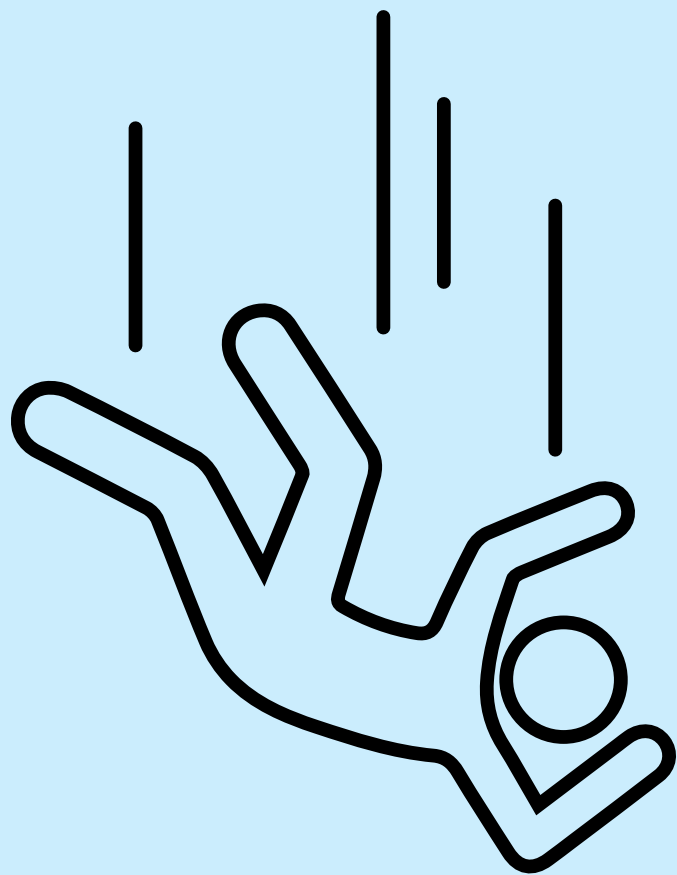


Reducing falls from heights in the construction industry - Options Paper

June 2023





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Executive summary

Falls from heights is the most common cause of traumatic fatalities on NSW construction sites. Sadly, this statistic is echoed throughout Australia and the rest of the world and has continued to be a wicked problem on construction worksites for decades.

Since 2017, SafeWork NSW (SWNSW) has:

- i. targeted working at heights safety in construction through its Building and Construction Work Health and Safety (WHS) Sector Plan to 2022, and Towards Zero – Falls from heights program
- ii. implemented annual “ScaffSafe” compliance blitzes
- iii. introduced “on-the-spot” fines (penalty notices) for falls and scaffold
- iv. commissioned in-depth independent research to better understand falls from heights
- v. delivered advertising campaigns to increase awareness and change behaviour
- vi. sought industry feedback on options to enhance the regulatory framework via a Building and Construction Safety Roadshow conducted across NSW.

This paper explores the major findings of these initiatives and proposes six regulatory options for SWNSW and its interstate regulatory counterparts to consider, including amendments to the model Work Health and Safety (WHS) legislation to solve this wicked problem of serious falls from heights in construction.

These proposed options have advantages and limitations, and a sliding scale on how they could be implemented for a whole of industry minimum safety standard.

The options could also be prioritised and implemented in an integrated way in accordance with the timeframes.

Regulators could likely implement options 1-3 in the short term as part of their operational decision-making. Due to the national implications, options 4-6 would benefit from consultation through the Heads of Workplace Authorities (HWSA) and the broader construction community. Additionally, options 5 and 6 would likely need be subject to undertaking a Regulatory Impact Statement (RIS).

1. Regulatory options

Short-term (6-12 months)

Option 1 - Hierarchy of control

- Explore more effective ways of ensuring that PCBUs are implementing the hierarchy of control. For example:
 - **Communicate:** communicate to PCBUs and workers expectations about ensuring higher order controls are in place, over lower order control.
 - **Educate:** ensure white card units of competency explicitly outline the hierarchy of control in its performance and assessment requirements, including suitable examples.
 - **Publish:** consider providing specific hierarchy examples as per the roof work in the [2021 Guide to Safe Solar Panel Installation](#) or through higher order legislative instruments.
 - **Enforce:** enforce higher-order controls as part of pro-active compliance programs.

Option 2 - Worker Protection Planning

- Conduct further research to determine:
 - why safe work method statements (SWMS) and work health and safety (WHS) management plans are not consistently being operationalised in industry as intended
 - if there are opportunities to use alternate risk-based planning instruments, with a focus on falls from heights safety planning and job sequencing.

Option 3 - Construction plans/building design

- Foster discussions amongst relevant industry players (e.g. architects, designers, engineers) regarding the suitability of updating building design instruments and/or industry changes to integrate safety elements that protect against falls from heights into design.

Medium-term (12 -24 months)

Option 4 - Instruments and guidance material

- Amend and update the requirements, definitions and hierarchy order when it comes to restraint-type harness use in AS/NZS1891 Industrial fall-arrest systems and devices - harnesses and ancillary equipment.
- Amend Part 4.4 of the WHS Regulation and the related Codes of Practice, including competency recommendations.
- Develop practical guidance material on the use of mobile scaffolds, temporary edge protection and harness use.

Long-term (2 years+)

Option 5 - Training for workers and/or supervisors

- Explore options with relevant authorities concerning the implementation of mandatory Working at Heights (WAH) training.

Option 6 - Licences/permits

- Mandate the introduction of a licence or permit (with or without demerit points) to work or plan for heights safety.
- Attach to a specific competency or set of competencies (e.g., a unit of competency or approved training course) or safety activity (e.g., a work at heights safety plan).
- Attach to an existing safety or occupational licence, such as the white card or occupational licences as administered by other agencies.

2. Next steps

Taking the conversation to the national level

- SWNSW will lead the discussion at a national level through the HWSA forums to further explore and prioritise the regulatory options put forward within this paper for a consistent approach in addressing the falls from heights issue in the construction industry.
- Industry will be consulted through each jurisdiction as to the proposed changes, commencing with being provided an agreed approach for the deployment of regulatory action.

3. Why is further action needed?

Since 2017, SWNSW has targeted working at heights safety in construction through its Building and Construction WHS Sector Plan to 2022, and Towards Zero – Falls from heights program. [See Appendix A SWNSW compliance activities.](#)

Despite all of these targeted activities and interventions, the incidence rate of serious construction workers compensation claims has risen from 15.60 in 2015/16 to 17.47 per 1,000 employees in 2019/20.

Falls incidents are fairly evenly spread across the age groups, however, the 45-55 years bracket is prominent for fatalities in both the national statistics and workers compensation data.

Inspector observations also indicate high levels of non-compliance on site when it comes to fall risks:

- when working on roofs, including the incorrect set-up or misuse of harnesses
- when working on scaffolds, including missing components and unlicensed workers altering scaffolds
- when working on ladders, using step ladders that are too small for the job and not securing extension ladders.



4. Three pillars of workplace safety

There are three main interrelated pillars that assure safety on a construction site, based on national or international experiences. These are:

4.1 Overarching regulatory framework

The regulator must have an overarching regulatory framework that sets the minimum safety standards to protect workers and others on worksites.

For example, clear and consistent regulation and accompanying Codes of Practice that are administered by the regulator and validated through mechanisms, such as regular inspections, to ensure compliance.

4.2 On-site PCBU responsibility

The PCBU has a duty to implement the regulatory framework requirements into on-site systems and practice. This may include ensuring:

- up-front planning and safety systems are in place e.g. building design, risk assessments, trade and deliveries sequencing, supervision, site rules and policies
- capabilities are appropriate e.g. ensuring those supervising others have the appropriate skills and experiences to ensure the safety of those on their site

- there is adequate consultation and worker communication and involvement/engagement e.g. toolbox talks, formal or informal consultation and communications regarding safety
- safety equipment is planned for and in place ensuring higher order hierarchy equipment is preferred and available for use at the correct time in the job sequence e.g. physical barriers, temporary roof rails, work platforms etc. instead of harnesses
- they lead by example by modelling and influencing the appropriate safety behaviour – e.g. not preferencing performance over safety, following through with safety training to be applied practically on site, fostering a safety culture and mentoring
- they keep up to date with safety information, innovations and equipment – e.g. keeping abreast of the latest higher order engineering safety controls and innovations.

4.3 Worker's responsibility to work safely

The third pillar is centered around workers in accordance with their duties under the [NSW WHS Act Section 28 Duties of Workers](#). This includes their responsibility to follow safety systems and practices, being aware and educated about safe work requirements, safety empowerment to talk about safety and to speak up and refuse to work unsafely, and personal influencing factors, such as not being under the influence or affected by drugs and alcohol.



5. Data and research

SWNSW analysed workers compensation data, the current legislative framework, economic situation and commissioned independent research and examined how this issue is handled by some overseas and interstate regulators.

5.1 NSW Falls from Heights Data

Workers' compensation claims for the last five financial years (2016/17–20/21) were used to analyse 'Falls from Heights' (FFH) and their prevalence in the NSW Construction industry.

Findings suggest that:

- the greatest number of FFH claims were in Construction, which had almost three times more claims related to major injuries than the next highest industry (manufacturing)
- between 60% to 68% of FFH claims in Construction were for major claims, with the highest percentages in the last two years
- the cost of claims and time lost were substantially greater for Construction compared to other industries. With major injury claims, the cost was over 3.5 times higher and the time lost was over 2.5 times greater than the next industry
- in the five year period to 20/21, the cost ranged from around \$60 million to \$148 million per year, and between 7,000 and 15,000 weeks were lost per year due to 'major' claims.

In addition, Safe Work Australia data on NSW worker fatalities during 2010–20 indicates:

- worker fatalities from FFH were the second most prevalent mechanism of incident
- the greatest number of FFH fatalities were from Construction totaling 43, almost three times more worker fatalities than the next industry (Agriculture, Forestry, and Fishing).¹

SWNSW incident data (i.e., incidents reported to SWNSW) indicate that most serious and fatal falls are from a height of less than 4 metres – which is generally a single storey or less. 22% of current SWNSW investigations are falls incidents in construction (as at April 2022).

¹ Centre for WHS – Falls from a height in the construction industry report 2022 (Workers' compensation claims and fatalities)

5.2 Construction worker and site supervisor independent research findings

SWNSW commissioned in-depth independent research to better understand falls from heights from a construction worker and site supervisor perspective, to help inform an awareness-raising advertising campaign on working at heights safety in the construction industry. The researchers used a combination of digital diaries, interviews and focus groups to better understand this cohort's values, influences, barriers and motivators for safety.

Key findings from this research indicate:

- "heights" are perceived by workers and supervisors to be at least two storeys or higher (6+ metres), and they were surprised to find out most serious and fatal falls are from 4 metres or less (about a single storey)
- death and injury statistics have little meaning to workers and supervisors when it comes to deterring risk-taking behaviour. When told how many fatalities occur resultant from falls from heights, most responded they were surprised there wasn't more, or that that number seemed reasonable
- most workers are confident they can determine what is safe vs unsafe, however, their "safe" photos demonstrate there is no consistency from worker to worker. Additionally, many "safe" photos were viewed by inspectors as actually unsafe
- workers will step over their perceived safety "line in the sand" into a grey area of marginally unsafe when there is a quick fix to get the job done. This grey area of risk-taking is driven by getting the job done quickly and efficiently and the right equipment not being available
- there appears to be a momentary flicker of recognition where workers realise they are taking a risk. This decision point is using system 1 (fast - unconscious/automatic), instead of system 2 (slow - deliberate/rational) thinking
- this system 1 thinking is influenced by an optimism bias that "it won't happen to me"
- workers have a solid work ethic and a strong set of core values, with not much difference between cultural groups. Supervisors are similar to workers in their values and ethics and often worked their way up through the ranks to become supervisors
- workers are influenced primarily by family and friends, or at work by supervisors
- workers are most impacted by safety messaging that articulates what the personal impact of a serious injury would be including:
 - losing their independence, ability to shower or toilet themselves
 - losing the things they love e.g. not being able to jump in the car anytime

- losing their livelihood e.g. not being able to provide for themselves or their family
- upending their life e.g. not being able to undertake hobbies or interests
- guilt about impact on loved ones e.g. the impact of a loved one having to become a carer to them.²

6. Economic status of construction in NSW

Australian Bureau of Statistics (ABS) reports NSW has the largest construction workforce (about 400,000) followed by Victoria (302,000) and Queensland (233,600), generating \$24.4 billion in economic output – or 5.1% of the gross state product.

Over the past two years, COVID-19 has impacted many construction businesses with snap lockdowns, broad restrictions, skilled migrant shortages and soaring material costs to name a few. This has been further exasperated by “La Nina” with unprecedented weather episodes from November 2021 to mid-2022. The Bureau of Meteorology predicts a 70% chance of it reforming late 2022.

With restrictions easing and borders reopening, the industry has returned to some level of predictability and normalcy, however, the ongoing impact of the pandemic and “La Nina” has given rise to new problems and intensified existing, resulting in a domino effect for the entire construction industry in the following areas:

1. **Project delays** – production delays and supply chain disruptions have resulted in costly project overruns and the scale of demand exceeding capacity (project start-ups exceeding project completions). For example, the NSW Government has placed several infrastructure projects on hold and residential housing projects are exceeding times for completion with a four month wait for frames and trusses.
2. **Labour and skill shortages** – Master Builders Australia estimates the building and construction industry will need 477,000 workers to enter the industry in the next four and a half years to meet forecasted growth and replacement (shortfall of approximately 100,000 per year). 200,000 of these workers will be in the trades, with current apprentice completion rates below 60%, around 350,000 apprentices will need to commence to attain 200,000 completions. [The Australian Constructors Association](#) indicate similar, a likely shortfall of 93,000 workers in early 2023.

[The National Skills Commission 2022 Skills Priority List: Key Findings Report](#)³ confirms that shortages are still most prevalent within the Technicians and Trades Workers occupation group with almost half (47%) of all occupations in this group in shortage in 2022. The construction trades in shortage are electricians and carpenters. Supply of workers through these trade groups is generally through an apprenticeship training pathway that overall had a much lower estimated vacancy fill rate compared to other apprentices.

3. **Material shortages** – supply chains that haven’t fully recovered from the pandemic are now being affected by the situation in Ukraine. This is resulting in longer and more expensive shipping, transportation, and logistics. Lockdowns around the world have affected paints, glass, timber, steel, cement, trusses, roofs, and other supplies, which is also reflected in cost increases.
4. **Price increases** – the ABS indicates that prices across the nation rose a record 24% in 2021 for residential property, with new home build costs soaring by 20%. Ocean freight fees have increased 50% because of trade imbalances, a shortage of shipping containers, strong demand, and competition. The closure of borders to working migrants and skilled trade contractors has pushed up salaries in construction by 3.9%, forcing employers to increase to this rate to retain existing staff and recruit new talent.
5. **Inflation** – increased work due to government spending (e.g. record \$112.7 billion infrastructure commitment) and grants followed by interest rate rises, tighter lending and pressure on profit margins.
6. **Potential impact on WHS and quality** – with project delays and skills and materials shortages, the concern is increasing pressures to complete construction work and the potential for shortcuts to be taken (risk-taking), resulting in serious incidents and poor-quality builds.

³ National Skills Commission 2022 Skills Priority List: Key Findings Report - October 2022

² SnapCracker Falls from Heights Campaign Exploratory Research Report – July 2020

7. Regulatory framework options

At the May 2022 Building and Construction Safety Symposium and June-July 2022 Regional Roadshow events, SWNSW presented the five main regulatory framework options to prevent falls from heights in construction, including overseas examples in “think-tank” workshops. Participants were broken up into three streams—Class 1 single dwelling residential, Class 2 multi-storey apartment buildings, and Major Infrastructure.

Some of the framework options are used concurrently e.g. training attached to a licence output, and on a sliding scale from best practice guidance to mandatory requirements, in order to direct and manage workplace safety.

Further exploration of these options is outlined below:

Option 1. Hierarchy of control

The hierarchy of control is a step-by-step approach to eliminating or reducing risks, by ranking risk controls from the highest level of protection and reliability through to the lowest and least reliable protection.

As per clause 36 of the NSW WHS Regulations, a duty holder must eliminate the risks to health and safety if reasonably practicable. If elimination is not possible, they must minimise the risk through higher order controls such as substitution, isolation and/or engineering controls. If risk remains they must minimise through administrative controls and/or personal protective equipment. A combination of controls may be used, so far as reasonably practicable, if a single control is not sufficient.

Part 4.4 of the NSW WHS Regulations outlines the expectations of higher order controls when it comes to working at heights. In general terms, this part requires in order of highest control to lowest:

1. Work from ground or solid construction
2. Use fall prevention device (e.g. fence, edge protection, working platforms, covers)
3. Use work positioning system (e.g. industrial rope access, total restraint)
4. Use fall arrest (e.g. safety net, catch platform, harness-based system)
5. Other controls (e.g. training, safe work procedures, work sequencing, permit systems, signs).

SWNSW has consistently maintained and enforced the use of the WAH hierarchy of control in its approach to compliance in construction, and expectations are outlined in such instruments as the [Code of Practice for Managing the Risk of Falls in Housing Construction](#), and more recently in the [2021 Guide to Safe Solar Panel Installation](#), however industry too often resort to lower order and less effective controls e.g., harnesses.

Their main reasons were related to lack of awareness, cost, building design and availability.

Installers were asked

“if roof rails or scaffold are **NOT** in place, why have you not implemented that control?”

Excuse	% of sites
Didn't know or wasn't aware	29%
Cost	13%
Building structure or no eaves	13%
Available but not used	11%
On order	11%
Company doesn't have enough	10%
Complacency	6%
Chose to use harness	4%
Flat roof thought it was ok	2%

Table 1: Solar rooftop installers excuses as to why they did not have the higher order controls of scaffold or roof rails in place as part of the solar installation project between 26/2-31/12/2021.

29% of industry “not knowing” they should use higher order controls needs to be explored to determine if this is a genuine gap in knowledge or simply an excuse. One possible contributor to this reason may be linked to the basic safety information taught as part of the “white card”.



The White Card (general construction induction card)

The white card unit of competency elements, performance and assessment requirements reference to the “hierarchy of control” was present in the superseded unit CCPCCOHS1001A Work safely in the construction industry, but not present in the latter units CPCCWHS1001 and CPCWHS1001 (Prepare to work safely in the construction industry). Whilst these latter units refer to controlling hazards and risks, they do not explicitly refer to the concept of a “hierarchy of control” and how this may apply to work at heights. This change in criterion may mean that from December 2016, White Card students may not have been exposed to the concept of higher order control hierarchies when considering hazard controls in construction.

Innovation

In recent years, additional and innovative safety controls such as inflatable crash mats, netting and platform systems have been added to the safety equipment market in both Australia and internationally. These are not widely used in Australia.

Further regulatory discussions are required regarding the correct installation of these other systems and how effective they are. There may be some potential application for these types of systems, particularly where higher order controls (e.g. fall prevention roof rails) are not possible.

Regardless, innovations that implement fall prevention rather than fall arrest is however the most desirable outcome.

Option 1 - Hierarchy of control

Explore more effective ways of communicating, educating, publishing and/or enforcing the hierarchy of control when it comes to WAH in construction:

- **Communicate:** continue to communicate to PCBUs and workers the expectation about ensuring higher order controls are in place, over lower order controls.
- **Educate:** ensure white card units of competency explicitly outline the hierarchy of control in its performance and assessment requirements, including suitable examples.
- **Publish:** consider providing specific hierarchy examples as per section 8.1 Installing fall prevention, Guide to Safe Solar Panel Installation or through higher order legislative instruments.
- **Enforce:** continue to enforce higher order controls as part of its business as usual and pro-active compliance approach.

Option 2. Worker protection planning

Many falls from heights incidents occur because the PCBU did not adequately plan for safety, and so the appropriate safety equipment was not made available for workers to work safely at heights. SWNSW currently mandates worker protection planning in the construction industry via the use of a safe work method statement (SWMS) and a WHS management plan. Key to both of these planning documents is for extensive consultation and communication to have been undertaken to ensure that risks are appropriately planned for, and mitigations are in place to secure the safety of workers and others.

A 2019 study by Lingard et al on the effectiveness of the \$250,000 threshold for construction projects requiring a principal contractor with planning duties (the WHS Management Plan) found that organisations deliberately split contracts to avoid being subject to the monetary threshold. They summarised that:

The analysis suggests that (there are) limitations inherent in the use of a monetary threshold to trigger duties relating to OHS planning and coordination in construction works. Opportunities to use more sophisticated risk-based mechanisms are considered.⁴

Safe work method statement findings

In order for these plans to be effective, they need to be operationalised as they were intended. Unfortunately, this is not the case in many instances, where inspectors consistently observe that a SWMS for work at heights is not in place, and if it is, it is not being followed by a significant proportion of sites.

⁴ Getting the balance right: Regulating occupational health and safety planning and coordination in the Australian construction industry. Helen Lingard et al. 2019



Documentation and Consultation

16% of sites didn't have written confirmation that the construction of the scaffold was complete (e.g. no handover or inspection certificate, scaffolding tag).

18% of sites didn't have safe work method statements (SWMS) available for work at heights (above 2 metres).

21% of the sites with a SWMS in place, didn't follow the safe work methods for work at heights (above 2 metres).

12% of sites didn't consult workers for work at height risks.

2021 WAH Blitz inspector observations related to SWMS.

Inspectors observed even poorer planning and practices when it comes to rooftop solar panel installation. During the 2021 rooftop solar blitz inspectors observed that:

- 17% of sites did not have a SWMS for high-risk construction work, including where there was a risk of a person falling more than 2 metres
- Of the sites that did have a SWMS, 28% of the SWMS were not adequate to protect workers
- Of the sites that did have a SWMS, 46% were not following the safety controls outlined in the SWMS.

This inspector blitz data validates our anecdotal inspector observations that a significant number of construction sites do not adequately plan for work at heights safety as they either do not have a SWMS or only have one as a "tick and flick" exercise to satisfy legislative requirements.

Option 2 - Worker Protection Planning

Conduct further research to determine:

- why SWMS and WHS Management Plans are not consistently being operationalised in industry as intended
- if there are opportunities to use alternate risk-based planning instruments, with a focus on falls from heights safety planning and job sequencing.

Option 3. Construction plans/building design

The way and sequence in which a building is constructed can be designed so that workers are protected during the build. Additionally, engineering controls can be added at the design stage, to future-proof the safety of workers when undertaking future maintenance or installation services.

Currently, there are duties within the work health and safety legislation around safe design for designers, clients and principal contractors regarding safe design.

These include:

- **Designers:** Section 22 of the NSW WHS Act requires designers to ensure structures are designed to be safe when used as a workplace during its lifecycle. This includes during construction, use, maintenance, cleaning/repair and eventual demolition.
- **Clients:** [The Code of Practice: Safe Design of Structures](#) refers to a person conducting a business or undertaking (PCBU) who commissions a design, construction work or a construction project as "the client". Section 26 of the WHS Act requires clients to ensure they commission structures that are without risk to health and safety for workers (and others) throughout the lifecycle as a workplace. Additionally, WHS Regulation clauses 294 and 296 requires the client to consult with the designer on eliminating or minimising WHS risks, as well as the principal contractor around health and safety risks of the project.
- **Principal contractors:** The Code of Practice: Safe Design of Structures requires principal contractors to ensure construction work is planned and managed to eliminate or minimise health and safety risks, and to prepare a WHS Management Plan where the value of the construction work is \$250,000 or more.

Historically SWNSW has focused on the role of PBCUs and workers, with relatively limited work undertaken with respect to designers' obligations in the safety of construction workers.

Further, breaches of Sections 22 and 26 of the WHS Act are yet to be tested in the courts for construction matters. There are complexities with the application of the legislation to this sector and how to determine design as a primary factor in construction safety.

When looking at the design aspect of construction, some potential options for consideration for increasing the safety role of designers and building design could include:

- review the WHS legislation to place greater duties against designers for the safe design of buildings or structures during the build and maintenance phases
- amend the National Construction Code 2022 (NCC) or local council approvals to better implement safety considerations during the build phase (e.g. adding anchor points to account for future maintenance work on a roof).
- encourage greater use of off-site manufactured materials which reduce on-site safety risks.

Option 3 - Construction plans/building design

- Further consult with subject matter experts (architects, designers, engineers) regarding the suitability of updating building design instruments and/or industry changes to integrate safety elements that protect against falls from heights into design.
- Continue to collaborate across government agencies such as NSW Fair Trading to enhance enforcement outcomes for WHS, building quality and licensing.

Option 4 - Instruments and guidance material

There are a number of instruments that govern the requirements when working at heights. Some general deficiencies with these instruments include:

- insufficient information regarding how to adequately meet the WHS legislation requirements for working at heights
- conflicting requirements between instruments when it comes to harness use, inconsistent information and/or definitions across instruments/documents.

The table in the following section provides further information on the key instruments and documents that address falls from heights risks for roofs, ladders, scaffolds, edges, voids, penetrations and formwork. Inconsistencies and suggested amendments are outlined in the table below.

Option 4 - Instruments and guidance material

- Amend and update the requirements, definitions and hierarchy order when it comes to restraint-type harness use in AS/NZS1891 Industrial fall-arrest systems and devices- Harnesses and ancillary equipment.
- Amend Part 4.4 of the WHS Regulation and the related Codes of Practice, including competency recommendations.
- Develop practical guidance material on the use of mobile scaffolds, temporary edge protection and harness use.



The primary instruments that could be cited as addressing working at heights in construction in NSW include:

<i>Instrument/document</i>	<i>About the instrument/document</i>	<i>Inconsistencies and/or potential changes required re Working At Heights sections</i>
General falls from heights instruments/documents		
<ul style="list-style-type: none"> AS/NZS1891 Industrial fall-arrest systems and devices Harnesses and ancillary equipment 	<ul style="list-style-type: none"> 1891 Industrial fall-arrest systems and devices 1891.1 Part 1: Harness and ancillary equipment 1891.2 Part 2: Horizontal lifeline and rail systems 1891.2 Suppl Supplement 1: Horizontal lifeline and rail systems— Prescribed configurations for horizontal lifelines 1891.3 Part 3: Fall-arrest devices 1891.4 Part 4: Selection, use and maintenance 	<p>SWNSW suggested amendments:</p> <ul style="list-style-type: none"> AS/NZS1891 Currently under review and will likely go out for public comment in 2023. SafeWork NSW has proposed changes around restraint technique, moving it to the bottom of the hierarchy of control as it relies on human behaviour to work properly. Consider changes to training and competency – currently refers to a heights supervisor, but training does not exist. Possibly have a set of competencies for each level for harness – 1) standard has theory only person, 2) operator or user who is supervised and participates in rescue – know how to inspect their harness and put it on etc, 3) supervisor who supervises others and directs rescue, 4) equipment inspector, 5) height safety manager who designs height safety system for a particular job. Possibly add competency requirements regarding working at heights – that also align to adjusted AS1891 (harness use). Technical changes around correctly calculating fall heights.
Work Health and Safety Regulation 2017	<ul style="list-style-type: none"> Falls - Part 4.4, clauses 78-80 (risk of falling one level to another) Lifts - clause 236 (risk of falling down a lift shaft) High risk construction work – clause 291- (risk of person falling more than 2 metres) Safe Work Method Statements – clauses 299-303 required for high-risk construction work Excavation work – clause 305 (risk of person falling into an excavation) 	<p>SWNSW suggested amendments:</p> <ul style="list-style-type: none"> Part 4.4 requires amendment in regards to where it places restraint and restraint technique on the hierarchy of control, and rescue. Restraint technique is really full restraint technique and the legislation does not differentiate between two types of restraint. All codes would then need to be adjusted to reflect the legislative changes.
Code of practice for managing the risk of falls at workplaces.	Covering duties, designers, risk management process, work on ground or solid construction, fall prevention devices, work positioning systems, fall arrest systems, administrative controls, ladders and emergency procedures for falls.	Nil changes, however, additional more specific guidance materials should be considered

Instrument/document	About the instrument/document	Inconsistencies and/or potential changes required re Working At Heights sections
Code of practice for managing the risk of falls in housing construction.	Covering duties, risk management process, work on ground or solid construction, fall prevention devices, work positioning systems, fall arrest systems, administrative controls, ladders, safe work methods for common tasks and roofing tasks.	SWNSW suggested amendments: <ul style="list-style-type: none"> Does include how to implement falls controls, but overall, this document is lenient on what controls to be implemented. Suggest a review of language used and further clarification on when to use certain controls.
Code of practice construction work	<ul style="list-style-type: none"> Falls from heights are referenced via examples of things that can be done to reduce risk, regarding SWMS, for example on training (e.g., task specific training for a fall arrest system), designer safety report and emergency plan (fall rescue). Falls section defers to below falls COP's for more information. 	Any changes or inconsistencies would support changes to legislation and AS/NZS.
Housing industry site safety pack	General administrative requirements, risk management principles and forms	SWNSW suggested amendments: <ul style="list-style-type: none"> Two minor references to falls. Falls from heights missing in the SWMS section where other harms are called out and explained. Need to add falls references where appropriate.
Guide to safe solar panel installation	Covers ladders and roof work, focussing on the hierarchy of control for falls equipment.	Any changes or inconsistencies would support changes to legislation and AS/NZS.
Predominantly edges, including roofs (falls from heights risks)		
Safe work of roofs - Part 1: commercial and industrial buildings code of practice	Covering consultation and risk management, legislative requirements, hazards and control measures – access, roof edge protection, falls through roof, restraint systems, fall arrest systems, brittle or fragile roof openings, asbestos cement roofs, other risks, PPE.	Due to be reviewed by SWNSW. Note: there is also potential for a re-vamp of SWNSW (Workcover 2004) Safe work on Roofs Part 2 – residential buildings - <i>this code of practice applies to the planning, preparation and conduct of work for the installation, maintenance and removal of roof coverings and the movement of persons working on roofs of residential buildings.</i>
AS/NZS 4994.1.2009 Temporary edge protection - General requirements	Sets out requirements for the design, manufacture and testing of equipment that is intended to provide protection at the roof edge to workers installing, altering, repairing or removing cladding on housing and residential buildings having roof slopes of not more than 35 degrees to the horizontal.	Parts 1, 2 and 3 out for public comment as at May 2023
Predominantly scaffolds (falls from heights risks)		
Scaffold Industry Safety Standard (SISS)	Practical management tools for principal contractors, scaffolders, engineers, and other parties responsible for the provision and safe use of scaffolding.	Nil

Instrument/document	About the instrument/document	Inconsistencies and/or potential changes required re Working At Heights sections
Erecting, altering and dismantling scaffolds	Practical guidance for those erecting, altering and dismantling scaffolding, and for principal contractors, employers, suppliers of scaffolds and others involved in using prefabricated steel modular scaffolding.	Nil
Guide for scaffolds and scaffolding - SafeWork Australia	Information on managing the risks with scaffolds and scaffolding at the workplace.	Nil
Guide for scaffold inspection and maintenance - SafeWork Australia	Information on scaffold maintenance and inspection, including information on certification that a scaffold is safe to use.	Nil
AS/NZS1576 Part 1: Scaffolding – general requirements AS/NZS 1576 Part 6: Metal tube and coupler scaffolding – Deemed to comply AS/NZS4576: Guidelines for scaffolding	This Standard sets out design and operational requirements for scaffolding systems, scaffolding equipment and scaffolds. It includes specifications for catch platforms erected on scaffolds and covers temporary stairways for use on a general construction site.	
Predominantly ladders		
AS 1892.5:2020 Portable ladders Part 5: Selection, safe use and care	This Standard sets out the minimum requirements and recommended safe practices for the selection, use and maintenance of portable ladders. It includes specific recommendations and requirements for ladders predominantly constructed from a particular material i.e. metal, non-metal and timber.	Nil
Predominantly formwork (falls from heights risks)		
Code of practice for formwork	<ul style="list-style-type: none"> Design, falls and common hazards, erecting, altering and stripping/dismantling formwork. 	<ul style="list-style-type: none"> SWNSW currently has a suite of online resources including a dedicated formwork webpage, that contains a Code of Practice for Formwork, videos, PCBU checklist and a working safely on ladders poster. Further practical guidance to be developed aimed at workers and translate the Code of Practice into practical settings and in other languages.

Additional guidance required

Gaps for consideration of integration into existing guidance or the provision of new guidance. SWNSW suggestions include:

- specific falls risks planning, sequencing of work/ trades/materials delivery and consultation/ communication with workers
- guide for harness-based work at heights. Note: Safe Work Australia (SWA) has just written a new [Working at heights: New industrial rope access guide](#)
- how to safely install temporary edge protection
- safety alert, short guide or fact sheet for mobile scaffolds on how to erect them, including two or three major errors
- SWA has a [Tower and mobile scaffolds information sheet](#), however the guide has some gaps. Mobile scaffolds are also referenced in the [General guide for scaffolds and scaffolding work](#).

Consideration could be given to the storytelling of incidents and the specific controls that should have been put in place. This may require a change of legislation due to using authorities to obtain evidence and the confidentiality around that. Whilst there are legal concerns regarding story telling around defamation e.g. punished by law and again by SWNSW through a publication, many prosecutions are already published which may be a contradictory point to any defamation concerns.

Option 5. Training for workers and/or supervisors

Other than the general work health and safety provisions for training in the Work Health and Safety Regulation 2017 (clause 39), there are no specific mandated training or competencies for work at heights currently in NSW.

Clause 39 of the WHS Regulation 2017 states:

A person conducting a business or undertaking must ensure that information, training and instruction provided to a worker is suitable and adequate having regard to —

- a. the nature of the work carried out by the worker, and*
- b. the nature of the risks associated with the work at the time the information, training or instruction is provided, and*
- c. the control measures implemented.*

Considerations

Consideration could be given to mandating training for certain activities, occupations, or sub sectors, that could be delivered in a practical way that is appropriate for this cohort e.g., face-to-face, virtual reality etc. It could be via a set of competencies outlined in legislative instruments, via a unit of competency, or by a course owned and administered by the regulator.



Supporting evidence

A recent court outcome in NSW also supports this notion in the Safework vs Empire Contracting Pty Ltd (2022) NSWDC 437 case where the defendant entered a plea of guilty on 18 July 2022 to a breach of ss 19(1) and 32 of the Act and was fined \$300 000. At the time of the incident, the deceased was in the process of removing timber roof battens and was accessing a ladder. After disconnecting his harness he inadvertently stepped onto friable asbestos roof sheeting and fell approximately 2.5m and suffered fatal injuries. The deceased did not have any qualifications, formal training or extensive experience in working at heights, nor was there any assessment of his competence for working at heights using an individual fall arrest harness.

There has also been some success reported by researchers who looked at the effectiveness of mandatory working at heights safety training in Ontario where in 2020 Robson et al found that:

“the mandatory training standard was effective in reducing the incidence of injuries targeted by the training. However, the effects were modest and did not eliminate the problem. Practical application: A mandatory training standard should be considered as one approach to preventing traumatic injuries. However, other approaches higher in the hierarchy of risk controls should also be considered.”⁵

Additionally, a thesis paper published by R.Kambadur in 2020 by the University of Waikato regarding the effectiveness of work at heights training in New Zealand found that:

“The results imply that VHNZ (Vertical Horizonz) working at heights training is successful in imparting confidence in the workers so that they could stop co-workers from taking risks and therefore reduce injuries and improve the safety record. The results implicate that, for improving the safety record of the employees, it is essential to offer job specific safety training rather than a generic health and safety training. The study results indicate that “refresher training” is essential for the long term retention of the safety knowledge and behaviour.”⁶

A previous study in 2009 by Kaskutas et al focussed on the effectiveness of safety training for young workers and found:

5 Robson et al, 2020, Preventing fall-from-height injuries in construction: Effectiveness of a regulatory training standard

6 Kambadur, 2020, Evaluation of effectiveness of the working at heights training in New Zealand

“Despite participation in a formal apprenticeship program, many apprentices work at heights without adequate preparation and subsequently experience falls. Apprenticeship programs can improve the timing and content of fall prevention training. This study suggests that organizational changes in building practices, mentorship, and safety culture must also occur in order to decrease worker falls from heights.”⁷

Additionally in 2013, Kaskutas et al touted the role of the supervisor in ensuring safe work at heights behaviour as once the foreman have received training the:

“frequency of daily mentoring and toolbox talks increased, and these talks became more interactive and focused on hazardous daily work tasks. Foremen observed their worksites for fall hazards more often. We observed increased compliance with fall protection and decreased unsafe behaviors during worksite audits.”⁸

This option scored the highest by all three streams at the Building and Construction Safety Symposium and Regional Roadshow - the need for a mandatory FFH training regime - noting this was PCBU sentiment and has not had worker consultation or input (see Section 11).

In considering implementation:

- a needs assessment should first be conducted with workers and supervisors, with adult learning principles to emphasize hands-on experiences in a practical and realistic setting
- a set of working at heights competencies be devised to address the primary causes of falls from heights, that are targeted at individual cohorts (e.g. workers and supervisors and or type of work/duration), in addition to other safety framework controls
- a subject matter expert to be engaged to determine the competencies and mode of delivery/training framework
- competencies should be determined in consultation with the Australian Skills Quality Authority (ASQA) before a training timeframe be estimated.

Other considerations:

- any economic impact assessment of introducing competencies and/or training regarding work at heights should be considered via a sliding scale, from least impactful e.g. having a set of competencies added into a code of practice, through to most impactful e.g. mandating face-to-face training with a two year renewal also requiring face-to-face training.
- verification of training and/or an accompanying certification must be embedded into any mandatory training obligations.

7 Fall Prevention in Apprentice Carpenters. Vicki Kaskutas et al. 2009

8 Fall prevention and safety communication training for foremen: report of a pilot project designed to improve residential construction safety. Vicki Kaskutas et al. 2013

Option 5 - Training for workers and/or supervisors

- Explore options with relevant authorities concerning the implementation of mandatory Working at Heights training.

Option 6. Licences/permits

SWNSW licences and/or permits (“permits to work”) are predominantly issued to individuals as proof or evidence that they have been deemed competent in relation to a mandated unit of competency or assessment related to general safety or a specific activity.

For example, SWNSW currently issues the:

- General Construction Induction Card (white card - perpetual) to persons who have been deemed competent against the assessment criteria of CPCWHS1001: Prepare to work safely in the construction industry, or
- A specific class(es) for the National Licence to Perform High Risk Work for persons who have been deemed competent for the relevant unit of competency, including being assessed by a high risk work assessor (every five years for a high risk work licence).

Licences can be used by a regulator to ensure a level playing field in industry and/or to remove individuals who are undertaking undesirable activities through licence demerit points, suspensions or cancellations.

A current example of a building regulator using a demerit point system is the Queensland Building and Construction Commission (QBCC), the statutory body established under the Queensland Building and Construction Commission Act 1991 (QBCC Act). The QBCC issues demerit points against occupational licence holders found to have committed offences against the QBCC Act for defective or non-compliant work including:

- not paying home warranty insurance premiums
- not following QBCC directions to rectify defective or incomplete work
- not paying judgment debts (i.e. debts ordered by a court or tribunal)
- not meeting legislative requirements e.g. licence lending, no contract or excess deposit
- supervision offences
- providing a false and misleading statement or information to the QBCC.

The accumulation of 30 demerit points within a three-year period can lead to a disqualification of a licence for three years. If a licence holder accumulates another 30 points within 10 years of the first disqualification, they will receive a lifetime disqualification. Minor offences will result in auditing or further investigations.

Considerations

Licensing regimes are expensive to administer for both a regulator and industry and general government practices are to only introduce a licence or permit as a final option, if all other avenues of securing industry safety have been exhausted and proven unsuccessful.

Option 6 - Licences/permits

- Mandate the introduction of a licence or permit (with or without demerit points) to work or plan for heights safety
- Attach to a specific competency or set of competencies (e.g., a unit of competency or approved training course) or safety activity (e.g., a work at heights safety plan)
- Attach to an existing safety or occupational licence, such as the white card or occupational licences as administered by other agencies



8. Verification of framework requirements

When considering introducing any framework options that include training and/or a licensing/permit system, governance must ensure that the system is not subject to corruption or misuse, especially if a service (such as training) is outsourced to a provider (such as a training organisation and/or assessor). Additionally, regular auditing and quality assurance will need to be implemented.

The Independent Commission Against Corruption (ICAC) Investigation into safety certification and training in the NSW construction industry (2004) found deliberate and widespread abuse of the competency assessment regulations by accredited assessors and trainers who were accredited to undertake training and/or assessment on behalf of WorkCover NSW (now SWNSW) and provided a number of recommendations to implement in order to mitigate against the corruption of these third party providers. The recommendations were implemented over a number of years, and at great financial and reputational cost to the safety regulator.

Two of the more generalised recommendations about outsourced accreditation/training systems include:

- *That WorkCover NSW conducts a comprehensive corruption risk management plan for its accredited training system. This plan should include probity screening for accredited trainers.*
- *That WorkCover NSW, in conjunction with the Department of Energy, Utilities and Sustainability, develop a monitoring and auditing program to ensure proper adherence to the Code.*

ICACs general advice about agencies verifying the delivery of services to reduce corruptions risks related to [outsourcing](#) include:

- **Perform independent assessments:** random or continuous evaluation of delivery by managers can act as a deterrent to corrupt conduct. In cases of hard-to-quantify services, such as client wellbeing, there may be a need to employ dedicated assessors to verify the quality and quantity of delivery.
- **Specify measures in contracts:** performance indicators regarding both quality and quantity of deliverables can provide incentives to deliver, as well as assistance with monitoring.
- **Monitor the deliverable, not the process:** by focusing on outcomes (for example, competent operators of heavy plant and equipment) rather than on process (for example, monitoring and auditing the conduct of assessments by third-party assessors at pre-arranged times), poor performance could be discovered faster.
- **Evaluate control weaknesses arising from proposed outsourcing arrangements:** the development of a comprehensive risk management framework prior to an agency embarking on a large-scale outsourcing arrangement will help identify weaknesses in the control environment.

Other similar findings of corruption in governmental outsourced training, authorisation and/or accreditation services can be found in the:

- *Report on corruption in the provision and certification of security industry training (2009)*, which states that corruption risks associated with any function for which Government is responsible can never be transferred to the private supplier
- *Investigation into false certifications of heavy vehicle competency-based assessments by a Roads and Maritime Services-accredited assessor (2014)*, which identifies a number of control weaknesses that arose from the outsourcing of heavy vehicle licensing.



9. Overseas learnings

There are a number of countries who have implemented varying work at heights safety regimes including one or more of the five outlined regulatory framework options, where SWNSW could obtain further learnings.

Singapore

Singapore has a complex system in place that uses a number of options in the regulatory toolkit:

- a site-specific Fall Prevention Plan on all worksites. The plan is comprehensive in that it has 10 components covering risk management, policy, safe work procedures, PPE training and emergency response. The Fall Prevention Plan is developed by a competent person and signed off by an authorised manager or other competent persons.
- “permit to work” when a person is at risk of falling more than 3 metres. The “permit to work” must be submitted by the supervisor, endorsed by the work at heights safety assessor and approved by an authorised manager. Currently, the permit to work is only required for a factory environment, but previously it was across industries.
- training - the work at heights supervisor and work at heights safety assessor must be trained and competent at work at heights e.g., by attending the Ministry of ManPower (MOM) WAH course.
- specific hierarchy controls specified in their legislation such as guard rails on open sides in the first instance, handrails on staircases, crawler boards on fragile roof surfaces etc.
- demerit points for sub-contractors who breach the WHS laws – which is published on their website and can lead to a debarment from employing foreign workers for a period of time.

A study undertaken in 2016 on the effectiveness of the Singapore fall prevention plan, concluded that there are concerns about the phenomenon of a “paper exercise”, where documents were created to satisfy safety requirements, but do not meet the intent of management or regulators.

The MOM is also planning further measures to address a rise in workplace incidents during 2022. There were 28 workplace fatalities in the first half of 2022, 10 of which occurred in the construction sector the largest contributor to workplace fatalities with a fatality rate of 2.3, nearly three times the all-sector rate, prompting MOM to introduce a disqualification framework and revised demerit points system for the construction sector, introduced 1 October 2022.

- Disqualification framework – harmonised set of disqualification criteria across all public sector tenders, impacting the ability of contractors with a poor compliance history

- Demerit point system – the threshold for issuing demerit points will be lowered leading to PCBU's who continually breach WHS laws to reach the threshold more swiftly resulting in debarment from hiring foreign workers for up to two years.

Ontario

Ontario introduced FFH training in 2015, which focuses on the safe use of ladders, scaffold and when undertaking roof work.

Between 2015 and 2017, more than 400,000 workers had undertaken the WAH training – which is a similar size to our construction workforce.

The training which leads to a licence/permit output is one day face-to-face initial training with theory and practical components and renewal every two years via a half day face-to-face training.

The training course was developed by the regulator and training providers are approved and monitored by the regulator.

Whilst the training focuses on safe work on roofs, ladders and scaffolds – it has a strong focus on harness use, which is a lower order control in the hierarchy.

Some independent research and analysis of Ontario workers compensation statistics looks promising with a reduction in WC claims for the targeted risks, however, the researchers concluded that a mandatory training standard should be considered as one approach to preventing traumatic injuries. However, other approaches higher in the hierarchy of risk controls should also be considered.⁹

New Zealand

New Zealand is in a growth period, which is still evolving. They are looking at different regulatory models similar to NSW and defer to AS/NZ standards generally. They do, however, include control recommendations in their WAH guidance that are not currently widely encouraged by SafeWork NSW, such as crash mats and netting for residential builds.

⁹ Preventing fall-from-height injuries in construction: Effectiveness of a regulatory training standard. Robson et al. 2019

10. Industry sentiment

The six regulatory framework options, including overseas examples, were presented to primarily tier 1 and 2 industry safety representatives at the 10 May 2022 Building and Construction Safety Symposium, as well as small to medium construction business representatives in the regional roadshow.

Industry sentiment was generally supportive of modifying or introducing additional regulatory or instrument requirements for PCBUs and workers when it comes to working at heights safety.

However, it must be noted that the sentiment by those in attendance tended to avoid taking action at the business and site level, and instead preferenced the transfer of safety obligations and duties back to the regulator and the individual worker in the form of training and licensing, so that there is minimal impact to their business.

Proposal across sub sectors	
WAH Solution	Industry preference
Training	37%
Licence/ Permits	35%
Construction Plans / Design	17%
Hierarchy	9%
Worker Protection Planning	2%

Table 2: Breakdown of tier 1 and 2 construction industry sentiment on preferable working at heights solutions, as collected at the 5 May Construction Symposium.

In consideration of the proposed options a Regulatory Impact Statement (RIS) should be undertaken to ensure that any option or combination of options is 'best practice' regulatory design, and that the costs to implement do not outweigh the expected benefits.

11. Conclusion

While falls from heights has been a sustained and worldwide wicked problem, new approaches need to be considered. This paper presents a suite of options for consideration by regulators and industry.



Appendix A Safework NSW compliance activities

Deterrence vs Prevention: Key activities and initiatives have focused on raising awareness, providing education and advice and undertaking compliance activities, as outlined in the table below. For more information see [Working at heights](#) and [Work safely at heights in construction](#).

Dates	Activities
Nov 2017	On-the-spot fines: For falls risks introduced
Nov 2017 – Nov 2018	On-site verifications: Falls from heights in construction blitz
Nov 2017	Publications: Falls from heights poster and fact sheet
Dec 2017	Advertising campaign: Falls from heights kill (radio)
Mar – June 2018	Advertising campaign: “Safety starts with you”, SafeWork general campaign including voids on construction sites (café screens, social media, digital, radio)
July and Oct 2018	Advertising campaign: Falls from heights kill (digital)
April – June 2019	Advertising campaign: “Safety starts with you”, SafeWork general campaign including safe harness use (print, digital, social media, outdoor advertising such as bus stops)
April – Sept 2019	On-site verifications: Operation Scaff Safe
Oct 2019	On-site verifications: Falls from heights in construction blitz
Oct – Nov 2019	Workshops: TAFE/NECA for electrical apprentices
Oct – Nov 2019	Publication: Pocket guide to construction safety distributed to approx. 50,000 workers including 26,000 TAFE NSW construction apprentices
Mar - June 2020	On-site verifications: Scaff Safe 2020
Sept - Nov 2020	On-site verifications: Working at heights blitz 2020
From June 2020	Geographical blitzes: targeted geographical locations across the state (ongoing)
Mar – July 2020	Research: Working at heights in construction – attitudes, risk perceptions, barriers and influencing activities
Sept 2020	On-the-spot fines: for scaffold risks introduced
From Oct 2020	Supervisor workshops commenced (ongoing)
From Oct 2020	Safety podcasts: Various topics including falls from heights risks (ongoing)
Mar – Dec 2021	On-site verifications: Safe Solar Installation
Mar – June 2021	On-site verifications: Scaff Safe 2021
June - July 2021	Advertising campaign: Working at Heights in Construction (radio, billboards, digital)
June 2021	Publications: toolbox talks on ladder use and scaffold use, roof rail fact sheet
Oct 2021 - Mar 2022	Risk Based Fast Tracked Investigation compliance tool piloted for specific falls related breaches resulting in a recent court outcome August 2022 totaling fines of approx. \$26,670
Sept – Dec 2021	On-site verifications: Working at heights blitz 2021
Feb - May 2022	Advertising campaign: Working at Heights in Construction (radio, billboards, digital)
Apr - June 2022	On-site verifications: Formwork 2022
May 2022	Inaugural Building and Construction Safety Symposium – Focus on Falls from Heights as “wicked issue” in the industry
June 2022 - Dec 2022	On-site verifications: Safe Solar Installation phase 2

Table 3: Key activities and initiatives undertaken by SWNSW Construction Services Group to address falls from heights risks in the construction industry.

Appendix B Glossary

Term	Definition
AS/NZS (Australian and New Zealand Standards)	A standard created jointly by Standards Australia and Standards New Zealand. It was developed by a committee drawn from both countries.
Duty Holder	Any person who owns a work health and safety duty under the WHS Act including a PCBU, a designer, manufacturer, importer, supplier, installer of products or plant used at work (upstream duty holder), officer or a worker.
EU (Enforceable Undertaking)	An enforceable undertaking (also known as a work health and safety (WHS) undertaking), as an alternative to prosecution through the courts (except for category one offences).
Risk of a fall	A circumstance that exposes a worker while at work, or other person while at or in the vicinity of a workplace, to a risk of a fall that is reasonably likely to cause injury to the worker or other person. This includes circumstances in which the worker or other person is: <ul style="list-style-type: none"> – in or on plant or a structure that is at an elevated level – in or on plant that is being used to gain access to an elevated level – in the vicinity of an opening through which a person could fall – in the vicinity of an edge over which a person could fall – on or in the vicinity of a surface through which a person could fall – on or near a slippery, sloping or unstable surface.
HWSA (Heads of Workplace Safety Authorities)	HWSA is made up of representatives from work health and safety regulators across Australia and New Zealand. They work together to promote and implement best practice in work health and safety in the areas of policy and legislative matters, education and enforcement.
PCBU (Person conducting a business or undertaking)	A PCBU includes a: <ul style="list-style-type: none"> – company – unincorporated body or association, and – sole trader or self-employed person. <p>Individuals who are in a partnership that is conducting a business will individually and collectively be a PCBU.</p>
RIS (Regulatory Impact Statement)	High-level summary of the problem being addressed, the options and their associated costs and benefits, the consultation undertaken, and the proposed arrangements for implementation and review.
SME (Subject Matter Expert)	A person who has accumulated great knowledge in a particular field or topic and this level of knowledge is demonstrated by the person's degree, licensure, and/or through years of professional experience with the subject.
WAH	Any working at heights being performed in the workplace that poses a falls risk to the worker, in accordance with WHS law you must protect a worker from falling from one level to another -regardless of the height.
WHS management plan	A WHS management plan is a written plan that sets out the arrangements for managing some site health and safety matters. The intention of a WHS management plan is to ensure the required processes are in place to manage the risks associated with a complex construction project, as there are usually many contractors and subcontractors involved and circumstances can change quickly from day to day. Only required for Construction Projects .
Worker	Any person who carries out work for a PCBU, including work as an employee, contractor or subcontractor (or their employee), self employed person, outworker, apprentice or trainee, work experience student, employee of a labour hire company placed with a 'host employer' or a volunteer.
Workplace	Any place where work is carried out for a business or undertaking and includes any place where a worker goes, or is likely to be, while at work. This may include offices, factories, shops, construction sites, vehicles, ships, aircraft or other mobile structures on land or water.

Appendix C Referenced documents and further reading

Australian standards
<i>AS/NZS1891 Industrial fall-arrest systems and devices Harnesses and ancillary equipment.</i>
AS/NZS 4994.1.2009 Temporary edge protection-General requirements
AS/NZS1576 Part 1: Scaffolding –general requirements
AS/NZS 1576 Part 6: Metal tube and coupler scaffolding –Deemed to comply
AS/NZS4576: Guidelines for scaffolding
AS 1892.5:2020 Portable ladders Part 5: Selection, safe use and care
Safe Work Australia publications
Working at heights: New industrial rope access guide
General guide for scaffolds and scaffolding work
Tower and mobile scaffolds information sheet
SWNSW publications
Scaffold Industry Safety Standard (SISS)
Code of Practice for Formwork
Code of practice for managing the risk of falls at workplaces
Code of practice for managing the risk of falls in housing construction
Code of practice construction work
Housing industry site safety pack
Guide to safe solar panel installation
Findings Report -Safe Rooftop Solar Installation 2021
Safe work of roofs-Part 1: commercial and industrial buildings code of practice

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