



**ADVENTURE
INDUSTRY
ASSOCIATION**

Technical Skills Guideline: Quad Bikes and Side by sides Vehicle Operation

Approval page

The signatories hereof, being duly authorised thereto, by their signatures hereto authorise the execution of the work detailed herein, or confirm their acceptance of the contents hereof and authorise the implementation/adoption thereof, as the case may be, for and on behalf of the parties represented by them.

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10 July 2026

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1 Introduction

This Skills Guideline forms part of the official South African Adventure Industry Association (SA AIA) Technical Skills Framework.

It defines the minimum competencies, responsibilities, and environmental standards for instructors, facilitators, and guides conducting quad bike and side-by-side training or guided off-road experiences in South Africa.

Applicable Skills/Categories (Linked Activities):

- a. Quad Bike Vehicle Operation
- b. Side-by-Side Vehicle Operation
- c. Off-Road Riding, Driving and Recovery Techniques
- d. Vehicle-Based Adventure Touring and Recreational Training
- e. Quad Bike and Side-by-Side Driver Education

These standards align with the SA AIA Off-Road and Overlanding Chapter curriculum for operating quad bike and side-by-side vehicles in on-road and off-road conditions, and must be read together with the SA AIA Off-road Skills Development Partner and Facilitator Accreditation Requirements document.

2 Scope of Practice

Terrain and Environmental Setting:

Unsurfaced roads, trails and natural terrain, including gravel, sand, riverbeds, mud, grass, rocks, forest tracks, water crossings and other graded off-road terrain where the vehicle, facilitator/guide and participants are operating within the scope of achieved competence.

Vehicle Types:

- a. Adventure quad bikes suitable for off-road use.
- b. Side-by-side vehicles suitable for off-road use.
- c. Vehicles must be used within the manufacturer specifications, site rules and applicable legal, insurance and landowner requirements.

Duration:

Single-day and multi-day learning, riding/driving and guided activities, including theory, practical application and supervised trail use. Multi-day activities must include additional route, emergency, communication, fuel, water, weather and environmental planning appropriate to the operating area.

Client Supervision Ratio:

- a. Training activities – recommended maximum 1 facilitator: 6 learners, unless the risk assessment requires a smaller group.
- b. Guided recreational experiences – recommended maximum 1 guide: 5 client vehicles, unless the risk assessment requires a small group.
- c. Assistant guides or spotters must be used where terrain, visibility, client profile, traffic movement, recovery activity or venue layout requires additional control.
- d. The maximum ratio must be reduced where multiple quad bikes are active at the same time, where learners are inexperienced, where trail grading is higher, or where weather and environmental conditions increase risk.

Typical Group Profile:

Recreational quad bike and side-by-side owners, adventure tourists, adventure tourism operators, venue staff, guides, company or government employees, and other participants who require safe and environmentally responsible competence for off-road vehicle use.

Limitations:

- a. No competitive motorsport, racing, stunt riding, jumping, times events or intentionally aggressive driving.
- b. No operation beyond the achieved competence of the learner, guide, facilitator or group.
- c. No high-risk recovery beyond achieved competence, available equipment and safe recovery procedure.
- d. No operation on public roads unless all legal, licensing, registration, roadworthiness and insurance requirements are met.
- e. No passenger carriage on quad bikes unless the vehicles is specifically designed and approved by the manufacturer for that use.
- f. Side-by-side passengers may only be carried in designated seats and must use fitted seatbelts and safety equipment.
- g. No unsupervised night operations unless specifically risk-assessed, appropriately equipped and within the competence of the guide or facilitator.
- h. Operations are limited to vehicles that are mechanically sound, trail-ready and suitable for the terrain, load and activity being undertaken.

3 Required Technical Skills

The SA AIA Quad Bike and Side-by-Side Vehicle Operation pathway consists of **three progressive levels of training and competence.**

Each level builds on the previous one and is aligned with the SA AIA Off-Road and Overlanding Chapter curriculum.

3.1 Level 1: Introduction to Techniques

Purpose: Establish foundational awareness of quad bike and side-by-side vehicle operation, personal safety, vehicle limitations, basic riding/driving technique and environmental responsibility.

Technical Competencies Summary:

- a. Identify what off-roading is and recognise common off-road terrain, trail grading and basic trail etiquette.
- b. Identify relevant South African legislation, site rules, insurance implications and medical aid considerations associated with off-road riding or driving.
- c. Identify major quad bike and side-by-side vehicle components and describe their basic function.
- d. Identify vehicle capabilities and limitations, including width, height, weight, ground clearance, angles, load, wading depth and stability considerations.
- e. Identify and use appropriate riding gear and personal protective equipment, including helmet, riding boots, gloves, riding clothing and eye protection where required.
- f. Prepare a vehicle for off-road use, including basic visual checks, loose-item management and load security.
- g. Identify correct tyre pressure considerations for the road, trail, terrain, tyre type and vehicle load.
- h. Demonstrate correct rider/driver position, hand position, foot placement and body/weight positioning for basic control.
- i. Demonstrate safe introductory riding/driving through basic obstacles, including ascents, descents, side slopes and cross-axle style terrain as applicable to the vehicle.
- j. Demonstrate controlled braking and an emergency stop appropriate to the vehicle and surface.
- k. Identify basic recovery equipment, safety equipment, tools, tyre pressure equipment, first aid, fire extinguisher and drinking water requirements.

3.2 Level 2: Basic Techniques

Purpose: Develop operational competence for moderate off-road terrain and introduce safe recovery awareness, vehicle configuration, environmental management and structured teamwork.

Technical Competencies Summary:

- a. Identify the configuration and drivetrain of the vehicle, including engine, clutch or transmission, drive components, wheels and relevant off-road aids.
- b. Identify tyres, tyre markings, load and speed ratings, suspension type, vehicle options and the limitations of modifications and accessories.
- c. Conduct pre-use, during-use and post-use inspections before, during and after off-road riding or driving.
- d. Select and use applicable riding/driving modes, traction settings, differential locks or other vehicle aids where fitted.
- e. Demonstrate different riding/driving approaches on-road, gravel and off-road while maintaining safe speed, spacing and control.
- f. Demonstrate correct approach, line choice, throttle control, braking and exit procedures for moderate ascents, descents, side slopes and obstacle negotiation.
- g. Demonstrate descending a failed climb or emergency hill-start recovery procedure where applicable and safe to do so.
- h. Apply weight distribution principles to maintain traction and stability, including body position on quad bikes and load/passenger management in side-by-side vehicles.
- i. Demonstrate braking techniques used to manage vehicle weight transfer and maintain control on varied surfaces.
- j. Identify environmental impacts of off-road riding/driving and apply practical methods to minimise damage.
- k. Identify the recovery triangle, equipment ratings, gloves, communication and safe working areas during recovery activities.
- l. Demonstrate safe basic recovery procedures within the limits of the equipment, vehicle, terrain and facilitator/guide competence.
- m. Identify the use and limitations of emergency tyre repair equipment.

3.3 Level 3: Advanced Techniques

Purpose: Build advanced riding/driving, traction management, recovery and field repair competence for challenging terrain and expedition-style operating environments.

Technical Competencies Summary:

- a. Identify the relationship between torque, traction, wheel slip, centre of gravity and vehicle stability in advanced off-road conditions.
- b. Demonstrate controlled weight transfer and traction management appropriate to quad bikes and side-by-side vehicles.
- c. Demonstrate stopping distances on varied surfaces such as tar, gravel, mud, sand, snow or similar terrain available at the training venue.

- d. Drive or ride correct lines through grade 3 obstacles, including sand, mud, water crossings, rocky terrain and other venue-appropriate obstacles.
- e. Drive or ride grade 4 and 5 obstacles only where the learner, vehicle, facilitator, route and venue are suitable and where the course explicitly includes those obstacles.
- f. Demonstrate advanced braking and steering/weight transfer while maintaining vehicle control.
- g. Identify recovery forces, mechanical loads and the risks associated with failed equipment during recoveries.
- h. Demonstrate recovery safety procedures, communication and the safe use of recovery equipment.
- i. Demonstrate towing of a quad bike or side-by-side using another suitable quad bike or side-by-side, where safe and appropriate.
- j. Demonstrate tyre repair for tubeless tyres and field procedures for removing a wheel and repairing or replacing a tube where applicable.
- k. Demonstrate appropriate self-recovery or assisted recovery from uphill, sand, log, rock or similar obstacles available at the training venue.
- l. Plan and manage an advanced riding/driving activity, including route, weather, communication, emergency response, environmental controls and client supervision.

4 Minimum Safety Standards

Table 1: Minimum Safety Standards

Aspect	Minimum Standard
Guide-to-Client Ratio	Recommended maximum 1:6 for training and 1:5 client vehicles for guided recreational activities, reduced where risk assessment, terrain, learner profile or weather requires stricter supervision.
Vehicle Condition	Mechanically sound, trail-ready and suitable for the activity; brakes, throttle, steering, tyres, controls, drivetrain, lights where needed, battery and safety systems must be checked before use.
Quad Bike PPE	Helmet, riding boots, riding gloves, riding pants and riding shirt or jacket. Eye protection is required where the helmet or conditions do not provide adequate protection.
Side-by-Side Safety	Seatbelts must be worn in all designated seats. Doors/nets, rollover protection, handholds and

	manufacturer safety systems must be used as fitted. Helmets and eye protection must be used where required by risk assessment, venue rules or manufacturer guidance.
Passenger Management	Passengers may only be carried where the vehicle is designed for passengers and activity, terrain and risk assessment allow it. No standing passengers, unsecured passengers or passengers outside designated seating.
Pre-Activity Briefing	Participants must be briefed on PPE, vehicle controls, speed, following distances, trail rules, emergency signals, recovery safety, environmental behaviour and stop/abort criteria.
Recovery Equipment Inspection	Recovery equipment and emergency tools must be checked before and after each activity. Defective equipment must be removed from service and recorded.
Minimum First Aid Level	First Aid Level 1 as a minimum; Level 2 or wilderness-based first aid is encouraged for remote venues or where functioning medical assistance is more than one hour away.
Fire Safety	Fire extinguisher available for the activity and compliant with vehicle/venue risk assessment requirements.
Communication	Two-way radio, cellular coverage or alternative emergency communication must be confirmed. Emergency contact plan must be documented and communicated to staff.
Weather Criteria	Facilitation or guiding must be suspended or modified under lightning, flood, poor visibility, extreme heat, severe wind, wildfire, unsafe water crossing or other severe weather risk.
Incident Reporting	Incidents, near misses, equipment defects and environmental damage must be recorded and reported according to the SDP, operator and SA AIA requirements.

Facilitators and guides must comply with the SA AIA Off-Road and Overlanding Chapter's venue, track and equipment requirements for quad bikes and side-by-sides as contained in the latest accreditation requirements document.

5 Environmental Considerations

Activities must uphold the SA AIA Environmental and Sustainability Policy and responsible off-road use principles.

- a. Stay on designated tracks and approved training areas to prevent erosion, vegetation damage and uncontrolled trail creation.
- b. Observe trail grading, vehicle load limitations, group size and speed controls to protect the environment and other trail users.
- c. Avoid wheel spin, aggressive acceleration, donuts, unnecessary braking damage and repeated attempts that degrade the trail surface.
- d. Use established water crossings only where permitted, safe and environmentally appropriate.
- e. Avoid disturbing wildlife, livestock, cultural heritage sites, neighbouring communities and sensitive ecosystems.
- f. Dispose of waste responsibly and pack out all non-biodegradable items.
- g. Manage fuel, oil, coolant and chemical spills immediately and report spills to the landowner, venue manager or relevant authority as required.
- h. Use open fires only where permitted and ensure they are fully extinguished before departure.
- i. Respect landowner rules, protected area requirements, seasonal closures and route-specific access restrictions.

6 Assessment Criteria

SA AIA's assessment framework distinguishes between trainee competency standards and trainer facilitation responsibilities. Both are aligned with the SA AIA Off-Road and Overlanding Chapter's Quad Bike and Side-by-Side Operating Courses Curriculum.

6.1 Trainee Competency Standards

Trainees must demonstrate that they can safely and confidently perform the following in simulated and real-world conditions appropriate to the applicable level, vehicle type, terrain and trail grade.

6.1.1 Level 1: Introduction to Techniques

Practical Competence Summary

- a. Select and correctly wear required PPE for the activity.
- b. Conduct a basic pre-use and post-use vehicle inspection.
- c. Demonstrate correct rider/driver position, hand position, foot placement and basic body/weight positioning.

- d. Ride or drive introductory terrain and grade 2 obstacles safely under supervision.
- e. Demonstrate safe ascents, descents, side-slope awareness and cross-axle style obstacle approach appropriate to the vehicle.
- f. Demonstrate controlled braking and an emergency stop appropriate to the vehicle and surface.
- g. Demonstrate communication signals when being guided through an obstacle.
- h. Demonstrate basic use of a tyre pressure gauge and air compressor where included in the training event.

Knowledge Competence Summary

- a. Define off-roading and identify common terrain types and trail grading principles.
- b. Identify relevant legislation, site rules, insurance and medical aid implications associated with off-road use.
- c. Identify major vehicle components and describe their basic functions.
- d. State basic vehicle limitations, load considerations and tyre pressure principles.
- e. Identify basic recovery, safety and emergency equipment requirements.
- f. Describe basic environmental care and responsible trail behaviour.

6.1.2 Level 2: Basic Techniques

Practical Competence Summary

- a. Operate a quad bike or side-by-side on moderate terrain with correct speed, spacing, line choice, throttle control and braking.
- b. Select and use applicable vehicle modes and off-road aids where fitted.
- c. Conduct pre-use, during-use and post-use inspections and identify safety-critical defects.
- d. Demonstrate correct procedures for ascents, descents, side slopes and failed climb recovery where safe and applicable.
- e. Apply weight distribution principles to maintain traction and stability.
- f. Demonstrate basic recovery safety, including safe positioning, communication and equipment checks.
- g. Use emergency tyre repair equipment within its limitations where included in the training event.
- h. Apply environmental risk reduction in practical trail use.

Knowledge Competence Summary

- a. Explain relevant vehicle configurations, drivetrain elements, tyres, tyre markings, suspension and vehicle options.

- b. Identify hazards and explain the recovery triangle and safe working areas.
- c. Explain equipment ratings, limitations and the risks of failed recovery equipment.
- d. Describe environmental risk reduction, waste management and trail damage prevention.
- e. Explain communication and teamwork requirements for group riding/driving and recovery activities.

6.1.3 Level 3: Advanced Techniques

Practical Competence Summary

- a. Demonstrate stopping distances and controlled braking on varied terrain and surfaces.
- b. Ride or drive correct lines through advanced obstacles appropriate to the learner, vehicle, route and venue.
- c. Operate on grade 3 terrain as a minimum and grade 4 or 5 terrain only where those obstacles are included and safely achieved during training and assessment.
- d. Demonstrate safe towing, assisted recovery and self-recovery methods appropriate to the vehicle and terrain.
- e. Demonstrate puncture repair for tubeless tyres and wheel/tube procedures where applicable.
- f. Plan and lead a simulated or real advanced activity, including route, weather, communication, emergency response and environmental controls.

Knowledge Competence Summary

- a. Explain torque, traction, wheel slip, centre of gravity and stability considerations.
- b. Explain recovery forces, mechanical loads and risk mitigation for advanced recoveries.
- c. Identify hazards and mitigation strategies for advanced terrain, water crossings, sand, mud, rock, snow or similar conditions.
- d. Identify access, permit, landowner, protected area and public-road compliance requirements that may affect the activity.
- e. Explain advanced activity planning principles, including fuel, load, communication, emergency response and client supervision.

6.1.4 Performance Benchmarks (All Levels)

- a. Minimum 80% pass for theory, oral questioning or written knowledge assessment where used.

- b. Practical tasks completed without unsafe practices, avoidable damage, uncontrolled speed, reckless behaviour or avoidable environmental harm.
- c. Personal protective equipment, environmental requirements and safety protocols observed throughout the training and guided activity.
- d. Professional communication, teamwork and response to instructions demonstrated throughout.
- e. Learner certificates must clearly state the course level, trail grading, terrain types, recovery procedures and equipment used during facilitation and assessment, and whether the certificate reflects attendance or competence.

Learners who achieve all applicable requirements are recognised as **Competent** for the applicable quad bike and side-by-side course level.

6.2 Trainer / Instructor Guidelines

Accredited SA AIA Instructors, Facilitators or Assessors must:

- a. **Plan:** Structure training according to the official SA AIA curriculum modules and ensure that all relevant knowledge, skill and attitude outcomes are covered.
- b. **Risk assess:** Confirm vehicle suitability, learner readiness, venue suitability, trail grading, weather, emergency arrangements and environmental limitations before the activity starts.
- c. **Brief:** Provide a clear safety, environmental, communication and emergency briefing before practical activities.
- d. **Demonstrate:** Model correct techniques before asking learners to perform them.
- e. **Supervise:** Maintain active supervision during practical riding/driving, obstacle work, recovery and repair activities.
- f. **Control movement:** Manage vehicle spacing, stop points, speed, obstacle entry and exit, and recovery exclusion zones.
- g. **Assess:** Use observation checklists, verbal questioning, practical tasks, debriefing and learner products to collect evidence.
- h. **Document:** Record attendance, competence decisions, corrective feedback, incident reports and equipment defects.
- i. **Report:** Provide SA AIA with course results, learner evaluation summaries and any incidents as required.
- j. **Re-mediate:** Provide additional instruction where learners are Not Yet Competent (NYC) and reassess before certification where appropriate.
- k. **Certify:** Issue learner certificates only after attendance or competence requirements are confirmed and in line with SA AIA certificate requirements.

Instructors must hold a valid **SA AIA facilitator or instructor accreditation number**, and training may only be conducted through an accredited **Skills Development Partner (SDP)** or approved training arrangement that meets the SA AIA Off-Road and Overlanding Chapter requirements.

7 Legal and Regulatory Notes

- a. Tourism Act (2014):** Adventure Tourist Guides conducting guided tourist activities must comply with tourist guide registration requirements and relevant provincial registrar processes.
- b. Occupational Health and Safety Act (1993):** Employers, SDPs and operators must maintain appropriate risk management, incident reporting, safe systems of work and emergency response procedures.
- c. National Road Traffic Act (1996):** Where any public road is used, vehicles and operators must comply with applicable licensing, registration, roadworthiness and road traffic requirements.
- d. Protected Areas and Permit Regulations:** Access to protected areas, private land, conservation areas and managed trails requires appropriate permission and compliance with site-specific rules.
- e. Manufacturer and equipment requirements:** Vehicles, PPE and recovery equipment must be used within manufacturer instructions, ratings and limitations.
- f. Insurance and Liability:** SDPs, tour operators, instructors and guides must maintain appropriate personal, public liability and/or business insurance and obtain participant indemnities where required.
- g. SA AIA Accreditation Requirements:** All Skills Development Partners and facilitators must comply with the SA AIA Off-road Skills Development Partner and Facilitator Accreditation Requirements document, latest revision.

8 Applicable Roles

Table 2: Applicable Roles

Role	Description	Supervision Level
Assistant Instructor/Guide	Supports an accredited instructor, facilitator or certified guide during training or guided activities. Assists with group control, demonstrations, spotting, equipment and communication.	Works under direct supervision of an accredited instructor/facilitator or certified guide.

Certified Site-Specific Guide (Quad Bike / Side-by-Side Operator)	Leads a defined quad bike or side-by-side activity within a site-specific scope, graded trail and organisational risk management system. Manages clients, route, safety and environmental controls on site.	Works independently within the defined site scope and organisational policies.
Independent Guide / Overlanding Leader	Plans and manages vehicle-based journeys, including route planning, emergency response, fuel, water, communications, client safety and environmental controls.	Works autonomously within legal, SA AIA and organisational standards.
Instructor / Trainer	Designs, delivers and assesses SA AIA-aligned quad bike and side-by-side training programmes and mentors the development of new guides or facilitators.	Accredited under SA AIA Off-Road and Overlanding Chapter requirements.

9 Annexures

9.1 Annexure A: referenced and applicable documents

9.1.1 Referenced documents

–None.

9.1.2 Applicable documents

- SA SA AIA Operating Adventure Quad Bikes and Side by Sides in Off-road Conditions - Courses Curriculum (latest revision).
- SA AIA Off-road Skills Development Partner and Facilitator Accreditation Requirements (latest revision).
- SA AIA Environmental and Sustainability Policy (latest revision, where applicable).
- Relevant landowner, venue, protected area, insurance and manufacturer requirements applicable to the activity.

9.2 Nondisclosure

SA AIA will not disclose any information contained in accreditation documentation to third parties. The information will only be used internally for the purposes of accreditation, as specified in the relevant SA AIA accreditation requirements document.

9.3 Annexure B: abbreviations

Abbreviation	Description
OEM	Original equipment manufacturer
OHS	Occupational health and safety
POE	Portfolio of evidence
PPE	Personal protective equipment
ROPS	Roll-over protection structure
SA AIA	South African Adventure Industry Association
SDP	Skills development partner
SxS	Side-by-side vehicle

10 Version Control and Review

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