PROJECT DOCUMENTATION

Demonstration of Electronic Identification (EID) to Support Management and Legislative Requirements on Welsh Sheep Farms

JUNE 2007 – DECEMBER 2009

FINAL REPORT

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1 Executive Summary

The co-funded Welsh Assembly Government and Hybu Cig Cymru – Meat Promotion Wales (HCC) project "Demonstration of Electronic Identification (EID) to Support Management and Legislative Requirements on Welsh Sheep Farms", considers the benefits and possible problems associated with farmer use of EID technology. The objectives were: to establish the costs of EID tags and reading equipment, investigate any advantages EID could bring to sheep management on the farm and to explore the use of EID beyond the farm gate in supply chain traceability. This is the final report and covers the period from June 2007 to October 2009.

Since December 2007 fourteen farms that had been nominated by stakeholder organisations have been involved in the project. The farms were selected to give a wide range of flock size and to cover different sheep farming systems. They were also selected to give a wide geographic coverage throughout Wales and to represent a wide range of farmer computer ability. Farms were allocated a budget to buy tags and a level of equipment appropriate to their sheep farming enterprise. All farms had a hand held reader, some also had a race reader and some a higher level specification which has a reader integrated into a weigh crate.

After two years of investigation the project has concluded that problems exist with the supply of certain EID equipment. Generally, hand held readers were found to be reliable and easy to use. Race readers have worked well with integrated weigh crates, making lamb weighing and recording much easier. However, using race readers to quickly read a group of sheep was disappointing; unless sheep were stopped next to the reader not all of them were read. Project farmers, therefore, tended to use hand held readers to read groups in a race as this was often quicker than using the static reader.

Understanding the computer and the sheep management programs proved to be time consuming and has caused considerable farmer frustration, especially for those new to computers. However, it became apparent that on some farms lambing, medicine and movement recording can be made easier using electronic recording.

The project also funded an EID reader at Randall Parker Foods abattoir, Llanidloes. This did not give consistent results throughout the project reporting period. Some batches achieved a 100% read whilst other batches achieved a much lower read rate. A technical problem with the EID reader has been under investigation for over six months and was not fully resolved before the project was concluded.

The project did not evaluate any EID equipment in livestock markets. Auctioneers were interviewed and a questionnaire completed by a sample of market businesses. This work showed that markets had not, at that time, made preparations to implement the Regulation when they were interviewed (6 January to 15 June 2009).

2 Background and Introduction

In 2003 Council Regulation 21/2004 was agreed as a consequence of the impact of the 2001 Foot and Mouth Disease (FMD) outbreak across Europe, resulting in a European wide system for identifying sheep and goats. Member States of the European Union (EU) agreed that the principle of individual traceability of small ruminants should be established. The objective for Community rules on the identification of sheep and goats is the tracing of animals for veterinary and disease control purposes and for the management and supervision of livestock premiums, as part of the reform of the Common Agricultural Policy (CAP).

The United Kingdom (UK) was successful in negotiating a temporary derogation to the new double tagging system of identifying sheep and goats, a European requirement that was introduced in the majority of other Member States on 9 July 2005. However, the UK system of sheep identification between July 2005 and January 2008 was complex and not easily understood by sheep keepers. Despite efforts by industry, Government and enforcement officials the temporary derogation to double tagging was given up on 30 June 2007, following three missions from the EU Food and Veterinary Office between January 2005 and March 2007.

Council Regulation (EC) No 21/2004 required, from 1 January 2008, sheep and goats to be double identified using one electronic identification (EID) device, subject to a Commission report to the Council of Ministers. Evidence submitted by UK Governments to the Commission, based on previous trials and experiences, suggested that EID technology was neither sufficiently robust or reliable and that further development and testing was required. Although the Commission report recommended wider stakeholder discussions, on 17 December 2007 the date for mandatory EID was fixed, under pressure from other Member States, as 31 December 2009.

Results from the Welsh EID Project, undertaken between 2003 and 2005, found that none of the four EID systems evaluated during the study were able to provide a system of individual identification and management that was 100% reliable. It was noted that equipment development would continue and, as a result, it was anticipated that equipment available in the future would be much improved.

This project has therefore been undertaken by the Welsh Assembly Government (WAG) and Hybu Cig Cymru – Meat Promotion Wales (HCC), in order to determine both the functional capabilities and the supply of EID systems that were available to industry between 2007 and 2009. Outside of the requirements of the Regulation, the potential benefits of this technology throughout the lamb supply chain have also been evaluated. The Project Management role was commissioned from the Technical Services Division of WAG, initially for the period July 2007 to December 2008 and extended later to December 2009.

The project objectives were:

- to investigate potential problems associated with farmer use of EID technology;
- to establish the current costs of tags, readers and other equipment;
- to identify and, where possible, quantify the farmer benefits of using EID technology (within and outside of the Regulation);
- to explore the use of EID beyond the farm gate in supply chain traceability by considering market and abattoir involvement; and
- to identify benefits to enforcers for legislative checks, for compliance with Welsh Assembly Government schemes and for disease control.

This final report presents the findings of the project from June 2007 to October 2009.

During the project lifetime the EU Council of Ministers agreed that the obligatory implementation date for the introduction of EID (Council Regulation (EC) No 1560/2007) would be delayed until 31 December 2009. This delay enabled the project life to be extended to include data collection and evaluation during lambing 2009. The Standing Committee on Food Chain and Animal Health (SCoFCAH) agreed a further change to the annex of the Regulation on 14 July 2009. Commission Regulation (EC) No 759/2009 of 19 August 2009 introduces third party recording, where keepers can use an approved central point recording centre to undertake the reading of individual identities after the animals have arrived and to return the readings to the farmer to update records.

3 Project Set-up

3.1 Farmer Selection

The first stage of farmer selection, following a brief to stakeholders of the project detail, was to ask the following organisations for three nominations each for consideration by the Project Management Board (PMB). Letters were sent to: NSA Cymru[1], FAWL[2], FUW[3], NFU Cymru[4], CLA[5] and YFC[6]. Replies were received from NSA Cymru, FAWL, NFU Cymru and FUW, each putting forward three nominations; neither the CLA nor the YFC responded. A matrix was compiled and nominated farms were selected on flock size and type, farmer IT experience, geographical location and whether they were involved in previous EID trials in Wales.

Flock size	**Sheep system**	**Farmer IT ability**	**Geography**
Large >1000 ewes	Pedigree/pure bred, selling breeding stock	Competent	Throughout Wales
Medium 500 to 600 ewes	Pure-bred hill ewes producing flock replacements, store and finished lambs		
Small <200 ewes	Hill ewes producing Welsh Mule ewe lambs	Beginner	
	Cross-bred flock producing only finished lambs (purchased flock replacements)		

This process yielded nine suitable farms. Those rejected were either geographically close to other farms or were duplicated within the matrix. HCC nominated two farms to improve the coverage across Wales and Organic Centre Wales (OCW) was asked for a suitable nomination to ensure that at least one of the project farms represented an organic sheep system. Although the HCC and OCW nominations resulted in a further three farms being selected, there were no farms that represented pedigree ram breeding or farms where breed improvement recording was practised. Two further farms were subsequently added giving a total of fourteen, as listed at Annex 1.

3.2 EID Equipment Selection

A key aim of the project was to monitor the selection and purchase of equipment by farmers with a minimum steer from the Project Manager (PM) in favour of any particular type of equipment or supplier. Project farmers were however allocated a budget following an on-farm assessment by the PM of

[1] National Sheep Association Cymru
[2] Farm Assured Welsh Livestock
[3] Farmers Union of Wales
[4] National Farmers Union Cymru
[5] CLA - Country Land and Business Association
[6] Young Farmers Club

their sheep system and of their likely use of EID, including weighing and enterprise recording equipment.

Before on-farm visits commenced, a meeting was organised at the Welsh Assembly Government Pavillion, Llanelwedd to provide the project farmers with an opportunity to view and learn more about EID identifiers and equipment. Unfortunately, it was not possible to have livestock at the first project meeting on 30 October 2007 due to Foot and Mouth Disease (FMD) restrictions. Eight of the project farmers attended the meeting. They were briefed on the background to sheep EID policy, on current and future sheep ID requirements and of the project aims. All tag manufacturers listed on the Ear Tag Allocation System (ETAS) database were invited to attend the meeting and allocated 30 minutes each to make a presentation on EID identifiers and reading equipment to the project farmers. Five EID identifier and equipment suppliers attended the meeting: Shearwell Data Ltd., Allflex UK Ltd., Dalton ID Systems/ Livestock Technology Solutions (LTS), Symtag Ltd. and Coxagri. All presentations were well received and the supplier representatives were questioned in depth. As a result, the meeting lasted considerably longer than anticipated. The project farmers did not, however, have sufficient confidence to move forward and purchase EID equipment in the absence of an on-farm demonstration with electronically identified sheep.

A practical EID demonstration was subsequently organised by HCC for the morning of a Farming Connect Open Day at IGER Bronydd Mawr on 6 December 2007. 12 project farmers attended and had an exclusive, practical demonstration of EID before the event was opened to all, when an additional 120 farmers attended. The suppliers that attended the previous meeting on 30 October 2007, together with representatives from Thistle Ltd. (Agridata) and Cwmni Cefn Gwlad, attended. Each supplier was allocated 15 minutes to give a ‘live’ demonstration to project farmers.

All of the EID equipment demonstrated, both during the morning and the afternoon events, worked well. It was particularly impressive during the afternoon that all equipment being demonstrated was working simultaneously without any apparent interference. This was commented on by the farmers; the equipment performed much better than the reputation of EID technology from the recent past. However, the farmers involved said they would have preferred a demonstration of the complete range of EID equipment, from the cheapest hand held reader to the more expensive automatic shedding race complete with weighing facilities.

3.3 Budget Allocation for Project Farmers

The project farmers were originally divided into two budget groups, high and low specification. The low specification group received a budget to purchase EID identifiers for their flock; a basic hand held reader, EID management software and a computer to run the software (“low” specification). The high specification group received additional funding for a weigh crate and for a race reader/ recorder (“high” specification).

However, on visiting the project farmers and on establishing their needs, based on the sheep management systems practised, it was found that a split between “high” and ‘’low’’ specification was too simplistic. This was highlighted by two farms that had been expected to weigh sheep regularly but did not and by two large flocks where sheep were handled infrequently but who needed a system that could cope with large numbers at speed. The fourteenth farm had used EID previously and already had some equipment. Their budget allocation allowed the hand held reader to be upgraded as the existing race reader and weigh crate were deemed to be working and fit for purpose. A mid range was therefore introduced to more closely represent the likely purchasing decisions made by farmers when EID is introduced. For example, some farms will not individually record management practices on frequent occasions but when they do they will read large groups e.g. hill gatherings for lamb marking, shearing, or for ecto-parasite treatments. In this situation, the farmer wants to read the sheep as they are released from a race or pen but would have no requirement to weigh ewes or lambs.

Farms were therefore split into 3 specifications:

- Six farms had a hand held reader, a race reader and an integrated weigher (“high” specification);
- Three had a hand held reader and a race reader (“mid” specification); and
- Five had a hand held reader only (“low” specification).

The budget for each farm was agreed between the Project Manager and the farmer at a farm visit. All visits were undertaken between 26 November 2007 and 3 December 2007. A summary of the budgets allocated to the 14 project farms is shown at Annex 2.

3.4 EID Beyond the Farm Gate

A further element of the project was to work with abattoirs and auction markets to assess their likely use of EID within their premises. This enabled processes such as sorting, drafting and re-grouping to be observed. EID may, in the future, assist with the enhanced traceability of part carcasses in providing background information for each cut of meat produced (individual ID, holding of birth, holding of departure, breed, age, weight, etc.). Electronic identifiers should also facilitate an effective use of EID technology, by providing important and individual feedback to primary producers on carcass attributes, carcass condemnations, etc.

3.4.1 EID in Abattoirs

It was established that more finished lambs from project farms moved directly to Randall Parker Foods (RPF) in Llanidloes for slaughter than to other abattoirs. The Project Manager and the HCC Industry Development Manager met RPF on 8 January 2008 to discuss potential project involvement and possible grant funding for an EID reader on the slaughter line of the abattoir. As a result of this meeting, RPF agreed to install and to monitor an EID reader in return for grant funding to cover hardware, installation and software development within the management system already operating in the plant.

3.4.2 EID in Markets

The installation of reader equipment within a market premises was also considered. However, there was no single market taking sheep from more than one project farm and there was no certainty that the chosen market would necessarily receive any project sheep. At a Project Management Board meeting on 19 December 2007 it was decided that EID equipment would not be installed at any market but that a questionnaire would be developed in order to identify the issues associated with the use of EID technology in markets (see section 6).

3.4.3 EID in Transport

A proposal to investigate “tail gate” readers of livestock transport was also considered. It was proposed that an EID reader would be built into the loading ramp of the haulier’s transport and would read EID identifiers at loading/ unloading. Such a system would have meant that farmers would not need to use readers and could pass the responsibility of tag reading to the haulier. It was not possible to progress within the project because no suitable tailgate reader was available within the UK during this period. This provision has since been catered for by third party reporting but record keeping remains the responsibility of the owner/keeper of the sheep.

4 Project Farm Results

4.1 Equipment Purchase and Supply Experiences

Project farmers were asked to order and to take receipt of their EID equipment before the end of January 2008. This was achieved on only one farm; there were a number of reasons for the slow take up. Two significant and unexpected changes in the commercial EID supply chain had a major impact on the delivery of equipment.

- **Symtag Withdrawal from EID**

Soon after the Open Day on 6 December 2007, one of the EID suppliers (Symtag) withdrew from supplying EID tags and readers. This was an unexpected decision as Symtag had attended both meetings and had persuaded a number of project farmers to purchase their tags and equipment. Those project farmers were then required to make a further decision on which supplier to purchase equipment from. To ensure that they were aware of the situation, a letter was sent to all project farmers on the 17 January 2008 with details of alternative suppliers and with contact details of all EID suppliers.

- **Agrident Reader Availability**

The Agrident hand held reader was preferred by many of the project farmers as it was considered to be competitively priced, offering suitable functionality and with good ergonomic design. LTS, Thistle and Cwmni Cefn Gwlad originally supplied Agrident readers but from January 2008 all Agrident readers were distributed in the UK by Shearwell. However, these three companies were either not aware of this change or were not prepared to source readers through Shearwell. Project farmers with a preference for Dalton EID tags supplied by LTS and those with a software allegiance to either Agridata (supplied by Thistle) or the Digital Farm (supplied by Cwmni Cefn Gwlad) experienced a delay in equipment delivery, as a result. All three suppliers affected by this development supplied the Allflex reader (Anilog 3050) but this change caused a considerable delay as their own equipment and software needed to be evaluated for compatibility with the Anilog 3050 reader.

Whilst the above two issues were valid reasons for the slow uptake, they did not fully explain why some project farmers delayed their purchasing decision for as long as they did. Those farmers who did delay were questioned to establish why they were reluctant to proceed. Many of them said they had not had time saying they had been too busy with lambing or other farm work, they simply did not make the purchase of EID tags or equipment a priority over the 2007/2008 winter. There was no financial reason for the delay as all purchases were 100% grant aided by the project. In the opinion of the Project Manager, the delay resulted from a general reluctance to accept new technology and to use a system that may result in more time being spent in the farm office.

The following table shows the order and supply date of hand held readers.

Farm	Date ordered	Date supplied	Supplier/ Comments
1	February 2008	February 2008	Shearwell
2	January 2008	September 2008	Dalton/ LTS
3	January 2008	March 2008	Dalton/ LTS
4	January 2008	July 2008	Dalton/LTS
5	January 2008	September 2008 by Shearwell	Originally ordered from Thistle who never delivered the equipment. Reordered from Shearwell who supplied the equipment within two weeks
6	February 2008	October 2008 by Shearwell	Originally ordered from LTS who never delivered the equipment. Re-ordered from Shearwell who supplied the equipment within two weeks
7	December 2007	July 2008	Dalton/ LTS
8	April 2008	July 2008	Cwmni Cefn Gwlad
9	January 2008	May 2008	Thistle
10	January 2008	June 2008	Cwmni Cefn Gwlad
11	March 2008	October 2008	Border Software Ltd. and Prattley Industries Ltd.
12	January 2008	January 2008	Shearwell
13	April 2008	May 2008	Shearwell
14	April 2008	April 2008	Shearwell

On-farm monitoring by the Project Manager included farmer experiences of equipment selection and supply and their initial use of EID. It is not completely unexpected that the introduction of new technology caused problems on farm, with few obvious benefits initially. The main problem reported related to the supply of hand held readers. Although EID tags were readily supplied, project farmers were reluctant to use them without a reader. This was because they wanted to record and to cross reference their breeding sheep, which already had an official tag, with the new EID management tag.

The delay in the delivery of hand held readers had a subsequent impact on the delivery or use of all other equipment. Until sheep were identified with electronic tags, the race readers, weigh crates, computers and software were redundant and, in the absence of data from readers, there was nothing to download onto the computer software.

Computers and Software
There have been no supply issues reported with the computers. Some farmers purchased computers via the internet and some from high street/ warehouse outlets. The allocated budget was not limiting and most farmers elected to buy laptops rather than a desk machine. New computers were supplied with Microsoft "Vista" and although this caused an initial software conflict with one management program, this was soon resolved.

The installation and training in the use of software was slow on many project farms because of the delay in the supply of hand held readers. Until sheep data could be collected by hand held and race reader equipment there was little requirement for the software.

4.2 Equipment Reliability and Ease of Use

4.2.1 Hand Held Readers
Generally hand held readers worked reliably. There were instances where recording was not undertaken because the battery was not charged in readiness. Three types of hand held reader were used by the project farmers; Psion Workabout, Agrident APR350 (both supplied by Shearwell) and Anilog 3050 (supplied by Allflex but also supplied by others).

Project farms with the Psion Workabout found it easy to use. It is really a miniature computer and holds all the sheep data that it has ever recorded. Historic data is therefore available and can be updated when working with the sheep. This has obvious advantages in that decisions about an individual sheep, culling on performance or health history for example, can be made while actually working with the sheep. The data held should be downloaded to the computer software so that it is backed up and can then be used to produce reports on a flock basis. The Psion Workabout from Shearwell cost project farmers £1,000 and only downloads to Farmworks (the Shearwell farm software) at a cost of £350. The current list price (November 2009) for the Psion Workabout with Farmworks is £1,525.

Before purchase of the Psion Workabout, project farmers were concerned that it was not sufficiently robust for use while working outside in wet weather, or with sheep. However during the project none of the Psion Workabouts failed or were damaged. In total there were six of these readers on project farms and the farmers found them easy to use. Initially, because these readers have many features, some farmers were concerned about understanding and making full use of all the options. However, the touch-screen proved to be easy to navigate and further understanding of the menu options developed with use. As the information held on the reader could be used without data transfer to the computer and software, some farmers did not download or "back up" the data on the reader as often as they should. This is not considered good practice, but fortunately there were no instances of data being lost through infrequent download/ backup.

The Agrident APR350 (supplied by Shearwell) and Anilog 3050 (supplied by Allflex) both work in a similar way. They accumulate multiple lists of sheep

EID numbers against a particular function, e.g. off movements, drenching for worms, number of lambs born to a particular ewe. This data is then downloaded to the management software to produce reports; for example, to update the flock record with off movements or to add to the veterinary and medicine records. As they only hold lists of numbers, they cannot be used like the Psion Workabout. It is not possible to view the records for an individual sheep without returning to the computer.

The main difference between the Agrident APR350 and the Anilog 3050 readers is capacity. The Agrident APR350 holds up to 2,000 numbers and the Anilog 3050 up to 10,000 numbers. The Agrident APR350 reader, at £500, was cheaper and would be adequate for flocks of up to about 400 ewes, provided data was downloaded to the computer after each day's work. The Anilog 3050 costs £700 (with charger and spare battery) and is suitable for larger flocks. Project farms reported that both readers were easy to program and to use when working with sheep.

At the start of the project (June 2007), "stick readers" were not available, so could not be purchased by project farms. . However, one project farmer with surplus budget subsequently purchased a stick reader (supplied by Tag Master) in March 2009. He found that it was easy to use and was much quicker in use than the Anilog 3050 when used from outside a race and set to "continuous scan." This reader cost £475 and was supplied with software which allowed transfer of data into Microsoft Windows software. As records on this farm were held on the Digital Farm software, the software supplied with the stick reader was not tested. The Digital Farm software required a "fix" before it would accept data from this reader but this was quickly achieved, allowing the farmer to use his existing software.

The project also purchased an Agrident AWR100 stick reader in June 2009 (at a cost of £680), for demonstration purposes at the project farm open events over the summer/ autumn of 2009. It was subsequently given to one of the project farms who had been unable to operate their hand held reader, in readiness for their farm open event. Project farmers reported that this stick reader was easy to use when working with sheep and they were able to download the data.

4.2.2 Race Readers and Integrated Weighing

Race readers, or static readers, consist of an antenna or aerial, which is linked to a control box that interprets the signal from the antenna and records a list of EID numbers. The control box also contains a battery to power the antenna so that the unit is portable. A race reader can be used to simply accumulate a list of EID numbers for later downloading to management software.

The project had three different race readers represented, the Shearwell race reader (SDL 130 antenna and control box), the Gallagher BR race reader and an Agrident race reader (ASA 008 antenna and ASR 454 control box).

The Shearwell race reader is linked by blue tooth to the Psion Workabout and

the EID identity data is accumulated in the hand held reader. The Gallagher and Agrident readers were linked by wire to the electronic weigh head on the scale

When supplied, none of the three systems were able to read 100% of sheep unless the sheep were stopped next to the antenna. If sheep walked or ran some were missed. This was an unexpected and disappointing finding. Farmers were expecting to be able to release sheep from pens, via a race, and that all sheep would be identified and recorded by the race reader. Project farmers with race readers have concluded that they would not purchase one without funding. As sheep have to be stopped to be certain of a read it would be just as easy to use a hand held reader. The only exception to this would be integrated weighing. As the sheep is held in the weigh crate, the reader will identify the sheep while also recording the weight. This leaves the farmer with hands free to load and unload the weigh crate.

The Shearwell race reader cost project farmers £1,200 or £1,300 if blue tooth enabled. The Gallagher race reader cost project farmers £1,400 (although it should be noted that the November 2009 list price is £2,449). The Agrident race reader cost project farmers £600.

During the project, Shearwell developed a new race reader to read moving sheep. As a result, the original Shearwell antenna was replaced with the new "switcher" antenna on two of the project farms and was redefined as a static reader. The new equipment proved to be far more reliable and often achieved a 100% read.

Five project farms also had weigh crates with integrated weighing and identification. Three had the Shearwell system, two had the Gallagher readers and one farm had an Agrident system. There were no problems reported/ experienced with integrated weighing and identification. The cost of the weigh crate varies between manufacturers but all use Tru-test weigh cells and weigh heads.

4.2.3 EID Tags

- **Tag Bucket Format**

EID tags are supplied with a "tag bucket" which is a data file containing the flock number, the printed individual tag number, the electronic "chip" number, a manufacturer code, etc. This file data is written to a CD disk, which the farm software must be able to recognise in order to update the farm software data. It should, therefore, be supplied in the same format. On one project farm two batches of tags from one manufacturer were supplied with two different file formats. This could be more of an issue if, in future, tags are purchased from a different supplier. UKEIDA (the UK EID Association formed to act as a single body on behalf of members) has been informed in writing of this problem.

With tags supplied under the new Regulation (full EID), the chip number and the number printed on the tag will be the same (WYSIWYG – What You See

Is What You Get). With such tags there will be no need for a tag bucket file to link the printed number to the chip number.

- **Tag Retention**

Tags containing EID devices are often an adaptation of an existing tag design and are often visually indistinguishable from non-EID tags. It was therefore reasonable to assume that tag retention for EID tags would be similar to that of non–EID tags.

Project farms generally reported losses of between 5-10% annually. These losses were from tags being caught and ripped from the ear, rather than from tags breaking or coming apart. Infection around the tag after insertion was also a problem. This caused the tag to hang loose as the hole in the ear became enlarged making the tag more vulnerable to becoming snagged.

Tag retention on one project farm was a serious issue. Initial losses were unacceptably high (44 EID tags lost from 300 ewes in one month). The company concerned investigated this and identified a technical problem with the plastic manufacture of the EID tags. The project farmer was also supplied with the wrong applicator for the secondary tags. Although this was an extreme and isolated incident, it does demonstrate that the benefits of individual identification of sheep can soon be lost when tag retention is poor.

On some project farms the loss of tags in finishing lambs between birth and sale was less than 0.5%.

- **Tag Type**

There was no agreed preference on project farms between the two main types of EID tag design; button (two discs with central pin) or fold over tag (folds over the ear to give a D shape, the straight part being the pin which passes through the ear). The choice on each farm was based on previous experience of tag retention but there was no consistency between breed of sheep or farming system.

When the project began, not all tag suppliers had an EID tag available. Only three suppliers were then represented on the project, Shearwell, Dalton and Allflex. In the summer of 2009, Ritchie introduced an electronic version of the RD2000. This tag was used for 300 ewe lamb replacements on one of the project farms.

Although some project farms had experience, and had sheep with National Scrapie Plan/ Welsh Ewe Genotyping Scheme (NSP/ WEGS) boli, none elected to continue to use a rumen bolus within the project. Farmer perception is that the bolus is both unreliable and expensive. However, NSP evidence with large numbers of breeding sheep over several years is that bolus retention rates are considerably higher than those of ear tags. A bolus would offer a solution in hill systems where ear notching is used and where the harsh conditions can lead to ear tags becoming worn and broken. [Ear notching is still common and is the preferred method of identification on many hill sheep farms. Ear damage from tag loss, especially now that tags are

needed in both ears, reduces the effectiveness of ear notching as a system of identification.]

It was also noted that when a batch of sheep are tagged, unless extreme care is taken, not all sheep will have tags placed in the optimum position in the ear. It is likely that some tags will be inserted too close to the edge of the ear and some too near the ear tip such that the chances of retention are reduced. Hygiene is also critically important to avoid infection after tagging; both the tag and the ear should be clean before the tag is inserted. Any infection after tagging will increase the size of the hole in the ear and make future tag loss more likely.

4.3 Equipment Compatibility

There were a number of problems that were apparent when the farmers began using the EID equipment.

- **Compatibility Between Suppliers**

Early experience of compatibility between EID tags and readers from different suppliers was mixed. On some farms there were no compatibility problems while on one project farm the hand held reader would not read any tags that were supplied by another company. These problems were quickly resolved by making an adjustment to the hand held reader. Such problems are not expected in future if equipment is ISO compliant and on the approved list held by BCMS (British Cattle Movement Service).

The farm management software on project farms did not automatically download data from all of the available hand held/ stick or static readers used. In future, introducing new equipment may involve a relatively simple fix by the software developer, where the program is changed in order to recognise and download from a different reader. However, some reader equipment will only work with the software supplied with it. It is important that farmers ensure that the reading equipment and software are compatible before any purchase is made.

- **Serial and USB Ports**

Some EID reader equipment was supplied with a serial port only. New computers no longer have this type of port, having moved over to USB ports. This problem was easily overcome by an adapter lead, serial to USB, but such leads are not always easily available in remote rural locations. The simplest short term solution is for such readers to be supplied with a suitable lead until all readers are manufactured with USB ports or wireless communication is used more widely.

4.4 Management Software

There were four software packages represented on the 14 project farms. These were: Farmworks (Shearwell), Agridata (Thistle), FarmIT3000 (Border Software) and the Digital Farm (Cwmni Cefn Gwlad). Each of the four

software packages that were evaluated cost £350. If additional cattle or business management modules or any helpline support was needed, this added to the cost.

Three project farmers already had experience of Agridata software, which they were keen to continue with as they were already familiar with it. This then influenced and restricted the choice of hardware purchases to those that were known to be compatible with that software. One farm with Agridata and an Anilog 3050 reader successfully downloaded data and updated management records within the software. The other two farms with Agridata were supplied with an Agrident 350 hand held reader and also both had a Gallagher static reader. On these farms, transfer of data was problematic or was not achieved. Data collected on the Gallagher reader was never transferred into Agridata as the program was not compatible with this equipment.

The six project farms with the Shearwell system - a Psion Workabout and Farmworks - did not experience compatibility problems as the reader and software were developed together. Farmers have acknowledged that the support for the reader and software was very good with training provided at delivery and setup. Most of the farmers used their full £750 training budget for further on farm training. Free support was provided by telephone if required.

Four project farms purchased the Digital Farm software from Cwmmi Cefn Gwlad. This software is available in both the English and Welsh language and two of the four farms used the Welsh version. The software package continued to be developed during the project in response to issues as they arose. Although the program is fully functional farmers reported that it was quite difficult to get started with and to learn to use. They would have preferred to have had some support from a manual.

Only one farm had Farm IT3000 from Border Software Ltd. This program is comprehensive and although telephone and on farm support were provided, the project farmer reported that the program was not simple to use.

One project farm suffered a computer failure 15 months after purchase, it was out of warranty and not economic to repair. All data from the hard drive was able to be downloaded to a backup computer so no recorded information was lost. On another project farm, the computer and all software disks were stolen in a burglary. Fortunately, all flock data recorded over 18 months had been backed up to the Shearwell NLMD (National Livestock Management Database) website. Farmworks software and the farm data have been reinstated on a replacement computer. These two events demonstrate the importance of farmers backing up data on a regular basis, and then securing the copy away from the computer, ideally on another premises.

On most of the project farms, the transfer and manipulation of data in the reader and software programs has caused the most problems. This is an issue even for those farmers familiar with using computers and other types of software. All four programs used in the project contain a full range of features, as well as flock book and movement records there may be field data sheets to

match Single Payment Scheme records, a medicine book, pedigree records, financial information to calculate gross margins, etc. When the program presents so many menu options, it is initially difficult to find and use only the relevant part.

In summary, farmer success with the software packages was mixed. With 14 farms that were deliberately chosen to have varying IT skills, and with four software options, there was no consistency with regard to ease of use. It was difficult to draw any firm conclusion on ease of software use.

4.5 Support and Training

The quality of support provided to project farmers by suppliers was variable. Farmers commented that support by Shearwell was very good; they were quick to respond and the helpline staff for Farmworks and the Psion Workabout hand held reader were able to resolve problems.

At the other extreme, no technical support was provided to project farmers supplied by Dalton/LTS; there was a long period of uncertainty then LTS ceased trading. The four Gallagher race readers on project farms supplied by LTS were not supported. When LTS ceased trading, Dalton continued to supply Gallagher readers in the UK, but did not provide support to the project farmers. The Project Manager approached Gallagher (Europe) in February 2009, seeking support for Gallagher race readers on the four project farms. Although the initial response was positive, no direct contact was made with the farmers concerned. Gallagher representatives attended the open event at IBERS, Bronydd Mawr, on 21 May 2009 and met with the four project farmers that had Gallagher readers and who attended the event. Some problems were resolved at this meeting and it was agreed that a training event would be held on farm at a mutually convenient date. A technical adviser from Gallagher in New Zealand visited the UK for two months over the summer. Limited support was offered to one farmer but no training was offered to the other three project farmers.

Farmers reported that support from Thistle for Agridata and the hand held readers they supplied was poor. Two farmers with Agridata software and an Agrident 350 reader failed to succeed in downloading data to the Agridata program at any time over the project period. Both these farms also had a Gallagher reader but this was not supported by the software. Thistle supplied one project farm with Agridata and an Allflex Anilog 3050 reader. This farm was able to take data from the reader into Agridata and although he considered himself computer literate, he found the process difficult.

Support for the Digital Farm program from Cwmni Cefn Gwlad was variable, support was good in North Wales but distance reduced the support provided in south Wales.

4.6 Other Issues and Future Considerations

At the end of the project some farmers reported that they were still having problems using the EID equipment. However some of these difficulties could possibly have been overcome by more frequent/ routine use.

In general, hand held readers have worked reliably if they have been correctly set up and the battery charged. Some readers need to be "pre-set" before being used with the sheep tasks to be undertaken; veterinary and medicine treatments, lambing data and off farm movements all need to be set up in the hand held before use. The management software on the computer does this pre-setting, so some preparation is needed before the work begins. This was not always completed by the project farmers, or in some instances was only partially completed. For example, an unexpected task may be undertaken while working with the sheep. It is possible to manually set the hand held reader outdoors without the computer but this can be burdensome and may not get done once work with the sheep has started.

Following the use of the hand held reader, the data should be downloaded to the software and data files updated. This is good practice in terms of data backup and is also easier while the work is still in the farmers' mind. Often, however, farmers will accumulate many weeks worth of information a hand held reader if they have the capacity to hold a lot of data. The downloading then takes longer and becomes a bigger job.

Most farmers were able to accumulate the data on the hand held reader but then found it difficult to transfer to the software to update the flock files. If this process is not done regularly it does become more difficult to remember how to do it. Although this was initially a problem on all farms using sheep enterprise software for the first time, some software programs proved to be easier to use and to remember than others. Some project farmers passed this work to other family members with the requisite computer skills. In future, those farms that choose to only record the minimum required (i.e. just meeting Regulatory requirements) may only update their records once or twice per year and in those cases, they may not be able to remember how to do it.

The concession to allow EID identities to be read and recorded off the farm after the sheep have moved, so called "third party recording," was agreed with the EU in July 2009. This change will mean that many keepers will now not need to have reading equipment on the farm. They will be able to obtain hard copies of the EID numbers from the "third party" and append to their movement or flock records. However, those farmers that regularly move sheep with EID may find it easier to use a reader on farm. If keepers choose to use readers and a computer, then data transfer from the reader to the software may be the most significant problem they face in using the new technology. The majority of farmers will not be familiar with farm management or enterprise software or even using computers. Whilst there may be training and helpline support for the various software packages offered by the software supplier, this will not offer a solution for many. The provision of

further training by third parties in computer and software use is not likely to solve this issue either.

4.7 Benefits Observed with EID Equipment

EID equipment was not in use on many of the project farms during lambing 2008, so it was not possible to observe management benefits of EID. Although all project farms had equipment in place for the 2009 lambing, only one farm with a performance recorded flock, linked lambs to their dams at birth using EID. Project farmers reported that they did not consider the benefits of enterprise recording to be worth the additional work that it would entail at lambing time.

Some project farms were successful in recording births/ deaths and in recording medicines administered. One farm with several different grazing blocks recorded the location of all individual sheep as they left the lambing shed, a task they had never attempted before. Whilst this information is unlikely to be recorded by the majority of farmers, it was considered to be both interesting and beneficial to the farmer concerned.

From discussions between the PM and project farmers, it was apparent that few intend to use the EID technology to record more enterprise information than they have recorded in the past. Farmers had not, however, considered the potential benefit of EID in making the recording of enterprise information easier. This may change with the individual recording that will be required in the future, as a result of the Regulation. This includes entries to the flock record (holding register) and to movement documents.

There has been some recording of veterinary and medicine treatments but, if all sheep are given a treatment, it is easier to record “all sheep treated” in the medicine book as a batch than to scan each individual sheep as it is treated. Although software programs will allow groups or all sheep records to updated together, most project farmers were not aware that this could be done. The reading of all sheep at a hill gathering would be more likely if race readers could be used as sheep were released from the pens, see problems at ***4.2.2***

5 Abattoir Equipment

5.1 Equipment Purchase Experiences

Following the meeting on 8 January 2008, Randall Parker Foods (RPF) was given a list of EID equipment suppliers and were asked to select a suitable supplier for the installation of a reader and for software development. No guidance on equipment selection was given by the project. Three suppliers were considered and National Milk Records (NMR)/Fullwood was chosen. They worked with the RPF software supplier and also had experience from the abattoir installation at Dunbia, Llanybydder. The contract was awarded in February 2008 and the hardware was installed in March 2008 following a site assessment to identify the most suitable location for the antenna and controlling computer. The antenna was an Agrident DAF006 connected to an Agrident ASR700 signal processor. This equipment was in accordance with ISO standards.

5.2 Equipment Reliability and Ease of Use

It was hoped that the EID system would be operating in April 2008 and ready to read electronic tags of the 2008 lamb crop from project farmers. By the end of June 2008 the system had worked well on some occasions but was not always reliable. Some test runs would either give a 100% read or the read rate would exceed 98% whilst other test runs would have a read rate of between 50 and 90%. There was no apparent or obvious reason why this was happening.

5.3 Ongoing Issues with the Abattoir Reader

- **Not all Lambs in a Batch have a Functioning EID Tag**

All lambs, whether tagged on farm or in the lairage with an EID tag, were read with an Agrident AWR 100 stick reader before they moved to the slaughter line to establish the exact number of functioning tags that pass the reader on the line. This check on functional EID tags was introduced on 18 August 2008. The actual read rate for batches of lambs reported before this date are not reliable. It is essential for EID tags to be pre-read before the slaughter line or the wrong conclusion may be reached on slaughter line read rate.

- **Use of Hand Held Reader in the Lairage**

The EID reader on the slaughter line picked up the radio waves from the hand held reader when it was used in the lairage. (Radio waves emitted from the hand held reader are at the RFID (Radio Frequency Identification) frequency of 134.2kHz, the frequency that the reader on the line is set to pick up). The interference from an EID reader extends over a wide area (at least 20 metres) and, if present, may reduce the read rate of the other EID readers. As a result, the practice of using the hand held reader in the lairage when EID tagged lambs were being read on the slaughter line was stopped.

- **Position of Antenna**

There are a number of possible problems with the position of an antenna. It should not be subject to any vibration or be knocked by lambs as they pass, although it should be as close as possible to the EID tag. The antenna in RPF was mounted on a bracket attached to a concrete block wall and it was, therefore, not subject to any vibration or within range of being knocked by a carcass.

- **Other Sensors**

In addition to the EID tag reading antenna, an “animal body sensor“ and ”hook sensors’’ were fitted to the line to detect if there was a carcass on each hook. The software needs this information to report an “untagged lamb.” Any electrical sensor close to the EID reading antenna has the potential to produce interference and to reduce read rate success. Read rate improved when these sensors were disconnected.

- **Power Supply**

The power supply to the reader should be “clean.” Power in a large plant with many different electrical loads that are regularly switched on and off can cause sensitive equipment, such as computers and an antenna signal processor, to work less efficiently. It was intended to install a UPS unit (uninterrupted power supply) for the reader to overcome this problem but by project completion, this had not been actioned.

- **Earth Connection**

The metal bracket supporting the antenna was originally connected to the main supply earth at the plant. A switch disconnecting the bracket from the earth was found to reduce interference picked up by the antenna, since the interference was tracking back through the ground.

- **Other Electrical Equipment**

Any other electrical equipment, from florescent tube lighting to heavy-duty motors, can cause intermittent interference. The frequency and level of the interference can be monitored by diagnostic software on the computer that is linked to the antenna. Once identified, this interference can be reduced by filters within the software or by fitting chokes to power supplies and to cables that carry power to these pieces of equipment. As the source of the interference was not identified, no filter or choke has been fitted.

5.4 Read results from RPF

Tagged sheep were either project lambs, lambs from other farms using EID or from test runs with sheep tagged in the abattoir lairage.

Date	Number of sheep EID tagged	Number of tags read	Read rate (%)
05/09/2008	40	35	88
12/09/2008	35	22	63
18/09/2008	32	12	38
18/09/2008	31	15	48
25/09/2008	49	24	49
10/10/2008	50	46	92
16/10/2008	90	62	69
16/10/2008	40	38	95
16/10/2008	6	6	100
17/10/2008	136	100	74
17/10/2008	100	85	85
23/10/2008	50	50	100
31/10/2008	40	26	65
04/11/2008	40	26	65
05/11/2008	50	48	96
06/11/2008	24	24	100
06/11/2008	50	33	66
06/11/2008	41	18	44
06/11/2008	54	54	100
07/11/2008	100	99	99
11/11/2008	100	98	98
13/11/2008	50	50	100
13/11/2008	40	37	93
28/11/2008	40	40	100
04/12/2008	29	28	97
12/01/2009	50	50	100
04/02/2009	200	198	99
Total/average	**1,567**	**1,324**	**84.5**
Antenna mounted on new bracket			
21/05/2009	95	95	100
22/05/2009	200	198	99
Total/ average	**295**	**293**	**99.3**
Antenna repositioned			
05/06/2009	99	97	98
11/06/2009	10	10	100
26/06/2009	16	16	100
09/07/2009	30	28	93
10/07/2009	24	24	100
13/07/2009	25	24	96
22/07/2009	10	10	100
11/08/2009	20	17	85
21/09/2009	60	55	92

15/10/2009	46	37	80
16/10/2009	53	37	70
Total/average	**393**	**355**	**90.3**
Overall total/average	**2,255**	**1,972**	**87.5**

The slaughter line EID reader experienced an intermittent problem which remained unresolved throughout the project. Read rate was either 100% or approaching 100% but, on some days, fell to a much lower level. On average, over the lifetime of the project the average read rate success was 87.5%. Work to identify and to overcome the problem continued throughout the project and the antenna was mounted on a new bracket so that it was closer to the carcass. Although read rate on certain days was high, there continued to be days when read rate fell and this could not be explained. The software controlling the reader can be monitored remotely via an electronic link but the lack of technical support for the reader at the plant proved to be an insurmountable problem, preventing issues with the system from being investigated and resolved immediately.

RPF have concluded that there are many problems with mounting the reader on the slaughter line, including the harsh environment, access, large carcass size range (6 kg to 36 kg), electrical interference and monitoring. However, the technical support provided by NMR has not resolved these issues.

The Enterprise Resource Planning (ERP) software supplier for RPF was HCS. They support all the other software and many of the hardware items used in the abattoir. In the future, HCS would be the logical partner to support the EID reader and they have suggested that a held reader connected directly to their network would deal with the short-term requirement of EID reading. They propose to install a cage reader in the lairage, with a door or flap to count the lambs as they pass. This should improve both access and monitoring. The abattoir requires, and has agreed to, a robust solution but this is not the most efficient solution for the longer term, as it will require an operator in the lairage to read the sheep. The panel reader is still in place and will initially be used as a backup system. In the longer term, if farmers request that EID tags are read in the abattoir in greater numbers, then the reader on the line will offer an effective solution. However, RPF will wait to see what proportion of slaughter lambs are presented with EID before investing further.

It continues to be a priority to strive for 100% read rate in the abattoir as those lambs not read will lose the benefit of carcass feedback, on an individual basis, for the producer. The ability for EID to work reliably in the abattoir would enable it to be used as a tool for payment.

6 Auctioneers' Interviews

From 6 January 2009 to 15 June 2009, 12 auctioneer companies, covering a total of 18 market sites, were interviewed and the "EID – Market Questionnaire" was completed. The questionnaire is shown at Annex 3. An additional three companies were approached, but were reluctant to complete the formal interview – some due to work commitments and some indicated that they had nothing to add to the EID views of the Livestock Auctioneers Association (LAA). Their comments about EID during informal conversation were in line with those interviewed.

A questionnaire approved by the PMB and by Chris Dodds, Executive Secretary LAA was used as the template for auctioneer interviews. The markets visited during the reporting period varied greatly in the number and type of sheep that they handled. Neither, however, influenced the responses of the auctioneer companies.

Those interviewed are listed below.

Auctioneer	**Market(s)**
Lloyd-Williams & Hughes	Bryncir
Morgan Evans & Co	Gaerwen
Clee Tompkinson Francis	Sennybridge, Llandovery
JJ Morris	Cardigan, Whitland, Crymych
McCartneys	Brecon
Jones Peckover	St Asaph
Farmers Marts	Dolgellau, Bala, Corwen and Machynlleth
Welshpool Livestock Sales	Welshpool
Aled Ellis & Co	Aberystwyth
Brightwells	Builth Wells, Rhayader and Hay on Wye

Others that were contacted are listed below.

Auctioneer	**Market(s)**
Rennies	Abergavenny
Newport Market Auctioneers	Newport
D A G Jones & Son	Tregaron

6.1 Current Position and Preparation for EID

- **Throughput**

Of finished lambs sold through the markets included in the survey, between 10% and 20% were reported as being purchased for further fattening or for breeding. This percentage increased with the higher throughputs between September and December. It was also reported that when markets are held on a Friday, large volumes of lambs sold (over 90%) go to a separate holding over the weekend. They often then require sorting prior to moving to slaughter.

- **Drop Off and Pick Up**

Market staff are present at all markets when sheep arrive. However, most markets have lairage facilities for late pick-ups of sheep following a sale. In these cases, market staff are not usually present when sheep leave. They will, however, have sorted the sheep before leaving.

- **Preparation for EID**

All companies had given some thought to how they would manage EID once it was introduced. There was a variation in the understanding of EID regulations between companies. Most auctioneers were aware of the implications of EID but knowledge amongst other their staff, drovers and administrative staff, for example, was generally poor. In some cases LAA briefings are circulated to the staff to read during breaks, which they found very helpful, as they included briefings on EID. Some of the companies had a fair understanding of the EID Regulation but reported that they had little knowledge of EID equipment.

No action had been taken by any company to address future changes, as they were not yet sure of exact requirements. All said that they are following developments closely and would take action when they were sure what needed to be done.

Responses regarding extra resources that would be required following the introduction of EID were consistent. Auctioneers listed capital outlay for EID equipment and additional staff to operate the equipment, as the major costs facing them when EID is introduced. All staff would need training in the use of equipment and the Regulation. One auctioneer estimated their costs would increase as a result of EID, to approximately 10 pence per sheep sold as a result of EID. All stated that these costs would have to be passed on to producers and were worried that this alone would persuade many farmers to sell direct to abattoirs.

6.2 Market Infrastructure

All markets visited had steel pens. The number of entry and exit points ranged from 2 to 6, with several unloading bays leading to weigh scales through which all finished lambs passed. All markets visited, with two exceptions, had one weigh scale. The remaining two markets had more than one weigh scale. The number of sheep in a pen varied and was dependent on both the size of the pen and on the size of sheep. Average figures were 15 to 20 lambs or about 15 ewes. One market had larger pens that could hold up to 60 lambs or slightly less ewes.

Markets ranged from fairly modern facilities to facilities where parts of the market are almost a century old. On large sale days at some markets, extra pens are constructed in the parking area from steel hurdles to accommodate the extra sheep.

All markets were found to sell most sheep in their pens. The only exception to

this was the breeding sales, the majority of which take place during late summer and early autumn. Breeding sheep are sold through a ring but return to the same pens afterwards. Following the sale, sheep are grouped according to the buyer and bulked up into large lots.

Most auctioneers favoured reading sheep in their pens with a hand held stick reader, rather than using a race reader. The main reasons for this were;

- Reliability.
- Expense. Dedicated races would have to be installed, as existing alleyways would be too wide. There would also be pens either side and stock would move in both directions along them. Some auctioneers also said they would need a roofed area for a race reader, as they are too expensive to leave out in the weather.
- Sheep, especially lambs, are notoriously difficult to drive down narrow races. It was reported that extra staff would be needed to push sheep through so they may as well be reading sheep with hand held readers in pens.
- Races would cause bottlenecks slowing down the whole market operation. It was reported that a non-working race reader would have a greater impact than a non-working hand held, which would be easily replaceable.
- Reading in pens would fit into the normal market operation better, as lambs have been weighed and batched by then. It was not considered practicable to read when unloading, as sheep have not yet been sorted into pens.

Six auctioneers said that they would consider a race type reader in order to save on staff costs, provided the technology allowed sheep to be read quickly and reliably at the weigh scales. One expressed concern that expensive race readers might have to be either dismantled or housed in secure buildings, for security purposes, again adding costs. They were also concerned about the effect that thorough washing and disinfecting would have on expensive equipment.

Most of the auctioneers said that they were not planning to change market infrastructure prior to the introduction of EID, due to cost. They said that they would wait and see how things would work with the minimum of spend. Some consideration was being given, however, to the possible construction of roofed areas to accommodate the technology required, new sheep pens and new sorting pens and to races.

6.3 IT and Market Software

The majority of markets interviewed used either XKO or Newline market software. Two markets used a basic IT package called “MAP” which was designed solely for them. All markets used a paper system during the sale, with information input into the software afterwards. Some markets also used mobile IT equipment (laptops) to save costs.

Auctioneers felt that IT skills of auctioneers and drovers are generally poor.

Only administrative staff were considered competent with computers and the market software and they were confident that they would cope with EID software upgrades following training.

All markets expected the current software suppliers to upgrade existing packages to integrate EID. Two markets reported that they may have to purchase new software. All expected to have to pay more for software upgrades. Newline have indicated to one auctioneer that an upgraded package will cost £5,000 per auction site. All auctioneers envisaged having to purchase additional IT equipment to handle EID. Some had started to consider how to network around the market site to avoid having to walk back and forth to the office to download information. Most said they would probably have to employ IT competent staff and that they would be nervous of operating the market without an IT technician nearby in case of an IT problem.

All auctioneers interviewed were happy to provide farmers with a list of individual identities of animals presented for sale, if legislation would allow. Most said that they would have to charge for this service, in order to recover their investment in equipment. One auctioneer expected to need a dedicated member of staff for this purpose, as requests for printouts would coincide with the busiest time of day at the market office. Another auctioneer, however, saw this as an opportunity to eventually replace movement licences thereby freeing up a member of staff that currently collects these from farmers on sale days.

6.4 Thoughts on Slaughter Derogation

At the time of the questionnaire interviews, all auctioneers were strongly against the slaughter derogation. At this time, an EID slaughter tag was not being considered so the following responses relate to use of a non-electronic slaughter tag.

- Difficulty in reading non-EID tags on store lambs. This was expected to take up a vast amount of staff resources. These costs would have to be passed on to producers who, as a result, may prefer to sell direct to an abattoir to the detriment of livestock markets.
- It will seriously affect lamb trade, as store purchasers will be unlikely to want lambs without EID tags, due to the difficulties in manually reading all lambs for batch within batch recording for movement licenses. This could result in a glut of non-EID lambs (which normally would be sold as stores) being slaughtered in the September to December period, depressing prices. This in turn would lead to a shortage of British lamb from mid February to mid April (as they have already been slaughtered) impacting on abattoirs and auctions alike and encouraging supermarkets to source their lamb from overseas, increasing carcass imports.
- It may affect lamb trade because buyers would not be able to select ewe lambs for breeding from store or finished lambs.
- It may result in a “two-tier” market, made up of lambs with or without EID. Those without EID would attract less buyers (store lambs) and export buyers would only be able to buy lambs with full EID for live export. This

would be likely to result in farmers voluntarily identifying store and finished lambs with EID to increase their marketing options, regardless of any slaughter derogation.

- Most of those interviewed were of the view that a slaughter derogation would cause problems and confusion for the whole sheep industry, and would only give a small benefit to those selling lambs from their holding of birth direct to an abattoir. They believed that the small saving in EID tag costs on their lambs will be far outweighed by the impact it will cause to the lamb trade.

The slaughter derogation options are now known, slaughter lambs may be tagged with either an electronic or a non-electronic slaughter tag. The responses above are still relevant and confirm the difficulties markets will have if lambs are not electronically tagged. Auctioneers also see the cheap, non electronic slaughter tag, which may be used by farmers selling direct to abattoir, as a further threat to the live market.

6.5 Thoughts on an Industry Led Database

Most auctioneers interviewed were of the opinion that a national database should be made available to record all sheep movements. They also felt that with no database, there would be little point in having individual identification and EID. They felt that Government should at least part fund an approved database. Some said that if updating a database were not compulsory, then they would take no part in it.

6.6 Help/ Support Needed

Some auctioneers said that the biggest assistance required would be clear decisions and guidance from Government, so that they know what is required of them and what equipment is needed. They reported that there is so much uncertainty about the Regulation, that detailed planning for the future is impossible.

All said that funding to assist in the purchase of equipment would be the most helpful thing Government could do, as smaller markets would be unable to absorb such costs.

Some expressed an interest in workshops for staff but said that they would have to be done on a company by company basis in order for market staff to gain most benefit.

Although auctioneers had reservations about reader equipment, they also envisaged problems with integrating the reader information into the existing market system. The larger markets had a bespoke software package but many of the smaller markets managed with a manual system with an “office” software package.

Several companies expressed a strong interest in trialling EID equipment at

their market(s). One auctioneer, for example, stated that they would have no problem in getting enough vendors' lambs tagged with EID, in order to conduct a realistic market day trial but would need some financial assistance from Government to undertake this exercise.

The project organised an open event at IBERS, Bronydd Mawr, for the morning of 28 May 2009 specifically for auctioneers and markets, the afternoon was then open to farmers. The event was attended by Tag Master and Shearwell who demonstrated market race reading equipment. There were also hand held and stick readers shown by Tag Master, Shearwell, Cox Agri, Tag-ie and Gallagher. Representatives from Newline were also present. The event demonstrated the reading equipment suitable for market use and was attended by auctioneers representing 19 of the 38 markets in Wales.

Neither of the race readers demonstrated at the event achieved a consistent 100% read rate. The explanation given by suppliers was the fact that the equipment was not fixed to a solid floor and that it was subjected to vibration when the sheep passed through. Since most sheep sold in Welsh markets are sold in pens rather than through a ring, most interest was shown in stick readers. Although this appeared labour intensive when compared to a walk through reader, it may be the only practical solution when sheep are "lotted" at penning.

7 EID Open Days

A series of open days were held on each of the participating project farms between 19 May 2009 and 9 October 2009. The key objective was to enable farmers from across Wales to receive information about EID ahead of the introduction of the new Regulation, to see a demonstration of the equipment used at that farm and to hear the project farmer's experiences of the EID system.

Manufacturers and suppliers of equipment attended events by invitation of the host farmer. This also enabled a wider range of EID equipment to be displayed. The project also provided a stick reader for demonstration at all the events, as this was considered to be the most popular type of device likely to be used by the industry in the future.

The events ran from 2 p.m. until approximately 5 p.m. with the following format:

- Welcome and introductions;
- EID policy update on Regulation and consultation;
- Slaughter derogation options within the consultation;
- WAG/HCC project, set up and provisional results;
- Introduction to project activity on the farm (usually by the farmer); and
- Practical demonstration of EID equipment.

The talks lasted about 40 minutes in total, followed by questions which that were taken on a one to one basis or in small groups during and after the demonstration.

All events attracted considerable interest with attendances ranging from 60 to 118. Total attendance was 1,105 with an average of 79 per meeting (see table below). Informal feedback gathered from visitors was that the events had met their requirements and they felt that they now had a greater understanding of the Regulation and what they needed to do on their own farms.

Whilst there was some negative discussion at two of the events, on the whole attendees appeared to accept that the Regulation would be implemented, and that they now needed to understand how they would be affected. Farmers considering EID for the first time struggled to understand the options under the slaughter derogation. Many farmers were relieved when they realised that they would not necessarily have to purchase reading equipment or use management software. They had not realised that recording could be undertaken manually or reading and recording services could be provided by a third party recording, where available.

Farm Location			Open Day Date	Farmers Attended
CAMDA	Pentrefoelas	Gwynedd	19 May 2009 *(Welsh Sheep 2009)*	85
Mynachdy Farm	Ynysybwl	Pontypridd	8 July 2009	66
Rosepark Farm	Narberth	Pembrokeshire	9 July 2009	50
Cilgoed	Corwen	Denbighshire	5 August 2009	60
Tynllyn	Lampeter	Ceredigion	6 August 2009	70
Tanhouse	Llandrindod Wells	Powys	20 August 2009	118
Drostre	Brecon	Powys	24 August 2009	109
Ty llwyd	Aberystwyth	Ceredigion	3 September 2009	85
Coedyparc	Caersws	Powys	4 September 2009	103
Bryn Celynog	Trawsfynydd	Gwynedd	9 September 2009	77
Gwern	Caernarfon	Gwynedd	10 September 2009	81
Bwlchyddwyallt	Brecon	Powys	23 September 2009	98
Morfa	Llanrhystud	Ceredigion	24 September 2009	107
Cynghordy Hall	Llandovery	Carmarthen	9 October 2009	66

8 Conclusion

This project aimed to determine both the functional capabilities and the supply of EID systems that were available to industry between 2007 and 2009, and to consider the potential benefits of this technology throughout the lamb supply chain. The project was conducted against a backdrop of considerable political debate and policy development, during which time many changes were made to ease the implementation requirements of the Regulation. Throughout the same period there were also technical developments with equipment and changes within supply companies.

Problems were experienced with equipment supply at the start of the project. Some of the companies were relatively new to EID and trading relationships between manufacturers and suppliers were not well established. Many of the EID suppliers selected by the project farmers were relatively small companies with few staff, who were often sales orientated and not able to provide them with sufficient technical support. At the start of the project it was anticipated that there would be growth in those companies supplying equipment and perhaps new companies entering the EID market. However, there has been little evidence of this, possibly due to the uncertainty of requirements and the reduced demand caused by the continuing regulatory changes. The exception to this was with the suppliers of EID tags. When the project began, the choice of tag was limited and relatively few tags were represented on the project (Shearwell, Dalton and Allflex). As the introduction of the regulation has drawn closer, all manufacturers on the Ear Tag Allocation System (ETAS) database have now introduced an electronic tag.

Tag retention on project farms has been variable with no apparent difference between the type of tag used or the sheep farming system. With the exception of one project farm, where there were particular problems, tag loss was similar on each farm to that experienced in previous years for non-EID tags. When performance or pedigree data is recorded for individual sheep, this is lost when the identity of the sheep is lost. Tag loss usually results from snagging such that the tag is ripped from the ear rather than the tag breaking or pulling apart. Tag placement and hygiene are important to ensure high retention rate but some tag losses are inevitable.

When the project began, stick readers were not readily available and hand held readers were supplied to project farmers. The hand held readers used in the project had the ability to record a range of information while working with sheep, whereas stick readers just record a simple list of EID tag numbers. In general, the project farmers did not use their hand held readers to their full potential and most of them did not take the opportunity to use the equipment to record lambing data or veterinary and medicine treatments. Two project farms had stick readers and found them much quicker to use than their hand held readers. Both hand held and stick readers were reliable in use.

Project farms with race or “static” readers were disappointed with the read rate achieved when sheep were moving. The Shearwell “switcher” unit was

developed during the project lifetime and two project farms had their reader upgraded to the new technology. At the end of the project, the read rate with the switcher reader was approaching 100%. There were four Gallagher readers on project farms, two as part of an integrated weighing system and two used in a race. These readers worked well in a weigh crate when the sheep were stopped and held for weighing but only read 50% – 80% of sheep read when they were allowed to flow freely through a race.

The download of EID data from the reader into software held on a computer has been the main issue on project farms. Farmers experienced compatibility problems between software and readers and the process proved too complex for many farmers to complete. The exception was with the Shearwell system which farmers found easier to use and was well supported. At the farm open events, the Shearwell stick reader with wireless connection straight to a portable printer, without the need for a computer or software, generated considerable interest.

Since it was not possible to determine any additional cost/benefit of EID equipment across the 14 project farms as most project farms did not use the equipment to record any more information than they would have recorded without it, it was not possible to determine any additional benefit. Only one project farm, that performance recorded with dated EID equipment before they joined the project, used the equipment for performance recording. The remaining farmers did not find any discernable benefits from the EID equipment. They were, however, basing their evaluation on the Regulatory framework for sheep identification at that time, which did not require individual recording. Several farmers have indicated that they will continue to explore the full use of their EID systems. They are optimistic that recording within the software will become easier with increasing use. They also see that the value of the recorded information will increase once several years of information has been accumulated.

The open events on project farms were well attended and were generally well received by visiting farmers. The level of understanding of both the regulation and the new technology was low and they appreciated having this explained while being able to actually see EID equipment in operation. There was considerable relief amongst farmers that they could continue to operate without a reader or computer, by keeping records manually and by using third party recording.

The installation of the race reader at Randall Parker Foods in Llanidloes proved useful in identifying the problems with EID reading within the abattoir environment. Although a number of issues were addressed, it was unfortunate that the source of the interference/factor which reduced read rate on certain occasions could not be identified and eliminated. The reader on the slaughter line will therefore now be used as a backup. Technical support for the reader has now moved to HCS, who are regularly on site, and it is possible that a solution will be found in the future.

The market questionnaire enabled the challenges of the integration of EID

within the livestock markets in Wales to be considered. At the outset of the project, auctioneers had either not considered EID or could not see how they could possibly operate under the new Regulation. Awareness raising events undertaken during the spring and summer of 2009 increased their understanding of the Regulation and the EID technology. By the end of the project, market operators had begun to consider how they could operate in 2010 and to possibly offer third party reading to their farmer clients.

There have been a number of less tangible benefits from the project. A number of project farms have hosted events or spoken at meetings which were not organised by the project, for example, ATB groups, NFU/FUW meetings, The Hill Farming Forum. Project farms have also been a reliable source of information on the EID regulation and on EID equipment within their local communities. Eight project farmers braved the difficult weather conditions on 3 February 2009 to meet EU officials in Montgomery. They made a significant contribution to the evidence presented by Wales on the difficulties of EID implementation on farms. Undertaking the project has also kept both WAG and HCC staff in touch with EID equipment and increased the understanding of the technology, the possible benefits, and the on farm problems. This in turn has informed GB policy development and influenced negotiations with the EU.

In conclusion, the functional capabilities and the effectiveness of the supply of EID systems that were available to the Welsh sheep industry between 2007 and 2009 were found to be extremely variable. Although considerable progress had been made in a number of areas since the first EID project in Wales (2003-2005), some project farmers still experienced problems with the supply of their chosen equipment and with compatibility between some EID readers and software. The levels of training and technical support required by farmers also varied considerably depending upon their own skills and the systems selected. Project farmers used and evaluated the equipment under the 2008 tagging and recording rules, this limited the ability of the project to examine any additional cost/benefit from the use of EID. Although a number of the problems within the abattoir environment were overcome during this project, technological limitations meant that it was not possible to remove the source of the intermittent interference which prevented a 100% read rate from being achieved. It is likely that similar technical challenges will be faced by other abattoirs and possibly livestock markets in the future.