



**ACS. CESP1. CMA1. CMA2LS.  
SAFETY ASSESSMENT CRITERIA  
INITIAL AND RE-ASSESSMENT  
EMERGENCY SERVICE PROVIDER AND  
GAS METER INSTALLER  
NON-DOMESTIC AND DOMESTIC  
NATURAL GAS**

**Introduction**

Tests gas safety competence in Core Domestic Limited Scope meter work (**CMA2LS**); Core domestic and non-domestic emergency service gas work (**CESP1**) and Core domestic and non-domestic gas metering work (**CMA1**).

**CMA2LS** is a limited core and pre-requisite to **MET3LS** which is the assessment combination for installing domestic gas meters which are sealed off at the meter outlet fitting and labelled; ensuring gas is not left available to the installation pipework and/or appliances.

The assessment criteria have been split into:

**Part A: Generic Competencies (CMA1; CESP and CMA2LS)**

1. Gas safety legislation and standards
2. Gas emergency actions and procedures
5. Installation of pipework and fittings (pipework within meter installation)
6. Tightness testing and purging
7. Checking and/or setting meter regulators
8. Unsafe situations, use of emergency notices and warning labels
9. Operation and positioning of ECV, isolation controls and valves

**Part B: Specific Competencies (CMA1 & CESP1 only)**

1. Gas safety legislation and standards
3. Products and characteristics of combustion
4. Ventilation (for domestic and non-domestic appliances)
5. Installation of pipework and fittings (outlet pipework)
9. Operation and positioning of ECV, isolation controls and valves (non-domestic premises)
12. Chimney Standards
15. Re-establish existing gas supply and re-light appliances.

**Part C: Re-Assessment of Options**

No longer covered in this document and are found within respective criteria documents.

CBs may adopt Competence and Criteria numbering different to that used in this document.

CB documentation may adopt wording for criteria different to that used in this document, provided the meaning is unaffected.

**Range**

Primary 'Multi -Core' for gas meter and ESP type work.

**CMA1 & CESP1:** All gas fittings.

**CMA2LS:** not connecting to an outlet supply

**Pre-Requisites****Initial:**

In accordance to GN8

However, CESP1, CMA1 and CMA2LS, as appropriate, are pre-requisite for all other natural gas safety assessments required for the ESP and meter installer sector.

**Re-Assessment (CESP1, CMA1 and CMA2LS)**

CESP1, CMA1, CMA2LS, as appropriate.

Candidates holding CMA1 may undertake CESP1 re-assessment and vice versa.

**Exclusions**

**CMA1 & CESP1:** Work on appliances other than re-lighting after a temporary interruption to gas supply.

**CMA2LS:** Work on altering position of meters, meter exchange, connection of outlet pipework or commissioning on appliances or internal installation pipework other than that required for the meter installation.

**References and Normative Documents**

MIs.

All relevant documents as listed in the Legislative, Normative & Informative Document List (LINDL), inc:

- HSL56
- GIUSP
- BS 6400-1
- IGEN/GM/6 Edition 2
- IGEN/GM/8
- IGE/UP/1B
- IGEN/UP/1B Edition 3
- IGEN/UP/17
- IGEN/UP/10 Edition 3 Amended 2017

ACS.SMB. 003.ACDND identifies normative documents that should be held by ACs.

**Abbreviations**

AC	Assessment Centre
AECV	Additional emergency control valve
AIV	Appliance isolation valve
CFS	Communal flue systems
CSST	Corrugated stainless steel tube
ECV	Emergency control valve
ESP	Emergency service provider
GT	Gas transporter
I	Initial
IV	Installation volume
LDF	Leak detection fluid
MIs	Manufacturer's / manufacturers' instructions
MIV	Meter inlet valve
MOP	Maximum operating pressure
OP	Operating pressure
OQ	Oral questioning
R	Re-assessment
Ref	Reference

**PART A (CMA2LS; CESP; CMA1)****1. Gas safety legislation and standards**

KNOWLEDGE & UNDERSTANDING	REF	I	R
<b>1. HSL56:</b>			
(i) Reg.2 General interpretation and application 2(1), (2), (3), (4), (5)c (iii), (6), (7) (8)		✓	
(ii) Reg.3 Qualification and supervision 3(1), (2), (3), (5), (6), (7) and (8)		✓	
(iii) Reg.4 Duty on employer		✓	
(iv) Reg.5 Materials and workmanship 5(1) to (3)		✓	
(v) Reg.6 General safety precautions 6(1) to (6)		✓	
(vi) Reg.7 Protection against damage 7(1) to (3)		✓	
(vii) Reg.8 Existing gas fittings 8(1) to (3)		✓	

**2. Gas emergency actions and procedures**

KNOWLEDGE & UNDERSTANDING	REF	I	R
<b>1. priorities of actions and responsibilities:</b>			
(i) action to stop a gas escape downstream of ECV		✓	
(ii) action if gas continues to escape after turning off supply		✓	
2. limits of flammability		✓	
3. specific gravity and its effect in relation to air		✓	
4. hazardous ignition sources and their elimination		✓	
5. methods of preventing/reducing dangerous concentrations of gas in atmosphere		✓	
6. advice to occupants		✓	
7. HSL56: Reg.37 Escape of gas 37(1) to (4)		✓	

**5. Installation pipework and fittings (pipework within meter installation)**

PERFORMANCE CRITERIA	REF	I	R
1. join threaded pipe using appropriate fittings, methods and agents		✓	
2. connect threaded joint with washer using appropriate fittings, methods and agents		✓	
3. use of temporary earth continuity bond		✓	
4. check installation is gas tight. For re-assessment, Competency 6. can be assessed now		✓	
5. purge installation pipework of air		✓	
6. identify installation pipework safety defects		✓	✓
KNOWLEDGE & UNDERSTANDING	REF	I	R
1. recognising correct types of outlet connections		✓	
2. threaded fittings		✓	
2a Press end connections, jointing requirements		✓	
3. flexible and rigid connections		✓	
4. jointing agents for threaded and connections with washers		✓	
5. pipe supports, clips and fixing for outside pipework		✓	
6. sleeving and sealing of pipework		✓	
7. Main protective bonding conductor (minimum cross sectional area)		✓	
8. fixing pipework when connected to a meter not securely restrained		✓	
9. siting and installation of gas controls and isolation valves		✓	
<b>10. HSL56:</b>			
(i) Reg.10 Maintaining electrical continuity		✓	
(ii) Reg.18 Safe use of pipes 18 (1) and (2)		✓	
(iii) Reg.19 Enclosed pipes 19 (1), & (2 to 6)		✓	
(iv) Reg.20 Protection of buildings		✓	
(v) Reg.22 Testing and purging of pipes 22 (1) to (3)		✓	
(vi) Reg.23 Marking of pipes 23 (1) and (2)		✓	
11. GIUSP. Identify MP installation. Pipework directly enters premises through rear spigot of meter box		✓	✓
12. Importance & suitable methods to protect stainless steel semi rigid connectors from corrosive products i.e. meter connections & flux		✓	✓
13. Restrictions for making and sealing holes into meter boxes		✓	✓
14. Purpose and suitability to the use of non-contact voltage tester		✓	✓

**6a. Tightness testing and purging** (LP or MP with MIV fitted)*Total IV ≤ 0.035 m<sup>3</sup> up to 1¼ (steel) and / or 35 mm (copper)**Operatives who test installations outside the scope of IGEM/UP/1B will require TPCP1A / TPCP1*

PERFORMANCE CRITERIA		REF	I	R
<b>1.</b>	<b>testing new or existing installations with gas or air:</b>			
(i)	visually inspect the installation to ensure joints made correctly and no open ends		✓	✓
(ii)	check appliances and ensure AIVs are open & any SSOV are open.		✓	✓
(iii)	turn off the gas installation at the appropriate valve: <ul style="list-style-type: none"> <li>• ECV /AECV for MOP ≤ 75mbar</li> <li>• or MIV for MOP &gt; 75mbar ensuring ECV is open</li> </ul>		✓	✓
(iv)	connect the pressure gauge to a suitable pressure test point on the installation or, if testing with air, branch of test T-piece		✓	✓
(v)	If using gas, carry out a let-by test of the closed supply control valve (OO) related to actions should do with a LP ECV letting by or a MP MIV letting by		✓	✓
(vi)	adjust the pressure to between 7 and 10 mbar (OO) related to MOP >75mbar, ensure the regulator on inlet side of MIV is activated		✓	✓
(vii)	close the valve and note the gauge reading		✓	✓
(viii)	test for 1 minute. If pressure rises by more than 0.25 mbar, let-by may be occurring		✓	✓
(ix)	if pressure rise is observed, if LP check valve by disconnecting its outlet union and applying LDF to valve barrel (OO) on actions for a MP supply		✓	✓
(x)	on satisfactory completion of let-by test, slowly raise the pressure in the installation to between 20 and 21 mbar		✓	✓
(xi)	turn off gas or air supply		✓	✓
(xii)	allow 1 minute stabilisation; if necessary re-adjust pressure to between 20 and 21 mbar		✓	✓
(xiii)	check for any perceptible movement (fall) of the gauge over the next 2 minute period		✓	✓
(xiv)	for new installations, or existing installations with no appliances connected check there is no pressure drop		✓	✓
(xv)	for existing installations, check any pressure drop is within permissible values and there is no smell of gas		✓	✓
(xvi)	if installation fails test, trace and repair escape and re-test installation		✓	✓
(xvii)	if tightness test is successful, remove pressure gauge and re-seal test point		✓	✓
(xviii)	when connected to gas, test pressure test point; ECV/AECV outlet connection; regulator connections and, where appropriate, MIV connections with LDF		✓	✓
(xix)	purge installation		✓	✓
(xx)	record test results		✓	✓
<b>2.</b>	<b>locate and repair a gas escape</b>		✓	✓
KNOWLEDGE & UNDERSTANDING		REF	I	R
<b>1.</b>	selection and reading of pressure gauges		✓	
<b>2.</b>	Not CMA2LS allowed pressure drops for existing installations related to meter size/type, pipe diameter and IV with appliances connected to gas supply and not isolated inc. E6, U6/G4, U16/G10 and where no meter is fitted		✓	✓
<b>3.</b>	identify no perceptible movement on gauge ( 0.25 mbar water gauge and 0.2 mbar electronic gauge reading to 1 decimal place)		✓	
<b>4.</b>	Not CMA2LS allowed pressure drop for existing installation, inc. ECV but no meter is installed e.g. flat where supply is not individually metered		✓	
<b>5.</b>	electronic token meter tamper devices and their effect on tightness testing		✓	✓
<b>6.</b>	dealing with ECV/AECV/MIV that is letting by		✓	✓
<b>7.</b>	actions when smell of gas persists (a) after completion of satisfactory tightness test (b) when ECV/AECV/MIV is turned off, or a leaking installation cannot be repaired		✓	✓
<b>8.</b>	Not CMA2LS testing pipework of diameter > 35 mm or total IV > 0.035 m <sup>3</sup>		✓	✓
<b>9.</b>	Not CMA2LS testing prior to alteration or extension to existing installations		✓	
<b>10.</b>	acronyms and symbols		✓	
<b>11.</b>	Not CMA2LS calculating IV and PV exercise for E6, U6 and G4 meters connected to 35 mm diameter pipework and U16 meters connected to any pipework of diameter ≤ 35 mm		✓	✓
<b>12.</b>	Not CMA2LS purging installations of IV ≤ 0.02 m <sup>3</sup> and those of IV > 0.02 m <sup>3</sup>		✓	✓



**6b. Tightness testing and purging** (MP without MIV)

*Total IV ≤ 0.035 m<sup>3</sup> up to 1¼ (steel) and / or 35 mm (copper)*

*Operatives who test installations outside the scope of IGEM/UP/1B will require TPCP1A / TPCP1*

PERFORMANCE CRITERIA	REF	I	R
<b>Tightness testing existing NG installations for 75mbar &lt;MOP ≤ 2bar without a MIV</b> (IGE/UP/1B Edition 3 Appendix 4 A4.3)			
1. turn off the gas installation at the ECV		✓	✓
2. connect the pressure gauge to a suitable pressure test point on the installation		✓	✓
3. carry out a let-by test of the closed ECV as follows:		✓	✓
(i) adjust the pressure to between 7 and 10 mbar		✓	✓
(ii) operate the UPSO or excess flow valve reset to balance the pressures either side of the device, then allow it to re-shut		✓	✓
(iii) close the ECV and note the gauge reading		✓	✓
(iv) check for any perceptible movement (rise) of the gauge reading (>0.25 mbar) over the next 1 minute period		✓	✓
(v) if ECV is letting-by the test is suspended, installation made safe and the appropriate Gas Emergency Service Call Centre immediately notified (OO)		✓	✓
4. Slowly raise the pressure in the installation to between 18 and 19 mbar by opening the ECV then turn off the valve		✓	✓
5. Allow 1minute for temperature and pressure stabilisation, if necessary re-adjust the pressure to between 18 and 19 mbar (the test shall not proceed until a stable reading is obtained)		✓	✓
6. Continue test as from 6a) 1 (xiii) to (xx)		✓	✓

**7. Checking and/or setting meter regulators**

PERFORMANCE CRITERIA	REF	I	R
1. Not CMA2LS Turn all appliances off		✓	✓
2. zero pressure gauge and connect to meter test point		✓	✓
3. observe and record standing pressure at test point		✓	✓
<b>For CMA1 &amp; CESP1</b>			
<b>For CMA2LS</b>			
4a. turn on gas appliances and, dependent on appliances available, operate as follows: <ul style="list-style-type: none"> <li>boiler - full rate</li> <li>space heater - full rate</li> <li>cooker - 3 hotplate burners on full rate</li> <li>other appliances - full rate</li> </ul>		✓	✓
4b. Install meter regulator test device and re-establish gas supply			
5. read and record OP on gauge (21 mbar) (OO) Supplementary oral question/s on:		✓	✓
(i) effects of pressure absorption across primary meter installation		✓	✓
(ii) effects of low and high flow rates on regulator outlet pressures (19–23 mbar)		✓	✓
6. <b>if reading is incorrect:</b>			
(i) notify GT where pressures are outside 19 – 23 mbar range		✓	✓
(ii) apply procedure for an AMI for re-setting and sealing meter regulator		✓	✓
7. remove gauge; re-seal test point and test for gas tightness		✓	✓
<b>KNOWLEDGE AND UNDERSTANDING</b>	<b>REF</b>	<b>I</b>	<b>R</b>
1. reading pressure gauges		✓	
2. operation of a gas meter regulator		✓	
3. HSL56: Reg.14 Regulators 14(1), (5), (6), (7)		✓	

**8. Unsafe situations, use of emergency notices and warning labels**

PERFORMANCE CRITERIA	REF	I	R
<b>Not CMA2LS.</b>			
1. identify unsafe situations as ID & AR		✓	✓
2. identify and label defective installation(s)		✓	✓
3. identify what and when to report under RIDDOR		✓	✓
4. Visual risk assessment of appliances		✓	✓

<b>KNOWLEDGE AND UNDERSTANDING Not CMA2LS.</b>		<b>REF</b>	<b>I</b>	<b>R</b>
1.	explain dealing with ID installations / appliances		✓	✓
2.	explain dealing with AR installations / appliances		✓	✓
2a	explain dealing with AR installations / appliances when turning off does not remove the risk		✓	✓
3	explain dealing with situations that do not meet current standards but are not unsafe		✓	✓
4.				
5.				
6.	<b>identify correct notices and labels to be used:</b>			
(i)	MP supply		✓	
(ii)	warning notice forms		✓	
(iii)	advisory notices - NCS installation, RIDDOR, electrical bonding		✓	
7.	situations reportable under RIDDOR: explain reporting to HSE		✓	✓
8.	HSL56: Reg.15 Meters – emergency notices 15 (1) to (2)		✓	
9.	<b>GIUSP:</b>			
(i)				
(ii)	overall scope		✓	✓
(iii)	gas incidents		✓	✓
(iv)	non-domestic installations		✓	✓

### 9. Operation and positioning of ECV, isolation controls and valves

<b>PERFORMANCE CRITERIA</b>		<b>REF</b>	<b>I</b>	<b>R</b>
1.	identify incorrectly positioned valves			
2.	identify correctly positioned valves			
3.	demonstrate dealing with incorrectly positioned valves			
4.	identify correct labels and attach to valves			
<b>KNOWLEDGE AND UNDERSTANDING</b>		<b>REF</b>	<b>I</b>	<b>R</b>
1.	inside meter positions		✓	
2.	outside meter positions		✓	
3.	multi-occupancy installations-external risers		✓	
4.	multi-occupancy installation-internal risers		✓	
5.	multi-occupancy installation-remote meters		✓	
6.	types of emergency / automatic isolation valves used in multi-occupancy meter installations (AECVs etc.)		✓	
7.	HSL56: Reg.9 (1) to (4) inclusive		✓	

## PART B (for CESP1 and/or CMA1)

### 1. Gas safety legislation and standards

<b>KNOWLEDGE AND UNDERSTANDING</b>		<b>REF</b>	<b>I</b>	<b>R</b>
1.	<b>HSL56:</b>			
(i)	Reg.25 Interpretation of Part E.		✓	
(ii)	Reg.26 Gas appliances - safety precautions 26(1) to (10)		✓	
(iii)	Reg.36 Duties of Landlords 36(1) to (12)		✓	

### 3. Products and characteristics of combustion

<b>PERFORMANCE CRITERIA</b>		<b>REF</b>	<b>I</b>	<b>R</b>
1.	<b>inspect flame pictures of a selection of burners visually to identify those:</b>			
(i)	indicating complete combustion		✓	✓
(ii)	indicating incomplete combustion		✓	✓
2.	<b>identify incomplete combustion:</b>			
(i)	around appliance location		✓	✓
(ii)	in appliance		✓	
3.	<b>CO detectors and indicators:</b>			
(i)	identification of detectors and indicators		✓	✓
(ii)	installation- locations		✓	✓
(iii)	commissioning and maintenance of detectors (audible, readable, visual)		✓	
<b>KNOWLEDGE AND UNDERSTANDING</b>		<b>REF</b>	<b>I</b>	<b>R</b>



1.	main constituents of complete and incomplete combustion		✓	✓
2.	air required for complete combustion		✓	✓
3.	<b>causes of appliance incomplete combustion at:</b>			
(i)	burner		✓	✓
(ii)	combustion space		✓	✓
(iii)	heat exchanger		✓	✓
(iv)	flue		✓	✓
4.	symptoms of CO poisoning		✓	✓
5.	advice to a person who describes symptoms of being affected by products of combustion or when indicator/detector has activated		✓	✓
6.	other sources of CO & CO <sub>2</sub> in dwellings		✓	✓
7.	ambient levels of CO in atmosphere		✓	✓
8.	levels of CO within dwellings and effect on electronic detectors		✓	
9.	causes of activation of CO detectors and indicators		✓	✓
10.	ambient levels of CO <sub>2</sub> in atmosphere		✓	✓
11.	critical levels of CO <sub>2</sub> that could cause vitiation affecting combustion process		✓	✓
12.	movement of products of combustion within properties and its effects		✓	✓
13.	advice to be given when a CO detector has activated	BS7967 2015 7.2	✓	✓
14.	<i>Criteria Removed</i>			
15.	manufacturing standards for electronic CO detectors (alarms)		✓	
16.	identification of unsafe situation: combustion products that could enter premises.		✓	

#### 4. Ventilation

PERFORMANCE CRITERIA		REF	I	R
1.	calculate free area of selection of air bricks (inc. terracotta types) and air vents		✓	
2.	identify correct and incorrect types of air vents and grilles e.g. fly screens		✓	
3.	identify inadequate ventilation for domestic and non-domestic. Inputs ≤ 70 kW		✓	✓
4.	recognise suitable overhead canopy extraction		✓	✓
5.	<b>calculate ventilation for:</b>			
5a.	<b>domestic appliances/installation</b>			
(i)	combustion of domestic open flue appliances (≤ 70 kW input)			✓
(ii)	compartments (domestic open, balanced and fan flue appliances ≤ 70 kW input)			✓
(iii)	multi-appliance installations (multiple open flue and flueless appliances within same room/space)			✓
(iv)	flueless appliance ventilation inc. cooking, water heating, and space heating			✓
(v)	single and multiple DFE space heater installation, inc. flued and flueless			✓
5b.	<b>non-domestic appliances/installation</b>			
(i)	calculate natural ventilation at high and low level direct to outside air for Type B boilers in plant rooms/heated spaces			✓
(ii)	calculate natural ventilation at high and low level direct to outside air for Type B boilers in enclosures			✓
6.	calculate individual ventilation for non-domestic laundry applications			✓
7.	calculate multi-equipment ventilation for non-domestic laundry applications			✓
8.	identify correct and incorrect labels and notices			✓
KNOWLEDGE AND UNDERSTANDING		REF	I	R
1.	requirements for ventilation		✓	
2.	siting of ventilation (wall, window, floor, ceiling and ducted) direct to outside air, series air vents		✓	
3.	restrictions to ventilator/grille locations		✓	
4.	installation of ventilation grilles and vents		✓	
5.	types of grilles and vents		✓	
6.	adventitious air supplies		✓	
7.	sizing of grilles and vents (free area availability)		✓	
8.	Calculating Ventilation for: -			
8a	calculating natural ventilation at high and low level direct to outside air for Type B boilers in plant rooms and heated spaces		✓	
9.	calculating natural ventilation at high and low level direct to outside air for Type B boilers in enclosures		✓	
10.	calculating combustion ventilation for air domestic open flue appliances		✓	
11.	calculating ventilation for compartments (domestic, open, balanced and flued		✓	

	appliances of heat input $\leq 70$ kW)			
12.	calculating ventilation for multi-appliance installations (multiple open flue and flueless appliances within same room/space)		✓	
13.	ventilation for flueless appliances (inc. cooking, water heating and space heating)		✓	
14.	ventilator location for single and multiple DFE space heater installations (inc. flued and flueless)		✓	
15.	additional ventilation e.g. extractor fans, cooker hoods, driers etc.		✓	
16.	recommendations and restrictions to ventilator/grille locations for non-domestic heating appliances		✓	✓
17.	safety interlocks between ventilation fans and gas appliances		✓	✓
18.	mechanical ventilation installations for non-domestic heating appliances/plant of heat input $\leq 1.8$ MW net	IGEM/UP/10 7.3.1	✓	✓
19.	labels and notices		✓	
20.	calculating individual ventilation for non-domestic laundry applications		✓	
21.	calculating multi-equipment ventilation for non-domestic laundry applications		✓	
22.	identify installation of adequate and inadequate ventilation in non-domestic situations			✓
23.	recognise mechanical ventilation requirements of Type B2 boilers (inlet and extract)			✓
24.	<b>HSE - ventilation of kitchens in catering establishments:</b>	IGEM/UP19		
(i)	replacement air		✓	
(ii)	canopies' performance		✓	
(iii)	dealing with interlocks fitted with overrides		✓	
(iv)	recognition of when canopy performance tests are to be carried out		✓	
25.	effects of oil or solid fuel appliances on ventilation for DFEs		✓	
26.	identification and installation of in tumescent air vents		✓	
27.	operation of passive stack ventilation		✓	
28.	ventilation for internal kitchens		✓	✓

## 5. Installation of pipework and fittings

*Range of pipe sizes: CMA1 up to 50 mm; CESP1 up to 100 mm*

*Operatives who install pipework outside this scope associated with a meter installation or over 35 mm not associated with a meter installation will require ICPN1*

PERFORMANCE CRITERIA		REF	I	R
1.	Not CMA1 join steel pipe using appropriate fittings, methods and agents		✓	✓
2.	join copper tube using appropriate capillary end feed fittings, methods and agents		✓	
3.	join copper tube using appropriate mechanical (compression) fittings, methods and agents		✓	
4.	confirm all work carried out is gas tight (method at CC discretion)		✓	✓
5.	purge pipework of air and apply protective coating (OQ) supplementary oral questions will satisfy this PC		✓	✓
6.	identify installation pipework safety defects		✓	✓
7.	join CSST		✓	✓
8.	join stainless steel pipe / copper pipe with appropriate pressed joints and tools		✓	✓
9.	test supply for gas tightness, isolate, attach temporary earth continuity bond			✓
10.	disconnect meter, cap and make safe			✓
11.	cap or plug all open ends and take all general safety precautions, prior to work			✓
12.	install copper capillary fitting adjacent to meter, using appropriate methods and agents			✓
13.	re-connect meter and remove temporary earth continuity bond			✓
KNOWLEDGE AND UNDERSTANDING		REF	I	R
1.	copper pipe and fittings, Standards, suitability and use		✓	
2.	mild steel pipe and fittings		✓	
3.	<i>Criteria Removed</i>			
4.	micro-points (leisure points)		✓	
5.	jointing and cleaning agents for steel, copper and PE pipe and fittings used in non-domestic applications		✓	
6.	<b>requirements for pipework:</b>			

(i)	laid in joisted floors & roof spaces		✓	
(ii)	notching and drilling solid timber floor joists		✓	
(iii)	installed in solid floors		✓	
(iv)	installed behind dry lined walls		✓	
(v)	within timber/light steel frame walls		✓	
(vi)	passing through a timber/light steel frame/masonry wall - accommodating movement		✓	
7.	external surface mounted installation pipework		✓	✓
8.	precautions when using an exposed flame for soldering joints on pipework previously containing gas and/or when a gas meter is already fitted		✓	
9.	restrictions on use of mechanical joints		✓	
10.	<i>Criteria Removed</i>			
11.	requirements for ducts specifically designed to contain gas pipes		✓	
12.	<b>HSL56:</b>			
(i)	Reg.19 Enclosed pipes 19 (4) & (6)		✓	
(ii)	Reg.21 Clogging precautions		✓	
13.	ventilation size for pipework installed within ducts		✓	
14.	fire stopping in buildings containing flats or maisonettes		✓	✓
15.	installing pipework inside a protected area		✓	
16.	<i>Criteria Removed</i>			
17.	pipework for multi-occupancy dwellings		✓	✓
18.	minimum depth/identification of pipework buried below ground		✓	✓
19.	pipework installed under the base of a wall or foundations		✓	
20.	use of PE pipework		✓	
21.	limitations on use of pressed joints - stainless steel or copper non-domestic pipework		✓	✓

## 9. Operation and positioning of ECV, isolation controls and valves (non-domestic premises)

KNOWLEDGE AND UNDERSTANDING	REF	I	R
1. emergency isolation valves		✓	✓
2. types of emergency automatic isolation valves used in Non Domestic establishments		✓	✓

## 12. Chimney Standards

KNOWLEDGE AND UNDERSTANDING	REF	I	R
<b>A. Where solid fuel chimneys can be visually inspected without removal of an appliance:</b>			
1. operation of dampers and restrictor plates		✓	
2. catchment spaces and standard dimensions / volumes		✓	
3. effects of other fuels on chimneys and need for cleaning		✓	
4. fitting bird guards to chimneys		✓	
5. suitable and unsuitable terminals for space heaters inc. radiant, inset and DFE		✓	
<b>B. Chimneys for individual open flue natural draught appliances:</b>			
1. construction and operation of a chimney		✓	✓
2. types of chimney material – cement based and metallic		✓	
3. methods of jointing chimney components		✓	
4. termination positions for chimney outlets		✓	
5. ridge terminal positions		✓	
6. restrictions to siting bends and lengths of chimney run to avoid condensation		✓	
7. sealed compartments for open flue appliances		✓	✓
8. additional requirements when fans are installed in secondary flues		✓	✓
9. flueing systems for non-domestic catering equipment		✓	

10.	passive stack ventilation systems in houses, where open flue natural draught appliances are fitted		✓
<b>C. Condensing flues:</b>			
1.	Selection for correct condensate disposal methods position and termination for appliances		✓
2.	plume management kits		✓
<b>D. Pre-cast flue systems:</b>			
1.	pre-cast flue design		✓
2.	adapters for connecting open flues into pre-cast flues		✓
3.	termination procedures for pre-cast flues		✓
4.	flueing through loft spaces		✓

<b>E. Room sealed natural draught and fanned draught chimney configurations:</b>			
1. balanced flue systems natural and fanned draught		✓	
2. restrictions for outlet positions inc. horizontal and vertical configurations		✓	
3. restrictions on lengths, bends etc. for fanned draught room sealed flue appliances		✓	
4. <i>Criteria Removed</i>			
5. enclosing chimneys		✓	
6. proximity of flue duct outlets to boundaries		✓	
7. identify unsafe situation of room sealed fanned flue system enclosed without sufficient inspection facility'		✓	✓
<b>F. Shared flue systems, SE ducts and U ducts: SE-ducts, U-ducts and CFS</b>			
(i) Types-of SE-ducts, U-ducts and CFS Natural Ventilated (NV), CFS Exhaust Only (EO), CFS Positive Pressure (PP) shared flue systems.		✓	✓
(ii) identify unsafe situation of room sealed fanned flue system on CFS		✓	✓
<b>G. HSL56:</b>			
(i) Reg.27 Flues (1) to (4)		✓	
(ii) Reg.30 Room-sealed appliances (1) to (3)		✓	
(iii) Reg.32 Flue dampers (2) and (3)		✓	
<b>H. Non-domestic heating appliance chimney requirements:</b>			
1. terminal types and positions for Type B open/natural draught chimneys		✓	✓
<b>2. fan diluted flues:</b>			
(i) dilution air intakes		✓	✓
(ii) discharge points		✓	✓
3. flueing for balanced compartments		✓	✓
4. common flue /chimney construction requirements - suitable materials for large chimneys		✓	✓
5. flue dampers and stabilisers		✓	✓
5a. testing procedures for natural draught flues			✓
6. flueing systems for non-domestic catering equipment		✓	
<b>J. Laundry exhaust duct requirements:</b>			
1. calculating individual exhaust duct requirements		✓	
2. siting exhaust ducts and preferred termination procedures		✓	
3. calculating individual ventilation			✓
4. calculating multi-equipment ventilation			✓

### 15. Re-establish existing gas supply and re-light appliances/plant

PERFORMANCE CRITERIA	REF	I	R
1. re-establish gas supply		✓	✓
2. check installation is gas tight		✓	✓
<b>3. check appliance(s)/plant visually and re-light inc.:</b>			
(i) purge system and appliances/plant of air		✓	✓
(ii) light appliance(s)/plant		✓	✓
(iii) confirm satisfactory operation of user controls		✓	✓
(iv) visually inspect appliance/plant installation(s) for unsafe situations		✓	✓
KNOWLEDGE AND UNDERSTANDING	REF	I	R
1. describe action when an un-commissioned appliance/plant is identified		✓	
2. confirm actions if pipework and appliance(s) /plant are not tested (commissioned) when gas supply is re-established		✓	
3. HSL56: Reg.33 Testing of appliances 33(1) to (3)		✓	