



TVET SKILLS FOR RENEWABLE ENERGY AND GREEN HYDROGEN IN NAMIBIA

Annexure 9: Heavy Haulage

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ACRONYMS

HRDC	Human Resource Development Centre (NamWater)
GH ₂	Green Hydrogen
ToT	Training of Trainer
TVET	Technical and Vocational Education and Training
NTA	Namibia Training Authority
VTC	Vocational Training Centres
TETA	Transport Education Training Authority (South Africa)
SAQA	South African Qualifications Authority

1.1 Status quo, an overview of the existing training measures and training providers

In Namibia, the profession of a Heavy Haulage Driver differs significantly from that of a Heavy Equipment Operator, even though both roles are part of the construction, transport, and industrial sectors. They often work in similar environments, such as large-scale construction sites or within the mining industry.

A Heavy Haulage Driver is primarily responsible for transporting exceptionally heavy or oversized loads. These transports require specialised vehicles, such as low-bed trailers or modular heavy transporters, that demand a high level of experience and technical understanding. In Namibia, this is usually linked to mining operations—where large machinery is imported via the port of Walvis Bay—as well as to national infrastructure projects.

Drivers in this field need appropriate truck driver's licences and must be well-versed in route planning, road traffic regulations for heavy loads, and the correct securing and handling of cargo. Since routes can be long and often involve police escorts or pilot vehicles, a high degree of concentration and the ability to coordinate with authorities and team members is essential.

In contrast, the profession of a Heavy Equipment Operator focuses on the operation of construction and mining machinery. These professionals operate various machines such as excavators, bulldozers, graders, and large wheel loaders, on construction sites or in mines. Their main task is to carry out construction or earthmoving efficiently and precisely. The work usually takes place on-site, for example, on large construction projects in cities such as Windhoek or Oshakati, as well as in industrial mining areas such as the Rössing or Husab mines.

Heavy Equipment Operators must be proficient in operating and controlling these machines while also capable of performing basic maintenance tasks and safety checks. Technical understanding, physical endurance, and often formal training—such as those offered by Vocational Training Centres (VTCs)—are particularly important in this field.

In summary, a Heavy Haulage Driver is more involved in the logistics sector, focusing on the transport of heavy goods, while a Heavy Equipment Operator is directly engaged in the practical execution of construction or excavation work. Both professions are essential to the success of major industrial and infrastructure projects in Namibia, yet they differ clearly in terms of their responsibilities, work environments, and required qualifications.

In Namibia, the heavy transport sector will be an essential pillar of the green hydrogen (GH₂) economy. Large machines, building materials, and

oversized loads need to be transported over long distances to support infrastructure projects. Despite the expected high demand for qualified drivers for heavy haulage, there is a lack of specific training and further education opportunities in this area.

There are currently no specialised training centres in Namibia that address the requirements of heavy goods transportation. Many drivers learn their skills through practical experience or informal training within companies, which carries risks in terms of road safety, efficiency, and compliance with manufacturer and transport company regulations.

The Namibia Training Authority (NTA), which is responsible for technical and vocational education and training (TVET) in Namibia, has not yet developed any specific training programmes for the basic training of heavy transport drivers. Although there are general truck driver training courses that are not overseen by the NTA, there is a lack of specialised modules for the transportation of oversized or heavy loads. The development of tailor-made programmes in the field of heavy-duty logistics would be an important step towards improving driver qualifications and meeting international standards.

1.2 Stakeholder mapping and analysis for Heavy Haulage

As part of a survey, key stakeholders from industry and training centres were involved to obtain well-founded insights into relevant requirements, challenges, and needs. Data was collected through guided interviews based on a structured set of questions. These questions were developed using the SPSS-based method of Helferich, which includes four main steps: Collecting, Examining, Sorting, and Summarising.

This method ensures a systematic and transparent derivation of the interview content. Mapping of Industrial Stakeholders Namibia is becoming a major player in the renewable energy (RE) and GH₂ sector. Various companies and projects in this field are expected to generate an increased demand for heavy haulage, particularly for the transport of equipment, materials, and products. Below is an overview of relevant stakeholders:

► **Cleanergy Solutions Namibia:** Cleanergy Solutions Namibia is a joint venture between the Namibian Ohlthaver & List Group and the Belgian cleantech company CMB.TECH. The company operates a state-of-the-art 5-megawatt hydrogen pilot plant near Walvis Bay, which produces 200 tonnes of GH₂ annually. This hydrogen is used for local applications, including the harbour, mining, and

transport sectors. The operation of this plant requires the transport of heavy equipment and materials and is expected to increase the need for heavy haulage.

- ▶ **Hyphen Hydrogen Energy:** Hyphen Hydrogen Energy, selected by the Namibian government as its preferred partner for a large-scale hydrogen project, plans to build electrolysis plants with a capacity of three gigawatts and corresponding wind and solar energy plants with a capacity of five gigawatts. The aim is to produce around 300,000 tonnes of GH₂ per year. This project will require extensive heavy goods transport for both the construction and maintenance of the plants.
- ▶ **HDF Energy:** The French company HDF Energy is planning to build a 24-megawatt hydrogen power plant near Swakopmund, including solar plants and a seawater desalination plant. Implementing this project will require the transport of heavy components and materials, further increasing the need for heavy haulage.
- ▶ **Grindrod Limited:** Grindrod Limited is a South African company active in freight logistics, operating container terminals in Walvis Bay, Namibia, among others. With the development of the hydrogen economy in Namibia, Grindrod could play a key role in the transport of heavy equipment and materials for hydrogen projects.
- ▶ **NamWater:** NamWater and the NamWater Human Resource Development Centre (HRDC), which is part of the company, were consulted as part of the survey. The results showed a fundamental interest, but the training centre does not yet have the appropriate equipment and trained trainers for the area under consideration.
- ▶ **NamPower:** NamPower operates its own training centre, which offers defensive driving and heavy equipment operator training. The centre is accredited by the South African Road Safety Education and Training Authority and recognised by Namibia's Ministry of Labour. According to publicly available statements, only NamPower personnel are trained in this area. Despite several attempts, no contact could be established with the responsible persons.

Identified skills needs of industry stakeholders:

- ▶ Specialised training in heavy goods transportation, for example in load securing and special permit requirements.
- ▶ In-depth knowledge of the safe handling of large transport loads and the specific challenges associated with special vehicle dimensions and weights.
- ▶ Practical experience in driving heavy transport loads in order to safely manage complex manoeuvres and behaviour in unusual traffic situations.
- ▶ Operation of vehicle-mounted loading equipment.
- ▶ Basics of special vehicle composition, technology, and the physics of heavy haulage transport.

To sustainably promote the development of safe and efficient heavy haulage in Namibia, the implementation of a Training of Trainers (ToT) programme specifically targeting the core competencies described above is recommended.

At present, there are very few qualified trainers in Namibia with practical experience and specialised know-how in the heavy haulage sector. These are found – if at all – only in mining companies. A structured and centrally organised Training of Trainers (ToT) would create multipliers who could

sustainably transfer knowledge and best practices to local training centres and companies. In this way, capacities would be strengthened in the long term, accidents reduced, and the international competitiveness of Namibian logistics service providers enhanced.



1.3 International Benchmarking with regard to the Heavy Haulage

When conducting training programmes in the field of transport with special vehicles—such as the use of articulated trucks or so-called “tower bridges”—it is essential to consider both national standards and industry-specific requirements. South Africa serves as a prime example of the importance of accreditation and standardisation in training initiatives: there, training programmes must be registered with the Transport Education Training Authority (TETA) and accredited in accordance with the South African Qualifications Authority (SAQA) Unit Standard 123254: Operate a Vehicle Combination.

These regulations ensure that drivers possess not only the necessary theoretical knowledge but also the practical skills to operate complex vehicle combinations safely and efficiently. This is particularly crucial in the transport of special vehicles such as tower bridges, which place heightened demands on driving techniques and safety. Aligning with established standards such as those used in South Africa can therefore serve as an international best practice approach.

Drivers in heavy and special transport require specialised training and additional qualifications, especially for the transport of long goods such as rotor blades and tower segments. This includes special licences, certificates for the transport of dangerous goods, and modular training in accordance with EU Directive 2003/59/EC.

Important knowledge includes the physical characteristics of these transports (e.g. shifts in the centre of gravity, aerodynamic influences) as well as the safe handling of heavy-duty tractor units and trailers, particularly telescopic or steerable trailers. Comprehensive knowledge of axle loads, vehicle types, and their optimum utilisation is also required. Specialised load-securing technology for oversized components is vital in ensuring stability and safety during transportation. Drivers must also be familiar with European regulations, route requirements, and country-specific rules (e.g. escort vehicle obligations, night driving bans).

Experience in route planning — considering bridge loads, curve radii, level crossings, and bottlenecks — is essential, especially for transports exceeding 16.5 m long or with a total weight of 40 t.

The following regulations are decisive for intra-European transport:

- ▶ VDI 2700 Page 1: Securing of loads on road vehicles – Training and contents of training
- ▶ VDI 2700 Page 3.1: Securing of loads on road vehicles – Instruction manual for lashings
- ▶ DIN EN 12195: Load securing on road vehicles
- ▶ EU Directive 2003/59/EC
- ▶ UVV DGUV Regulation 52, §29: Operating authorisation for truck-mounted loader cranes
- ▶ Learning Area 8: Loading of freight, training of professional drivers in Germany

Within Europe and in other countries, drivers in the heavy haulage sector are trained mainly in-house. Certification usually takes place only in specific areas, such as load securing and the operation of self-loading cranes. In addition, few — if any — generic driver training courses are offered in the field of heavy goods transport. One reason for this is that personnel are trained in-house on the specialised systems they use.

1.4 Gap analysis in the Heavy Haulage Qualifications

The heavy haulage industry in Namibia suffers from a significant lack of specialised training opportunities for drivers. Despite the increasing importance of this sector, there are no comprehensive training programmes that prepare drivers for its specific challenges. While general truck driver training programmes exist nationally through NATIS (Namibian Traffic Information System), essential content necessary for the safe and efficient operation of heavy haulage remains absent.

Lack of training content in the area of load securing

Status quo: There are currently no standardised training courses on load securing for transporting heavy goods in Namibia. General truck driver training courses often only include basic knowledge of load securing, which is sufficient for transporting normal goods, but insufficient for the heavy goods sector. Other areas such as crane operation or construction machinery operation were also considered during the survey.

There were no directly transferable overlaps, so this occupational group was not explicitly considered in the subsequent course. Adaptable content was only identified in the area of crane operator training for truck-mounted loader cranes.

Missing content:

- ▶ Load securing techniques for different types of heavy loads.
- ▶ Machine parts and construction machinery: securing with chains, tension belts, stanchions and anti-slip mats.
- ▶ Concrete parts and steel structures: Use of special load securing equipment such as heavy-duty lashing straps and wedges.
- ▶ Transformers and wind turbines: Special transport racks and modular securing systems.
- ▶ Calculation of the required lashing forces and friction coefficient.
- ▶ Use of electronic and mechanical securing systems.
- ▶ Influence of road conditions on load securing.
- ▶ Legal requirements and international standards (e.g. EN 12195, VDI guidelines).

Effects of these shortcomings: Without sound training in load securing, there is an increased risk of accidents, loss of cargo and damage of transported goods. There is also a risk of fines and delays due to inadequately secured loads.

The basics of heavy transport with special vehicles

Status quo: Current truck driver training does not specifically address the use of heavy goods vehicles.

Missing content:

- ▶ Different heavy transport vehicles and their areas of use.
- ▶ Low loader (low bed, semi low loader).
- ▶ Modular vehicles (SPMT – Self-Propelled Modular Transporters).

- ▶ Telescopic trailers for transporting long goods.
- ▶ Structure and function of special vehicles.
- ▶ Hydraulic axle load distribution for even weight distribution.
- ▶ Special drive and steering systems for heavy goods transport.

Effects of these shortcomings: Drivers who work with heavy haulage vehicles without specific training, can cause damage to the vehicle or the load through incorrect operation. The risk of accidents is considerably increased.

Anticipatory Driving and Driving Safety in heavy Transport

Status Quo: Current training courses include general driver safety training but fail to address the specific challenges of heavy transport. As part of the survey, a few training institutions were identified that offer specific training content for the general transport sector. There are currently no training centres in Namibia for the specific area of heavy haulage and not many in South Africa.

Missing content:

- ▶ Assessment of hazards due to road conditions and weather.
- Coordination with escort vehicles and police.
- ▶ Recognising and responding to critical traffic situations involving overly long or overly wide loads.
- ▶ Braking and evasive strategies in emergencies.
- ▶ Optimising fuel consumption through anticipatory driving.

Impact of the lack of content: Accidents due to misjudgements, inefficient driving, and increased fuel consumption.

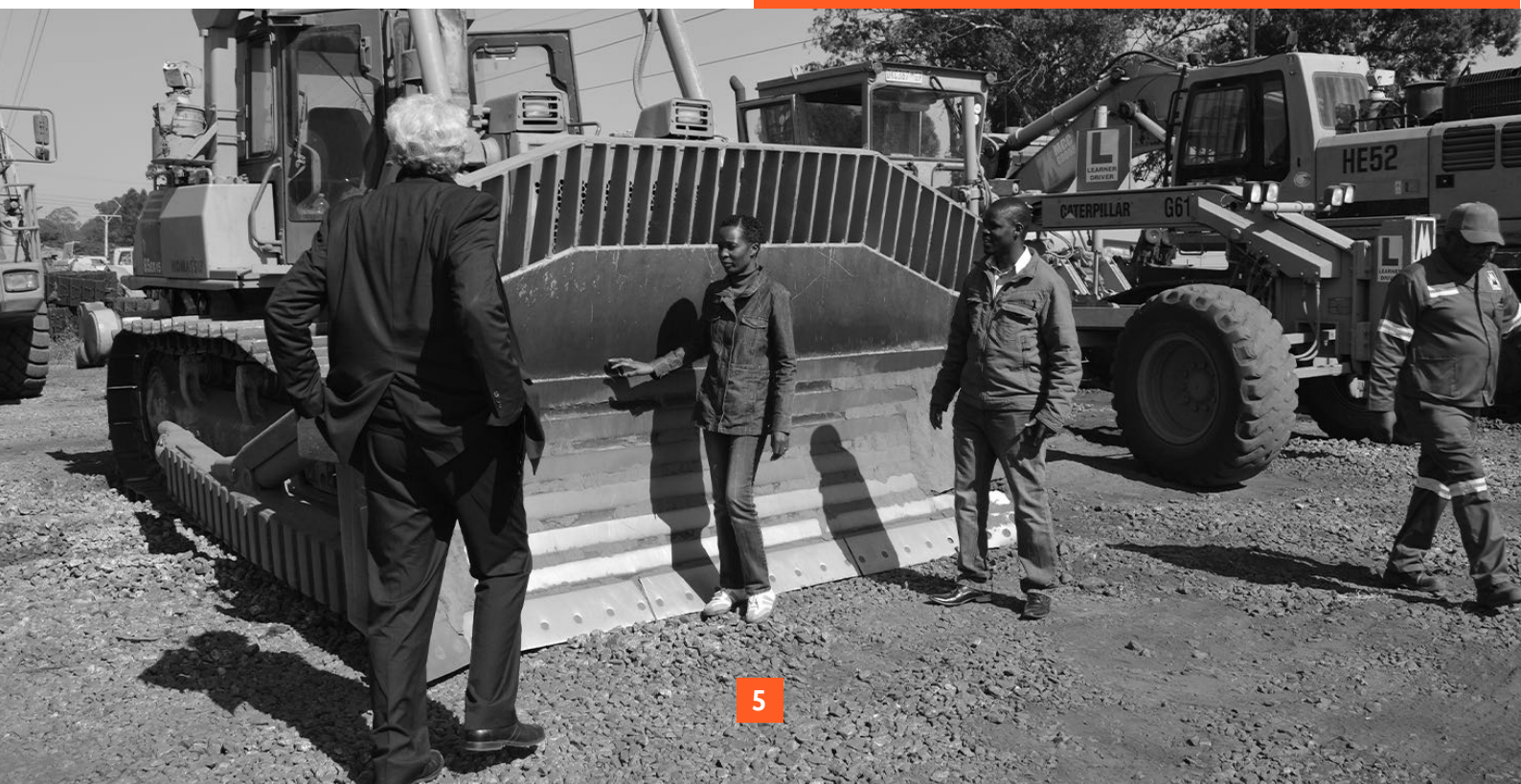
Operating Truck-Mounted Loading Cranes

Status Quo: Truck-mounted loading cranes are frequently used for heavy transport in Namibia, but there is little structured training on safe operation. Training in this area is provided by NamWater, among others. However, this company only trains its own employees.

Missing Content:

- ▶ Basics of the hydraulics and mechanics of loading cranes.
- ▶ Load distribution calculations and vehicle stability during crane operation.
- ▶ Safe working near high-voltage power lines.
- ▶ Emergency procedures in the event of crane malfunctions or hydraulic failure.
- ▶ Legal requirements and safety regulations.

Impact of the Lack in Training: Without training, there is a high risk of accidents due to incorrect crane operation, vehicle tipping, or incorrect load handling.



2

RECOMMENDATIONS FOR TRAINING MEASURES IN THE HEAVY HAULAGE

2.1 Priority 1: Basics of load securing for commercial heavy goods transport

The aim is for course participants to learn the basics of load securing using different securing devices and to be able to apply them in different situations.

Recommended existing upskilling training measures related to the short course: In the field of driver training for load securing, there are currently no comparable national courses.

Course Description: This advanced training course provides specialised knowledge and practical skills for load securing in heavy transport. Participants will learn about legal requirements, physical principles, and various securing methods for different types of cargo. Through hands-on exercises and simulations, they will gain the necessary expertise to transport heavy and oversized loads safely and efficiently.

Course Details

Competencies (Learning Objectives)

Upon completion of the course, participants will be able to:

Understand the fundamentals of load securing:

- ▶ Legal requirements and regulations (EN 12195, VDI guidelines, national regulations)
- ▶ Responsibilities of drivers, loaders, and companies
Apply physical principles:
- ▶ Calculation of friction coefficients, lashing forces, and securing equipment
- ▶ Impact of centrifugal forces, acceleration, and braking distance on the loads

Select appropriate securing methods:

- ▶ Direct and indirect securing (tie-down lashing, diagonal lashing, positive locking)
- ▶ Securing machines, steel structures, concrete elements, and sensitive loads
- ▶ Use of heavy-duty straps, chains, anti-slip mats, and stanchions

Handle special challenges in heavy transport:

- ▶ Securing oversized and overweight loads
- ▶ Adjusting load securing for different road conditions
- ▶ Inspection and re-securing during transit

Perform practical load securing:

- ▶ Proper handling of lashing equipment and anchoring points
- ▶ Load securing inspection and error detection
- ▶ Documentation and proof for submission to authorities and companies

Estimated Duration

- ▶ **Total duration:** 5 days
- ▶ **Theoretical instruction:** 2.5 days (20 hours)
- ▶ **Practical exercises:** 2.5 days (20 hours)

At the end of the course, participants will complete both a theoretical and a practical examination.

Target Audience

This course is designed for:

- ▶ Professional drivers in heavy Haulage
- ▶ Loaders and logistics personnel
- ▶ Employees of heavy transport and construction companies
- ▶ Individuals seeking to expand their expertise in load securing

Certification: Upon successful completion, participants will receive a “Load Securing in heavy Haulage” certificate, confirming their qualification and compliance with legal requirements.

This course contributes to increased safety and efficiency in the heavy haulage sector and helps companies train qualified professionals.

Consideration of existing Unit Standards: The following Namibian Qualification on Transport Operations and Logistics Level 2 to 5 should be considered for the above-mentioned training, as far as their content can be adapted.

Package, load, secure and unload cargo for transportation

▶ Unit number: 2377

▶ Level 2

Follow security procedures when working with cargo

▶ Unit number: 2386

▶ Level 3

Monitor, assess and manage risk

▶ Unit number: 2354

▶ Level 5

Potential capacity-building initiatives

The following requirements apply to conducting a corresponding course: Personnel requirements:

- ▶ Trainers as experts in the field of load securing
- ▶ Experience in course design
- ▶ Experience in designing practical and theoretical course content
- ▶ Basic knowledge of mathematics and physics related to the topic of load securing

Infrastructural and material requirements:

- ▶ Access to load securing models
- ▶ Classroom equipped for conducting theoretical training units
- ▶ Materials (books and worksheets) for conducting relevant training units
- ▶ Access to appropriate vehicles and loads for practical training

Potential partnerships for training measures

Existing infrastructure and training staff from Skillset Namibia can be used for a potential pilot course. This Windhoek-based training and development company has expertise in the field of training and continuing education in the transport sector. Collaboration with DeNa Education creates a symbiosis for professional and technical training. DeNa Education has extensive experience in the training and continuing education of professional drivers.

The focus is on training in the area of load securing in intermodal transport. DeNa Education has extensive experience in the training and continuing education of professional drivers, owning both professional expertise and necessary technical and material resources, including the necessary materials and training resources.

Participants will receive a certificate of participation from the University of Bremen in collaboration with DeNa Education, including a training certificate by VDI 2700a, which is valid for an unlimited period.

2.2 Priority 2: Advanced Training Course: Fundamentals of Heavy Transport with Specialised Vehicles

The aim is for course participants to learn the fundamentals of heavy transport technology, various vehicles, and vehicle combinations. They also learn about specific influences on driving physics and are prepared for the practical application of content learned.

Recommended existing upskilling training measures related to the short course: In the field of driver training for Heavy Transport with Specialised Vehicles, there are currently no comparable national courses.

Course Description: Heavy transport imposes special requirements on drivers and logistics professionals. In this course, participants will learn the fundamentals of transporting oversized and heavy loads using specialised vehicles. The focus is on vehicle types, technical characteristics, legal regulations, and practical driving techniques. Through a combination of theoretical and practical lessons, participants will be thoroughly prepared for the challenges of heavy transport.

Course Details

Competencies (Learning Objectives)

Upon completion of the course, participants will be able to:

Understand the fundamentals of heavy transport:

- ▶ Definition and classification of heavy transport
- ▶ Legal requirements and permit procedures for special transports
- ▶ Responsibilities and collaboration with authorities, escort vehicles, and logistics partners

Identify and correctly utilise specialised vehicles:

- ▶ Types of heavy transport vehicles (low-loaders, modular vehicles, SPMTs, telescopic trailers)
- ▶ Structure, axle configurations, and hydraulic control systems
- ▶ Importance of axle load distribution and load shifts

Plan and execute specialised vehicle operations:

- ▶ Selection of the appropriate vehicle for different transport tasks
- ▶ Calculation of weight distribution and adaptation to road conditions
- ▶ Practical execution of heavy transports considering driving physics and vehicle stability

Apply safe driving techniques:

- ▶ Handling inclines, curves, and narrow road conditions
- ▶ Emergency management in case of technical issues or road obstacles

- ▶ Communication with escort vehicles and traffic safety personnel

Perform practical exercises:

- ▶ Manoeuvring and positioning oversized and overweight loads
- ▶ Operation of hydraulic controls and steering axles
- ▶ Safe handling of braking, drive, and steering system

Estimated Duration

- ▶ Total duration: 5 days
- ▶ Theoretical instruction: 2.5 days (20 hours)
- ▶ Practical exercises: 2.5 days (20 hours)

Target Audience

This course is designed for professional drivers working in or preparing for heavy haulage transport.

Certification: Upon successful completion, participants will receive the "Fundamentals of Heavy Transport with Specialised Vehicles" certificate, confirming their qualification and competency in the safe and efficient transport of heavy loads. This course contributes to increased safety and efficiency in the heavy haulage sector and helps companies train qualified professionals.

Potential capacity-building initiatives

The following requirements apply to conducting a corresponding course:

Personnel requirements:

- ▶ Trainers as experts in the field of load securing
- ▶ Experience in course design
- ▶ Experience in designing practical and theoretical course content
- ▶ Basic knowledge of mechanics and hydraulics related to the topic of heavy haulage with specialised vehicles

Infrastructural and material requirements:

- ▶ Access to heavy haulage equipment
- ▶ Classroom equipped for conducting theoretical training units
- ▶ Materials (books and worksheets) for conducting relevant training units
- ▶ Access to appropriate vehicles

Potential partnerships for training measures

Existing infrastructure and training staff from Skillset Namibia can be used for a potential pilot course. This Windhoek-based training and development company has expertise in the field of training and continuing education in the transport sector. Furthermore, Skillset Namibia has a broad network of companies in the transport industry.

These companies could access appropriate equipment for practical

training through direct consultation. The collaboration with DeNa Education creates a symbiosis of vocational and technical training. DeNa Education has extensive experience in the training and continuing education of professional drivers, owning both professional expertise and necessary technical and material resources, including the necessary materials and training resources.

Participants could receive a certificate of participation from the University of Bremen in collaboration with DeNa Education, including a training certificate valid for an unlimited period.

2.3 Priority 3: Advanced Training Course: Anticipatory Driving and Driving Safety in heavy Haulage

The aim is for course participants to learn proactive driving and how to handle specific vehicle combinations. They can then practice fuel-efficient and wear-reducing driving in real-world conditions.

Recommended existing upskilling training measures related to the short course: A training course on this topic already exists. It could be expanded or adapted to include heavy transport.

Course Description: Heavy transport places high demands on drivers, particularly regarding road safety and defensive driving. This course teaches essential techniques for the safe and efficient operation of heavy transport vehicles. Participants will learn how to anticipate critical traffic situations, respond appropriately, minimise fuel consumption and vehicle wear. Practical exercises with real-life scenarios reinforce theoretical knowledge and prepare participants for challenging transport tasks.

Course Details

Competencies (Learning Objectives)

Upon completion of the course, participants will be able to:

Understand the fundamentals of defensive driving:

- ▶ Importance of foresight and risk assessment in heavy transport
- ▶ Effects of weight, length, and width on driving behaviour
- ▶ Impact of weather conditions, road surfaces, and visibility

Apply safety aspects in heavy transport:

- ▶ Prevent critical situations through proper speed control and braking strategies
- ▶ Use emergency techniques in case of brake failure or technical malfunctions
- ▶ Coordinate with escort vehicles and police for traffic safety

Master driving techniques for challenging situations:

- ▶ Safe driving on narrow roads, bridges, and inclines
- ▶ Braking strategies for different load conditions
- ▶ Optimal use of retarders and engine brakes to reduce main brake wear

Implement efficient and vehicle-friendly driving:

- ▶ Reduce fuel consumption and wear through optimised driving techniques
- ▶ Avoid unnecessary load shifts and sudden braking manoeuvres
- ▶ Utilise driver assistance systems for safe manoeuvres

Train practical road safety techniques in realistic scenarios:

- ▶ Emergency braking with heavy transport vehicles
- ▶ Evasive manoeuvres in case of obstacles
- ▶ Safe navigation through difficult road section.

Estimated Duration

- ▶ Total duration: 3 days
- ▶ Theoretical instruction: 1.5 days (12 hours)
- ▶ Practical driving exercises: 1.5 days (12 hours)

Target Audience

This course is designed for:

- ▶ Professional drivers in the heavy transport sector
- ▶ Heavy transport companies looking to further qualify their drivers

Certification: Upon successful completion, participants will receive the "Defensive Driving and Road Safety in heavy Transport" certificate, confirming their qualification in safe driving techniques and emergency response skills.

Potential capacity-building initiatives

The following requirements apply to conducting a corresponding course:

Personnel requirements:

- ▶ Trainers as experts in the field Anticipatory Driving and Driving Safety in heavy Haulage
- ▶ Experience in course design
- ▶ Experience in designing practical and theoretical course content

Infrastructural and material requirements:

- ▶ Access to heavy haulage equipment
- ▶ Classroom equipped for conducting theoretical training units
- ▶ Materials (books and worksheets) for conducting relevant training units
- ▶ Access to appropriate vehicle

Potential partnerships for training measures

For a potential pilot course, Skillset Namibia's existing infrastructure and training staff could be utilised. This Windhoek-based training and development company has expertise in training and continuing education in the transport sector. Furthermore, Skillset Namibia has a broad network of companies in the transport industry.

These companies could access appropriate equipment for practical training through direct consultation. Participants would receive an established certificate of participation from Skillset Namibia, recognised by the Namibian Ministry of Labour.

2.4 Priority 4: Advanced Training Course: Operation of Truck-Mounted Loading Cranes

The aim of the course is for participants to gain knowledge of how to operate loading cranes, to be able to use this system and to analyse and correct minor errors.

Recommended existing upskilling training measures related to the short course: A training course on this topic already exists. It could be expanded or adapted to include heavy transport.

Course Description: Truck-mounted loading cranes are essential tools in heavy transport, construction, and logistics. Their safe and efficient operation requires specialised knowledge of technology, safety, and load handling. This course provides both theoretical and practical training for the professional use of truck-mounted cranes.

Participants will learn to lift loads safely, control crane movements precisely, and avoid hazards. Hands-on exercises ensure safe handling of various crane models and load scenarios.

Course Details

Competencies (Learning Objectives)

Upon completion of the course, participants will be able to:

Understand the fundamentals of crane operation:

- ▶ Structure and functionality of truck-mounted cranes
- ▶ Hydraulics, control systems, and stabilisation mechanisms
- ▶ Safety regulations and legal requirements for crane operation

Operate loading cranes safely and efficiently:

- ▶ Proper setup and levelling of the vehicle
- ▶ Load lifting, hoisting techniques, and safe unloading
- ▶ Use of crane hooks, grabs, pallet forks, and other attachments

Calculate load limits and stability:

- ▶ Understanding load charts and centre-of-gravity shifts
- ▶ Considering wind, ground conditions, and inclines
- ▶ Preventing tipping and oscillation movements

Apply safety measures and emergency procedures:

- ▶ Identifying and avoiding hazards (e.g., power lines, unstable ground)
- ▶ Handling hydraulic or mechanical malfunctions
- ▶ Communicating with signallers and team members for safe operation

Train in practical crane operation:

- ▶ Performing lifting and setting manoeuvres with various loads
 - ▶ Precise work in confined spaces
 - ▶ Efficient use of remote-control systems for improved handling
- Estimated Duration
- ▶ Total duration: 4 days
 - ▶ Theoretical instruction: 2 days (16 hours)
 - ▶ Practical exercises: 2 days (16 hours)

Target Audience

This course is designed for:

- ▶ Professional drivers operating truck-mounted cranes
- ▶ Construction and logistics personnel working with truck-mounted cranes
- ▶ Technical staff in heavy transport and construction companies

Certification: Upon successful completion, participants will receive the "Operation of Truck-Mounted Loading Cranes" certificate, confirming their expertise in safe crane operation.

Consideration of existing Unit Standards: The following Namibian Qualification for the National Vocational Certificate in Surface Mining and Quarrying (Heavy Plant Operation) will be considered for the above-mentioned training, in so far as the course content can be adapted.

Lift and place loads with truck-mounted crane

- ▶ Unit number: 1120
- ▶ Level 3

Potential capacity-building initiatives

The following requirements apply to conducting a corresponding course:
Personnel requirements:

- ▶ Trainers as experts in the field of operation of truck-mounted loading cranes
- ▶ Experience in course design
- ▶ Experience in designing practical and theoretical course content

Infrastructural and material requirements:

- ▶ Access to truck-mounted loading cranes

- ▶ Classroom equipped for conducting theoretical training units
- ▶ Materials (books and worksheets) for conducting relevant training units
- ▶ Access to appropriate vehicles

Potential partnerships for training measures

Skillset Namibia's existing infrastructure and training staff could be utilised for a potential pilot course. The Windhoek-based training and development company has expertise in training and continuing education in the transport sector.

Skillset regularly conducts operator training courses for truck-mounted loader cranes on behalf of various companies, including NamWater. Furthermore, they are connected to a broad network of companies within the transport industry. These companies could access suitable equipment for practical training via direct consultation.

Participants will receive an established certificate of participation from Skillset Namibia, which is recognised by the Namibian Ministry of Labour.



3

REFERENCED LITERATURE

- ▶ VDI 2700 - Securing of loads on road vehicles
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