



**Maldives National Skills Development Authority**



# **National Competency Standard for Sound Engineering**

**Standard Code: SOC17S17V1**

**Qualification Name: National Certificate III in Sound Engineering**  
**Qualification Code: SOC17SQ1L317**

## **PREFACE**

Technical and Vocational Education and Training (TVET) Authority was established with the vision to develop a TVET system in the Maldives that is demand driven, accessible, beneficiary financed and quality assured, to meet the needs of society for stability and economic growth, the needs of Enterprise for a skilled and reliable workforce, the need of young people for decent jobs and the needs of workers for continuous mastery of new technology.

TVET system in the Maldives flourished with the Employment Skills Training Project (ESTP) funded by ADB with the objective of increasing the number of Maldivians, actively participating in the labor force, employed and self-employed. The Project supported expansion of demand driven employment-oriented skills training in priority occupations and to improve the capacity to develop and deliver Competency Based Skill Training (CBST). The project supported delivery of CBST programs to satisfy employer demand-driven needs. The National Competency Standards (NCS) provide the base for this training. Currently CBST is offered for five key sectors in the Maldives: Tourism, Fisheries and Agriculture, Transport, Construction and the Social sectors. These sectors are included as priority sectors that play a vital role in the continued economic growth of the country.

The NCS are developed in consultation with Employment Sector Councils representing employers. They are designed using a consensus format endorsed by the Maldives Qualifications Authority (MQA) to maintain uniformity of approach and the consistency of content amongst occupations. This single format also simplifies benchmarking the NCS against relevant regional and international standards. NCS specify the standards of performance of a competent worker and the various contexts in which the work may take place. NCS also describes the knowledge, skills and attitudes required in a particular occupation. They provide explicit advice to assessors and employers regarding the knowledge, skills and attitudes to be demonstrated by the candidates seeking formal recognition for the competency acquired following training or through work experience. By sharing this information, all participants in the training process have the same understanding of the training required and the standard to be reached for certification. Certification also becomes portable and can be recognized by other employers and in other countries with similar standards. NCS are the foundation for the implementation of the TVET system in Maldives. They ensure that all skills, regardless of where or how they were developed can be assessed and recognized. They also form the foundation for certifying skills in the Maldives National Qualification Framework (MNQF).

## KEY FOR CODING

### Coding Competency Standards and Related Materials

DESCRIPTION	REPRESENTED BY
Industry Sector as per ESC (Three letters)	Construction Sector ( <b>CON</b> ) Fisheries and Agriculture Sector ( <b>FNA</b> ) Transport sector ( <b>TRN</b> ) Tourism Sector ( <b>TOU</b> ) Social Sector ( <b>SOC</b> ) Foundation ( <b>FOU</b> )
Competency Standard	<b>S</b>
Occupation within an industry Sector	<b>Two digits 01-99</b>
Unit	<b>U</b>
Common Competency	<b>1</b>
Core Competency	<b>2</b>
Optional/ Elective Competency	<b>3</b>
Assessment Resources Materials	<b>A</b>
Learning Resources Materials	<b>L</b>
Curricula	<b>C</b>
Qualification	<b>Q1, Q2 etc</b>
MNQF level of Qualification	<b>L1, L2 etc</b>
Version Number	<b>V1, V2 etc</b>
Year of endorsement of standard, qualification	<b>By two digits Example- 07</b>

**1.Endorsement Application for Qualification 01****2. NATIONAL CERTIFICATE III IN SOUND TECHNICIAN****3. Qualification code:** SOC17SQ1L317**Total Number of Credits: 42****4. Purpose of the qualification**

The holders of this qualification will possess the necessary skills and knowledge required to work as a sound technician. Work may be undertaken as part of a team and would be generally performed under supervision in a structured environment.

**5. Regulations for the qualification**

National Certificate III in Sound Technician Qualification will be awarded to those who are competent in unit 1+2+3+4+5+6+7+8+9

**6. Schedule of Units**

Unit Title	Unit Title	Code
1	Observe personal and workplace hygiene practices	SOC17S1U01V1
2	Practice health, safety and security practices	SOC17S1U02V1
3	Practice effective workplace communication	SOC17S1U03V1
4	Perform computer operations	SOC17S1U04V1
5	Handle physical elements safely during bump in/bump out	SOC17S1U05V1
6	Develop basic audio skills and knowledge	SOC17S1U06V1
7	Select and manage microphone and other audio input sources	SOC17S1U07V1
8	Install and disassemble audio equipment	SOC17S1U08V1
9	Assist with sound recordings	SOC17S1U09V1

**7. Accreditation requirements**

The training provider should place trainees in relevant work environments to provide the trainees the hands-on experience related to this qualification.

**8. Recommended sequencing of units**

As appearing under the section 06

**1.Endorsement Application for Qualification 02****2. NATIONAL CERTIFICATE IV IN SOUND ENGINEER**

<b>3. Qualification code:</b> SOC18SQ2L417		<b>Total Number of Credits: 168</b>
<b>4. Purpose of the qualification</b> <p>The holders of this qualification will possess in depth necessary skills and knowledge required to work as a sound engineer. Work may be undertaken as part of a team and would be performed under supervision or independently in a structured environment.</p>		
<b>5. Regulations for the qualification</b>		National Certificate IV in Sound Engineer Qualification will be awarded to those who are competent in unit 1+2+3+4+6+7+8+9+10+11+12+13+14
<b>6. Schedule of Units</b>		
Unit Title	Unit Title	Code
1	Observe personal and workplace hygiene practices	SOC17S1U01V1
2	Practice health, safety and security practices	SOC17S1U02V1
3	Practice effective workplace communication	SOC17S1U03V1
4	Perform computer operations	SOC17S1U04V1
5	Handle physical elements safely during bump in/bump out	SOC17S1U05V1
6	Develop basic audio skills and knowledge	SOC17S1U06V1
7	Select and manage microphone and other audio input sources	SOC17S1U07V1
8	Install and disassemble audio equipment	SOC17S1U08V1
9	Assist with sound recordings	SOC17S1U09V1
10	Manipulate and incorporate audio into multimedia presentations	SOC17S1U10V1
11	Perform basic sound editing	SOC17S1U11V1
12	Develop and implement sound plans	SOC17S1U12V1
13	Apply a general knowledge of audio to work activities	SOC17S1U13V1
14	Manage audio operations for outdoor events	SOC17S1U14V1
15	Undertake live audio operations	SOC17S1U15V1
16	Manage and compile audio replay material	SOC17S1U16V1
17	Solve problems in basic electronic circuits	SOC17S1U17V1
18	Repair and maintain audio equipment	SOC17S1U18V1

<b>7. Accreditation requirements</b>	The training provider should place trainees in relevant work environments to provide the trainees the hands-on experience related to this qualification.
<b>8. Recommended sequencing of units</b>	As appearing under the section 06

## UNIT DETAILS

Unit Title	Unit Title	Code	Level	No of credits
1	Observe personal and workplace hygiene practices	SOC17S1U01V1	3	3
2	Practice health, safety and security practices	SOC17S1U02V1	3	3
3	Practice effective workplace communication	SOC17S1U03V1	3	3
4	Perform computer operations	SOC17S1U04V1	3	3
5	Handle physical elements safely during bump in/bump out	SOC17S1U05V1	3	6
6	Develop basic audio skills and knowledge	SOC17S1U06V1	3	6
7	Select and manage microphone and other audio input sources	SOC17S1U07V1	3	6
8	Install and disassemble audio equipment	SOC17S1U08V1	3	6
9	Assist with sound recordings	SOC17S1U09V1	3	6
10	Manipulate and incorporate audio into multimedia presentations	SOC17S2U10V1	4	15
11	Perform basic sound editing	SOC17S2U11V1	4	12
12	Develop and implement sound plans	SOC17S2U12V1	4	15
13	Apply a general knowledge of audio to work activities	SOC17S2U13V1	4	15
14	Manage audio operations for outdoor events	SOC17S2U14V1	4	15
15	Undertake live audio operations	SOC17S2U15V1	4	15
16	Manage and compile audio replay material	SOC17S2U16V1	4	15
17	Solve problems in basic electronic circuits	SOC17S2U17V1	4	12
18	Repair and maintain audio equipment	SOC17S2U18V1	4	12

### **Packaging of National Qualifications:**

National Certificate III in Sound Technician will be awarded to those who are competent in units

1+2+3+4+5+6+7+8+9

Qualification Code:

SOC17SQ1L317

National Certificate IV in Sound Engineer will be awarded to those who are competent in units

1+2+3+4+5+6+7+8+9+10+11+12+13+14+15+16+17+18

Qualification Code:

SOC18SQ2L417



## COMPETENCY STANDARD FOR SOUND ENGINEERING

Unit No	Unit Title
1.	Observe personal and workplace hygiene practices
2.	Practice health, safety and security practices
3.	Practice effective workplace communication
4.	Perform computer operations
5.	Handle physical elements safely during bump in/bump out
6.	Develop basic audio skills and knowledge
7.	Select and manage microphone and other audio input sources
8.	Install and disassemble audio equipment
9.	Assist with sound recordings
10.	Manipulate and incorporate audio into multimedia presentations
11.	Perform basic sound editing
12.	Develop and implement sound plans
13.	Apply a general knowledge of audio to work activities
14.	Manage audio operations for outdoor events
15.	Undertake live audio operations
16.	Manage and compile audio replay material
17.	Solve problems in basic electronic circuits
18.	Repair and maintain audio equipment

## **BRIEF DESCRIPTION**

Sound engineers or audio engineers work on the technical aspects of sound and music production by mixing, reproducing and manipulating the equalization and electronic effects of sound.

Sound engineers don't have to work strictly in music. Some engineers end up designing and controlling the sound at conferences, in theatres, and in any other venue that requires sound projection for an audience.

By controlling microphones, sound levels, and outputs, sound engineers combine their well-trained ears with their knowledge of acoustics to produce the best quality of sound for a variety of purpose.

Sound engineering is all about taking responsibility for the delivery of sound no matter what the medium. This may be mixing of sound at a venue, maintaining a broadcast, mixing and recording in a studio or even the maintenance and repair of sound equipment.

Sound engineering also requires one to understand the correct use of equipment such as the microphones, amplification, acoustic demands of a room/ venue and much more – all for the sole purpose of ensuring that the audience (in whatever form the sound is delivered – recorded, live or broadcast) receives the desired experience.

## UNIT 01

<b>UNIT TITLE</b>	Observe personal and work place hygiene practices				
<b>DESCRIPTOR</b>	<p>This unit covers the knowledge, skills and attitudes required to observe workplace hygiene procedures and maintaining of personal presentation and grooming standard.</p> <p>This unit deals with necessary skills and knowledge required for maintaining the hygiene of workers and the hygienic practices that should be applied while on the job.</p>				
<b>CODE</b>	SOC17S1U01V1	<b>LEVEL</b>	3	<b>CREDIT</b>	3

<b>ELEMENTS OF COMPETENCIES</b>	<b>PERFORMANCE CRITERIA</b>
1. Observe grooming, hygiene and personal presentation standards	<p>1.1. Grooming, hygiene and personal presentation practices maintained at high standards in line with industry norms and procedures</p> <p>1.2. Adequate level of personal cleanliness observed throughout the work</p> <p>1.3. Effects of poor personal hygiene understood and avoided in all practices</p>
2. Follow hygiene procedures	<p>2.1. Hygiene procedures followed in line with procedures and legal requirements</p> <p>2.2. Hygiene standards maintained in line with procedures</p>
3. Identify and avoid hygiene risks	<p>3.1. Hygiene risks understood and avoided in line with general standards and guidelines</p>

## ASSESSMENT GUIDE

### Form of assessment

- Assessment for the unit needs to be holistic and observed during assessment of other units of competency which forms the qualification.
- Any written or oral examinations may include questions related to hygiene, illness and personal grooming standard.

## Assessment context

Assessment may be done in workplace or a simulated work environment.

## Critical aspects

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- Maintaining adequate level of all aspects of personal hygiene and cleanliness
- Following cleaning procedures for effective cleaning of work areas
- Immediately reporting any symptoms of illness
- Undertaking routine medical check-ups
- This unit may be assessed in conjunction with all and units which form part of the normal job role

## Assessment conditions

- Theoretical assessment of this unit must be carried out in an examination room where proper examination rules are followed.
- Assessment of hygienic work practices must be constantly evaluated.

## UNDERPINNING KNOWLEDGE AND SKILLS

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"><li>• General knowledge of common terminologies used in hygiene including personal hygiene</li><li>• Knowledge on general symptoms of different types of diseases</li><li>• Detailed knowledge and importance of illness and injury reporting procedures</li></ul>	<ul style="list-style-type: none"><li>• Ability to follow procedures and instructions</li><li>• Competent to work according to relevant hygiene regulations and procedures</li><li>• Competent to work to meet requirements for personnel hygiene and hygienic practices</li><li>• Communication skills</li><li>• Interpersonal skills</li></ul>

## UNIT 02

<b>UNIT TITLE</b>	Practice health, safety and security Practices				
<b>DESCRIPTOR</b>	This unit describes the importance of health and safety in the working environment. It identifies the key safety hazards within the work area and recognizes the correct manner in which to safely carry out the tasks of the job, for the benefit of the trainee, colleagues and customers.				
<b>CODE</b>	SOC17S1U02V1	<b>LEVEL</b>	3	<b>CREDIT</b>	3

<b>ELEMENTS OF COMPETENCIES</b>	<b>PERFORMANCE CRITERIA</b>
1. Follow workplace health, safety and security procedures	1.1. Health, safety and security procedures followed in line with operational policies and procedures and laws and regulations 1.2. Illnesses reported through proper channels of communication, using relevant forms and formats, in line with enterprise procedures 1.3. Safety and security breaches reported through proper channels of communication, in line with enterprise procedures
2. Deal with emergency situations	2.1. Emergency situations recognized and appropriate procedures followed in line with enterprise procedures 2.2. Assistance sought and cooperation given in emergency situations in line with enterprise procedures 2.3. Emergency incidences reported in line with enterprise procedures
3. Identify and prevent hygiene risks	3.1. Hygiene risks identified, prevented and avoided in line with enterprise procedures 3.2. Hygiene risks reported to appropriate persons and corrective action taken in line with enterprise procedures

4. Clean the work area	4.1. Cleaning tasks accomplished to enterprise standards 4.2. Proper method for cleaning selected and employed for appropriate task 4.3. Undertakes sterilization 4.4. Understands infection control procedures
5. Secure work premises	5.1. Work premises closed and locked at the end of work, in line with enterprise procedures
6. Follow first aid procedures	6.1. Emergency and first aid procedures understood and followed.
7. Inventory and storage	7.1. Inventory maintained 7.2. Equipment stored according to the set procedures

## RANGE STATEMENT

Procedures included:

- Guidelines for safe handling of equipment of utensils
- Emergency procedures
- Fire safety procedures
- Security and safety guidelines
- Cleaning and decontamination procedures
- Waste handling procedures
- Cleaning chemicals handling guidelines
- Accident and incidence reporting procedures
- Basic first aid procedures
- Maintaining storage and inventory

## Tools, equipment and materials required may include:

Relevant procedure manuals

## ASSESSMENT GUIDELINE

### Forms of assessment

Assessment for the unit needs to be holistic and must be observed through real or simulated workplace activities.

### Assessment context

Assessment of this unit must be completed on the job or in a simulated work environment which reflects a range of safe working practices.

### Critical aspects (for assessment)

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- Communicating effectively with others involved in or affected by the work.
- Identifying and assessing hazardous situations and rectifying, or reporting to the relevant persons.
- Safely handling and storage of dangerous and/or hazardous goods and substances.
- Applying safe manual handling practices.
- Safely and effectively operating equipment and utilising materials over the full range of functions and processes for work undertaken on worksite.
- This unit may be assessed in conjunction with all and units which form part of the normal job role.

### **Assessment conditions**

Assessment must reflect and events processes that occur over a period of time

### **Resources required for assessment**

The following should be made available:

- A workplace or simulated workplace
- Situations requiring safe working practices
- Instructions on safe working practice
- Hazardous chemicals and/or dangerous goods information
- Common food services equipment with their usage guideline

### **UNDERPINNING KNOWLEDGE AND SKILLS**

<b>UNDERPINNING KNOWLEDGE</b>	<b>UNDERPINNING SKILLS</b>
<ul style="list-style-type: none"> <li>• General knowledge on safe practices</li> <li>• Communication procedures</li> <li>• Relevant workplace procedures and guidelines</li> <li>• Infection control</li> <li>• sterilisation</li> </ul>	<ul style="list-style-type: none"> <li>• Undertake safe manual handling jobs</li> <li>• Competent to follow safety regulations</li> <li>• Competent to work safely with workplace equipments, materials and colleagues</li> </ul>

### UNIT 03

<b>UNIT TITLE</b>	Practice effective workplace communication				
<b>DESCRIPTOR</b>	This unit addresses the need for effective communication in the spa environment. It describes the ethics of communication and shows the importance of selecting the best method of communication during various situations. It also identifies the barriers to communication and explains how to overcome them. The unit also describes how to use the telephone; the procedures for answering, transferring and holding calls, making outgoing calls and taking messages. In addition it also highlights the need for cleaning telephone equipment.				
<b>CODE</b>	SOC17S1U03V1	<b>LEVEL</b>	3	<b>CREDIT</b>	3

<b>ELEMENTS OF COMPETENCIES</b>	<b>PERFORMANCE CRITERIA</b>
1. Communicate with customers and colleagues	1.1 Proper channels and methods of communication used 1.2 Workplace interactions with customers and colleagues appropriately made 1.3 Appropriate non-verbal communication used 1.4 Appropriate lines of communication followed
2. Participate in workplace meetings and discussions	2.1 Meetings and discussions attended on time 2.2 Procedures to expressing opinions and following instructions clearly followed 2.3 Questions asked and responded to effectively 2.4 Meeting and discussion outcomes interpreted and implemented correctly
3. Handle relevant work-related documentation	3.1 Conditions of employment understood correctly 3.2 Relevant information accessed from appropriate sources 3.3 Relevant data on workplace forms and other documents filled correctly 3.4 Instructions and guidelines understood and followed properly



	3.5 Reporting requirements completed properly
4. Handle telephone	4.1 Procedures for taking messages and making outgoing calls followed correctly 4.2 Incoming calls answered correctly 4.3 Calls put on hold and transferred properly 4.4 Outgoing calls made efficiently 4.5 Communication in both English and Dhivehi demonstrated correctly

## RANGE STATEMENT

Procedures included:

- Organizational hierarchy and reporting order
- Communications procedures
- Telephone handling procedures

Aspects evaluated:

- Non-verbal communication
- Interpersonal skills
- General attitude to customers, colleagues and work
- Conformity to policies and procedures

**Tools, equipment and material used in this unit may include**

- Telephone
- Note pads
- Pens
- Forms and formats related to inter-personal communication

## ASSESSMENT GUIDE

### Assessment form

Assessment for the unit needs to be continuous and holistic and must include real or simulated workplace activities.

### Assessment context

Assessment of this unit must be completed on the job or in a simulated work environment which reflects a range of opportunities for communication.

### Critical aspects (for assessment)

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of communicating effectively with others involved in or affected by the work. This unit may be assessed in conjunction with all and units which form part of the normal job role.

## Assessment conditions

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying circumstances.

## Special notes for assessment

Evidence of performance may be provided by customers, team leaders/members or other persons, subject to agreed authentication arrangements

## Resources required for assessment

The following should be made available:

- A workplace or simulated workplace
- Materials and equipment

## UNDERPINNING KNOWLEDGE AND SKILLS

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"><li>• General knowledge of English and Divehi grammar</li><li>• General knowledge of common telephone equipment</li><li>• General knowledge on effective communication</li></ul>	<ul style="list-style-type: none"><li>• Undertake effective customer relation communications</li><li>• Competent in communicating basic with customers</li><li>• Fluency in English and Dhivehi language usage</li></ul>

## UNIT 04

<b>UNIT TITLE</b>	Perform Computer Operations				
<b>DESCRIPTOR</b>	This unit covers the knowledge, skills and attitudes and values needed to perform computer operations that include inputting, accessing, producing and transferring data using the appropriate hardware and software.				
<b>CODE</b>	SOC17S1U04V1	<b>LEVEL</b>	3	<b>CREDIT</b>	3

<b>ELEMENTS OF COMPETENCIES</b>	<b>PERFORMANCE CRITERIA</b>
1. Input data into computer	1.1. Data entered into the computer using appropriate program/application in accordance with company procedures 1.2. Accuracy of information checked and information saved in accordance with standard operating procedures 1.3. Input data stored in storage media according to requirements
2. Access information using computer	2.1. Correct program/application selected based on job requirement 2.2. Program/application containing the information required accessed according to company procedures 2.3. Desktop icons correctly selected, opened and closed for navigation purposes
3. Produce/output data using computer system	3.1. Entered/stored data processed using appropriate software commands 3.2. Data printed out as required using computer hardware/peripheral devices in accordance with standard operating procedures 3.3. Files and data transferred between compatible systems using computer software, hardware/ peripheral devices in accordance with standard operating procedures

## **RANGE STATEMENT**

This unit covers computer hardware to include personal computers used independently or within networks, related peripherals, such as printers, scanners, keyboard and mouse, and storage media such as disk drives and other forms of storage. Software used must include but not limited to word processing, spreadsheets, database and billing software packages and Internet browsing software.

### **Tools, equipment and materials required may include:**

- Storage device
- Different software and hardware
- Personal computers system
- Laptop computer
- Printers
- Scanner
- Keyboard
- Mouse
- Disk drive /CDs, DVDs, compressed storage device

## **ASSESSMENT GUIDE**

### **Forms of assessment**

The assessor may select two of the following assessment methods to objectively assess the candidate:

- Observation
- Questioning
- Practical demonstration

### **Assessment context**

Assessment may be conducted out of the workplace preferably in a computer classroom

### **Critical aspects (for assessment)**

Assessment must show that the candidate:

- Selected and used hardware components correctly and according to the task requirement
- Identified and explain the functions of both hardware and software used, their general features and capabilities
- Produced accurate and complete data in accordance with the requirements
- Used appropriate devices and procedures to transfer files/data accurately

### **Assessment conditions**

Assessment may be conducted out of the work environment and may include assignments and projects.

### **Special notes for assessment**

During the assessment the trainees shall:

- Carry out all the tasks according to the industry and organizational policies and procedures
- Meet the performance criteria of all competence
- Demonstrate accepted level of performance determined by the assessors

### **Resources required for assessment**

Computer hardware with peripherals and appropriate software

### UNIT 05

<b>UNIT TITLE</b>	Handle physical elements safely during bump in/bump out				
<b>DESCRIPTOR</b>	<p>This unit describes the skills and knowledge required to assemble, pack and load/unload physical elements under supervision for any production.</p> <p>This unit is introductory in nature and focuses on safe manual handling and general knowledge of the bump in/bump out process and types of equipment. It does not include the specialised bump in/bump out procedures and knowledge required by technicians.</p>				
<b>CODE</b>	SOC17S1U05V1	<b>LEVEL</b>	3	<b>CREDIT</b>	6

<b>ELEMENTS OF COMPETENCIES</b>	<b>PERFORMANCE CRITERIA</b>
1. Prepare physical elements for transportation.	<p>1.1. Assemble/dismantle physical elements in the correct order in accordance with instructions to ensure ease of packing, loading, unloading and installation</p> <p>1.2. Pack physical elements safely using appropriate techniques and materials to avoid damage during transportation</p>
2. Load/unload physical elements	<p>2.1. Load/unload physical elements in the required order taking care to avoid damage</p> <p>2.2. Use safe manual handling techniques throughout the loading/unloading process to avoid injury or damage</p> <p>2.3. Install or position physical elements in appropriate work or storage area in accordance with directions</p>

	<p>2.4. Identify any hazardous items and load these in a manner which minimises health and safety risk</p> <p>2.5. Inspect load prior to transportation to ensure that all items are loaded appropriately, and make adjustments as required.</p>
3. Check condition of physical elements	<p>3.1. Check the condition of physical elements to ensure that no damage has occurred during bumpin/bump-out</p> <p>3.2. Identify any repairs required and report to the appropriate personnel for action, using correct documentation as required</p>

## RANGE STATEMENT

Physical elements may include any equipment or materials commonly used for an entertainment production such as;

- sets
- lighting
- equipment
- audio
- equipment
- props

Packing/loading techniques

- use of restraints
- particular ways of handling different equipment
- use of protective coverings.

Packing materials

- road cases
- boxes crates
- tape

- rope
- straps
- bubble wrap
- tissue paper
- labels

## **ASSESSMENT GUIDE**

### **Assessment context**

The assessment context must provide for:

practical demonstration of skills through the packing, loading and positioning of physical elements and interaction with a team during the bump in/bump out process.

### **Critical aspects (for assessment)**

The following evidence is critical to the judgement of competence in this unit:

- knowledge of safe manual handling techniques for various types of equipment
- ability to move, pack and load equipment under instruction using safe manual handling techniques

### **Assessment methods**

Assessment may incorporate a range of methods to assess performance and the application of essential underpinning knowledge:

- direct observation of the candidate packing, loading or unloading equipment during a bump in/bump out,
- oral or written questioning to assess knowledge of equipment types and features, safety issues,
- case studies or problem-solving exercises to assess the candidate's ability to respond to different operational situations and contexts,
- review of portfolios of evidence and third-party workplace reports of on-the job performance by the candidate.

Assessment of this unit requires access to:

- a venue for bump in/bump out
- a range of equipment typically used for a production
- transportation into which equipment can be loaded.

## UNDERPINNING KNOWLEDGE AND SKILLS

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"><li>• general knowledge of the bump in/bump out process for different types of production, including typical procedures and processes and the roles and responsibilities of different personnel.</li><li>• general knowledge of the typical physical elements used for different types of production</li><li>• safe manual handling techniques and the broader safety issues associated with the movement of physical elements</li><li>• relevant Health and Safety requirements</li><li>• packing materials and techniques used for different types of equipment</li><li>• techniques for loading and stowing equipment for safe transportation</li><li>• the range of tools commonly required during the bump in/bump out process</li></ul>	<ul style="list-style-type: none"><li>• literacy skills sufficient to read simple work instructions, equipment lists and safety directions</li><li>• numeracy skills sufficient to count/tally equipment and other physical elements.</li></ul>



## UNIT 06

<b>UNIT TITLE</b>	Develop basic audio skills and knowledge				
<b>DESCRIPTOR</b>	<p>This unit describes the performance outcomes, skills and knowledge required to complete basic audio tasks in a range of production contexts.</p> <p>At this level, they are working under the direct supervision of experienced sound technicians and operating equipment at a basic level.</p>				
<b>CODE</b>	SOC17S1Uo6V1	<b>LEVEL</b>	3	<b>CREDIT</b>	6

<b>ELEMENTS OF COMPETENCIES</b>	<b>PERFORMANCE CRITERIA</b>
1. Prepare for audio set-up	<p>1.1. Confirm requirements with supervisor and with reference to audio installation plans</p> <p>1.2. Identify preferred rigging and positioning points for audio equipment</p> <p>1.3. Sort equipment and accessories in preparation for set-up</p> <p>1.4. Handle equipment appropriately, taking equipment differences into account</p>
2. Complete tasks using audio equipment	<p>2.1. Connect and position audio system cables according to supervisor's instructions and safety requirements</p> <p>2.2. Wire audio system in correct sequence, demonstrating a knowledge of how signal flows through the audio chain, and then confirm wiring with supervisor</p> <p>2.3. Set start-up and operating settings in correct sequence and test features of audio desk according to instructions</p>

	<p>2.4. Identify problems with equipment promptly, and take action within scope of own responsibility or report to supervisor</p> <p>2.5. Use positioning and equalising techniques to create optimum sound quality</p> <p>2.6. Communicate appropriately with relevant personnel, clients and the public during the completion of tasks</p>
3. Complete post-production tasks	<p>3.1. Disconnect equipment and accessories according to supervisor's instructions and safety requirements</p> <p>3.2. Assist with storing and transporting equipment as required</p> <p>3.3. Seek feedback on own work performance from supervisor and adjust work practices accordingly</p>

## **RANGE STATEMENT**

- Audio installation plans
- Rigging and positioning points for audio equipment
- Wiring audio system
- Signal flow
- Positioning and equalizing techniques

## **ASSESSMENT GUIDE**

### **Forms of assessment**

Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

### **Assessment context**

Assessment must ensure:

- access to an actual workplace or simulated environment
- access to office equipment and resources

### Assessment conditions

The assessment environment must include access to:

- a range of sound equipment
- an environment in which an audio system can be run.

### UNDERPINNING KNOWLEDGE AND SKILLS

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<p>General scope of audio operations in different contexts and the relationship between audio operations and other technical and performance areas.</p> <p>Features and meaning of a signal flow chart for a typical sound system in the context of completing audio tasks.</p> <p>Basic sound pressure level measurement</p> <p>Decibel levels</p> <p>Phase and phase cancellation</p> <p>Power isolation</p> <p>Basic safety procedures for handling, operating and storing audio equipment and accessories</p> <p>key features of, purpose and basic operating procedures for the following audio equipment:</p> <ul style="list-style-type: none"> <li>• audio mixing consoles</li> <li>• common accessories</li> <li>• input source equipment</li> <li>• loudspeakers</li> <li>• signal processing equipment.</li> </ul>	<p>Complete a range of audio tasks safely and according to instructions</p> <p>Apply knowledge of key features and purpose of audio equipment and accessories to work activities</p> <p>Apply knowledge of signal flow through the audio chain when undertaking audio set-up tasks</p> <p>Work collaboratively.</p>

## UNIT 07

<b>UNIT TITLE</b>	Select and manage microphone and other audio input sources				
<b>DESCRIPTOR</b>	This unit describes the skills and knowledge required to select and manage audio input sources and the audio signals these devices create.				
<b>CODE</b>	SOC17S1U07V1	<b>LEVEL</b>	3	<b>CREDIT</b>	6

<b>ELEMENTS OF COMPETENCIES</b>	<b>PERFORMANCE CRITERIA</b>
1. Select microphones and other input sources according to application	1.1. Determine audio requirements for the application 1.2. Assess the venue to determine input source options based on acoustic analysis and any physical limitations 1.3. Assess the acoustic source of the audio to identify the preferred microphone placement 1.4. Identify and select the most appropriate microphone options, including consideration of microphones for specific purposes
2. Maximise gain on stage	2.1 Electrically connect and mechanically set microphones in a desired location using safe work practices 2.2 Position microphone appropriately to achieve required gain 2.3 Implement appropriate equalisation options and introduce relevant effects equipment to increase gain before feedback
3. Manage inputs	3.1. Prepare and implement an appropriate microphone plot 3.2. Patch microphone signals to the audio mixing desk, including multiple signals where required

	3.3. Prepare and maintain an input signal failure plan 3.4. Test input sources, identify any problems promptly and take action to rectify as appropriate
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## **RANGE STATEMENT**

### Acoustic sources

- acoustic instruments
- electric instruments
- the voice for dramatic dialogue
- the voice for lectures and meetings
- the voice for music

### Microphone options

- condenser
- dynamic

### Microphones for specific purposes

- lectern
- specific instruments, e.g. piano, electric guitar
- stage dialogue

### Equalisation options and effects equipment to achieve maximum gain before feedback

- feedback eliminator style device
- one third octave equaliser
- parametric equaliser

## **ASSESSMENT GUIDE**

### **Forms of assessment**

Assessment of this unit requires access to:

- a range of industry-current microphones of different types
- other audio equipment such as mixing console
- venue/location for staging of production/event

### **Assessment context**

The assessment context must provide for:

- practical demonstration of skills through the selection and set-up of a complex microphone plot for more than one production/event
- involvement of and interaction with a production/performance team
- use of industry-current equipment.

### **Critical aspects (for assessment)**

The following evidence is critical to the judgement of competence in this unit:

- knowledge of microphone technology and product options sufficient to complete a set-up
- ability to select, set-up and test a microphone plot.

### **Assessment methods**

Assessment may incorporate a range of methods to assess performance and the application of essential underpinning knowledge, and might include:

- evaluation of the audio aspects of an event where the candidate has been responsible for microphone selection and set-up
- evaluation of a microphone plot prepared for a specific purpose by the candidate
- oral or written questioning to assess knowledge of microphone technology
- review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate.

### **UNDERPINNING KNOWLEDGE AND SKILLS**

<b>UNDERPINNING KNOWLEDGE</b>	<b>UNDERPINNING SKILLS</b>
<ul style="list-style-type: none"> <li>• knowledge of different types of microphone and their applications, including different audio pick-up patterns, microphone behaviour in different environments, acoustic consequences of signal phase problems, the use of phantom power</li> <li>• Microphone requirements for different types of environment, including live sound, studio recording and live broadcast</li> </ul>	<ul style="list-style-type: none"> <li>• Current trends in microphone development and the availability of products</li> <li>• Terminology associated with input source management</li> </ul>

<ul style="list-style-type: none"> <li>• Techniques for preparation of a microphone plot, including key elements and relevant issues for consideration</li> <li>• Techniques for preparation of an input signal failure plan, including key elements and issues for consideration</li> <li>• Techniques for management of diverse input signal types, including limitations</li> </ul>	
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## UNIT 08

<b>UNIT TITLE</b>	Install and disassemble audio equipment				
<b>DESCRIPTOR</b>	<p>This unit describes the skills and knowledge required to install and disassemble audio equipment for a range of productions.</p> <p>It applies to individuals who work collaboratively as part of a production team to install, align, test and disassemble audio equipment.</p>				
<b>CODE</b>	SOC17S1U08V1	<b>LEVEL</b>	3	<b>CREDIT</b>	6

ELEMENTS OF COMPETENCIES	PERFORMANCE CRITERIA
1. Prepare for installation of audio equipment	<p>1.1. Interpret production documentation and requirements, and confirm with relevant people</p> <p>1.2. Assess acoustic characteristics of venue with relevant people and select appropriate equipment and accessories</p> <p>1.3. Calculate power requirements and identify power locations and patching requirements</p>
2. Install audio equipment	<p>2.1. Secure and label cabling in line with production requirements</p> <p>2.2. Set up power distribution in line with production requirements</p> <p>2.3. Position microphones, accessories and cabling</p> <p>2.4. Confirm fitted lapel microphones meet technical performance standards</p> <p>2.5. Confirm phantom power is provided at microphone inputs</p> <p>2.6. Connect effects rack to mixer in line with production requirements</p> <p>2.7. Follow safe work practices when installing equipment</p>



<p>3. Align audio equipment</p>	<p>3.1. Match audio equipment according to level, impedance, phase and frequency</p> <p>3.2. Route test signals to correct destination</p> <p>3.3. Confirm test signal level meets production requirements</p> <p>3.4. Tune the system to avoid feedback</p>
<p>4. Test audio equipment</p>	<p>4.1. Check microphone lines for continuity and patching</p> <p>4.2. Test microphones and confirm they are functioning correctly</p> <p>4.3. Fit microphones to relevant people and perform sound cues as required</p> <p>4.4. Patch, test and tune sound reinforcement system to suit production venue</p> <p>4.5. Conduct sound check and document any adjustments in line with production requirements</p> <p>4.6. Inform relevant people of any problems that arise during testing processes</p>
<p>5. Disassemble audio equipment</p>	<p>5.1. Disassemble equipment in line with production requirements</p> <p>5.2. Check audio equipment against inventory before packing, and report lost or damaged equipment to appropriate people</p> <p>5.3. Pack equipment and accessories and prepare for transit or storage in line with safe work practices and production requirements</p> <p>5.4. Clean and restore work environment to previous condition</p>

	5.5. Seek feedback from relevant people on own work performance, and note areas for improvement
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## **RANGE STATEMENT**

Acoustic characteristics of venue

- frequency
- pitch
- amplitude
- loudness
- velocity
- wavelength
- acoustical phase
- timbre
- sound envelope

psychoacoustic principles

- spatial hearing
- direct sound
- early sound
- reverberant sound
- room design

Power requirements

- voltage
- distribution
- phasing
- load and circuit breaking
- Power locations

Patching requirements

Cabling

Microphone options

- condenser

- dynamic

Microphones for specific purposes

- lectern
- specific instruments, e.g. piano, electric guitar
- stage dialogue

## ASSESSMENT GUIDE

### Assessment Conditions

The assessment environment must include access to:

- audio equipment
- suitable venue
- relevant production documentation
- interaction with others.

## UNDERPINNING KNOWLEDGE AND SKILLS

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<p>Basic audio principles and practice, including:</p> <ul style="list-style-type: none"> <li>• range of microphones and contexts in which they are used</li> <li>• microphone characteristics, e.g. frequency response, sensitivity and polar patterns</li> <li>• effect of microphone placement on quality of sound</li> <li>• characteristics of sound in a range of environments</li> <li>• signal-to-noise ratio, signal phase and audio level/headroom control</li> <li>• audible defects in analogue and digital technologies</li> <li>• features of mixers, amplifiers, speakers and effects racks</li> </ul>	<ul style="list-style-type: none"> <li>• interpret production documentation and requirements in collaboration with others safely install and disassemble audio equipment for at least three productions</li> <li>• test audio equipment and accessories in line with production requirements</li> </ul>

<p>Basic principles of acoustics, including:</p> <ul style="list-style-type: none"> <li>• frequency</li> <li>• pitch</li> <li>• amplitude</li> <li>• loudness</li> <li>• velocity</li> <li>• wavelength</li> <li>• acoustical phase</li> <li>• timbre</li> <li>• sound envelope</li> </ul> <p>Basic understanding of psychoacoustic principles, including:</p> <ul style="list-style-type: none"> <li>• spatial hearing</li> <li>• direct sound</li> <li>• early sound</li> <li>• reverberant sound</li> <li>• room design</li> </ul> <p>Techniques for installing, aligning and testing audio equipment, including:</p> <ul style="list-style-type: none"> <li>• understanding electrical power (e.g. voltage, distribution, phasing, load and circuit breaking)</li> <li>• knowledge of a range of sound equipment and associated operating principles (e.g. level, impedance, phase and frequency)</li> <li>• testing and tagging all electrical fittings in accordance with safety regulations</li> </ul> <p>Issues and challenges that typically arise in the context of setting up and disassembling audio equipment</p>	
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OHS requirements, including:

- licensing requirements for persons performing high risk work and entering building sites
- safe manual-handling techniques
- working safely with electricity and hazardous substances
- principles of safe listening, such as safeguards against hearing loss

## UNIT 09

<b>UNIT TITLE</b>	Assist with sound recordings				
<b>DESCRIPTOR</b>	<p>This unit describes the skills and knowledge required to undertake routine sound recording tasks using a variety of recording equipment in a studio or live environment.</p> <p>It applies to individuals who work under close supervision and have responsibility for assisting with setting up recording equipment, doing sound checks, monitoring the quality of recorded sound, labelling/logging recordings and solving routine problems that might occur during the recording process.</p>				
<b>CODE</b>	SOC17S1U09V1	<b>LEVEL</b>	3	<b>CREDIT</b>	6

<b>ELEMENTS OF COMPETENCIES</b>	<b>PERFORMANCE CRITERIA</b>
1. Assist with prerecording checks	<p>1.1. Clarify documentation and consumables for recording production with appropriate people</p> <p>1.2. Connect and operate sound equipment and accessories according to work health and safety, technical and production requirements</p> <p>1.3. Refer faults and problems to appropriate people</p>
2. Contribute to recording operations	<p>2.1. Follow directions about the placement and movement of microphones and microphone accessories</p> <p>2.2. Assist with sound check to ensure levels and characteristics of recorded sound meet required standards</p> <p>2.3. Confirm signal processing requirements with appropriate people, and make test recordings to</p>

	<p>ensure no audible defects are present</p> <p>2.4. Listen to sound recording for audible defects and extraneous background sound, and report problems to appropriate people</p> <p>2.5. Label and log recordings according to production requirements</p> <p>2.6. Disconnect sound equipment and accessories according to safety, technical and production requirements</p> <p>2.7. Clean work environment after use and restore to pre-recording condition</p>
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## ASSESSMENT GUIDE

Assessment should ensure access to;

- work environments and productions where sound is recorded
- sound recording equipment and accessories
- production documentation.

## UNDERPINNING KNOWLEDGE AND SKILLS

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> <li>• describe the operation and uses of a range of industry current sound recording equipment and accessories</li> <li>• explain the basic principles and techniques of sound recording</li> <li>• explain the basic characteristics of recorded sound</li> <li>• outline the work health and safety (WHS) principles of safe listening, including safeguards against hearing loss.</li> </ul>	<ul style="list-style-type: none"> <li>• work environments and productions where sound is recorded</li> <li>• sound recording equipment and accessories</li> <li>• production documentation.</li> </ul>

## UNIT 10

<b>UNIT TITLE</b>	Manipulate and incorporate audio into multimedia presentations				
<b>DESCRIPTOR</b>	This unit describes the skills and knowledge required to edit, combine and incorporate audio into multimedia presentations.				
<b>CODE</b>	SOC17S2U10V1	<b>LEVEL</b>	4	<b>CREDIT</b>	15

<b>ELEMENTS OF COMPETENCIES</b>	<b>PERFORMANCE CRITERIA</b>
1. Identify and describe formats of digital audio	1.1. Distinguishing features and uses of analogue and digital audio are determined Terms describing audio characteristics are used correctly 1.2. Contemporary digital audio formats and their application in achieving defined outcomes are identified 1.3. Data rates for major digital sources and their relevance to defined outcomes are determined 1.4. Appropriate methods for saving and producing digital audio outputs are determined for range of sources and destinations 1.5. Sampling techniques and sources for digital audio appropriate to defined outcomes are determined 1.6. Uses of Musical Instrument Digital Interface (MIDI) technology are determined
2. Use digital audio software	2.1. Appropriate digital audio software is assessed and selected for job 2.2. Programs are used to edit and manipulate audio according to job specifications
3. Edit digital audio	3.1. Single and multiple audio tracks are edited to achieve defined outcome 3.2. Multiple tracks of digital audio are joined according to job specifications



	<p>3.3. Digital effects are employed to modify and integrate digital audio tracks according to job specifications</p> <p>3.4. Time encoding is applied to single and multiple edited digital audio tracks according to job specifications</p> <p>3.5. Audio track is inserted into multimedia production sequence according to job specifications</p>
4. Construct digital audio track	<p>4.1. Techniques for hooking sounds are identified.</p> <p>4.2. Defects on sound recordings are eliminated and/or treated</p> <p>4.3. Special effects and mixing techniques are used on audio track according to job specifications</p> <p>4.4. Sequencers are used to create digital audio tracks according to job specifications</p> <p>4.5. MIDI and sound cards are used to create digital audio according to job specifications</p> <p>4.6. Audio track is produced using appropriate track construction software and hardware Audio tracks are saved in appropriate file formats</p>

## **RANGE STATEMENT**

This relates to the unit as a whole providing the range of contexts and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

## **ASSESSMENT GUIDE**

### **Assessment Conditions**

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the digital media technologies field of work and include access to software, hardware and equipment and materials required for construction and editing of sound files.

## UNDERPINNING KNOWLEDGE AND SKILLS

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<p>Identify the distinguishing features of analogue and digital audio</p> <p>Explain the terms:</p> <ul style="list-style-type: none"><li>• amplitude, sound waves, frequency, mono and stereo</li></ul> <p>Identify the main contemporary digital audio formats</p> <p>Describe data rates that apply to selected digital sources</p> <p>Identify sampling, sampling techniques and sources for sampling digital audio</p> <p>Explain the different uses of Musical Instrument Digital Interface (MIDI) technology</p> <p>Identify the distinguishing features of selected digital audio software</p> <p>Explain the purpose of an audio frame when saving and producing digital audio outputs</p> <p>Explain the process to join multiple tracks of digital audio</p>	<p>Construct, edit and incorporate audio elements into at least TWO different multimedia sequences including:</p> <ul style="list-style-type: none"><li>• finding and using information relevant to the task from a variety of sources</li><li>• interpreting requirements from job specifications</li><li>• selecting and using suitable software and hardware.</li></ul>

Identify the types of digital effects that are used to modify and integrate digital audio tracks	
Explain the purpose of time encoding	
Clarify how sequencers are used to create digital audio tracks	
Explain the purposes of sound cards.	

## UNIT 11

<b>UNIT TITLE</b>	Perform basic sound editing				
<b>DESCRIPTOR</b>	This unit describes the performance outcomes, skills and knowledge required for basic digital sound editing.				
<b>CODE</b>	SOC17S2U11V1	<b>LEVEL</b>	4	<b>CREDIT</b>	12

<b>ELEMENTS OF COMPETENCIES</b>	<b>PERFORMANCE CRITERIA</b>
1. Prepare for editing sound	<p>1.1. In consultation with relevant production personnel, clarify editing requirements, including creative and technical expectations of productions</p> <p>1.2. Obtain and label source materials and additional materials as required and keep them in a safe, clean location with appropriate documentation</p> <p>1.3. Organise transfer of source materials to appropriate equipment where necessary, ensuring sufficient digital storage capacity is available</p> <p>1.4. Check editing equipment is operational and suited to the designated editing processes</p> <p>1.5. Organise additional equipment and consumables needed to minimise interruptions during the editing process</p>
2. Assemble sequences for editing	<p>2.1. Digitise audio content and additional sound materials in the specified format, ensuring format is compatible with available software and editing equipment</p> <p>2.2. Monitor digital output and arrange for problems to be fixed where necessary</p> <p>2.3. Identify sound edit positions using appropriate documentation and optimise quality where applicable</p>

	<p>2.4. Log and assess sound sequences according to production requirements and arrange digital back-up copies as insurance against editing errors</p> <p>2.5. Consider how materials may be edited efficiently to meet technical and creative criteria</p>
3. Edit sound sequences	<p>3.1. Edit audio sequences according to production requirements and accurately document details of each edited sound sequence</p> <p>3.2. Generate an appropriate track list to facilitate subsequent stages of sound mixing processes</p> <p>3.3. Accurately chart positions and durations of sound sequences, noting requirements for transitions where applicable</p> <p>3.4. Apply effects and digital enhancements to maximise creative outcomes of sound sequences according to production requirements</p> <p>3.5. Manipulate editing software and equipment to produce required sequences and to resolve identified problems</p> <p>3.6. Seek feedback on work in progress from relevant production personnel and refine edits as required</p> <p>3.7. Submit final edits by the agreed deadline in accordance with enterprise procedures</p>
4. Finalise sound edits	<p>4.1. Archive edited audio files and complete associated documentation according to enterprise procedures</p> <p>4.2. Advise relevant production personnel of editing equipment requiring maintenance and leave workstation in original or improved condition</p>

	<p>4.3. Participate in post-production debriefing sessions as required</p> <p>4.4. Evaluate own performance against technical and creative criteria and discuss with colleagues where appropriate</p>
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## **RANGE STATEMENT**

### Production personnel

- assistant editor
- broadcasters
- CGI (computer generated imagery) personnel
- director
- musicians
- producer
- production manager
- sound designer
- sound editor
- sound effects personnel
- sound engineer
- sound recording studio personnel
- other technical/specialist personnel.

### Source materials

- archival recordings
- atmosphere
- CD/DVD recordings
- foley effects
- live captured effects
- music
- SFX (sound effects)
- synthesised sound
- voice recordings/dialogue.

### Additional materials

- archival sound footage

- file images
- stock sound footage.

#### Editing equipment

- amplifiers
- audio converters
- audio desk/mixers
- CD player/burner
- CDs
- DAT (digital audio tape)
- digital and analogue recording devices
- digital non-linear (online) editing systems
- DVDs
- effects rack
- hard disk recorder
- headphones
- linear (off-line) editing systems
- mini disks
- mixing console/desk analogue, digital, digitally controlled analogue (hybrid)
- sequence sampler
- speakers
- tape machines.

#### Consumables

- computer disks
- labels
- marker pens
- mini disks
- sound tapes, e.g.:
  - DAT
  - cartridge
  - compact audio cassette
  - reel-to-reel
  - 16 mm magnetic.

#### Audio content

- atmosphere recordings
- dialogue
- foley effects
- interviews
- live recordings
- music
- sound effects
- synthesised audio.

## Formats

- audio/sound, e.g.:
  - DAT
  - AIF (AIFF)
  - WAV
  - WAV (BWF - broadcast WAV format)
  - WMA
  - MIDI
  - OGG
  - AAC (advanced audio coding)
  - Apple lossless
  - magnetic tape
  - Real Audio
  - QuickTime
  - MP3
- computerised data.

## Software

- after effects package
- computer programs, e.g.:
  - Pro Tools
  - Sound Forge
  - Adobe Audition
  - Final Cut Pro
  - Adobe After Effects
- EDL software
- freeware
- shareware.



## Sound edit

- computerised data
- digital non-linear
- edit of rough and fine cuts
- edit of source and recorded materials
- film and video audio assets
- initial edit of sound rushes
- integration of the picture (image) editing process to ensure sound and picture are in sync
- linear
- off-line
- on-line.

## Sound sequences

- atmosphere tracks
- dialogue
- foley effects
- music
  - sound effects tracks that have been:
  - pre-recorded (using sound effects libraries)
  - recorded live (foley sound effects, production sound effects)
  - electronically generated (synthesised/computer generated sound effects)
- voice-overs.

## Manipulating editing software and equipment

- adjusting and normalising audio levels
- inserting, e.g.:
  - transitions
  - sound effects
  - music
  - voice-overs
  - overlays
- manipulating audio clips, e.g.:
  - cutting
  - pasting
  - copying

- moving
- splitting.

## ASSESSMENT GUIDELINE

### Forms of assessment

Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

### Assignment Context

Assessment must ensure:

- access to a range of pre-recorded sound footage
- access to industry-current sound editing software
- access to appropriate learning and assessment support when required

### Critical aspects (for assessment)

Evidence of the following is essential:

- a range of digitally edited sound sequences that meet production requirements
- collaborative approach to work
- attention to detail
- ability to work to deadlines.

### Assessment methods

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:

- direct questioning combined with review of portfolios of evidence and third-party workplace reports of on-the-job performance
- evaluation of a range of sound sequences edited by the candidate in response to instructions received from a supervising editor
- observation of the candidate preparing and editing sound sequences
- written or verbal questioning to test knowledge as listed in the required skills and knowledge section of this unit.

## UNDERPINNING KNOWLEDGE AND SKILLS

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
familiarity with basic sound editing conventions, practices and techniques	communication, teamwork and organisational skills sufficient to:

<p>editing and audio terminology</p> <p>understanding of the roles and skills associated with other post-production personnel</p> <p>sound editing software and equipment for both broadcast and non-broadcast</p> <p>varied characteristics of sound in a range of environments</p> <p>OHS standards in relation to:</p> <ul style="list-style-type: none"> <li>• using a computer and keyboard for periods of time</li> <li>• observing safe noise levels</li> </ul>	<ul style="list-style-type: none"> <li>• arrange sound media logically and accurately</li> <li>• liaise with relevant production personnel</li> <li>• understand and follow instructions</li> </ul> <p>technical skills sufficient to:</p> <ul style="list-style-type: none"> <li>• edit a range of audio sequences and segments</li> <li>• digitise pre-recorded content, e.g. digital and analogue audio, sound effects</li> <li>• change audio from one format to another</li> <li>• follow relevant file management protocols for specified operating systems</li> <li>• identify faults that occur in audio production environments</li> </ul> <p>initiative and enterprise in the context of editing sound to meet creative production requirements</p> <p>aural discrimination skills in the context of listening critically to, and enhancing the quality of, sound elements and sequences</p> <p>self-management skills sufficient to:</p> <ul style="list-style-type: none"> <li>• prioritise work tasks and meet deadlines</li> <li>• seek expert assistance when problems arise</li> </ul> <p>literacy and numeracy skills sufficient to:</p> <ul style="list-style-type: none"> <li>• identify and label accurately source materials and copies</li> </ul>
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	<ul style="list-style-type: none"> <li>• read and interpret sound documentation and plans</li> <li>• implement and record codes and timings</li> <li>• document sound components, e.g. maintenance of logging sheets</li> </ul>
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## UNIT 12

<b>UNIT TITLE</b>	Develop and implement sound plans				
<b>DESCRIPTOR</b>	This unit describes the performance outcomes, skills and knowledge required to develop and implement sound plans for productions. This involves researching the most appropriate sound systems to use, identifying everything needed to meet creative and technical requirements, and supervising the implementation of sound plans.				
<b>CODE</b>	SOC17S2U12V1	<b>LEVEL</b>	4	<b>CREDIT</b>	15

<b>ELEMENTS OF COMPETENCIES</b>	<b>PERFORMANCE CRITERIA</b>
1. Establish brief for sound system	1.1. Liaise with the relevant personnel to determine the project requirements 1.2. Undertake research to determine the best options for meeting production requirements 1.3. Consider available budget and other resources when determining the scope of the production 1.4. Source additional expertise as required
2. Produce sound plan	2.1. Develop a draft sound plan to meet production requirements 2.2. Ensure that microphone plots, sound sources, block diagrams and layout are drawn and notated as required 2.3. Anticipate problems that might arise and plan accordingly 2.4. Seek feedback on draft sound plan from relevant personnel and amend plan
3. Implement sound plan	3.1. Ensure that all parties meet their obligations, adhere to quality standards and work within project requirements 3.2. Ensure that relevant personnel are involved in negotiating and agreeing on changes to the sound plan 3.3. Ensure that sound system is tuned to achieve desired result

	3.4. Ensure that equipment technical problems are addressed in ways that cause least disruption to productions 3.5. Ensure that all work is undertaken with due regard to OHS requirements 3.6. Prepare and update documentation as required
4. Evaluate operations	4.1. In consultation with relevant personnel identify aspects of the production that worked well and those that could be improved 4.2. Evaluate own role in operations and note areas for improvement 4.3. Provide feedback to team members on their performance as required 4.4. Document evaluation of operations in line with enterprise procedures

## RANGE STATEMENT

### Elements of a sound plan

- list of equipment required
- features of the sound system
- personnel required
- block diagrams to indicate positioning of equipment for optimum effect
- pre-production testing arrangements
- venue considerations
- budget
- performers' requirements
- interaction with other production elements, e.g. lighting
- sound sources.

### Sound sources

- dialogues and voice-overs
- additional dialogue recording (ADR)
- effects (FX)
- music produced acoustically or electronically
- foley

- atmosphere
- sounds from the natural environment.

## Equipment

- amplifiers
- limiters
- compressors
- effects rack
- turntables
- analogue to digital converters
- cables
- compact disc (CD) and digital versatile disc (DVD) players and burners
- computer technology and associated software
- recording devices:
  - hard disk recorder, e.g. digital audio workstation (DAW)
  - digital audiotape recorder, e.g. S-DAT and R-DAT
  - digital videotape recorder (DVTR)
  - mini disc recorder (MD)
  - modular digital multi-track recorder (MDM)
- digital audio players, such as:
  - iPod
  - MP3
- headphones
- microphones and accessories
- mixing consoles and desks
- monitors and speakers
- signal processors and plug-ins
- sequencers and samplers
- musical instruments.

## ASSESSMENT GUIDELINE

### Forms of assessment

Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended

### Assessment context

Assessment must ensure:

- access to a range of industry-current equipment as listed in the range statement
- access to venues and productions or events

### Critical aspects (for assessment)

Evidence of the ability to:

- prepare sound plans that clearly specify all production requirements
- implement sound plans on at least two occasions
- supervise the work of others
- work collaboratively with team members.

### Assessment methods

The following assessment methods are appropriate for this unit:

- case studies, and written or oral questioning to test knowledge as listed in the required knowledge section of this unit
- authenticated copies of sound plans developed by the candidate.

## UNDERPINNING KNOWLEDGE AND SKILLS

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
techniques and principles in sound system specification, including: <ul style="list-style-type: none"><li>• applying acoustic principles when evaluating sound systems and their components</li><li>• operational knowledge of a wide range of sound-recording equipment</li><li>• how sound is incorporated into the artistic, technical and operational requirements of productions</li></ul>	communication and teamwork skills sufficient to: <ul style="list-style-type: none"><li>• liaise and negotiate with sound-production personnel</li><li>• supervise the implementation of sound plans</li><li>• clearly explain/offer options about sound systems for a range of productions</li></ul>



<ul style="list-style-type: none"> <li>• features and operating characteristics of noise reduction systems</li> <li>• fault finding techniques and procedures</li> <li>• testing procedures</li> <li>• drawing and annotating sound systems in sound plans</li> <li>• issues and challenges that typically arise in the context of developing and implementing sound plans</li> <li>• OHS principles of safe listening, including safeguards against hearing loss</li> </ul>	<ul style="list-style-type: none"> <li>• critical-listening and aural-discrimination skills in the context of sound operations</li> </ul> <p>initiative and enterprise skills in the context of:</p> <ul style="list-style-type: none"> <li>• contingency planning</li> <li>• responding effectively to equipment or system malfunction and other unexpected events during productions</li> </ul> <p>literacy skills sufficient to:</p> <ul style="list-style-type: none"> <li>• read and interpret recording documentation</li> <li>• document and annotate sound plans</li> <li>• numeracy skills sufficient to calculate the range of recording devices needed to capture sound in various environments</li> </ul> <p>planning and organisational skills sufficient to:</p> <ul style="list-style-type: none"> <li>• prioritise work tasks</li> <li>• meet deadlines</li> <li>• locate and use relevant sources of information in the context of preparing sound plans</li> </ul> <p>technology skills sufficient to:</p> <ul style="list-style-type: none"> <li>• work with a variety of audio equipment</li> <li>• identify and rectify equipment faults</li> </ul>
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### UNIT 13

<b>UNIT TITLE</b>	Apply a general knowledge of audio to work activities				
<b>DESCRIPTOR</b>	This unit describes the foundation skills and knowledge required to complete a range of general audio-related tasks in a live venue environment.				
<b>CODE</b>	SOC17S2U13V1	<b>LEVEL</b>	4	<b>CREDIT</b>	15

<b>ELEMENTS OF COMPETENCIES</b>	<b>PERFORMANCE CRITERIA</b>
1. Make preparations for audio set-up	1.1. Extract key information from audio installation plans and confirm requirements with supervisor 1.2. Correctly identify preferred rigging and positioning points for audio equipment 1.3. Correctly identify cables used to connect different audio components 1.4. Correctly identify and sort equipment and accessories in preparation for set-up, ensuring appropriate handling and taking account of equipment differences
2. Complete tasks using audio equipment	2.1. Correctly connect, disconnect and position audio system cables, including microphone, speaker, multicore and power feeds, in accordance with supervisor's instructions and safety requirements 2.2. Wire the audio system in correct sequence and confirm with supervisor 2.3. Set start up and operating settings in correct sequence and correctly use features of audio desk in accordance with instructions 2.4. Identify any problems with equipment promptly, take action within scope of

	<p>individual responsibility or report to supervisor</p> <p>2.5. Use positioning and equalising techniques to create optimum sound quality</p> <p>2.6. Communicate appropriately with other technicians, performers or customers during the completion of tasks</p>
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## RANGE STATEMENT

### Equipment

- audio mixing consoles
- input source equipment
- loudspeakers

### Accessories

- active splits
- analysis software
- continuity and phase testers
- DI boxes
- insulation transformers
- spectrum analysers
- SPL meters
- white or pink noise generators

### Equipment differences for loudspeakers

- features of high frequency compression driver types
- size of paper cone loudspeakers

### Equipment differences for audio mixing consoles

- how front of house consoles differ from stage monitor consoles, particularly the difference between pre and post fade auxiliary sends

### Equipment differences for input source equipment

- devices in the main signal chain, e.g. equalisers, CD, cassette, mini disk

- devices inserted over individual channels, such as noise gates, limiters, compressors, preamps

Correct start up sequence and operating settings for an audio system

- ensuring all amplifier volume controls are down (at minimum settings)
- ensuring all output faders on console are down (at minimum settings or muted)
- powering up all front-of-house equipment first
- powering up amplifiers last
- winding up amplifier volumes after all equipment is powered up

Correct sequencing of wiring

- connection of adequate mains to all components and understanding of power isolation
- patching to create a complete signal chain from input to output
- safe and neat positioning of cables and multicore

Sound equipment

- amplifiers to suit the system
- analogue FOH mixing desk of at least 24:8:2 format
- CD player
- computer DAT
- effects rack
- hard disc recorder
- microphones of different pickup patterns and types
- mini disc
- signal processing equipment
- speakers as part of the system
- stereo 3-way PA system for audiences of different sizes

### **Forms of assessment**

Assessment of this unit requires access to:

- a range of sound equipment
- a sound system
- an environment in which an audio system can be run.

## Assessment context

The assessment context must provide for:

- practical demonstration of skills through the completion of a range of preparatory and set-up tasks with industry-current audio equipment
- project or work activities that allow knowledge to be applied to specific production contexts and situations.

## Critical aspects (for assessment)

The following evidence is critical to the judgement of competence in this unit:

- recognition of sound equipment, including key features and purpose
- understanding of signal flow through the audio chain
- completion of audio-related tasks in accordance with health and safety procedures.

## Assessment methods

Assessment may incorporate a range of methods to assess performance and the application of essential underpinning knowledge, and might include:

- direct observation of the candidate completing audio-related tasks
- evaluation of equipment which has been set-up by the candidate
- oral or written questioning to assess knowledge of equipment and audio theory
- review of portfolios of evidence and third-party workplace reports of on-the-job performance by the candidate.

## UNDERPINNING KNOWLEDGE AND SKILLS

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
the general scope and potential of audio operations within different live production contexts, e.g. theatre, music, corporate	literacy skills sufficient to extract key information from audio installation plans
the relationship between audio operations and other technical and performance areas, including lighting, vision systems and performance	numeracy skills sufficient to sort and count equipment
typical roles and responsibilities of audio technicians in different contexts, including different career paths	

fundamentals of sound in a circuit,  
including understanding that microphone  
level is 40 to -60dB line level

features and meaning of a typical sound  
system signal flow chart, including signal  
chains, gain structure and levels

decibel levels and basic sound pressure level  
measurement, including that frequency is  
measured in Hertz, understanding the  
differences between 100Hz and 1kHz

understanding of phase, including phase  
cancellation, and that at 180-degree phase  
difference signals do cancel each other out

common terminology used in relation to  
audio

occupational health and safety  
requirements that relate to audio personnel,  
in particular with regard to working safely  
with electricity

requirements for the storage of audio  
equipment

key features, purpose and basic operating  
procedures of major types of audio  
equipment, including different types of  
loudspeakers, audio mixing consoles, signal  
processing equipment, input source  
equipment and common accessories

different types of cable, their usage in different situations and how to care for them, including:

- microphone cables; how to run safely and neatly and where to store excess
- speaker cables; how to run safely and neatly and avoid lighting components
- multicore cables, how to run safely and neatly and where to store excess
- power cables, how to run safely and neatly and where to store excess

## UNIT 14

<b>UNIT TITLE</b>	Manage audio operations for outdoor events				
<b>DESCRIPTOR</b>	This unit describes the performance outcomes, skills and knowledge required to plan, install and manage the operation of audio systems at outdoor events where factors such as weather conditions can significantly affect operations.				
<b>CODE</b>	SOC17S2U14V1	<b>LEVEL</b>	4	<b>CREDIT</b>	15

<b>ELEMENTS OF COMPETENCIES</b>	<b>PERFORMANCE CRITERIA</b>
1. Plan audio for outdoor events	<p>1.1. Determine audio requirements in consultation with relevant personnel and with reference to production documentation</p> <p>1.2. Assess venues or sites to determine specific factors to consider when setting up outdoor audio systems, and plan for contingencies</p> <p>1.3. Record site information in an appropriate format to assist with system design</p> <p>1.4. Develop audio system specifications which take full account of power issues, loudspeaker requirements and sound pressure factors</p> <p>1.5. Develop schedules of outdoor audio system requirements, with specific reference to additional infrastructure and equipment requirements</p> <p>1.6. Reach agreement on final configuration of outdoor audio systems, allowing adequate time for installation and testing prior to events</p>
	2.1. Complete checks to ensure availability of all resources prior to installation phase



<p>2. Install audio systems for outdoor events</p>	<p>2.2. Install audio systems according to safety procedures and test for their compliance with site restrictions, emergency procedures and noise pollution limitations</p> <p>2.3. Use the services of licensed personnel to complete specialised work as required</p> <p>2.4. Liaise with relevant personnel during installation to ensure efficiency of installation and their cooperation</p> <p>2.5. Ensure a sufficient reserve of mains power</p>
<p>3. Monitor outdoor audio operations</p>	<p>3.1. Monitor sound dispersion, weather and overall sound quality and take action to rectify problems</p> <p>3.2. Communicate with colleagues during operation to share information and ensure quality of productions</p> <p>3.3. In consultation with relevant personnel, evaluate effectiveness of outdoor audio operations and note areas for future improvement</p>

## ASSESSMENT GUIDE

### Assessment guide

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in creative arts industry environments.

The assessment environment must include access to:

- an outdoor venue and audio
- staging equipment suitable for outdoor use.

## UNDERPINNING KNOWLEDGE AND SKILLS

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
Explain how delay is applied in audio systems to deal with the speed of sound	Develop specifications for audio systems that meet production requirements in an outdoor setting on at least two occasions
Provide examples of health and safety issues and hazards associated with operating audio equipment outdoors, and suggest ways of responding to them	Manage the installation and operation of audio operations for outdoor events on at least two occasions
Explain the impact of different types of outdoor sites on electricity	Work collaboratively.
Provide examples of issues and challenges that typically arise when managing audio operations for outdoor events, along with strategies for addressing them.	

## UNIT 15

<b>UNIT TITLE</b>	Undertake live audio operations				
<b>DESCRIPTOR</b>	This unit describes the performance outcomes, skills and knowledge required to interpret audio production requirements, participate in technical run-throughs and operate professional audio equipment during live performances in the screen, media, entertainment and events industries.				
<b>CODE</b>	SOC17S2U15V1	<b>LEVEL</b>	4	<b>CREDIT</b>	15

<b>ELEMENTS OF COMPETENCIES</b>	<b>PERFORMANCE CRITERIA</b>
1. Participate in technical or creative run-throughs	<p>1.1. Determine audio requirements in consultation with relevant personnel and with reference to production documentation</p> <p>1.2. Ensure that equipment is positioned and ready for operation according to production requirements</p> <p>1.3. Plot and run through cues on direction from relevant personnel and according to equipment, sequencing, timing and speed requirements</p> <p>1.4. Implement appropriate changes to audio operations and document them</p> <p>1.5. Communicate appropriate technical information to performers and presenters</p>
2. Prepare for audio operations	<p>2.1. Power up equipment at the appropriate time and check that it is working correctly</p> <p>2.2. Complete audio check and implement and document adjustments</p> <p>2.3. Promptly identify, rectify or refer equipment problems to relevant personnel as required</p>
	<p>3.1. Execute all audio cues according to running sheets or directions from colleagues</p>

<p>3. Operate professional audio equipment</p>	<p>3.2. Promptly identify changes required during performances and modify cues as required to cater for unexpected events and minimise negative impact on performances</p> <p>3.3. Operate console to produce the required technical level and tonal balances</p> <p>3.4. Adjust equalisation for required tonal balance</p> <p>3.5. Balance signal levels</p> <p>3.6. Maintain overall audio level in line with the requirements of the environment</p> <p>3.7. Play back audio effects at the required level through the appropriate speakers</p> <p>3.8. Monitor equipment for correct operation throughout performances and resolve problems as required</p>
<p>4. Complete post-performance procedures</p>	<p>4.1. Safely power down equipment at the appropriate time according to manufacturer instructions</p> <p>4.2. Identify and complete necessary equipment adjustments, including maintenance and re-setting as required in preparation for next performance</p> <p>4.3. Update documentation as required and process according to organisational procedures</p> <p>4.4. Evaluate effectiveness of audio operations with relevant personnel and note areas for future improvement</p>

### Assessment guide

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in creative arts industry environments. The assessment environment must include access to professional audio equipment used for live productions or events.

## UNDERPINNING KNOWLEDGE AND SKILLS

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<p>Describe features, formats and purpose of audio production documentation</p> <p>Describe features of, and operating procedures for, industry-standard audio mixing consoles, amplifiers, speakers and equalisers</p> <p>Describe the characteristics of sound in a range of environments</p> <p>Explain audio effects and provide examples of when to use them</p> <p>Describe techniques for amplifying music to suit varying live environment conditions</p> <p>Describe typical faults and problems that occur in a live audio environment, and provide examples of how to address them</p> <p>Provide examples of health and safety issues relevant to working with electricity and noise</p>	<p>Operate professional audio equipment to meet production requirements on at least two occasions</p> <p>Follow safety procedures when operating audio equipment</p> <p>Work collaboratively during productions.</p>

## UNIT 16

<b>UNIT TITLE</b>	Manage and compile audio replay material				
<b>DESCRIPTOR</b>	This unit describes the skills and knowledge required to compile sound effects and replay material from diverse sources and to replay those effects on cue in a live performance situation.				
<b>CODE</b>	SOC17S2U16V1	<b>LEVEL</b>	4	<b>CREDIT</b>	15

<b>ELEMENTS OF COMPETENCIES</b>	<b>PERFORMANCE CRITERIA</b>
1. Assess source materials	1.1. Liaise with relevant colleagues to determine production needs for replay materials 1.2. Identify sources of materials and ascertain availability 1.3. Prepare an accurate record of material noting source, content and duration required 1.4. Establish any copyright restrictions on source materials and seek clearance for use as required
2. Assemble source materials	2.1. Collect and collate pre-recorded materials and check correct versions and duration 2.2. Liaise with relevant colleagues to determine the most appropriate replay mechanism or platform 2.3. Ascertain hardware and software availability for duplication and recording
3. Duplicate and record materials	3.1. Correctly record voice using a range of devices 3.2. Correctly prepare an Edit Decision List (EDL) 3.3. Use appropriate techniques and equipment to record sources at different source levels 3.4. Use correct techniques and equipment to complete editing of tracks or cues

	3.5. Make back-up materials using equipment correctly
4. Test and play materials on cue	4.1. Check final source material against show log 4.2. Correctly prepare replay equipment, sound levels and back-up hardware 4.3. Confirm cues with relevant colleagues 4.4. Play materials on cue

## RANGE STATEMENT

### Replay

- multi-tracking
- music
- sound effects
- voice overs

### Source materials

- cassette
- CD
- live effects
- musical instruments
- radio and TV broadcasts
- voice

### Replay mechanisms or platforms

- cassette decks
- CD player
- DAT machine
- hard disk recorder
- mini disk player
- PC
- reel-to-reel machines

## ASSESSMENT GUIDELINE

## Forms of assessment

Assessment of this unit requires access to:

- source materials
- recording and replay devices.

## Assignment Context

The assessment context must provide for:

- practical demonstration of skills through the recording and editing of sound effects for use in a live production
- use of industry-current equipment.

## Critical aspects (for assessment)

The following evidence is critical to the judgement of competence in this unit:

- ability to correctly use equipment to record and edit source materials for use as audio effects in a live production
- knowledge of recording and replay devices.

## Assessment methods

Assessment may incorporate a range of methods to assess performance and the application of essential underpinning knowledge, and might include:

- evaluation of audio materials compiled/edited by the candidate
- oral or written questioning to assess knowledge of equipment and techniques
- review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate.

## UNDERPINNING KNOWLEDGE AND SKILLS

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
optimum recording levels for a range of devices	literacy skills sufficient to interpret cue documentation and source materials
operating techniques for different recording devices, both digital and analogue	
operating techniques for a range of audio equipment to complete a signal chain	



<p>safety issues associated with recording material</p> <p>copyright, moral rights and intellectual property issues that impacts on the recording and replay of material</p> <p>techniques for creation and adaptation of cue sheets</p>	
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## UNIT 17

<b>UNIT TITLE</b>	Solve problems in basic electronic circuits				
<b>DESCRIPTOR</b>	This competency standard unit covers determining correct operation of single source parallel and series-parallel circuits and providing solutions as they apply to various electronic work functions. It encompasses working safely, problem solving procedures, including the use of voltage, current and resistance measuring devices, providing solutions derived from measurements and calculations to predictable problems in multiple path circuit.				
<b>CODE</b>	SOC17S2U17V1	<b>LEVEL</b>	4	<b>CREDIT</b>	12

<b>ELEMENTS OF COMPETENCIES</b>	<b>PERFORMANCE CRITERIA</b>
1. Prepare to work on electronic circuits	<p>1.1. OHS procedures related to work are understood and followed</p> <p>1.2. The nature of the circuit(s) problem is obtained from documentation or from work supervisor to establish the scope of work to be undertaken</p> <p>1.3. Advice is sought from the work supervisor to ensure the work is co-ordinated effectively with others</p> <p>1.4. Tools, equipment and testing devices needed to carry out the work are obtained and checked for correct operation and safety</p>
2. Solve electronic circuit problems	<p>2.1. The need to test or measure live is determined in strict accordance with OHS requirements and when necessary conducted within established safety procedures</p>

	<p>2.2. Circuits are checked as being isolated where necessary in strict accordance OHS requirements and procedures</p> <p>2.3. Established methods are used to solving circuit problems from measure and calculated values as they apply to electronic circuit</p> <p>2.4. Problems are solved without unnecessary damage to apparatus, circuits, the surrounding environment or services</p>
3. Complete work and document problem solving activities	<p>3.1. Work site is cleaned and made safe</p> <p>3.2. Justification for solutions used to solve circuit problems is documented</p> <p>3.3. Work completion is documented and an appropriate person or persons notified in accordance with established procedures</p>

## **RANGE STATEMENT**

This competency standard unit shall be demonstrated in relation to:

Single source parallel and series-parallel electronic circuits as they apply to operational circuit functions in relation to at least two of the following types of circuit problems and on at least two occasions:

- Determining the operating parameters of an existing circuit
- Altering an existing circuit to comply with specified operating parameters
- Developing circuits to comply with a specified function and operating parameters

## **ASSESSMENT GUIDELINE**

## Assignment Context

This unit should be assessed as it relates to normal work practice using procedures, information and resources typical of a workplace. This should include:

- OHS policy and work procedures and instructions.
- Suitable work environment, facilities, equipment and materials to undertake actual work as prescribed by this competency standard unit.

## Critical aspects (for assessment)

candidate is able to:

- Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures as specified
- Demonstrate an understanding of the essential knowledge and associated skills as described in this unit.
- Solve problems in electronic circuits
- Determine the operating parameters of an existing circuit.
- Alter an existing circuit to comply with specified operating parameters.
- Develop circuits to comply with a specified function and operating parameters.

## Assessment methods

the specified essential knowledge and associated skills are assessed in a structured environment which is primarily intended for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the essential knowledge and skills described in this unit.

## UNDERPINNING KNOWLEDGE AND SKILLS

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"><li>• Basic circuit configurations</li><li>• The relationship between variable parameter in electrical /electronic circuits</li><li>• Behaviour of electrical /electronic circuits for various values of voltage, current, resistance, impedance, inductance, capacitance and reactance and variable parameters</li></ul>	<ul style="list-style-type: none"><li>• understanding of power supplies for electronics circuit principles, applying safe working practices</li></ul>

<ul style="list-style-type: none"> <li>• Types of voltage testers, multimeters, clamp meters, continuity testers and insulation resistance testers and their application</li> <li>• Features of testing/measuring devices - safety, user calibration and parameter and range settings</li> <li>• Connection of test/measuring devices into a circuit encompassing</li> <li>• Taking readings</li> <li>• Storage, maintenance and care of test/measuring devices</li> </ul>	
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## UNIT 18

<b>UNIT TITLE</b>	Repair and maintain audio equipment				
<b>DESCRIPTOR</b>	This unit describes the performance outcomes, skills and knowledge required to undertake basic repairs to, and maintain, audio equipment and accessories used in the screen, media, entertainment and events industries.				
<b>CODE</b>	SOC17S2U18V1	<b>LEVEL</b>	4	<b>CREDIT</b>	12

<b>ELEMENTS OF COMPETENCIES</b>	<b>PERFORMANCE CRITERIA</b>
1. Undertake routine maintenance tasks	<p>1.1. Clean and maintain equipment, cables and accessories</p> <p>1.2. Conduct safety checks on equipment according to manufacturer instructions and work health and safety (WHS) guidelines</p> <p>1.3. Check and replace spares and consumables and ensure production equipment is ready, and available to productions, at specified locations</p> <p>1.4. Complete required documentation to ensure accurate records of checked and maintained items, and provide copies to relevant personnel</p>
2. Undertake repair tasks	<p>2.1. Recognise faults and safely shut down equipment if necessary, following manufacturer instructions</p> <p>2.2. Isolate fault to specific equipment or parts of equipment using fault detection procedures, and determine repair requirements</p>

	<p>2.3. Tag faulty production equipment</p> <p>2.4. Make minor repairs to faulty equipment according to safety requirements and manufacturer instructions and within level of own responsibility</p> <p>2.5. Refer complex repairs to technical specialists or licensed personnel in consultation with relevant personnel</p> <p>2.6. Discuss faults and repair needs with technical specialists, demonstrating correct use of terminology</p>
3. Finalise work activity	<p>3.1. Undertake simple modifications to equipment, ensuring current safety measures and deadlines are met</p> <p>3.2. Review repair and maintenance activities to ensure compliance with service documentation and manuals</p>

### **ASSESSMENT GUIDELINE**

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities in the industry environments. The assessment environment must include access to productions or events with audio equipment.

## UNDERPINNING KNOWLEDGE AND SKILLS

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"><li>• explain typical maintenance needs and schedules for a range of audio equipment</li><li>• explain the type of cleaning agents to use with different equipment</li><li>• explain techniques and processes for detecting and repairing common faults in audio equipment</li><li>• describe common spare parts and sub-assemblies used when maintaining and repairing audio equipment</li><li>• explain the consequences of bad ventilation on audio equipment</li><li>• explain how the following apply when maintaining and repairing audio equipment:<ul style="list-style-type: none"><li>• voltage</li><li>• current resistance</li><li>• power insulation</li><li>• circuit continuity</li></ul></li><li>• explain the role of the restricted electrical licence, testing and tagging certification, and limitations on the type of work that can be undertaken without a licence</li><li>• describe work health and safety issues related to the repair and maintenance of audio equipment.</li></ul>	<ul style="list-style-type: none"><li>• use appropriate tools to undertake routine repairs and maintenance on audio equipment and accessories</li><li>• apply logical fault-detection procedures</li><li>• follow safety procedures when testing and maintaining audio equipment</li><li>• refer to service and technical manuals when undertaking repair and maintenance tasks</li><li>• work collaboratively.</li></ul>