

DISASTER RESILIENCE EDUCATION IMPLEMENTATION PLAN

An integrated roadmap for improving the capabilities of Australia's built environment professionals in creating more disaster resilient communities.





Australian Government Attorney-General's Department

FOREWORD

In Australia, the role of built environment professionals in creating safer buildings, neighbourhoods and communities that are resilient to the changing nature of our environment has never been more pronounced. In the last few years we have experienced a range of natural disaster events of unprecedented magnitude that in some cases have shown just how vulnerable our settlements can be to these changing risks. This situation is further compounded by increasing population in locations that are more susceptible to extreme weather events, which can magnify the impact of an event because more people and property are then at risk.

Focus on community education to risks through a wide range of agencies and programs is significant and ongoing. We know that informed, educated and aware people are a critical component of a resilient community, and the improvements achieved by all those involved in the community education process, such as government, nonprofits and research institutes is to be commended. Professional awareness of how to address the wide ranging causes and effects of climate change and the need to develop more sustainable communities has also grown markedly in recent years through the good work of these same agencies.

But there is still work to be done to ensure Australia's built environment professionals, not just the wider community, are specifically equipped with the knowledge and skills to limit future vulnerabilities to natural hazards and address current risks so that adverse impacts on people, property and infrastructure are avoided or reduced to acceptable levels. This need to incorporate disaster resilience education into mainstream planning, development and urban management is the challenge before us. The Planning Institute of Australia (PIA) with its project partners the Australian Local Government Association (ALGA) has secured funding from the Australian Government's Attorney-General's Department (AGD) to complete a project titled *Enhancing Disaster Resilience in the Built Environment: Resilience Education Implementation Program.* The first element of this Program to be funded is the preparation of this Disaster Resilience Education Implementation Plan (the Implementation Plan).

The second element is the preparation of National Guidelines for Land Use Planning for Disaster Resilient Communities, resulting from a revision of the existing guidance material from Emergency Management Australia titled Australian Emergency Manual 7 – Planning Safer Communities, Land Use Planning for Natural Hazards.

This Implementation Plan identifies a road map of actions that, once complete, will mean that we will have made significant progress in closing the current gaps in disaster resilience knowledge and education for built environment professionals that exist across our country.

It is our hope that we can work together to implement this plan to improve disaster resilience education in Australia and ensure that we are more resilient to the impacts of

All

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Stream-based Action Statements / Detailed Action Plans

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The Planning Institute of Australia (PIA) has worked with its project partners the Commowealth Attorney-General's Department and the Australian Local Government Association to deliver this Implementation Plan with the support of the resilience planning services of MWH Global. This initiative has also received strong industry support via the Australian Sustainable Built Environment Council.

PIA also wishes to acknowledge the significant contributions made by a wide range of project stakeholders including the Land Use Planning and Building Codes Taskforce, Australian Fire and Emergency Services Authorities Council, Australian Centre of Excellence for Local Government, Bushfire and Natural Hazards Cooperative Research Centre, National Climate Change Research Facility, Australian Building Codes Board, Housing Industry Association, Australian and New Zealand Association of Planning Schools, Australian Federation of Societies for Studies of Society and the Environment, Australian Geography Teacher's Association and a range of tertiary education institutions including the University of Melbourne and the University of New England.

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IMPROVING OUR RESILIENCE CAPABILITIES

Australia is a land of natural extremes. From floods, cyclones and severe storms to drought and bushfire we know how devastating natural hazards can be to our livelihoods, our possessions and our communities. What is not always evident to us as built environment professionals is the role we must play in the stewardship of our built environments to understand, manage, mitigate and avoid the risks that these natural hazards present. This is usually because we can view these events as irregular or very infrequent, or at worst, 'too difficult to predict'.

As stewards of our built environments, it is incumbent upon us to locate and build safer, stronger and more resilient settlements – it should be part of our professional 'DNA'. In this way, built environment professionals like planners, architects, engineers, surveyors and builders are uniquely placed to help shape more resilient buildings, neighbourhoods and communities where they have the awareness of risks and the skills to address these risks.

In order to effect true long term improvements in practice, we also need to target where built environment professionals of the future do their formative learning – in schools and at university. Equipping our built environment professionals means providing them the opportunity to learn and through whole-of-life education, not just professional development once they have entered the workforce.

The purpose of this Implementation Plan is to build upon, and set a pathway for, the delivery of implementation activity F3 of the Enhancing Disaster Resilience in the Built Environment (EDRBE) body of work completed in 2012 by the Land Use Planning and Building Codes Taskforce (LUPBC) under the auspices of the Australia-New Zealand Emergency Management Committee (ANZEMC). The EDRBE body of work is available at www.planning.org.au/ news/resilient-communities. Therefore, this Implementation Plan has been developed to close the gaps that currently exist in disaster resilience education for built environment professionals across both their professional development and their formative education. It will ensure that built environment professionals of the future have a significant grounding in, and awareness of, the risks presented by natural hazards and the technical skills to enable our communities to adapt to these natural stresses and shocks.

FROM THIS



TO THIS



Source: waterfrontcenter.org, Room for the Waal, Neijmegen, The Netherlands

Who is a built environment professional?

Persons who perform a role in planning, building or managing our built environments and their supporting natural environments, such as planners, engineers, architects, building designers, landscape architects, developers, builders, environmental managers, land managers and lawyers.



Vision Statement

By 2025, Australian built environment professionals maintain an up to date awareness of natural hazards and the skills to manage these changing risks to help them create more disaster-resilient buildings, neighbourhoods and communities.

IMPLEMENTATION STREAMS

This Implementation Plan builds upon the lifelong education and training elements of the EDBRE to identify a range of specific actions to advance disaster resilience education that will improve the skillsets of built environment professionals. The strategies and actions to achieve the Vision above will be delivered through three key implementation streams, being Professional Development, Tertiary & Vocational Education, and School-based Education. Each stream is provided with an overarching Action Statement and a Detailed Action Plan that will set the program to achieve the Vision above.



Figure 1 - This Implementation Plan provides three separate 'implementation streams' for achieving the Vision set out above related to the three key areas of focus for disaster resilience education.

'Disaster resilience' means different things to different people. Disaster resilience as it relates to the built environment is about the ability of people, property and infrastructure within our communities to adapt over time in a manner that minimises the governance, social, economic and environmental burden in responding to, and recovering from, natural hazard stresses and shocks like floods, bushfire, cyclones and storm tide, coastal erosion, droughts, heatwave and earthquake. It shares many parallels and similarities with other drivers to build better communities such as climate adaptation and sustainability but focuses specifically on the effect of current and future natural hazards on our built environments.

COMMON GOALS

While focused on different education fields, the Implementation Streams share six common goals. This Implementation Plan acknowledges that the field of disaster resilience is relatively new in Australia and in some instances interfaces heavily with existing initiatives such as climate adaptation and environmental management, these common goals provide a clear set of objectives for meeting the Vision identified above and also set the basis for the evaluation and monitoring of Implementation Plan performance.





Figure 2 - These Common Goals provide the foundation for the actions sought by this Implementation in improving disaster resilience education across the three Implementation Streams





Greater disaster resilience can be achieved through learning, innovating, and developing skills and resources at the individual, community and operational level that can be applied to responding to and recovering from a wide range of disasters. A disaster resilient nation harnesses knowledge and coordinates research efforts of institutions, industry and government. Aligning research outcomes with policy needs will be an important way of achieving this and will shape our future capabilities.

Source: National Strategy for Disaster Resilience, page 12



UNDERSTANDING THE CONTEXT

SIGNIFICANT WORK TO DATE

Much has already been accomplished across the field of disaster resilience education, and these efforts should be recognised and commended. Particularly, awareness of the broader community to natural hazard risks, the effects of climate change and concerted efforts by all levels of government, institutions, non-profit groups and tertiary research.

A large number of industry, professional and tertiary bodies have also undertaken a diverse range of professional development activities across themes such as risk assessment, disaster resilience, climate adaptation and governance. Focus at the tertiary and vocational level on resilience education, particularly through the wide availability of post-graduate programs throughout Australia, is also growing, while efforts to increase schoolbased learning and capacity building in this space for teachers as well as broad awareness raising activities across all ages have also been significant.

The availability of technical guidance, training programs and formal education for emergency management and disaster response professionals has also increased markedly in recent years, and there are opportunities to re-focus that existing guidance for built environment professionals too.

This project is not intended to duplicate these previous efforts, but rather create a coordinated cross-disciplinary implementation approach that builds upon existing work and continues to drive the focus on disaster resilience education for the particular benefit of future built environment professionals.





By ensuring that the built environment professionals of the future are well equipped to help our communities adapt to current and future risks, emergency management professionals and all levels of government can expect the burden of response and recovery to ease over time as less people are located in harm's way. This coordination of activity between built environment professionals and those in the emergency management fields will mean the ability of our communities to minimise impact recover quickly will increase.



LOOKING INTERNATIONALLY

The Hyogo Framework for Action developed in 2005 provides five priorities for action in building the resilience of nations and communities to disasters that are important drivers for education of built environment professionals (at right).

Internationally other built environment industry associations including the American Planning Association (APA) and the Royal Town Planning Institute (RTPI) provide a range of resources for professionals. For example, the APA administers the National Hazards Planning Center and maintains a wide range of technical resources and training/CPD programs for planners.

The RTPI has prepared a guideline document titled The Built Environment Professions in Disaster Risk Reduction and Response: A Guide for Humanitarian Agencies that provides good context for understanding a built environment professional's role in disaster resilience, while also providing other resources such as operating a virtual learning module on Planning for Climate Change, guidance publications and CPD events for planners.

The Global Planners Network also provides clear overarching principles via its 2012 Naples Declaration, an strategic blueprint for taking action to address the key issues facing planners all over the world, including resilience to climate change and extreme weather events.

The Hyogo Framework for Action

Priority 3 - Use knowledge, innovation and education to build a culture of safety and resilience at all levels

Sector training for engineers, architects and surveyors (as well as masons and other trades people) is an essential part of the task of ensuring a culture of safety and resilience in the construction industry in vulnerable regions.

Priority 4 - Reduce the underlying risk factors

Environmental management to reduce risks relating to natural hazards, including those resulting from climate change, is an increasing part of the professional's task. Working with communities and traditional land use planning and human settlement development are essential elements of implementation.

Source: Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters, page 5

INTERFACE WITH THE NATIONAL STRATEGY FOR DISASTER RESILIENCE

The National Strategy for Disaster Resilience (the NSDR) was adopted in February 2011 by the then National Emergency Management Committee (now the ANZEMC).

According to the Australian Emergency Management Institute, the purpose of the [NSDR] is to provide high-level guidance on disaster management to federal, state, territory and local governments, business and community leaders and the not-for-profit sector. While the [NSDR] focuses on priority areas to build disaster resilient communities across Australia, it also recognises that disaster resilience is a shared responsibility for individuals, households, businesses and communities, as well as for governments. The [NSDR] is the first step in a long-term, evolving process to deliver sustained behavioural change and enduring partnerships.

The NSDR underpins efforts in improving disaster resilience across Australia, and provides the basis for the EDRBE work as well as this Implementation Plan. This Implementation Plan addresses a range of priority outcomes of the NSDR and support the overall purpose through aiming to improve disaster resilience education across school based and tertiary education and professional development.



PARENT PROJECT - ENHANCING DISASTER RESILIENCE IN THE BUILT ENVIRONMENT

The ERDBE project delivered by the LUPBC Taskforce in 2012 provided a Roadmap for delivering improvements to Australia's land use planning and building codes regimes across every State and Territory jurisdiction. A key focus area for the ERDBE was Lifelong Education and Training for built environment professionals.

Activity Element F3 of the Roadmap noted the need to Develop and implement a National Strategy of Natural Disaster Education focused on whole of life education, with emphasis on educating primary school children through to ongoing professional development. This Implementation Plan addresses Activity Element F3.

Following liaison with Emergency Management Australia, it was decided to narrow the focus of Activity Element F3 to coordinate the implementation of activities that would achieve the intent of the Lifelong Education and Training focus area of the Roadmap – hence the need for this Implementation Plan.

The Roadmap provides several key points in relation to hazard mitigation and awareness that informed this Implementation Plan:

- Professional training, development and certification on disaster mitigation approaches needstobeprovidedtopolicysetters, assessment managers and industry professionals;
- Ongoing mentoring and training is to be facilitated by the peak industry bodies; and
- A strategy for lifelong community awareness and education is needed to encourage people to understand the principles behind disaster resilience and the reason certain decisions are made.

BROADER GOVERNANCE OPPORTUNITIES

In June 2012 the Australian Sustainable Built Environment Council prepared a comprehensive blueprint to help guide government action in climate change adaptation titled **Preparing for Change: A Climate Change Adaptation Framework.** This blueprint included a focus on investing in education for both the community and built environment professionals in terms of climate adaptation awareness, strategies and actions. There are significant opportunities for ASBEC to build upon this foundation by focusing on how education improvements in this space can be made through this Implementation Plan.





PLANNING AND BUILDING

Australia's built environment regulatory framework is comprised of planning and building systems. Built environment professionals will at times interface with one or both of these systems in their day-to-day work. These systems form the 'backbone' of efforts to improve the resilience of our built environments, and the role that each plays in development and growth management needs to be understood by all built environment professionals.

It is therefore important to understand how built environment resilience can be improved through both these systems – whether it be via State-based planning legislation and local government planning requirements, or via the implementation of the National Construction Code.

The interface of these two systems within the relevant jurisdiction is particularly important context for built environment professionals in understanding their day-to-day obligations particularly in relation to building resilience.

The ABCB released a Discussion Paper in April 2014 to inform and seek feedback from stakeholders on the resilience of new buildings to extreme weather events.

COURSE ACCREDITATION

A key element of successful implementation will be aligning the tertiary accreditation policies of professional associations with the intent and content of this Implementation Plan.

For example, PIA's Accreditation Policy notes the importance of consideration of natural hazard management – knowledge of natural hazards and planning approaches to managing those hazards is a key performance outcome for the Environmental planning competency. The extent to which this performance outcome is sufficient to meet contemporary requirements for practice (and other such performance outcomes that might be contained in other professional associations' accreditation policies) may need to be reassessed in the context of this Implementation Plan.

ABCB Discussion Paper - Resilience of Buildings to Extreme Weather Events, 2014

Conclusion 12:

The National Construction Code (NCC) is an important tool in a much larger framework for responding to extreme weather events and managing building resilience. For matters that are within the scope of the NCC, there should not be duplication or alternatives in other parts of the framework to deal with resilience (design and construction) of buildings and structures for extreme weather events. However, the NCC can be supplemented by guidelines, information and education.

Conclusion 13:

Planning controls alone can't effectively address extreme weather events. Planning is only part of the solution and may limit the extent of the hazard but the NCC must define requirements for the building given the hazard.

Conclusion 17:

In some jurisdictions, building and planning are working more effectively than in others. However, in general, there is room for improvement and a reduction in the gaps and inconsistencies.

Conclusion 20:

It is technically possible to design and construct 'safe' buildings in high hazard areas; however, it may not be economically feasible to do so. Planning restrictions and zoning are an effective way to prevent development in extremely high hazard areas, or alternatively, sufficient information about the risks and consequences should be provided by authorities to allow the public to make informed choices.

Source: http://www.abcb.gov.au/en/work-program/Natural%20Disaster%20Mitigation. aspx



CURRENT STATE



CURRENT STATE OF DISASTER RESILIENCE EDUCATION IN AUSTRALIA

As part of background research in developing this Implementation Plan, a high-level current state review of existing disaster resilience education practice across the professional, tertiary/vocational and school-based sectors was undertaken to identify broad gaps in the way it is currently being delivered in Australia. A summary of this current state review is provided below.

Professional Sector

Some current actions and initiatives in the Professional sector include:

- Australian Emergency Management Knowledge Hub administered by AGD
- Work undertaken by independent research and policy bodies such as BNHCRC and AFAC
- Existing training programs offered by AGD, EIANZ, PIA and tertiary bodies
- Existing technical resources such as the Australian Emergency Manual Series

There are a range of existing professional development programs and technical resources available to practitioners across industry, government and tertiary providers. These appear programs/resources focus to on emergency management disciplines and climate adaptation in particular. This approach lends itself to developing awareness of natural hazard risks, the role/responsibilities of the community in preparing for these, as well as the functions of emergency managers in responding to such risks, and developing skills around broad scale practice changes to address climate related risks (including low-carbon futures, accommodating sea level rise etc). The amount of technical guidance available to practitioners in the emergency management space is significant, and there appears to be a number of professional development programs (involving both short courses and more in-depth study) available.

However, there appears to be a clear gap in the education space around equipping built environment professionals with tools to understand, communicate and implement approaches to long-term resilience such as hazard avoidance, adaptation, defence, retreat and accommodation other than guidance material provided through the Australian Emergency Manual Series, which requires updating with contemporary professional practice. AGD's short course on riskbased land use planning is an important course and should be continued, however it appears that other professional development opportunities for built environment professionals are otherwise somewhat limited.

Tertiary Sector

Some current actions and initiatives in the Tertiary sector include:

- Strong post-graduate opportunities for resilience and climate change adaptation across most universities
- Strong focus in many undergraduate courses on climate change and in some instances natural hazard management
- Tertiary research centres contributing to technical information and policy development (for example, the Torrens Resilience Institute Community Resilience Toolkit and the NCCARF Coastal Climate Risk Management Tool currently under development)

It appears that the universities surveyed generally did not offer a dedicated resilience subject as a part of their built environment undergraduate programs, with the notable exception of the University of Melbourne. It is clear that subjects canvassing climate change adaptation and natural hazard/risk management are more commonly taught, though even these subjects are usually not considered 'core' subjects but rather as electives for built environment disciplines.

Further, elective subjects dealing with climate change or natural hazards tend to be available as electives for urban planning and environmental sciences/management disciplines, but less so for disciplines such as architecture and engineering. This is an important distinction to make – those technical disciplines involved in designing and building the built environment appear not to always have the grounding in resilience that will likely be necessary in the future.



The research centres identified (while likely not exhaustive) demonstrate that there are professional development options outside of government agencies such as AGD that are available for consumption by professionals. Accessibility to these programs by built environment professionals is therefore critical. Greater linkages between professional bodies such as PIA and these research centres may increase opportunities for this accessibility.

Further, the linkages between the research centres operated by some of the universities and their undergraduate programs are unclear. It appears that where linkages exist, learnings are linked to post-graduate programs rather than the undergraduate level.

The current state review has shown there is a need for increased focus on resilience through tertiary education – at present it appears that resilience is taught as a core subject in only a couple of university undergraduate course programs in urban and regional planning, and not at all in other disciplines. While it may be that elements of resilience are taught either as an elective to these course programs, or the concept of resilience may be touched upon in other specific subjects taught as part of these course programs, it does not currently hold a strong focus in undergraduate education for built environment professionals. It appears post-graduate programs addressing resilience are the more common means of providing resilience education at the tertiary level. This is a key area of focus for professional bodies such as PIA who have responsibility for accrediting university courses that meet their professional standards.

Greater integration between university research centres (where they exist) and those universities' undergraduate programs would be beneficial in addition to any linkages that may exist with their postgraduate programs. While those universities that operate centres for resilience appear to integrate resilience learnings into their masters programs (either via research or coursework), this integration appears to be unclear at the undergraduate level. Resilience therefore appears to be thought of as a 'specialisation' rather than a core element of learning for built environment professionals.

School-based Sector

Some current actions and initiatives in the Schoolbased sector include:

- Completion of Educating the Educators: Mapping of disaster resilience education resources against the Australian Curriculum by the Australian Red Cross
- Various technical resources developed by AGD and others including Units of Work for Disaster Resilience and the online interactive education tools like Dingo Creek

A review of the 47 resources analysed as part of the Educating the Educator project reveals a strong focus on risk awareness and resources for increasing personal and community-based resilience through preparedness and recovery. There does not appear to be significant focus on how built environments may need to change in order to give effect to broader community resilience by reducing the number of those vulnerable to natural hazard risk.

Secondly, it appears that the Australian Curriculum itself has a strong focus again on risk awareness, preparation for and response/recovery from natural hazards. Resilience of the built environment through physical adaptation and change does not appear to be a significant focus.

Thirdly, resilience-specific training programs for educators appear to be generally limited.

It is clear that there is a wide range of resilience education resources (particularly at the school level) that have been developed previously and are currently in operation. These existing practice & resources focus strongly on the risk awareness and emergency management elements of resilience, particularly in relation to how this relates to the community. While this is an obviously necessary component of resilience practice, there is less focus on resilience of the built environment and options for adaptation, and how a community can change or alter the built environment in order to bring about resilience to natural hazards (such as via retreat, avoidance, defence or accommodation approaches). There also appears to be limited focus on aiding understanding of how important elements of our communities (such as roads, water, wastewater, and electrical networks) can be affected by natural hazards and the ways in which we need to protect these assets from hazards.



CLOSING THE GAPS

SUMMARY OF THE GAPS

The current state review identified a number of gaps in the current approaches to the provision of disaster resilience education in Australia across the three Implementation Streams.

PROFESSIONAL SECTOR GAPS

Lack of opportunity to access, and limited take-up of, disaster resilience education provided through professional development programs.

SUB-GAPS

Training programs appear 'siloed' and potential for duplication is strong

<u>INDICATOR</u>: Training programs exist either through professional institutes (e.g. PIA) oriented to professionals within their own discipline, tertiary bodies or via AGD

Focus is also not clear - 'climate adaptation' is a key focus, but so is 'resilience'

<u>INDICATOR</u>: There are many more climate adaptation focused groups, resources and training opportunities than there are for the related, but slightly broader, resilience topic

Lack of integration of existing disaster resilience education that integrates with other aspects of resilience training, such as community engagement, social media etc

<u>INDICATOR</u>: Training and resources about broadly related resilience subjects are not generally offered in associated with disaster resilience professional development options



TERTIARY and VOCATIONAL SECTOR GAPS

Limited disaster resilience education options being offered through undergraduate courses, with resilience seen as a 'specialisation' rather than a 'core' skill.



SUB-GAPS

Resilience is not considered as a fundamental issue/topic/subject to be dealt with through undergraduate degrees -

<u>INDICATOR</u>: Limited resilience related subjects are offered as part of undergraduate courses

A lot of postgraduate courses include subjects about resilience, however this relies on a graduate developing an interest in this area through their undergraduate degree, or is otherwise aimed at professionals retraining/ehancing their skillset

Limited collaboration and communication between research centres and professional organisations

<u>INDICATOR</u>: Often research centres and professional groups are not aligned and latest research and information is not provided to the professional and industry groups





2009 Victorian Bushfire Royal Commission

FINAL REPORT

SCHOOL-BASED SECTOR GAPS

Shortage of resources and training provided to educators meaning that a fundamental awareness of disaster resilience is not able to be engendered in individuals via school education.

SUB-GAPS

There is limited support for, and education of, the educators in the school based system about the specific topic of disaster resilience

<u>INDICATOR</u>: Lack of professional learning and capacity building programs in relation to disaster resilience education for school based educators

There is a lack of electronic access to resources available in a diverse teaching cohort

INDICATOR: A reliance on paper based resourcing still exists in some areas

Lack of centralised resource and curriculum development

<u>INDICATOR</u>: Resources for school based education tend to be developed on an ad hoc basis

The 2009 Victorian Bushfires Royal Commission noted:

'It will not be easy to maintain the focus on bushfire safety over time. Community memory of ferocious fires can fade because of the relative infrequency of such events. In these circumstances there is a risk of individual and collective underestimation of the risk—and possibly complacency. Individuals must remain vigilant, and the State should use community education and public awareness to break the cycle of complacency. Teaching bushfire history and safety in schools is important for maintaining community memory and awareness.'

Source: 2009 Victorian Bushfires Royal Commission Final Report, page 6



KEY STAKEHOLDER DRIVERS FOR IMPLEMENTATION

Several important drivers emerged from the stakeholder engagement process that informed the preparation of this Implementation Plan that were considered critical in framing the range of actions required in each Implementation Stream to meet the Vision prescribed.

These drivers included:

- Clarity on the definition of Disaster Resilience of the Built Environment particularly versus existing understanding of resilience as a personal or community-based attribute rather than also canvassing the resilience of buildings, neighbourhoods and infrastructure
- **Manage the AGD transition** need to ensure existing resources and substantial 'intellectual property' of personnel is not lost due to upcoming transition of AGD to a virtual delivery model
- **Ensure cross-disciplinary coordination** potential for duplication via a 'siloed approach' is strong and should be avoided, and the need to ensure all built environment professionals understand the different roles each discipline plays in disaster resilience in the built environment is critical
- **Enable international cooperation** built environment professionals in other countries are experiencing the same resilience challenges opportunities for information sharing and collaboration are strong
- Create '24-7' education access and delivery for all participants in disaster resilience education delivery information sharing, professional development and training delivery is increasingly becoming informal and less 'structured', and a focus on increasing training and resources should recognise this
- **Clarity on the differing roles of building and planning in building resilience** the nexus between the planning and building disciplnes is a key part of understanding the built environment regulatory framework
- **Training/CPD needs to be meaningful and carry a suitable weight** a formal certification or 'qualification' system such as that offered for sustainability via the Green Building Council of Australia or the United States Green Building Council would be suitable for further investigation
- Align the Australian Curriculum to desired disaster resilience education outcomes expand the current focus of the Curriculum on personal safety and risk awareness to include an understanding of how hazards impact our built environment and the tools used to address these risks





SECTORS	CURRENT STATE	IMPLEMENTATION	FUTURE STATE
PROFESSIONAL	GAP Lack of opportunity to access, and limited take-up of, disaster resilience education provided through professional development programs.	RESPONSE STRATEGY Improve access to, and the quality of (where required), professional development, including resources, training and CPD programs for built environment professionals	RESULT Professionals are aware of, and able to easily access, a range of resources, training and CPD support programs, and are confident in utilising their skills and knowledge in disaster resilience in everyday practice.
TERTIARY / VOCATIONAL	GAP Limited disaster resilience education options being offered through undergraduate courses is often resulting in built environment professionals having a lack of knowledge and skills in this area.	RESPONSE STRATEGY Increase the number of undergraduate courses offering disaster resilience education and improve access for tertiary students to student development opportunities offered through the industry	RESULT Graduates entering the workforce understand current disaster resilience best practice based on the study undertaken throughout their built environment related course and feel confident to utilise these skills throughout their career.
SCHOOL BASED	GAP Shortage of resources and training provided to educators meaning that a fundamental awareness of disaster resilience is not able to be engendered in individuals via school education.	RESPONSE STRATEGY Improve access to existing resources where applicable, and develop new resource and training schemes (where required), for educators in Australia about disaster resilience.	RESULT Educators have had adequate training, and have access to sufficient resources allowing them to engender both primary and secondary students with an interest in and understanding of disaster resilience.
		The response strategies become the guiding strategies for each the three Sector Streams, designed to ease implementation of the work program (see REIP Roadmap)	

Figure 3 - Key gaps identified need response strategies that will help frame the actions needed to reach the desired future state for each of the Implementation Streams.



IMPROVING DISASTER RESILIENCE EDUCATION

WHAT DO IMPROVEMENTS LOOK LIKE?

Understanding the broad improvements sought to be achieved through an Implementation Plan can sometimes be difficult to ascertain. Describing what an improved disaster resilience education framework looks like, and the reasoning for these improvements, is therefore considered important for this Implementation Plan given the wide range of stakeholder involved and the multiple Implementation Streams that will be delivering the wide range of actions required.

Figures 4 – 6 below provide a high level summary of the key improvements proposed to disaster resilience education for built environment professionals, and commentary on the importance of each of these elements in improving disaster resilience education.

The more detailed Stream-based Action Statements and Detailed Action Plans are provided in Appendix A of this Implementation Plan. They provide the requisite actions per Implementation Stream that seek to achieve the Vision for disaster resilience education for built environment professionals. The Action Statements demonstrate how each action and its sub-tasks meet the Common Goals sought by all parts of this Implementation Plan, while also providing an indication of the lead and support agencies as well as the level of resourcing required to be provided by these agencies in delivering the action.

The Detailed Action Plans then bind the actions in time, identifying whether the actions are either for completion under short (prior to end 2016), medium (early 2017 – end 2021), or long term (early 2022 – end 2025) time periods. Interdependences between actions (i.e. which actions must be completed before others can commence) are also identified in the Detailed Action Plans.

Given the Implementation Streams are tailored to each sector that has a role in disaster resilience education, it is intended that the Action Statements and the Detailed Action Plans for each Implementation Stream can be extracted from this larger Implementation Plan to act as a 'ready-reckoner' for stakeholders tasked with delivery of actions herein.

COMMUNITY RESILIENCE TOOLKIT

The Torrens Resilience Institute has been established at the International University Precinct in Adelaide, South Australia to improve the capacity of organisations and societies to respond to disruptive challenges which have the potential to overwhelm local disaster management capabilities and plans.

The Community Disaster Resilience Scorecard provides a tool for communities, in partnership with local governments, to assess the likelihood that you and your neighbours live in a community that can respond to and recover from a disaster.

The Scorecard is intended to be completed through an interactive process that involves local governments and community representatives, including some who may not see issues through the same lens. Torrens advises that it will probably take 2-3 meetings to think through the items, arrive at agreement on the scoring, and identify those areas most in need of ongoing attention. The Scorecard results should be widely shared as a part of the strategy to take action toward increased community resilience.

You can access the toolkit here: http://torrensresilience.org/community-resilience-tookit





Figure 4 - The key actions required by this Implementation Plan for the Professional Sector Stream.

AUSTRALIAN EMERGENCY MANAGEMENT - KNOWLEDGE HUB

The Australian Emergency Management Institute administers the Australian Emergency Knowledge Hub (the Knowledge Hub), a comprehensive online resource which provides research, resources and news relevant to emergency management and includes statistics and information and media about past disaster events

The Knowledge Hub also includes a forum space for those working in the emergency management sector to discuss ideas and issues affecting the sector by registering as a Knowledge Hub member. The Knowledge Hub also maintains an active Twitter feed that provides up-to-date information on relevant emergency management issues to its followers.

The Knowledge Hub acts as a broad access portal for a range of information – it has the ability to act as a comprehensive data source for both public awareness and technical practitioners.

You can access the Knowledge Hub here: https://www.emknowledge.gov.au/



POST-GRADUATE PROGRAMS

There are a range of post graduate programs offered around our Australia tertiary institutions. Feedback from the tertiary industry has advised that Masters-level education is becoming increasingly important and prominent across Australia.

It has become common practice for post graduate courses to deal specifically with resilience education. The industry feedback has indicated that short-course postgraduate programs are often touted as the most logical path of ongoing professional development for practicing built environment professionals.

Furthermore, there is a significant offering of various post graduate study courses and program relating to disaster resilience study and that are available across each of the states.





EDUCATING THE EDUCATORS: AUSTRALIAN CURRICULUM REVIEW

The Australian Red Cross undertook a comprehensive review of the Australian Curriculum in relation to disaster resilience education under NEMP funding in 2012 – 2013, titled Educating the Educators: Mapping of disaster resilience education resources against the Australian Curriculum.

This project identified 47 separate teaching resources relevant for analysis against the Australian Curriculum. It also developed a range of recommendations for improving resilience education in schools which are of relevance to this Implementation Plan. The two key alignments with this are the focus of disaster resilience education resources available for use in meeting curriculum requirements, and the specific focus of the relevant curricula sub-strands on disaster resilience education about resilient built environments.

You can access the report here: https://schools.AGD.edu.au/content/national-curriculum



ROLES AND RESPONSIBILITIES

GOVERNANCE FRAMEWORK

A governance framework has been developed in order to give effect to the Implementation Plan and its supporting Action Plans for each Implementation Steam. The governance framework should be put in place to ensure that the Implementation of the program is appropriately managed, guided, controlled, monitored and evaluated for successful delivery.

This section broadly articulates the roles and responsibilities of the stakeholders involved in advancing built environment disaster resilience so that improved understanding of the obligations for addressing risk and resilience both within and between disciplines can be formed.



Figure 7 - The proposed Governance Framework to help drive the implementation of the actions and strategies contained in this Plan.

POLE		SUGGESTED
KOLE	DESCRIPTION	STAKEHOLDER
Program Owner	Retains ultimate ownership and responsibility for delivery of the program, and is likely to be required to provide the most funding and resourcing to the program	Planning Institute of Australia
Program Steering Com- mittee (PSC)	Oversees the implementation of the program of work, including being responsible for addressing escalating risks for each of the sector streams, overall budget and resourcing matters and the prioritisation of work. Also responsible for identifying cross stream links and integrating actions where appropriate	ASBEC, Industry groups, ANZAPS, AGTA/AFSSSE, AGD
Program Secretariat	Required to manage secretarial and administrative tasks for the PSC, including preparing meeting papers, liaising with PSC members about any matters raised (in and out of session), organising and coordinating meetings, recording meeting minutes and monitoring actions of members, key point of contact for working group chairs, and providing any other additional support to the PSC as required	A dedicated resource from the program owner, PIA
Professional Working Group Chair	Required to organise and oversee regular meetings and communication between working group members, lead discussions and report directly to the PSC about important matters, also required to liaise with other sector leads to ensure cross stream collaboration occurs	ASBEC representative
Professional Working Group	Responsible for delegating and undertaking detailed sub-tasks in the implementation of the Professional Sector Stream Action Plan, monitoring risks and escalating these to the PSC when required, managing resourcing and undertaking robust and informed discussions to ensure the most appropriate decisions are made for this sector	Industry Groups (e.g. PIA, EA, AIA), ASBEC, LUPBC, AFESAC, Emergency Management Aus- tralian, ALGA, Investa, HIA, RAI, ACELG, BNHCRC, NCCRF, ABCB,
Tertiary Working Group Chair	Required to organise and oversee regular meetings and communication between working group members, lead discussions and report directly to the PSC about important matters, also required to liaise with other sector leads to ensure cross stream collaboration occurs	ANZAPS Representative
Tertiary Working Group	Responsible for delegating and undertaking detailed sub-tasks in the implementation of the Tertiary Sector Stream Action Plan, monitoring risks and escalating these to the PSC when required, managing resourcing and undertaking robust and informed discussions to ensure the most appropriate decisions are made for this sector	ANZAPS representative, Univer- sity representatives (including faculty and research centres)
School Based Working Group Chair	Required to organise and oversee regular meetings and communication between working group members, lead discussions and report directly to the PSC about important matters, also required to liaise with other sector leads to ensure cross stream collaboration occurs	AFSSSE or AGTA representative
School Based Working Group	Responsible for delegating and undertaking detailed sub-tasks in the implementation of the School Based Sector Stream Action Plan, monitoring risks and escalating these to the PSC when required, managing resourcing and undertaking robust and informed discussions to ensure the most appropriate decisions are made for this sector	AGTA, AFSSSE, Federal and State government education officers



PROGRAM STEERING COMMITTEE

The Program Steering Committee (PSC) will oversee the delivery of the program and include representatives from PIA and its project partners, as well as key stakeholders from each of the sub steam working groups.

The PSC will be responsible for the following business matters:

- Monitor the progress on delivery of the Roadmap, by reviewing progress on the Sector Stream Action Plans
- Meeting regularly to discuss various program matters, including escalating risks, progress and any other relevant general business associated with the implementation of the work
- Act as an escalation point for the subcommittees to resolve any issues both within and across sector streams
- Approve any documents or publications to be released under the program
- Manage the overall program scope and decide any scope changes;
- Appointing a Chair/Secretariat
- Manage the program budget
- Own responsibility for managing risks to the successful delivery of the program
- Undertake ongoing (as determined by the PSC) and final evaluation of the Implementation Plan up to 2025

INITIAL SET UP TASKS:

- 1. PIA to organise first meeting of the PSC
- 2. Nominate Secretariat for PSC
- 3. Prepare Terms of Reference for all members to agree in the PSC
- 4. PSC prepare an MOU and TORs to be signed by each Working Group outlining agreed terms going forward
- 5. Working Groups to nominate a Chair PIA to organise first meeting of the PSC
- 6. PSC to identify shortterm program of works inaccordance with the Detailed Action Plans
- 7. PSC to seek funding for shortterm program

IMPLEMENTATION STREAM WORKING GROUPS

Each sector will have an Implementation Stream Working Group (the Working Groups) that feeds into the overall PSC. The Working Groups will each have a Secretariat that is responsible for liaising with the PSC and attending their meetings to provide them with updates on progress, risks, cost, resourcing and scope matters within their working group.

The Working Groups will be responsible for following business matters:

- Delegating Actions and Sub-tasks to resource leads within the respective Working Group
- Regularly monitoring implementation of the actions/sub-tasks under the respect Sector Stream
- Provide avenue to consider amendments or additions to the Detailed Action Plan for the Implementation Stream
- Discuss range of detailed work stream matters at regular meetings, including scope, resourcing, costs, timeframes, risks and any other matters that arise while undertaking the work
- Appoint a secretariat responsible for liaising with the PSC
- Provide progress update reports detailing the delivery of their respective Action Plan and present on these report at the PSC's regular meetings
- Manage risks to delivery of the Action Plan, and report on escalating risks to the PSC, as required.



PERFORMANCE MANAGEMENT

MONITORING AND EVALUATION FRAMEWORK

The Implementation Plan will need a monitoring and evaluation framework from the outset that is designed to help track progress, understand the implementation status of key project themes, identify the issues arising in the delivery of the program and allow for reflection. The monitoring and evaluation framework envisaged for the Implementation Plan is shown in Figure 8.

REPORTING PROCESS

It is envisaged that progress of the Implementation Plan over the course of the program will be monitored by PIA in its role as the Program Owner. With the governance framework proposed by the Implementation Plan in place, it is expected that an ongoing understanding and awareness of project progress will be maintained via periodic meetings of the Project Steering Committee (PSC) and the respective working groups.

However, more formal monitoring and evaluation reporting is necessary to ensure that progress can be properly tracked over time and management decisions made accordingly. The monitoring, reporting and evaluating requirements are outlined in the table below.



Figure 8 - A cyclical monitoring and evaluation process is proposed to underpin the ongoing management of this Implementation Plan. Monitoring is proposed to be undertaken by yearly status action reports, with periodic (e.g. up to 3 times during the life of the Plan) evaluation points to assess project performance across the long term.

	Requirement	What?	How?
1.	Yearly status review via action status reports	MONITORING A high level tracking delivery of the actions, and traffic light indication of status Includes a detailed description of progress on each action by working group members delegated tasks	Prepared by working groups and submitted to the PSC by the Working Group Chairs for review and endorsement at the end of each year
2.	Periodic evaluation review	EVALUATION An evaluation of the performance against the measures (common goals), and anecdotal commentary on delivery of the program. Periodic evaluation review to be undertaken three times during the life of the program – at the end of each Short, medium and long term period defined in the Detailed Action Plan	Draft coordinate and largely prepared by PSC Secretariat, in consultation with Working Group Chairs, and reviewed by all PSC members prior to final endorsement



PERFOMANCE MEASURES

To effectively monitor and evaluate performance of a program of work, measures must be set out and agreed upon during the early stages. This approach will ensure that the evaluation framework and performance measures are designed with an integrated focus, allowing for more effective, consistent and transparent evaluation of performance throughout the life of the program.

For this program, utilising the common goals (see Figure 9) as the performance measures have been determined as the best approach, as they provide great indicators of performance because they apply equally to all three implementation Sector Streams, and their respective action plans.

It is not intended to set a formal project analysis and reporting procedure for this evaluation as this will be left to the discretion of the PSC, however some relevant questions to be addressed through the evaluation include:

- Have actions and sub-tasks been completed as scheduled?
- Have actions achieved the applicable common goals?
- What are the lessons learnt?
- Are changes to the Implementation Plan needed to improve on or advance the achievement of the common goals?



Figure 9 - The Common Goals identified early on in the Implementation Plan are intended to form the basis against which the Plan will be assessed via a procedure to be determined by the PSC.

NATURAL HAZARDS CHILDREN'S AWARENESS AND EDUCATION PROGRAM

This project received National Emergency Management Projects funding in 2010-11. The Australasian Fire and Emergency Services Authorities Council (AFAC) manages the Natural Hazards Children's Awareness and Education Program. The Federal Attorney-General launched the program on 10 November 2010.

Lil'Larrakins

A key output of this Program was the Lil' Larrakins Natural Hazards Children's Program, a children's cartoon series about the natural hazards of storms, cyclones, floods and tsunami, available via the Australian Emergency Management Institute . The Program is a series of ten half-minute stories aimed at building awareness with children (6-12 years) and their families of natural hazards, and providing them with information about being prepared, being responsive and being resilient.

You can access the videos here: http://www.ses.vic.gov.au/students/primary-students/copy_of_safety-videos

Dingo Creek

The Dingo Creek interactive game is also available through the AGD Schools Education website. AGD notes that it is an engaging, easy to use multimedia learning tool with accompanying classroom activities and resources.

The players travel back in time to save the fictional small community of Dingo Creek from a disaster that has struck the town. In the second game, players explore how to build community resilience as they help the community recover. Dingo Creek provides interactive content for students and teachers that is based on real life issues that affect a community during, and after, a disaster. The Dingo Creek game can be accessed here: http://schools.ema.edu.au/

FUTURE DIRECTIONS

KEYS TO SUCCESS:

- Cross-disciplinary commitment
- Sector-based leadership and enthusiasm
- Sharing of information and resources
- Enabling a community of practice
- Commitment to manage, monitor and update

WHERE TO FROM HERE?

This Implementation Plan has set out a clear path for stakeholders to follow to ensure that in future built environment professionals are provided with adequate education, training and resources to utilise in building more resilient communities across Australia.

This Implementation Plan has called for a wide range of specific and practical actions to make real improvements to disaster resilience education through professional, tertiary and school based sectors.

In addition, the creation of a formal industry-based entity may also be warranted to drive stakeholder engagement, policy development and technical consistency across built environment resilience in Australia and potentially further afield, in the manner of the Built Environment Adaptation Council identified by ASBEC in its **Preparing for Change: A Climate Change Adaptation Framework for the Built Environment**.

This body may have multiple functions – that is, as a cross-disciplinary training provider but also as a dedicated research and technical advisory centre that integrates and coordinates work across existing industry associations and tertiary research centres in advancing disaster resilience knowledge, policy development and technical professional capabilities nation-wide. This entity may also look internationally to New Zealand and Asia Pacific to ensure that regional cooperation and collaboration on resilience building is achieved. Indeed, international collaboration and knowledge sharing should be a key focus of built environment industry associations moving forward with this Implementation Plan.

Finally, an important common goal of this Implementation Plan in meeting the Vision is maintaining a culture of continuous advancement. It is important to remember that each step in the right direction, however small, will improve disaster resilience education across Australia and also ultimately the capacity of our built environment professionals to address the natural hazard risks present in our communities.

CURRENT ADVANCEMENTS:

A Bushfire and Natural Hazards CRC funded project *Building best practice in child-centred* disaster risk reduction is currently starting to systematically evaluate current education programs, through a 'co-production and co-evaluation' process. The first step is to develop an evaluation framework to examine education program frameworks, content, delivery and implementation factors with project end users (EM agencies, all of whom have disaster resilience education programs). Once done, then education programs will be evaluated in partnership with end user agencies. This process may provide an opportunity for inclusion of features not currently included in education programs, including issues linked to the role of built environment features. Once programs are 'internally evaluated', then they will undergo 'outcome evaluation', asking the question "do these programs produce important student learning outcomes as well as disaster risk reduction outcomes?"



STREAM-BASED ACTION STATEMENTS & DETAILED ACTION PLANS





	 STRATEGY 1: Improve access to and drive participation in appropriate professional development initiatives across built environment disciplines, in resources, training and CPD programs INTENDED OUTCOMES: Disaster resilience practice is 'front of mind' for all built environment professionals when undertaking their day-to-day tasks Practitioners work together across disciplines in building disaster resilience through their work Disaster resilience of the built environment is a core element of contemporary planning practice 	ncluding	
	Future Action Common Goa	l Linkages	Resourcing Required
	1. Clarify roles and responsibilities between Professional Sector stakeholders		
	 A. Formalise and enact Implementation Plan governance framework, including Program Steering Committee and Professional Sector Workin Enable unrestricted access to existing AGD and professional/professional group technical resources via improvements to AGD Knowledge Hub functionality and content A. Professional associations and AGD to undertake audit of all available publications and technical resources 	ng Group	
	B. PIA to seek agreement with NZPI for information/resources sharing (e.g. via MOU)		
	C. Professional associations to seek agreement with corresponding organisations in NZ to share information/resources		Lead Agency AGD
~	D. Populate AGD Knowledge Hub with all suitable resources from across government & professional, from policy to actual hazard information (or create linkages with various databases from Geoscience Australia)		
TREAN	E. Populate AGD Knowledge Hub with appropriate research findings from tertiary research entities & other institutions such as BNHCRC and AFAC where intellectual property rights allow	2 CG4 CG6	
SECTOR S	F. Create forum within AGD Knowledge Hub for built environment professional to post questions/discussions with other built environment professionals and emergency management professionals – such as via Yammer site or bespoke forum functionality on Knowledge Hub		Support Agencies Professional Associations
INAL	G. Professional associations to contribute their own existing resources to the Knowledge Hub where intellectual property rights allow		
FESSI	H. Establish a Knowledge Hub 'curator' to manage content and referencing system/user interface to ensure information is easily/readily accessible		
PRO	3. Transition/update existing resilience resources to contemporary practice		
	A. Update the Australian Emergency Manual Series to be in line with contemporary practice as required, including update to Manual 7		
	B. (PIA/AGD to investigate how existing emergency management guidance provided in the Australian Emergency Manual)		Lead Agency
	Series can be tailored to a built environment audience, such as:		PIA
	(i. Update Manual 45 to include guidance on how built environment professionals can communicate/engage with the	2 CG4	
	ii. Develop addenda or summary documents to re-cut/re-package existing content to enable built environment		
	professionals to understand linkages with their day-to-day practice		Support Agencies
			AGD & Professional Associations



Fu	ture Action	Common Goal Linkages	Resourcing Required
4.	 Develop new cross-disciplinary technical/guidance resources for access via AGD Knowledge Hub A. Undertake detailed audit of existing course content related to climate change, climate and adaptation policy, natural hazard management to identify specific gaps related to disaster resilience in the built environment B. Develop online webinars and short courses that can be taken 'on demand' via the Knowledge Hub C. Develop specific technical resources on topics such as: i. Developing and applying risk-based approaches to planning, development and city management ii. Undertaking long term generational change to built environments iii. Specific settlement adaptation techniques through infill development iv. Infrastructure resilience techniques v. Resilience considerations for developers vi. Resilient building design vii. Use of social media in built environment resilience viii. Elected officials – obligations in governance and management of natural hazard risk 	CG2 CG4	Lead Agency PIA Support Agencies AGD Professional Associations
5.	 Coordinate existing CPD/training activities across built environment disciplines, to create reciprocal training opportunities A. Professional associations ensure existing CPD/training activities are made available and opportunities to participate communicated to other disciplines via the respective professional B. Secure a reciprocal training agreement between professional associations C. Liaise with AGD to ensure courses are transitioned over to virtual arrangement D. Retain AGD short course on risk based land use planning and investigate opportunities to expand course content and offerings E. Incorporate tertiary research centres providing training programs into CPD/training programs 	CG2 CG5 CG6	Lead Agencies Professional Associations & Tertiary Research Centres
6.	 Develop improved CPD and training program content for delivery across disciplines A. Training program to include 'qualification' status B. Continued roll-out of CPD/training programs across disciplines C. PIA to implement an ongoing national professional education program regarding natural disaster resilience and land use planning, for planners and other built environment professionals that utilises existing resources, new resources & communications tools, and includes input from tertiary research centres & other institutions such as BNHCRC and AFAC D. Other professional associations to develop similar cross-discipline programs as required 	CG2 CG5 CG6	Lead Agency PlA Support Agencies AGD Professional Associations



	Future Action	Common Goal Linkages	Resourcing Required
	7. Professional associations to build 'core' awareness of resilience concepts and available resources/training avenues through all available communication channels		
	A. Professional associations to develop resilience-specific awareness using existing communications delivery platforms that link to Actions 2 – 7 above		
	B. PIA to incorporate disaster resilience into 'Australia at 50 million' policy statement		
	C. Professional associations to incorporate disaster resilience into their own policy statements	CG1 CG6	
	D. PIA to create Award for Excellence in Resilience		Professional Associations
	E. PIA to submit national winning Award for Excellence in Resilience into the Resilient Australia Awards		
team	F. Other professional associations to develop resilience-focussed awards & drive further participation in the Resilient Australia Awards		
CTOR ST	8. Investigate viability of single cross-discipline CPD and training entity such as that operated by the Green Building Council of Australia for Greenstar to provide training across all built environment disciplines and coordinate resilience education across the tertiary and school-based sectors		
L SE	A. PSC/Professional Sector working group to develop terms of reference/scope for cross discipline entity	CG1 CG3 CG3	
SIONA	B. PSC/Professional Sector working group to undertake cost/benefit analysis of consolidating resilience education/ training initiatives across disciplines through one entity		Lead Agencies
FES	C. Subject to PSC agreement, develop business case to scope creation of training entity and funding structure required	CG4 CG5 CG6	Professional Associations
PRO	D. PSC to decide whether to progress with cross-disciplinary CPD and training entity		
	 Investigate viability of cross-disciplinary, collaborative and professional-based built environment resilience research and education centre under the auspices of an entity such as ASBEC 		
	A. PSC/Professional Sector working group to develop terms of reference/scope for cross discipline entity		
	B. PSC/Professional Sector working group to undertake cost/benefit analysis of consolidating resilience education/ training initiatives across disciplines through one entity	CG1 CG3 CG3	
	C. Subject to PSC agreement, develop business case to scope creation of training entity and funding structure required	CG4 CG5 CG6	Lead Agencies
	D. Subject to the above, PSC to advance negotiations via ASBEC with government		Professional Associations



s •	TRATEGY 2: Increase access to undergraduate courses offering disaster resilience education and improve access for tertiary stud	lents to skills development	
	opportunities offered through professional associations		
	NTENDED OUTCOMES: Disaster resilience of the built environment is a core element of contemporary tertiary and vocational education pro	ngrammes	
•	Disaster resilience remains a key part of PIA/professional association course certification		
•	Students develop a sustained interest in disaster resilience and are equipped with knowledge and skills to contribut	e to resilience building in practice	
l	uture Action	Common Goal Linkages	Resourcing Required
1	Clarify roles and responsibilities between Tertiary & Vocational Sector stakeholders		
	A. Formalise and enact Implementation Plan governance framework, including Program Steering Committee and Tertiary	& Vocational Sector Working Group	
2	. Promote take-up of existing post-graduate resilience programs by current practitioners across all built environment disciplines		
	A. Professional associations to consider scholarships/bursaries to support current practitioners to undertake post- graduate studies		
Σ	B. Support tertiary and vocational bodies to provide 'open learning' subject content to AGD Knowledge Hub relevant to built environment resilience where intellectual property rights allow	CG3 CG5 CG6	Lead Agencies Tertiary Bodies and Professional Associations
0 I KEA	C. PIA to investigate certification of post-graduate degrees in resilience where they meet appropriate criteria relevant to built environment resilience		
	. PIA to review its internal degree certification process in accordance with the Australian Qualifications Framework		
	A. Review certification criteria for undergraduate and post-graduate planning degrees to incorporate resilience subjects	CG1 CG2 CG3	
	B. Determine certification weighting to be applied to resilience in determining whether a degree meets the certification requirements	CG5 CG6	
2 4	Other professional associations to undertake Action 3 for their respective tertiary degrees		PIA
		CG1 CG2 CG3	
Ĭ		CG5 CG6	Professional Associations
	Support universities and vocational entities to create core subject content that is tested through professional practice		
	A. Undertake detailed audit of existing course content related to climate change, climate and adaptation policy, natural hazard management to identify specific gaps related to disaster resilience in the built environment as per Action 5B below		
	B. Develop subject content where gaps exist on issues such as risk management practice and risk-based decision-		Lead Agency
	making, addressing natural hazard risk through planning & development, climate science, adaptation & risk reduction	CG1 CG2	Tertiary Bodies
	resilience in governance		
	C. Professional associations to provide in-kind support to assist universities and vocational entities in quantifying	CG4 CG5	
	contemporary practice gaps for consideration in developing targeted course content		Support Agency Professional Associations



Future Action	Common Goal Linkages	Resourcing Required
 Support greater linkages between tertiary research centres and the teaching of resilience subjects at undergraduate level. A. Encourage universities to transition research advancements made via their research centres to undergraduate cour content via Action 5B above 	rse CG2 CG3	Lead Agencies Tertiary Bodies and Research Centres
 Mandate at least one resilience-specific subject (that may address natural hazard management, climate adaptation and/or resilience) as a core (not elective) subject of each planning degree Australia-wide A. Certification from PIA as per Action 3 above 	CG1 CG5	Lead Agency Tertiary Bodies Support Agency PIA
8. Other professional associations to undertake Action 7 for their respective tertiary/vocational degrees/certifications, or at least advocate accessibility of resilience subjects to students in their respective professional fields via electives	t CG1 CG5	Lead Agency Tertiary Bodies
 9. Enable student access to existing professional resources without restriction A. Enable and encourage student access to full range of AGD Knowledge Hub resources and training opportunities, including making appropriate training opportunities available without cost for students in full-time study B. Create discussion forum specifically for students via AGD Knowledge Hub – e.g. via Yammer or bespoke discussion forum C. Professional associations to communicate availability of AGD Knowledge Hub to students via student membership channels and direct engagement with universities/vocational entities 	CG1 CG2 CG3 CG4 CG5	Support Agencies Professional Associations
 Formalise opportunities for student mentorship with current practising resilience professionals A. Professional associations to offer specific resilience focus as part of existing mentorship arrangements B. Where formal professional association mentorship arrangements do not exist, professional associations to formalis arrangements for resilience-based mentorships 	se (G1 (G2 (G4 (G5	Lead Agencies Professional Associations



	STRATEGY 3:		
	 Improve access to existing resources where applicable, and develop new resource and training schemes (where required), for s 	chool-based educators	
	INTENDED OUTCOMES: Togehers have the skills and resources to provide students with the principles of disaster resilience		
	 The curriculum supports opportunities to teach disaster resilience at all levels 		
	Students develop an interest in disaster resilience and are encouraged to pursue higher education opportunities to further the	ir participation in resilience	building
	Future Action	Common Goal Linkages	Resourcing Required
	1. Clarify roles and responsibilities betweenSchool-based Sector stakeholders		
	A. Formalise and enact Implementation Plan governance framework, including Program Steering Committee and School-based Sector	Working Group	1
	Ascertain the current status of implementation of the recommendations of the Educating the Educators: Mapping of disaster resilience education resources against the Australian Curriculum since 2012-13. Specifically:		
	A. Recommendation 1: Ensure all future DRE resources link closely with the Australian Curriculum		
	B. Recommendation 2: Avoid reinventing the wheel, streamline resources, build partnerships and plan to cover new ground		
5	C. Recommendation 3: Explore creative and innovative ways of using ICT resources, tools and approaches in future DRE resource development		
Ā	D. Recommendation 4: Incorporate Assessment as part of the learning process in future DRE resources	CG1 CG4	
	E. Recommendation 5: Explore developing more DRE resources for EAL/D students to build intercultural understanding		Lead Agencies
Š	F. Recommendation 6: Target future resources more directly to specific student audiences	CG5 CG6	Professional Associations
ן ני	G. Recommendation 7: Develop DRE resources for parents		
	H. Recommendation 8: Continue to build teacher capacity		
Ž	I. Recommendation 9: Evaluate impact and explore a range of ways of delivering resources to schools to promote interest and use		
	J. Recommendation 10: Undertake a further mapping exercise following the release of the Australian Curriculum HPE and Civics and Citizenship learning areas in December 2013.		
	 Review the Australian Curriculum to ensure resilience of the built environment appears as a focus along with existing curriculum focus on personal risk awareness and personal preparation for and response/recovery from natural hazards 		
Ă	A.Develop specific proposed changes to the Australian Curriculum including resilience themes such as:		
EK	i. Understanding how wind (cyclones and severe storms) and water (floods, coastal inundation/erosion, and drought) can damage our buildings and infrastructure and impact on our lives		
	ii. adapting our buildings, neighbourhoods and cities to the effects of natural hazards		
	iii. investigating how a changing climate affects our homes and cities	CG1 CG4 CG5	
	iv. include specific focus on the role of roads, water, wastewater, and electrical networks in cities as the backbone of a resilient settlement		AGTA/AFSSSE and Australian Government
	v. the role of builders, architects, engineers and planners in shaping resilient cities, not just 'building things'		
	vi. developing an understanding of 'risk', and what that means in decision-making		
	B. Advocate to the Australian Government for amendments to the Australian Curriculum on the basis of Action 3A		

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Future Action	Common Goal Linkages	Resourcing Required
4. Review AGD's existing Units of Work for Disaster Resilience		
A. Undertake review to identify education gaps relative to the proposed Curriculum themes to be developed via Action 3A and any supplementary technical resources required for teachers		
B. Develop business cases/funding applications to update this material with additional Units of Work or updates to existing Units as may be required by Action 4A above		Lead Agency AGTA/AFSSSE
5. Review existing supporting tools (such as Dingo Creek by AGD) and the other resources identified as relevant) to ensure these tools also have a shared focus on the roles of built environment professionals in adapting their communities for resilience, along with their current preparedness/response/recovery focus		
A. Undertake review to identify gaps in resilience 'message' (if any) being delivered by the tools, specifically in relation to how the supporting tool addressing resilience of the built environment	CG1 CG4	
B. Develop business cases/funding applications to update this material as may be required by Action 5A above, rather than developing 'new' supporting tools		AGD
6. Develop a set of learning modules and technical teaching resources based on gaps identified through Actions 4 & 5 to assist teachers across F-12 to deliver built environment resilience education		
	CG1 CG5 CG6	Lead Agency AGTA/AFSSSE
7. Enable teacher access to existing educator and professional resources without restriction		
A. Transition all available teacher resources to AGD Knowledge Hub, where these resources are not already provided on it		
B. Enable and encourage teacher access to full range of AGD Knowledge Hub resources and training opportunities	CG1 CG2 CG3	
C. Create discussion forum specifically for teachers via AGD Knowledge Hub – e.g. via Yammer or bespoke discussion forum	CG4 CG5	Support Agencies
D. Professional associations to communicate availability of AGD Knowledge Hub to educators via direct engagement with State education departments and religious/independent school bodies		FTUIESSIULIAI ASSOCIATIOLIS
8. Develop educator-specific training program for disaster resilience education in partnership with professional bodies and the		
Australian Government		
A. In an integrity program to infolute qualification. Status	CG1 CG2 CG3	
leader, but may include creation of training modules, short courses, online learning & CPD and identification of a suitable delivery platform		
C. Subject to PSC agreement, develop business case to scope creation of training program and funding structure required	CG4 CG5 CG6	Lead Agencies
D. PSC to decide whether to progress with training program and implement		AG IA/AFSSSE and Australiar Government

















Denotes interdependency between actions





Denotes Interdependency between actions

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STAKEHOLDERS

STAKEHOLDER GENERAL INTEREST PROJECT INTEREST

Land Use Planning and Building Codes (LUPBC) Taskforce	A group formed by the National Emergency Manage- ment Committee that includes land use planning and building expertise from across Australia.	Ensuring built environment professionals are adequately aware of and skilled in disaster resilience
Australian Sustainable Built Environ- ment Council (ASBEC)	ASBEC is a peak body with membership consisting of public and private associations, involved in the planning, design, delivery and operation of our built environment.	Ensuring built environment professionals are adequately aware of and skilled in disaster resilience
Engineers Australia	The peak industry body and national form for the advancement and professional development of engineers.	Ensuring engineering professionals are adequately aware of and skilled in disaster resilience
Australian Institute of Architects	The peak industry body and national form for the advancement and professional development of architects.	Ensuring architects are adequately aware of and skilled in disaster resilience.
Environment Institute of Australia and New Zealand		
Australasian Fire and Emergency Service Authorities Council	The peak body for Australasian fire, land management and emergency services.	Ensuring emergency management practitioners are aware of and skilled in disaster resilience.
Emergency Management Policy Branch, National Security Resilience Policy Division, Attorney General's Department	The National Security Resilience Policy Division is responsible for policy, legislation, advice and programs related to developing resilience to all hazards.	Ensuring built environment professionals are aware of and skilled in disaster resilience, particularly current policy, legislation and best practice.
Australian Local Government Association	The Australian Local Government Association is the national voice of local government, representing 560 councils across the country.	Ensuring built environment professionals work- ing in local government are aware of and skilled in disaster resilience.
Housing Industry Association	Australia's peak residential building, renovation and development industry association.	Ensuring builders, developers and associated professionals are aware of and skilled in disaster resilience.
Australian Centre of Excellence of Local Government	A national local government research and policy in- stitution interested in enhancing professionalism and skills in local government.	Ensuring built environment professionals work- ing in local government are aware of and skilled in disaster resilience.
Bushfire and Natural Hazards CRC	A not-for-profit public company that draws together fire and emergency service authorities with experts to explore bushfire and other natural disasters.	Ensuring communities and emergency service authorities are aware of and skilled in disaster resilience, particularly bushfire.
National Climate Change Research Facility (NCCARF)	NCCARF works across Australia to build resilience to climate change in government, NGOs and the private sector.	Ensuring built environment professionals are adequately aware of and skilled in disaster resilience, particularly climate change.
Australian Building Codes Board (ABCB)	A Council of Australian Government (COAG) standards writing body that is responsible for the National Con- struction Code which comprises the Building Code of Australia and the Plumbing Code of Australia.	Ensuring the national standards that are used by built environment professionals address disaster resilience.
Australian Emergency Management Institute	A Centre of Excellence for capability development in the national emergency management sector which coordinates a range of education, training, profession- al development, research services to the nation and our region.	Ensuring school and tertiary student, as well as professionals, are educated about disaster resilience.
University of Melbourne	One of Australia's largest and highest ranking universities.	Ensuring tertiary students are adequately edu- cated in disaster resilience.
Australia and New Zealand Associa- tion of Planning Schools (ANZAPS)	A scholarly society formed by the urban planning schools and programs at Australian universities.	Ensuring tertiary and educators are adequately educated in disaster resilience.
Australian Federation of Societies for Studies of Society and the Environ- ment (AFSSSE)	The peak organisation for the board area of study known as studies of society and environment in school based educations.	Ensuring school students and educators are adequately educated in disaster resilience.
Australian Geography Teacher's Association (AGTA)	An industry organisation representing geography teachers in Australia.	Ensuring school students and educators are adequately educated in disaster resilience.







Australian Government Attorney-General's Department