

RIIMPO324A	Conduct civil construction grader operations
Unit descriptor	This unit covers conducting grader operations in the civil construction industry. It includes: planning and preparing; conducting machine pre-operational checks; operating the machine; selecting, removing and fitting attachments; relocating the machine; carrying out machine operator maintenance; and cleaning up.
Employability skills	This unit contains employability skills.
Application of the unit	This unit is appropriate for those working in mobile plant operator roles, at worksites within: <ul style="list-style-type: none"> • Civil construction <p>Operator license issued by OHS authority may be required in some states or territories and graders must be registered to drive and operate on public roads.</p>
Competency field	Mobile Plant Operations

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
1. Plan and prepare	<ol style="list-style-type: none"> 1.1. Access, interpret and apply <i>compliance documentation</i> relevant to <i>grader operations tasks</i> 1.2. Obtain, confirm and apply <i>work instructions</i> to the allotted task 1.3. Obtain, confirm and apply <i>safety requirements</i> to the allotted task 1.4. Resolve coordination requirements with others at the site prior to commencing and during work activities 1.5. Identify, obtain and implement signage requirements from the project traffic management plan 1.6. Select plant, <i>tools and equipment</i> to carry out tasks that are consistent with the requirements of the job, check them for serviceability and rectify or report any faults 1.7. Identify, confirm and apply <i>environmental</i> protection requirements from the project environmental management plan, to the allotted task
2. Conduct machine pre-operational checks	<ol style="list-style-type: none"> 2.1. Carry out <i>pre-start, start-up, park and shutdown procedures</i> 2.2. Recognise and respond to hazardous and emergency situations as required 2.3. Check grader controls and functions, including implements or other attachments, brakes and manoeuvrability for serviceability and rectify or report any faults
3. Operate grader	<ol style="list-style-type: none"> 3.1. Identify site hazards associated with grader operations and use safe operating techniques to minimise risk 3.2. Identify and apply operating techniques for grader to achieve optimum output in accordance with design specifications while achieving specified tolerances 3.3. Operate grader to work instructions
4. Select, remove and fit attachments	<ol style="list-style-type: none"> 4.1. Select <i>attachment</i> for the task 4.2. Remove and fit attachment 4.3. Test attachment to ensure correct fitting and operation

ELEMENT	PERFORMANCE CRITERIA
	4.4. Use attachment in accordance with recommendations and design limits 4.5. Clean and store removed attachments in designated location
5. Relocate the grader	5.1. Move grader safely between worksites, observing relevant codes and traffic management requirements 5.2. Prepare grader for relocation
6. Carry out machine operator maintenance	6.1. Safely park, shutdown and prepare machine for <i>maintenance</i> 6.2. Conduct inspection and fault finding 6.3. Remove and replace defective parts safely and effectively 6.4. Carry out regular programmed maintenance and housekeeping tasks 6.5. Maintain and process records
7. Clean up	7.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 7.2. Clean, check, maintain and store plant, tools and equipment

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct grader operations:

- apply legislative, organisation and site requirements and procedures
- apply site and equipment safety requirements
- apply grader operating techniques related to essential tasks, including:
 - apply cut and fill techniques
 - apply levelling techniques
 - construct drains
 - form and carry a windrow
 - tow equipment/plant
- apply processes for interpreting drawings and sketches
- apply operational, maintenance and basic diagnostic procedures
- apply site isolation and traffic control responsibilities and authorities
- interpret materials safety data sheets and apply materials handling methods
- apply project quality requirements
- use civil construction terminology
- apply methods of changing machine attachments
- apply safe operating techniques in all terrain
- carry out basic earthworks calculations
- apply JSA's/Safe work method statement procedures
- apply diagnostic techniques
- apply operations directing techniques
- apply driving techniques
- apply hazardous goods handling techniques
- interpret plans, reports, maps, specifications
- apply lifting techniques
- organise work tasks
- apply defect reporting requirements

REQUIRED SKILLS AND KNOWLEDGE	
<ul style="list-style-type: none"> • apply safe work practices • use communications equipment • use computer systems • use hand and power tools 	
Required knowledge	
<p>Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct grader operations:</p> <ul style="list-style-type: none"> • site risk control procedures • site and equipment health and safety procedures, including: <ul style="list-style-type: none"> ◦ site isolation and traffic control responsibilities and authorities ◦ materials safety data sheets (MSDS) and materials handling methods ◦ JSA's/Safe work method statement ◦ hazard identification and response procedures ◦ site and project personal protective equipment requirements • site and project environmental requirements and constraints • site and project quality requirements • site and project communication procedures • site operational procedures • civil construction activity sequences of road construction, earthworks and drainage • civil construction terminology • processes for interpreting drawings and sketches • site soil and survey data • basic principles of soil technology for civil works • grader types, characteristics, technical capability and limitations • grader pre-start, start-up, operating and shut-down procedures and techniques • grader and attachment operating techniques related to essential tasks, including: <ul style="list-style-type: none"> ◦ safe operating techniques in all terrain ◦ levelling techniques • operational, maintenance and basic diagnostic procedures • methods of changing machine attachments • site record keeping requirements • basic earthworks calculations 	

RANGE STATEMENT	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
<p>Relevant compliance documentation may include:</p>	<ul style="list-style-type: none"> • legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • codes of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
<p>A grader:</p>	<ul style="list-style-type: none"> • is a self-propelled articulating or rigid framed wheeled machine, designed to cut, move and place construction materials using a centrally mounted blade and may include forward and/or rear mounted

RANGE STATEMENT	
	<ul style="list-style-type: none"> rippers/scarifiers the blade and attachment controls are normally hydraulic; however, they may be mechanical
Grader tasks are to include:	<ul style="list-style-type: none"> cutting and maintaining drains, forming/upgrading/maintaining roads, mixing/spreading materials, scarifying and ripping, cutting and trimming of batters and trimming of road sub-grades and pavements
Grader tasks may include:	<ul style="list-style-type: none"> stripping/spreading topsoil and materials, cutting/boxing, cut and fill
Work instructions may include:	<ul style="list-style-type: none"> plans, specifications, quality requirements and operational details quality requirements may include but not be limited to dimensions, tolerances, standards of work and material standards as detailed in the project drawings, specifications and project documentation to meet client satisfaction soil types and information survey data, including: cut and fill levels, layer thicknesses, finished levels, finished grades and cross-falls
Safety requirements are to be:	<ul style="list-style-type: none"> in accordance with state or territory legislation and regulations, organisational safety policies and procedures, and project safety plan
Safety requirements may include:	<ul style="list-style-type: none"> the site safety plan and organisational policies and procedures protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of fire fighting equipment, use of First Aid equipment, hazard control and hazardous materials and substances personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices safe operating procedures which are to include but not be limited to recognising and preventing hazards associated with underground and overhead services, other machines, personnel, restricted access barriers, traffic control, working at heights, working in proximity to others, worksite visitors and the public safe parking practices which is to include but not be limited to ensuring access ways are clear, equipment/ machinery is away from overhangs and refuelling sites, safe distance from excavations, and secured from unauthorised access or movement hazards and risks may include but not be limited to installed services, damaged or defective pressurised hoses and fastenings, abandoned equipment, adverse weather conditions (electrical storms, floods, fires), chemicals, contaminants, ancillary equipment, fences, holes and pot holes, overhanging rocks, personnel, unsafe ground, unstable

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	<p>faces, vehicles, powerlines, dust and noise, conveyors, overhead services and stored energy which may include: engine components, radiators and cooling systems, hydraulic tanks and reservoirs, air tanks and reservoirs, hydraulic hoses, air hoses, tyres, air conditioning components, electrical components, braking systems, centrifugal forces</p> <ul style="list-style-type: none"> • hazardous and emergency situations, which may include: motor vehicle accidents, lighting strikes (potential tyre explosion) and tyre fires (isolation procedures) • emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping, extinguishing fires, organisational First Aid requirements and evacuation
Tools and equipment are to include:	<ul style="list-style-type: none"> • hand tools and maintenance equipment relevant to the particular grader
Environmental requirements are to include:	<ul style="list-style-type: none"> • organisational/project environmental management plan, waste management, water quality protection, noise, vibration, dust and clean-up management
pre-start, start-up, park and shutdown procedures may include:	<ul style="list-style-type: none"> • external check of the machine • inspection of attachments to ensure security and identify defects • checking of fluid levels (windscreen washer tank, hydraulic oil, coolant, grease, water, engine oil, fuel) • carry out lubrication • checking of display instrumentation and gauges (indicators, gauges, laser levels), computer systems, including: <ul style="list-style-type: none"> ◦ brake air pressure ◦ brake oil temperature ◦ computer indicators ◦ engine oil pressure ◦ fuel filter ◦ parking brake ◦ retarder ◦ service meter ◦ speedometer/odometer ◦ steering filters ◦ tachometer ◦ torque converter ◦ oil temperature ◦ transmission filter ◦ voltmeter ◦ water temperature • inspection of air filter restriction indicator • inspection and checking of cab (horn, lights, air conditioner) • testing of engine and stop engine lights • testing visual and audio warning devices and lights

RANGE STATEMENT	
	<ul style="list-style-type: none"> • checking instruments and control lever • reporting of defects and damage • secure equipment as required by site procedures • render attachments safe • clear access ways
Materials may include:	<ul style="list-style-type: none"> • clays, silts, stone, gravel, mud, rock, sand, topsoil, blended materials, organic materials, typical construction site materials/waste and bituminous mixes • rock types may include metamorphic, igneous and sedimentary
Attachments are to include:	<ul style="list-style-type: none"> • tynes/scarifiers
Attachments may include:	<ul style="list-style-type: none"> • dozer blade, machine guidance system, laser levelling equipment, ripper, slash
Operator maintenance is to include:	<ul style="list-style-type: none"> • cleaning, authorised servicing and the monitoring, recording and reporting of faults. It may also include the conduct of authorised minor replacements and the provision of assistance to maintenance personnel during maintenance and repair activities

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	<p>The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:</p> <ul style="list-style-type: none"> • knowledge of the requirements, procedures and instructions for conducting grader operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of grader operations, including: <ul style="list-style-type: none"> ◦ in a minimum of two different soil types and ◦ to include the mandatory tasks of cutting and maintaining drains, forming/upgrading/maintaining roads, mixing/spreading materials, scarifying and ripping, cutting and trimming of batters and trimming of road sub-grades and pavements • working with others to undertake and complete grader operations that meet all of the required outcomes • consistent timely completion of grader operations that safely, effectively and efficiently meet the required outcomes • laser guidance or ATS are not to be used to assist in control of the machine during assessment
Context of and specific resources for assessment	<ul style="list-style-type: none"> • This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances.

EVIDENCE GUIDE	
	<ul style="list-style-type: none"> • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.
Method of assessment	<p>This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:</p> <ul style="list-style-type: none"> • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: <ul style="list-style-type: none"> ◦ implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes, including: <ul style="list-style-type: none"> - in a minimum of two different soil types, and - to include the mandatory tasks of cutting and maintaining drains, forming/upgrading/maintaining roads, mixing/ spreading materials, scarifying and ripping, cutting and trimming of batters and trimming of road sub-grades and pavements ◦ consistently achieving the required outcomes • first hand testimonial evidence of the candidate's: <ul style="list-style-type: none"> ◦ working with others to undertake and complete grader operations
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.