

# *The Value of Independence*

MEAT AND LIVESTOCK COMMERCIAL SERVICES LTD (MLCSL)

## PIG

**CARCASE  
AUTHENTICATION  
AND  
VERIFICATION  
SERVICES**



# Pig Carcase Classification for the Meat Industry

## Meat and Livestock Commercial Service Ltd's (MLCSL) Independent Authentication Service

The information provided by MLCSL's Pig Carcase Authentication Service is used widely as the basis for transactions between producers and slaughterers. MLCSL is a wholly owned subsidiary of the Agriculture and Horticulture Development Board.

The current service incorporates all of the mandatory requirements of the EC Pig Carcase Grading Scheme which was introduced in Great Britain in 1989.

### What does the service provide?

The service provides pig abattoirs with MLCSL's Authentication Service classifiers who are technically trained to legislative requirements and a documented Quality System, accredited by UKAS. The classifiers independently establish all of the important criteria intended to form the basis of the deadweight transaction between pig suppliers and abattoirs and deliver confidence and assurance at a vital point within the supply chain.

### The service includes:

**Identification** – Carcases are individually serial-numbered and the slap marks are read and recorded to identify each consignment of pigs. The Pigs (Records, Identification and Movement) Order 2003 requires all pigs going to slaughter to be identified with a Defra allocated herdmark on both shoulders. This must be legible before and after slaughter. This legibility is vitally important to both the individual producer and the industry as a whole, as this allows correct tracing of the pigs for both payment and bio-security (*see page 11 or BPEX – Pigs work instruction 2*).

**Weighing** – Carcases are individually weighed. Hot weights are recorded, with a hot weight rebate and dressing coefficients deducted to establish the payment weight (*see page 5 for details of the hot weight rebate and dressing coefficients*). To ensure accuracy when weighing, regular scale and tare checks form an integral part of the service. Mature boars and sows are not covered by the mandatory scheme, but an independent weighing service is available as part of the MLCSL's Authentication Service.

**Assessment of Carcases** – MLCSL classifiers are trained to operate all of the approved classification/grading equipment to provide independent backfat measurement and the lean meat percentage calculations. (*see Methods and Probes*).

**Visual Appraisal** – Identification of pigs with carcase faults. These are described as 'Z' carcases. Carcases that are scraggy, deformed, blemished (*see page 9*), pigmented, coarse skinned, those with soft fat or pale muscle and those devalued by being partially condemned are recorded as 'Z' on the classification documents. Young boars are identified and recorded. Carcases with poor conformation, particularly of the leg, are recorded as 'C' carcases at the request of the abattoir.

**Dressing Specification** – There are two methods of pig carcases dressing in the UK; the EC method, which involves the removal of the Tongue (Tng), Flare Fat, Kidney and Diaphragm (FFKD) which is recorded on the kill record as 'Tng out and FFKD out'. And the UK specification, which involves retaining these, 'Tng in and FFKD in'. Carcase dressing specifications are closely monitored by MLCSL staff to ensure compliance and provide a vital element of the carcase record (*see appendix 1 and 2*).

## Methods and Probes

MLCSL can offer four methods, of pig carcass classification for the prediction of lean meat percentage in accordance with EU legislation. Each method involves taking carcass measurements with EU approved equipment at specified positions on each carcass. The following equipment is approved in the UK:

Introscope (Optical Probe), Hennessey Grading Probe (HGP), Fat-O-Meater (FOM), AutoFOM and CSB Ultra-Meater.

The HGP, FOM, AutoFOM and CSB Ultra-Meater are all automatic recording probes.



Method 1

### Optical Probe

**Method 1** – Optical Probe is used to measure back-fat and rind thickness at the P1 and P3 positions, level with the head of the last rib. The probe is inserted 4.5cm and 8cm from the dorsal mid-line respectively (see *Figure 1 overleaf*). The sum of the P1 and P3 measurements is recorded.

**Method 2** – Optical Probe is used to measure back-fat and rind thickness at the P2 position, level with the head of the last rib. The probe is inserted 6.5cm from the dorsal mid-line respectively (see *Figure 1 overleaf*).



Method 2

### Hennessey Grading Probe (HGP) and Fat-O-Meater (FOM)

**Method 3** – HGP or FOM are used to measure:

- Back-fat and rind thickness at the P2 position as for Method 2. The HGP or FOM probes are inserted 6cm from the dorsal mid-line (see *Figure 1 overleaf*).
- Back-fat and rind thickness at a point 6cm from the dorsal mid-line between the third/fourth last rib (see *Figure 1 overleaf*). This measurement is referred to as rib fat.
- Eye muscle, (Longissimus dorsi), depth at a point 6cm from the dorsal mid-line between the third and fourth last rib (see *Figure 1 overleaf*). This measurement is referred to as rib muscle.

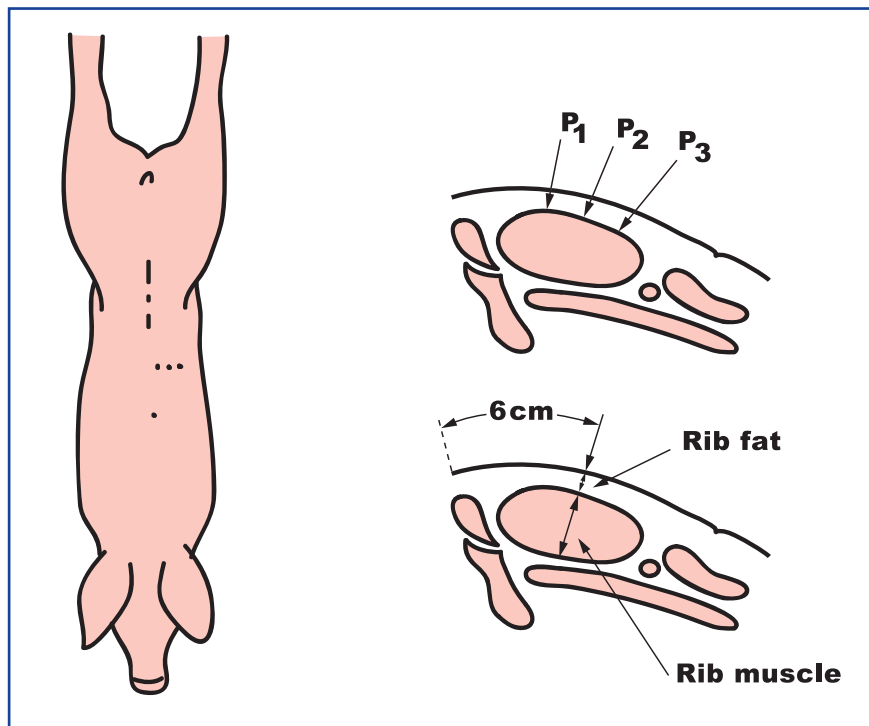


Method 3

### Time of measuring back-fat and rind thickness

Measurement of back-fat thickness is taken at the time of weighing, ie normally within 45 minutes of slaughter. No adjustment is made when the measurements have been taken at a later time.

Figure 1 Location of probing sites on a pig carcass



AutoFOM



CSB Ultra-Meater

#### AutoFom and CSB Ultra-Meater

**Method 4** – AutoFom and CSB Ultra-Meater are ultrasonic methods:

**AutoFOM** – Provides ultrasonic images throughout the carcass by passing individual carcasses over a U-shaped cradle of ultrasonic transducers. The data is then used to generate a three dimensional ultrasound image which is analysed by computer to provide information regarding the carcass composition.

**CSB Ultra-Meater** – the CSB Ultra-Meater is also an ultrasonic device using ultrasound B-scan techniques. It measures back fat and muscle thickness longitudinally 6cm from the mid-line in the region of the third fourth last rib. The measurement results are converted into estimated percentage lean meat through the CSB Ultra-Meater itself.

## Lean Meat Percentage and EU Grade

The lean meat percentage is calculated as follows:

### Optical Probe

The cold carcass weight and P2 (or P1+P3) fat depths are used to estimate lean meat percentage.

### Automatic and Ultrasound Methods

The automatically recorded measurements P2, rib fat and rib muscle are used for calculation of lean meat percentage. Ultrasound methods predict lean meat percentage from a number of fat and muscle measurements.

An EU grade can be allocated to a carcass by using the lean meat percentage figure below:

Lean meat EU grade percentage	
60% and above	S
55 – 59%	E
50 – 54%	U
45 – 49%	R
44 – 44%	O
39% or less	P

### Hot Weight Rebate (for clean pigs and young boars)

The carcasses are weighed to the calibration divisions on the scale and the actual scale display is recorded. When pig carcasses are weighed 'hot', the hot carcass is reduced in weight by 2%, if weighed within 45 minutes of slaughter. This is to allow for moisture loss from the carcass after slaughter. Where pig carcasses are dressed 'Tng in, FFKD in' coefficients are used to ensure that the estimated lean meat percentage can be established to EU Regulations.

### Tongue (Tng)/Flare Fat, Kidney and Diaphragm (FFKD) Coefficients

Hot weight carcass range in kg	Tng Out FFKD Out	Tng In FFKD Out	Tng Out FFKD In	Tng In FFKD In
Deductions in kg				
>56	0	0.3	0.7	1.0
56.5 – 74.5	0	0.3	1.1	1.4
75>	0	0.3	1.6	1.9
The coefficients are applied in addition to the 2% hot weight rebate				

## Hot Weight Rebate for Breeding Pigs

There is a fixed rebate table system used for breeding sows and boars which is applied as follows:

Hot weight (kg)	Within 1 hr of slaughter (kg)	Thereafter but within 4 hrs of slaughter (kg)	Thereafter but between 4 to 6 hrs of slaughter (kg)
to 56	1.0	0.5	-
56.5 – 71	1.5	1.0	0.5
71.5 – 94	2.0	1.5	1.0
94.5 – 107	2.5	2.0	1.5
107.5 – 120	3.0	2.5	2.0
120.5 – 140	3.5	3.0	2.5
140.5 – 160	4.0	3.5	3.0
160.5 – 180	4.5	4.0	3.5
180.5 – 200	5.0	4.5	4.0
200.5 & over	5.5	5.0	4.5

NOTE: a) If weighed 'cold', the carcasses will be weighed within 24 hours of slaughter.

b) Carcasses which are to be skinned can be weighed with the hair on; with a deduction of 1.5kg made for the weight of hair.

## The Value of Independence



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MLCSL's Pig Carcass Authentication Service is the only UKAS accredited national provider of independent classification services. MLCSL's UKAS accreditation gives the following benefits:

- Provides assurance within the supply chain that the independent service follows a laid down code of practice.
- Gives confidence that its quality control systems operate to an agreed standard with regular monitoring, both internal and external.

The independent service also makes a major contribution to transparency throughout the supply chain providing confidence between producers and abattoirs. Regular performance monitoring ensures technical standards are delivered consistently across Great Britain by a dedicated team of Classifiers and Managers, providing confidence in the classification process thereby contributing to the effective marketing of the finished stock and the ultimate transaction between buyer and seller.

Including FFKD:

Flare Fat

Kidney

Diaphragm

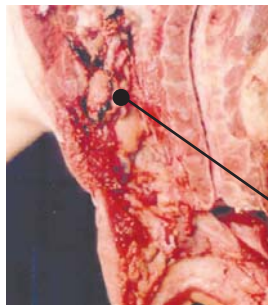


Excluding FFKD

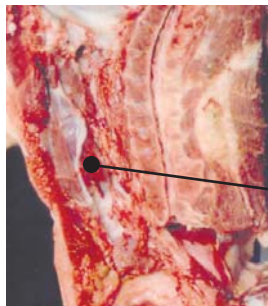


Neck Trimming

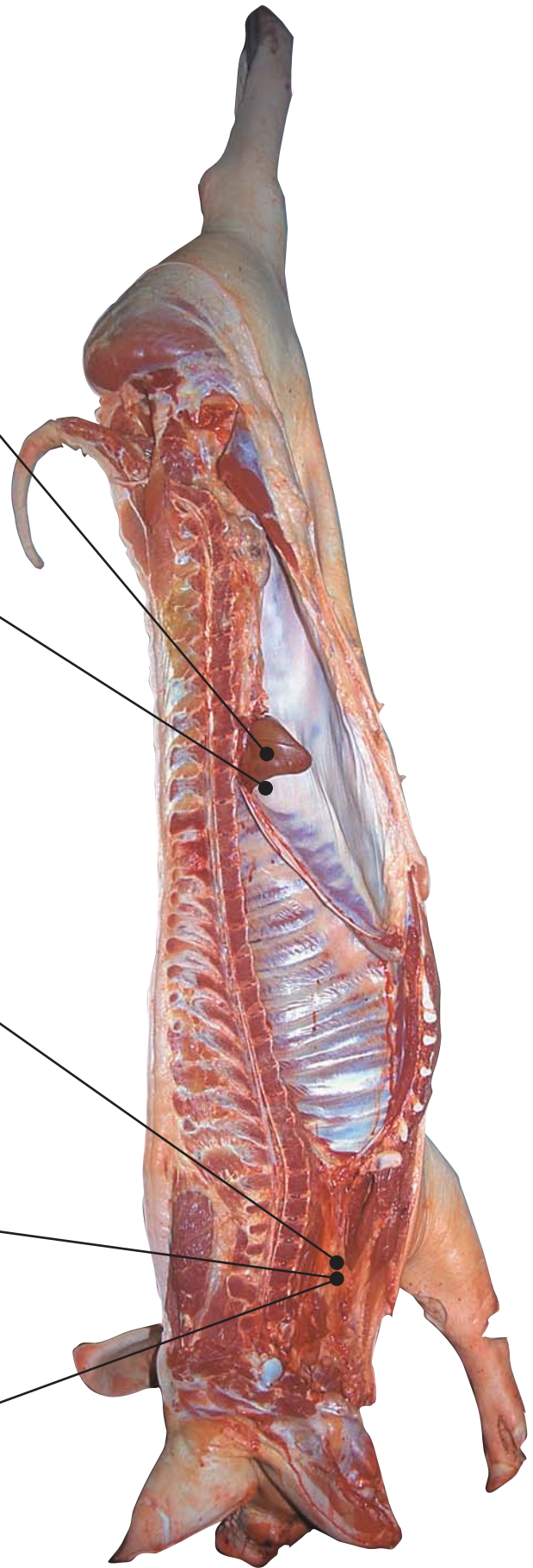
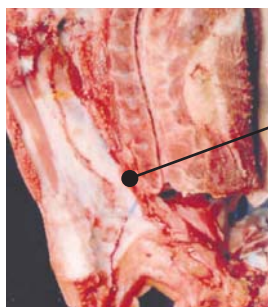
Untrimmed



Trimmed to Specification



Overtrimmed



### Clean pigs and young boars

**A** The following parts shall be removed:

- a) Hair (see note b under Hot Weight Rebates)
- b) Liver, melt, heart and lungs, ie the 'pluck' or 'race'
- c) Guts
- d) Caul and gut fat
- e) Genito-urinary organs, excluding kidneys
- f) Scrotal sac on boar carcasses
- g) Nails on each foot

**B** The following parts shall not be removed:

- a) The head
- b) The feet and tail
- c) Ear root and eyes
- d) There shall be no trimming of the neck beyond cutting off ragged edges and cleanly removing the blood vessels, (see '*neck trimming*', Appendix 1)

**C** The tongue may either:

- a) remain attached to the carcase *or*
- b) be removed from the head attached to the pluck, taking with it the minimum amount of meat attached to the jaw

**D** The flare fat, kidneys and diaphragm (FFKD) may either:

- a) remain attached to the carcase *or*
- b) be entirely removed

Note: A dressing coefficient reduction will be made according to the dressing specification used, (see page 5).

### Mature Boars

Mature boar carcasses may be dressed as in A, B, C and D above, or as sow carcasses (see below).

### Sows

The following parts shall be removed, in addition to a-e in Section A above:

- a) Head (to be square cut)
- b) Tail
- c) Flare fat and diaphragm
- d) Kidney and kidney fat
- e) Front and hind feet
- f) Udder (to be removed tidily)

## Carcase Damage – Fighting

### Z Carcasses

The natural inclination of pigs to establish a pecking order will result in fighting when peer groups are mixed. The resulting carcass damage, particularly to the loin and leg, can devalue the carcass considerably, leading to a reduction in the price paid for the carcass. Carcasses damaged in this way are recorded as Z carcasses (blemish).



Loin



Leg

### Carcass Identification

#### Slap Marks

Correctly and clearly applied slaps are essential for carcasses to be accurately identified on slaughter lines. A Defra allocated herdmark must be applied to both shoulders. They are an important means of tracing pigs for payment, bio-security and disease control. Slap markers should be regularly cleaned and inspected to ensure all tines are present and not damaged. Tattooing ink must be frequently replenished to ensure slaps can be read.



Good Slap



Poor Slap



MLCSL Authenticated Classification Documents

**MLCS PIG -Carcase Service 07/06/10**

Participant PCC MEATS PEAR FARM PEAR TREE LANE WARWICKSHIRE Method :P2	Lot Details No. :30 Dress :MLC Std Size :010-010 Tongue:OUT	Centre Name.:PCC No. :1234 /0 Week No :10 Staff No.: FFKD :IN /PAY YES	Supplier WATSON
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Slap	Kill.	Hot (kg)	Reb (kg)	Cold (kg)	Cond (kg)	Net.C (kg)	Pay (kg)	Prb mm	Est% Lean	Z	B	Remark
NT4876	000001	75.0	3.1	71.9	0.0	71.9	73.5	12	59.9			TARE CHECK
NT4876	000002	66.7	2.4	64.3	0.0	64.3	65.4	11	60.4			
NT4876	000003	71.7	2.5	69.2	0.0	69.2	70.3	10	61.7		B	
NT4876	000004	74.6	2.6	72.0	0.0	72.0	73.1	11	60.9		B	
NT4876	000005	76.3	3.1	73.2	0.0	73.2	74.8	12	60.0	Z	B	DEFORMED
NT4876	000006	74.0	2.6	71.4	0.0	71.4	72.5	18	54.2			
NT4876	000007	72.5	2.6	69.9	0.0	69.9	71.0	09	62.7		B	
NT4876	000008	70.4	2.5	67.9	0.0	67.9	69.0	06	65.4		B	
NT4876	000009	84.1	3.3	80.8	0.0	80.8	82.4	14	58.6	Z		PIGMENT
NT4876	000010	80.3	3.2	77.1	1.5	75.6	77.2	11	61.2			HOCK

	Total		717.7		1.5	729.2						
Brought Forward			0.0		0.0	0.0						
	Total		717.7		1.5	729.2						

The carcasses on this form were classified by me at the centre shown above. The carcasses were dressed and the hot weight rebates were calculated in accordance with the Specification indicated above.  
A deduction has been made where carcasses have been dressed 'tongue in' or 'FFKD in' as indicated

Signature MLCS CSO

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A copy of the MLCSL carcase classification document is made available for every consignment of pigs to pass back to the producer, so insist on receiving this important document whether selling directly to the abattoir or through marketing groups.

**ENSURE YOUR CARCASES ARE HANDLED BY MLCSL's PIG CARCASE AUTHENTICATION AND VERIFICATION SERVICES**





BPEX represents pig levy payers in England. BPEX is focused on enhancing the competitiveness, efficiency and profitability for English pig levy payers and driving demand for English pork and pig meat products in Britain and globally. BPEX is a subsidiary of the Agriculture and Horticulture Development Board.

## Work Instruction

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FINISHING
Slapmarking Slaughter Pigs

All pigs must be clearly slapmarked, with the Defra herd mark. The slapmarking can take place at a suitable stage in the production system, but must take place before the pigs are loaded. The slapmark must be legible before and after slaughter. The slapmark allows clear identification of pigs and carcasses at slaughter and so provide traceability. It is the responsibility of the pig keeper to ensure that every pig being dispatched for slaughter has been clearly and correctly slapmarked.

Equipment/info required	Personal safety
Slapmarker plate or characters	Gloves
Tattooing ink (or paste)	Dust mask
Slapmarker handle	
Inkpad	

**Pre-use check**

- Ensure the slapmarker is clean
- Ensure all of the pins are complete, straight and undamaged
- Ensure the inkpad is in suitable condition to retain a reservoir of ink
- Ensure the plate or characters are securely fixed in place

**Preparation**

- Clean or replace any damaged characters as necessary before use
- Test the slapmark to ensure that the correct slapmark is being used and is clear
- Set up the facilities to allow the flow of pigs to be managed, for example pigs passing in single file at a slow speed
- Ensure the area is well lit and protected from prevailing rain (wet skin = unclear marks)
- The floor area should be dry
- Ensure enough space is available to effectively slap both shoulders of each pig

**Outline of the work**

- Open the supply of tattooing ink or paste and fill the ink pad
- Ink up the slapmarker
- Slap each pig firmly and evenly, making contact squarely on both shoulders

nb: Slapping harder does not necessarily mean improved clarity, ¼ of an inch is all that is needed to penetrate the skin.

- Apply the slap in the correct place i.e. both shoulder areas (see image overleaf)
- Reapply ink to the slapmarker on a frequent basis using the inkpad, ie after every or every other pig
- Refill the ink pad at regular intervals while in use
- If any of the pins become bent during use stop immediately and replace the damaged character or slap plate before continuing

**After use**

- Clean the slap marker thoroughly after use, for example with a wire brush in soapy water or by pressure washing
- Replace damaged slap plates immediately and replace worn ink pads
- Store in a clean, dry and secure place
- Replace the lid on the tattooing ink or paste and seal
- Wrap the inkpad in a plastic bag to prevent it from drying out

Slapmarking Slaughter Pigs

Work Instruction
Slapmarking Slaughter Pigs
FINISHING

Check pins and plates

Apply slapmark to target area (blue area on photo)

Clean equipment and check for damage

Note: Just two missing pins can impact the clarity of the mark

**Additional Information**

The slapmark used must be the Defra herd mark specifically designated to the unit by the local Animal Health Divisional Office. The Defra herd mark is a specific combination of letters and numbers which is unique to each unit. It is a requirement of the The Pigs (Records, Identification and Movement) Order 2003, that all pigs being moved to slaughter must be identified with their Defra herd mark. Further guidance is given to this order in New Pig Identification Rules Nov 2003. In addition to the legal requirement clear identification is also essential for the BPHS scheme, ZAP and also grading and payment. Pay attention to feedback from your abattoir and BPHS reports regarding the clarity of slapmarks. If either of these indicate that any slapmarks are unclear, review both slapmarking procedures and equipment. The alternative to slapmarking is the use of metal ear tags or ear tattoos both of which must withstand processing of the carcass – for further information see New Pig Identification Rules Nov 2003.

For help or advice please contact the BPEX-KT Team or your abattoir representative.

**Reference documents**

The Pigs (Records, Identification and Movement) Order 2003

New Pig Identification Rules Nov 2003

[www.opsi.gov.uk](http://www.opsi.gov.uk)

[www.crosscompliance.org.uk](http://www.crosscompliance.org.uk)

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BPEX has a specialised knowledge transfer (KT) team, created to transfer best practice ideas and guidance to the whole industry. As well as the 'Work Instructions' guidance on 'Slapmarking Slaughter Pigs' above, the KT team also produce a farm case study on 'Piglet Slapmarking' and work instructions on the 'Loading and Unloading of Pigs'. Within the 'Action for Productivity' range of best practice titles 'Increasing Uniformity of Finished Pigs' and 'Factors Affecting Killing Out Percentage' will be of particular interest to those producers sending pigs to slaughter.

[www.bpex.org.uk](http://www.bpex.org.uk)



# PIG

## CARCASE AUTHENTICATION AND VERIFICATION SERVICES

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