Security Guidance Document for Agricultural and Construction Plant

Publication No. 64/09

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Ministerial Foreword

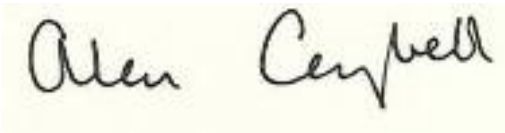
I'm pleased to have the opportunity to introduce this new edition of the Security Guidance Document for Agricultural and Construction Plant, which replaces the original version published in January 2008.

This revised and updated document takes account of recent developments in technology, and our most recent understanding of the methods used by criminals to steal agricultural and plant machinery. It is intended to ensure that manufacturers, owners and users of agricultural and plant machinery can make informed decisions to protect the significant investment they make in agricultural and plant machinery. That is always important, but especially now when the industry wants to ensure maximum value for money and we all want to be on the front foot in improving plant security as construction continues on the Olympic sites. I therefore strongly encourage those working in this sector who have not already done so to adopt the best practice described in this guidance.

Since the previous guidance was published we have seen some progress in reducing levels of plant theft, and increased recovery rates for stolen plant, now around 10%. This is promising, but there is still a way to go before we see the level in reductions in plant theft that we have seen in vehicle crime overall, which has fallen by 65% from 1991 to 2008/09. This was achieved by effective partnership between the government, police, insurance industry, vehicle manufacturing industry and the vehicle security industry. I am optimistic that, with similar partnership across the plant and agricultural machinery industry, we can achieve reductions in theft on a similarly impressive scale.

This partnership is already underway, and I am grateful to the Plant Theft Action Group (PTAG) for their significant achievements in this area. PTAG was established by the Home Office, and it is encouraging to see how the industry has really taken ownership of the issue – the Group is now operated by and for the plant industry. They have had considerable success in improving the take up of security measures, which has led to the formation of the Construction Equipment Security and Registration Scheme (CESAR), which has not only helped to deter theft, but has also aided the detection, investigation and prosecution of plant thieves.

With your assistance we can increase the security of the plant and farm machinery in this country; reduce the cost to the industry of theft; make it harder for criminals to steal plant and more likely that those who do will be caught and brought to justice, and return more stolen machinery to its rightful owners.



Alan Campbell

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1 Introduction

This document is written with, and intended for use in construction and agricultural environments by contractors, plant hire companies and hirers, owners of plant, insurers, brokers, plant manufacturers, police and test houses. We are particularly grateful for the contribution made by the Plant Theft Action Group (PTAG).

Contractors and sub-contractors such as local authorities, utility companies and building firms should also bear this guidance in mind when preparing contracts and evaluating tenders.

There is currently a lack of comprehensive data for plant theft in the UK. However, the then National Criminal Intelligence Service (NCIS) published a summary of available information in March 2006. It noted:

In 2004/05 the Police National Computer (PNC) recorded 9,902 off-road plant thefts but these did not include several hundred items of self propelled equipment (such as JCBs, New Hollands etc) registered for road use that remain unrecovered on the PNC vehicle file. Over the last five years this figure has remained fairly consistent.

A commercially held international database[1], reported that in 2006 the total value of plant theft reported by its members was £31.5 million. Other sources, including the International Association of Engineering Insurers (IMIA) estimate the value of thefts to be much higher, at between £56 million and £78 million. Estimates based on this range of figures suggest that between £700,000 and £1.5 million worth of plant are stolen every week in the UK.

The principal financial victims of plant thefts are contractors, owner-operators, insurance companies, banks and finance houses. However, there is the potential for much wider economic effects as losses invariably affect the delivery of maintenance and construction projects and agriculture. Utility companies and local authorities can bear the end cost where losses, including 'consumables', are built into the pricing structures of contracts and tenders.

This document makes recommendations which primarily address the security of larger plant and machinery in categories A, B and C (Table 1). Smaller plant or tools (categories D, E and F) can generally be secured in locked storage facilities. Further information can be found in appendix A.

[1] The National Plant & Equipment Register (TER),

Table 1: Categorisation of plant; for further details and examples see Appendix A.

Category	Description
A	Driven Equipment comprising Large Tracked and Wheeled Machines greater than 3 tonnes
B	Driven Equipment comprising Compact and Smaller Driven Equipment less than 3 tonnes
C	Non-Driven Equipment and Towed Plant with Axle
D	Non Driven Mobile/Portable Attachments and Equipment
E	Power Tools
F	Non-Powered items

1.1 Plant Theft Action Group (PTAG): Code of Practice

The Plant Theft Action Group (PTAG), formed in 1996 as a Home Office advisory body, came under the auspices of the Vehicle Crime Reduction Action Team (VCRAT) when it was formed in 1998. PTAG recommends best practice in plant security, bringing together all those with an interest in minimising plant theft including representatives from plant manufacturers, owners, hirers, users, insurers, trade associations and police. Following the dissolution of VCRAT, PTAG became a self funded organisation continuing to represent the interests of the stakeholder community.

In 1997/8 a series of discussions in the Plant Theft Action Group produced a Code of Practice giving minimum measures of protective security to be incorporated into products as part of their original specification. This was updated in 2002 to take account of advances in standards and technologies (Refer Appendix B).

The existing PTAG Code of Practice covers:

- Registration of plant
- Vehicle/Parts marking
- Keys
- Perimeter security
- Immobilisation
- Tracking systems
- Physical restraints.

The Code of Practice envisages these and additional measures being introduced progressively as standard on plant sold in (or imported into) the United Kingdom. The Plant Theft Action Group is convinced that making equipment more secure is a crucial element of the strategy to reduce plant theft and continues to urge implementation across the industry of what has been agreed as quickly as practicable.

Manufacturers following this code of practice can apply to PTAG for agreement to put the plant security logo on their equipment (Refer to details at Appendix D).

2 Why Increase Plant Security?

Criminals consider plant theft to be an easy crime to commit, offering high returns with little risk of detection or imprisonment.

Available information (PNC, private sector) suggests that over 90% of all stolen plant is never recovered. It is estimated that the true value of plant stolen each year is likely to be more than double the recorded figure, as there is much under-reporting with less than 40% of plant insured.

The additional costs of plant theft are substantial. According to a study in 2006[2], Plant Insurance Premiums have risen significantly over the last 5 years and the total costs associated with theft from construction and agricultural sites is now well over £200 million per year. A press release by Allianz Cornhill Engineering on 24 May 2006 stated that the annual cost of plant and equipment theft was thought to be upwards of £400 million a year. The insurance industry estimate these costs typically amount to 25% of the plant's value.

Taking into consideration other anticipated major regeneration and house building initiatives there are significant indicators to warrant positive action now. The additional, uninsurable costs of plant theft to owners and users include:

- Insurance policy excess charge;
- Administrative work in connection with the loss;
- Downtime (job and driver) lost productivity while organising and awaiting delivery of replacement equipment;
- Replacement hire and cost of buying replacement equipment;
- Increased premiums and excess (or judged uninsurable); and
- Bottom line losses (e.g. due to contract penalties, lost crops or similar).

2.1 Case Study 1 – Uninsurable costs, contractor's machine stolen

Theft of mini-excavator from site
Loss occurred in December 2005 and claim was settled 2 weeks later based on machine value of £12,750 in total. Insurers paid £10,250 after deduction of £2,500 policy excess.

The policyholder had to hire a replacement machine for 2 weeks and also had an operator idle on site for 1 day pending delivery of the replacement machine.

[2] Allianz Cornhill Engineering, UK

Uninsurable costs	
Policy excess	£2,500
Hire of replacement machine, 2 weeks @ £135 per week	£270
Estimated idle labour cost, 1 day @ £100 per day	£100
Total	**£2,870**
Estimated costs of management time spent reporting of the theft to the police, dealing with brokers, loss adjusters and insurers etc.	£500
Grand total	**£3,370**

(Equivalent to 26% of the agreed machine value).

2.2 Case Study 2 – Uninsurable costs, machine stolen while under hire by contractor

Theft of mini-excavator from site
Loss occurred in December 2004 and claim was settled 6 weeks later based on a machine value of £20,000 in total. Insurers paid £17,500 after deduction of £2,500.

The policyholder, generally the contractor who hired the equipment had to pay the machine operator plus banksman while idle on site for 2 days pending delivery of the replacement machine. The replacement machine was hired for 6 weeks.

Uninsurable costs	
Policy excess	£2,500
Hire of replacement machine, 6 weeks @ £185 per week	£1,100
Estimated idle labour cost, 2 men for 2 days @ £100 per day	£400
Total	**£4,010**
Estimated costs of management time spent reporting of the theft to the police, dealing with brokers, loss adjusters and insurers etc.	£500
Grand total	**£4,510**

(Equivalent to 22% of the agreed machine value).

From work undertaken by the then NCIS [3] it is known that:

- Plant theft is a very real problem causing considerable harm and generating considerable criminal profits;
- Most plant theft is an organised criminal activity;
- Compact machines (such as mini-excavators) and certain larger machines (e.g. tele-handlers and agricultural tractors) are popular targets for theft; and
- Fraud and possible cloning are likely avenues for plant crime in the future.

In addition to the uninsurable costs of the theft, are the considerable costs to policing and the Criminal Justice System from dealing with plant theft and the further costs of any associated crime. For these reasons, there is a high level of harm associated with plant theft.

Whilst manufacturers, supported by the PTAG Code of Practice have made significant improvements in plant security in recent years, there are substantial numbers of older plant equipment that have the traditional single key system of operation.

For example, under the single key system all excavators on a site can be driven by the use of only one generic key for ease of use. These keys are generally simple in design, allowing the plant to be started with any flat piece of metal of the right size. A consequence of this is that driven plant is easy to steal. When added to the low level of reporting and recovery rates, this results in a low-risk, high-return opportunity for the criminal.

The way in which people buy second-hand vehicles and plant has changed, with weekly publications and the internet becoming increasingly popular. These media are particularly hard to police, impose few checks on sellers and afford criminals a high degree of anonymity, thus offering greater appeal to criminals. The public's willingness to travel long distances, pay cash and accept a vehicle or plant without fully examining documentation leaves buyers extremely vulnerable to criminals.

Plant is rarely stolen and recovered in the same force area, and is much less likely to be recovered if exported abroad. Generally speaking, evidence provided by the private sector suggests that the higher the value of plant stolen, the more likely it is to move further and faster, often out of the country. The average value of plant stolen has continued to rise from £7,400 in 2001 to £8,900 in 2006*. This possibly reflects a more selective approach by thieves to target higher value equipment, indicating a more organised rather than opportunistic approach to theft.

[3] National Criminal Intelligence Service, UK
*TER 2006 Equipment Theft Report

Figure 1: False serial number on Manitou 1740SL telehandler, Hertfordshire. When covered in paint this number appeared to finish in '33', however with the paint removed it was clear that some additional stamping and paint was masking the true numbers, which were '22'.

Plant theft covers a cross-section of criminality and its investigation often offers opportunities for police and multi-agency intelligence development, counter-criminal operations and prosecutions. The seriousness of this area of criminal activity is increased when it is realised that part of it is undertaken to facilitate other, even more serious, crime such as funding drug-trafficking and terrorism or that plant may be employed in acts of terrorism[4].

[4] Call Crimestoppers anonymously with information about crime (0800 555 111)
If you have information about possible terrorist activity call the anti-terrorist hotline (0800 789 321)

3 Preventing Plant Theft

3.1 Owners and users: a proportionate response

Less than 10% of all stolen plant items are recovered. It is in the best interests of any business to protect its assets. Therefore, it is important to prevent theft by improving the overall security of all types of plant equipment. New standards have recently been agreed by PTAG and the Insurance Industry with the release of the Thatcham 5 Star Security Criteria (See Appendix B).

PTAG recommends owner-operators and hire companies should fit suitable after-market devices (see Appendix C) to existing stock. In respect of new plant, operators should purchase and/or hire only registered plant with an appropriate level of security (refer PTAG recommendations below, if in doubt look for the PTAG plant security logo).

PTAG endorses the following basic security measures:

- CESAR (Construction Equipment Security And Registration) system – sets out standards for marking and registration. The Construction Equipment Association and the Agricultural Engineers Association have taken responsibility for implementing this system which has been designed by PTAG and partners specifically to reduce theft and aid recovery of stolen equipment.
- Where possible only using plant equipment which meets Thatcham 5 Star rated security criteria.
- Removing vulnerable plant from site (or locking it into secure storage) when not in use.
- Reminding all drivers/ operators to use the security measures available.
- Good key security.
- Clear identification of the owner by use of company livery.
- Keeping accurate records of plant identification numbers and other identifying features.

In the meantime there is much more that owners and users can do to secure their plant and reduce their vulnerability to theft, at a cost which is a fraction of the uninsurable costs of plant theft.

PTAG recommends users and hire companies carry out a risk assessment of the vulnerability of their assets to theft. In conducting a risk assessment, it will be necessary to consider factors including value, size and category of plant, location of use, storage facilities, attractiveness of the item to thieves and other security measures already in place (e.g. site security).

Plant users (either owner or hirers) when purchasing and/or hiring new equipment should, where possible, select equipment compliant with Thatcham 5 Star ratings or take advantage of after-market security systems and devices, which start with basic physical restraints and increase in sophistication. Options include:

- Physical restraints.
- Hydraulic locks (disabling hydraulic components from being operated).
- Electronic and electro-mechanical immobilisation[5] systems (disabling electronic, electrical and hydraulic components so as to prevent an item of Plant from being driven)
- Alarm systems (with or without remote monitoring).

Systems are also available to assist in the recovery and identification of stolen plant:

- Tracking systems (using satellite navigation and/or mobile phone technologies)
- Parts-marking systems, comprehensive and tamper-proof identification that can be checked by anyone 24/7 (as a deterrent and to aid recovery, increasing the risk to the thief i.e. CESAR).

Clearly not all of these approaches are appropriate to every situation, but all options relevant to a given piece of plant should be exploited as the uninsurable costs of plant theft greatly exceed the cost of installing effective security systems.

3.2 Case Study 3 – Utilities company, secure plant

Often utilities construction gangs are working in locations where it may not be feasible to take equipment away at the end of the day or to return it to a central compound. Consequently, it is common for items to be left in situ, often at the side of the road.

Early in 2004 concerns were raised over the amount of plant and equipment that the utilities businesses were losing. One depot alone lost £100k worth of plant and equipment in 12 months with considerable additional costs from lost work, recovery of machines (where possible), administration overheads and their own investigations. Such cost would go a long way to providing measures to prevent theft occurring.

As a result, the utilities company concerned decided to run a pilot scheme to deter theft. It was decided to:

Paint new machines and compressor/generators in corporate colours

Fit immobilisation systems

Issue gangs with a variety of physical restraint security devices including track locks, hitch locks, high quality security chains

Meet with the gangs and explain what was to be achieved and encourage good housekeeping.

[5] Note: it is illegal to operate remote immobilisation devices on vehicles in motion on public roads.

The net result was that, over the first six months of the pilot, only one compressor/generator was lost and that was in the old livery and had not had the other security items fitted.

The utilities company is convinced that good housekeeping together with the raft of measures outlined above make equipment less attractive to thieves and reduce not just the cost of losses but other 'hidden' costs of theft of plant.

It is in the interests of the equipment owners, whether private or hire-companies, to ensure that those using the equipment act responsibly, taking advantage of all available security features to ensure the safety of the equipment in their trust. As items of plant become harder to steal, thieves are more likely to turn to the theft or fraudulent procurement of keys, a code or transponder in order to enter and start the vehicle. Steps should be taken to reduce the opportunity for thieves to obtain keys.

Appendix C describes in more detail the technologies mentioned above and Appendix F lists further sources of advice.

3.3 Manufacturers: building secure plant

Appendix B summarises the current minimum security targets (PTAG Code of Practice, CESAR and Thatcham 5 Star rating) for plant manufacturers to progressively build into their products. A number of manufacturers have taken up the challenge and have worked to meet the PTAG Code of Practice. The first PTAG Plant Security logos were awarded in 2004.

As technology advances, further measures will become available and increasingly cost-effective. Examples include:

- The instigation and maintenance of a quality management system for issuing replacement keys, codes and transponders only to those with legitimate requirements.
- The increasing use of electronic engines to meet European emissions targets facilitates the installation of electronic immobilisation for driven plant.
- Telematic and fleet management ('tracking') systems offer increasing opportunities for monitoring the use and movement of some plant, with intelligent immobilisation systems (e.g. systems compliant with Thatcham Category 5 Criteria for After-Theft Systems for Vehicle Recovery)[6]
- Programmable 'smartcards', issued to authorised drivers/ operators, replacing keys.

[6] Note: it is illegal to operate remote immobilisation devices on vehicles in motion on public roads.

Figure 2: Stolen Fiat Hitachi 200LC excavator, Newry, Co Down. This £75,000 excavator had been stolen 48 hours before in London, and here it is in Northern Ireland.

4 Supporting Secure Plant

4.1 Insurers: encouraging secure plant

The Financial Services Authority (FSA) has placed an explicit requirement on insurers to address money laundering and fraud. There is scope for fraud in plant and equipment insurance at both the underwriting and claims management stages of insurance. The use of effective security measures is actively encouraged by some insurers with the offer of discounted premiums and lower levels of excess. Insurers can use the categorisation of plant, the Thatcham 5 Star Rating criteria, targets for manufacturers and PTAG plant security logo to assist in evaluating risk. Insurers should actively encourage the use of the PTAG Code of Practice and Thatcham 5 Star Rating criteria together with overt marking and registration to deter theft of plant and assist in identification and recovery of stolen plant.

Insurance providers, including those corporates that are 'self insured', have a clear responsibility through the corporate and social responsibility statement that is part of PLC annual reporting.

With the quantity of stolen equipment in circulation - estimated at £200M[7] worth at any time - combined with the current business practices of insurers, PTAG feels it is likely that insurers provide cover for equipment that has already been stolen and which is actually the property of another insurer or even of their own company.

The efforts of the insurance industry are of little use if there is no overall responsibility for the equipment insured and security measures are not utilised when the equipment is left unattended. The state of mind that results in 'protection being ignored because it is insured' must be emphatically discouraged at all levels. Proof that equipment is currently registered on an approved database would also discourage false and fraudulent reporting of thefts.

4.2 Case Study 4 – Theft of tools and equipment from rented compound

The loss occurred in September 2005 when a van appeared at a rented compound and the drover handed a piece of "headed" paper to security guards requesting the collection of tools and equipment (breakers and the like).

No identification was provided, but the security guards allowed the persons to load their van with the equipment which had been hired in by the client. It was found that the CCTV which covered the yard was ineffective and the van was fitted with false registration plates.

[7] TER 2006 Equipment Theft Report

The amount claimed by the owners of the equipment was over £5,500 for replacement and £800 for loss of hire.

In the final analysis the plant was never recovered. The security firm was never found liable, so the clients ended up with the losses under their own hired-in plant policy. Punitive terms were applied to the policy at renewal. The security firm went into liquidation the day after the loss.

Insurers of contractors' plant and equipment should clearly differentiate between those clients that do effectively manage theft risk and those that do not. To facilitate this it is essential that each item insured is absolutely identifiable and registered onto a register that is readily available to the insurer's claims department. Each item's record should include the theft prevention and recovery systems that are used on that item.

4.3 Test houses: ensuring security features are fit for purpose

Test houses such as Thatcham and Sold Secure provide a security assessment service in order for plant and security equipment manufacturers to demonstrate that their products are effective in meeting the minimum standards set for components, system features and installation of security systems for use with plant.

The assessment is applicable both to systems fitted as original equipment by the plant manufacturer and to after-market systems which are subsequently fitted. Attack trials on an item of plant are a common method used by test houses and are undertaken from a position of some intimate and detailed knowledge of the equipment and its security systems**.** This would approximate to the knowledge available to a thief after the plant had been freely available in the market place for, say, a year.

The various generic types of plant have been grouped in order that a security device or system can be assessed in relation to the type of product it is intended to fit (see Appendix A). Attack tools used in testing consist of commonly available portable items. Some of these items may be found on building sites or in workshops, highlighting the need for secure storage of these smaller items.

4.4 Police: retrieving stolen plant

It needs to be remembered that criminals who steal plant and machinery are very often linked to serious organised crime and/or terrorism. Stealing plant is perceived as a low risk crime by the criminal because currently detection and conviction rates are low. Law enforcement agencies need to be able to more easily identify stolen plant. If criminals are faced with easily identified and traceable plant, stealing it will become a high-risk crime with the chances of discovery and conviction much higher. In addition, valuable intelligence can be gained from recovered plant.

Police forces throughout the country have difficulty identifying construction and agricultural equipment which is stolen. There are two main reasons for this:

- Firstly, few of the world-wide manufacturers who make or market their products in the UK have a standard method of marking their machines with identification numbers, and many are applied to the equipment in such a way that they are very easy to remove, erase or alter.
- Secondly, should the equipment be stripped into component parts, it is usually impossible to identify these parts on their own because manufacturers cannot generally search their data systems using the component serial number.

Before the introduction of the CESAR database the identification of stolen plant proved problematic. For the police to stand any chance of positively identifying construction and agricultural equipment, there is a need for all manufacturers to mark their products in a standard manner which is easy to read, but difficult to erase or alter. One such system in existence since 1979 is the 17 character alphanumeric Vehicle Identification Number (VIN). VIN is internationally recognised by police and other agencies as the unique identifier for a vehicle. Where a plant manufacturer does not have access to VIN, a Product Identification Number (PIN) should be used. An increased use of overt marking such as the CESAR system, will both act as a visible deterrent and ensure that all police officers can easily and accurately identify plant without special training or equipment, increasing the rate of recovery of plant and increasing the risk to thieves. Additional covert marking will also assist in increasing the probability of detection and conviction.

5 Summary and recommendations

The harm caused by plant theft is considerable and plant owners, users and manufacturers cannot rely solely upon the police to resolve the problem. There is a need to work in partnership if plant theft is to be reduced.

In past years, owners and hirers have believed that their plant is at low risk of being stolen leading to poor security and much being uninsured. The insurance industry advise that increases in insurance premiums indicates that the risk has increased and provides an incentive to buy more secure plant, and for manufacturers to supply it.

While there is currently little secure plant available direct from manufacturers, a range of after-market security systems are available and there is much that owners and hirers can do to protect their assets and reduce the risk of theft.

The Home Office recommends that the following steps should be taken:

- Use of overt marking and a single portal/point of entry to databases and/or a national register allowing the police service free access, enabling identification of plant and equipment 24hrs/day. We commend PTAG's work with the police, the construction industry and the Construction Equipment Association to develop the CESAR system (refer Appendix E) with the support of the industry itself. These standards have been created with the sole intention of deterring theft and aiding the recovery of stolen equipment. CESAR went live on 2 April 2007.
- Manufacturers/importers/distributors to adopt a minimum standard of security devices, as recommended in the PTAG Code of Practice and Thatcham 5 Star Rating criteria, including parts marking, and extending the range of new equipment with security features fitted as standard.
- Owners and hirers should complete risk assessments and take all appropriate measures to reduce their risks.
- Insurers should promote the PTAG Code of Practice and security logo, and registration of plant through the wording of insurance policies and the education of brokers.
- Improved plant theft data collection by the police and analysis by the Home Office to help the future targeting of plant security initiatives.
- All parties work together to promote security and educate users, employers and employees on their personal responsibility regarding security of equipment and where it is stored.

Figure 3: Stolen JCB 3CX backhoe loader, Felixstowe Docks. This stolen excavator was containerised, ready for despatch to Ashdod in Israel. The gang which had stolen it were caught and convicted. More than £1M of stolen equipment had already been sent to Israel.

Appendix A: Classification of plant

Plant can be segregated into the following categories:

A	Driven Equipment comprising Large Tracked and Wheeled Machines greater than 3 tonnes
B	Driven Equipment comprising Compact and Smaller Driven Equipment less than 3 tonnes
C	Non-Driven Equipment and Towed Plant with Axle
D	Non-Driven Mobile/Portable Attachments and Equipment
E	Power Tools
F	Non-Powered items

While this is neither definitive nor exhaustive, it should incorporate all plant equipment. Examples of items in each of these categories are listed below.

Table 2: Examples of plant in categories

Category A	Tractor (tracked/wheeled), Dozer (tracked/wheeled), Loader (tracked/wheeled), Excavator (tracked/wheeled), Motor Scraper, Motor Grader, Dump Truck (articulated), Dump Truck (rigid), Backhoe Loader, Telescopic Handler, Rough Terrain Forklift, Cranes (Mobile/Crawler), Crane (tower), Dragline, Face Shovel, Compactor (soil), Compactor (waste), Crusher, Screener, Conveyor, Concrete Pump (truck/trailer), Pavers, Chip Spreader, Trencher, Road Sweeper, Harvester, Forestry Skidder, Forestry Forwarder, Piling Rig
Category B	Skid Steer Loader, Mini-Excavator, Site Dumper, Quad Bike, Mobile Elevating Work Platforms, Compact Backhoe Loader, Compact Tractor, Ride on Roller (vibratory/dead weight)
Category C	Trailers, Trailer Mounted; Lighting Towers, Compressors, Generators, Traffic Lights, Welders, Pumps, Winches, Access Equipment, Chippers, Power Cultivators, Sprayers, Spreaders, Water Bowsers,
Category D	Rammer, Plate Roller, Hydraulic Breaker, Pulveriser, Cutter/Crusher, Grab/Grapple, Shear, Ball, Auger, Sprayer, Spreader, Power Packs, Heaters, Dehumidifiers, Power Washers, Transformers
Category E	Power Tools (all), Drills, Stihl Saws
Category F	Ladders, Scaffolding, Staging, Shuttering, Fencing

This chart is a guide and not a comprehensive categorisation document.

Excavators shown as Micro, Mini and Midi should be graded by weight.

Driven – This refers to any machine which is Self-Propelled and requires a Driver or Operator. Non-driven refers to any item of equipment which does not require a Driver/Operator or Engine to propel it.

Appendix B: Plant Security Standards for Manufacturers

B.1 Plant Theft Action Group

The Plant Theft Action Group (PTAG) first formulated a Code of Practise in 1997/98 for Agricultural and Construction Manufacturers.

The current Code of Practice recommends the following minimum measures of protective security be incorporated into products as part of their original specification:

- VIN/PIN – 17 character alphanumeric Vehicle Identification Number to World Manufacturers Index Scheme (WMI) or 17 character alphanumeric Product Identification Number to ISO 10261:2000;
- Other markings – a number to be applied as a covert mark on major component parts. The minimum number is 6 major parts (category A - B equipment), 2 major parts (category C - F equipment);
- Keys – a unique key for the driving function. This may be the immobiliser key;
- Perimeter security – cabs with lockable doors and windows;
- Immobilisation;
- Physical restraints; and
- Registration – a register of ownership with a recognised company.

B.2 CESAR (Construction Equipment Security And Registration Scheme)

Devised by PTAG to address the concerns regarding vehicle identity specified in the original code of practise, CESAR is a unique security and registration scheme for agricultural and construction plant. It was launched in April 2007 with the active support of the plant insurers who, since the launch, have been actively recommending the use of CESAR to plant manufactures.

B.3 Thatcham 5 Star Rating

Following on from the previous initiatives, in which Thatcham took an active part, and the drafting of Thatcham's new OEM Plant Criteria, the Vehicle Security Steering Group for Plant (VSSG-P) approved the creation of the 5 Star rating for plant.

This new plant rating brings together the: PTAG Code of Practise; Construction Equipment Security And Registration Scheme; British Insurance Industry's criteria for plant security criteria to create a simple but effective guide to standard fit security for:

- Plant manufactures
- Plant insurers
- Plant users

Star Rating Table

	Stars	Functionality	Requirement
Mandatory	☆	Vehicle Identification Number, Registration Covert markings	CESAR
Mandatory	☆	Keys – a unique key for each vehicle. This may be the immobiliser key	Thatcham NVSA Accredited
Mandatory	☆	Immobilisation	Thatcham Cat P2 Accredited
Optional	☆	Perimeter security Cabs with lockable doors and windows;	Thatcham NVSA Accredited
Optional	☆	After theft system for vehicle recovery May include additional functionality such as fleet management.	Thatcham Cat P5 Accredited

The recommended minimum star rating for standard fit security is below:

Category A & B Plant

Mandatory	☆	Vehicle Identification Number Registration Covert markings	CESAR
Mandatory	☆	Keys – a unique key for each vehicle. (This may be the immobiliser key)	Thatcham NVSA Accredited
Mandatory	☆	Immobilisation	Thatcham Cat P2 Accredited

Category C Plant

Mandatory	☆	Vehicle Identification Number Registration Covert Markings	CESAR

B.4 Plant security logo

If you follow the PTAG Code of Practice, you can apply to PTAG to put the plant security logo on your equipment, using the application form attached. It is a criminal offence to reproduce this logo under any circumstances, or unless PTAG have given permission, in writing.

See Appendix D for details.

Appendix C: Security technologies

This publication has recommended a number of security technologies that can be used to secure plant against theft. The main features and applications of each technology are briefly described below.

C.1 Currently available systems

C.1.1 Physical restraints

Physical restraints which are specifically designed for plant that can lock steering mechanisms, excavator and crane booms, stabiliser legs, tow hitches, tracks and wheels, trailers, site storage containers, breaker locks, towing pins etc.

For small and mid-sized equipment (categories B and C), which can be towed away or craned onto a truck and removed from site to a secure place for modification, physical restraints are practical and effective. Their visibility acts as a deterrent and their removal requires physical effort, time and tools, accompanied, often, by noise.

Physical restraints can be used on equipment which has no engine and may also be useful on plant in categories D-F. However, because they require operator effort, their application and implementation needs to be managed to ensure their use.

In most cases it is not possible to offer a standard restraint. Such devices have to be designed and purpose made for each manufacturer's type of product. This can be an advantage as each restraint has to be attacked in a different way to remove it.

The insurance industry recognised security standard for plant mechanical restraints is Thatcham Category P3.

C.1.2 Hydraulic locks

Hydraulic locks are dedicated to rendering inoperable the hydraulic, braking, steering or gear selection.

C.1.3 Immobilisation systems

Immobilisers aim to prevent unauthorised moving or use of an item. Immobilisation systems are best used for self-propelled, on or off highway equipment (categories A and B). These products have fuel, hydraulic, brake, electric, steering and gear selection systems which can be immobilised. In most cases the equipment must be fully operable even to be loaded on a low loader for removal from site.

Plant immobilisation systems are activated by an electronic fob, transponder key or by keypad and PIN code and can be either electrical or electro-mechanical according to the engine type.

An advantage of immobilisation systems is that they are usually automatically set after the engine has been switched off without user intervention.

Effective immobilisation may also prevent exposure to public liability claims, injury and even death of so-called 'joy riders' and members of the public.

The insurance industry recognised security standard for plant immobilisers is Thatcham Category P2.

C.1.4 Alarm systems

Alarms are one option for increasing vehicle perimeter security. The noise level acts as a significant deterrent to people in proximity to the protected item, yet audible alarm systems may attract less attention in unpopulated areas. However, alarms may also send silent signals to remote monitoring stations or to pagers.

C.1.5 After-theft recovery systems

Tracking systems can assist with the location and recovery of vehicles and, by increasing the risks of apprehension for the criminal; they may play a part in reducing theft. These types of systems may be used as silent alarms when an item moves without authorisation.

The insurance industry recognised security standard for plant tracking systems is Thatcham Category P5.

C.1.6 Parts marking

Any marking system should be tamper-proof and able to withstand the ravages of working on construction, forestry and farm sites using a marking system capable of being easily identified by the police. The VIN and/or PIN should be embedded on the item in as many places as possible, both overt (visible) and covert. All locations should be recorded but only made available on a controlled basis.

C.1.7 Visible marking

All equipment within the definition of plant in categories A-C should be marked with a 17 character alphanumeric Vehicle Identification Number as described by the World Manufacturers Identification Scheme. Where this is not possible, a Product Identification Number (PIN) should be used. Refer Appendix E – CESAR Plant Marking Scheme.

The VIN/PIN should be in a visible position when the equipment is fully assembled. Ideally at the front right hand side of the equipment, taking account of any ancillary attachments which may be fitted. The number should be marked and securely fixed in accordance with British Standard 6913 part 12:1995 and ISO/DIS 10261:2000.

At the beginning and end of the VIN/PIN there should be a security mark, preferably the manufacturer's logo, to prevent characters being added or subtracted. VIN/PIN will be the identification mark recorded by police in the event of theft or other incident.

The characters should be indelibly marked or stamped to prevent easy erasure or alteration. VIN/PIN should be in addition to any manufacturer's build plate which is attached to the equipment, and which should also bear the VIN/PIN.

Visible PIN or other unique identification number should be used on smaller items of plant (categories D-F).

C.1.8 Covert (or concealed) marking

In addition to the stamped-in number and manufacturer's plate, there should be a further VIN/PIN located in a concealed area somewhere else on the vehicle known only to the manufacturer. It should be on a permanent structure or a part of the equipment which is not susceptible to damage and repair.

In addition, all plant manufacturers are encouraged to covertly mark their products in as many locations as possible, preferably with the VIN/PIN or another unique identifier linked to the VIN/PIN, (a minimum of 6 (category A and B equipment) or 2 (category C - F equipment)). Enquiries from the police and other authorised agencies seeking information on covert marks should be dealt with in the strictest confidence.

The aim of this marking is to make identification possible if the primary marking is destroyed or unreadable. The positions of covert marking should not be published in the operator's or service handbook. The marks should be difficult to discover accidentally and the whereabouts only divulged to authorised persons on a need-to-know basis.

C.1.9 After-market property marking

Property marking is advised by the Home Office for all plant and machinery (old and new). Available property marking methods range from readable numbers and letters to unique electronic tags and chemical coding solutions (see CESAR Plant Marking Scheme – Appendix E, Sold Secure SS305, Loss Prevention Council standard LPC 1225 or Thatcham listing for asset marking systems). These unique identifiers should be linked to the VIN/PIN.

C.2 Emerging technologies

The Home Office recommends that manufacturers and installers of security devices take account of the advances in technology, whilst recognising that personal safety of the operators/keepers of that equipment must not be compromised and that installation and security standards are maintained.

C.2.1 Smart cards

Smart cards may be offered in place of keys. Smart cards are plastic cards containing a microchip. There are various kinds, some requiring the card to be passed through a reader (like a credit card), others require a touch against a reader (e.g. London's travel smartcard, Oyster) and others can be read more remotely (1m or more). Smart cards can be used in place of keys or as an additional layer of security when issued to authorised drivers/operators.

C.2.2 Biometrics

Biometrics uses unique human characteristics (e.g. a fingerprint) or actions (e.g. voice) as a form of identification. Biometrics is an emerging technology which may have substantial advantages over current systems for security applications. Devices and systems are available now, only some which might be suitable for extended use outside. Specialist advice should be sought to ensure that a system is fit for purpose.

C.3 Installation and safety

C.3.1 Installation

To benefit from the security that these devices offer it is essential that after-market installation of immobilisation systems, alarms and tracking devices is carried out to Vehicle Systems Installation Board (VSIB) requirements or an equivalent standard. This may be by plant manufacturer authorised dealers or by companies with VSIB (or equivalent) certification.

Some systems may interfere with emissions or invalidate the manufacturer's warranty. If in doubt, please contact the manufacturer.

C.3.2 Safety

The fitting of plant immobilisation systems, mechanical restraint and/or any other form of security device must not interfere with, or prevent the operation of, standard safety features on equipment. The fitting of security devices, whether OEM or after-market, should be risk assessed, as part of the European Union directive on CE marking. It is the manufacturer's responsibility to ensure that all devices fitted by themselves or their agents conform to European or other legislation.

Appendix D: PTAG Security Logo, Application to use the plant security logo

Name:	Position in company:
Address:	Signature: Date:
Phone number:	Email address:
Please answer the following questions about what your company will do to meet the code of practice for manufacturers	
Do you either: (a) Apply a 17-digit identification number to all plant in categories A B C (VIN or PIN)? **Yes** ☐ **No** ☐ Or (b) Use the Construction Equipment Security and Registration system to mark all plant in categories A B C? If no, are you going to do this in the future? **Yes** ☐ **No** ☐	
Do you record the serial number or identification codes of major parts? **Yes** ☐ **No** ☐ If yes, how? If no, are you going to do this in the future?	
Does your equipment have a unique key, key card or pass code? **Yes** ☐ **No** ☐ If no, would you consider introducing this?	
Please give details of your perimeter security (door locks on the cab; windows secured from the inside and so on) used on your equipment.	
Are immobilisers fitted that can withstand an attack time of 15 minutes or more **Yes** ☐ **No** ☐ If no, would you consider using these?	
Does your company register all new equipment? **Yes** ☐ **No** ☐ If yes, with which company/system? If no, would you consider doing this?	

Please send the completed application form:

Either electronically attached to an email addressed to: CEA@admin.co.uk

With "FAO The Chairman, Plant Theft Action Group" written in the subject field;

Or in hard copy to:

The Chairman,
The Plant Theft Action Group
c/o The Construction Equipment Association
Orbital House
85 Croydon Road
Caterham
Surrey
CR3 6PD

Appendix E: CESAR System

This system went live on 2 April 2007.

It has been designed through the auspices of PTAG by the construction industry and Police specifically to reduce theft and aid recovery of stolen equipment.

- The system makes use of a unique CESAR identification number allocated to a specific piece of plant which allows anyone access to verify the authenticity of any piece of equipment 24 hours a day.
- The central database has the capability of recording these CESAR numbers and will match equipment data together with the VIN and PIN with new keeper details and an emergency contact number.
- The CESAR number uses a special security non falsifying text to prevent alteration or attempts to disguise or change the appearance of the digits.
- The CESAR number can easily become the stock control number or plant contract number utilised by the owner.
- The tamperproof CESAR identification plates contain a micro chip or transponder utilizing Datatag ® technology with the Construction Equipment Association, Agricultural Engineers Association & Datatag's registered trademarks and will allow interested parties to check authenticity of the equipment and the CESAR identification plates by contacting the secure 24/7 database and call centre.
- This number is easily readable and allows equipment to be traceable by police as well as site managers, hauliers, contract agencies, other law enforcement agencies and shipping agents.
- The number will be visible from the ground and readable to the ordinary observer at the roadside, control room or site office for police or internal logistic uses.
- If equipment is stolen an immediate report to police or the data handler can be made.
- Associated components to the plant equipment to be further property marked with the CESAR number i.e., welded onto the buckets, laser etched into other components, glass etched etc.
- If plant is recorded on the UPN central database, the data holding company will also register onto the Off Road Register at DVLA. A registration document is then issued to the owner of the equipment.
- This enables accurate data to be entered onto the PNC, enabling the piece of equipment to be correctly reported if it is stolen.
- Enables increased confidence for the owner to be in possession of a genuine V5C registration document and encourages continuous registration.

- If these numbers have been defaced then an investigating officer will immediately be suspicious and cross-checks of the equipment VIN /PIN can be made.
- Likewise, a prospective buyer can check the validity of the equipment before purchase.
- The seller should be in possession of a genuine V5C registration document.

Anyone at any time can enter their equipment onto the national database, thus both new and old equipment can be registered, and more importantly it can be the hire company, the multi national company, the farmer or the one-man operator with their mini digger or tractor to register.

This system could easily be utilised by any persons requiring logistic support or security on any number of sites.

It is suggested by the implementation of the above proposals PTAG and its partners together with the law enforcement agencies can have a significant impact on criminals who specialise in Plant Theft.

Figure 4: Example of a CESAR Marking label

Appendix F: Further sources of information

Additional sources of information include[8]:

F.1 General

www.crimereduction.gov.uk

www.cesarscheme.org

Further advice on security can be obtained from insurance surveyors and police Crime Prevention Officers or via the Plant and Agricultural National Intelligence Unit Telephone 0207 230 7290 Email: paniu@met.police.uk

F.2 Test houses for after-market security devices

Sold Secure. www.soldsecure.com

The Motor Insurance Repair Research Centre (Thatcham). www.thatcham.org

F.3 Registration of plant and other sources of information

DVLA – will register off-road equipment for free which is VIN based www.dvla.gov.uk

www.cesarscheme.org

www.datatag.co.uk

www.cpa.uk.net

www.ter-europe.org

www.thiefbeaters.co.uk

F.4 Thatcham 5 Star Rating

The Motor Insurance Repair Research Centre (Thatcham).

http://www.thatcham.org/security/index.jsp?page=974

[8] The information on this page is correct at time of publication

Appendix G: Bibliography

Security Guidance Document for Agricultural and Construction Plant. PSDB 1/02. Home Office (2002).

Steer Clear of Plant Theft, PTAG Code of Practice for Manufacturers. Home Office Communications Directorate, June 2002.

TER 2006 Equipment Theft Report

British Insurance Industry's Criteria for Vehicle Security (Plant)

G.1 Acknowledgements

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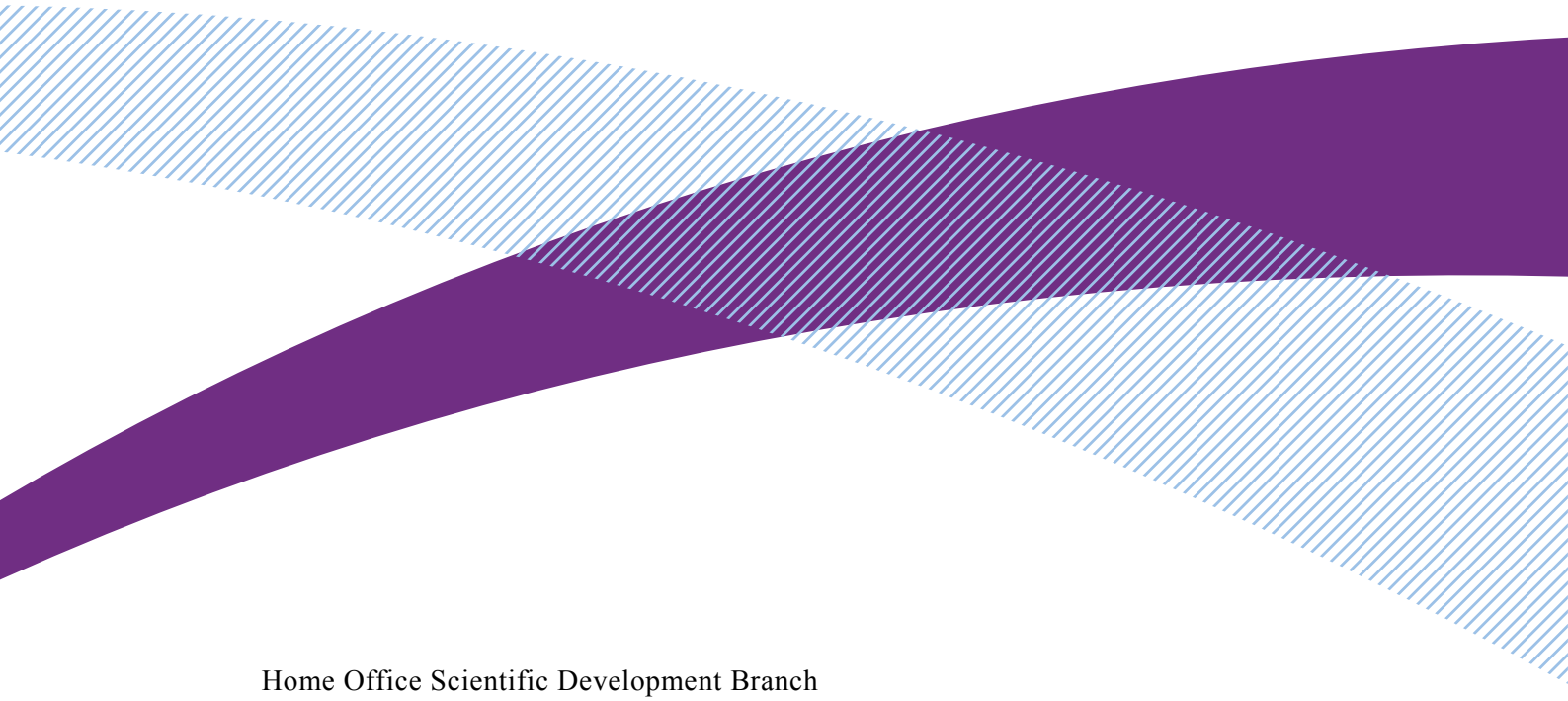
Case studies provided by:

Page 6	Bridle Insurance Brokers
Page 7	Amec Utilities
Page 11	HSB Engineering Insurance

Images provided by:

Figures 1-3	The National Plant & Equipment Register (TER)
Figure 4	MPS Stolen vehicle unit



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