LONG TERM IDENTIFICATION OF GRAVES IN

NATURAL BURIAL GROUNDS

INTRODUCTION

This presentation is aimed at owners and managers of natural burial grounds. However the author welcomes interest from families or individuals wishing to find out more about the technology of discreet long term marking of grave plots, in case of any anxiety concerning interference with human remains.

The Epitrace system described has no equipment or process that disturbs the contents of any grave, coffin, or ashes interments.

BACKGROUND

The establishment of natural burial grounds is a direct response to owners and families wishing to express their concerns about the use of chemicals, concrete, hardwoods, marble, and energy consumption in traditional cemeteries and crematoria. With Ken West establishing the first such site in Carlisle as the first in 1994 and over 250 UK sites since then, momentum has increased recently in Australia, New Zealand, USA, and Canada with new services responding to more environmentally friendly standards. Graves are generally laid out in either woodland or meadowland settings in a variety of patterns. As outer space and undersea options have already appeared as 'last resting place' options, no doubt desert and mountainous sites will become available too! Whatever the landscape the burial conditions applied by almost all site owners have something to say about memorialisation in order that their impact upon the natural surroundings is minimized.

Such restrictions can vary considerably, for example

- no stone based vertical memorials • only flat plaques of a certain size and material

- only a boulder • only a specified range of trees

- inscriptions allowed only at a central collective memorial

Whatever the marker, there is a possibility of removal by accident or design, which leaves the owner reliant on methods not directly connected to the grave location. Survey coordinates, GIS or office wall maps, grid systems and GPS are all helpful in getting close to the exact spot but none provide unique identification in the grave plot itself.

POST BURIAL REQUIREMENTS

Following interment a visit to a grave is required for up to four reasons

1. Family and friends visits   2. Additional interments
3. Maintenance   4. Exhumation

Following the burial, grave visits are frequent, and the excavation mound particularly on top of non rigid coffins is easy to see and return to. Soil compaction, change in surrounding vegetation and tree growth coupled with less frequent visits all contribute to a lack of certainty with the passage of time. *The threat here is visitor concern at being unable to stand over 'Uncle Fred's grave' and pay their respects.*

Additional interments in or adjacent to existing graves may take place many years later. *The threat is an inability to deliver exact positioning which might have been paid for years earlier and again contributes to family anxiety.*

Even if reduced to just grass cutting or tidying, long term maintenance agreements may have been arranged for specific graves. *The threat is non compliance with agreed standards.*

Exhumations may occur long after the burial, particularly those for criminal investigations not subject to any statute of limitations. *The threat is extreme distress if the wrong grave is interfered with.*

All these situations are exacerbated by changes in ownership, management, and lack of site knowledge. All contribute ultimately to loss of reputation which in severe circumstances may cause loss of sales and collapse of the enterprise.

IDENTIFICATION SOLUTIONS

OPTIONS	ADVANTAGES	DISADVANTAGES
Vertical memorials	May be personalised Can be seen easily	Deteriorate with time, particularly wood A potential safety and vandal risk Interferes with the landscape Can interfere with maintenance Some materials not 'green'
Flat memorials	May be personalised Can be found fairly easily	Deteriorate with time Theft and fracture risk Some materials not 'green'
Boulders	Easy to see long term marker Not easily removed Economic if already on site	Not always in keeping with the landscape, costly to move Can be too large for urban settings
Trees	Attractive In keeping with many surroundings	Expensive Exposed to wind and disease Not easily distinguished from other trees
GPS	Easy to read latitude/longitude Unit costs reducing	Not accurate enough for closely spaced plots, particularly under trees. Signal can be switched off
Microchips	Vandal proof No interference with landscape Unique ID seen without touching grave	Short range version can take time to detect Long range version expensive

MICROCHIP IDENTIFICATION

RFID (radio frequency identification) technology has been around for 50 years and apart from retail applications, is most widely used in asset tracking, particularly in tagging domestic pets and livestock management such as cattle and sheep herds.

The microchip below is built to a world wide ISO standard, (ISO 11784/5 at 134.2 KHz for the technically minded) and comprises an integrated circuit with factory locked number couple to a ferrite and copper wound aerial, all hermetically sealed in a glass tube 22m x 3mm.
With no moving parts or battery or maintenance requirements, and with a temperature range of -25C to +50C it has an almost indefinite life.
It is supplied embedded inside a 150mm x 15mm rigid plastic rod for a stable position in the ground and protection against accidental impact from tools or machinery.

MICROCHIP IDENTIFICATION.....

The pegs are supplied separately bagged, each with a set of identical self adhesive barcode labels. These may be

- fixed on the rectangle representing the grave on office wall maps
- inserted in client correspondence if appropriate
- fixed to entries in burial registers or backup records
- used with the eye readable number (ie the chip number) to enter a new record in either the Epitrace plot register or any other burial administration system

MICROCHIP IDENTIFICATION…..

The chipped peg is implanted a few inches underground in a standard position relative to the interment, often a foot above the 'head end' of the grave in undisturbed earth. The pegs can be supplied as pairs for marking both head and foot. These positions can be marked on computer based records or office wall maps. A practical application is to implant the peg just under a flat memorial which could be marking ashes interments as well as full burials. Firstly the chip can be read straight through the wood or stone, and in the event of removal also help to reposition a replacement marker precisely.

The Microchip Reader – As seen here the unit is a practical pocket size hand held device, with an in built battery rechargeable via the PC and USB cable provided. With just one button, training is minimal. Bring the scanner within 6" of the chip and an audible beep confirms a 'read' and the chip displayed on the screen for linking with the burial record and confirming the deceased. Chips can be scanned through grass, earth, water, ice, anything except metal.

The scanner can transmit the chip number straight into a PC based burial register if needed but low burial frequency suggests that it is just as easy to type in manually by reading the number printed under the barcode.
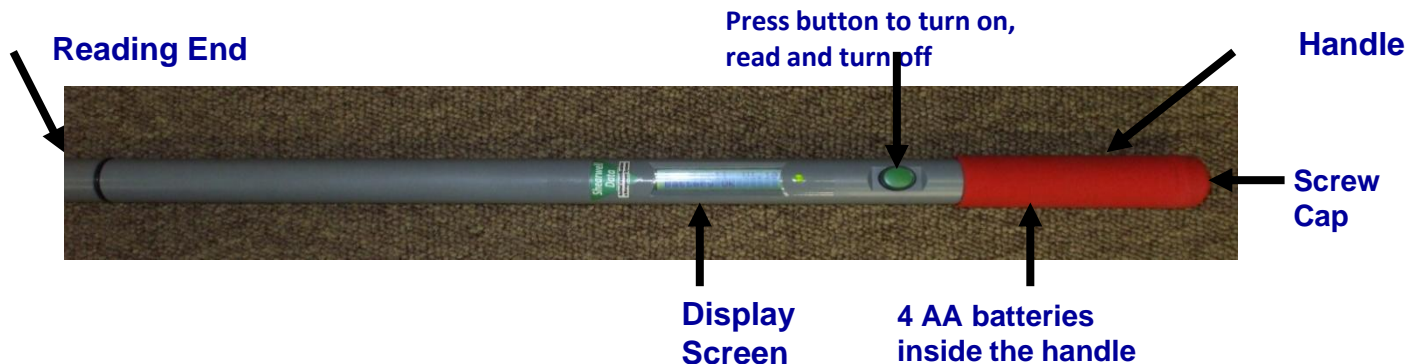
MICROCHIP IDENTIFICATION…..

The Pole reader- This replaces the hand scanner in the field to save bending down to read the buried chip, and allows instant reference to the whole burial record not just the chip number, removing the need for any paper carried on site. The increased benefits are

- The pole reader is made by a long standing UK supplier of agricultural ID products and software
- Built for livestock scanning in the field, it is very robust, and it can be used to move aside vegetation
- Length 85 cm and read range around 23cm almost double the current hand held
- On board memory and one button operation
- Rechargeable batteries from mains or in car charger
- Wireless Bluetooth communication built in

The machine switches off automatically when not in use. The microchip number is shown on the pole reader screen and, when 'paired' with a Bluetooth enabled tablet, can be sent wirelessly at the same time to the hand held unit.

Reading End

Press button to turn on, read and turn off

Handle

Screw Cap

Display Screen

4 AA batteries inside the handle

MICROCHIP IDENTIFICATION…..

The chip and peg require no maintenance. The battery in the scanner will need changing very occasionally as the machine automatically switches off after a couple of minutes if not in use.

For best site management the peg should be scanned once a year for two reasons. Firstly when this task is delegated to various employees, it helps to transfer site knowledge, an important consideration as trees, surrounding vegetation, and owners grow old! Secondly there are three factors that could potentially disturb a peg and move it out of range, all thankfully quite rare.

Tree root development. This should be noted over time and the peg can be repositioned.
Rodents. The peg is unlikely to be dug up as plastic has no attractive smell!
**Subsidence.** A possible influence although the peg is unlikely to fall independently of the earth above it, and thus retain its distance from the surface.

Each peg supplied under the Epitrace brand from ASSETtrac includes self adhesive labels showing the chip number which can be fixed to the wall map and used in back up burial registers and client correspondence. Grave owners are reassured by the fact that there is a long term covert method of identifying family members, independent of staff or ownership changes.

MICROCHIP IDENTIFICATION…..

There are other uses for the microchip in bereavement services. The tag, as below left may be encapsulated in hard wearing plastic designs as nails for large trees, slotted for cable tying to memorial trees, rose bushes and body bags, as badges for fixing to the back of memorials for safety checks, and in site machinery, power tools and computers for theft deterrence and maintenance recording.
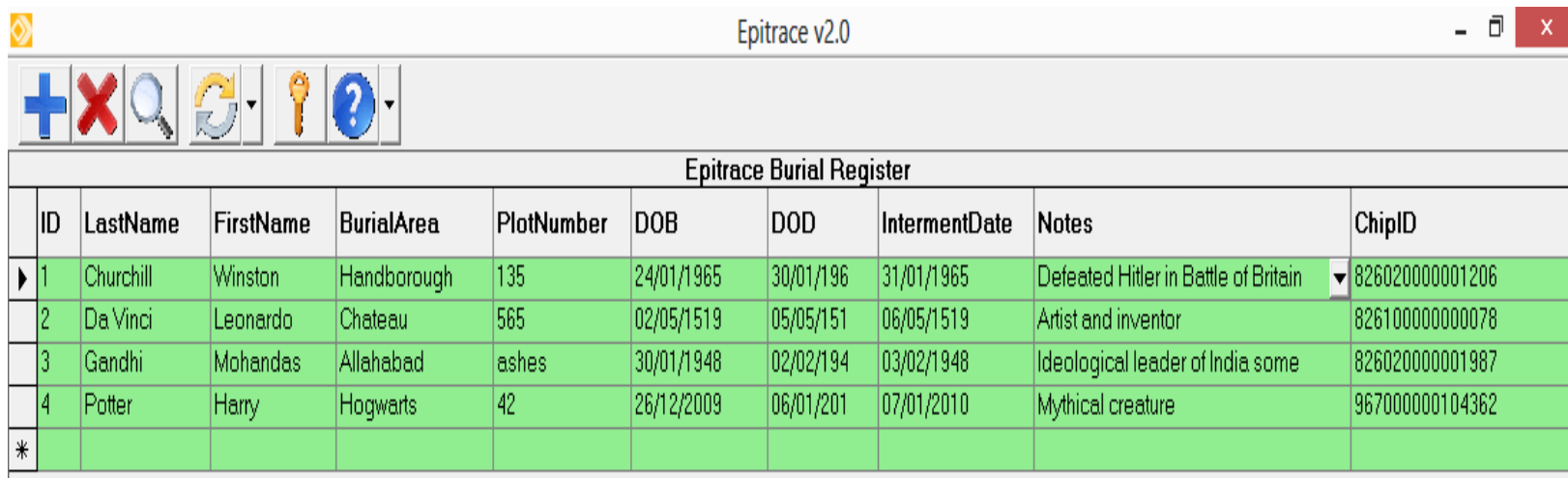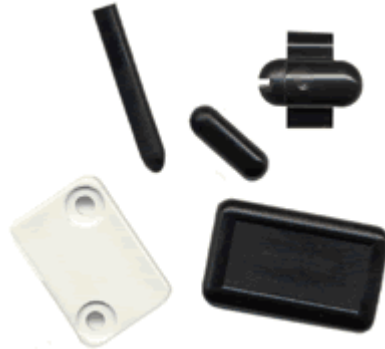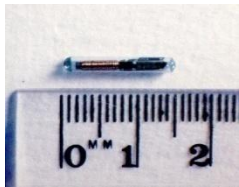

 Software programs- It is obviously important to store chip numbers for future reference. This can be done through fixing the labels in book registers or keying in the chip number to the computer burial record. Multiple chip numbers can be downloaded automatically too. Straightforward programs exist to cover all aspects of burial ground record keeping:-
• burial and cremation recording compliant with local legislation
• tracking equipment and office assets with barcode or RFID tags
• maintenance records for trees, site machinery, and electrical tests
• safety tests on traditional memorials archiving long term audit trails

EPITRACE PRO

The professional system enables communication all the way from office PC to the peg in the grave

Epitrace v2.0

Epitrace Burial Register

ID	LastName	FirstName	BurialArea	PlotNumber	DOB	DOD	IntermentDate	Notes	ChipID
1	Churchill	Winston	Handborough	135	24/01/1965	30/01/196	31/01/1965	Defeated Hitler in Battle of Britain	826020000001206
2	Da Vinci	Leonardo	Chateau	565	02/05/1519	05/05/151	06/05/1519	Artist and inventor	826100000000078
3	Gandhi	Mohandas	Allahabad	ashes	30/01/1948	02/02/194	03/02/1948	Ideological leader of India some	826020000001987
4	Potter	Harry	Hogwarts	42	26/12/2009	06/01/201	07/01/2010	Mythical creature	967000000104362
*									

The next burial or reservation record is set up on the plot register as above, and for private owners assists compliance with prevailing legislation, being the Burial Registration Act 1864. The database of deceased details can be downloaded via USB cable or Wi-Fi to the tablet as illustrated, so the whole register can be taken on site electronically.

EPITRACE PRO…

When onsite at the appropriate grave, the tablet is 'connected' wirelessly with the pole reader and on scanning the grave peg or tree tag, the tablet screen displays the record set up under the chip number.

A visible demonstration actually proves to owners and families that a plot is occupied by 'Uncle Fred' and confirms whether additional reservations are made in same plot or next door which adds value to service levels and peace of mind to visitors. It also enables replacement of a disturbed or stolen plaque in exactly the right place.

EPITRACE SUMMARY

Essentially the system is a low cost long term insurance policy against both family distress and protecting an owner's reputation for sound management. Since 1999 it has been supplied to over 90 UK burial grounds including The Commonwealth War Graves Commission and 2 Australian state burial authorities .

THE BENEFITS

- Long term unalterable identification.
- Vandal and weather proof
- Integrates with administration software.
- Links memorials with safety inspections
- Can track containers of cremated remains.
- Adds peace of mind for you and client families.

- Maintenance free, and minimal training required.
- No barrier to vehicles, power tools, or human traffic.
- Reduces the chances of mistaken exhumations.
- Deters theft and proves ownership of visible memorials.
- Can substitute for coffin plates in shroud burials.

Microchips, barcode labels, and software tracking programs are available from ASSETtrac Ltd for all types of applications. Please call +44 (0)1273 491267 or email info@assettrac.co.uk for details.

MAJOR CLIENTS

A selection of clients supplied with the EPITRACE system in the last fifteen years

<u>Local Public Sector</u>

Bradford MBC
Caerphilly CBC
Carlisle CC
Castle Morpeth DC
CWGC
Doncaster MBC
Dorchester TC
Ealing BC
East Ayrshire
Eastbourne BC
Glasgow CC
Glastonbury TC
Lancaster CC
Peterborough CC
Scottish Borders
Sandwell MBC
South Ayrshire
Stirling CC
Stockport MBC
Torfaen CBC

<u>Private ownership</u>

Bristol Memorial Woodlands
Craufurdland Castle
Crouch Valley Meadow
Gaulds of Crieff
Green Acres Woodland Burials
Green Burial Company
Greenfields
Herongate Woodland Burials
Humber Woodland Burial
Muchwood burials
Natural Burial Co
Penwith
Portchester Memorial Gardnes
Swanlow Park
South Shropshire Remembrance Park
The Sustainability Centre
Tarn Moor
Woodland & Wildlife Conservation Co

<u>International Public Sector</u>

Metropolitan Cemeteries Board Perth
Adelaide Cemetery Authority

COMPANY BACKGROUND

ASSETtrac Ltd was formed in 1999 by director Stephen Laing with the experience of some 25 years as a Lloyd's broker in the City of London and abroad. The company's initial focus was on security with the provision of objective advice on unique identification and the supply of a range of tagging devices including RFID microchips, radio frequency identification devices commonly found in animals. These are a serious alternative to barcodes in chosen areas of article numbering. Ian Athersmith joined as technical director in 2003 and is responsible for all software products. In a short time the company has developed a number of household name clients, and the focus now is very much on:-

- Improving processes in the data management field, particularly in physical asset management
- Major activities in bereavement services for cemeteries, crematoria, and natural burial grounds
- Enabling clients to dispense with costly slow paper processes and tick sheets
- Providing integrated end to end solutions comprising tag, scanner, and software
- Keeping the software simple, to accelerate roll out, minimise training and facilitate user defined procedures.
- Reinforcing day to day management benefits with security as a bonus.
- Hosting the website for The Institute of Cemetery and Crematorium Management (www.iccm-uk.com) of which we are a corporate member

ASSETtrac SERVICES

We will provide any combination of the following services:-

- Recommend, assist design, and supply generic or customised labels

- Supply appropriate microchips and barcode terminals or RFID scanners

- Conduct asset audits in commercial, education, or health environments.

- Supply standard or client specified software hosted in the 'Cloud'.

- Supply on site system training

- Import current inventories and/or create new databases

- Provide office hours technical support.

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