

CURRICULUM, TRAINING AND ASSESSMENT GUIDE

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Purpose of Guide

This Guide is designed for WDA's Training Providers (ATOs) and Adult Educators who are responsible for the design and delivery of programs within the **Supervise Workplace Safety and Health in Process Plant** of the Process Industry. This Guide aims to provide essential curriculum, training and assessment design advisory information, to guide developers, trainers and assessment in the interpretation and translation of competency standards into training and assessment programme. The Guide also contains training and assessment requirements stipulated by industry, and WSQ accreditation information for compliance. It is divided into 2 parts:

Part I - Details specific recommendations and advice for **Supervise Workplace Safety and Health in Process Plant** programme developers.

Part II - Provides a broad spectrum of information about WSQ and related components relevant to the **Supervise Workplace Safety and Health in Process Plant**

PART I

WSQ

Supervise Workplace Safety and Health in Process Plant

CHAPTER 1: OVERVIEW OF THE ALL PROCESS SECTORS

This chapter describes the overview and nature of the industry sector, covering the following key components:

1.1 Nature of sector and sub-sectors (if any)

Process Industry Framework

The Process Workforce Skills Qualification System (WSQ) is a competency-based national continuing education and training system designed to facilitate adult learning. It provides career progression pathways and open access for skills upgrading which aims to equip our workforce with the necessary occupational skills to remain competitive and stay ahead of industry developments

1.2 Skills, education profile, nature of employment, typical occupation titles in the sector

Learners will be taught on the practical approach in using various tools, tactics, tips and know-how, contextualised to the needs of different sectors, including building and engineering construction services. Learners will also acquire a deeper skill set as they learn how to match these skills to different situations and have the knowledge and expertise at their disposal.

On completion of this unit, learners will have the knowledge and application skills to carry out hazard identification and risk assessment, comply with the safety and health management system, co-ordinate a permit-to-work system, and carry out safety inspections and investigations.

The job role(s) / occupations that this unit would be relevant to may include the following parties related to / in the process industry:

- Managers
- Supervisors
- Foreman
- Engineers
- Technicians

1.3 Expected attitudes of workers in the sector

Learners are expected to be self-directed, with a mind to acquire skills and knowledge. They should be able to apply the acquired skill & knowledge to carry out hazard identification and risk assessment, comply with the safety and health management system, co-ordinate a permit-to-work system, and carry out safety inspections and investigations

1.4 Work conditions and context of job performance

This section describes the work environment and operation context of the workforce in general. These could include working conditions such as operating under the hot sun, in enclosed work areas, long standing hours, operating of machineries etc.

1.5 Skills gaps and key challenges facing the sector/industry

One of the key challenges in improving the organization's workplace safety & health performance is the unique nature of workplace situations. Most learners will have very little or no knowledge in workplace safety & health in management system, co-ordinate a permit-to-work system, and carry out safety inspections and investigations This programme in this competency category will close the gap and will enable the learner to put in of good use in their work.

CHAPTER 2: Process Industry AND WSQ Supervise Workplace Safety and Health in Process Plant

This chapter describes the overview of the WSQ Framework and its qualifications, covering these components:

2.1 Overview of the Process Industry

The WSQ **Process Industry Framework** is a generic framework that targeted at training and skill-up workers for the process industry as well related industries. The framework comprises common cross-cutting occupational skill sets for operations, supervisory and managerial level workers across all sectors of the industry. Qualifications would be designed to take into consideration needs of the industry as well as progression articulation for workers.

Supervise Workplace Safety and Health in Process Plant is one of the skills that come under the **WSQ Process Industry Framework**. The module belongs to the system category under all process sectors for competency level 3.

2.2 Overview of WSQ Supervise Workplace Safety and Health in Process Plant

This section provides a brief synopsis about the **Supervise Workplace Safety and Health in Process Plant**, how the Supervise Workplace Safety and Health in Process Plant sits within the WSQ Process Framework, the competency units under the Qualification, the WSQ level and the total credit values.

2.3 Key Features of the Supervise Workplace Safety and Health in Process Plant

This section describes the key features or characteristics of the **Supervise Workplace Safety and Health in Process Plant**. This may include features such as practicum component, usage of graded assessment, action-learning project requirement, learning environment etc.

2.4 Importation of Elective Credits from Other WSQ Frameworks or Recognised Equivalents

This section lists and explains the units that are imported from other WSQ frameworks and those units that are recognized as equivalent to the units within the **Supervise Workplace Safety and Health in Process Plant**

2.5 Target Audience

The job role(s) / occupations that this unit would be relevant to may include the following parties related to / in the process industry:

- Supervisor
- Rescue personnel
- Manager
- Company Safety Personnel
- Engineers
- Technician / Operators

2.6 Recommended Learning Hours (RLH) (Mandatory Section)

The recommended Learning Hour for **Supervise Workplace Safety and Health in Process Plant** programme is 32 hours of competency-based Learning and assessment. The recommended Learning duration for the competency unit is illustrated in Table C.

Table C: Competency Unit's Recommended Learning Hours

Competency Units	Recommended Learning Hours	
	Training Delivery Hours:	Assessment Hours:
Supervise Workplace Safety and Health in Process Plant	• 29	• 3

Attendance Requirement: 75% for classroom

WDA acknowledges that different ATOs may adopt different approaches and training methodologies in delivering these programmes and as such the programme duration may vary. Despite the variations in the programme duration, as the Curriculum Developer of these programmes, it is important that you ensure the developed programme meets the general principles of competency-based training delivery and assessment and fulfils all the Performance Criteria / Expectations and Underpinning Knowledge as stipulated in all the competency units.

2.7 Recommended Class Size and Facilitator-Learner Ratio

Room with the capacity for up to 20 candidates for conduct of programme

Room or place to be used must be away from noise or interruptions

The recommend maximum class size and trainer-learner ratio are illustrated as follow:

Competency Unit Title	Class Size (Max)	Trainer to Learner Ratio	
		Lecture	Learning activities
Supervise Workplace Safety and Health in Process Plant	20	1: 20	≤5

2.8 Recommended Assessor to Candidate Ratio

Competency Unit Title	Assessor to Candidate Ratio	
	Written Question	Practical Performance / Group Activity
Supervise Workplace Safety and Health in Process Plant	1: 20	1: 5

CHAPTER 3: TYPES OF PROGRAMME

ATOs has the prerogative to offer programme developed based on only one competency unit (CU) or may wish to develop as an integrated programme as there are correlation with other competency units.

3.1 Programmes with One Competency Unit (Modular)

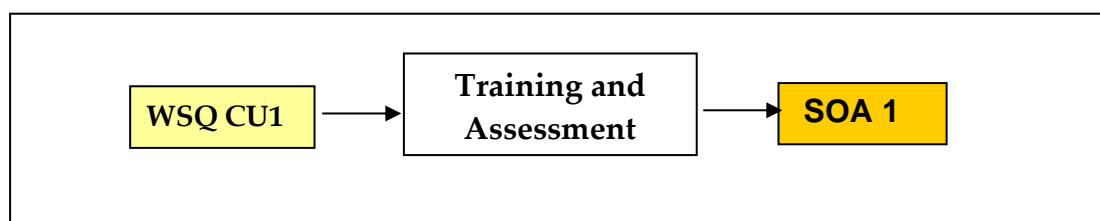
There is one (1)) competency unit offered in the WSQ Process Industry for worker level under the category. The table below shows a summary of the content coverage for the competency unit.

Competency Unit	Descriptor	Competency Element
Supervise Workplace Safety and Health in Process Plant	On completion of this unit, learners will have the knowledge and application skills to carry out hazard identification and risk assessment, comply with the safety and health management system, co-ordinate a permit-to-work system, and carry out safety inspections and investigations	<p>CE1. Identify duties and responsibilities of a Manhole/Confined Space Supervisor under the WSH legislations and Codes of Practice</p> <p>CE2. Identify, prevent and control manhole hazards</p> <p>CE3. Comply with safety and health management system</p> <p>CE4. Follow a permit-to-work system</p> <p>CE5. Conduct safety and health inspection</p> <p>CE6. Conduct incident investigation</p>

3.1 Programmes with One Competency Unit (Modular)

This section offers explanations to ATOs who are keen to offer programmes developed based on only one competency unit (CU). There is little or minimal correlation with other competency units. An illustration (Figure 1) is given below.

Figure 1: Programme with One Competency Unit



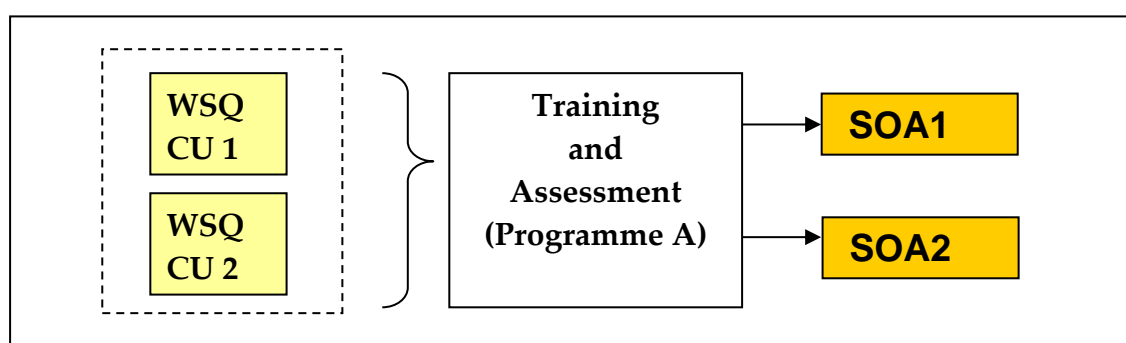
Developers should be discouraged from lifting of competency elements, performance criteria or underpinning knowledge straight from the competency standard and used them as learning outcomes. Developers should first examine what the learner should be able to perform at the workplace upon end of training (learning outcomes), and unpack the competencies to the learning outcomes accordingly.

3.2 Integrated Programme with Multiple Competency Units

In order to meet the needs of the learners, ATOs may want to consider combining two or more competency units into a single integrated curriculum/training programme. The competency units must be selected carefully in order to develop a learning programme that is meaningful and relevant to the learners. Developers should develop integrated programme when there is significant overlap of learning outcomes where integrated programme would normally achieve time-savings for the learners. Specific instructions on how to integrate and when to integrate should be explained in this section.

The sequencing of the learning content need not follow the sequence of competency requirements in the competency standard documents. They may be rearranged within the same or across different competency units as you deem most appropriate for your learners. Nevertheless, the sequencing of learning content should be logical and provide sufficient scaffolding for training to be effective. Learners should not be made to go through the same competency unit again as they progress from one training programme to another once they have acquired the SOA. An illustration (Figure 1) is given below.

Figure 2: Integrated Programme with Two Competency Units



Note: If there are more elaborate or specific guidelines on packaging and integration of programmes, FLD should either include the details here or produce a separate advisory. To indicate so if there is a separate guide.

CHAPTER 4: KEY DELIVERY ADVICE

This chapter describes the following components:

4.1 Content Coverage

In developing the programme for any **Supervise Workplace Safety and Health in Process Plant** competency unit, ATOs should always make cross references to the Performance Statements (PS) or Competency Elements (CE) / Performance Criteria, Underpinning Knowledge (UK), Range of Application and Evidence Sources sections as stipulated in the **Supervise Workplace Safety and Health in Process Plant**

The components of the Competency Standard and the interpretations are briefly explained here.

For example,

The Range and Application and Evidence Sources reference to the Performance Criteria and/or Underpinning Knowledge is usually accompanied by the instructions “may include” or “must include”:

“May include”

- Indicates that training providers are required to cover some **(50 percent)** of the suggested Range and Application items listed when developing the **Supervise Workplace Safety and Health in Process Plant**
- The training provider may choose to add more Range and Application items related to the corresponding Performance Statements/Criteria and/or Underpinning Knowledge as part of their **Supervise Workplace Safety and Health in Process Plant** programme development.

“Must include”

- Indicates that training providers are required to cover all of Range and Application items listed when developing courseware.
- The training provider may choose to add more Range and Application items related to the corresponding Performance Statements/Criteria and/or Underpinning Knowledge as part of their **Supervise Workplace Safety and Health in Process Plant**

(b) Underpinning Knowledge

It is to be noted that "Assumed Attitudes Skills and Knowledge" stipulated in the respective competency unit will not be covered or taught during the delivery of the unit whereas "Underpinning Knowledge" will be.

4.1.1 WSQ Supervise Workplace Safety and Health in Process Plant Contents Coverage:

The content coverage should take into consideration the following:

Competency Elements	Performance Statement/Criteria/Underpinning Knowledge Range and Application and Evidence Sources to be covered
<p>CE1: Comply with workplace safety and health legislations, guidelines and codes of practice and provide inputs for *risk assessment</p> <p>*The Risk Assessment/Management process should consider the management of infectious disease outbreak, employees' health (including mental well-being) and terrorist threats. Training Provider should take reference from the 3rd revision of the Code of Practice on Risk Management.</p>	<ul style="list-style-type: none"> • Performance Criteria <ol style="list-style-type: none"> 1.1. Identify and comply with legislations and regulations relevant to oil / petrochemical industry when carrying out duties and responsibilities of a supervisor 1.2. Perform the roles and responsibilities of the supervisors to ensure workplace safety and health 1.3. Conduct job safety analysis for a job or task 1.4. Identify safety and health hazards associated with the job or task 1.5. Evaluate level of risks involved in identified hazards 1.6. Develop ways to eliminate / mitigate hazards identified in accordance with risk management regulations 1.7. Co-ordinate measures to control risks according to organisation's procedures 1.8. Complete a risk assessment form 1.9. Communicate risks to stakeholders according to organisation's procedures • Underpinning Knowledge <p>A competent individual should be equipped with the following knowledge:</p> <ul style="list-style-type: none"> • Legal requirements of Workplace Safety and Health Act (WSHA) <ul style="list-style-type: none"> - Guiding principles of WSHA - Stakeholders under WSHA and their legal obligations - General penalties for offences • Key subsidiary legislations, regulations and codes of practice • Roles and duties of an oil/petrochemical supervisor in safety and health • WSH (Risk Management) Regulations 2006 • Risk management process • Methods to identify hazards • Technique to evaluate risks • Methods to control risks – hierarchy of controls • Pitfalls of risk assessments • The need for regular review of risk assessment and control measures • Importance of record keeping in risk management

- Importance of communicating risks to stakeholders

Range of Application:

Key subsidiary legislations may include but is not limited to:

- WSH (General Provisions) Regulations
- WSH (Incident Reporting) Regulations
- WSH (First Aid) Regulations
- WSH (WSH Committees) Regulations
- WSH (Scaffolds) Regulations
- WSH (Operation of Cranes) Regulations
- WSH (Explosive Powered Tools) Regulations
- WSH (Medical Examinations) Regulations
- WSH (Confine spaces) Regulations
- Working at Height

Relevant Codes of practice may include but is not limited to:

- SS568:2011
- Workplace Safety and Health (WSH) Risk Management
- Working Safely at Height
- Safe Lifting Operations in the Workplaces

Other relevant factories regulations may include but is not limited to:

- Factories (Asbestos) Regulations
- Factories (Persons-in-charge) Regulations

Roles and duties of oil / petrochemical supervisor in safety and health may include but is not limited to:

- Ensuring worker uses suitable and adequate personal protective equipment
- Ensuring equipment, materials and personal protective devices are maintained in good condition
- Advising workers of potential and actual hazards and control measures
- Taking reasonable precaution to protect the safety and health of workers
- Implementing and monitoring safe work conditions
- Implementing safe work practices and monitoring for compliance
- Ensuring proper control and storage of hazardous materials
- Ensuring workplace injury and accident are promptly reported and attended to

Risk management process may include but is not limited to:

- Identifying likely hazards at workplace
- Evaluating probability / likelihood of risk occurrence
- Assessing consequences of injury or illness arising from exposure to identified hazard
- Determining appropriate measures for risk control
- Implementing risk control measures

Methods to identify hazards associated with work may include but is limited to:

- Job safety analysis (JSA)
- Hazard and operability analysis (HAZOP)

	<ul style="list-style-type: none"> • 'What-if' analysis <p>Techniques to evaluate risks may include but is not limited to:</p> <ul style="list-style-type: none"> • Analysing consequences of hazards identified and the risks involved • Classifying risks into categories of severity • Categorising risks in terms of likelihood of occurrence <p>Methods to control risks may include but is not limited to:</p> <ul style="list-style-type: none"> • Elimination • Substitution • Engineering control • Administrative measures • Use of personal protective equipment <p>Importance of communicating risks to stakeholders may include but is not limited to:</p> <ul style="list-style-type: none"> • Ensuring compliance with safety and health legislations and guidelines • Impact on performance • Obtaining 'buy-in' from relevant stakeholders <p>Implementing risk control measures may include but is not limited to:</p> <ul style="list-style-type: none"> • Monitoring effectiveness of risk control measures • Maintaining proper documentation for risk management • Reviewing risk assessment regularly • Making adjustments to risk control measures, if necessary <p>Interactions with people, which may include but is not limited to:</p> <ul style="list-style-type: none"> • Co-workers • Foreman • Supervisors • Engineers • Manager • Owners and owner representatives • Equipment Vendor / Suppliers • Sub-contractors <p>Frequency</p> <ul style="list-style-type: none"> • Regularly <p>Criticality</p> <ul style="list-style-type: none"> • Critical <p><u>Process evidence:</u></p> <ol style="list-style-type: none"> 1. Identifying legislations and regulations relevant to oil / petrochemical industry 2. Complying with relevant legislations and regulations when carrying out duties and responsibilities of a supervisor 3. Perform work safely in accordance with the roles and responsibilities of the supervisors 4. Conduct a job safety analysis 5. Identifying safety and health hazards associated with work
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	<ol style="list-style-type: none"> 6. Evaluating level of risks involved in identified hazards 7. Identifying ways to eliminate / mitigate hazards identified in accordance with risk management regulations 8. Implementing risk control measures according to organisation's procedures 9. Communicating risks to stakeholders <p><u>Knowledge evidence (Verbal/Written Questioning):</u></p> <ol style="list-style-type: none"> 1. Legal requirements of Workplace Safety and Health (WSH) Act 2. Key subsidiary legislations 3. Give three major roles and responsibilities of an oil / petrochemical supervisor in safety and health 4. State the major provisions of the WSH (Risk Management) Regulations 2006 5. List the risk management process 6. List the common methods to identify hazards 7. List the techniques to evaluate risks 8. State the methods to control risks – Hierarchy of controls 9. State the Importance of communicating risks to stakeholders 10. List the procedures to implement risk control measures 11. State the importance of record keeping in risk management 12. List the contents to be communicated to stakeholders
<p>CE2: Identify hazards and control measures</p>	<ul style="list-style-type: none"> • Performance Criteria <ol style="list-style-type: none"> 2.1 Anticipate and identify types of hazards that are likely to occur in the workplace 2.2 Assess hazards identified to determine their consequences and risks involved 2.3 Identify gaps or shortfalls in workplace conditions and practices against existing control measures in according with organizational procedures 2.4 Identify control measures to minimize safety risks arising from hazards 2.5 Monitor the implementation of control measures in accordance with organizational procedures <ul style="list-style-type: none"> • Underpinning Knowledge <p>A competent individual should be equipped with the following knowledge:</p> <p><u>General Safety and Health</u></p> <ul style="list-style-type: none"> • Safe means of access and egress • Hazards of working at height • Measures to prevent falls • Safe use of scaffolds and ladders • Housekeeping practices <p><u>Fire and Explosion Prevention</u></p> <ul style="list-style-type: none"> • Chemistry of fire – Fire Triangle • Types of combustible materials (Fuel) • Sources of ignition (Heat) • Classification of fires • Methods to extinguish fire

- Types of Explosions

Safe Work Practices in Confined Space

- Confined space and its implications
- Hazards in confined space
- General control strategies
- Importance of ventilation systems in confined space
- Procedures to carry out atmospheric testing
- Duties of key personnel in performing atmospheric testing

Mechanical and Electrical Hazards

- *Types of mechanical hazards and controls*
- Danger of electricity
- Methods to control electrical hazards
- Ways to protect against electrical danger
- Importance of procedural control (Lock Out and Tag Out)
- Causes of electric fire
- Methods to prevent electric fire
- Applying engineering control to prevent electrical hazards

Health Hazards

- Principles of occupational health
- Types of health hazards
- Chemical hazards and routes of entry
- Evaluation of chemical hazards
- Managing chemical hazards
- Noise hazards and their effect on hearing
- Controlling noise hazards
- Heat exposure and symptoms of heat stress related illness
- Prevention of heat stress
- Ergonomic hazards
- Controlling ergonomic hazards
- Hazards in special operations
- Safety Data Sheets (SDS), its function and importance
- Hazards of asbestos
- Controlling exposure to asbestos

Legislations and regulations

- WSH (General Provision) Regulations 2006
- WSH (Scaffolds) Regulations
- Salient points of Code of practice 88: Part 1

Range of Application:

Identify job hazards which may include but not limited to:

- Working at height
- Use of scaffolds and ladders
- Fire
- Explosion
- Confined space hazards
- Mechanical hazards
- Electrical hazards

Types of combustible materials may include but not limited to:

- Solid fuel
- Liquid fuel
- Gaseous fuel

Sources of ignition (heat) may include but not limited to:

- Chemical heat energy
- Electrical heat energy
- Mechanical heat energy

Methods to extinguish fire may include but not limited to:

- Temperature reduction
- Oxygen dilution
- Fuel removal
- Interruption of chain reaction

Types of explosion may include but not limited to:

- Chemical explosion
- Electrical explosion
- Mechanical explosion

Implications of confined space may include but not limited to:

- Presence of dangerous gases, vapours or fumes that can cause fire or explosion
- Inadequate supply of air to sustain life
- Risk of engulfment by material

Hazards in confined space may include but not limited to:

- Suffocation
- Fire
- Explosion
- Poisoning

Types of mechanical hazards may include but not limited to:

- Removal of fencing from machinery
- Construction of fencing or other safeguards
- Maintenance of fencing or other safeguards

Danger of electricity may include but not limited to:

- Electrocutation
- Electric shock
- Burns (arc injuries)
- Falls

Ways to protect against electrical danger may include but not limited to:

- Insulation of live parts
- Barrier or enclosure
- Obstacles
- Placing out of reach

Causes of electric fire may include but not limited to:

- Over current
- Ignition of flammable by static discharge

	<ul style="list-style-type: none"> • Ignition of flammable by arcing or sparks from electrical equipment • Auto-ignition by hot surfaces <p>Principles of occupational health may include but not limited to:</p> <ul style="list-style-type: none"> • Anticipation of hazards • Identification of hazards • Assessment of hazards • Evaluation of risk • Control of hazards <p>Types of health hazards may include but not limited to:</p> <ul style="list-style-type: none"> • Chemical hazards • Physical hazards • Ergonomic hazards • Biological hazards <p>Chemical hazards may include but not limited to:</p> <ul style="list-style-type: none"> • Toxic • Flammables • Corrosive • Reactive • Explosive <p>Chemical routes of entry may include but not limited to:</p> <ul style="list-style-type: none"> • Inhalation • Skin contact / absorption • Ingestion • Accidental injection <p>Evaluation of chemical hazards may include but not limited to:</p> <ul style="list-style-type: none"> • Qualitative methods • Quantitative methods <p>Managing chemical hazards may include but not limited to:</p> <ul style="list-style-type: none"> • Implementing of chemical hazard management programme • Use of personal protective equipment <p>Controlling noise hazards may include but not limited to:</p> <ul style="list-style-type: none"> • Implementing hearing conservation programme • Use of hearing protectors <p>Prevention of heat stress may include but not limited to:</p> <ul style="list-style-type: none"> • Taking appropriate breaks or rests • Wearing appropriate clothes when working outdoors • Conducting strenuous activities during cooler periods of the day • Working under the shade whenever possible • Consuming lots of water frequently • Paying attention to condition of co-workers and looking out for symptoms of heat-related stress <p>Ergonomic hazards may include but not limited to:</p> <ul style="list-style-type: none"> • Manual lifting and handling operation • Working posture
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- Cumulative trauma disorder (CTD)

Controlling ergonomic hazards may include but not limited to:

- Use of mechanical aids
- Team lift
- Proper lifting technique
- Proper planning

Hazard control measures may include but not limited to:

- Elimination of source
- Proper housekeeping
- Training and education

Interactions with people, which may include but not limited to:

- Co-workers
- Foreman
- Supervisors
- Engineers
- Manager
- Owners and owner representatives
- Equipment Vendor / Suppliers
- Sub-contractors

Frequency

- Regularly

Criticality

- Critical

Process evidence:

1. Identifying job hazards
2. Reviewing emergency response or rescue plans, if any
3. Conducting tests (such as atmospheric tests) where applicable
4. Identifying appropriate measures to control / mitigate each type of hazard in accordance with relevant legislations and regulations
5. Anticipating and identifying types of hazards that are likely to occur
6. Assessing hazards identified to determine their consequences and risks involved
7. Developing hazard control measures to manage hazards identified

Product evidence:

1. Atmospheric test reports prepared
2. Job hazard analysis reports prepared
3. Hazards assessment report generated
4. Accident prevention plan developed

Knowledge evidence (Verbal/Written Questioning):

General Safety and Health

1. State the Safe means of access and egress
2. List the Hazards of working at height
3. State the Measures to prevent falls
4. State the Safe use of scaffolds and ladders
5. State the Housekeeping practices

Fire and Explosion Prevention

1. Explain the Chemistry of fire – Fire Triangle
2. List the Types of combustible materials (Fuel)
3. List the Sources of ignition (Heat)
4. Explain the Classification of fires
5. List the Methods to extinguish fire
6. List the Types of Explosions

Safe Work Practices in Confined Space

1. List the confined space and its implications
2. State the hazards in confined space
3. List the general control strategies
4. State the importance of ventilation systems in confined space
5. Describe the procedures to carry out atmospheric testing
6. State the duties of key personnel in performing atmospheric testing

Mechanical and Electrical Hazards

1. State the types of mechanical hazards and controls
2. State the dangers of electricity
3. Explain the methods to control electrical hazards
4. List the ways to protect against electrical danger
5. State the importance of procedural control (Lock Out and Tag Out)
6. List the causes of electric fire
7. List the methods to prevent electric fire
8. Describe the application of engineering control to prevent electrical hazards

Health Hazards

1. List the principles of occupational health
2. List the types of health hazards

	<ol style="list-style-type: none"> 3. State the chemical hazards and routes of entry 4. List the process to evaluate chemical hazards 5. List the process to managing chemical hazards 6. List the types of noise hazards and their effect on hearing 7. Describe ways to control of noise hazards 8. List the symptoms of heat stress related illness 9. Describe ways to prevent heat stress 10. List the types of ergonomic hazards 11. Describe ways to control ergonomic hazards 12. Give examples of safety data sheets (SDS) and state its function and importance 13. Describe ways to control exposure to asbestos <p style="text-align: center;"><u>Legislations and regulations</u></p> <ol style="list-style-type: none"> 1. State the WSH (General Provision) Regulations 2006 2. State the Factories (Scaffolds) Regulations 3. State the Salient points of Code of practice 88: Part 1
<p>CE3: Comply with safety and health management system</p>	<ul style="list-style-type: none"> • Performance Criteria <ol style="list-style-type: none"> 3.1 Identify the structure of Occupational Safety and Health Management System (OSHMS) 3.2 Recognise the core elements of Occupational Safety and Health Management System (OSHMS) 3.3 Check to ensure compliance of OSHMS 3.4 Communicate to relevant stakeholders the requirement of OSHMS according to organization procedure. • Underpinning Knowledge <p>A competent individual should be equipped with the following knowledge:</p> <ul style="list-style-type: none"> • WSH (Safety Management System) Regulations and the obligations of stakeholders • Elements of Process Safety Management System • Occupational Safety and Health Management System (OSHMS) <ul style="list-style-type: none"> - Elements of OSHMS and its sub-elements - General requirements of OSHMS - Implementation and the operations of OSHMS <p><u>Range of Application:</u></p> <p>Occupational Safety and Health Management System (OSHMS) which may include but not limited to:</p> <ul style="list-style-type: none"> • SS 506: Part 1: 2006 • SS 506: Part 3: 2006

- OHSAS 18001

Structure and core elements of Occupational Safety and Health Management System (OSHMS) may include but is limited to:

- Occupational safety and health objectives and targets at each function and level within organisation
- Responsibility, authority and timeline for achievement of objectives and targets
- Clearly defined roles, responsibilities and authorities
- Resources required for implementation
- In-house rules and regulations such as:
 - Operating procedures and safe work practices
 - Incident and hazard reporting
 - OSH training requirement
 - Use of personal protective equipment
 - Housekeeping practices
 - Fire
- Promotional programmes
- Implementation and operation plan
- Procedures for monitoring and controlling OSHMS
- Emergency preparedness and response

Relevant documentation for OSHMS may include but is limited to:

- OSH policies, objectives and targets
- Scope of OSHMS
- Core elements of OSHMS
- Records to ensure effective planning , operations and maintenance of process system, plant, machinery and equipment
- Mandatory records

Implementation plan for OSHMS may include but is not limited to:

- Identification of process safety information
- Hazard analysis
- Document control
- Operating control
- Management of change and procedures
- Pre-start up safety
- Managing contractors
- Mechanical integrity and reliability
- Occupational health
- Medical surveillance programme
- Checking and corrective actions
- Inspection and incident investigations

Procedures for monitoring and controlling OSHMS may include but is not limited to:

- Performance measurement
- Evaluation of compliance
- Internal audits
- Emergency preparedness and response
- Management reviews

Interactions with people, which may include but is not limited to:

- Co-workers

	<ul style="list-style-type: none"> • Foreman • Supervisors • Engineers • Manager • Owners and owner representatives • Equipment Vendor / Suppliers • Sub-contractors <p>Frequency</p> <ul style="list-style-type: none"> • Regularly <p>Criticality</p> <ul style="list-style-type: none"> • Critical <p><u>Process evidence:</u></p> <ol style="list-style-type: none"> 1. Interpreting the requirements of the elements of an Occupational Safety and Health Management System (OSHMS) 2. Accessing relevant documentations for OSHMS 3. Participating in OSH training programmes 4. Participating in OSH promotional activities 5. Accessing emergency response plan and equipment <p><u>Product evidence:</u></p> <ol style="list-style-type: none"> 1. Written OSH organizational structure 2. List of OSH hazards 3. List of OSH training programmes is documented 4. List of promotional OSH activities at the workplace 5. List of OSH inspection activities carried out at the work place <p><u>Knowledge evidence (Verbal/Written Questioning):</u></p> <ol style="list-style-type: none"> 1. List the elements of Process Safety Management 2. List the elements of Occupational Safety and Health Management System (OSHMS) 3. State the general requirements of OSHMS 4. List the procedures to implement OSHMS
<p>CE4: Implement permit-to-work system</p>	<ul style="list-style-type: none"> • Performance Criteria <ol style="list-style-type: none"> 4.1 Identify circumstances that require PTW 4.2 Determine types of PTW required 4.3 Assist in preparing and submitting a PTW 4.4 Ensure compliance to PTW according to legal and organization requirements <ul style="list-style-type: none"> • Underpinning Knowledge <p>A competent individual should be equipped with the following knowledge:</p> <ul style="list-style-type: none"> • Permit-to-work system (PTW), and its purpose • Circumstances that require PTW • Types of PTW

- Responsibility and authority of permit signatories
- Competencies of permit signatories
- PTW process
- Guidelines for issuing permit
- Essential features of a PTW
- General preparatory work
- Types of workplace hazards
- Purpose and procedure for Lock Out Tag Out (LOTO)

Range of Application:

Purpose of PTW system may include but is not limited to:

- Controlling work within process area
- Use as checklist
- Communicating safety requirements
- Documenting agreement between parties (issuing and performing authorities)
- Preventing incompatible work
- Fulfilling legal requirements

Circumstances that require PTW may include but is not limited to:

- Modification of equipment
- Plant inspection and repair
- Construction
- Demolition
- Plant maintenance
- Work that departs from normal operational routine

Types of PTW may include but not limited to:

- Cold work permit
- Hot work / fire permit
- Confined space permit
- Equipment transfer permit
- Excavation permit
- Lifting permit
- Scaffold work permit
- Ionizing radiation permit
- Electrical permit
- Painting permit
- Chemical handling permit
- Road closure permit
- Fire water permit

Permit signatories include:

- Permit issuer (Issuing Authority)
- Permit holder (Performing Authority)
- Authorised gas tester

Guidelines for issuing permit may include but is not limited to:

- Clear precise description of work
- Confirmation of operational preparations that have been made
- Description of hazards remaining
- Additional precautions to be taken during work
- Authorisation of work and issue of permit

	<ul style="list-style-type: none"> • Period of validity • Distribution of permits <p>General preparatory work may include but is not limited to:</p> <ul style="list-style-type: none"> • Mechanical and electrical isolation • Clearance of process materials • Gas and / or dust testing <p>Types of workplace hazards may include but is not limited to:</p> <ul style="list-style-type: none"> • Change in process operations • Sampling of hazardous substances • Nearby sewers – source of fuel • Leakages • Incompatible works • Confined space • Working at height <p>Legal requirements for issuing PTW include:</p> <ul style="list-style-type: none"> • WSH (Risk Management) Regulations • WSH (General Provision) Regulations • WSH (Confined Spaces) Regulations • WSH (Construction) Regulations • Factories (Scaffold) Regulations <p>Interactions with people, which may include but is not limited to:</p> <ul style="list-style-type: none"> • Co-workers • Foreman • Supervisors • Engineers • Manager • Owners and owner representatives • Equipment Vendor / Suppliers • Sub-contractors <p>Frequency</p> <ul style="list-style-type: none"> • Regularly <p>Criticality</p> <ul style="list-style-type: none"> • Critical <p><u>Process evidence:</u></p> <ol style="list-style-type: none"> 1. Identifying circumstances that require PTW 2. Determining types of PTW required 3. Interpreting the contents of the PTW <p><u>Product evidence:</u></p> <ol style="list-style-type: none"> 1. Permit to work endorsed <p><u>Knowledge evidence (Verbal/Written Questioning):</u></p> <ol style="list-style-type: none"> 1. Permit-to-work system (PTW), and its purpose 2. Circumstances that require PTW 3. Types of PTW
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	<ol style="list-style-type: none"> 4. Responsibility and authority of permit signatories 5. General preparatory work 6. Types of workplace hazards 7. Purpose and procedure for Lock Out Tag Out
<p>CE5: Conduct safety and health inspection</p>	<ul style="list-style-type: none"> • Performance Criteria <ol style="list-style-type: none"> 5.1 Carry out safety and health inspection according to legislations and organisation's guidelines and procedures 5.2 Document observations / findings of inspection using relevant inspection checklists 5.3 Take appropriate follow-up actions to monitor deficiencies identified <ul style="list-style-type: none"> • Underpinning Knowledge <p>A competent individual should be equipped with the following knowledge:</p> <ul style="list-style-type: none"> • Objectives and purpose of safety and health inspection • Types of safety and health inspection • Roles and responsibilities of stakeholders in safety and health inspection • Safety and health inspection procedures • Purpose and importance of using inspection checklists • ABC hazard rating system • Follow-up actions and their purposes <p><u>Range of Application:</u></p> <p>Purpose of safety and health inspection may include but not limited to:</p> <ul style="list-style-type: none"> • Prevention of incidents / accidents • Reduction of incidents and property damage • Meeting legal requirements <p>Types of safety and health inspection may include but not limited to:</p> <ul style="list-style-type: none"> • Statutory inspections by <ul style="list-style-type: none"> - Authorised examiners - Professional engineers - Any competent persons • Regular inspections by <ul style="list-style-type: none"> - Management - WSH committee - WSH officers - Supervisors <p>Planning and preparing for safety and health inspection may include but not limited to:</p> <ul style="list-style-type: none"> • Establishing policies and procedures for conducting safety and health inspection • Establishing WSH standards set for supervisors and workers • Assigning responsibilities and accountability for inspection • Appointing inspectors • Scheduling inspections • Determining issues / areas to be inspected

	<p>Documenting observations / findings may include but not limited to:</p> <ul style="list-style-type: none"> • Recording any unsafe actions or conditions observed using relevant inspection checklists • Establishing location of observations <p>Appropriate follow-up actions may include but not limited to:</p> <ul style="list-style-type: none"> • Rating hazards observed • Recommending corrective actions, if necessary • Assigning accountability and setting timeline for completion of corrective actions • Communicating inspection outcomes and corrective actions to management, supervisor and safety committee • Developing statistics for record keeping and future reference <p>Relevant legislations and guidelines include:</p> <ul style="list-style-type: none"> • Workplace Safety and Health Act • WSH (General Provisions) Regulations • WSH (Incident Reporting) Regulations • WSH (WSH Committees) Regulations <p>Interactions with people, which may include but not limited to:</p> <ul style="list-style-type: none"> • Co-workers • Foreman • Supervisors • Engineers • Manager • Owners and owner representatives • Equipment Vendor / Suppliers • Sub-contractors <p>Frequency</p> <ul style="list-style-type: none"> • Regularly <p>Criticality</p> <ul style="list-style-type: none"> • Critical <p><u>Process evidence:</u></p> <ol style="list-style-type: none"> 1. Planning and preparing for safety and health inspection 2. Carrying out safety and health inspection according to legislations and organisation's guidelines and procedures 3. Documenting observations / findings of inspection using relevant inspection checklists 4. Taking appropriate follow-up actions to monitor deficiencies identified <p><u>Product evidence:</u></p> <ol style="list-style-type: none"> 1. Inspection checklists developed 2. Action plan for corrective actions established
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	<p>3. Inspection records are maintained and updated 4. Statistics on inspection findings and outcomes updated</p> <p><u>Knowledge evidence (Verbal/Written Questioning):</u></p> <p>1. State the purpose of safety and health inspection 2. List the types of safety and health inspection 3. Outline the safety and health inspection procedures 4. State the purpose and importance of using inspection checklists 5. Describe follow-up actions and state their purposes 6.</p>
<p>CE6: Conduct incident investigation</p>	<ul style="list-style-type: none"> • Performance Criteria <p>6.1 Gather information and facts about incident 6.2 Analyse information and facts to determine root causes of incidents 6.3 Preparing recommendations for the consideration of management 6.4 Report findings according to relevant legislations and guidelines 6.5 Maintain proper documentation of incident investigation</p> <ul style="list-style-type: none"> • Underpinning Knowledge <p>A competent individual should be equipped with the following knowledge:</p> <ul style="list-style-type: none"> ▪ Accident causation theories and their applications ▪ Purpose of incident investigation ▪ Incident investigation process and procedures ▪ Techniques of incident report writing <p><u>Range of Application:</u></p> <p>Accident causation theories may include but not limited to:</p> <ul style="list-style-type: none"> • Domino Theory • Heinrich's Theorems • Frank E Bird Jr's Loss Causation Model • Modern Causation Model • Accident Causation Model – Swiss Cheese • Accident Causation Model - TMEPM <p>Causes of accidents may include but not limited to:</p> <ul style="list-style-type: none"> • Task related issues • Equipment and machines issues • Environment related issues • Personnel related issues • Safety management issues <p>Purpose of incident investigation may include but not limited to:</p> <ul style="list-style-type: none"> • Finding root causes of incident • Preventing similar accidents in future • Fulfilling legal requirements • Complying with safety regulations to process workers' compensation claims <p>Incident investigation process and procedure may include but not limited to:</p>

- Surveying incident site
- Interviewing witnesses
- Taking photographs and making sketches
- Taking measurements and samples
- Seizing related / relevant documents
- Collecting broken equipment or debris

Gathering information and facts may include but not limited to:

- Looking for physical evidences such as what happened, where, when and how it happened
- Handling witnesses appropriately when interviewing them
- Referring to relevant documents such as permit to work, safety data sheets, standard operating procedures etc.

Analysing information and facts to determine root causes of incidents may include but not limited to:

- Keeping an open mind to avoid preconceived notions
- Writing down a step-by-step account of what happened
- Working backwards from the moment of the accident
- Listing all possible causes at each step
- Drawing conclusions only after all information is gathered and analysed

Relevant legislations and guidelines include:

- Workplace Safety and Health Act
- WSH (General Provisions) Regulations
- WSH (Incident Reporting) Regulations

Relevant documents when investigating incidents may include but not limited to:

- Permit to work
- Technical data sheets
- Safety data sheets
- Minutes of meeting
- Inspection reports
- Operating manual
- Company policies
- Maintenance reports
- Past accident reports
- Safe work procedures
- Training reports
- Standard operating procedures

Reporting findings may include but not limited to:

- Completing incident report according to legislations and organisation's guidelines
- Providing evidence to support conclusions made
- Submitting incident report to Commissioner of Workplace Safety and Health

Maintaining proper documentation of incident investigation may include but not limited to:

- Recording all investigations and findings obtained
- Keeping records of all incident reports and supporting documents

	<p>Interactions with people, which may include but not limited to:</p> <ul style="list-style-type: none"> • Co-workers • Foreman • Supervisors • Engineers • Manager • Owners and owner representatives • Equipment Vendor / Suppliers • Sub-contractors <p>Frequency</p> <ul style="list-style-type: none"> • Regularly <p>Criticality</p> <ul style="list-style-type: none"> • Critical <p><u>Process evidence:</u></p> <ol style="list-style-type: none"> 1. Gathering information and facts about incident 2. Analysing information and facts to determine root causes of incidents 3. Reporting findings according to relevant legislations and guidelines 4. Maintaining proper documentation of incident investigation <p><u>Knowledge evidence (Verbal/Written Questioning):</u></p> <ol style="list-style-type: none"> 1. Describe the accident causation theories and their applications 2. State the purpose of an incident investigation 3. Outline the incident investigation process and procedures 4. Describe the techniques of incident report writing
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4.2 Sequence of Coverage

A clear sequencing strategy should be suggested. Sequencing is the efficient ordering of content in such a way as to help the learner achieve the objectives.

The learning sequence need not be the same as the sequence of tasks performed on the job. It is also not necessary to use the same sequencing strategy throughout the training programme although it may be more expedient. Effective sequencing can result in greater motivation since every task mastered will increase the learner's confidence and pride. Some effective sequencing strategies are proceeding from:

- the known to the unknown;
- the simple to the complex;
- the concrete to the abstract;
- the particular to the general;
- observation to reasoning; and
- the whole, to the parts, and back again to the whole

4.3 Practicum

Currently, there is no practicum requirement for the programme.

4.4 Project Work

Currently, there is no practicum requirement for the programme.

4.5 Learning Strategies and Methods

Suggested Delivery Strategies and Methods

The respective competency unit of the WSQ programme may be delivered off-the-job, it can be face to face in the classroom in a training organisation venue. Classroom delivery should emphasize interactive and learner-centred learning and use a flexible range of learning and delivery methods.

If preparations by learners are required prior to commencement of the course, they should be provided with learning materials such as handouts (self-directed learning) upon registration of the course. They should also be notified by training organisations on what they need to prepare before coming for the course.

Every effort must be made to emphasise the direct relationship between the acquisition and application of the skills, knowledge and attributes to their workplace.

Varied delivery strategies should be utilised to optimise learning. Listed below are some possible options:

- Lecture presentation / Self-directed learning / E-learning / Session Review
- Group Discussions / Presentation

The above suggested delivery strategies and methods should be adjusted according to the profile of the target audience. Programme developers are also encouraged to be creative in designing an interactive learning experience that allows the learners to apply the learning into context.

In addition, you may want to adopt the following approach to curriculum development for the learning:

Suggestions for delivery of Competency Unit are given below:

Learning Activity	Applications
Lecture on underpinning knowledge and principles	<ul style="list-style-type: none">• Method to provide details on a specific subject• Little or no interaction with learners• Recommended to incorporate graphics such as videos, diagrams and pictures

	<ul style="list-style-type: none"> Recommended to complement lecture with session review to maximise learning for learners
Case study	<ul style="list-style-type: none"> Opportunity for learners to understand the context through scenario-based illustrations
Practice	<ul style="list-style-type: none"> Opportunity for learners to try performing a skill with support and feedback Best conducted in small groups or one-on-one Generally used for skill development Effective form of learner engagement
Discussion	<ul style="list-style-type: none"> Two-way interaction to examine issues or problems Best for a small group of learners Generally used for analysing problems, attitudes or difficult situations Can be time consuming

The suggested learning strategies to optimize learning for the competency unit in the WSQ **Process Industry training programmes** are illustrated as follow:

CU: Supervise Workplace Safety and Health in Process Plant

Suggested Learning Strategy	Topics & Learning Activity Involved
Lecture / Session Review	CE1: Identify duties and responsibilities of a Manhole/Confined Space Supervisor under the WSH legislations and Codes of Practice CE2: Identify, prevent and control manhole hazards CE3: Comply with safety and health management system CE4: Follow a permit-to-work system CE5: Conduct safety and health inspection CE6: Conduct incident investigation
Practice Performance / Group Activity	PC1.3 Conduct job safety analysis for a job or task PC1.4 Identify safety and health hazards associated with the job or task PC1.5 Evaluate level of risks involved in identified hazards PC1.6 Develop ways to eliminate / mitigate hazards identified in accordance with risk management regulations

Suggested Strategy	Learning Topics & Learning Activity Involved
	<p>PC1.7 Co-ordinate measures to control risks according to organization's procedures</p> <p>PC1.8 Complete a risk assessment form</p> <p>PC4.1 Identify circumstances that require PTW</p> <p>PC4.2 Determine types of PTW required</p> <p>PC4.3 Assist in preparing and submitting a PTW</p> <p>PC4.4 Ensure compliance to PTW according to legal and organization requirements</p> <p>PC5.1 Carry out safety and health inspection according to legislations and organization's guidelines and procedures</p> <p>PC5.2 Document observations / findings of inspection using relevant inspection checklists</p> <p>PC5.3 Take appropriate follow-up actions to monitor deficiencies identified</p> <p>PC6.1 Gather information and facts about incident</p> <p>PC6.2 Analyze information and facts to determine root causes of incidents</p> <p>PC6.3 Preparing recommendations for the consideration of management</p> <p>PC6.4 Report findings according to relevant legislations and guidelines</p> <p>PC6.5 Maintain proper documentation of incident investigation</p>

An example of instructional strategy selection for cognitive, affective and psychomotor domains is given in **Annex A**.

A non-exhaustive list of recommended delivery methods is provided below.

- Role play
- Group Discussion
- MCQ Exercise
- Written Exercise
- Case Study
- Workplace Practice
- Presentation

- Action Learning
- Coaching / Mentoring

Where relevant and appropriate, the learning activities for the unit should be designed to shape or cultivate the expected attitudes of the candidates and to prepare them for their role in the sector.

Industry Requirements

Currently there is no particular assessment method mandated by the industry.

4.6 Trainer's Guide and Learners' Workbook/handouts

The ATO is required to prepare a trainer's guide for the course. The guide provides the facilitator with information on the course including

- Course aim
- Learning objectives
- Target audience
- Assumed skills and knowledge
- Course duration
- Class size and trainer/trainee ratio
- Lesson plan
- Course contents and instructional materials
- Training methodologies
- Training resource requirements
- Course administration instruction

To facilitate the learning process, it is recommended that the ATO provided each trainee with a participant's workbook or handouts. This set of notes should contain the course aim, learning objectives and the key learning points (WSHA 2006, subsidiary legislations, industrial code of practice, safety guidelines etc).

The ATO to ensure that materials used for the training does not infringe on patent, design, copyright and intellectual property rights.

The ATO shall maintain a version control of updates made to the course materials for verification by the relevant authorities.

4.6.1 Total WSH Presentation Slides

- Total WSH presentation slides will be issued upon approval of the Training Provider.

- The materials are provided strictly for the explicit use and guidance of training providers for the conduct of this course.
- Any other use of the materials or parts thereof, reproduction, publication, distribution, transmission, re-transmission, or storage in a retrieval system in any form, electronic or otherwise, for purposes other than that expressly stated above without the express permission of WSH Council is strictly prohibited.

4.7 Training Venue Requirements

The ATO shall ensure that the classroom used for this training has adequate seating. Facilities inclusive of writing tables must be reasonably and comfortably spaced so as to be conducive to the learning process and for the purpose of conducting the assessment. Classrooms must be equipped with projectors, whiteboards, flipcharts and specific training aides related to the course. The classroom must be adequately illuminated and ventilated. Emergency exit signs and routings must be clearly demarcated and briefed to all the course participants at the start of the course.

In the event, where the TP wishes to conduct its WSH theory course(s) at a venue, other than the approved Training Venue, the TP must inform the CB, which had certified its WSH course(s) at the approved Training Venue/s, of its intent to effect such a change, and it must also demonstrate to the CB that:

- (a) It has an approved Training Venue at the registered address;
- (b) That the proposed venue is conducive for learning; and
- (c) That there are no safety and health concerns in relation to the proposed venue/s.

The TP may conduct its WSH theory course(s) at a venue other than the approved Training Venue/s only after obtaining the CB's approval.

The requirements stated above shall apply to a TP for single and multiple usage.

Where the CB has granted approval to the TP to conduct the WSH theory course(s) at an alternate venue, the TP must ensure that:

- a) All training and assessment records are kept by the TP, for courses conducted, at the alternate venue. Such records shall include the following documents:
 - i. Photographs of the alternate venue;
 - ii. Photographs of the WSH theory course(s) being conducted at the alternate venue;
 - iii. Layout plan of the alternate venue; and
 - iv. Leasing documents;
- b) The records mentioned in (a) above, are continually updated;
- c) The alternate venue is only used for the conduct of WSH theory course(s). No practical

training/assessment shall be allowed at the alternate venue, unless approval has been granted by the Authorities; and

d) The alternate venue is not occupied and or used by another TP or WSH approved training provider at any time.

The TP must ensure that all Training Venues (including alternate venues) have been approved by the Urban Redevelopment Authority (URA) or the Housing & Development Board (“HDB”), either as a Commercial School (theory based only) or for Industrial Training (theory and practical), before it applies to be certified by the CB.

Note: Tenancy agreement (e.g. from JTC Corporation or other Developers) does not constitute a URA approval. Only correspondence with letterheads bearing the office of the relevant government authorities granting the approval shall be recognised. The requirement shall not apply to TP who is applying for a one-off use of the theory training premises.

The TP is to note that a CB’s approval of any practical training venue is conditioned upon its safe and adequacy of the training facilities and equipment. The TP shall comply with all relevant legislations including but not limited to legislations involving land use, building, fire and safety.

4.8 Training Provider Requirements

Training Providers are required to fulfill the following requirements:

- ISO 29993 certification;
- bizSAFE Level 3 certification;
- Blended learning
 - Have developed an SOP to conduct online training and assessment (with online proctoring for supervisor and above courses) when required to do so.
 - For each WSH course, the Training Provider must have at least:
 - a. 1 full time Principal/Director;
 - b. 1 full time WSH Approved Adult Educator/ Trainer/Facilitators for each WSH course; and
 - c. 2 approved full time/associate Adult Educator/ Trainer/Facilitators for each of the language.

Training Providers are to inform the WSH Council when they withdraw their training provider status for any WSH course(s), or have their status suspended or terminated by any authority.

Training Providers are to comply with the instruction by either (i) SkillsFuture Singapore (SSG), Ministry of Manpower (MOM) or the WSH Council to stop conducting any WSH Course(s) when an investigation is ongoing, or a non-compliance is being verified. Further actions would be taken when fraudulent acts or significant non-compliances are established.

CHAPTER 5: KEY ASSESSMENT ADVICE

This chapter describes the following components:

A description on the general guidelines and requirements for conducting assessment is given in the reference WSQ resource websites in Part II of this document.

5.1 Assessment Strategies

A non-exhaustive list of assessment strategies and methods indicating the possible assessment methods or combination of assessment methods, as illustrated in below, can be used as a planning guide for determining the appropriate assessment strategy for the respective performance statements and underpinning knowledge in each **Supervise Workplace Safety and Health in Process Plant** competency unit.

Written / Oral Questioning
Practical Performance / Group Activity

5.1.1 Performance-based Methods (Practical Performance / Group Activity)

Performance-based assessments have always been the preferred competency-based assessment methods. They have the benefit of authenticity. The assessments require candidates to perform a particular task according to specification or standards as a demonstration of their achievement. Performance-based assessments offer the assessor a direct source of evidence to evaluate the candidate's ability. Most of the vocational training adopts performance-based assessment, for example in nursing, performing arts, culinary, military, and technical, etc. By observing the candidates performing the real task, it is more reliable for the assessor to predict the candidate's ability to perform the same tasks in future. Some examples of performance-based assessment methods are highlighted in the sections below.

- **Workplace Performance**

This is arguably the best method to collect reliable and authentic evidence of a candidate's actual work competencies. The fact that the assessment context is set under actual work conditions that require demonstration of actual occupational competencies maximises the degree of realism in the assessment process. Consider the assessing of a candidate's process operating skills. What best way to administer this assessment other than to get his direct supervisor observes how he actually operates the process equipment and takes the required measurements? Due to the high-quality evidence that can be derived, workplace assessment should always be an assessor's primary source of evidence collection.

In spite of the above, key considerations of this method include significant investment in resources, training of supervisors in conducting competency-based assessments and the availability of opportunities to assess the candidate across the full range of activities specified within the standards. In such cases, simulation of role-play should be considered as a supplementary means to collecting evidence.

- **Case Study/Scenario-based**

Case study is a documented study of a specific real-life situation or imagined scenario. Learners are required to analyze prescribed cases and present their interpretations or solutions supported by the line of reasoning employed and assumptions made. Normally case study is accompanied by a series of short questions to be answered

5.1.2 Questioning Methods

- **Oral Questioning with interview**

The oral questioning methods are usually used for testing underpinning knowledge items or assessing performance statement/criteria that are not observable during performance observation.

Under this method, the candidates have to give appropriate answers to the questions asked by the assessors. It is recommended that the questions designed should be able to draw out the competence from the answers provided by the candidate.

This method is usually preferred over the written method as it allows the assessors to clarify and verify with candidates during the oral questioning. Though this method can be time consuming, however, it addresses the principles of assessment; flexibility and at the same time, fairness especially in cases where candidates have difficulty in expressing themselves in writing.

- **Written Questioning**

Written forms of assessments offer wider variety of methods and it is more versatile in its design and use. The more commonly-used types of written methods that are relevant to competency-based assessment are short answers, case study, portfolio, etc. However, ATO may have the option to use MCQ in the assessment.

- **Short answers**

Short answers require the candidate to articulate his understanding in written form but the answers are relatively short as compared to essays. These are appropriate for candidates with difficulty in written literacy. Short-answer questions take different forms:

- 1) Fill in the blanks

Questions are focused on finding out a response that is very certain. In this example below, the answer that is expected is a method used to identify the most common recurring problem

➤ **MCQ answers**

MCQ answers require the candidate to articulate his understanding in written form but 4 suggested answers are given. The candidate will demonstrate his competent in selecting the correct / most appropriate answer out of the 4 choices to the question asked.

The number of attempts a candidate is allowed to be assessed in the written assessment is **ONE**. The candidate certified "NOT YET COMPETENT" after the assessment, the candidate must be re-coursed.

Industry Requirements

Currently there is no particular assessment method mandated by the industry. Training providers are encouraged to refer to the checklists such as those suggested in the Annexes (see Annex B to D) as tools for organising assessments for performance statements/criteria and underpinning knowledge.

To facilitate uploading of the assessment results, TPs shall install the Automated Marking System (AMS) and its associated hardware.

The TP personnel who is authorised to use the AMS must also ensure that the assessment results are updated in SSG's TPGateway.

TPs are to upload the test results to MOM/ WSH Council no later than 5 calendar days after completion of the courses. All errors must be rectified within 24 hours for re-submission of the affected results to MOM/ WSH Council via WSH TRS. This is in addition to the uploading of assessment results to SSG via TPGateway

MOM/WSH Council officers shall conduct audits with or without notice on WSQ WSH TPs.

5.2 Graded Assessment

NA

5.3 Assessment Instruments and Tools

General Guidelines on Conducting Competency-Based Assessment

As part of the preparation of courses for accreditation, training organisations are required to prepare an assessment plan for each Competency Unit. An integrated Assessment Plan can also be prepared where competency units with similar or related subject matter are combined and assessed at the same time. The advice which follows is provided to assist in the preparation of an assessment plan.

Samples and templates of these instruments and tools as suggested in Annex B to D that could be used for this Competency unit- **Supervise Workplace Safety and Health in Process Plant** are:

- An Evidence Sources Checklist to serve as a reporting snapshot of the types of evidence gathering that may be used.
- Performance Criteria Checklist as an instrument for the recording performance statements/Criteria
- A Verbal Assessment Checklist to record answers to questions concerning Underpinning Knowledge if this is used as an alternative to written exercise.
- Written Assessment Checklists as an instrument for the recording of answers to questions concerning the performance criteria and underpinning knowledge
- A Recording and Reporting Assessment Table Format as an instrument for the concise recording of competency and re-assessment information concerning the Competency Unit
- An Assessment Summary Record as an instrument for the recording of the performance criteria, assessment methods and assessment tools with the indication of the overall result (Competent or Not-Yet-Competent)

The Quality Assurance Division in WDA has set out the following general guidelines for conducting assessments, particularly competency-based assessment. While there are some points in the advice that follows which may need to be modified in the context of each Competency Unit, they represent a sound starting point for reference in developing an assessment plan.

5.3.1 Technical Principles of Assessment

Competency based assessment is the process of collecting evidence and making judgments on whether or not competency has been achieved. All assessment centres and

training organisations are required to demonstrate compliance with the following four technical principles of assessment which are: Validity, Reliability, Flexibility and Fairness.

These technical principles of assessment must be addressed in the development of assessment tools, conduct of assessment, and in the design, establishment and management of the assessment process.

(i) **Validity**

A valid assessment assesses what it claims to assess; evidence collected is relevant to the activity and demonstrates that the performance criteria have been met.

The principles of assessment therefore must take into account several factors:

- Assessment activities are reflective of the performance expectations of the unit/s covered
- Assessment against the competency unit/s must cover the broad range of skills and knowledge
- Assessment should integrate knowledge and skill with their practical application
- Evidence should, if possible, be gathered on a number of occasions and in a range of contexts, using different assessment methods

The validity of assessments can be enhanced when some or all of the factors below are applied:

- The assessment focuses on the appropriate areas of competence and skills
- A sufficient range of the performance of the person being assessed is sampled
- The assessment tasks resemble those encountered in the workplace. Where this is not possible (e.g. in a facilitated learning environment where participants come

from different industries), scenarios and/or contexts which participants can easily relate to should be used.

- Evidence of performance is obtained after the assessment to support predictive validity
- The assessment procedure documents the links to workplace performance
- Multiple approaches to assessment are used
- The assessor can demonstrate how evidence of competency discriminates between different competencies and reinforces similar competencies

(ii) **Reliability**

Reliability refers to the consistency of the interpretation of evidence and the consistency of assessment outcomes. Reliability can only be achieved when assessors share a common interpretation of the unit/s being assessed.

Some or all of the following factors will contribute to reliability:

- The criteria for the judgment of competence must be stated clearly and adhered to
- Assessment practices in the assessment of candidates, need to be monitored and reviewed to facilitate consistency of judgment
- As a minimum requirement, assessors must meet the vocational competence requirements outlined in Part B of this Guide

Applying the following practices enhances reliability:

- Comparing the results of two or more assessors (moderation)
- Collecting evidence via a number of different assessment methods
- Collecting evidence across different locations and times
- Specifying clearly the competencies to be attained (documentation)
- Specifying clearly the instructions on how assessments should be undertaken and carried out
- Detailing clearly items on self / peer / supervisor assessment (documentation)
- Reviewing the training of assessors (systematic procedures)

Evidence of consistency can be obtained by assessing on multiple occasions and by using a number of methods of evidence gathering and in a range of contexts.

(iii) Flexibility

Flexibility in assessment allows for assessment either on or off the job and at mutually convenient times and situations:

- Cover both on and off-the-job components of training where applicable
- Provide for the recognition of competencies no matter how, where or when they have been acquired
- Draw on a range of methods and be appropriate to the context, task and candidate
- Be made accessible to candidates so that they can proceed readily from one Competency Unit to another

Flexibility applies to the process – not the standard.

(iv) Fairness

A fair assessment will not disadvantage CTAG any person and will take into account the characteristics of the person being assessed. To maintain fairness:

- reasonable adjustments are made to assessment procedures depending on the characteristics of the person being assessed
- assessment procedures and the evidence (whether product or process) must be made clear
- a consultative approach to assessment of a competency against one or all of the units in the Standards is recommended
- persons being assessed against the Standards must have the opportunity for a review and an appeal of assessment decisions

To be fair, an assessment should:

- help the person being assessed understand clearly what is expected and what form the assessment will take
- be equitable to all groups of people being assessed (make reasonable adjustments to the methods used for collecting evidence depending on the characteristics of the person(s) being assessed)
- have criteria for judging performance that are made clear to all those seeking assessment

- involve a participatory approach to assessment that is agreed to by the assessor and the person being assessed
- provide opportunities that allow the person(s) being assessed to challenge assessments with provision for reassessments

5.3.2 Collecting Evidence of Competency

Assessment of competency should involve demonstration of competence in all dimensions of competency (task skills, task management skills, contingency management skills, job role / environment skills and transferability). Evidence should involve a variety of evidence types, where possible.

At least one form of direct evidence should be considered to make a judgment on the practical performance component of the competencies, for example, observation of a simulated performance.

Supplementary and indirect forms of evidence should be used, where possible, in support of direct evidence to:

- extend on direct forms of evidence, for example, a range of situations, with different types of persons being assessed, or in conflict situations
- facilitate transferability of competencies to new situations and contexts
- assess underpinning or required knowledge and understanding
- provide information on possible performance in rarely occurring but critical situations, for example, theft, breakdown and industrial conflict

Third party reports are used only to verify and support evidence obtained using other methods, unless the third party is a qualified assessor and is familiar with the standards of the Competency Unit mentioned.

Self-assessment against the Competency Units can make the person being assessed aware of the standards they are expected to achieve, prepare them for formal assessment and/or contribute towards final assessment particularly as part of recognition of current competencies.

(a) Rules of evidence

Evidence of competence must be:

- (i) Valid evidence

Evidence of competence must cover the broad range of knowledge and skills required to demonstrate competence. Assessors need to ensure that the evidence meets the

specified criteria of the standards. Evidence should also match or reflect the type of performance that is being assessed.

(ii) Sufficient evidence

This relates to the amount of evidence. Assessors must collect enough evidence to satisfy that the candidate is competent across all competency elements taking into account the contexts for application of the skills / knowledge required in performing the Competency Unit.

Evidence should be collected from multiple sources and at different time where possible.

(iii) Current evidence

An assessor needs to determine the currency of the evidence of competence.

(iv) Authentic evidence

Assessors need to be sure that the evidence is the candidate's own work. To determine authenticity, validation of the evidence by a third party may be necessary.

(b) Questioning

Written and or oral questioning is used to assess underpinning knowledge and performance expectations that are not observable during practical performance. Written test could be done through electronic means or question paper.

Where candidates are unable to express a response during oral questioning, other means of response could be used, such as writing, drawing or demonstrating. In situation where

knowledge can be demonstrated or implied through practical performance, questions need not be asked.

(c) Documentary Review

Documentary evidence can be recent work or current work completed by the candidate during the practical performance, which may include working in team to implement improvement to work processes or products.

Where evidence is lacking from the documentary evidence, assessor will use supplementary questions to gather evidence during an interview with the candidate or gather the evidence from the candidate's supervisor.

In addition, the assessment instruments and tools for the conduct of the assessment planned that may be relevant to this programme include:

- Practical Performance Checklists to serve as reporting mechanism for several Performance Statements or Criteria that may be achieved through the use of different assessment methods
- An Evidence Sources Checklist to serve as a reporting snapshot of the types of evidence gathering that may be used.
- An Evidence Plan Checklist to serve as a reporting instrument to record a plan of expected evidence materials.
- A Verbal /Knowledge Assessment Checklist to record answers to questions concerning Underpinning Knowledge if this is used as an alternative to written exercise

In summary, the range of assessment tools utilised in assessing the performance can include work-related performances, projects, work related portfolio, case studies or practical tasks. The knowledge-based test may be written or oral, based on the underpinning knowledge specified in the evidence guide in the appropriate units of competency.

Other Assessment Advice

a. Collecting Evidence

Evidence must be gathered from a range of contexts that will enable a fair and reliable judgment about the participant's competence. The assessment process and collection of

evidence must be valid, reliable, flexible, and fair while the evidence collected must also be valid, sufficient, current and authentic.

Evidence gathering methods should be culturally inclusive and take into account the language, literacy and numeracy skills of the participant.

Reasonable adjustments may be considered for participants with physical and/or sensory disabilities or learning difficulties that may require support to undertake assessment. Such support could include physical, mechanical or technical aids, extra time for assessment or specially devised or adapted methods of assessment. For example, participants who do not have opportunities to be observed conducting live meetings or briefings may be assessed through interviews or simulations.

Evidence of competency must include occupational safety and health and other legislative aspects of the job.

b. Recording and Reporting Assessment

The candidate should be given specific and constructive feedback on the assessment outcome. Information to be captured in an assessment record includes the Competency Unit and elements, the assessor name, assessment date, candidate name, the assessment evaluation, and any subsequent appeal and outcome. A suggested format is given in *Annex E*.

c. Recognition of Prior Learning

An individual who has acquired skills and knowledge relevant to this unit through previous learning or work experience may be assessed for recognition of prior learning. Where skills and knowledge have been gained through experience, the applicant will need to provide evidence of competence. Documentary evidence of formal assessment should be provided by the applicant such as certification obtained under National Skills Recognition System (NSRS) Competency Units or other recognised certification bodies.

d. Workplace Safety and Health Requirements

This programme should be delivered and assessed in accordance with Workplace Safety and Health (WSH) regulations of Singapore. Candidates should only be required to undertake instruction and assessments in environments that comply with WSH regulations of Singapore so as to ensure that everyone associated with learning in this programme commits to maintaining a safe environment. The following outlines where people can obtain more information and advice on the type of control measures used in the training programme to

eliminate WSH risks are also addressed. Some suggested strategies that could apply to this training programme are:

- establish policies for safety and health policies
- establish roles and responsibilities with respect to safety and health
- specify procedures for safety and health
- communicate safety and health instructions to trainers, assessors, participants and administrative staff
- maintain safety and health records

There should be an emphasis on the interaction between everyone involved in the learning process. Mutual consultation should cover all aspects of the learning process. Trainers and assessors should make the participants aware of the WSH issues throughout the Competency Unit in theoretical and practical situations. For more information on WSH regulations of Singapore please access www.mom.gov.sg.

5.3.3 Code of Practice for Assessors

Conflict of interest sometimes arises for assessors. Under these circumstances, the conflict should always be declared. Potential forms of conflict of interest in the assessment process and/or outcome may include:

- a pre-established, personal relationship between the assessor and the person being assessed
- financial implications for the assessor
- employment opportunities for the assessor
- power opportunities for the assessor

Referrals for opinions to other internal assessor/s or to an external assessor/s can help to establish fair practice. The referrals may involve informal verbal consideration, a formalised written document, or a combination of the two.

Care must be taken to conduct assessment practices that do not perpetrate possible workplace discriminatory practices. As well, assessors must not use the assessment to coerce personal or professional favours or to gain economic advantage CTAG from the person/s being assessed or potential client groups.

Personal or interpersonal factors (biases) not related to the assessment decision or process may include the characteristics of the person being assessed and/or the assessor - for example, race, gender, language background, religious background, political affiliation, sexual

orientation, physical disabilities, physical appearances, marital status, age, skin colour, social class and/or ethnic background. Such biases are always to be avoided.

Assessment specialists have developed an international code of ethics and practice (The National Council for Measurement in Education i.e. NCME). The Code of Practice below is based on the international standards:

- The differing needs and requirements of the person(s) being assessed, the local enterprise(s) and/or industry are identified and handled with sensitivity
- Potential forms of conflict of interest in the assessment process and/or outcomes are identified and appropriate referrals are made, if necessary
- All forms of harassment are avoided throughout the planning, conducting, reviewing and reporting of the assessment outcomes
- The rights of the candidate(s) are protected during and after the assessment
- Personal or interpersonal factors that are not relevant to the assessment of competency must not influence the assessment outcomes
- The candidate is made aware of rights and processes of appeal
- Evidence that is gathered during the assessment is verified for validity, reliability, authenticity, sufficiency and currency
- Assessment decisions are based on available evidence that can be produced and verified by another assessor
- Assessments are conducted within the boundaries of the assessment system policies and procedures
- Formal agreement is obtained from both the candidate(s) and the assessor that the assessment was carried out in accordance with agreed procedures
- Assessment tools, systems, and procedures are consistent with equal opportunity legislation
- The candidate is informed of all assessment reporting processes prior to the assessment
- The candidate is informed of all known potential consequences of decisions arising from an assessment, prior to the assessment
- Confidentiality is maintained regarding assessment results
- Results are only released with the written permission of the candidate(s)

- The assessment results are used consistently with the purposes explained to the candidate
- Self-assessments are periodically conducted to compare current competencies against the Advanced Certificate in Generic Manufacturing competencies
- Professional development opportunities are identified and sought
- Opportunities for networking amongst assessors are created and maintained
- Opportunities are created for technical assistance in planning, conducting and reviewing assessment procedures and outcomes

Sources: CU5 – Develop Competency-Based Assessment

CU6 – Conduct Competency-Based Assessment

5.4 Issuance of “Safety Pass” and the “Certificate of Successful Completion”

- 5.4.1 “Safety Pass/Card” is to be issued, in accordance with the format shown in Annex F, to candidate who is assessed “Competent” in this Competency Unit for the SOC.
- 5.4.2 “Certificate of Successful Completion” is to be issued, in accordance with the format shown in Annex G, to candidate who is assessed “Competent” in this Competency Unit.
- 5.4.3 TPs are to issue the certificate of successful completion in accordance to the format shown in Annex G to every candidate who is assessed “Competent” in this Competency Unit.

CHAPTER 6: ADULT EDUCATOR REQUIREMENTS

(Mandatory Section)

This chapter articulates the Adult Educator (AE) requirements covering these components:

6.1 Trainer/Facilitator Requirements

Trainer Requirements

The trainer must be able to demonstrate current competency in the Competency Units delivered. Current competency will usually be demonstrated by the completion of a relevant technical or vocational qualification, or relevant work experience within the generic manufacturing industry, it is recommended that the trainer hold a qualification higher than the level of qualification being delivered. In the nutshell, a trainer of the Competency Unit must:

- Have demonstrated competency for the Competency Unit to be delivered
- Have at least three (3) years of relevant industry experience at supervisory or managerial level, including evidence of maintaining currency, for example, through recent work in the industry as supervisor, consultant or trainer, or professional development or active membership of a professional association
- Be certified competent in Full Advanced Certificate in Training and Assessment (ACTA) or Advanced Certificate in Learning and Performance (ACLP) or Diploma in Adult Continuing Education (DACE) or Diploma in Design and Development of Learning for Performance (DDDLP).
- Have completed WSQ Specialist Diploma in Workplace Safety and Health or its equivalent or higher
- Have completed Oil/Petrochemical Industry Safety Course for Supervisors or its equivalent; or Have an established track record in the delivery of the Oil/Petrochemical Industry Safety Course for Supervisors or its equivalent.
- All trainers/adult educators are required to attain 10 hours (minimum) annually by attending Continuing Professional and Development (CPD) courses conducted by appointed training providers. For more details, refer to CPD Programme for WSH Trainers Programme in WSH Council website (www.wshc.sg).
- The trainer for the course is not permitted to be the assessor for the same course learners during the assessment.

6.2 Developer Requirements

Developer Requirements:

- AE should be competent in the WSQ technical or vocational qualification, at an equivalent WSQ level or higher. This should also include any mandatory or legal

certification or qualification. Alternatively, a qualified and experienced developer can work in consultation with an SME in developing a courseware.

- AE should possess at least 5 years of domain work experience within the sector.
- AE must have Diploma in Adult Continuing Education (DACE) or Diploma in Design and Development of Learning for Performance (DDDLP).

6.3 Assessor Requirements

The assessment is to be carried out by approved assessors who meet the assessor requirements for this unit. Assessors must:

- Have demonstrated competency under this competency unit.
- Have at least three (3) years of relevant industry experience at supervisory or managerial level, including evidence of maintaining currency, for example, through recent work in the industry as supervisor, consultant or trainer, or professional development or active membership of a professional association.
- Be certified competent in the planning and conducting of competency-based assessments or relevant National Trainer Competency Standards certification such as Advanced Certificate in Training and Assessment (ACTA) or Advanced Certificate in Learning and Performance (ACLP) or Diploma in Adult Continuing Education (DACE) or Diploma in Design and Development of Learning for Performance (DDDLP).
- Have completed WSQ Specialist Diploma in Workplace Safety and Health or its equivalent or higher
- Have completed Oil/Petrochemical Industry Safety Course for Supervisors or its equivalent; or an established track record in the delivery of the Oil/Petrochemical Industry Safety Course for Workers or its equivalent.

Assessors must follow the assessment guidelines and are expected to carry out the assessment activities which include a pre-assessment briefing, careful evaluation of the evidence, feedback to the candidate and recording the assessment outcome.

6.4 Facilities, Equipment and Tools Information

Identify the required and / or recommended facilities, equipment, and tools needed for the training and assessment. Special attention should be paid to facilities, equipment, and tools for learners with disabilities or special needs. For example but not limited to,

- Room with tables and chairs
- Flip-chart/whiteboard
- Audio/visual aids
- Office stationery (pens, markers, writing materials, graph paper, etc)
- Application software pertaining to data collection
- WSHA and its subsidiaries legislation
- Safety Data Sheet
- Technical advisory for Confined Space

- Personal Protective Equipment
- Gas testing instruments
- Open communication equipment
- First aid equipment

CHAPTER 7: SUMMARY OF MANDATORY SECTIONS / INFORMATION

This chapter summarizes all the mandatory sections and required information, for easy reference. ATOs / Adult Educators are expected to note the information indicated in the following Sections and to comply with the stated requirements, where appropriate:

<u>Section</u>	<u>Title</u>
2.6	Recommended Learning Hours (RLH)
2.7	Recommended Class Size and Trainer-Trainee Ratio
2.8	Recommended Assessor to Candidate Ratio
4.1	Content Coverage <i>On percentage of items under Range and Application and Evidence Sources to be covered</i>
4.5	Learning Strategies and Methods - Industry Requirements
5.1	Assessment Strategies - Industry Requirements
6.1	Trainer Requirements
6.2	Developer Requirements
6.3	Assessor Requirements

CHAPTER 8: RESOURCE INFORMATION

The various literatures, journals, articles and researched information on **Supervise Workplace Safety and Health in Process Plant** competency unit are listed below

- Workplace Safety & Health Act
- WSH(General Provisions) Regulations
- WSH(First Aid) Regulations
- WSH(Risk Management) Regulations
- WSH(Confined Spaces) Regulations 2009
- WSH(Noise) Regulations 2011
- WSH(Scaffold) Regulations 2011
- WSH (Operation of Cranes) Regulations 2009
- Factories (Asbestos) Regulations
- Code of Practice on WSH Risk Management
- Code of Practice for Working Safely at Height
- Code of Practice on Safe Lifting Operations in the Workplaces
- WSH Guidelines Safeguarding against Falling Objects
- Confined Spaces - Technical Advisory
- Lifting Equipment - Technical Advisory
- Flammable Hazardous Substances - Technical Advisory
- Safe Use of Machinery - Technical Advisory
- Work at Height - Technical Advisory
- Gas Cutting/Hot Work (Singapore Standard Document 510)
- Assessment Guidelines (published by WSH Council)
- Salient points of Code of practice 88: Part 1

8.1 CTAG Review Processes

The Curriculum, Training, and Assessment Guide should include the process for a regular review of the continuing relevance and quality of the document. A review should take place when there are changes such as industry developments, new technologies, work processes and legislation where applicable, or in response to feedback. Information on the feedback channel should be provided.

PART II

WSQ

&

Supporting Resources

1 Online WSQ Resources from WDA

This section highlights relevant WSQ resources that could be found online at WDA’s website, and which are useful to the users. If WSQ information can be found at WDA’s website, it should not be repeated in the Guide.

2 Glossary of Terms

This section presents the list of terms and abbreviations used in this document as well as terms frequently encountered in the training and assessment.

Glossary Terms	Description
Competency-based Assessment	Judging the degree to which a candidate has met predetermined criteria; candidates must show that they can do certain tasks in a prescribed way and that they know the context of the task and why it must be performed in certain ways.
Assessment Criteria	The standards against which assessments are judged; they must be explicit before the assessment is agreed and undertaken.
Assessment Instruments	The range of questionnaires, tests, checklists, and other materials used to assess specific skills, knowledge, qualities, or understanding; for example, there are tests designed to pick out weaknesses in processing of sales order, or tell us how confident we are; underpinning knowledge can be tested through oral questioning and skills by using real or simulated work tasks.
Assessment Plan	An agreed statement between candidate and assessor, normally documented, of how the candidate will demonstrate competence; the plan cover the whole award and whole unit of competence; assessment plan specifies what will be assessed, the criteria for assessment, how the assessment will be undertaken and by whom, the time-scale involved and any special arrangements that need to be made: the assessment plan is usually for individuals but can also be for groups.
Training Provider (TP)	A Training Provider (TP) is a training organisation accredited under the SSG to offer training programmes and assessment services leading to WSQ certification
Authentic	Authentic evidence can be established as being that of the candidate rather than that of another, or of a group; if group work is used as evidence, the candidate's contribution should be clearly identifiable. Determining whether performance evidence is authentic is straightforward if the assessor is observing the candidate actually doing something at work
Candidate	A person who is preparing to be assessed for a skills standard; the term is used in this document to indicate anyone who is presenting themselves for assessment in the workplace or

Glossary Terms	Description
	training school; depending on the context, the candidate can be an employee/client.
Certification	The process of registration, assessment, recording results, completing documentation, applying for and receiving certificates.
Certification Body (CB)	A Certification Body (CB) is an organization accredited by the Singapore Accreditation Council (SAC) to assess and certify a WSH Training Provider's compliance to ISO 29993:2017 and MOM/WSH Council requirements.
Competency	The ability to perform within a work-related function or occupational area to national standards expected in employment; the ability to produce results that are valuable to the employer and that make the employer valuable to the customer or consumer, that someone is willing to pay; employers and the public will not pay for what someone knows or feels; knowledge and attitudes are only useful if they help the person produce some valuable product or service.
Competency Unit	A group of elements of competence which together constitute a particular work role, duty or function, and which form the smallest grouping of competence able to be recognized separately for certification.
Currency	Refers to evidence which shows the candidate can competently perform at the time of the assessment; evidence less than two years old is usually required. For example, a candidate's evidence that he/she has worked in a retail store 15 years ago would not be considered current for a unit in retail nor would someone who has been out of work for the last two years qualify for a unit in retail. Generally, areas that deal primarily with people can use evidence that dates back over a greater number of years than occupational areas where rapid changes in technology are likely to make skills obsolete even those acquired only a few years before.
Evidence	Information from a variety of sources which proves competence or meeting the criteria.
Feedback	Reviewing a process and giving constructive oral or written comment to the candidate or candidates so that they understand the strengths and weaknesses of their performance / evidence and understand what to do as a consequence.
Practical Performance	Observation of performance at the actual workplace with real guests or clients to assess knowledge, skills and attitude.
Prior Experience	Experience acquired by the candidate before registering for an assessment which may provide evidence against units or elements of competence.
Prior Learning	Learning acquired by the candidate before registering for an assessment; this learning may or may not be certificated.

Glossary Terms	Description
Qualification	A certificate legally provided which indicates that the holder has reached a necessary standard.
Quality Assurance	The methods by which standards are regularly checked and monitored to ensure that procedures are done in a certain way.
Reliability	The degree to which an assessment can be administered with the same results to others, the consistent ability of the assessment or the assessor to accurately distinguish between competent and non-competent performance.
Role Play	A realistic exercise to assess knowledge, skills and attitudes. It replicates a real work situation with the assessor and candidate taking on pre-defined roles according to instructions.
Simulation	A realistic exercise set up specifically to assess knowledge, skills or understanding; it should replicate a real work situation and should be used in circumstances where it would be difficult or costly to assess within the work context (e.g. dealing with complaints).
Skill	The ability to do a task or perform an activity.
Statement of Attainment (SOA)	Certificate testifying that the candidate has the competencies identified in the competency standard. It can be achieved through training and assessment, assessment only pathway and recognition of prior learning (i.e. current work competencies, work experiences and prior learning)
Sufficiency	Evidence presented for accreditation is considered sufficient when they are enough to prove competence. Examples of insufficient evidence: letter from an employer which simply claims that the candidate is competent but does not say how that has been determined; documentation included in portfolio without any explanation as to why it is valid; only one observation of someone performing a task
Validity	An assessment process has validity if it measures what it is supposed to measure. Valid assessment implies that the method(s) used are the ones most likely to give an accurate picture of that individual's competence within a particular area. No evidence is automatically valid or not valid. It is the candidate's interpretation of that evidence and how they justify its relevance that makes it valid.

3 List of Acronyms

To provide a list of acronyms used to aid users. This glossary of used acronyms commonly encountered in the training and assessment.

Acronyms	Meaning
ABC	Association of Boards of Certification
ACTA	Advanced Certificate in Training and Assessment
AWWA	American Water Works Association

Acronyms	Meaning
C	Competent
CB	Certification Body
CBA	Competency-based Assessment
CE	Competency Element
CP	Code of Practice
CU	Competency Unit
CTAG	Curriculum Training and Assessment Guide
EPA	US Environmental Protection Agency
NYC	Not-Yet-Competent
OJT	On-the-Job Training
PET	Pre-employment Training
PC	Performance Criteria
PI	Process Industry
PS	Performance Statement
PUB	Public Utilities Board
RLH	Recommended Learning Hours
RPL	Recognition of Prior Learning
SDF	Skills Development Fund
SOA	Statement of Attainment
TP	Training Provider
UK	Underpinning Knowledge
WDA	Workforce Development Agency
WSH	Workplace Safety and Health
WSQ	Singapore Workforce Skills Qualifications

4 Version Control Record

An example is given below:

Version	Effective Date	Changes	Author	Approved
1.0		First Official Issue	ASPRI-IPI	WDA
2.0	21 Jan 2022	Updates	WSH Council	WSH Council
3.0	1 Sep 2023	Updates	WSH Council	WSH Council

Annex A

Instructional Strategy Selection Chart

Instructional Strategy	Cognitive Domain (Bloom, 1956)	Affective Domain (Krathwohl, Bloom, & Masia, 1973)	Psychomotor Domain (Simpson, 1972)
Lecture, reading, audio/visual, demonstration, or guided observations, question and answer period	1. Knowledge	1. Receiving phenomena	1. Perception 2. Set
Discussions, multimedia CBT, Socratic didactic method, reflection. Activities such as surveys, role playing, case studies, fishbowls, etc.	2. Comprehension 3. Application	2. Responding to phenomena	3. Guided response 4. Mechanism
On-the-Job-Training (OJT), practice by doing (some direction or coaching is required), simulated job settings (to include CBT simulations)	4. Analysis	3. Valuing	5. Complex response
Use in real situations. Also may be trained by using several high level activities coupled with OJT.	5. Synthesis	4. Organize values into priorities	6. Adaptation
Normally developed on own (informal learning) through self-study	6. Evaluation	5. Internalizing values	7. Origination

Instructional Strategy	Cognitive Domain (Bloom, 1956)	Affective Domain (Krathwohl, Bloom, & Masia, 1973)	Psychomotor Domain (Simpson, 1972)
or learning through mistakes, but mentoring and coaching can speed the process.			

The chart does not cover all possibilities, but most activities should fit in. For example, self-study could fall under reading, audio visual, and/or activities, depending upon the type of program you design.

(Extracted from <http://www.nwlink.com/~donclark/hrd/strategy.html>, accessed 19 Sep 2010)

Annex A2 – Evidence Sources Checklist

Name of Candidate and Organisation	
Name of Assessor	
Date & Venue of Assessment	

Summary of evidence sources for the Competency Unit(s)		
Competency Unit(s): Supervise Workplace Safety and Health in Process Plant		
Performance Criteria (PC)	Evidence Sources	
	Written / Oral Questioning	Practical Performance
PC1.1 Identify and comply with legislations and regulations relevant to oil / petrochemical industry		
PC1.2 Perform the roles and responsibilities of the supervisors to ensure workplace safety and health		
PC1.3 Conduct job safety analysis for a job or task		
PC1.4 Identify safety and health hazards associated with the job or task		
PC1.5 Evaluate level of risks involved in identified hazards		
PC1.6 Develop ways to eliminate / mitigate hazards identified in accordance with risk management regulations		
PC1.7 Co-ordinate measures to control risks according to organization's procedures		
PC1.8 Complete a risk assessment form		
PC1.9 Communicate risks to stakeholders according to organization's procedures		
PC2.1 Anticipate and identify types of hazards that are likely to occur in the workplace		

PC2.2	Assess hazards identified to determine their consequences and risks involved		
PC2.3	Identify gaps or shortfalls in workplace conditions and practices against existing control measures in accordance with organizational procedures		
PC2.4	Identify control measures to minimize safety risks arising from hazards		
PC2.5	Monitor the implementation of control measures in accordance with organizational procedures		
PC3.1	Identify the structure of Occupational Safety and Health Management System (OSHMS)		
PC3.2	Recognize the core elements of Occupational Safety and Health Management System (OSHMS)		
PC3.3	Check to ensure compliance of OSHMS		
PC3.4	Communicate to relevant stakeholders the requirement of OSHMS according to organization procedure		
PC4.1	Identify circumstances that require PTW		
PC4.2	Determine types of PTW required		
PC4.3	Assist in preparing and submitting a PTW		
PC4.4	Ensure compliance to PTW according to legal and organization requirements		
PC5.1	Carry out safety and health inspection according to legislations and organization's guidelines and procedures		
PC5.2	Document observations / findings of inspection using relevant inspection checklists		
PC5.3	Take appropriate follow-up actions to monitor deficiencies identified		
PC6.1	Gather information and facts about incident		
PC6.2	Analyze information and facts to determine root causes of incidents		

PC6.3 Preparing recommendations for the consideration of management		
PC6.4 Report findings according to relevant legislations and guidelines		
PC6.5 Maintain proper documentation of incident investigation		

Annex B – Performance Criteria Checklist

Name of Candidate and Organisation	
Name of Assessor	
Date & Venue of Assessment	
Competency Unit(s)	Supervise Workplace Safety and Health in Process Plant

Assessment Strategy		Performance Criteria Assessed	Result		Remarks
			C	NYC	
1.	Written / Oral Questioning	1.1 Identify and comply with legislations and regulations relevant to oil / petrochemical industry when carrying out duties and responsibilities of a supervisor			
		1.2 Perform the roles and responsibilities of the supervisors to ensure workplace safety and health			
		1.9 Communicate risks to stakeholders according to organization's procedures			
		2.1 Anticipate and identify types of hazards that are likely to occur in the workplace			
		2.2 Assess hazards identified to determine their consequences and risks involved			
		2.3 Identify gaps or shortfalls in workplace conditions and practices against existing control measures in according with organizational procedures			
		2.4 Identify control measures to minimize safety risks arising from hazards			

		2.5	Monitor the implementation of control measures in accordance with organizational procedures			
2	Practical Performance / Group Activity	1.3	Conduct job safety analysis for a job or task			
		1.4	Identify safety and health hazards associated with the job or task			
		1.5	Evaluate level of risks involved in identified hazards			
		1.6	Develop ways to eliminate / mitigate hazards identified in accordance with risk management regulations			
		1.7	Co-ordinate measures to control risks according to organization's procedures			
		1.8	Complete a risk assessment form			
		1.9	Conduct job safety analysis for a job or task			
		4.1	Identify circumstances that require PTW			
		4.2	Determine types of PTW required			
		4.3	Assist in preparing and submitting a PTW			
		4.4	Ensure compliance to PTW according to legal and organization requirements			
		5.1	Carry out safety and health inspection according to legislations and organization's guidelines and procedures			
		5.2	Document observations / findings of inspection using relevant inspection checklists			

		5.3 Take appropriate follow-up actions to monitor deficiencies identified			
		6.1 Gather information and facts about incident			
		6.2 Analyze information and facts to determine root causes of incidents			
		6.3 Preparing recommendations for the consideration of management			
		6.4 Report findings according to relevant legislations and guidelines			
		6.5 Maintain proper documentation of incident investigation			

Annex C – Evidence Checklist

Evidence Plan		
Name of candidate & Organisation		
Name of assessor		
Competency Unit(s)	Supervise Workplace Safety and Health in Process Plant	
Sources of Evidence	Expected Evidence	Received
Written / Oral Questioning		<input type="checkbox"/>
Practical Performance		<input type="checkbox"/>
Skills development activities		
Arrangements		
Agreement		
<input type="checkbox"/> Evidence to be submitted by:		
<input type="checkbox"/> Interview date:		
<input type="checkbox"/> I agree to the evidence plan:		
<input type="checkbox"/> Candidate	(name)	(signature)
.....
<input type="checkbox"/> Assessor	(name)	(signature)
.....

Annex D – Verbal /Knowledge Assessment Checklist

Record of Interview Questions				
Name of Candidate & Organisation				
Name of assessor				
Date and Venue of Assessment				
Competency Unit(s)		Supervise Workplace Safety and Health in Process Plant		
Questions	Satisfactory Response		Remarks	
	Yes	No		
UK 1	Legal requirements of Workplace Safety and Health Act (WSHA)	<input type="checkbox"/>	<input type="checkbox"/>	
UK 2	Key subsidiary legislations, regulations and codes of practice	<input type="checkbox"/>	<input type="checkbox"/>	
UK 3	Roles and duties of an oil/petrochemical supervisor in safety and health	<input type="checkbox"/>	<input type="checkbox"/>	
UK 4	WSH (Risk Management) Regulations 2006	<input type="checkbox"/>	<input type="checkbox"/>	
UK 5	Risk management process	<input type="checkbox"/>	<input type="checkbox"/>	
UK 6	Methods to identify hazards	<input type="checkbox"/>	<input type="checkbox"/>	
UK 7	Technique to evaluate risks	<input type="checkbox"/>	<input type="checkbox"/>	
UK 8	Methods to control risks – hierarchy of controls	<input type="checkbox"/>	<input type="checkbox"/>	
UK 9	Pitfalls of risk assessments	<input type="checkbox"/>	<input type="checkbox"/>	
UK 10	The need for regular review of risk assessment and control measures	<input type="checkbox"/>	<input type="checkbox"/>	
UK 11	Importance of record keeping in risk management	<input type="checkbox"/>	<input type="checkbox"/>	
UK 12	Importance of communicating risks to stakeholders	<input type="checkbox"/>	<input type="checkbox"/>	
UK 13	Knowledge of General Safety and Health	<input type="checkbox"/>	<input type="checkbox"/>	
UK 14	Knowledge of Fire and Explosion Prevention	<input type="checkbox"/>	<input type="checkbox"/>	
UK 15	Knowledge of Safe Work Practices in Confined Space	<input type="checkbox"/>	<input type="checkbox"/>	
UK 16	Knowledge of Mechanical and Electrical Hazards	<input type="checkbox"/>	<input type="checkbox"/>	

UK 17	Knowledge of Health Hazards	<input type="checkbox"/>	<input type="checkbox"/>
UK 18	Knowledge of Legislations and regulations	<input type="checkbox"/>	<input type="checkbox"/>
UK 19	WSH (Safety Management System)	<input type="checkbox"/>	<input type="checkbox"/>
UK 20	Elements of Process Safety Management	<input type="checkbox"/>	<input type="checkbox"/>
UK 21	Occupational Safety and Health	<input type="checkbox"/>	<input type="checkbox"/>
UK 22	Permit-to-work system (PTW) and its	<input type="checkbox"/>	<input type="checkbox"/>
UK 23	Circumstances that require PTW	<input type="checkbox"/>	<input type="checkbox"/>
UK 24	Types of PTW	<input type="checkbox"/>	<input type="checkbox"/>
UK 25	Responsibility and authority of permit	<input type="checkbox"/>	<input type="checkbox"/>
UK 26	Competencies of permit signatories	<input type="checkbox"/>	<input type="checkbox"/>
UK 27	PTW process	<input type="checkbox"/>	<input type="checkbox"/>
UK 28	Guidelines for issuing permit	<input type="checkbox"/>	<input type="checkbox"/>
UK 29	Essential features of a PTW	<input type="checkbox"/>	<input type="checkbox"/>
UK 30	General preparatory work	<input type="checkbox"/>	<input type="checkbox"/>
UK 31	Types of workplace hazards	<input type="checkbox"/>	<input type="checkbox"/>
UK 32	Purpose and procedure for Lock Out Tag Out (LOTO)	<input type="checkbox"/>	<input type="checkbox"/>
UK 33	Objectives and purpose of safety and health inspection	<input type="checkbox"/>	<input type="checkbox"/>
UK 34	Types of safety and health inspection	<input type="checkbox"/>	<input type="checkbox"/>
UK 35	Roles and responsibilities of stakeholders in safety and health inspection	<input type="checkbox"/>	<input type="checkbox"/>
UK 36	Safety and health inspection procedures	<input type="checkbox"/>	<input type="checkbox"/>
UK 37	Purpose and importance of using	<input type="checkbox"/>	<input type="checkbox"/>
UK 38	ARC hazard rating system	<input type="checkbox"/>	<input type="checkbox"/>
UK 39	Follow-up actions and their purposes	<input type="checkbox"/>	<input type="checkbox"/>
UK 40	Accident causation theories and their applications	<input type="checkbox"/>	<input type="checkbox"/>
UK 41	Purpose of incident investigation	<input type="checkbox"/>	<input type="checkbox"/>
UK 42	Incident investigation process and procedures	<input type="checkbox"/>	<input type="checkbox"/>
UK 43	Techniques of incident report writing	<input type="checkbox"/>	<input type="checkbox"/>

The candidate's underpinning knowledge and understanding was:

Satisfactory **Not satisfactory**

Signed by the candidate: _____ **Date:** _____

Signed by the assessor: _____

Date: _____

Feedback to candidate:

Annex E – Suggested Format for Recording and Reporting Assessment

Competency Unit(s)	Supervise Workplace Safety and Health in Process Plant
Name of Candidate & Organisation	
Name of assessor	
Date and Venue of Assessment	

Assessment Criteria For...	Competent	Not Yet Competent
Feedback to participant:		
Assessor's Signature : _____ Date: _____		
Re-assessment information		
Date of re-assessment _____ Item/s to be re-assessed	Competent	Not Yet Competent
Assessor's Signature : _____ Date: _____		

Annex F

Format of Safety Pass

Training Providers are to issue a Safety Pass and or Certificate of Course Completion, to workers who have successfully completed and passed the course.

Do note that the reference below is intended only to present the format of the pass and should not be used as an actual template for direct printing.

Guidelines for the credit card size pass for MOM WSH courses by TPs

3 $\frac{3}{8}$ × 2 $\frac{1}{8}$ inch (85.60 × 53.98 mm)



Font Type: Arial
Font size (Course title): Recommended 8pt or larger
Font size (Others): Recommended 6pt or larger
Photo size: 3.1cm X 2.4cm

- Pass should contain no less than the information depicted in the guide
- TP may use their own reference format for serial number
- Course Title should be the title as indicated in the WSQ Framework(CS/CTAG). The Technical Skills and Competency (TSC) Code and Title, should also be printed in parentheses () aligned to the title reflected in either the Competency Standards (CS) or TSC. However, it is not required to print the TSC Course name if it is the same as the SC/CTAG title
- ID should be FIN, NRIC Passport Number or any unique official identifier
- Course Venue should reflect address of training centre (not business office, etc) which pass holder attended
- Trainer signature should reflect the trainer that conducted the course

Back view



1. Use of card is governed by terms and conditions of < Name of Training Provider>
2. < Name of Training Providers> is a SkillsFuture Singapore Agency's Training Provider at the date of issuance of the pass
3. This card is not transferrable
4. The course is conducted @ < Course venue>
5. Holder of the card has been certified competent in the <Course Title> on the issued date as indicated in front.
6. This card will expire <xx> years from the date of issue.
7. This card is the property of < Name of Training Provider> and must be returned on request.
8. Card shall be retained if it has been tampered with, misused or replaced.
9. This card is issued by < Name of Training Provider>. If found, please return to < Name of Training Provider> . at <Address of < Name of Training Provider>..
10. For enquiries, please contact < Name of Training Provider> . > at <hotline>

Font Type: Arial

Font size : Recommended 6pt or larger

Certificate of Successful Completion

Training Providers are to issue a Safety Pass and or Certificate of Course Completion, to workers who have successfully completed and passed the course.

<p>3 inch 10pt</p> <hr/> <p>20pt</p> <hr/> <p>10pt</p> <hr/> <p>16pt 12pt</p> <hr/> <p>10pt</p> <hr/> <p>16pt</p> <hr/> <p>10pt</p> <hr/> <p>12pt</p> <hr/> <p>10pt</p> <hr/> <p>10pt</p> <hr/> <p>1 inch</p>	<p><Official Logo/Name of TP></p> <p style="text-align: right;">Serial Number: <xxx></p> <p style="text-align: center;">CERTIFICATE OF SUCCESSFUL COMPLETION</p> <p style="text-align: center;">is awarded to</p> <p style="text-align: center;"><Name of Trainee></p> <p style="text-align: center;">< ID ></p> <p style="text-align: center;">for successful completion of the</p> <p style="text-align: center;"><Course Title></p> <p style="text-align: center;"><TSC Title/Code></p> <p style="text-align: center;">< Name of TP ></p> <p style="text-align: center;"><small><TP Approved by SkillsFuture Singapore></small></p> <p style="text-align: center;">@ < Training venue ></p> <p style="text-align: center;">from</p> <p style="text-align: center;"><Training Date/s></p> <p style="text-align: center;">Validity: < x Years from last date of course/ NA ></p> <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;">  <p>Genius Man Director / Principal Training Division <Name of TP> / Company Stamp</p> </div> <div style="text-align: center;">  <p>Smart Man Trainer Training Division <Name of TP></p> </div> </div> <p style="font-size: small; text-align: center;"><Name of TP> UEN: <XXX> <Office Address> Tel: <xxx> Fax: <xxx> Website: <xxx> Email: <xxx></p>
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- Certificate should contain no less than the information depicted in the guide
- TP may use their own reference format for serial number
- ID should be FIN, NRIC Passport Number or any unique official identifier
- For TP Course, Course Title should be the corresponding title as indicated in WSQ System Framework(CS/CTAG). The Technical Skills and Competency (TSC) Code and Title should be printed in parentheses () aligned to the title reflected in either the Competency Standards (CS) or TSC. However, it is not required to print the TSC course name if it is the same as the CS/CTAG Title
- Course Venue should reflect address of training centre (not business office, etc) which pass holder attended
- Certificate should indicate that <<Name of TP>> is a Training Provider (TP) approved by SkillsFuture Singapore for <<Course Title of corresponding course>>
- Trainer signature should reflect the trainer that conducted the course
- Management of safety certificate should be in accordance to the requirements under TP scheme