

**NZECF 1:1993**

**ISSN 0114-0663**

**COVER PAGE**

NZEC 1:1993

**NEW ZEALAND ELECTRICAL CODE OF PRACTICE**

**for**

**ELECTRICAL INSTALLATIONS**

**CARAVANS AND CARAVAN PARKS**

Issued by the Office of  
The Chief Electrical Inspector,  
Energy and Resources Division, Ministry of Commerce

**THE ELECTRICITY ACT 1992**  
**APPROVAL OF ELECTRICAL CODE OF PRACTICE**  
**FOR**  
**ELECTRICAL INSTALLATIONS, CARAVANS AND CARAVAN PARKS**

Pursuant to Section 36 of the Electricity Act 1992 ("the Act")

On the 1st day of February 1993, the Secretary of Commerce issued the Electrical Code of Practice for Electrical Installations, Caravans and Caravan Parks ("the Code")

On the 4th day of February 1993, pursuant to Section 38 of the Act the Secretary published in the Gazette a notice of intention to apply to me for approval of the Code, and there has been consultations with such persons (or their representatives) as will be affected by the Code and they have had the opportunity to consider possible effects and comment on those effects.

I have considered the comments concerning those effects and where necessary amendments were made to the Code.

Therefore Pursuant to Section 38 of the Act, I, John Luxton, Minister of Energy, have this day approved the Code as attached to this approval, which Code shall come into force on the 1st day of April 1993.

Dated this 18th day of March 1993.

John Luxton  
Minister of Energy.

## **COMMITTEE REPRESENTATION**

This Code of Practice was prepared by the Ministry of Commerce, Chief Electrical Inspector's Office with reference to the following organisations:

Electrical Contractors' Association of NZ Inc.  
Electrical Supply Engineers' Association of NZ  
New Zealand Electrical Institute  
Electrical Inspectors' Association  
Institution of Professional Engineers of New Zealand

## **REVIEW**

This Code of Practice will be revised as occasions arise. Suggestions for improvement of this Code are welcome. They should be sent to the Chief Electrical Inspector's Office, Ministry of Commerce, P O Box 1473, WELLINGTON.

# CONTENTS

	Page
INTRODUCTION.....	1
SECTION 1	
SCOPE, REFERENCE DOCUMENTS, INTERPRETATIONS, GLOSSARY AND NUMBERING	
1.1    SCOPE .....	2
1.2    REFERENCE DOCUMENTS .....	2
1.3    INTERPRETATIONS .....	2
1.4    GLOSSARY OF ABBREVIATIONS USED IN THIS CODE .....	3
1.5    NUMBERING SYSTEM OF THIS CODE.....	3
SECTION 2	
CARAVAN PARK AREAS	
2.1    METHOD OF SUPPLY.....	4
2.2    EARTHING.....	4
2.3    CABLES.....	6
2.4    SOCKET-OUTLETS PROVIDED FOR CONNECTING CARAVANS .....	6
SECTION 3	
INSTALLATION AND SUPPLY LEAD	
3.1    SUPPLY LEAD.....	8
3.2    CONNECTING FACILITIES.....	8
3.3    SWITCHBOARDS .....	8
3.4    FITTINGS .....	9
3.5    EARTHING.....	10
3.6    SOCKET-OUTLETS.....	10
3.7    APPLIANCES .....	10
3.8    FINAL SUB-CIRCUITS.....	10
3.9    EXTRA LOW VOLTAGE TRANSFORMERS .....	10
3.10   ISOLATION AND SEGREGATION OF LOW AND EXTRA LOW VOLTAGE WIRING.....	11
SECTION 4	
TENTS.....	12
SECTION 5	
ELECTRICAL WARRANTS OF FITNESS FOR VEHICLES OR RELOCATABLE INSTALLATIONS	
5.1    REQUIREMENTS .....	13
5.2    EXAMINATION OF VEHICLES OR RELOCATABLE INSTALLATIONS .....	13
5.3    TESTING OF VEHICLES OR RELOCATABLE INSTALLATIONS .....	14

SECTION 6

PERIODIC INSPECTION OF CARAVAN PARK AREAS

6.1	REQUIREMENTS .....	16
6.2	EXAMINATION OF CARAVAN PARK AREAS.....	16
6.3	TESTING OF CARAVAN PARK AREAS.....	17

APPENDIX A

	EXAMINATION AND TESTING OF VEHICLES OR RELOCATABLE INSTALLATIONS .....	18
--	---	----

APPENDIX B

	EXAMINATION AND TESTING OF CARAVAN PARK AREAS .....	20
--	---	----

APPENDIX C

	EXAMPLE OF ELECTRICAL WARRANT OF FITNESS .....	21
	CERTIFICATE OF RE-INSPECTION.....	21

## **INTRODUCTION**

New Zealand is a country where a large number of holiday makers use caravans which include electrical facilities for lighting and heating purposes.

This Code of Practice covers the requirements necessary to ensure that these caravans and the caravan parks that supply them provide the same level of electrical safety as they usually find in homes.

The essential purpose of this Code is to detail safe supply to and operation of electrical facilities in caravans.

A number of fatalities and other accidents have arisen with caravans with most of these caused by adaptor cords in combination with faulty earth connections at the associated plugs and sockets.

**ELECTRICAL INSTALLATIONS, CARAVANS AND CARAVAN PARK AREAS****SECTION 1****SCOPE, REFERENCE DOCUMENTS, INTERPRETATIONS, GLOSSARY AND NUMBERING****1.1 SCOPE**

This Code of Practice sets out requirements for electrical installations of:

- (a) Connectable installations of vehicles or relocatable installations intended for connection to low voltage single phase multiple earthed neutral supply systems and having a demand not exceeding 32 amperes.
- (b) Caravan park areas providing facilities for such connections.
- (c) Supply to tents erected in caravan park areas.

**1.2 REFERENCE DOCUMENTS**

The following standards are referred to in this Code of Practice.

- AS 1939 Classification of degrees of protection provided by enclosures for electrical equipment.
- AS 3123 Plugs, socket-outlets and couplers for general industrial application.
- BS 4343 Industrial plugs, socket-outlets and couplers.
- CEE 17 Industrial plugs, socket-outlets and couplers.
- IEC 309 Plugs, socket-outlets and couplers for Industrial Purposes.

**1.3 INTERPRETATIONS**

- 1.3.1 Caravan - means a relocatable installation or vehicle which is intended to provide living accommodation for a person or persons (house upon wheels), and which is intended for connection to a supply of electricity within a caravan park.
- 1.3.2 Caravan site - means a plot of ground within a caravan park area intended for the accommodation of either a caravan, tent or other individual camping unit.
- 1.3.3 Caravan-site supply fittings - means the necessary fittings, consisting of circuit breakers of the non-adjustable type, socket-outlets and other fittings, located near the caravan site and intended to provide a supply of electricity.

- 1.3.4 Degree of protection - means the extent of protection provided by an enclosure against access to hazardous parts, against ingress of solid foreign objects and / or against ingress of water and verified by standardised test methods in accordance with AS 1939.
- 1.3.5 IP Code - means a coding system to indicate the degrees of protection provided by an enclosure against, from to hazardous parts, ingress of solid foreign objects, or the ingress of water.
- 1.3.6 Tent - means a portable shelter or dwelling of canvas, fabric or synthetic material.

#### **1.4 GLOSSARY OF ABBREVIATIONS USED IN THIS CODE**

A	Amperes
a.c.	Alternating current
amp	amperes
AS	Australian Standard
C	Celsius
d.c.	Direct current
ELV	Extra Low Voltage
IEC	International Electrotechnical Commission
IP	Ingress protection code
mA	Milliamperes
m	Metres
MIMS	Mineral insulated metal sheathed cable
mm	Millimetres
mm <sup>2</sup>	Square millimetres
RCD	Residual current device
PVC	Poly vinyl chloride
T.P.S	Tough Plastic Sheathed
UV/PVC	Ultra-violet stabilised poly vinyl chloride

#### **1.5 NUMBERING SYSTEM OF THIS CODE**

- 1.5.1 Sections are numbered from 1 to 6.
- 1.5.2 Subsections are numbered by one full stop between two numbers.(e.g:1.4)
- 1.5.3 Clauses are numbered by two full stops between three numbers.(e.g:1.1.2)
- 1.5.4 Subclauses are numbered by three full stops between four numbers. (e.g: 2.1.1.1)

- 1.5.5 Paragraphs contain numbering punctuated by one or more full stops together with a parenthesised letter.
- 1.5.6 Subparagraphs are represented by lower case roman numerals enclosed in parenthesis following paragraphs.

## SECTION 2

### CARAVAN PARK AREAS

#### 2.1 METHOD OF SUPPLY

- 2.1.1 The electricity supply system in a caravan park area shall be underground cables from a main switchboard, or sub-main switchboard, to the socket-outlet boxes.
- 2.1.1.1 Cables shall be placed in areas used as roadways or walkways, or in continuously paved or defined service areas, which are outside areas intended for the caravan sites. All cables installed shall have protection against mechanical damage unless armoured, MIMS, or heavy duty neutral screened cable. T.P.S cable may be installed provided it has adequate additional covering throughout its length by either poured concrete, or, 75 mm by 25 mm of H4 tanalised radiata pine, or other suitable protection such as 50 mm concrete slabs, laid on the covering material directly over the cable or PVC planks equivalent rating to 50 mm of concrete.
- 2.1.1.2 All cables in a caravan park shall be laid to a minimum depth of 600 mm and shall be bedded and covered to a depth of 50 mm with clean soil, clay, or sand (free from stones), and before backfilling. Cables in solid sub-strata rock may be laid at less than 600 mm depth if enclosed in heavy gauge galvanised steel tube or PVC conduit substantially covered with poured concrete to prevent damage to the cable.
- 2.1.1.3 Where the cable enters or leaves the trench, or is taken above ground level in an exposed position, it shall be protected from a depth of 600 mm below ground level:
- (a) Either to the socket-outlet enclosure or switchboard; or
  - (b) To a minimum height of 2.0 m above ground level,- by unplasticised PVC conduit or other suitable material.
- 2.1.1.4 Ground conditions in thermal regions, beach resorts, or where ash or clinker has been used for filling, could have a corrosive effect on the metal sheath of MIMS cables. Where such corrosion could take place MIMS cable shall not be used unless it is PVC served.
- 2.1.1.5 If cables are installed in areas where pegs may be driven they shall have additional protection against mechanical damage by being:
- (a) Encased in heavy-gauge/galvanised steel tube; or
  - (b) Buried at a depth of not less than 1.0 metre with a 50 mm covering of clean soil, clay or sand (free from stones), and further covered with either concrete slabs or poured concrete overlapping each side of the wiring system by at least 40 mm.

## 2.2 EARTHING

- 2.2.1 Each switchboard and socket-outlet enclosure in the caravan park shall be earthed by an earth continuity conductor and an earth electrode.
- 2.2.2 Switchboards or enclosures containing socket-outlets shall be provided with a neutral bar for neutral conductors insulated from earth, and an earth bar for connection of earthing conductors (including earth electrode connections). The neutral and earth bar shall be connected by a removable link.
- 2.2.3 Except as provided for in clause 2.2.5 and subclauses 2.2.5.1 and 2.2.5.2, the earth bar of each switchboard or enclosure that contain socket-outlets shall have connected:
- (a) An earth continuity conductor of copper cable of a minimum size of 4 mm<sup>2</sup> copper cable and;
  - (b) A supplementary earthing lead of copper cable of a minimum size of 6 mm<sup>2</sup> copper cable connected to an earth electrode.
- 2.2.3.1 The earth continuity conductor shall originate from the switchboard earth bar that supplies the circuit.
- 2.2.3.2 Earth continuity conductors shall be separately terminated on the earth bars.
- 2.2.3.3 Earth continuity conductor connections at enclosures shall be such that if the earthing conductor is removed from the terminal of the earth bar, this shall not result in loss of continuity to other enclosures.
- 2.2.3.4 The supplementary earthing lead from an earth electrode shall be connected to the earth bar.
- 2.2.4 The earth electrode may consist of:
- (a) A rod electrode, protected against corrosion, of not less than 12 mm diameter, driven into the ground to a depth not less than 1.8 metres; or
  - (b) A length of not less than 16 metres of bare 16 mm<sup>2</sup> or greater sized copper conductor run at a depth of not less than 600 mm.
- 2.2.5 Clause 2.2.1 of this Code shall be deemed to be complied with by the installation of a combined earth continuity conductor and supplementary earthing system consisting of a minimum size of copper cable of 16 mm<sup>2</sup> originating from the earth bar of the switchboard supplying the circuit, and run underground to the switchboard/enclosures containing socket-outlets.

- 2.2.5.1 The underground portion of the cable shall be bare, buried at a minimum depth of 600 mm and be continuous between switchboards and enclosures of the circuit.
- 2.2.5.2 The cable shall loop into each switchboard and enclosure. Alternatively a separate earthing lead of copper cable of minimum 6 mm<sup>2</sup> shall run from the underground earth continuity conductor to the enclosure.
- 2.2.6 Where a separate earthing lead is used, the joint between it and the earth continuity conductor/earth electrode shall be made by a proprietary connection system designed for the purpose.

### **2.3 CABLES**

- 2.3.1 All conductors shall be:
- (a) Of sufficient capacity for the purposes for which the supply of energy is to be used; and
  - (b) Of adequate size to withstand all stresses likely to be encountered in service and during fault conditions; and
  - (c) Constructed, installed, and protected, so as to prevent danger so far as is reasonably practicable and to allow for safe maintenance, inspection and testing.
- 2.3.2 Ring Circuits.  
A ring circuit can be a useful way to overcome voltage drop where several outlet boxes are installed. Circuit breakers shall be used for protecting such a circuit. The use of ring circuits is encouraged, but it should be remembered that the short-circuit fault current on a ring circuit can be appreciably greater than for a radial circuit.
- 2.3.3 The use of ring circuits is governed by the following:  
Both ends of the current carrying conductors and the earth continuity conductor shall be connected to a single terminal on the main or sub-main switchboard supplying the circuit.

### **2.4 SOCKET-OUTLETS PROVIDED FOR CONNECTING CARAVANS**

- 2.4.1 Each socket-outlet provided for the purpose of connecting supply to a caravan shall be connected to a circuit breaker and installed in accordance with clause 2.4.4.
- 2.4.2 Each socket-outlet shall be of single phase 16A or 32A complying with IEC 309.

- 2.4.3 Enclosures containing socket-outlets and circuit breakers shall be mounted on substantial pillars, poles or similar structures at a height of 1.5 metres to the centre line of the lowest socket-outlet. Where there is a difference in ground levels the measurement shall be taken from the highest adjacent ground level.
- 2.4.3.1 The enclosure shall be a corrosion resistant weatherproof box protected against the ingress of moisture with a minimum degree of protection IPX3, which will effectively protect the socket-outlets and associated circuit breakers from the weather, and against mechanical damage. Such protection shall remain effective when socket-outlets are in use.  
The cover or covers should be top hinged with a suitably bushed slot provided at the bottom of the box to prevent damage to the supply leads when the covers are closed.
- 2.4.3.2 A brass stud of not less than 6 mm in diameter and 25 mm projecting shall be provided for earthing any metal enclosure. This stud shall be brazed and fitted with two brass washers, a brass nut, and a brass lock nut.
- 2.4.3.3 A durable notice may be fixed at socket-outlets stating that caravans shall not be connected to the socket-outlet unless there is evidence to show they are in compliance with this Code of Practice. A current electrical warrant of fitness is deemed to be evidence of compliance.
- 2.4.3.4 An enclosure containing socket-outlets may serve a number of sites provided that:
- (a) Its location is such that caravan flexible cords do not cross any other site to reach the enclosure; and
  - (b) The supply cord is prevented from being subjected to mechanical damage, either by location or by provision of suitable mechanical protection.
- 2.4.4 A circuit breaker shall be installed adjacent to each socket-outlet for control and protection. The circuit breaker rating shall not be greater than the rating of the associated socket-outlet.
- 2.4.4.1 Both the ON and OFF positions of the circuit breaker shall be permanently indicated.
- 2.4.5 Unless the relative positions of a circuit-breaker and socket-outlet make it obvious, every circuit-breaker shall be clearly and permanently identified with the socket-outlet it controls.

## **SECTION 3**

### **INSTALLATION AND SUPPLY LEAD**

#### **3.1 SUPPLY LEAD**

- 3.1.1 Caravans shall carry a standard supply lead of not less than 10 metres continuous length.
- 3.1.2 Supply lead fittings shall be rated appropriately for the demand of the caravan (i.e. 16 amps or 32 amp supply for caravans).
- 3.1.3 The flexible cord or cable of the supply lead shall be sheathed with heavy duty tough rubber, or with tough plastic, with all conductors (including the protective earthing conductor) integral within the sheath.
- 3.1.4 Plugs and cord extension sockets used for the connection of a caravan shall be of a type complying to IEC 309.

#### **3.2 CONNECTING FACILITIES**

- 3.2.1 Connection of the supply lead shall be:
- (a) For caravans by means of an appliance inlet complying to Standards IEC 309 or equivalent, or AS 3123 having a minimum degree of protection IPX6; or
  - (b) For Caravans or other vehicles or relocatable installations a permanently connected supply lead.
- Where the cord is permanently connected to a suitable cord anchorage shall be fitted and a suitable storage compartment shall be provided.
- 3.2.2 Any appliance inlet shall be:
- (a) Mounted in an accessible position to enable convenient insertion and withdrawal of the connector; and
  - (b) Effectively protected from the weather, splashings and mechanical damage, either by construction or by a suitable enclosure.
- 3.2.3 Provision shall be made for the supply lead to be attached to the outside wall of a caravan by means of a suitable fitting located adjacent to the appliance inlet, for strain relief on connections and support of the lead. A bracket and insulator, or hook and thimble, or non-perishable guy rope tensioner, are suitable ways of meeting this requirement.

### 3.3 SWITCHBOARDS

- 3.3.1 Every switchboard in a caravan shall contain a link between the earth continuity busbar and the supply neutral. A caravan that does not contain a switchboard, shall contain a link between earth and neutral on or behind the fitting electrically closest to the caravan appliance inlet. The fitting shall be appropriately labelled.
- 3.3.1.1 A vehicle or relocatable installation other than a caravan shall not contain a link between neutral and earth either in the switchboard (for those fitted with a switchboard) or at any fitting.
- 3.3.2 An RCD may be used to provide additional safety for the use of electricity in a vehicle or relocatable installation. In a caravan the incoming neutral terminal of an RCD used for providing overall protection may be utilised as a supply neutral terminal for the purpose of establishing the link between neutral and earth.
- 3.3.3 Switchboards shall be accessible at all times. They may be installed in a cupboard or wardrobe provided that they are not likely to be subject to damage, and that suitable markings are provided to indicate their location.

### 3.4 FITTINGS

- 3.4.1 All fixed wiring shall consist of:
- (a) Stranded tough plastic sheathed cable(s) of not less than 1.5 mm<sup>2</sup>; or
  - (b) Heavy duty flexible cable(s) of not less than 0.75 mm<sup>2</sup>- containing an earth continuity conductor.
- 3.4.2 The appliance inlet and switchboard of a caravan shall be connected by a sheathed cable or flexible cord with conductors of not less than:
- (a) 2.5 mm<sup>2</sup> in the case of 16 amp supplies; and
  - (b) 4 mm<sup>2</sup> in the case of 32 amp supplies.
- 3.4.3 All fittings in a vehicle or relocatable installation and the associated supply lead (with the exception of the conductors described in sub-clause 3.4.2 of this Code) shall be protected against over current by a protective device to limit the maximum overcurrent to a safe value and duration, unless the current is limited by the nature of the fittings and electrical appliance in a vehicle or relocatable installation.
- 3.4.4 All cables shall be protected against mechanical damage either by suitable location, or by additional protection in the form of plastic conduit or the like. Where cables pass through any metal work they may be given additional protection by suitable grommets, securely fixed in position. Metal flush boxes shall be effectively earthed.

- 3.4.4.1 Holes into which grommets are fitted shall not have sharp edges or projections. Grommets shall be constructed from durable insulating material which is not subject to damage by abrasion, and cannot be displaced when the cable or cables have been passed through them.
- 3.4.5 The wiring shall be arranged so as to limit movement or stress on conductors at points of termination.
- 3.4.5.1 Enclosed cables shall be adequately supported with sufficient slack to allow for the movement and flexing of the frame occurring in travelling.
- 3.4.6 Ferrules shall be used for the termination of flexible cables.

### **3.5 EARTHING**

- 3.5.1 The following shall be effectively connected to the earth continuity conductor busbar with stranded conductors:
  - (a) The earth contact of all socket-outlets;
  - (b) Exposed conductive parts; and
  - (c) The chassis frame.The chassis earth continuity conductor shall be a minimum 4 mm<sup>2</sup> stranded conductor, shall be marked/identified and shall be accessible for inspection purposes.
- 3.5.2 As complete segregation of the metal parts of a vehicle or relocatable installation is often difficult to achieve, it is strongly recommended that all metal parts be bonded together and connected to the earth continuity conductor busbar. Such metal may include the sheathing of the vehicle or relocatable installation, any metal framework, gas pipes, and the like.

### **3.6 SOCKET-OUTLETS**

- 3.6.1 Where a vehicle or relocatable installation employs electrical systems operating at different voltages, the plug / socket system employed shall ensure that plugs employed for one system cannot enter outlets of the other system.
- 3.6.2 Low voltage socket-outlets located on the exterior of a vehicle or relocatable installation shall be of a type protected against the ingress of moisture with a minimum degree of protection IPX4, and protected by an isolating transformer providing personal protection, or an RCD affording personal protection, and having a rated residual operating current not exceeding 30mA.

### **3.7 APPLIANCES**

Every electrical appliance which is permanently connected to the fixed wiring shall be controlled by an accessible switch installed on or adjacent to such an appliance.

### **3.8 FINAL SUB-CIRCUITS**

Any circuit may feed any combination of appliances or lighting fittings.

### **3.9 EXTRA LOW VOLTAGE TRANSFORMERS**

Any extra low voltage transformer incorporated in a vehicle or relocatable installation shall comply with the requirements for a transformer for personal protection and shall be protected against overheating.

Non earthed conductors shall be provided with overload protection.

### **3.10 ISOLATION AND SEGREGATION OF LOW AND EXTRA LOW VOLTAGE WIRING**

3.10.1 All parts of the vehicle or relocatable installation intended for connection to a low voltage supply shall be effectively isolated from any wiring which can be supplied at extra low voltage either from a battery, a motor vehicle or relocatable installation electrical system, or from a transformer.

3.10.1.1 A changeover switch may be used to supply extra low voltage fittings and electrical appliances from either a transformer or a battery, provided that it is not necessary to alter any component part of the fittings and appliances for the normal operation. Changeover switches shall be capable of handling a.c. and d.c. loading.

3.10.2 Cables for extra low and low voltage shall be effectively segregated from each other, unless the cable used is rated for low voltage.

## SECTION 4

### TENTS

Tents erected in caravan park areas may be supplied with electricity from a caravan park supply system. Where this occurs the tent installation shall be regarded as an outdoor installation with all associated fittings and electrical appliances being supplied either from an isolating transformer providing personal protection or from an RCD providing personal protection and shall have a residual operating current not exceeding 30mA.

The IP rating of fittings (excluding appliances) shall be such as will protect against the ingress of moisture with a minimum degree of protection IPX5.

Lighting equipment shall:

- (a) Be of double-insulated construction; and
- (b) Incorporate protection against lamp breakage.

**SECTION 5****ELECTRICAL WARRANTS OF FITNESS FOR VEHICLES OR RELOCATABLE INSTALLATIONS****5.1 REQUIREMENTS**

- 5.1.1 All vehicles or relocatable installations using fittings or electrical appliances, or containing fittings or electrical appliances installed for use in or about the vehicles or relocatable installations, may be examined and tested in order to obtain an electrical warrant of fitness.
- 5.1.2 An electrical warrant of fitness shall only be issued in respect of a vehicle or relocatable installation which has been examined and tested in accordance with the requirements of this section and shown to be compliant with these requirements.
- 5.1.3 Electrical warrants of fitness shall be valid for a period not exceeding 49 months and in any case shall expire on the 31st day of January of the year four years from the year of issue.
- 5.1.4 Electrical warrants of fitness shall be issued on the numbered form supplied by the Secretary of Commerce for this purpose (an example of the warrant of electrical fitness is shown in Appendix C).
- 5.1.5 Electrical warrants of fitness shall only be issued by persons holding a registration as an electrical inspector and having a valid practising certificate, or by such persons who are authorised by the Secretary to do so.
- 5.1.6 The person issuing the certificate shall:  
(a) Give a copy to the applicant;  
(b) Either retain a copy of the certificate for a period not less than five years or supply a copy to the Secretary of Commerce.
- 5.1.7 The inspector shall affix the sticker supplied with the warrant form to a prominent position on the vehicle or relocatable installation.
- 5.1.8 The certificate, a copy of the certificate, or the electrical warrant of fitness sticker shall be deemed to be proof of compliance with this section.
- 5.1.9 The form contained in Appendix A of this Code may be used to record the results of the examination and testing of vehicles or relocatable installations. A copy of the completed form may be issued to the client requesting the issue of an electrical warrant of fitness.

## 5.2 EXAMINATION OF VEHICLES OR RELOCATABLE INSTALLATIONS

The examination of any vehicle or relocatable installation for the issue of an electrical warrant of fitness shall verify the following requirements;

- 5.2.1 **Protection against direct contact (Exposed Live Parts).**  
The vehicle or relocatable installation, including the supply cables, shall not have any exposed live parts including damaged fittings, or appliances.
- 5.2.2 **Protection against indirect contact (Unearthed Metallic Parts).**  
The vehicle or relocatable installation shall not contain any unearthed metallic fittings liable to become alive.
- 5.2.3 **Protection against indirect contact (Exposed Basic Insulation).**  
The vehicle or relocatable installation shall not contain any exposed basic insulation protecting live parts.
- 5.2.4 **Protection against fire (Overcurrent Protection).**  
The rating of all protective devices shall not exceed the rating of the cable connected to that protective device.
- 5.2.5 **Protection against adverse conditions (Protection Against The Ingress of Moisture).**  
All external fittings shall have IP ratings in accordance with the requirements of this Code.
- 5.2.6 **Technical standardisation (Supply Couplers).**  
The caravan appliance inlet and supply lead socket shall comply with IEC 309, AS 3123, BS 4343 or CEE 17.  
The supply lead plug (caravan park plug) shall comply with IEC 309, BS 4343 or CEE 17.
- 5.2.7 **Technical standardisation (Neutral / Earth Links).**  
For caravans a neutral / earth link shall be installed.  
For other vehicles or relocatable installations a neutral / earth link shall not be installed.

## 5.3 TESTING OF VEHICLES OR RELOCATABLE INSTALLATIONS

- 5.3.1 **Polarity tests (Polarity of Socket-Outlets).**  
All socket-outlets shall have the correct polarity.
- 5.3.2 **Polarity tests (Polarity of Switches).**  
All switches shall operate in the phase (active) conductor.

- 5.3.3 **Polarity tests (Polarity of Supply Lead(s)).**  
All supply leads shall have the correct polarity.
- 5.3.4 **Polarity tests (Appliance Inlet).**  
The appliance inlet shall be of the correct polarity.
- 5.3.5 **Continuity (Socket-Outlets).**  
All socket-outlets shall have effective continuity of all conductors (phase, neutral and earth) to the switchboard or appliance outlet (Maximum value 1 ohm).
- 5.3.6 **Continuity (Supply Lead).**  
All supply leads shall have effective continuity of all conductors (phase, neutral, and earth) between plugs and sockets (Maximum value 1 ohm).
- 5.3.7 **Continuity (Appliance Inlets).**  
Appliance inlets shall have effective continuity to the switchboard or fitting containing the link (Maximum value 1 ohm).
- 5.3.8 **Protection against indirect contact (External Socket-Outlets).**  
All external socket-outlets shall provide personal protection.  
This shall be verified using a proprietary RCD tester or a device designed to introduce a 30mA current between phase (active) and earth to ensure that the RCD operates correctly.
- 5.3.9 **Protection against indirect contact (Segregation of ELV and LV).**  
The vehicle or relocatable installation shall pass a 500V insulation test between phase (active) and each unearthed ELV circuit (minimum value 1 megohm).
- 5.3.10 **Protection against indirect contact (Earthing).**  
The vehicle or relocatable installation shall pass a continuity test between the supply lead plug and the chassis, conducted by passing a minimum of 15 amperes from a voltage source having a no load voltage not exceeding 12 volts (AC or DC) for 10 seconds between the earth-bar, or stud, and the chassis. The voltage drop between the earthing terminal supply lead plug and the accessible metal part is measured, and the resistance calculated from the current and voltage drop. The resistance shall not exceed 1 ohm.
- 5.3.11 **Protection against fire (Insulation Resistance).**  
A caravan shall pass a 500v insulation resistance test with the supply lead connected and link installed, between phase and earth (minimum value 1 megohm). A vehicle or relocatable installation other than a caravan shall pass a 500V insulation resistance test, with the supply lead connected, between phase and neutral combined, and earth (minimum value 1 megohm).

## SECTION 6

### PERIODIC INSPECTION OF CARAVAN PARK AREAS

#### 6.1 REQUIREMENTS

- 6.1.1 Certificates of reinspection of caravan park areas shall only be issued by persons holding a registration as an electrical inspector and having a valid practising certificate.
- 6.1.2 Certificates of reinspection of caravan park areas shall be valid for a period of 5 years.
- 6.1.3 The issuing person shall complete testing and examination in accordance with the requirements of this section. The issuing person may issue a certificate (referred to as a "Certificate of Reinspection") to the client whose caravan park area meets the requirements of Section 6.  
The certificate issued in accordance with this section shall be in the Form prescribed in Appendix C of this Code.
- 6.1.4 The person issuing the certificate shall:  
(a) Give a copy to the applicant; and  
(b) Either retain a copy of the certificate for a period not less than five years or supply a copy to the Secretary of Commerce.
- 6.1.5 Persons carrying out the examination and testing of caravan park areas for the purposes of granting such a certificate may complete the form proscribed in Appendix B of this Code.
- 6.1.6 The form contained in Appendix B of this Code may be used to record the results of the examination and testing of caravan park areas. A copy of the completed form may be issued to the client requesting the issue of a certificate of reinspection.

#### 6.2 EXAMINATION OF CARAVAN PARK AREAS

- 6.2.1 **Protection against direct contact (Exposed Live Parts).**  
The caravan park area shall not contain exposed live parts including damaged fittings, cable sheaths, or mechanical protection.
- 6.2.2 **Protection against indirect contact (Unearthed Metallic Parts).**  
The caravan park area shall not contain any unearthed metallic fittings liable to become alive.

- 6.2.3 **Protection against indirect contact (Exposed Basic Insulation).**  
A caravan park area shall not contain any exposed basic insulation protecting live parts.
- 6.2.4 **Protection against fire (Overcurrent Protection).**  
The rating of all protective devices shall not exceed the rating of the socket-outlet connected to that protective device.
- 6.2.5 **Protection against adverse conditions (Protection Against The Ingress of Moisture).**  
All socket-outlets and enclosures shall have appropriate IP ratings.
- 6.2.6 **Technical standardisation (Caravan Park Outlet).**  
Caravan park outlet shall comply with IEC 309, BS 4343 or CEE 17.
- 6.2.7 **Technical standardisation (Neutral / Earth Links).**  
Switchboard / socket-outlet enclosures shall have neutral / earth links installed.

### 6.3 TESTING OF CARAVAN PARK AREAS.

- 6.3.1 **Polarity tests (Polarity of Socket-Outlets).**  
All socket-outlets shall have the correct polarity.
- 6.3.2 **Polarity tests (Polarity of Circuit Breakers).**  
All Circuit Breakers shall operate in the phase (active) conductor.
- 6.3.3 **Protection against indirect contact / fire (Rating of Protective Devices).**  
The protective devices installed for the protection of supplies to caravans shall have the correct fault rating. This may be verified using a line loop earth tester or by calculation.

**APPENDIX A**

**EXAMINATION AND TESTING OF VEHICLES OR RELOCATABLE INSTALLATIONS**

PROTECTION AGAINST DIRECT CONTACT

Exposed Live Parts.

*The vehicle or relocatable installation, including the supply cables, shall not have any exposed live parts including damaged fittings, or appliances.*

Pass	Fail

PROTECTION AGAINST INDIRECT CONTACT

Unearthed Metallic Parts.

*The vehicle or relocatable installation shall not contain any unearthed metallic fittings liable to become alive.*

Pass	Fail

Basic Insulation.

*The vehicle or relocatable installation shall not contain any exposed basic insulation protecting live parts.*

Pass	Fail

PROTECTION AGAINST FIRE

Overcurrent Protection.

*The rating of all protective devices shall not exceed the rating of the cable connected to that protective device.*

Pass	Fail

PROTECTION AGAINST ADVERSE CONDITIONS

Protection Against The Ingress of Moisture.

*All external fittings shall have appropriate IP ratings.*

Pass	Fail

TECHNICAL STANDARDISATION

Supply Couplers For A Caravan.

*Appliance inlet and supply lead socket comply to IEC 309, AS 3123, BS 4343 or CEE 17.*

Pass	Fail

Supply Lead Plug For A Caravan.

*Caravan park plug shall comply to IEC 309, BS 4343 or CEE 17.*

Pass	Fail

Neutral / Earth Link.

*For caravans a neutral / earth link shall be installed.*

*For other vehicles or relocatable installations a neutral / earth link shall not be installed.*

Pass	Fail

Location of Neutral / Earth Link

--

**TESTING OF VEHICLES OR RELOCATABLE INSTALLATIONS**

POLARITY TESTS

Polarity of Socket-Outlets.

*All socket-outlets shall have the correct polarity.*

Pass	Fail

Polarity of Switches.

*All switches shall operate in the phase (active) conductor.*

Pass	Fail

Polarity of Supply Lead(s).

*All supply leads shall have the correct polarity.*

Pass	Fail

Polarity of Appliance Inlet.

*The appliance inlet shall be of the correct polarity.*

Pass	Fail

CONTINUITY

Socket-Outlets.

*All socket-outlets shall have effective continuity (Maximum value 1 ohm). Earth, neutral, and phase.*

Pass	Fail

Supply Leads.

*Continuity of conductors of all supply leads verified (Maximum value 1 ohm).*

Pass	Fail

Appliance Inlets.

*All appliance inlets shall have effective continuity (Maximum value 1 ohm). Earth, neutral, and phase.*

Pass	Fail

PROTECTION AGAINST INDIRECT CONTACT

External Socket-Outlets.

*Tested to verify personal protection.*

Pass	Fail

Segregation of ELV and LV.

*The vehicle or relocatable installation shall pass a 500v insulation test between phase (active) and each unearthed ELV circuit (minimum value 1 megohm).*

Pass	Fail

Earthing.

*The caravan shall pass a continuity test between the supply lead plug (caravan park plug) and the chassis, conducted by passing a minimum of 15 amperes from a voltage source having a no load voltage not exceeding 12 volts (a.c. or d.c.) for 10 seconds between the earth-bar, or stud, and the chassis. The voltage drop between the earthing terminal supply lead plug and the accessible metal part is measured, and the resistance calculated from the current and voltage drop. The resistance shall not exceed 1 ohm.*

Pass	Fail

PROTECTION AGAINST FIRE

Insulation Resistance.

*The vehicle or relocatable installation shall pass a 500v insulation test with the supply lead connected and link installed, between phase and earth (minimum value 1 megohm).*

Pass	Fail

*Insulation minimum resistance obtained with supply lead connected.*

--	--

**APPENDIX B**

**EXAMINATION AND TESTING OF CARAVAN PARK AREAS**

PROTECTION AGAINST DIRECT CONTACT

Exposed Live Parts.

*The caravan park area shall not contain exposed live parts including damaged fittings, cable sheaths, or mechanical protection.*

Pass	Fail

PROTECTION AGAINST INDIRECT CONTACT

Unearthed Metallic Parts.

*The caravan park area shall not contain any unearthed metallic fittings liable to become alive.*

Pass	Fail

Exposed Basic Insulation.

*A caravan park area shall not contain any exposed basic insulation protecting live parts.*

Pass	Fail

PROTECTION AGAINST FIRE

Overcurrent Protection.

*The rating of all protective devices shall not exceed the rating of the socket-outlet connected to that protective device.*

Pass	Fail

PROTECTION AGAINST ADVERSE CONDITIONS

Protection Against The Ingress of Moisture.

*All socket enclosures shall have appropriate IP ratings.*

Pass	Fail

TECHNICAL STANDARDISATION

Caravan Park Outlet.

*Caravan park outlet shall comply to IEC 309, BS 4343 or CEE 17.*

Pass	Fail

Neutral / Earth Links.

*Switchboard / socket-outlet enclosures shall have neutral / earth links installed.*

Pass	Fail

**TESTING**

POLARITY TESTS

Polarity of Socket-Outlets.

*All socket-outlets have the correct polarity.*

Pass	Fail

Polarity of Circuit Breakers.

*All Circuit Breakers shall operate in the phase (active) conductor.*

Pass	Fail

PROTECTION AGAINST INDIRECT CONTACT/FIRE

Rating of Protective Devices.

*The protective devices installed for the protection of supplies to caravans shall have the correct fault rating. This may be achieved by using a line loop fault tester.*

Pass	Fail

kA Rating

--

**APPENDIX C**

**EXAMPLE OF ELECTRICAL WARRANT OF FITNESS**

**ELECTRICAL WARRANT OF FITNESS**

**\*\* number \*\***

(Please print)

REGISTRATION OR OTHER

IDENTIFICATION : .....

NAME OF INSPECTOR & REG. NUMBER : .....

DATE OF EXAMINATION : .....

I hereby certify that the examination and testing of the connectable installation identified above has been carried out in accordance with the Electricity Regulations, and that the connectable installation meets the requirements of for the issue of a Electrical Warrant of Fitness.

Signed by: ..... (Inspector).

Date: / /

**CERTIFICATE OF RE-INSPECTION**

(Please print)

PARK IDENTIFICATION : .....

LOCATION OF CARAVAN PARK AREA : .....

NAME OF INSPECTOR & REG. NUMBER : .....

DATE OF EXAMINATION : .....

I hereby certify that the examination and testing of the caravan park area has been carried out in accordance with Section 6 of ECP 1.

Signed by: ..... (Inspector).