfall and suitable soil types) may become a concern if land degradation and farm forestry issues are not properly managed.

Climate change is predicted, on the whole, to reduce production and exportable quantities from existing arable land. New methods of farming semi-arable land are needed such as salt and drought-tolerant crops and grasses.

ABARE has estimated that if Australia commits to reducing greenhouse gas emissions by 20% by 2020, over 40 million hectares, an area equivalent to 40% of the Murray-Darling Basin could be suitable for Kyoto compliant forestry.

Long term changes in demand for wool, coupled with more attractive alternative enterprises such as plantations for pulp have seen a large fall in production in recent years.

6. Conscientious consumer-Biosecurity., food integrity, labelling ,traceability and compliance

Community and trading partner concern about genetically modified food remains high on the agenda. Genetically Modified (GM) wheat is currently being bred and Australia is a major consumer and exporter of wheat. GM wheat's availability will likely meet with a mixed response.

Australia's capacity to effectively deal with biosecurity outbreaks may be challenged at some point, due to increased global risks (more extensive human movement and trade). Consumers are becoming increasingly concerned about diseases carried in food such as Bovine Spongiform Encephalopathy (BSE- Mad Cow) in beef and Salmonella in imported seafood, as well as the transmission of diseases from humans to animals and vice-versa.

Consumers want more information about the food they purchase (nutrition, composition, artificial production practices, ethical status/social responsibility, organic etc.) and are concerned also about chemical residues which will result in labelling becoming more complex for products such as those related to non-mulesed wool and carbon footprints.

Traceability systems will become more sophisticated and widespread including the National Livestock Identification Scheme's (NLIS) electronic tagging system, the recording of stock movement through the entire supply chain and animal micro-chipping.

Compliance costs will increase with the increased burden of maintaining records such as chemical application. Maintaining an "Australian Made" status is becoming increasingly difficult for large food processors.

Consumers will look more critically at water use in the production of foods and it is possible a 'water footprint' will become a label requirement. The CSIRO has developed a water footprint model to calculate water consumed in the production of four Mars Corporation products. This type of information could be used for marketing purposes in the future.

7. Primary infrastructure, succession planning

Lower long term profitability is leading to reduced investment in infrastructure. In spite of this, land prices, in the main, continue to increase.

The average age of farmers continues to rise and succession planning

issues are not being effectively addressed in many cases. This sees many farmers continuing to work well into their 70s and 80s with younger family members leaving farms for metropolitan based study & employment. As rural businesses expand, technology and in particular planning and decision support tools are needed to assist young and inexperienced farmers assist to develop their expertise as new managers.

The GFC & recessed economic conditions may see later retirements and re-entry into the workforce by older workers and the collapse of Managed Investment Schemes (MIS) has hit many farmers financially with the option of retiring farmers selling out and converting arable land into tree crops seeming closed for the time being.

Although conservation infrastructure is not being maintained in a number of areas, a new initiative targeted at upgrading the "Two Bays" of Port Phillip and Westernport for increased recreational use is currently being implemented with likely flow on effects for the CLM industries.

8. Net outflow of workers, particularly the young, primary industries and rural areas.

The trend of rural people moving to more urban areas is continuing with resultant labour and skill shortages. The new carbon economy has the potential to reverse this flow with 'new' primary industry jobs in areas such as carbon accounting and auditing. As rural businesses grow larger, opportunities for qualified specialists either within businesses or service enterprises will also grow. Examples include agronomy, agricultural consultancy and whole enterprise planning.

Some sectors are experiencing difficulty having suitable courses delivered through institutions. In addition some institutions are reluctant to deliver training in the workplace, reducing engagement. There is persistent difficulty attracting trainees to animal technology, companion animal and shearing industries.

The cost of accessing vocational training in rural areas is reported on average to be five times higher than if the same training were accessed in metropolitan areas.

9. Animal welfare, animal traceability.

Community sensitivity to animal welfare issues continues to grow and in recent times has focused on the responsible breeding of animals with inheritable defects that can cause disease. Urban community interest continues to extend into rural issues. Marks and Spencer have indicated their intention to only source wool products made from non mulesed sheep from 2011. Other farming practices likely to attract the attention of animal welfare groups include confinement of animals in cages, surgical husbandry practices, long distance transport, disease problems in the production environment and the administration of disease treatments/preventions to stock.

Use of microchipping technology has the potential to store vast amounts of valuable data on animal genetics, production, health, treatments, origin, movements, ownership etc. and could simplify data-handling practices. Microchipping will also assist with biosecurity management.

10. Natural Environment, Land Degradation, Fire, Waste

Drought is continuing to impact on both native and introduced plants and animals with more species' becoming endangered through loss of habitat. The natural environment is suffering increased exposure to land degradation, particularly through fire, erosion and salinity. This creates opportunities for arboriculture, land regeneration and ongoing management or maintenance. Additionally, the possible introduction of a CPRS could see an expansion of farm forestry plantings generally and a resultant improvement in environmental outcomes as a consequence including increased biodiversity, carbon sequestration and improved water quality.

Increased salinity is at present less obvious due to drier conditions and resultant lower water tables. Some important habitats are being threatened, particularly wetland areas. Saline groundwater is less suitable for irrigation of soils, stock and plant growth. Ground water in some areas has been extracted for irrigation to the point where groundwater for stock sourced through wells on surrounding farms has dried up. Deeper wells have had to be sunk.

Wildlife and conservation expectations of the public remain high. Public and private land will be increasingly managed towards conservation objectives by specialist organisations although budgets are tight in the community based-sector such as Conservation Volunteers, Conservation Management Committees, Landcare

A larger area of arable land could become devoted to catchment objectives, natural environment or forests.

The National Trust in the U.K has called for farmers to be paid to protect national conservation assets such as peat banks in Northern England.

The Australian livestock herd produces 500000 tonnes of manure a day. Methane capture and use has been proven to be economical in many intensive livestock industries, although the practice has not been widely adopted.

Threat from fire will continue to intensify due to the effects of drought, climate change and increasing areas of drought affected, destocked or abandoned arable land. (eg. left unattended where irrigation licences have been sold) A major bushfire does enormous damage to the natural environment, farm infrastructure, livestock and causes severe land degradation. The Bushfire Royal Commission is likely to lead to a major restructure of Parks Victoria, local government, conservation & land management organisations and emergency services with new approaches and additional training required.

11. New methods of marketing, export

Deregulation of statutory marketing authorities' means farmers need to make decisions about the best way to market their products. New options are appearing. E.g. Innovative methods of web marketing of grain, meat, plants etc. Entrepreneurs are look to develop their own brands. Esp. Dairy/cheese. Marketing groups have appeared. Eg. Certified Angus Beef. (CAB) Some industries may be able to market their low carbon or water footprint. E.g. Landscaping.

Genetically modified crops are segregated in the production and supply chains although concerns exist over contamination and possible consequences.

12. New Regulations

A number of other sectors of agriculture also will now or in the near future have to cope with increasing demands to respond to the introduction of regulations in the areas of quality assurance , animal husbandry practices (eg. mulesing) transport, fodder production, on farm grain storage, fertiliser & pesticide application.

Possible new government legislation and regulations have the potential to impact on a number of areas of primary industry including:-

- Mob based movement of stock

- Recording on the NLIS database for each traded lot

- Further changes to the Agricultural and Veterinary Chemicals (Control of Use) Act 1992 as a result of spray drift incidence.

- Stricter transport regulations

- Stricter regulations in relation to companion animals.

- Maximum Residue Limits (MRLs) – more intense testing procedures

Mandatory requirements for aircraft operation insurance
 Stricter regulations on the use of quad bikes
 Requirement for landscapers and other workers to hold an OHS “Red” card
 National Water Reform
 Stricter land clearing regulations
 Tighter regulations on trade of wildlife and wildlife products
 Planting of fire shelter belts

Increasingly, industries such as the Australian Grain Industry are being governed by Codes of Practice. It is likely that these Codes will become more prevalent and reviewed more regularly.

13. Land rezoning

Rezoning of agricultural and horticultural land for urban development and “green wedge” conservation is expected to impact negatively on traditional farming enterprises. As an example, the entire Werribee horticultural area has recently been rezoned “green wedge”. In response, many urban-centric industry sectors will be able to access major growth opportunities as a result. Animal care & management and amenity horticulture sectors will benefit.

Generally more urban areas are likely to be zoned or rezoned for conservation and parks & gardens use as urban development increases. Water costs, rates and land values will drive many rural farming enterprises further away from cities.

Some land becomes unofficially zoned through enterprise domination such as wine industry in the Yarra Valley.

14. Health and Safety

Physical and Mental Health & Safety in farming and fishing industries has been identified as a government priority.

The agricultural industries experience a disproportionately high rate of death and serious injury, particularly associated with heavy machinery use.

15. Innovation

Extensive research is underway which it is hoped will provide innovations to mitigate carbon emissions and maximise opportunities to gain carbon credits through strategies such as altered animal feeding regime and improved soil carbon sequestration from reduced tillage methods. In spite of advances in knowledge, it is likely that significant current knowledge and skills gaps will persist for some time into the future. Innovative, integrated approaches which maximise sustainability, productivity and carbon emissions outcomes will need to be defined, adapted and implemented.

Over the past 20 years, agriculture has achieved 1% growth through innovation and 1% productivity growth but it is doubtful this level of achievement will be enough to sustain agriculture into the future.

Further advances in robotics and advanced medical technology may be seen in some areas such as robotic milk harvesting. Satellite imaging & GPS technology have the potential to provide valuable information that will improve farm profitability and create more sustainable land systems. More emphasis is being placed on performance recording, controlled trafficking and yield mapping.

Sector impacts and responses made by industry over the past 12 months

Agriculture & Production Horticulture

1. Planning, enterprise selection and management, Climate Change and Variability

Complexity is driving more extensive use of predictive tools in enterprise selection and management.

Farmers are more likely to employ greater use of diversification to mitigate risk. Eg combinations of cropping, wool and forestry.

The emergence and growth of farmer based technology education and transfer groups such as Birchip Cropping Group and Southern Farming Systems present both challenge and opportunity to the Training system.

These are 'needs' and 'industry led' movements and by working in collaboration, the training system has an opportunity to offer relevant skill sets according to genuine industry needs. This could be under an auspicing arrangement where a wide range of skill sets are offered by RTOs through such organisations. Industry will continue to place emphasis on skill sets ahead of full qualifications.

Farm forestry and arboriculture skills may emerge and become more popular as part of agricultural/rural training packages.

Farmers will have to be quick to identify emerging opportunities and threats. They will then need to respond with agility based on the best available information.

Part of the farm planning exercise is to choose varieties which will perform well under specific conditions. Farmers are being urged to produce more yet use fewer resources. However, without sufficient research & training, this is a contradiction in terms.

2. Carbon Pollution Reduction Scheme (CPRS), Emissions Trading Scheme (ETS).

If agriculture and horticulture are included, impacts will be far reaching. There will be far greater emphasis on the triple bottom line and farm plans will need to be prepared accordingly.

Farms are much more likely to display diversified combinations of enterprises and skills including farm forestry; CPRS and ETS carbon generating activities. They are likely to become more involved in green energy activities, improved waste management, and sophisticated trading schemes. Careful risk assessment and management will be required.

Farm forestry and arboricultural skills may emerge and become more popular as part of the new AgriFood Training Packages.

Enterprises may be required to specify carbon status to downstream purchasers. There will be a greater role for contracted specialists in these areas. New broad based jobs will appear (eg. Integrated farm planners with broad skills in farm planning, agronomy, arm forestry, green energy and carbon areas) or specialists such as carbon planners or accountants. At present, industry is largely unprepared to respond in a way that will maximise outcomes in any new carbon economy.

Each industry is in the process of making its 'carbon case' eg. Wool as a carbon sink.

3. International commodity supply and demand, trade policies and practices, input costs, exchange rates, global competitiveness, world economy

The combination of these factors makes agriculture and production horticulture increasingly risky investments, placing upward pressure on full qualifications and skill sets.

In 53% of the agricultural workforce, there is not only a lack of labour but also a lack of skills for roles such as managers, overseers and administrators. The emphasis needs to be on skill sets, Recognition of Prior Learning/Recognition of Current Competency (RPL/RCC) and portability of qualifications from sector to sector, given rapid industry expansion and shrinkage in the face of fluctuating fortunes caused by various driver combinations. It is increasingly difficult for farmers to begin production based on a prices that are months out of date at the time of product sale. Some sectors such as dairy are less able to respond flexibly to dramatic price changes, except by altering scale. Forward contracting is available more in some sectors than others.

4. Water policy and availability, catchment management, water use efficiency

Farming will be conducted within the context of larger catchment management plans. The Victorian government announced all stock & domestic dams on properties of less than 8 ha. will need to be licensed. This move has been prompted by fears the uncontrolled construction of stock & domestic dams is posing a risk to towns', irrigators & dwindling water supplies in some catchments.

Design and management skills for sophisticated irrigation technology will be required as a result of higher water cost and lower availability. This technology is being developed locally and imported.

More saline and deeper groundwater may mean increased reprocessing of water prior to use. There has been a dramatic downsizing in scale of enterprises affected by lack of irrigation supply and/or persistent drought, particularly dairying in Northern Victoria.

5. World population growth, food and fibre supply and demand

The short term effects of world oversupply and local drought have overwhelmed anticipated long term increases in demand. This is having damaging effects on the training system with low levels of entry in some courses, especially those in rural production. Conversely, dairy defies this trend reporting increased enrolments.

Although world food shortages are likely in the next decades, some commodities face an uncertain future. Wool now constitutes only 2% of the world's global textile market

6. Conscientious consumer-Biosecurity , food integrity, labelling ,traceability and compliance

A review has been undertaken into Australia's food labelling system. Trade and domestic sensitivity to genetically engineered products and chemical residues may result in increased testing and documentation responsibilities. Food producers will need to prove there are no toxins in foods and grain purchasers will be very conscious to avoid any possibility of contamination in the production, storage and handling chain of GM & non GM products. Extensive grain handling & storage training is currently being undertaken.

The Australian Fodder Industry Association is offering Fodder Care Accreditation.

7. Primary infrastructure, succession planning

Profits are rarely sufficient to allow upgrading of aged infrastructure Some informal training concerning succession planning is taking place, however, by and large, an ageing workforce faces this issue largely unprepared.

8. Net outflow of people workers from rural industries and areas, industry attractiveness and skill shortages

Agricultural industries face severe difficulties in recruiting and retaining workers to maintain existing production levels in sectors with chronic skill shortages. The NFF and others confirm that younger workers are leaving regional areas in favour of cities and note that these workers have easily found alternative employment. 11% of occupations face severe skill shortages, including shearing.

- It is predicted that the number of farmers intending to work past the age of 70 will increase from 4% to 24% over the next 3 years. Pathways need to be created for skilled workers to move in and out of primary industries in areas such as management, irrigation specialties, plant and animal nutrition and surveying with workers picking up skill sets rather than full qualifications as they go.
- Some industries such as dairy are seeing an influx of “sea-changers” buying farms.
- Young Rural Finance is dependent on having industry specific qualifications. Young dairy farmers without a specific dairy qualification may be considered ineligible for finance under the scheme.
- The Dairy industry’s responses by creating & supporting the National Centre for Dairy Education (NCDEA) with regional campuses would seem to have made training more affordable & accessible.
- 9. Animal welfare, animal traceability.** Producers need to prove that their product is residue and toxin free. Advertising and publicity is being undertaken by pressure groups to persuade the public not to consume animals produced in certain intensive systems such as pig production.
- 10. Natural Environment, Land Degradation, Fire, Waste** Climate change and a CPRS have potential to dramatically alter the way in which land is managed. Death of the native trees and the perennial pasture resource through drought will continue, accelerating land degradation. Skills are needed to plan and implement environmental regeneration and more adequately defend against land degeneration and disaster from fire. Injury of livestock through fire is a concern. Waste mitigation will become critical in more intensive industries, particularly if it represents a real opportunity or cost under a CPRS.
- 11. New methods of marketing, export** Farmers are beginning to participate in auction style marketing online. Globalisation of trade, starting pre-farm gate, demands skills in Codes of Practice, contracts, export protocols and financial derivatives such as currency hedging.
- Farmers are seeking to take control of their own destiny since deregulation of the single desk for wheat & growth in export of other commodities to Asian and BRIC (Brazil, Russia, India, China) economies. Eg live cattle. Farmers are seeking to process and market their own product direct to end buyers. Trading tools such as forward contracting and derivatives will become more important for farmers to manage risk.
- Emphasis is being placed on the marketing of product and health benefits of fresh produce including campaigns promoting anti-cancer, anti-oxidant, omega 3 etc.
- 12. New Regulations** Industry is funding quality assurance training programmes in mulesing, transport, fodder care, on farm grain storage, fertiliser application, and pesticide application technology.
- A water system reserve scheme determining irrigation allocations will be introduced in the Goulburn (2010-11) & Murray Darling (2011-12) Systems.
- Planning and approval process for carbon forestry appears to lay at state and local government levels. Carbon forests may be managed by or in collaboration with Catchment Management Authorities to reduce environmental impacts by avoiding deforestation and preventing an imbalance in farm forestry practices.
- 13. Land rezoning** Urban encroachment is likely to continue to claim land for conservation purposes, forcing some intensive industries such as vegetable production into more remote areas.
- Farmer’s would benefit from learning advanced techniques which

minimise impacts on the environment and their urban neighbours

14. Health and Safety

Recent farm machinery related deaths and injuries have attracted criticism from The Victorian Coroner and recommendations are likely to flow through into regulatory change.

15. Innovation

Marker genes and objective measurement will become a more important part of livestock management. Eg. cattle tenderness, and marbling, dairy progeny testing.

New chemicals for processes such as mulesing, are emerging.

Precision agriculture and controlled traffic farming and electromagnetic imaging are helping farmers improve profitability.

Weed sensing technology is becoming more and more viable, promising to reduce chemical costs. Weed sensing technology also has the potential to improve weed kills. New fertiliser formulations and methods of placement may lead to greater efficiency.

Conservation & Land Management

1. Planning, enterprise selection and management, Climate Change and Variability

Long term shortage of water alongside budget cuts and increased costs have placed increased strain on management in the industry making long term planning difficult. The need to conserve and manage land in the context of a drier climate is forcing short term trade offs regarding the priority placed on the survival of older plants and less drought tolerant species (including heritage).

Coupled with this, the additional pressure placed on habitats and native animal populations is leading to a greater number of endangered species as population numbers fall where lower levels of biomass are available for food and protection.

Greater knowledge of indigenous land management practices could greatly assist sustainability.

Industry continues to encourage growth and interest in ecotourism and there is an emergent demand for conservation, regeneration and management of public and privately owned land.

There has been an increased emphasis on the use of contractors and volunteers as a response to reduced funding.

Incentive exists in some organisations for employees to up-skill where pay rates are linked to qualifications.

2. Carbon Pollution Reduction Scheme (CPRS), Emissions Trading Scheme (ETS).

A CPRS could create significant opportunities for CLM entities as they are likely to generate excess carbon credits. Carbon accounting will need to be adapted and applied to large & diverse topographical areas and diverse environments. Carbon related skills will need to be incorporated into the workforce and specialists such as carbon accountants will need to be employed or contracted. At present the necessary analytical tools for diverse environments do not appear to exist.

3. International commodity supply and demand, trade policies and practices, input costs, exchange rates, global competitiveness world economy

A higher \$A will dampen overseas tourism, but Australia's iconic outdoor areas are likely to remain attractive to overseas tourists.

4. Water policy and availability, catchment management, water use

Stage 4 restrictions could have a very negative impact. Adoption of more sophisticated irrigation technology and a whole systems approach will be required.

efficiency

- 5. World population growth, food and fibre supply and demand** Increased ecotourism will place greater pressure on conservation and natural resource areas.
- 6. Conscientious consumer-Biosecurity, food integrity, labelling ,traceability and compliance** Biosecurity outbreaks could have devastating effects on the natural environment and could be extremely difficult to contain. A greater focus on risk management is required.
- 7. Primary infrastructure, succession planning** The 'Two Bays' initiative will renew infrastructure and have ecological impacts.
The loss of key experienced staff from CLM organisations presents a challenge. Up-skilling of existing staff and contractors is a priority.
Contractors will be expected to have more qualified and trained staff and an increase in the formal training of volunteers is becoming a consideration.
- 8. Net outflow of people workers from rural industries and areas, industry attractiveness and skill shortages** Volunteering in organisations such as Landcare remains fairly strong. Competition for employment is high and new entrants often present with pre-existing tertiary qualifications in disciplines such as science and are then offered vocational competency-based skills training. New funding arrangements will render this cohort largely ineligible for funded training delivery which will dissuade the engagement of higher calibre candidates
- 9. Animal welfare, animal traceability.** Increased ecotourism activity will require an increase in monitoring of conservation and resource areas against adverse impacts.
There has been an increase in the level of collaboration between conservation, veterinary and community organisations in the capture and care of animals injured by fire or other mishap.
- 10. Natural Environment, Land Degradation, Fire, Waste** Dramatic expansion in controlled burning across the state has increased the level of public concern about adverse environmental impacts and possible negative consequences. Fire and associated emergency management are clearly of high priority.
Due to drought, erosion and salinity have become less obvious as an issue and will re-emerge in a significant manner under periods of more normal climatic conditions.
Bushfires and controlled burns release massive amounts of carbon into the atmosphere and this is yet to be accounted for.
- 11. New methods of marketing, export** Parks Victoria is currently marketing the opportunity to "relax and exercise body and mind" emphasising the 'experience'. Industry is endeavouring to educate the public towards responsible behaviour in conservation areas.
- 12. New Regulations** Stage 3A water restrictions are likely to remain in force, increasing the need for custodians to find new ways to sustainably manage natural resources with very low levels of water input. The industry is endeavouring to refine and improve recycling and water treatment techniques.
- 13. Land rezoning** There is potential to expand the area currently under conservation which will have a consequent increase in the requirement for trained and skilled staff.
- 14. Health and Safety** Industry regards OHS training for workers, contractors and volunteers as a very high priority covering aspects such as biosecurity, public confrontation and management as well as ordinary operational processes.

15. Innovation

Increasingly, organisations will need to market themselves to the public as well as convince funding bodies of the importance of their resource in order to stay relevant and receive funding.

Animal Care & Management

1. Planning, enterprise selection and management, Climate Change and Variability

Animal welfare and ethics are of increasing importance in all areas. A significant increase in demand for new workers is expected in the technology sector with the opening of a new, large medical research facility.

A significant increase in demand for new workers is expected in the technology sector with the opening of a new, large medical research facility in the next couple of years

Critical shortages in position applications for animal technologists and middle management candidates exist. Deficits in understanding of the job role exist and there are fewer staff able to perform specialist roles such as IVF and embryo transplants. These factors may lead or have already lead to a slowing of some research processes.

Lack of competent staff leads to stress on other staff resulting in job dissatisfaction and higher attrition rates.

Inadequate underpinning knowledge leads to limitations and mistakes on the job. Animal technology institutes have already developed their own in house training in order to supplement what is taught by RTO's.

There is extreme difficulty recruiting capable and competent staff and trainees in the pet area. As a result, the pet sector looks to recruit its own staff and fund in-house training rather than rely on new graduates.

The pet industry is continuing to expand, particularly in the aquatic sector, with overall pet adoption rates tripling and euthanized animal rates in animal shelters continuing to fall.

In some cases stray cats are being received by animal shelters and provided to pet super centres for sale back to the public.

Some veterinary practices have report a negative impact from the recession. Management consultants are advising practices to put extra effort into retaining existing employees rather than incurring the additional cost of recruitment.

The role of veterinary nurse is continuing to broaden into non technical areas such as customer service and communications. There is a trend towards trainees such as vet nurses undertaking more challenging and skilled technical work including microchipping and other surgical procedures.

Animal grooming and training are strong growth areas.

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Animal grooming and training are strong growth areas.

2. Carbon Pollution Reduction Scheme (CPRS), Emissions Trading Scheme (ETS).

Facilities will need to be carbon efficient with close monitoring of emissions in all sectors. All sectors are likely to experience carbon deficit with limited opportunity to generate additional credits.

3. International commodity supply and demand, trade policies and practices,

N/A.

input costs, exchange rates, global competitiveness, world economy

4. Water policy and availability, catchment management, water use efficiency

Higher water costs and lower availability mean that more efficient delivery and recycling techniques are required.

5. World population growth, food and fibre supply and demand

Growth in the Australian population and affluence will mean steady long-term growth in the companion animal services, captive animals, animal control & regulation and vet nursing sectors.

6. Conscientious consumer- Biosecurity, food integrity, labelling, traceability and compliance

Consumers across the board hold higher expectations for the quality of products and services. The onus of proof regarding biosecurity, compliance etc. rests with industry. With a greater emphasis being placed on the accuracy and timely retrieval of records.

Vet nurses & other animal care staff could be placed under considerable strain in the event of a major biosecurity incident involving animals.

7. Primary infrastructure, succession planning

The animal technology and companion animal services industries are reporting difficulty attracting and retaining staff in supervisory and management positions.

There are concerns about the ageing of council animal control officers, some of whom have extensive experience but little or no formal training. There are moves to accredit these staff through an RPL/RCC process. Heavy reliance on RPL in the courses offered so far has automatically excluded inexperienced animal control officers.

Within the animal control & regulation sector, heavy documentation is required to prosecute infringements and training for this industry currently occurs under delivery from the Local Government Training Package.

8. Net outflow of people workers from rural industries and areas, industry attractiveness and skill shortages

The animal technology industry is advertising its own internally delivered traineeships (not yet as there are no agreements in place. The diploma level course is not registered as a traineeship) in an attempt to engage quality applicants to entry level positions with a view to promotion within the larger organisations. Animal technology may look to recruit staff from other sources than TAFE and then have them enrolled at TAFE.

Interest in vet nursing and captive animals remains relatively high and there is also strong interest from young people wanting to work in certain animal shelters such as the RSPCA.

9. Animal welfare, animal traceability.

A perception exists amongst some groups that dog and perhaps other animal breeders are not acting within the best interests of animals. There is community disapproval of sub standard practices within so called "puppy farms" and animal rights groups are pressuring to ban the sale of animals through pet stores and caging of all pets. Personal confrontation by activists is considered a risk to facilities and staff, especially in the animal technology, pet and animal shelter sectors.

There is a community push for tighter regulation of dangerous dog breeds such as Pit Bull Terriers.

Industry is attempting to qualify microchipping operators under the supervision of veterinarians. Pre-requisite qualifications apply.

The Equine Dentistry (ED) industry is moving closer to completion of competencies for the industry.

10. Natural Environment, Land Degradation, Fire, Waste

There is heightened community concern about the destruction of natural habitats and injury to wild and domestic animals, particularly by fire. This led to an increase in community volunteers wishing to 'help' but requiring appropriate training.

Veterinary nurse resources were placed under considerable strain

- during the recent bush fires. Nurses volunteered their services to tend burned & injured companion animals, horses & wildlife. Employers modified rosters & in some cases paid wages for nurses attending the burned zone.
- 11. New methods of marketing, export**
- Animal houses are marketing employment opportunities through school career teachers.
- Veterinarians are placing more emphasis on marketing and communications and are seeking greater assistance from vet nursing staff in regard to activities such as promotions and improved pet care.
- Dogs Victoria is connecting with its members and the community generally with events such as 'Big day out for dogs,' where anyone with a dog on a leash can learn about breeds and training programmes.
- An example of a successful public relations program was in how the Lost Dogs Home handled the appeal for a new owner for a mistreated dog by the name of "Buckley".
- Membership of puppy and dog obedience training schools has increased and community expectations are higher in response to point of sale promotion.
- Public relations programmes are being undertaken to allay concerns that irresponsible breeding resulting in the expression of genetic defects is widespread. It has been suggested that additional technical knowledge relating to genetics and breeding may assist the industry.
- 12. New Regulations**
- Councils are progressively introducing the compulsory de-sexing and microchipping of all dogs and cats. All new animal registrations for dogs and cats must be accompanied by evidence of microchip implantation.
- New regulations under the Prevention of Cruelty to Animals (POCTA) legislation are applicable to farming, animal handling, horse events and management of research animals.
- A new version of the *Domestic (Feral and Nuisance) Animals Act 1994* and supporting regulations commenced on 1st September 2009. The changes to the Act were introduced in 2007 in the *Animals Legislation Amendment (Animal Care) Act 2007* but had a delayed commencement due to the need to develop supporting regulations.
- The *Domestic (Feral and Nuisance) Animals Act 1994* will be renamed the ***Domestic Animals Act 1994*** and the Regulations will be renamed ***Domestic Animals Regulations 2005***.
- 13. Land rezoning**
- New urban growth corridors in the southeast, north and west of Melbourne will see increased demand for animal related services.
- 14. Health and Safety**
- Industry has been challenged to provide OHS support for volunteers and workers, particularly in relation to animal rescue and care.
- 15. Innovation**
- The use of medical technology in animal settings has become more widespread.

Horticulture

- 1. Planning, enterprise selection and management, Climate Change and Variability**
- Industry is placing greater emphasis on the identification, breeding and propagation of drought tolerant plants.
- The importance of the creation of microclimates to improve plant survival rates and assist with reducing water use is being recognised by industry to a greater extent.
- Emerging pests will present new challenges however traditional solutions to pest outbreaks such as indiscriminate use of large quantities of broad spectrum insecticide are no longer desirable.
- The Landscape sector has been remarkably resilient in the face of the

	<p>GFC and water restrictions. Landscape and Park designs have altered due to the need to incorporate low water use and recycling elements.</p> <p>With consumer desire to maintain the value of investments, there is the possibility of greater opportunities for provision of professional maintenance services.</p> <p>With emphasis and legislation on hardscaping. Landscapers are requiring more sophisticated design and specialized building skills to meet government and public expectations and the landscape industry has responded by marketing building registrations to members with an aim to have 100% registered by 2010.</p> <p>Additionally, the industry may separate into landscape builders and gardeners.</p> <p>The Landscape Industry Association of Victoria has offered training in business management and support to encourage better practice to ride out challenging times.</p> <p>Consumer purchase of vegetable seedlings continued to grow and production and consumption of fresh, local produce appears as a strong trend.</p>
<p>2. Carbon Pollution Reduction Scheme (CPRS), Emissions Trading Scheme (ETS).</p>	<p>There is a significant opportunity to generate credits and to market solutions based on carbon footprints.</p>
<p>3. International commodity supply and demand, trade policies and practices, input costs, exchange rates, global competitiveness, world economy</p>	<p>The high \$A has adversely affected exports of turf products.</p>
<p>4. Water policy and availability, catchment management, water use efficiency</p>	<p>With tighter water regimes, industry is seeking more sophisticated technology to retain water in the soil by minimising evapotranspiration, run off and drainage losses.</p> <p>Industry is marketing low water use options and designs both for plant material and irrigation systems. Whole systems approaches are increasingly promoted.</p> <p>Extreme stress on water resources in Parks & Gardens will lead to difficult decisions about water allocation and subsequent death of lower priority plants.</p> <p>Any implementation of Stage 4 water restrictions, which bans all outdoor watering of gardens and lawns, would obviously have drastic impacts on all horticultural industries.</p> <p>Consumers have responded to water issues by reducing lawn areas and increasing the use of artificial turf which is made from plastic and has an increased greenhouse footprint</p> <p>The turf industry has developed more drought tolerant varieties of grass which have lower water use and better wearing ability.</p>
<p>5. World population growth, food and fibre supply and demand</p>	<p>Growth in the Australian building industry, the overall population and general affluence will mean long term growth in the sectors of horticulture.</p>
<p>6. Conscientious consumer- Biosecurity, food integrity, labelling, traceability and compliance</p>	<p>The community has higher expectations of industry regarding products and services and more emphasis is being placed on plant quality control.</p> <p>Farming on the urban fringe by lifestyle 'peri-urbans' who are new to horticulture poses a risk to existing farms through inadequate pest and weed management.</p>
<p>7. Primary infrastructure,</p>	<p>Park infrastructure will need to be renewed with low water use as a</p>

succession planning	<p>strong focus. It is expected that an increased use of contractors will result in loss of core skills within Parks & Gardens organisations and training and accreditation of contractors will become more of a priority.</p> <p>There is a need for the introduction of Improved irrigation technology to allow the efficient use and reuse of available water.</p> <p>The turf production sector has reported difficulty in filling available positions at all employment levels.</p>
8. Net outflow of people workers from rural industries and areas, industry attractiveness and skill shortages	<p>The increased use of contractors with the retention of only core key staff in the parks & gardens sector is expected to lead to more transient employment resources which are less well trained and place a lower value on training.</p>
9. Animal welfare, animal traceability.	N/A
10. Natural Environment, Land Degradation, Fire, Waste	<p>There is a continued focus on improved recycling techniques.</p> <p>Fire continues to increase the threat to urban natural environments and horticultural enterprises.</p> <p>The remains significant pressure to recycle and design “closed” systems, mulch lower fertiliser use and without using mains water.</p>
11. New methods of marketing, export	<p>To maintain competitiveness within the nursery and landscape industries businesses need to increase marketing and promotional opportunities.</p> <p>The nursery industries are promoting the health and lifestyle benefits of being active and growing one’s own produce in the home garden and .staying at home in the garden.</p>
12. New Regulations	<p>There is a continued focus on OHS issues on building sites and requirements for the ‘red card’ Training is generally delivered onsite and all landscape workers will be required to hold a Construction Industry (red) card by 1 July 2010 or within 28 days.</p> <p>Businesses using more than 10megalitres of water annually must complete a Water Management Action Plan (WaterMAP) and submit it to their local water authority.</p>
13. Land rezoning	<p>More areas are likely to be rezoned for parks and gardens.</p>
14. Health and Safety	<p>Delivery of OHS units is challenging and innovative delivery approaches such as combining OHS training at industry AGMs are being utilised. Eg. TGAA. Some organisations including LIAV and NGIV are active in promoting and facilitating OHS training within their industry membership.</p>
15. Innovation	<p>Sophisticated water and nutrient delivery technology in open field and greenhouse growing processes is making production more precise and input use much more efficient. New fertiliser formulations and methods of placement may lead to greater efficiency.</p>

Seafood & Aquaculture

1. Planning, enterprise selection and management, Climate Change and Variability	<p>Abalone areas which have been devastated by the <i>Ganglioneuritis</i> virus are recovering and the virus has currently stopped spreading. Some areas are being reopened to divers and, as yet, there is no sign of re-infection with farms now being identified as virus free. The number of divers has halved since the virus outbreak.</p> <p>Production in the eel industry has fallen from 450 tonnes to 40 tonnes due to drought, decimating the industry. Rock lobster stocks appear constant but catch rates are down 50%.</p> <p>Climate change is being identified as being responsible for the warm</p>
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	<p>NSW coastal current strengthening and bringing tropical fish and sea urchins with their prized roe into Victorian waters.</p> <p>Community and industry desire effective Environmental Management Systems (EMS) and DPI has instigated a climate change and fisheries adaptation programme.</p>
2. Carbon Pollution Reduction Scheme (CPRS), Emissions Trading Scheme (ETS).	<p>Additional fuel and processing costs associated with a CPRS will be borne by the industry. The effects of higher water temperature and higher CO₂ levels are not thought to be specifically detrimental in Victorian fisheries, although some uncertainty exists.</p>
3. International commodity supply and demand, trade policies and practices, input costs, exchange rates, global competitiveness, world economy	<p>Australia represents a significant portion of world rock lobster and abalone exports. Higher prices due to higher \$ A appear to be able to be passed on, albeit at lower trade volumes.</p>
4. Water policy and availability, catchment management, water use efficiency	<p>East Gippsland lakes are becoming more saline and the closing of the lakes due to low fresh water supply has closed up the sandbar and is affecting the fishing industry in that area. A large amount of fresh water needs to enter the lakes in order to reopen the bar and revive the wild catch industry.</p> <p>Higher allocation of water to river systems (vs. other uses) would see a recovery in Eel & East Gippsland wild catch industries.</p> <p>This again illustrates the tenuous state of industries which rely on but also compete for scarce water resources and are largely impacted by government decisions about allocations.</p>
5. World population growth, food and fibre supply and demand	N/A
6. Conscientious consumer- Biosecurity , food integrity, labelling ,traceability and compliance	<p>Food safety and biosecurity protocols continue to remain of significant concern to the community and this is driving an increased requirement for compliance with food and handling safety expectations.</p> <p>Warmer ocean currents and the subsequent migration of new species into Victorian waters may have possible negative environmental impacts on natural fishery habitats. The industry will need to expand current monitoring activity to assess possible impacts.</p>
7. Primary infrastructure, succession planning	<p>Ageing of the seafood workforce and instability within the industry has led to contraction and an overall loss of skilled workers. This has compounded issues associated with succession planning which is now considered the major issue facing industry. There are few new entrants and licences are being resumed through government buyback. The capital requirement of entering the fishing industry is high.</p> <p>Fisheries Victoria has identifying talented young candidates for professional development with the intention of encouraging future leadership within the industry.</p> <p>Competency has traditionally been based on hours at sea rather than competencies such as setting gear, hauling gear etc.</p>
8. Net outflow of people workers from rural industries and areas, industry attractiveness and skill shortages	<p>Contraction of abalone and rock lobster catches, combined with availability of high paying mining jobs has seen movement of people out of the industry. Others are underemployed or combining other paid part time work with fisheries work.</p> <p>The industry is aware of current skill shortages and the need for training programmes that are industry led and competency based.</p>
9. Animal welfare, animal	N/A

traceability.

10. Natural Environment, Land Degradation, Fire, Waste

In an effort to adopt more sustainable practices, industry has undertaken to store and handle by-catch for on-selling rather than disposal overboard as waste.

11. New methods of marketing, export

Niche products such as abalones are most likely to produce sustainable profits in the face of cheap seafood imports. Strong and effective overseas marketing relationships need to be developed and maintained.

12. New Regulations

The *Fishing Regulations 2009* released in March of this year do not contain any major implications for industry other than requirements for record keeping.

Reopening of abalone areas recovered from virus and a \$5 million buyback of rock lobster licences have both been positive for the industry.

13. Land rezoning

N/A

14. Health and Safety

The enforcement of recreational fishing regulations can lead to confrontation between fisheries staff and the public. Officers need to adequately prepared and protected under these conditions.

15. Innovation

N/A

Emerging critical implications of these developments. (Skill gaps)

Agriculture & Production Horticulture

1. Planning, enterprise selection and management, Climate Change and Variability

Greater emphasis will need to be placed on whole farm planning, particularly in the grains, beef, wool and dairy industries. Farmers will increasingly seek specialist advice on whole farm planning particularly in the context of the natural environment, carbon and marketing.

There is a need for skills in the use of computer software to develop written business plans, maintain records and retrieve critical information on processes such as chemical operations.

The Farm Ready programme provides \$1500 for farmers to undertake training focused on adapting to climate changes - economically and environmentally.

Business management, supervisory and computer skills are required in all areas.

Greater agility will be required with decision making to deal with the pace of change.

There is an ongoing need for agronomists and trained farm managers.

2. Carbon Pollution Reduction Scheme (CPRS), Emissions Trading Scheme (ETS).

Primary industries are relatively unprepared for CPRS and ETS schemes. "Green" skills are required.

It is expected that Carbon accounts are likely to be prepared by specialists initially who may be specifically skilled or by agricultural advisors, preferably those who assist with the development of farm plans. At present these skills do not exist in any sector.

In their traditional form, current forestry skills may not be ideally suited to the farm environment. These may need to be adapted for rural enterprise application in the context of any CPRS or ETS.

Skills in reduced and no till farming are required.

3. International commodity supply and demand, trade policies and practices, input costs, exchange rates, global competitiveness, world economy

Job advertisements for commodity traders have increased. Many commodity sale decisions are influenced by large broking houses with vastly superior trading knowledge and skills and most of the financial skills exist in banking institutions and accounting firms. With increasing farm sizes, managers are being forced to make complex decisions, with significant financial consequences, based on limited information that is sourced off-farm. Skill sets are needed to assist these managers to research relevant information in order to make more profitable and sustainable decisions.

4. Water policy and availability, catchment management

Skills are needed to enable farmers to develop and understand regional, local and farm specific catchment plans in order to maximise water use and minimise land degradation. These skills include the design, installation and maintenance of the latest irrigation systems

5. World population growth, food and fibre supply and demand

Long term demand for grains and beef is likely to remain strong. Dairy growth will occur but is not a traditional part of the Asian diet. Skills to produce consistently high quality produce are required. These skills include breeding, quality assurance and objective measurement.

6. Conscientious consumer- Biosecurity, food integrity, labelling, traceability and compliance

Post farm-gate skills in food integrity, labelling, traceability and compliance are needed.

Those who can identify a need and then market, label and comply against that need will gain a competitive advantage highlighted by the recent promotion through fast food chains of the "Angus" burger using "Certified Angus Beef".

Vet nurses & other animal workers may be under prepared & under-

	resourced to deal with major biosecurity or large natural disasters.
7. Primary infrastructure, succession planning	<p>The difficulty in sourcing skilled farm workers has led to an increased use of unskilled labour for processes including milking, cropping, wool harvesting etc. at operator, supervisor and manager levels.</p> <p>Skills are needed to understand the process of succession planning.</p> <p>Skill shortages & gaps being are potentially created & exacerbated by the high cost of training in rural vs. metropolitan areas.</p>
8. Net outflow of young workers from primary industries and skill shortages	<p>The new merged AgriFood Training Package may assist with transferability of skills from sector to sector but will still need to address specific industry needs.</p> <p>Skill shortages are likely to intensify as workers migrate to more attractive alternative employment options such as mining and construction.</p>
9. Animal welfare, animal traceability.	Computer and record keeping skills are required for animal traceability processes.
10. Natural Environment, Land Degradation, Fire, Waste	<p>Skills are needed to create fire safety plans for livestock including improved fire shelter belts.</p> <p>Community based waste management models like that in the Bega (NSW) dairy sector need to be developed.</p>
11. New methods of marketing, export	<p>Business management and marketing skills will assist with business expansion. These skills may be defined and delivered through programmes such as <i>Skills for Growth</i>.</p> <p>Quality assurance skills are required and an understanding of marketing and collection of market intelligence will be needed.</p>
12. New Regulations	<p>The ACUP certificate continues to be a requirement for those who buy and apply agricultural chemicals. Following reported incidents of spray drift, skills in measurement and recording of environmental conditions during spraying would be advantageous in defending liability claims.</p> <p>Skills are required in grain, fodder & livestock transport, fodder production, on farm grain storage, fertiliser application.</p>
13. Land rezoning	N/A
14. Health and Safety	<p>Skills in the safe operation of farm machinery including quad bikes, chainsaws, front end loaders and others are ongoing requirements following recent deaths and serious injuries.</p> <p>Based on the relatively high incidence of suicide amongst the farming community, skills in the recognition of “warning signs” and the provision of advice connecting individuals with professional support services are of importance to industry.</p> <p>Skills in hazard analysis, traceability and food safety are required in the agricultural industries.</p>
15. Innovation	Controlled trafficking, precision agriculture, GPS and satellite technology are generating data, but understanding and skills in integrating the use of these technologies are needed.

Conservation & Land Management

1. Planning, enterprise selection and management, Climate Change and Variability	<p>There is an increased emphasis on training of contractors and volunteers. Preference is generally offered to those contractors who can report higher levels of competency through qualifications or skill sets.</p> <p>The identification, seed harvesting, production and use of drought tolerant native species is a priority since Stage 4 or ongoing Stage 3A water restrictions will result in loss of vegetation and ecosystems which</p>
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	will subsequently need regeneration. Critical skills required are plant identification, plant climatology, and plant culture. A skills shortage for trained arboriculturalists in a growing industry exists and there are limited training options available.
2. Carbon Pollution Reduction Scheme (CPRS), Emissions Trading Scheme (ETS).	The absence of detail concerning the governments CPRS and CTS is making planning and the definition of skills required difficult. It has been identified that skills in carbon accounting of diverse sources will be needed but others are as yet undetermined.
3. International commodity supply and demand, trade policies and practices, input costs, exchange rates, global competitiveness, world economy	N/A
4. Water policy and availability, catchment management	Greater emphasis is being placed on sustainable water and catchment management and water re-cycling. Consumers have responded to water issues by reducing lawn areas and increasing the use of artificial turf which is made from plastic creating a high carbon footprint.
5. World population growth, food and fibre supply and demand	N/A
6. Conscientious consumer- Biosecurity, food integrity, labelling ,traceability and compliance	CLM staffs need to acquire skills in identifying biosecurity threats, containing outbreaks and assisting to direct public response. Biosecurity Management plans need to be developed.
7. Primary infrastructure, succession planning	Due to funding changes and the increased cost of training to the sector, new employees with pre-existing qualifications and existing skills may be dissuaded from entering this sector, resulting in a general skills shortage.
8. Net outflow of young workers from primary industries and skill shortages	The flow of “tree-changers” into the industry will slow significantly because of changes to funding arrangements and the recruitment of employees with higher skill and learning capability. There will need to be a greater emphasis placed on developing the entry level operational and technical skills of a larger number of new industry entrants
9. Animal welfare, animal traceability.	Skills need to be developed in capture and care of animals (both native and domestic) that are injured as a result of fire or other mishap.
10. Natural Environment, Land Degradation, Fire, Waste	Emergency management, coordination, public awareness and safety skills are needed. Skills in natural resource management for indigenous communities are needed.
11. New methods of marketing, export	Industry requires skills in the development of marketing and communication plans.
12. New Regulations	N/A
13. Land rezoning	N/A
14. Health and Safety	Skills are required in OHS and First Aid applications in the workplace as well as a wider understanding of safety issues concerning the use of machinery.
15. Innovation	N/A

Animal Care & Management

1. Planning, enterprise selection and management, Climate Change and Variability	Business management, supervisory, staff management & communication and computer skills are needed in all sectors.
	The lack of course availability for animal handlers in the pet industry is compounded by RTOs being reluctant to deliver on-site training as required by industry. This has led to critical skills shortages in the pet industry.
	There are critical staff shortages in the animal technology sector where large animal technology facilities may have to respond by undertaking more internal training of staff. This sector in particular is keen to see staff upgrade their qualifications and acquire the underpinning knowledge. Advanced skills in IVF and embryo transplant are in short supply.
2. Carbon Pollution Reduction Scheme (CPRS), Emissions Trading Scheme (ETS).	Carbon specialists with industry knowledge are required.
3. International commodity supply and demand, trade policies and practices, input costs, exchange rates, global competitiveness, world economy	N/A.
4. Water policy and availability, catchment management	Recycling, measurement and cost control skills will become increasingly important
5. World population growth, food and fibre supply and demand	N/A
6. Conscientious consumer- Biosecurity, food integrity, labelling ,traceability and compliance	DPI has introduced a Code of Practice for the responsible breeding of animals with hereditary defects that may cause disease. There is a responsible dog ownership accreditation programme for breeders, but no code of ethics for non-breeders.
	Microchipping and DNA identification are on the national agenda for pedigree dog breeding.
	Skills in the application of regulations, data recording, processing and retrieval will be required.
	Animal care staff & in particular vet nurses require skills to deal with various biosecurity threats.
7. Primary infrastructure, succession planning	The pool of vet nurses will become less fluid with a reduction in new vacancies & new positions created. Businesses may plateau over the next 12 months which will restrict the creation of new positions. Ageing of staff in the animal care & management industries will require further skill development in succession planning.
8. Net outflow of young workers from primary industries and skill shortages	N/A

9. Animal welfare, animal traceability.	Skills in the use of computers and record keeping and retrieval are required. Concern has been expressed that there are skill shortages in equine dentistry in rural areas. It is suggested that costs may increase and horses may suffer as a result if equine dentists are required to operate with the approval of a vet. This is a contentious issue between the Australian Veterinary Association (AVA) and the Australasian Association for Equine Dentistry (AAED).
10. Natural Environment, Land Degradation, Fire, Waste	N/A
11. New methods of marketing, export	<p>Areas with skill shortages such animal technology and pets, need to market employment and career opportunities. Greater emphasis needs to be placed on skills relating to the communication of therapeutic benefits of pets.</p> <p>Falling participation rates in industry associations calls for advanced skills in marketing. Associated members are generally more aware of relevant training, which can be channelled through these organisations assisting to develop the skills base in the wider industry and general public.</p> <p>Industry Associations can also identify and facilitate export opportunities (i.e. certain breeds of dog) whereby skills in marketing and export of animals will be needed.</p> <p>There is a greater need for the marketing of responsible pet ownership and compliance with council regulations.</p>
12. New Regulations	<p>Skilled microchip implanters are still in demand. After much debate, there is still a view that prerequisite qualifications for the Microchipping short course need to be reviewed by DPI (Department of Primary industries)/ BAW Bureau of Animal Welfare.</p> <p>More emphasis on industry Codes of Practice and compliance issues is required. Industry Association Members are obliged to comply with Codes to satisfy the terms of membership.</p> <p>New Codes are required for the activities of commercial aquariums.</p>
13. Land rezoning	Business management and marketing skills may assist with business expansion into new residential areas. These skills may be defined and delivered through programmes such as <i>Skills for Growth</i> .
14. Health and Safety	Staff need greater support and education on security procedures relating to confrontation with the public.
15. Innovation	Skills are required in the use of digital x-ray machines and fibre optiscope.

Horticulture

1. Planning, enterprise selection and management, Climate Change and Variability	<p>Critical skills needed in the Parks & Gardens area are plant identification, plant climatology and plant culture. Selection of appropriate tree species is critical.</p> <p>Sophisticated knowledge of plants relating to low water use and drought tolerance, aspect, frost tolerance, local indigenous status, mulching, irrigation and fertiliser requirement is needed to make effective, sustainable decisions.</p> <p>Integrated pest management (IPM) solutions for established pests and greater emphasis on biosecurity approaches for new and emerging threats are needed.</p>
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	<p>Diversification and specialisation may mean that potential landscape employers may seek trainees from broader Certificate III sectors such as Parks & Gardens for their maintenance divisions as well as carpenters, stone masons or pavers.</p> <p>Environmental and sustainability skills will remain important to the industry.</p> <p>Management skills for maintenance of golf courses, turf facilities and sporting ovals are in short supply. The turf industry association TGAA is responding to skill shortages by developing an industry accreditation scheme to reward members for developing skills in their workplace.</p>
2. Carbon Pollution Reduction Scheme (CPRS), Emissions Trading Scheme (ETS).	<p>There is a requirement for carbon specialists with industry and small business knowledge. The absence of detail concerning the governments CPRS and CTS is making planning difficult.</p>
3. International commodity supply and demand, trade policies and practices, input costs, exchange rates, global competitiveness, world economy	<p>Skill gaps in the turf sector may lead to reduced ability to compete in cricket and other sports turf activities.</p>
4. Water policy and availability, catchment management	<p>Design and management skills for sophisticated irrigation and water recycling technology are required</p>
5. World population growth, food and fibre supply and demand	<p>There is strong demand from overseas students in production horticulture and landscaping. Students want to be trained in state of the art production, technology and business management skills.</p>
6. Conscientious consumer- Biosecurity, food integrity, labelling ,traceability and compliance	<p>Skills are required in the preparation of biosecurity action plans in collaboration with government agencies.</p>
7. Primary infrastructure, succession planning	<p>Skills are required in strategic planning, supervisory and computer applications</p>
8. Net outflow of young workers from primary industries and skill shortages	<p>Technical and operational skill shortages will lead to greater use of unskilled labour. Management may require skills in developing career plans for employees.</p>
9. Animal welfare, animal traceability.	N/A
10. Natural Environment, Land Degradation, Fire, Waste	N/A
11. New methods of marketing, export	<p>Business and marketing skills for the horticultural industries are needed to ensure success and relevance.</p>
12. New Regulations	N/A
13. Land rezoning	<p>Business management and marketing skills may assist with business expansion into new residential areas. These skills may be defined and delivered through programmes such as <i>Skills for Growth</i>.</p>
14. Health and Safety	N/A
15. Innovation	N/A

Seafood & Aquaculture

1.Planning, enterprise selection and management, Climate Change and Variability	<p>The industry is seeking a flexible system where skills are acquired incrementally to a Certificate 2 or 3 with subsequent progression wrapped around actual activity rather than a theoretical job description.</p> <p>Delivery of skills, irrespective of enterprise scale, must be delivered in manageable pieces at a time, pace and place conducive to the enterprise. This system does not exist at present.</p> <p>The current training focus is heavily on regulations.</p> <p>Principles of sustainability need to be explained and competencies developed for these, handling and processing.</p>
2. Carbon Pollution Reduction Scheme (CPRS), Emissions Trading Scheme (ETS).	Carbon specialists with industry and small business skills will be needed.
3.International commodity supply and demand, trade policies and practices, input costs, exchange rates, global competitiveness, world economy	N/A
4.Water policy and availability, catchment management	N/A
5. World population growth, food and fibre supply and demand	N/A
6. Conscientious consumer- Biosecurity, food integrity, labelling ,traceability and compliance	Biosecurity risks are significant as seen with the abalone virus. Skills are required in the observation and mapping of infections.
7. Primary infrastructure, succession planning	The focus of competency is currently largely based on hours at sea. It has been suggested that this focus should be more squarely placed on skill development in areas such as sustainability, handling & processing and licensing
8. Net outflow of young workers from primary industries and skill shortages	Specific programmes need to be undertaken to develop promising young people in the industry. While the industry is generally in need of up-skilling, the depressed economic conditions mean that this up skilling is unlikely to occur to any great extent, in the near future.
9. Animal welfare, animal traceability.	N/A
10. Natural Environment, Land Degradation, Fire, Waste	N/A
11. New methods of marketing, export	Correct handling and processing requirements need to be understood and protocols followed for each market.
12. New Regulations	The new regulations are not seen to have had any significant impact.
13. Land rezoning	N/A

- 14. Health and Safety** Skills in deckhand operations and OHS are required for new and existing workers.
- 15. Innovation** Technical skills as they relate to fresh water recycling production systems are needed.

Training demand consequences of addressing these skill needs (Training requirements)

Agriculture & Production Horticulture	
1.Planning, enterprise selection and management, Climate Change and Variability	-Certificate 4 & 5 in Agriculture covering Business management, supervision, farm planning, risk management and sustainability. Including contract interpretation, management and negotiation. -Diploma in Agronomy.
2. Carbon Pollution Reduction Scheme (CPRS), Emissions Trading Scheme (ETS).	- Development of State & Nationally accredited units at AQF level 3&4 on carbon trading, planning and accounts. (Swinburne University is offering a carbon accounting course that may provide a base for these units) -Training at AQF level 2 & 3 in sustainable production techniques. - Training at AQF level 4 & 5 in Crop selection
3.International commodity supply and demand, trade policies and practices, input costs, exchange rates, global competitiveness, world economy	-Certificate 4 & 5 in Agriculture covering Business management, supervision, farm planning, risk management and sustainability. Including contract interpretation, management and negotiation. -Training at AQF level 4 & 5 in New Technologies such as online trading and GPS/GIS.
4.Water policy and availability, catchment management	-Training at AQF 3 - 5 in interpreting and applying catchment plans. Particularly to interpret and apply an increasingly complex set of water regulations. -Training at AQF 2 to 4 in water conservation techniques across a range of enterprises
5. World population growth, food and fibre supply and demand	Training in examination and interpretation of forecast data.
6. Conscientious consumer- Biosecurity., food integrity, labelling ,traceability and compliance	- Inclusion of units at AQF level 4 to 5 on Biosecurity protocols - Inclusion of units at AQF level 2 to 4 on labelling and traceability - Selected units at AQF level 2 to 4 in pig production
7. Primary infrastructure, succession planning	Training is required to assist business owners to prepare succession plans with all stakeholders involved. Alongside this, training is also needed in relation to the inheritance legislation and the preparation of legal Wills.

8. Net outflow of young people workers to from primary industries and skill shortages	<p>Development of career pathways to retain young people in the industry is needed.</p> <ul style="list-style-type: none"> -Operator level training – Certificates III and IV in cropping, livestock, dairying -Certificate 2-4 in wool handling & shearing - Pre-apprenticeship programs at AQF level 2 aimed at attracting new employees into the agriculture work force.
9. Animal welfare, animal traceability.	Training in animal genetics and breeding is required.
10. Natural Environment, Land Degradation, Fire, Waste	Understanding of regional and local catchment plans. Development of sustainable farm plans. Salinity and erosion measures. Waste recycling. Fire survival and livestock safety plans.
11. New methods of marketing, export	<ul style="list-style-type: none"> -Certificate 4 & 5 in Agriculture covering Business management, supervision, farm planning, risk management and sustainability. Including contract interpretation, management and negotiation.
12. New Regulations	<ul style="list-style-type: none"> -The ACUP certificate continues to be a requirement for those who buy and apply agricultural chemicals. -Training at AQF 2 to 4 is required in grain, fodder & livestock transport, fodder production, on farm grain storage, fertiliser and advanced pesticide application technology. <p>Training at AQF level 4 & 5 Biosecurity competencies for GM crops.</p>
13. Land rezoning	NA
14. Health and Safety	<p>It could be useful to include 'safe-talk' or suicide prevention as a part of an OHS unit of competency, since suicide is a significant cause of death amongst farmers.</p> <p>Training on the safe use of quad bikes and front end loaders is needed.</p> <p>A front end loader unit of competency has been introduced</p> <p>Hazard Analysis and Critical Control Point (HACCP) food safety training is needed.</p>
15. Innovation	<p>Farm production related and particularly agronomy packages should address the interpretation and application of new Precision farming, Controlled trafficking and satellite technologies. New chemical spraying technology.</p> <ul style="list-style-type: none"> -Training at AQF level 3 to 5 in New Technologies such as GPS/GIS.

Conservation and Land Management

1.Planning, enterprise selection and management, Climate Change and Variability	-Training at AQF Levels 3 to 5 in arboriculture/ farm forestry.
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2. Carbon Pollution Reduction Scheme (CPRS), Emissions Trading Scheme (ETS).	<p>Training in Carbon accounting- no units are currently accredited. Once curriculum development in the carbon sequestration and carbon accounting has been completed, initial demand for this training will be substantial.</p> <p>- Development of State & Nationally accredited units at AQF level 3&4 on carbon trading, planning and accounts. (Swinburne University is offering a carbon accounting course that may provide a base for these units)</p>
3. International commodity supply and demand, trade policies and practices, input costs, exchange rates, global competitiveness, world economy	<p>- Training at AQF level 5 in evaluating agro-forestry projects for carbon sequestration potential and trading.</p>
4. Water policy and availability, catchment management	<p>- National sustainable water and catchment management units at AQF level 5 are needed. Victoria has developed an internal solution via the state Diploma in Sustainable Water and Catchment Management, the ability to access these within the National qualification structure remains a high priority.</p>
5. World population growth, food and fibre supply and demand	
6. Conscientious consumer- Biosecurity, food integrity, labelling, traceability and compliance	<p>Training at AQF level 2 to 3 to recognise symptoms and manage outbreaks relating to biosecurity is required.</p>
7. Primary infrastructure, succession planning	<p>Currently available training needs to incorporate up to date underpinning knowledge and skills in conservation and land management practices in order to implement future industry infrastructure renewal requirements</p>
8. Net outflow of young people workers to from primary industries and skill shortages	<p>NA</p>
9. Animal welfare, animal traceability.	<p>- AQF level 2 Training for those caring for injured animals is required (including volunteers).</p>
10. Natural Environment, Land Degradation, Fire, Waste	<p>- Training at AQF level 2 & 3 in the selection and positioning of fire retarding plants.</p> <p>- Water & fire competencies at AQF level 3 to 5 need to be included in CLM training packages.</p> <p>AQF level 4 & 5 training in emergency management coordination, public awareness and public safety is needed.</p>
11. New methods of marketing, export	<p>NA</p>
12. New Regulations	<p>NA</p>

13. Land rezoning	Planning and rehabilitation programs.
14. Health and Safety	- Training at level 5 with particular emphasis on volunteer groups & risk management & Governance
15. Innovation	- Development of State & Nationally accredited units at AQF level 3&4 on carbon trading, planning and accounts.

Animal Care and Management

1.Planning, enterprise selection and management, Climate Change and Variability	-Certificates 2 to 4 in Companion Animal Services particularly in dog grooming. are well supported - Animal welfare and ethics competencies should be included in the New courses soon to be available for equine dentistry and farriery. -Training in security procedures for animal industry employees to identify and operate safely when targeted by activism. -Training at levels 3-5 in animal technology particularly in advanced breeding techniques for small laboratory animals. .
2. Carbon Pollution Reduction Scheme (CPRS), Emissions Trading Scheme (ETS).	Carbon accounting- no units currently accredited.
3.International commodity supply and demand, trade policies and practices, input costs, exchange rates, global competitiveness, world economy	N/A
4.Water policy and availability, catchment management	N/A
5. World population growth, food and fibre supply and demand	N/A
6. Conscientious consumer- Biosecurity., food integrity, labelling ,traceability and compliance	-Training in policies and procedures relating to animal identification and data recording and storage. -Training at AQF level 3 to 5 in identification of biosecurity threats & response procedures.
7. Primary infrastructure, succession planning	- Delivery of Certificate 3 Animal Technology as a traineeship pathway with on and of the job delivery. - Delivery of the Certificate 4 Animal Control & Regulation as a new entrance course rather than a RPL process only.

8. Net outflow of young people workers to from primary industries and skill shortages	- Training at AQF level 3 & 4 Companion Animal in a flexible traineeship pathway
9. Animal welfare, animal traceability.	- Inclusion of the specialist units in the Certificate IV in Animal Welfare (Regulation) as part of the ACM training package. Training of farriery apprentices within Victoria is highly regarded. -Training at AQF level 4 & 5 in Equine dentistry. (National competencies need to be accredited as soon as possible)
10. Natural Environment, Land Degradation, Fire, Waste	- Delivery at AQF level 3 & 4 in Captive Animals targeted at specialist wildlife rescue & care stream
11. New methods of marketing, export	NA
12. New Regulations	-Training in the Victorian Course in Microchip Implantation is required. -An Accredited dog training courses needed to be Nationally accredited. -Certificate IV in Animal Control and Regulation -Course in Microchip implantation of Cats and Dogs.
13. Land rezoning	NA
14. Health and Safety	NA
15. Innovation	NA

Horticulture

1.Planning, enterprise selection and management, Climate Change and Variability	- Training will be required in Level 5 Turf management, Level 4 and 5 Landscape design, Level 3- 5 irrigation and horticulture, Level 3-5 in nursery, non apprenticeship level 5 in arboriculture. - Development of State & Nationally accredited units at AQF level 3 & 4 on carbon trading, planning and accounts. (Swinburne University is offering a carbon accounting course that may provide a base for these units) - Training at AQF level 4 & 5 in Plant selection & sustainable plantings
2. Carbon Pollution Reduction Scheme (CPRS), Emissions Trading Scheme (ETS).	- Training at AQF level 4 & 5 Horticulture all sectors, targeting carbon auditing and value of Horticultural assets.
3.International commodity supply and demand, trade policies and practices, input costs, exchange rates, global competitiveness, world economy	N/A

4. Water policy and availability, catchment management	<ul style="list-style-type: none"> - Training at AQF level 3 to 5 in the efficient design, installation, maintenance & operation of watering and irrigation systems I a Horticulture context. - Training will be required in Apprenticeship level 3 and 4 in arboriculture. <p>(With restrictions on water use for maintaining trees in parks and reserves, demand for arboriculture services increases as older trees under stress decline and die maintaining training demand into the next few years)</p>
5. World population growth, food and fibre supply and demand	N/A
6. Conscientious consumer- Biosecurity., food integrity, labelling ,traceability and compliance	-Training at AQF level 4 & % in biosecurity rules and regulations and their implications.
7. Primary infrastructure, succession planning	- Delivery of Turf & Ornamental Horticulture Diplomas will provide pathways to improve career options.
8. Net outflow of young people workers to from primary industries and skill shortages	<ul style="list-style-type: none"> -Pre- Apprenticeship programs at AQF level 2 in Horticulture. -Apprenticeship Training at AQF level 3 in all areas of Horticulture.
9. Animal welfare, animal traceability.	NA
10. Natural Environment, Land Degradation, Fire, Waste	-Training AQF level 3 & \$ in the selection and positioning of fire retarding plants.
11. New methods of marketing, export	NA
12. New Regulations	- Training at AQF level 3 to 4 in biosecurity and requirements for ACUP.
13. Land rezoning	NA
14. Health and Safety	- Training at AQF level 4 Landscape targeted at the increasing demand for industry personnel to hold the “Red Card”
15. Innovation	<ul style="list-style-type: none"> -Training at AQF level 3 to 5 in the efficient design, installation, maintenance & operation of watering and irrigation systems I a Horticulture context - Training at AQF level 4 & 5 in Plant selection & sustainable plantings - Training at AQF level 4 & 5 Horticulture all sectors, targeting carbon auditing and value of Horticultural assets.

Seafood	
1.Planning, enterprise selection and management, Climate Change and Variability	-Training at AQF level 4 & 5 for existing workers Environmental Management systems (biosecurity) - Training at AQF level 5 in governance & relationship management
2. Carbon Pollution Reduction Scheme (CPRS), Emissions Trading Scheme (ETS).	- Training at AQF level 4 & 5, targeting carbon auditing and accounting
3.International commodity supply and demand, trade policies and practices, input costs, exchange rates, global competitiveness, world economy	-Training at AQF level 5 in sustainability management of seafood resource.
4.Water policy and availability, catchment management	N/A
5. World population growth, food and fibre supply and demand	-Training at AQF level 5 in sustainability management of seafood resource. .
6. Conscientious consumer-Biosecurity., food integrity, labelling ,traceability and compliance	-Training at AQF level 4 & 5 for existing workers in Environmental Management systems (biosecurity) -Training at level 4 & 5 in supply chain management and QA.
7. Primary infrastructure, succession planning	-Training is needed for new and existing workers at Level 2-5 in fishing operations. -Training for new and existing workers at level 2 to 5 in seafood (aquaculture stream) including mariculture (abalone, mussels), fresh water salmonoids and other species produced in outdoor and indoor systems. - Training at AQF level 5 in governance & relationship management.
8. Net outflow of young people workers to from primary industries and skill shortages	- Training at AQF level 2 in deckhand operations and OHS as skill sets for new deck hands
9. Animal welfare, animal traceability.	N/A
10. Natural Environment, Land Degradation, Fire, Waste	-Training at AQF level 4 & 5 for existing workers Environmental Management systems (biosecurity)
11. New methods of marketing, export	NA
12. New Regulations	- Training for new and existing workers at level 2-5 in food safety and OHS.

13. Land rezoning	N/A
14. Health and Safety	<ul style="list-style-type: none">- Training at AQF level 2 in deckhand operations and OHS as skill sets for new deck hands-Training at level 5 Fisheries compliance focusing on conflict resolution.
15. Innovation	<ul style="list-style-type: none">-Training for new and existing workers at level 2 to 5 in seafood (aquaculture stream) including mariculture (abalone, mussels), fresh water salmonoids and other species produced in outdoor and indoor systems.

Training demand consequences of addressing these skill needs (Training requirements)

Agriculture & Production Horticulture

<p>1.Planning, enterprise selection and management, Climate Change and Variability</p>	<p>Business management, supervisory, farm planning, risk management and sustainability training is needed.</p> <p>Training in contract interpretation and management and negotiation is needed.</p> <p>Certificate 2-4 in wool handling.</p> <p>Diploma in Agronomy.</p>
<p>2. Carbon Pollution Reduction Scheme (CPRS), Emissions Trading Scheme (ETS).</p>	<p>Swinburne University is offering the first carbon accounting course (6 week program) targeting the acquisition of skills in this area. This may be of significant use to farmers and farm advisors.</p> <p>New farm forestry units may be needed. A new future farming qualification may be needed incorporating farm planning, carbon accounting, farm forestry, agronomy and farm management elements.</p> <p>Training in sustainable production techniques.</p>
<p>3.International commodity supply and demand, trade policies and practices, input costs, exchange rates, global competitiveness, world economy</p>	
<p>4.Water policy and availability, catchment management</p>	<p>Training may be needed to interpret and apply catchment plans locally.</p> <p>Training in water conservation techniques across a range of enterprises could be useful.</p> <p>Creation of suitable water based competencies.</p> <p>Diploma of sustainable catchment management</p> <p>Training may be needed to interpret and apply an increasingly complex set of water regulations.</p>
<p>5. World population growth, food and fibre supply and demand</p>	<p>Training in examination and interpretation of forecast data.</p>
<p>6. Conscientious consumer- Biosecurity., food integrity, labelling ,traceability and compliance</p>	<p>Interrogation of other packages has revealed a number of competencies within the transport package which with some customisation could provide suitable training for growers. These include, TLIJ 307C Apply grain protection measures, TLIJ 407C Implement grain monitoring measures, and TLIJ 607C Implement grain protection procedures.</p>
<p>7. Primary infrastructure, succession planning</p>	<p>Training is required to assist business owners to prepare succession plans with all stakeholders involved. Alongside this, training is also needed in relation to the inheritance legislation and the preparation of legal Wills.</p>
<p>8. Net outflow of young people workers to from primary industries and skill shortages</p>	<p>Development of career pathways to retain young people in the industry is needed</p>

9. Animal welfare, animal traceability.	Training in animal genetics and breeding is required.
10. Natural Environment, Land Degradation, Fire, Waste	Understanding of regional and local catchment plans. Development of sustainable farm plans. Salinity and erosion measures. Waste recycling. Fire survival and livestock safety plans.
11. New methods of marketing, export	Skills in marketing and exporting are needed. Competency needed in interpretation of contracts, commodity market analysis, risk management and decision making.
12. New Regulations	The ACUP certificate continues to be a requirement for those who buy and apply agricultural chemicals. Training is required in grain, fodder & livestock transport, fodder production, on farm grain storage, fertiliser and advanced pesticide application technology.
13. Land rezoning	Biosecurity competencies for GM crops. With respect to the likely effects of the projected expansion of urban growth boundaries with housing displacing vegetable production in the Cranbourne area, the horticultural facility at Chisholm – Cranbourne is strategically place to provide training to this area. Landscaping and parks and gardens are likely to be industries where training will be required. Expansion in the northern corridor north of Craigieburn can similarly be provided for by programs through Northern Melbourne Institute of TAFE through its Epping campus and Victoria University at Melton. Expansion in the western corridor will see skill shortages develop following the withdrawal of Chisholm Institute from Werribee.
14. Health and Safety	It could be useful to include ‘safe-talk’ or suicide prevention as a part of an OHS unit of competency, since suicide is a significant cause of death amongst farmers. Training on the safe use of quad bikes and front end loaders is needed. A front end loader unit of competency has been introduced Hazard Analysis and Critical Control Point (HACCP) food safety training is needed. Operator level training – Certificates III and IV in cropping, livestock, dairying
15. Innovation	Farm production related and particularly agronomy packages should address the interpretation and application of new Precision farming, Controlled trafficking and satellite technologies. New chemical spraying technology.

Conservation and Land Management

1.Planning, enterprise selection and management, Climate Change and Variability	Training at Levels 3-5 in arboriculture.
2. Carbon Pollution Reduction Scheme (CPRS), Emissions Trading Scheme (ETS).	Training in Carbon accounting- no units are currently accredited. Once curriculum development in the carbon sequestration and carbon accounting has been completed, initial demand for this training will be substantial.
3.International commodity supply and demand, trade	

policies and practices,
input costs, exchange
rates, global
competitiveness, world
economy

**4. Water policy and
availability, catchment
management**

Emphasis on training in water conservation, re-cycling, salinity and erosions control techniques.

National sustainable water and catchment management units are needed. Victoria has developed an internal solution via the state Diploma in Sustainable Water and Catchment Management, the ability to access these within the National qualification structure remains a high priority.

**5. World population growth,
food and fibre supply and
demand**

**6. Conscientious
consumer- Biosecurity,
food integrity, labelling
,traceability and
compliance**

Training to recognise symptoms and manage outbreaks relating to biosecurity is required.

**7. Primary infrastructure,
succession planning**

Currently available training needs to incorporate up to date underpinning knowledge and skills in conservation and land management practices in order to implement future industry infrastructure renewal requirements

Focus on upgrading of qualifications.

Student vet nurses currently have a requirement of being in current employment during their competency based training & assessment. This needs to be more strictly enforced, primarily so that qualified nurses are correctly assessed to the standards within the training package and to prevent unemployment rising in the sector.

**8. Net outflow of young
people workers to from
primary industries and skill
shortages**

**9. Animal welfare, animal
traceability.**

Training for those caring for injured animals is required (including volunteers). There may need to be more emphasis paid to emergency & critical care units and offering wildlife care as an elective in Vet nursing training packages. Qualifying Vet nurses need to be correctly assessed as competent so they can meet the immediate challenges of an emergency by using skill, underpinning knowledge & initiative.

There is a view that the Certificate III in Companion Animal Services is vocationally suited to staff in animal shelters, pounds & pet shops that care for dogs & cats & release them to new owners.

**10. Natural Environment,
Land Degradation, Fire,
Waste**

The government is releasing extra money for fire training. Fire prevention programmes to minimise risk, maximise public ownership and facilitate conservation & land management outcomes are required.

Training in the selection and positioning of fire retarding plants should be available. Water & fire competencies need to be included in CLM training packages.

Emergency management coordination, public awareness and public safety training needed.

Training at Levels 3-5 in CLM.

Units in Plant identification and control.

11. New methods of marketing, export	Effective communication and public education programmes are required. Understanding and applying marketing skills.
12. New Regulations	Training with an emphasis on risk management, governance and management of volunteers. Industry members have requested the delivery of formal training leading to acquisition of a construction industry "Red Card" for all participants in CLM training.
13. Land rezoning	Planning and rehabilitation programs.
14. Health and Safety	Risk management and communication programs
15. Innovation	Training in Water management- distribution, recycling, quality management. Hospitality and tourism competencies for ecotourism.

Animal Care and Management

1.Planning, enterprise selection and management, Climate Change and Variability	Certificates II and III in Animal Handling(Grooming) are well supported Training in communication and customer service skills is required for vet nurses. Animal welfare and ethics competencies should be included in the ACM Training Package. New courses now available for equine dentistry and farriery. Training in security procedures for animal industry employees to identify and operate safely when targeted by activism. Training in advanced breeding techniques for small laboratory animals. Levels 3-5 animal technology.
2. Carbon Pollution Reduction Scheme (CPRS), Emissions Trading Scheme (ETS).	Carbon accounting- no units currently accredited.
3.International commodity supply and demand, trade policies and practices, input costs, exchange rates, global competitiveness, world economy	N/A
4.Water policy and availability, catchment management	N/A
5. World population growth, food and fibre supply and demand	N/A
6. Conscientious consumer- Biosecurity., food integrity, labelling ,traceability and compliance	Training in policies and procedures relating to animal identification and data recording and storage. Training in breeding principles could reduce the incidence of hereditary defect in companion animals. Training in identification of biosecurity threats & response procedures.
7. Primary infrastructure, succession planning	There is a need for more workplace based competency development supplemented by more detailed underpinning knowledge. Industry would like to be more involved in the selection of staff/students undertaking courses.

	<p>More emphasis in all sectors on training for supervisory and management positions.</p> <p>There perhaps a need for an RTO to offer the Certificate IV in Animal Control & Regulation at recurrently funded fees rather than fees for service.</p>
8. Net outflow of young people workers to from primary industries and skill shortages	<p>Thin numbers for some courses are limiting industries such as companion animals. On site delivery is not financially attractive to RTOs and traditional traineeships are not effective in some sectors.</p> <p>Misconceptions about the complexity of the trainee system and employer obligations exist.</p>
9. Animal welfare, animal traceability.	<p>Certificate IV in Animal Welfare (Regulation)</p> <p>Training in the principles of animal breeding.</p> <p>Training of farriery apprentices within Victoria is highly regarded. The Equine dentistry national competencies need to be listed for public comment to enable RTO's to develop curriculum. Given the imminent introduction of the national program for equine dentistry (Cert IV and Diploma), there will need to be a discussion with institutes who already have a profile in this field to ensure the smooth introduction of the dentistry program into the state in 2010.</p>
10. Natural Environment, Land Degradation, Fire, Waste	<p>The Animal Care & Management Training Package may need more emphasis on dealing with animal trauma particularly where this is caused by fire and road injury</p>
11. New methods of marketing, export	N/A
12. New Regulations	<p>Extensive training in microchipping is still required.</p> <p>Accredited dog training courses needed.</p> <p>Certificate IV in Animal Control and Regulation</p> <p>Course in Microchip implantation of Cats and Dogs.</p>
13. Land rezoning	
14. Health and Safety	
15. Innovation	<p>The use of medical technology training should be incorporated into veterinary nursing and animal technology courses</p>

Horticulture

1.Planning, enterprise selection and management, Climate Change and Variability	<p>Carbon and water use efficiency calculation training required</p> <p>Training will be required in Level 5 Turf management, Level 4 and 5 Landscape design, Level 3- 5 irrigation and horticulture, Level 3-5 in nursery, non apprenticeship level 5 in arboriculture.</p> <p>With restrictions on water use for maintaining trees in parks and reserves, demand for arboriculture services increases as older trees under stress decline and die maintaining training demand into the next few years. Training will be required in Apprenticeship 3 and 4 in arboriculture.</p>
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2. Carbon Pollution Reduction Scheme (CPRS), Emissions Trading Scheme (ETS).	Once curriculum development in the carbon sequestration and carbon accounting has been completed, initial demand for this training will be substantial.
3. International commodity supply and demand, trade policies and practices, input costs, exchange rates, global competitiveness, world economy	N/A
4. Water policy and availability, catchment management	There needs to be emphasis on training in water conservation, recycling, salinity and erosion control techniques. There will be a significant training demand for training in advanced irrigation technology particularly in light of the availability of recycled water for public and residential use.
5. World population growth, food and fibre supply and demand	N/A
6. Conscientious consumer- Biosecurity., food integrity, labelling ,traceability and compliance	Training in biosecurity rules and regulations and their implications.
7. Primary infrastructure, succession planning	Cert. 2-3 Turf and Turf Diplomas will provide pathways to improve career options.
8. Net outflow of young people workers to from primary industries and skill shortages	The nursery and garden industry are reporting skill shortages. A pre-apprenticeship model is to be trialled. Supervisory and management training in landscaping, horticulture.
9. Animal welfare, animal traceability.	Wildlife carer and rescue training
10. Natural Environment, Land Degradation, Fire, Waste	Small plants, shrubs, trees and ground covers which are fire retarding have been identified. Training in the selection and positioning of fire retarding plants should be available. With restrictions on water use for maintaining trees in parks and reserves demand for arboriculture services & training will increase as older trees under stress decline and die. Training to support understanding of environmental laws and issues.
11. New methods of marketing, export	Increased promotion of in house services such as maintenance, pruning, and gardening has led to a need for training in the marketing and communication of horticultural enterprises.
12. New Regulations	Training in biosecurity and requirements for ACUP.
13. Land rezoning	
14. Health and Safety	Forklift, front end loader, ACUP, chainsaws, first-aid training required. The increasing demand for industry personnel to hold the "Red Card" will see a need for all training providers to conduct the OH&S induction unit from the CPP08 Construction Training package to satisfy that demand.

15. Innovation

New chemical spraying technology training.
 Water management, distribution, recycling, quality management training.
 Efficient nutrient management training.
 Hospitality and tourism competencies for nurseries.

Seafood**1.Planning, enterprise selection and management, Climate Change and Variability****2. Carbon Pollution Reduction Scheme (CPRS), Emissions Trading Scheme (ETS).**

Training in carbon accounting.

3.International commodity supply and demand, trade policies and practices, input costs, exchange rates, global competitiveness, world economy

Training is sustainability management of seafood resource.

4.Water policy and availability, catchment management

N/A

5. World population growth, food and fibre supply and demand

Training is sustainability management of seafood resource.

6. Conscientious consumer-Biosecurity., food integrity, labelling ,traceability and compliance

Training in supply chain management and QA.
 Competencies for new and existing workers at level 2-5 in food safety and OHS.
 Competencies for existing workers at Levels 4 and 5 in Environmental Management Systems (EMS), Biosecurity, QA and Supply chain management.

7. Primary infrastructure, succession planning

Training of new and existing workers on processing, licensing and regulations.
 Training is needed for new and existing workers at Level 2-5 in fishing operations.
 Training for new and existing workers in seafood (aquaculture stream) including mariculture (abalone, mussels), fresh water salmonoids and other species produced in outdoor and indoor systems.
 Competencies for existing workers at Level 6 in governance.

8. Net outflow of young people workers to from primary industries and skill shortages

The industry is more focused on skill sets than qualifications.

9. Animal welfare, animal traceability.

N/A

10. Natural Environment, Land Degradation, Fire, Waste	Training in sustainable management and practices needed. (level 2-5 in fishing operations, level 2-5 in seafood including mariculture, fresh water salmonoids and other species produced indoor and outdoor.)
11. New methods of marketing, export	Competencies for existing workers at Level 6 in marketing, communication & relationship management.
12. New Regulations	Ongoing training in compliance.
13. Land rezoning	N/A
14. Health and Safety	Pre-employment and existing worker training in deckhand operations and OHS. Conflict management training for fisheries officers. Competencies for new and existing workers at level 2 -5 in food safety and OHS.
15. Innovation	N/A.