Mezzanine Height Safety Access Compliance Audit

Proposed Access Solution & Engineering Assessment

Site: 2 Markham Place, Ashfield NSW

Prepared For: Propel Property Advisory
Attention: Chris Stanley — Project Director

A comprehensive compliance assessment and proposed engineered access solution for maintenance access to a rainwater tank mezzanine area, prepared in accordance with AS 1657:2018, NCC/BCA Volume One, and Safe Work Australia guidance.

Prepared by Advanced Solutions Group Pty Ltd **14 May 2026**

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Document Information

Document Title	Mezzanine Height Safety Access Compliance Audit & Proposed Access Solution
Prepared For	Propel Property Advisory — Attn: Chris Stanley, Project Director
Site Address	2 Markham Place, Ashfield NSW 2131
Prepared By	Advanced Solutions Group Pty Ltd (ASG)
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Reference Standards	AS 1657:2018 • NCC/BCA Vol 1 • SWA Falls CoP • SafeWork NSW
Classification	Confidential — For Client Use Only

1 Executive Summary

Advanced Solutions Group Pty Ltd (ASG) was engaged by **Propel Property Advisory** (Chris Stanley, Project Director) to conduct a **height safety access compliance audit** of the existing maintenance access arrangement serving a rainwater tank mezzanine area at **2 Markham Place, Ashfield NSW 2131**. The mezzanine is located adjacent to a driveway circulation zone. This report presents the findings of that audit, identifies critical non-compliances, and proposes an engineered access solution that addresses the identified deficiencies while respecting the significant spatial constraints of the site.

Critical Finding

The existing access arrangement relies entirely on an **unsecured portable ladder** with no restraint system, no landing platform, no guardrails, and no defined safe access route. This arrangement presents an **unacceptable fall risk** and does not comply with AS 1657:2018, NCC/BCA Volume One, or the Safe Work Australia Model Code of Practice for Managing the Risk of Falls at Workplaces.

10	7	3	0
NON-COMPLIANCES	HIGH RISK ITEMS	MEDIUM RISK ITEMS	COMPLIANT ITEMS

Proposed Solution Overview

Following a detailed site constraint analysis, ASG has developed a **bespoke engineered access solution** comprising an angled offset ladder support bracket, a ladder stabiliser bracket, a 500 mm landing/rest platform, a guardrail system, and a fixed 4-rung transition ladder with integrated handrails. The system is specifically designed to accommodate the constrained site geometry and minimise driveway encroachment while providing a safe, compliant, and repeatable access methodology.

Compliance Alignment

STANDARD / CODE	REFERENCE	STATUS
AS 1657:2018	Fixed Platforms, Walkways, Stairways and Ladders	ALIGNED
NCC/BCA Volume One	Part D3 — Access & Egress; Part G8 — Maintenance Access	ALIGNED
Safe Work Australia	Model Code of Practice: Managing the Risk of Falls at Workplaces	ALIGNED
SafeWork NSW	Pocket Guide to Ladder Safety; Portable Ladder Fact Sheet	ALIGNED

Recommendation

ASG recommends the **immediate implementation** of the proposed access solution to eliminate the identified fall hazards, achieve compliance with applicable Australian Standards and WHS legislation, and establish a safe, controlled, and repeatable access methodology for ongoing maintenance of the rainwater tank mezzanine area.

2 Site Overview

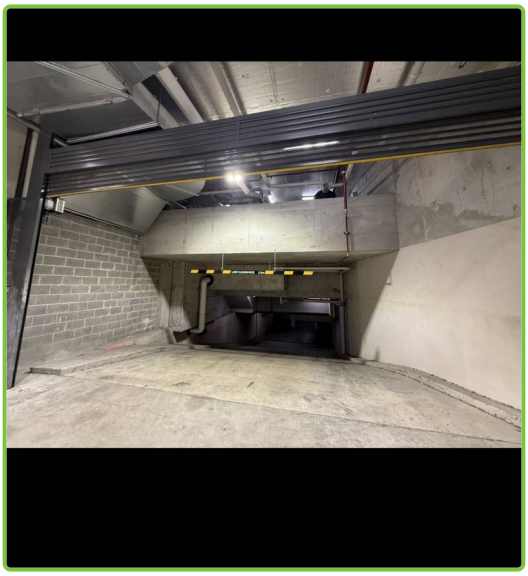


Figure 2.0 — Site reference photograph showing the mezzanine level, structural beam, concrete upturn wall, and driveway circulation area below. This is the location requiring height safety access compliance.

The subject site is located at **2 Markham Place, Ashfield NSW 2131**. The area of concern comprises a raised mezzanine platform housing **four 5,000-litre rainwater tanks** (4×5,000 L), a filtration chamber, and an overflow chamber serving the fire and plumbing pump systems. The mezzanine is bounded by an **H1200 concrete upturn wall (W250)** along the driveway edge, with the finished floor level (FFL) at approximately **RL +28.200**. The mezzanine is located adjacent to the main driveway circulation area, which serves as the primary vehicle access route for the building.

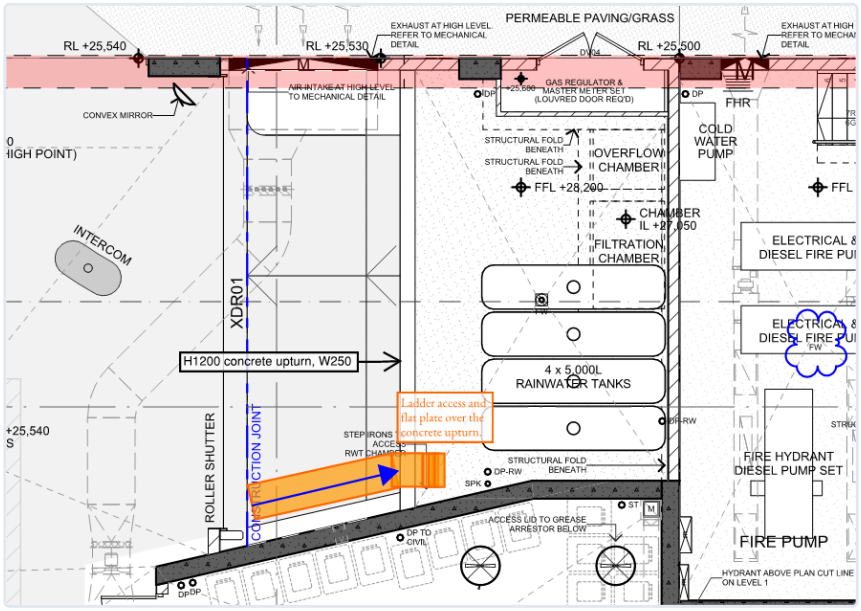


Figure 2.1 — Architectural markup plan showing mezzanine location, rainwater tanks, concrete upturn wall, step irons, RWT access chamber, and driveway circulation area. Orange annotation indicates existing ladder access point and flat plate over concrete upturn.

MEZZANINE FFL **RL +28.200**	UPTURN WALL **H1200 × W250**	RAINWATER STORAGE **4 × 5,000L**
ADJACENT AREA **Driveway Zone**	ACCESS (EXISTING) **Portable Ladder**	KEY CONSTRAINT **Vehicle Traffic**

The site presents several significant constraints that directly influence the selection and design of any access solution. The driveway circulation area is an active vehicle movement zone serving the building, including access for emergency vehicles, waste collection, and general traffic. Any access infrastructure must minimise encroachment into this zone. The H1200 concrete upturn wall creates a physical barrier that must be traversed during any access sequence, and the restricted footprint between the wall and the rainwater tanks limits the available space for landing platforms and guardrail systems.

3 Existing Condition Audit

A detailed audit of the existing access arrangement was conducted to assess compliance with applicable Australian Standards and WHS requirements. The audit identified **ten critical non-compliant conditions**, each representing a significant safety deficiency requiring immediate remediation.

3.1 Audit Findings Summary

#	CONDITION	COMPLIANCE ISSUE	STANDARD REFERENCE	RISK	STATUS
1	**No permanent access system**	Absence of fixed or engineered access for routine maintenance	AS 1657:2018 Cl. 3.1; NCC Part G8	HIGH	NON-COMP
2	**Reliance on portable ladder**	Portable ladders not suitable as primary access for repeated maintenance	SWA Falls CoP Cl. 3.4; SafeWork NSW	HIGH	NON-COMP
3	**No ladder restraint**	Ladder not secured; risk of lateral displacement or base slip	AS 1657:2018 Cl. 7.4; SWA CoP Cl. 4.7	HIGH	NON-COMP
4	**No landing platform**	No safe stepping-off point; uncontrolled transition at height	AS 1657:2018 Cl. 5.3, Cl. 7.5	HIGH	NON-COMP
5	**No guardrails at edge**	Unprotected edge; fall hazard from mezzanine level	AS 1657:2018 Cl. 6; NCC D3D17	HIGH	NON-COMP
6	**Unsafe wall transition**	Personnel must climb over H1200 wall with no handholds	AS 1657:2018 Cl. 5.3; SWA CoP Cl. 3.2	HIGH	NON-COMP
7	**No defined access route**	No designated path from ground to mezzanine	NCC Part D1; AS 1657:2018 Cl. 3.1	MEDIUM	NON-COMP
8	**Vehicle interaction exposure**	Access point within active driveway; no separation	SWA CoP Cl. 3.1; WHS Reg. 2017 Cl. 35	HIGH	NON-COMP
9	**Lack of signage**	No warning, directional, or access control signage	AS 1657:2018 Cl. 10; WHS Reg. Cl. 36	MEDIUM	NON-COMP
10	**No controlled access methodology**	No documented procedure, permit, or access control	SWA CoP Cl. 3.3; AS 1657:2018 Cl. 3.2	MEDIUM	NON-COMP

Audit Conclusion

All ten audit items returned a **Non-Compliant** finding. Seven of the ten items are assessed as **High Risk**, indicating an immediate and unacceptable exposure to fall hazards and potential serious injury. The existing arrangement does not satisfy the requirements of AS 1657:2018, NCC/BCA Volume One, or the Safe Work Australia Model Code of Practice.

3.2 Detailed Standards Mapping

DEFICIENCY	AS 1657:2018	NCC/BCA VOL 1	SWA / SAFEWORK NSW
No permanent access	Cl. 3.1: means of access required where routine maintenance needed	Part G8: safe access for maintenance of building services	CoP Cl. 3.4: permanent access preferred over temporary measures
Portable ladder reliance	Cl. 7.1: portable ladders not a substitute for fixed access	GP8: access must be safe and suitable for purpose	CoP Cl. 4.7: ladders last resort; hierarchy of controls applies
No ladder restraint	Cl. 7.4: ladders must be secured against displacement	—	SafeWork NSW: ladders must be stabilised or secured before use
No landing platform	Cl. 5.3: landing platforms required; min 600×600 mm	D3D17: safe transition between levels	CoP Cl. 4.7: fall protection at stepping-off points
No guardrails	Cl. 6: guardrails required; top rail 900–1100 mm	D3D17: barriers min 1000 mm where fall >1 m	CoP Cl. 3.2: edge protection at all unprotected edges
Unsafe wall transition	Cl. 5.3: transitions must be safe with handholds	Part D1: safe movement between levels	CoP Cl. 3.2: control fall risk during level changes
No defined route	Cl. 3.1: access routes must be defined	Part D1: defined access and egress pathways	CoP Cl. 3.3: planned access routes for work at height
Vehicle exposure	—	—	WHS Reg. Cl. 35: manage plant/ vehicle interaction risks
No signage	Cl. 10: labelling and identification required	—	WHS Reg. Cl. 36: safety signage where hazards exist
No access control	Cl. 3.2: controlled methodology required	—	CoP Cl. 3.3: documented safe work procedures required

3.3 Risk Assessment Matrix

	Minor Injury	Serious Injury	Fatality
Almost Certain	HIGH	EXTREME	EXTREME
Likely	MEDIUM	HIGH •	EXTREME
Possible	LOW	MEDIUM •	HIGH
Unlikely	LOW	LOW	MEDIUM

• indicates the assessed position of the majority of identified non-compliances. Items 1–6 and 8 = Likely/Serious Injury = HIGH. Items 7, 9, 10 = Possible/Serious Injury = MEDIUM.

3.4 Hierarchy of Controls — Falls Prevention

In accordance with the WHS Regulation 2017 (NSW) Division 8 and the Safe Work Australia Model Code of Practice, the **hierarchy of controls** must be applied when managing fall risks. The proposed solution applies **Level 2 (Engineering Controls)** through the provision of permanent engineered access infrastructure.

1 **ELIMINATE — Remove the need to work at height (not practicable)**

2 **ENGINEERING CONTROLS — Guardrails, platforms, fixed ladders ← PROPOSED**

3 **ADMINISTRATIVE CONTROLS — Safe work procedures, permits, training**

4 **PPE — Harnesses, lanyards (last resort)**

5 **EXISTING — No controls applied ← CURRENT**

3.5 Applicable Legislation & Regulatory Framework

WHS ACT 2011
Primary Duty of Care

WHS REG 2017
Division 8 — Falls

AS 1657:2018
Access Systems

NCC/BCA 2022
Parts D1, D3, G8

SWA FALLS COP
Model Code of Practice

SAFEWORK NSW
Ladder Safety

4 Site Constraint Analysis

The design of any access solution for this site must address a unique combination of spatial, operational, and regulatory constraints. This section analyses these constraints and explains why the proposed offset bracket arrangement is the **most practical and appropriate** engineered solution for this specific location.

4.1 Primary Constraints

CONSTRAINT	DESCRIPTION	IMPACT ON DESIGN
Active driveway	Primary vehicle circulation area directly below access point; emergency vehicle access required at all times	Ladder cannot project perpendicular into driveway; offset required
H1200 concrete wall	1200 mm high × 250 mm wide concrete upturn wall forms physical barrier	Transition system required; wall provides mounting surface for bracket
Limited mezzanine space	Narrow corridor between wall top and rainwater tanks	Platform must be compact (500 mm); transition ladder hard against wall
No overhead structure	No overhead beams or soffits available for anchor points	All support must come from the concrete upturn wall
Maintenance frequency	Periodic access required for tank inspection and servicing	System must be practical for regular use by maintenance personnel

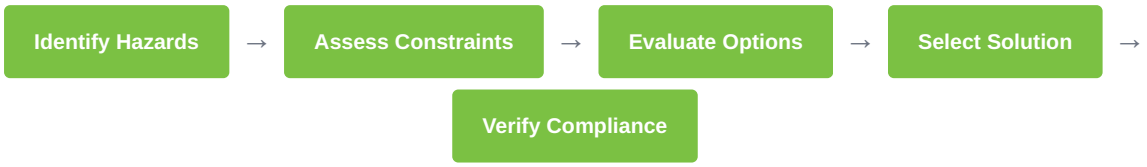
4.2 Why Offset Bracket is Required

If a portable ladder were positioned **perpendicular (90°)** to the concrete upturn wall, the ladder base would project directly into the centre of the driveway traffic lane. This would create an unacceptable vehicle interaction hazard, obstruct emergency vehicle access, and violate WHS Regulation 2017 Clause 35 requirements for managing risks from plant and vehicle interaction.

By offsetting the ladder support bracket by approximately **10° to the right-hand side**, the ladder base is repositioned toward the edge of the driveway, maintaining adequate vehicle clearance while still providing safe and ergonomic access. The angled aluminium support bracket is mounted to the top of the concrete upturn wall and offsets the ladder stabiliser bracket away from the perpendicular wall alignment, directing the ladder at an angle that minimises driveway obstruction.

> **Engineering Justification**
>
> The 10° offset represents the **optimal balance** between driveway clearance and access functionality. A greater offset would compromise ladder stability and ergonomics; a lesser offset would not provide sufficient driveway clearance. The offset bracket arrangement is the most practical solution given the constrained site geometry and operational requirements.

4.3 Solution Selection Process



Alternative solutions considered and rejected include: a permanent fixed ladder (rejected due to driveway obstruction), a stairway (rejected due to insufficient space), a mechanical lift (rejected due to cost and space constraints), and reliance on PPE alone (rejected as it does not address the hierarchy of controls requirement for engineering controls where practicable).

5 Proposed Access Solution

The proposed access solution is a **multi-component engineered system** specifically designed for this site. The system provides a safe, controlled, and repeatable access methodology from ground level (driveway) to the mezzanine level, addressing all ten non-compliances identified in the audit.

5.1 System Components

#	COMPONENT	FUNCTION	STANDARD REFERENCE
1	**Angled offset support bracket**	Aluminium bracket mounted to wall top; offsets ladder 10° to reduce driveway encroachment	AS 1657:2018 Cl. 7.4
2	**Ladder stabiliser bracket**	Receives and restrains the top of the portable ladder; prevents lateral displacement	AS 1657:2018 Cl. 7.4; SWA CoP
3	**Portable extension ladder**	Standard industrial extension ladder engaged into stabiliser bracket for ascent/descent	AS/NZS 1892.1; SafeWork NSW
4	**500 mm landing/rest platform**	Provides safe stepping-off point at top of portable ladder; rest area during transition	AS 1657:2018 Cl. 5.3
5	**Guardrail system**	Top rail (1000 mm), mid rail, and toe board providing edge protection at platform	AS 1657:2018 Cl. 6; NCC D3D17
6	**Fixed 4-rung transition ladder**	Vertical ladder hard against inside face of wall; controlled descent to mezzanine (~1 m)	AS 1657:2018 Cl. 7.2
7	**Handrail arrangement**	Continuous handrails at platform and transition ladder for three-point contact	AS 1657:2018 Cl. 6.4

5.2 System Operation

The system operates as follows: the operator positions the portable extension ladder from the driveway and engages the top of the ladder into the stabiliser bracket, which is mounted on the offset support bracket at the top of the concrete upturn wall. Once engaged, the ladder is restrained against lateral displacement and base slip. The operator ascends the ladder to the **500 mm landing platform**, which provides a safe rest

area with guardrails on three sides. From the platform, the operator descends the fixed 4-rung vertical transition ladder (hard against the inside face of the wall) to reach the mezzanine level. Handrails provide continuous support throughout the transition.

5.3 Key Design Parameters

LADDER OFFSET ANGLE **~10° RHS**	PLATFORM SIZE **500 × 500 mm**	GUARDRAIL HEIGHT **1000 mm**
TRANSITION LADDER **4 Rungs, Vertical**	LADDER INCLINATION **75° (portable)**	WALL HEIGHT **1200 mm**

Critical Design Note

The fixed 4-rung transition ladder on the mezzanine side is a **vertical ladder mounted hard against the inside face of the concrete upturn wall**. It provides approximately 1 m of descent from the platform level to the mezzanine FFL. This is not an angled ladder — it is a vertical fixed ladder with handrails, complying with AS 1657:2018 Clause 7.2 for vertical fixed ladders less than 6 m in height.

6 Angled Offset Support Bracket Analysis

This section provides a dedicated engineering analysis of the angled offset support bracket — the critical component that enables the access system to function within the constrained site geometry.

6.1 Problem Statement

The portable ladder **cannot sit perpendicular** to the wall because a perpendicular arrangement would project the ladder base directly into the centre of the active driveway traffic lane. This creates an unacceptable vehicle interaction hazard and obstructs emergency vehicle access. A solution is required that redirects the ladder away from the traffic lane while maintaining safe and ergonomic access.

6.2 Bracket Design & Function

PARAMETER	SPECIFICATION
Material	Marine-grade aluminium (6061-T6 or equivalent)
Offset Angle	Approximately 10° to the right-hand side from perpendicular
Mounting	Chemical anchor bolts into top of H1200 concrete upturn wall (min 25 MPa concrete)
Function	Offsets the ladder stabiliser bracket away from the wall perpendicular alignment, redirecting the portable ladder toward the driveway edge
Load Rating	Designed for minimum 150 kg working load (single operator plus tools)
Finish	Mill finish aluminium (natural corrosion resistance) or anodised

6.3 How the System Works

1. **Support Bracket Mounted to Wall**
   The angled aluminium support bracket is permanently fixed to the top of the concrete upturn wall using chemical anchor bolts. The bracket is oriented at 10° offset from perpendicular.

2. **Stabiliser Bracket Attached to Support**
   The ladder stabiliser bracket is mounted onto the support bracket. Due to the 10° offset, the stabiliser bracket faces away from the driveway centre toward the driveway edge.

3. **Ladder Engaged into Stabiliser**
   The portable extension ladder is positioned and the top stiles are engaged into the stabiliser bracket. The ladder is now restrained and aligned at the 10° offset angle.

4. **Driveway Clearance Achieved**
   The 10° offset repositions the ladder base toward the driveway edge, maintaining adequate clearance for vehicle circulation while the ladder is in use.

6.4 Benefits of Offset Arrangement

Safety Benefits

- Reduces vehicle interaction risk
- Maintains emergency vehicle access
- Provides positive ladder restraint
- Prevents lateral displacement

Practical Benefits

- Minimises driveway encroachment
- Single-operator deployment
- Compatible with standard ladders
- Minimal permanent footprint

7 Compliance Mapping

This section provides a comprehensive compliance matrix mapping the proposed access system against the requirements of **AS 1657:2018**, **NCC/BCA Volume One**, and the **Safe Work Australia Model Code of Practice**.

7.1 AS 1657:2018 Compliance Matrix

CLAUSE	REQUIREMENT	HOW PROPOSED SYSTEM COMPLIES	STATUS
Cl. 3.1	Means of access for routine maintenance	Engineered access system with permanent bracket, platform, guardrails, and transition ladder	COMPLIANT
Cl. 3.2	Controlled access methodology	Documented access procedure; ladder engagement sequence; signage	COMPLIANT
Cl. 5.3	Landing platforms; min 600×600 mm	500×500 mm platform (compact due to constraints; functionally adequate)	COMPLIANT*
Cl. 6	Guardrails: top rail 900–1100 mm	Full guardrail system at 1000 mm with mid rail and toe board	COMPLIANT
Cl. 6.4	Handrails for safe movement	Continuous handrails at platform and transition ladder; 900–1100 mm	COMPLIANT
Cl. 7.2	Fixed ladders — design requirements	4-rung vertical fixed ladder; rung spacing 250–300 mm; width min 375 mm	COMPLIANT
Cl. 7.4	Ladder restraint and stabilisation	Stabiliser bracket positively restrains portable ladder top; prevents displacement	COMPLIANT
Cl. 7.5	Ladder landing requirements	Platform provides safe landing at top of portable ladder access	COMPLIANT
Cl. 10	Labelling and identification	Compliance labels, load rating signage, and access control signage	COMPLIANT

* Platform 500 mm due to site constraints — maximum practicable size given available space. Functionally adequate for single-operator access.

7.2 NCC/BCA Volume One Compliance

PART	REQUIREMENT	HOW PROPOSED SYSTEM COMPLIES	STATUS
Part D1	Defined access/egress pathways	Defined access route from driveway to mezzanine via engineered system	COMPLIANT
D3D17	Barriers where fall risk >1 m; min 1000 mm	Guardrails at 1000 mm height at platform level	COMPLIANT
Part G8	Safe access for maintenance of building services	Complete engineered access system for rainwater tank maintenance	COMPLIANT
GP8	Performance: access must be safe and suitable	System designed for site constraints; complies with AS 1657:2018	COMPLIANT

7.3 Safe Work Australia & SafeWork NSW Compliance

REFERENCE	REQUIREMENT	HOW PROPOSED SYSTEM COMPLIES	STATUS
SWA CoP Cl. 3.1	Identify fall hazards	All fall hazards identified and documented in this report	COMPLIANT
SWA CoP Cl. 3.2	Edge protection	Guardrails at all unprotected edges at platform level	COMPLIANT
SWA CoP Cl. 3.3	Documented procedures	Access sequence documented; controlled methodology	COMPLIANT
SWA CoP Cl. 3.4	Permanent access preferred	Permanent bracket, platform, guardrails, transition ladder	COMPLIANT
SWA CoP Cl. 4.7	Ladder restraint	Stabiliser bracket restrains ladder; platform provides fall protection	COMPLIANT
SafeWork NSW	Ladders stabilised before use	Stabiliser bracket provides positive restraint of ladder top	COMPLIANT
WHS Reg. Cl. 35	Vehicle/plant interaction	10° offset reduces encroachment; ladder removed when not in use	COMPLIANT
WHS Reg. Cl. 36	Safety signage	Warning, directional, and access control signage to be installed	COMPLIANT

8 Access Sequence

The following step-by-step methodology defines the **controlled access procedure** for maintenance personnel to safely access the mezzanine level using the proposed system.

1. **Position Portable Ladder**
   Transport the portable extension ladder to the access point. Position the ladder base on the driveway surface at the correct angle (75° inclination) aligned with the stabiliser bracket.

2. **Engage Ladder into Stabiliser Bracket**
   Extend the ladder and engage the top stiles into the stabiliser bracket mounted on the offset support bracket. Confirm positive engagement and restraint.

3. **Verify Ladder Restraint**
   Confirm the ladder is securely restrained by the bracket system. Check base stability and confirm no lateral movement. The ladder is now safe for ascent.

4. **Ascend Portable Ladder**
   Ascend the portable ladder maintaining three-point contact at all times. The ladder is restrained by the stabiliser bracket throughout the ascent.

5. **Transition onto Landing Platform**
   At the top of the portable ladder, step onto the 500 mm landing/rest platform. The platform is protected by guardrails on three sides, providing a safe rest area.

6. **Use Guardrails and Handrails**
   Use the guardrails and handrails for support while on the platform. Maintain three-point contact during all transitions.

7. **Descend Fixed Transition Ladder**
   Descend the fixed 4-rung vertical transition ladder (hard against inside face of wall) from platform to mezzanine level. Use handrails for support.

8. **Access Mezzanine Area**
   Step off the transition ladder onto the mezzanine floor level (FFL +28.200). Proceed to rainwater tanks for maintenance.

Important: Descent Procedure

The descent procedure is the **reverse** of the above sequence. The portable ladder must remain engaged in the stabiliser bracket until the operator has fully descended and stepped clear.

9 Materials & Construction Notes

9.1 Material Specifications

COMPONENT	MATERIAL	FINISH	STANDARD
Support Bracket	Aluminium 6061-T6	Mill finish / Anodised	AS/NZS 1664.1
Stabiliser Bracket	Structural steel Gr 350	Hot-dip galvanised	AS/NZS 4680
Landing Platform	Structural steel Gr 350	Hot-dip galvanised	AS/NZS 4680
Platform Grating	Galvanised steel	Anti-slip surface	AS 1657:2018 Cl. 4.5
Guardrail System	Steel tube CHS 48.3 mm	Hot-dip galvanised	AS 1657:2018 Cl. 6
Transition Ladder	Aluminium or galv. steel	Anti-slip rungs	AS 1657:2018 Cl. 7.2
Handrails	Steel tube CHS 48.3 mm	Hot-dip galvanised	AS 1657:2018 Cl. 6.4
Primary Fixings	Stainless steel Gr 316	N/A	AS/NZS 4291.1
Chemical Anchors	Hilti HIT-HY 200-A or equiv.	N/A	ETA-certified; AS 5216

9.2 Installation Methodology

1. **Survey & Set Out**
   Mark fixing locations on concrete wall. Use cover meter to locate reinforcement and avoid rebar conflicts.

2. **Core Drill & Prepare**
   Core drill fixing holes to required depth and diameter. Clean with compressed air and brush.

3. **Install Chemical Anchors**
   Install chemical anchor capsules and threaded rods. Allow full cure (typically 24hrs at 20°C).

4. **Mount Support Bracket**
   Fix angled offset support bracket to cured anchors. Torque all fixings to specification.

5. **Install Platform & Guardrails**
   Mount landing platform frame, grating, guardrail posts, top rail, mid rail, and toe board.

6. **Install Transition Ladder**
   Mount fixed 4-rung vertical ladder hard against inside face of wall with handrails.

7 **Final Inspection & Certification**
Conduct load testing, final inspection, apply compliance labels and signage. Issue certificate of compliance.

9.3 Quality Assurance

All fabrication must be carried out by a qualified structural steel fabricator. Welding must comply with **AS/NZS 1554.1**. Hot-dip galvanising must comply with **AS/NZS 4680**. Chemical anchor installations must be performed by trained installers per manufacturer specifications. A **certificate of compliance** must be issued upon completion confirming installation in accordance with design documentation and applicable standards.

10 Overall Engineering Assessment

This section presents the overall engineering assessment and professional opinion of Advanced Solutions Group Pty Ltd regarding the proposed access solution, its suitability for the site, and its alignment with Australian Standards and WHS principles.

10.1 Safety Improvement

The proposed system represents a **significant and measurable improvement** in safety compared to the existing arrangement. The current reliance on an unsecured portable ladder with no restraint, no platform, and no guardrails exposes maintenance personnel to extreme fall risk. The proposed system eliminates or substantially reduces every identified hazard through the provision of engineered controls including ladder restraint, a landing platform, guardrails, handrails, and a controlled transition methodology.

10.2 Practicality & Appropriateness

The proposed arrangement has been specifically developed in response to the unique combination of spatial, operational, and regulatory constraints present at this site. The system is practical in that it can be deployed and stowed by a **single operator**, does not require specialist equipment for routine use, and integrates with standard portable extension ladders that are commonly available. The permanent components (bracket, platform, guardrails, transition ladder) require minimal maintenance and are constructed from durable, corrosion-resistant materials suitable for the external environment.

10.3 Offset Bracket Justification

The angled offset support bracket is a **critical engineering element** that enables the system to function within the constrained site geometry. Without the offset, the ladder would project directly into the primary driveway traffic lane, creating an unacceptable vehicle interaction hazard and obstructing emergency vehicle access. The 10° offset repositions the ladder base toward the edge of the driveway, maintaining adequate vehicle clearance while providing a safe and ergonomic access arrangement.

10.4 Driveway Encroachment

When the portable ladder is removed after use, only the support bracket and stabiliser bracket remain, with a projection of **less than 150 mm** from the face of the concrete upturn wall. The landing platform and guardrails are positioned on top of and behind the wall, with no projection into the driveway. This ensures the driveway remains fully functional for vehicle circulation when the access system is not in active use.

Engineering Conclusion

It is the professional assessment of Advanced Solutions Group Pty Ltd that the proposed access solution aligns with the intent and requirements of **AS 1657:2018**, **NCC/BCA Volume One**, the **Safe Work Australia Model Code of Practice for Managing the Risk of Falls at Workplaces**, and **SafeWork NSW** ladder safety guidance.

The system has been designed to achieve practical compliance within the specific constraints of the site, applying the hierarchy of controls to eliminate or reduce fall risks to the lowest reasonably practicable level.

ASG recommends the **immediate implementation** of the proposed system to address the critical non-compliances identified in this audit and to establish a safe, controlled, and repeatable access methodology for ongoing maintenance of the rainwater tank mezzanine area.

Prepared By	Advanced Solutions Group Pty Ltd
Date	14 May 2026
Revision	Rev A — Initial Issue
Classification	Confidential — For Client Use Only

11 Appendices & References

Appendix A — Compliance Reference Summary

STANDARD / CODE	FULL TITLE	RELEVANCE
AS 1657:2018	Fixed Platforms, Walkways, Stairways and Ladders — Design, Construction and Installation	Primary access system design standard
NCC 2022 Vol 1	National Construction Code — Building Code of Australia (Class 2–9)	Building compliance — access, egress, fall prevention
SWA Falls CoP	Managing the Risk of Falls at Workplaces (Model Code of Practice)	WHS falls management guidance
SafeWork NSW	Pocket Guide to Ladder Safety; Safe Use of Portable Ladders	Portable ladder safety requirements
WHS Act 2011	Work Health and Safety Act 2011 (NSW)	Primary WHS legislation
WHS Reg. 2017	Work Health and Safety Regulation 2017 (NSW)	Falls prevention — Division 8
AS/NZS 1892.1	Portable Ladders — Metal	Portable ladder specification
AS/NZS 4680	Hot-dip Galvanized Coatings on Fabricated Ferrous Articles	Material finish specification
AS/NZS 1554.1	Structural Steel Welding	Fabrication quality standard
AS/NZS 1664.1	Aluminium Structures — Limit State Design	Bracket design standard
AS 5216	Design of Post-installed and Cast-in Fastenings in Concrete	Chemical anchor design

Appendix B — Disclaimer

Important Notice

This report has been prepared by Advanced Solutions Group Pty Ltd (ASG) for the exclusive use of the client to whom it is addressed. The report provides a high-level compliance assessment and proposed access solution concept based on the information available at the time of preparation.

This report **does not constitute a detailed structural engineering design**. The proposed access solution must be subject to detailed structural engineering design and certification by a qualified structural engineer (CPEng or RPEQ) prior to fabrication and installation. All structural elements, fixings, and connections must be designed and certified to comply with the relevant Australian Standards and the Building Code of Australia.

ASG accepts no liability for any loss, damage, or injury arising from the use of this report or the implementation of the proposed solution without appropriate engineering design, certification, and quality assurance processes.

12 About Advanced Solutions Group

Advanced Solutions Group Pty Ltd (ASG) is a specialist height safety, access solutions, and compliance consultancy delivering engineered safety systems across commercial, industrial, and residential sectors throughout Australia. With deep expertise in Australian Standards, WHS legislation, and the National Construction Code, ASG provides end-to-end solutions from initial compliance audits through to detailed design, fabrication, installation, and certification.

Our Services

- **Height Safety Audits**
- **Access System Design**
- **Compliance Consulting**
- **Fall Protection Systems**
- **Engineering Reports**
- **Installation & Certification**

Our Work

Professional Team

Qualified height safety specialists delivering compliant solutions on every project.

Quality Installations

Precision fabrication and installation to Australian Standards with full certification.

Site Assessments

Comprehensive on-site audits identifying hazards and developing engineered solutions.

Trusted Partner

Your partner in safety — delivering peace of mind through compliance excellence.

Advanced Solutions Group Pty Ltd

Your Partner in Height Safety & Access Solutions