

REPORT
of
A DIGITAL SWITCHOVER TECHNICAL TRIAL AT
FERRYSIDE AND LLANSTEFFAN

July 2005

Digital Switchover Technical Trial Report

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Humax Fox2T

Pace PVR

Executive Summary

Purpose

The purpose of the Digital Switchover Technical Trial in Ferryside and Llansteffan was to investigate the technical issues for broadcasters and consumers associated with the switch from analogue to digital terrestrial television transmission.

The Trial was a partnership between the Government, broadcasters and digital multiplex operators, working closely with the transmission contractors, Intellect (representing receiver manufacturers) and Ofcom. The lessons from the Trial will be fed back to all industry stakeholders.

The detailed objectives of the Trial are set out in para.1.2 of the Report.

What did we expect to learn ?

We needed to know whether the switching over from only analogue transmissions to only digital transmissions planned for a small relay transmitter would be successful.

We wished to know whether people could **install and use** digital equipment on all of the sets in their home, and how much support they would need. Some would be able to cope with just a **telephone helpline**. Others would need an **installation service**.

We needed to know how much **domestic aerial work** would be needed for digital terrestrial television to work properly, and the cost of this.

We wished to find out whether people could cope with **recording** in a fully digital environment.

With many 'legacy boxes' in the market which do not 'auto-rescan', we wished to find out whether **channel re-scanning** would be a problem at switchover.

And finally, we wished to gain practical experience of **consumer communications** in relation to a 'switchover' situation.

The Trial Community - Ferryside and Llansteffan

The Ferryside transmitter site was selected as the Trial site for technical reasons. It offered a well-defined service area of about 500 homes in the villages of Ferryside and Llansteffan, and sufficient spare frequencies to 'simulcast' analogue and digital services with no international frequency clearance issues. There was also a strong local retailer infrastructure in the area.

The Trial community comprised around 1,200 people in 475 homes (Llansteffan 250, Ferryside 225) plus 30 beach chalets and 65 static caravans (occupied occasionally).

50% of people in the Trial area could speak Welsh (2001 Census). The Trial operated in both of the languages normally used by the Trial community.

Digital satellite take-up at around 42% was lower than average in Wales. The population was slightly older than the UK average, and as a result the percentage of elderly, retired and permanently ill was higher than average.

16% of respondents to the Trial initial consultation notified us of one or more disabilities (principally 2% vision problems, 7.5% hearing problems, 7% mobility issues).

Services

In this part of Wales just 4 core PSB television services, BBC ONE Wales, BBC TWO Wales, ITV Wales and S4C (Welsh language in peak hours) are available as analogue transmissions.

The Ferryside transmitter now carries 25 digital television and data services and 14 digital radio services (plus optional pay-tv television services). This significant increase in choice was the basis for the solid support for the Trial in the community.

Timetable / Building Consumer Confidence

In **May 2004** we arranged roadshows and digital equipment demonstrations in the villages, followed by a formal **consultation** to assess the community's willingness to be involved. Initial awareness of digital television was very low. We needed to increase consumer knowledge, change perceptions, and de-mystify digital television.

85% of residents responded to the consultation. These respondents returned a 100% positive vote in favour of participating in the Trial.

In October / November 2004 we prepared leaflets and arranged 'Clinics' to inform Trial households about digital television and to communicate the benefits.

On **30 November 2004** the digital signals were **switched on** at Ferryside, and from December 2004 - February 2005 Trial households were allowed a **3 month 'simulcast' period** during which they were encouraged to become regular users of digital television in place of analogue.

In early March 2005 the Trial households were asked to choose between only the analogue services and only the digital services. 87% responded. 99.2% of respondents 'voted' to keep the digital services.

Accordingly, on **30 March 2005** the analogue services at Ferryside were **switched off** (except for the analogue BBC TWO Wales service for which there is no digital terrestrial equivalent - see para. 4.7 of the Report).

Digital Equipment for the Trial

We needed to know whether people could **install and use** digital television instead of analogue on all of the TV sets and videos in their homes. If not, there could be no digital switchover at Ferryside as people would be deprived of core PSB services.

Advice was given to Trial households as to what equipment they would need to convert to digital TV. Some homes required particular set top boxes for connectivity or signal strength. Others needed advice on connecting to very old TVs (no user manual) or to complex existing equipment installations.

On average the Trial households contained 2.75 TVs and 1.5 VCRs. The average cost of equipment used for the Trial was £80 per unit.

Trial households could either:

- choose from a selection of 5 set top boxes, and 2 PVRs which were type-tested as 'fit for purpose' (e.g. MHEG, no proprietary software) and which were fully subsidised:-
 - a full subsidy for the Netgem set top box (the only set top box on the market with audio-description) was available to individuals who were vision-impaired.
 - twin tuner PVRs were used to convert TV/VCR 'clusters', allowing the user to record one programme while watching another.

or:

- purchase any digital equipment of their choice from any retailer and claim a subsidy from the Trial to the equivalent cost of providing the selection Trial equipment described above,

or:

- obtain digital satellite services (freesat or pay-tv) and qualify for the equivalent (one-off) subsidy.

Ben Evans & Son, a local retailer (who won the contract to provide support services, including the telephone helpline) arranged collection points in the villages so that Trial households dealing through Ben Evans could collect the equipment.

Installing the Equipment

Trial households were required to acquire their digital equipment, and to install it themselves, just as they would do at regional switchover. Anyone experiencing problems was offered support through the Trial helpline. A home visit was authorised if problems persisted.

Special Help

Help with delivering, installing and using equipment was offered to everyone aged 75+, or who suffered from a serious physical disability or vision-impairment, or was immobile.

Advice on the use of subtitles was offered to residents whose hearing was impaired.

Re-Scanning

When the analogue services at Ferryside were switched off and the digital services moved to the vacated channels, Trial householders needed to re-scan their digital receivers to tune into the new digital frequencies. The current generation of digital receivers do not tune or 'scan' digital services until activated by the consumer, using the remote control and the set-up menu in the receiver.

Detailed re-scanning instruction sheets were sent to all Trial households, tailored to their digital equipment. Assistance was made available to the elderly and other vulnerable residents. As a result, most Trial households completed the exercise without difficulty.

Key Lessons Learnt

(1) Transmission and Coverage

There were no major transmission issues. Digital signals were transmitted from the appointed date. Analogue signals were switched off at the end of March, as planned.

Digital coverage overall is equivalent to, or better than, analogue coverage from the Ferryside site. However, because of the different dynamics of digital transmission, six homes which previously suffered very poor analogue reception could not be served easily or at all by digital terrestrial services. Digital satellite provided the solution in the majority of such cases. No one lost their television services as a result of digital switchover at Ferryside.

(2) Consumer Experience

Building consumer confidence was fundamental to the success of the Trial. Most householders were able to install and use the digital equipment without help.

However, installing digital television equipment correctly is not a 'plug and play' exercise for everyone, especially if the existing equipment is old or very complex. A minority needed support - most issues were resolved over the telephone by the Trial Helpline. A small minority needed a lot of support - mostly the very elderly and the disabled. This was expected and planned as part of the work of the Trial Team.

Age was not a barrier to using and enjoying digital television. Older people were very keen - they tend to watch a lot of TV, and appreciated the additional choice.

(3) Remote Controls

Additional remote controls were a problem for some, especially the elderly. Most of the range of receivers selected for the Trial had a remote control that could be programmed to control the TV, but setting this up was not a 'user-friendly' process.

Many older people would have preferred a simple remote control with big buttons for the 3 basic functions (on/off, channel change, volume control). 'Big button' remotes are available on the market, but at extra cost, and were not used in the Trial.

Some elderly users found difficulty with 'directional' remote controls that needed to be pointed directly at the set top box. Many also had a tendency to 'hold down' the buttons on the remote control, or to press them more than once, leading to difficulties in channel selection.

(4) Aerials and Connectivity

Some domestic **aerials and cables** are in poor condition. Analogue pictures may be acceptable, but DTT either doesn't work at all or suffers picture break-up. In the Trial area, householders were required to provide adequate aerial installations and connectivity at their own cost. This affected around 22% of homes, but in many cases

the remedy was a new fly lead (the co-ax cable connecting the aerial wall-plate to the TV) not a new aerial.

Often fly leads were old and damaged, or had poor plug connections. Consumer awareness of the importance of good signal connections should pre-empt many problems. Remedial action is usually simple and inexpensive. Fly leads cost very little, and can be fitted easily by most householders.

Set top aerials caused few problems in Ferryside despite being used in 35% of homes, because of strong signals and proximity to the transmitter. This may not be typical of the general user experience of DTT through set top aerials.

A very small number of homes cannot receive a viable digital terrestrial signal at all. Digital satellite (either subscription or the 'freesat from Sky' offer) addresses this, but installations may need to be 'non-standard' - which involves extra cost - and the provision of separate signals to several sets within the home can be problematic.

Communication was essential - most consumers will cope well with switchover providing they are given sufficient information to know what to do, and when. This is the key to building **Consumer Confidence**.

Community links were important. Support should be made available to the most vulnerable consumers. This will be most effective where there is a balance between central control, community self-help and targeted support for those who really need it.

This loops back to **Communication**. If information is made available to consumers, they will be better able to help their family, friends and neighbours, as well as themselves. This was a key element in the success of the Trial.

(6) Content

The key driver for digital television and for acceptance of the ending of analogue transmissions is the **Content**, not the Technology. Trial households liked the additional services from 'trusted' brands (BBC3, BBC4, News 24, ITV2, ITV3 etc). Digital radio services through the television set top box were also well received. In Wales, the ability to receive Channel 4 and Five was particularly welcomed.

The **Electronic Programme Guide** (EPG) was popular, in particular the way it facilitated **digital recording**. Most Trial households had no concept of the benefits of a PVR until they had seen the equipment working, and the ease of use and digital picture quality compared with a VCR and VHS tapes. This underlines the importance of demonstrating digital equipment.

Outcome and Conclusion

Digital switchover at Ferryside was achieved on time, with no major issues, and the Trial was a positive experience for most Trial households.

1.0 Introduction

Background

- 1.1 The Ferryside Digital Switchover Technical Trial ('the Trial') implemented Task 6.5 of the Digital Television Action Plan which recommended that there should be "a small DTT test-bed zone without any analogue transmissions, where the DTT spectrum and reception conditions applicable to switchover and post switchover can be investigated".

The intention was to make DTT available during a simulcast period (reflecting the position for most UK Homes) and then to switch off the analogue signals. The Trial would affect everyone receiving television signals from the Ferryside transmitter, not a group of selected volunteers.

The Trial was planned as a technical trial, not as a 'pilot' for UK switchover.

- 1.2 The Trial was a partnership between the Government, broadcasters and digital multiplex operators, working closely with the transmission contractors, Intellect (on behalf of receiver manufacturers) and Ofcom. The lessons learned will be fed back to industry stakeholders.

Objectives

- 1.3 The objectives of the Trial agreed between the partners were:
- to test the mainstream scenario for switchover, affecting the 75% of the UK population who now have access to DTT alongside analogue terrestrial (as well as other digital platforms) and thus can be encouraged to switch to digital during the period of simulcasting, so that they no longer depend on analogue at the time of switchover
 - to rehearse a sequence of transmitter changes which will constitute an analogue conversion, albeit on a trial basis
 - to acquire practical experience of synchronising these changes with communications to consumers and with the process of converting consumers' reception equipment, and to learn lessons about consumer communication in relation to Switchover
 - to acquire practical experience of consumers handling the channel rescanning required at switchover
 - to acquire practical experience of recording devices using DTT advance programme information, with recording triggered from the EPG
 - to scope and size the extent of aerial work, VCR replacement/re-connecting, installation assistance, and telephone support required by consumers
 - to inform more fully the working assumptions about conversion cost per household

- to switch off the analogue signals if the Trial proved to be a success.

- 1.4 The Trial achieved its Objectives, within the planned timescale, and within the available budget.

Digital switchover at Ferryside was implemented in the early hours of Wednesday 30th March 2005.

This Report describes the work of the Trial and the key lessons learnt.

Timeline

- 1.5 The following timetable was agreed by the Trial Steering Board and was duly implemented.

Phase / Period	Event
Phase 1 : Planning	
April 2004	Steering Board approval in principle
	DTI/DCMS contracted key Project Staff
May 2004	Consultation with the proposed Trial communities
June 2004	After consultation, decision to proceed at Ferryside
	Broadcasters and Transmission Contractors agreed the arrangements for ordering, installing and operating digital transmission equipment at Ferryside
July 2004	DTI contracted with local retailer for support services and to guarantee supply of a selected range of domestic receivers
Phase 2 : Information	
September / October 2004	Information Sessions in the Trial area, giving out information on domestic receivers, and inviting Trial households to purchase or reserve their choice of equipment and/or subscribe to a pay-TV service
Phase 3 : Implementation	
Late November 2004	Distribution of domestic receivers reserved by Trial households
30 November 2004	Target date for switching on digital signals at Ferryside
1 December 2004	Start of 3 month Trial simulcast period
December 2004	Ipsos Phase 1 - Consumer Research commissioned by DCMS
Phase 4 : Switchover	
early March 2005	Trial households to be asked whether they wished to keep digital television or revert to the analogue services
mid March 2005	Decision whether or not to switch off the analogue signals at Ferryside
	Captions broadcast on analogue services
end March 2005	Target Switchover Date
Phase 5 : Reporting	
April 2005	Ipsos Phase 2 - Consumer Research commissioned by DCMS
end June 2005	Trial Report to be completed

2. Planning the Trial

Previous Projects

The following research data provided valuable background to the work of planning and implementing the Ferryside Technical Trial.

- 2.1 A previous trial known as '**Go Digital**' (co-ordinated by the ITC and completed early in 2003) produced useful data on consumer attitudes and usage of digital TV. Go Digital was based on a group of around 300 volunteers, and there was no plan to switch off a transmitter.

The key findings from the Go Digital Project can be found at:
http://www.ofcom.org.uk/static/archive/itc/uploads/GO_DIGITAL_KEY_FINDINGS.pdf

The Ferryside Trial would be more ambitious in three key respects :

- a terrestrial transmitter would be converted from analogue television to digital television, thus affecting every home served by the transmitter
- wherever possible, consumers were expected to install their own equipment
- if successful, the analogue signal would be switched off in the Trial area.

- 2.2 In April 2003, **Generics Group** and **Ipsos** were asked by the DTI to undertake research on how consumers engage with digital TV. Their work is summarised in three reports, as follows :

18 September 2003 : Digital Television For All - A Report on Usability & Product Design

http://www.digitaltelevision.gov.uk/pdf_documents/publications/Digital_TV_for_all.pdf

7 January 2004 : Attitudes To Digital Television - Preliminary Findings on Consumer Adoption of Digital TV

http://www.digitaltelevision.gov.uk/pdf_documents/publications/Attitudes_to_Digital_Television.pdf

30 March 2004 : Attitudes To Digital Switchover - Impact of Digital Switchover on Consumer Adoption of Digital Television

http://www.digitaltelevision.gov.uk/pdf_documents/publications/AttitudestoSwitchover_300304.pdf

This work built on baseline research known as 'Easy-TV' co-ordinated by the ITC. This project looked at consumers' attitude to digital TV and product usability. The project report can be accessed at <http://www.ofcom.org.uk>

- 2.3 In February 2004 the DTI, in association with Intellect and iBurbia, created a practical exhibition of the numerous ways in which UK homes can convert analogue TV reception and recording equipment to digital TV.

This gave industry stakeholder representatives some idea of the consumer technologies involved and an insight into issues experienced by consumers seeking to connect their equipment.

Structure and Responsibilities

- 2.4 The Ferryside Technical Trial was overseen by a Steering Board chaired by the DTI and formed under the terms of a MOU signed between DTI, DCMS and the broadcasters through TDN (The Digital Network representing the digital multiplex operators).

The transmission contractors, Crown Castle and ntl (subsequently re-named Arqiva), were invited to join the Steering Board.

Ofcom and Intellect attended as observers.

- 2.5 **DTI** were responsible for funding the Trial management staff, selecting and funding reception equipment, co-funding transmitter equipment required specifically for the Trial, managing relations with local retailers and manufacturers and agreeing relevant contracts.
- 2.6 **DCMS** were responsible for managing and funding communications and publicity, community liaison, project research (through Ipsos) and deciding whether to make the switch permanent.
- 2.7 **BBC** gave initial advice on technically suitable areas and provided other engineering and technical advice and support throughout the Trial, including extensive frequency planning, survey and coverage validation work.
- 2.8 **BBC, Digital 3&4 Ltd and SDN Ltd** (for their own services and related analogue services) contracted with Crown or ntl for the transmission and other equipment and operational work needed at the Trial site and the insertion of captions on analogue transmissions.
- 2.9 **Ofcom** provided regulatory support, and undertook related research.
- 2.10 **Intellect** provided practical support in the Trial area, and specialist advice in relation to receiver issues.
- 2.11 The **Project Team** comprised 3 part-time staff working as Project Director (contracted by DTI), Product Manager (contracted by DTI) and Communications Manager (contracted by DCMS). Practical, legal and administrative support was provided by BBC, DCMS, DTI, Intellect and Ofcom.
- 2.12 **Local Support Services** were provided by Ben Evans Ltd of St Clears, contracted by the DTI after winning an open tender competition, to provide support for demonstrations of domestic receiving equipment and installation and call centre support.
- 2.13 The total budgetted cash cost of the Trial was £865,000. Of this cash cost, Government contributed £565,000 and the broadcasters £300,000.

In addition to the cash budget, support in kind was provided by the BBC, DTI, DCMS, Intellect and Ofcom.

The most significant elements of the budget are transmission costs, the costs of domestic receivers, support services, and consultancy. All of these elements of cost are subject to commercial confidentiality.

Site Selection

2.14 The BBC Research and Development (Spectrum Planning) Group was asked to advise on suitable sites having regard to the following criteria:

- a well-defined, self-contained coverage area of around 500 TV homes
- sufficient available frequencies to broadcast the 4 core PSB services and 6 DTT multiplexes
- no international frequency clearance issues, as time did not allow for such issues to be resolved
- availability of a resilient RBL (re-broadcast link) to receive DTT direct from a main transmitter in the same region
- no dependent relays.

Further relevant factors were:

- whether there was sufficient space on site to accommodate the bigger site cabin needed to house additional equipment
- the need for a strong local retailer infrastructure in the area
- the site needed to be reasonably accessible.

Sites were considered in Scotland, Wales, Cornwall and Yorkshire. They were gradually reduced to a preliminary list of 16 sites, and then a 'short-list' of 5, all of which were in Wales.

2.15 Sites in Wales offered two key advantages for a DTT Technical Trial, namely:

- At that time Wales was the only part of the UK in which the Broadcasters were transmitting a fully established seven-day programme schedule (EIT_{schedule}) data service, as the technical test for this had been run in Wales. This enabled easy-to-operate recording through the EPG (electronic programme guide) of a PVR (digital personal video recorder).
- Neither Channel 4 nor Five are received terrestrially in analogue in most of Wales. The ability to receive them without subscription on all of a household's TV sets would be an additional advantage to help counteract the inconveniences of participation in the Trial.

2.16 Within Wales, Ferryside / Llansteffan was selected because it offered a particularly strong local retailer infrastructure (with a choice of large multiple electrical retailers as well as long-established Independents) and was very easily accessible, with excellent mainline rail and motorway access.

2.17 The Ferryside / Llansteffan option was not entirely free of issues. It is a split site, with two separate communities separated by a wide river estuary, which gave rise to some additional logistical considerations.

In the event these were dealt with very easily and it was useful to be able to compare experiences across two separate communities.

2.18 The principal 'risk' to the Trial (and a risk unique to Wales) was the replacement of the analogue BBC TWO Wales service by the digital BBC 2W service. This is discussed in greater detail in para 4.7.

2.19 A full description of the Trial area is included in Section 3 of this Report.

Domestic Equipment

- 2.20 Digital television on one or more platforms has been available to most UK TV homes for several years. Around 60% already enjoy digital television on at least one set. Consumers are willing to finance their own digital reception and recording equipment, because the benefits are significant.
- 2.21 However, it would have been unrealistic to require the residents of Ferryside and Llansteffan to pay fully for digital equipment to convert every set in their homes so far ahead of the rest of the UK just because their area happened to have been selected as the location for the Trial. There was not even the certainty that the DTT signals would be left on at the end of the Trial.

Therefore a key decision taken prior to the Trial was that the acquisition of necessary and appropriate digital equipment by Trial households would be subsidised. (The receiver "credit" arrangements for implementing this are described at 2.41)

This does not set a precedent. Subsidising equipment was seen as appropriate in the context of this Trial, where there was a need to implement full conversion of a significant number of households in a short period of time and where the choice of digital receivers was much more limited than is expected to be available by switchover.

- 2.22 This subsidy provided an incentive to participate in the Trial to set against the input that was asked from the Trial households. This included attending briefing sessions, completing questionnaires, responding to research needs, and generally embarking on a digital television 'learning curve' within just 6 months, compared to the minimum 2 years' notice of switchover given to the rest of the UK.
- 2.23 In addition, it was the householders' responsibility to ensure that aerials and connectivity were in good order. In some instances this involved additional costs, which were paid by the householders themselves.

Consultation with the Community

- 2.24 Before the Trial could proceed, the selected Trial communities needed to agree to support the project. If a significant number of householders had expressed concerns, the analogue signals would not have been switched off.

If householders were uncertain, disinterested or negative, the Trial undoubtedly would have been 'invasive'. Even so, the benefits offered by digital television gave us confidence that the vast majority within the Trial community would wish to participate. In any event, it would be helpful to gain practical experience of such issues.

Assessing the degree of acceptance and identifying solutions to householders' problems was one of the key reasons for undertaking the Trial.

2.25 Soon after Ferryside and Llansteffan were identified as the preferred Trial area, informal confidential soundings were taken with relevant political and community leaders, including:

- the Welsh Assembly Government
- local MPs
- local Assembly Members
- Carmarthenshire County Council
- County Councillors for Ferryside and Llansteffan
- representatives of the Community Councils for each area.

There was unanimous support in principle for the Trial, subject only to assurances that the vulnerable members of the communities would be offered appropriate help and assistance.

The Welsh Assembly Government also stressed the need for the use of the Welsh language in a bilingual community.

2.26 A formal consultation process was then implemented by the Project Director, on behalf of DCMS, with two key objectives:

- to inform the communities as to the nature and implications of the Trial - they could not be expected to have any real awareness of digital television at that early stage
- to give individuals who would be affected the opportunity to discuss in confidence whether they were willing to participate in the Trial.

2.27 The UK public will be provided with information about digital television for at least 2-4 years before they face the loss of analogue transmission. In the Trial area this process was condensed to a few months to inform, listen and respond to individual concerns and queries.

2.28 In May 2004 Open Days were held in each village to explain the concept and benefits of multi-channel digital television and to demonstrate a selection of DTT receivers and recording equipment. In a community with just 4 analogue television services, knowledge and perception of digital television was generally very limited, but there was a very strong demand for more TV channels, especially Channel 4 and Five.

2.29 Residents in the Trial area were sent a letter of invitation to the Open Days, with an information pack covering all of the following matters:

- (i) an explanation of the purpose of the Trial, with a standard Q&A sheet, and confirmation that necessary digital equipment would be subsidised
- (ii) a map of the Trial area
- (iii) a list of the digital channels that would become available
- (iv) a Response Form which would enable the respondent to record:
 - (a) whether or not they supported the proposal for the Trial
 - (b) whether they lived within the 'red line' area on the map, and received TV signals from the Ferryside transmitter
 - (c) usage of more than one aerial, or a set top aerial
 - (d) the number of TV sets and VCRs, and whether they had digital satellite
 - (e) any special needs or disability, especially vision, hearing, or mobility issues.

- 2.30 We were fortunate to have the support of Carmarthenshire County Council who provided us with a Mobile Exhibition Unit for the Open Days. This helped create an atmosphere of accessibility and relevance to the community, which was most helpful. In addition, County and Community Councillors attended to support the project.
- 2.31 There was no DTT service to either village at that time, but BBC Engineers were able to supply a signal temporarily for the Open Days in both villages, so that DTT receiving and recording equipment could be demonstrated. This was particularly helpful. A working demonstration was useful to explain the benefits and implications of digital equipment - especially digital recording equipment - to people who had never seen it before.
- 2.32 Responses received at the Open Days and on the Response Forms were overwhelmingly positive. People welcomed the idea of digital television and the extra services it would offer.

The offer of subsidised equipment was obviously a driver, but it was made clear to potential Trial households that they would be expected to collect, install and connect their own digital equipment, participate in research and respond to questionnaires. It was also explained that special help would be given to those who needed it.

- 2.33 Many people had wrongly assumed that they would need a new TV set, and were pleased to be told that digital adaptors should work with standard television sets of any age.
- 2.34 The issue of BBC TWO Wales / BBC 2W was raised by a few residents even at that early stage. (See para 4.7 of this Report).
- 2.35 85% of the residents within the Trial area responded to the initial consultation. There were a number of helpful points and requests for further information, but 100% of the respondents supported the proposal to undertake the Trial in Ferryside and Llansteffan.

On that basis, regulatory approval was obtained from DCMS and Ofcom for the Trial to proceed.

Regulatory Aspects

- 2.36 A Regulatory Group was established in order to co-ordinate the regulatory aspects of the Trial, and met independently of the Trial Steering Board.

The Regulatory Group was chaired by Ofcom, and included representation from Ofcom, DCMS and the BBC (which is self-regulating), with legal support provided by DCMS and Ofcom. The interests of S4C (which is a self-regulating broadcasting authority in Wales) were represented by DCMS.

- 2.37 The Regulatory Group addressed the following issues:
- (i) consideration of the legal basis for undertaking the Trial and for switching off the analogue signals

- (ii) ensuring that proper consideration had been given to the interests of people living in the Trial area
- (iii) liaison with DCMS in relation to securing policy approval for the Trial to proceed and (additionally) policy approval for Switchover at Ferryside
- (iv) co-ordinating the appropriate legal authorities, approvals and licences in relation to (a) switching on the digital signals at a small relay site, and (b) switching off analogue signals in advance of the UK Switchover
- (v) ensuring that the appropriate technical clearances had been secured. This required TPG approval¹, which took account of any issues relating to coverage, frequency clearances, and potential sources of interference from Ferryside to other analogue and digital transmissions. TPG approval was obtained on 17 June 2004 (ref. document TPG 2403)
- (vi) liaison with Ofcom in relation to licence amendments needed by commercial broadcasters and digital multiplex operators.

2.38 The agreement of all of the analogue broadcasters was needed in order to switch off their analogue signals at Ferryside.

Provisions relating to the ²ITV Wales and Teletext analogue signals were included in the relevant digital broadcast licences.

All of the analogue broadcasters supported the Trial and made the appropriate requests for their analogue signals to be switched off.

Security Numbers / Receiver "Credits"

2.39 It was necessary to ensure that Trial households could identify callers claiming to represent the Trial, whether they were seeking to gain actual entry to premises or merely asking for personal information on the telephone.

2.40 Every property participating in the Trial was allocated a unique security number, randomly generated, and known only to the Trial Team and authorised members of staff of Ben Evans, the contracted local retailer.

There were no known instances of the security numbers needing to be used to avoid difficulties, but the system offered peace of mind to Trial households, especially elderly people, and anyone living alone.

2.41 Each Trial household's security number was also used as a "credit", the value of which related directly to the number of television sets and VCRs requiring conversion and/or replacement. These credits could be redeemed by purchase or rental on the open market of any suitable terrestrial or satellite DTV equipment or service. The credits fully covered the cost of supply of the selected range of domestic receivers described in paras 7.4 ff.

¹ TPG : The Transmission Planning Group comprises Ofcom and the BBC, supported by Crown Castle and ntl. Its function is to approve the use of specific frequencies for broadcast transmitter sites, taking account of frequency planning considerations.

² Previously 'HTV Wales'

Research

- 2.42 The Technical Trial opened up a range of opportunities for research. However, it was very important:
- to respect the privacy of the Trial households, and not burden them with too many questionnaires and research projects
 - to limit research activity undertaken by the Trial participants by ensuring that it was directly relevant to the Trial objectives
 - to discourage speculative and unrelated third party research.
- 2.43 The system of security numbers enabled Trial households to challenge speculative approaches by third parties claiming to be part of the Trial.
- 2.44 DCMS commissioned Ipsos to undertake two 'waves' of quantitative and qualitative studies, the first in December 2004, soon after digital equipment had been distributed and digital signals switched on, and the second in mid April 2005, soon after the switch to digital television was completed.

Ipsos' Report will be published separately by DCMS.

3. The Trial Community

General Description

- 3.1 Ferryside and Llansteffan are separated by the estuary of the River Tywi. Map 1 (Appendix 1) shows the Trial area edged in red.

The Trial community comprised a total of 475 properties (the vast majority of which were domestic homes), namely 225 in Ferryside, and 250 in and around Llansteffan. In addition there was a static caravan park of 65 units, and also 30 beach chalets, occupied occasionally.

- 3.2 Both villages are lively communities with a wide range of social and other activities. On both sides of the estuary there is a mix of residents who have always lived in the area and a large number of newcomers, many from outside Wales. In both villages people were ready and willing to help each other and there was a particular concern to ensure that the older members of the community were looked after. This informal 'support system' was a crucial element of the success of the Trial.
- 3.3 The demographics of both villages are broadly in line with the average for England and Wales, except that the proportions of elderly and ill are significantly higher than average:

		Ferryside	Llansteffan	Eng/Wales
Age	60 - 74	18.8%	16.8%	13.3%
	75+	9.8%	7.8%	7.6%
	Average age	43.9	41.9	38.6

Health	Fairly good	22.5%	21.2%	22.2%
	Not good	11.8%	11.3%	9.2%
Permanently sick / disabled		8.6%	8.2%	5.5%
Limiting long-term illness		24.9%	20.7%	18.2%

Widowed	9.6%	8.1%	8.4%
Retired	19.0%	17.9%	13.6%
Pensioner living alone	15.6%	13.5%	14.4%
Other Pensioner Household	14.2%	12.3%	9.4%

Unemployed	2.7%	2.0%	3.7%
Lone parent/dependent children	4.3%	4.4%	6.5%

[Source : Census 2001]

Television is highly valued in such communities as it provides a ready supply of low cost entertainment and information. Older people in particular watch a lot of television, as everywhere else in the UK.

- 3.4 Before the start of the Trial, terrestrial reception from the Ferryside transmitter was limited to just 4 analogue channels - BBC ONE Wales, BBC TWO Wales, ITV1 Wales and S4C.

S4C broadcasts Welsh language programmes during peak viewing hours, and re-scheduled programmes from Channel 4 at other times. Most Welsh language programmes are subtitled in English, but 50% of the population of both villages do not speak Welsh, and many of the cultural references within S4C's output may not be directly relevant to them.

Ferryside

- 3.5 Ferryside is the larger of the two villages, but its southern half is mostly shielded from the Trial site by a hilly wooded outcrop and therefore was largely excluded from the Trial.

In total there were 225 Trial homes in Ferryside served by the Trial site.

- 3.6 The centre of the village is the small 'square' near the former ferry landing point. Most of the village facilities are situated here, including the railway station, the primary school, the post office, the newsagent, the village store and the White Lion tavern. Housing is mostly nineteenth century, with many terraced cottages but also several larger terraced and detached dwellings.
- 3.7 The railway station is on the main line from London Paddington to Carmarthen, and the M4 extension at Carmarthen is within 15 minutes drive. Ferryside is a popular commuter village for nearby towns such as Carmarthen and Llanelli.
- 3.8 There is additional development on the hillside overlooking the estuary, including a number of modern executive properties along Tripenhad Road and at Caradog Court (most of which are served by the Ferryside relay).
- 3.9 The northern part of the village shows evidence of development in the 1960s and 1970s, with local authority housing on the hillside at Glan Tywi and a sizeable private estate of bungalows at Glan Morfa / Glan yr Ystrad. In this part of the village are the Further Education Centre and the Ferryside Rugby and Social Club, a popular centre for the community (and the Trial Team's base in Ferryside).
- 3.10 Outside the main part of Ferryside village, there were 6 Trial homes to the north near the foreshore and a further 3 properties in the heavily wooded valley along the road into the village from the north-east - a very difficult area for television reception.
- 3.11 Because of the topography it seemed unlikely that users of the Ferryside relay would be found in the outlying areas on the eastern side of the estuary. This assumption proved to be correct.
- 3.12 As noted in 3.5 above, a hilly wooded outcrop separates the northern and southern halves of the village of Ferryside. The result is that most of the southern part cannot receive television signals from the Trial Site, because 'line of sight' is blocked by the hill. The dividing line runs across Brigstocke Terrace, where some dwellings were included in the Trial whilst, regrettably, close neighbours had to be excluded. This led to some lively discussions with local residents who were not eligible to participate in the Trial - but it was inevitable that there would be some problems at the boundaries of coverage from the Trial transmitter.

3.13 The decision whether to include or exclude a property in the Trial was taken by the Project Director on the basis of:

- (i) signal strength measurements from the relay and alternative main transmitter as measured by BBC Engineers (i.e. should the property be tuned to the Trial Site?)
- (ii) actual circumstances (i.e. is the property actually receiving robust signals from the Trial Site?).

In several cases, properties within the Trial area were able to receive analogue signals from both the main and relay transmitters. However, this was not an indicator of good DTT reception from the main transmitter, as the Trial Site is outside normal coverage for both Preseli and Carmel.

3.14 A very small number of dwellings situated at the foot of the hill directly below the transmitter site could not pick up a viable signal from the relay and thus relied on a weak signal from the Preseli transmitter, or had opted for digital satellite.

3.15 35% of homes in Ferryside used set-top aerials on at least one set. This is slightly higher than the UK average (31%) because of:

- (i) the strong signal from the local relay
- (ii) many rooftop aerials being in place long before the relay was built in 1985, thus pointing to a main transmitter, usually Preseli.

Most such aerials gave reasonable analogue performance but there was insufficient DTT signal to provide a viable digital service. Examples were seen where households near the railway line suffered significant interference to their Preseli analogue signal each time a train went by.

At UK Switchover, increased DTT transmission powers at Preseli may resolve such issues, but this cannot be guaranteed. Thus, based on individual assessments of signal strength, homes that should be using the relay were advised of this and were welcomed into the Trial provided they installed an aerial to Ferryside at their own expense.

3.16 In Ferryside there was a high level of awareness of whether domestic aerials pointed to the local relay or to the main transmitter at Preseli, as in most cases it was obvious from visual inspection - the two sites are in totally different directions and an aerial pointing across the estuary was obviously pointing towards Preseli. Even so, there were a few potential Trial households who genuinely did not know which was the 'business end' of the aerial and could not distinguish whether their signals came from Ferryside or from Preseli. For most people this issue was easily resolved by putting the appropriate information in a newsletter.

Llansteffan

3.17 Llansteffan is a much older settlement, dominated by the ruined castle on the hill just outside the village - formerly an important strategic stronghold. Today it is a quiet place, slightly 'off the beaten track' but within 15 minutes' drive of the M4 extension and the main line station at Carmarthen. The character and location of the village make it popular with tourists.

There were 250 Trial households in total in Llansteffan and the area to the north-east towards Llangain on the western side of the estuary.

- 3.18 There are a significant number of second homes / holiday homes in Llansteffan. This was a relevant issue for the Trial. It was generally less easy to communicate with these householders and to provide necessary and timely information.

- 3.19 For the purposes of the Trial, Llansteffan divides into four areas:
- (i) the upper village around the High Street and the Church
 - (ii) the lower village adjoining the Green
 - (ii) the sheltered valley leading up Old School Road, and
 - (iv) outlying coverage areas along the road north towards Llangain.

- 3.20 The upper part of Llansteffan village includes large terraced houses and attractive terraced cottages, as well as several large individual properties. Many are Georgian or earlier, but there are a few individual new houses.

This area also includes a small estate of local authority owned properties and sheltered housing, the Post Office and the two local pubs, The Castle Inn and the Sticks Hotel (which provided the base for the Trial Team). The Memorial Hall is used extensively for a wide range of community activities.

- 3.21 The upper part of Llansteffan village enjoys excellent television reception from the Ferryside relay directly across the water, but many properties can also receive signals from the Carmel main transmitter site. There was often confusion as to whether reception was from Carmel or from Ferryside as both transmitters are in much the same direction when viewed from Llansteffan.

- 3.22 Many residents learned to distinguish their signal source by looking at the elements (i.e. the 'bars') on the aerial, which should be horizontal for the main transmitter, and vertical for the relay. Unfortunately this was a fallible method as there were examples of new digital aerials of a different design, and aerials - (presumably self- installed) that were incorrectly polarised.

There was uncertainty whether some properties should be in the Trial until reception tests clarified the actual source of their television signals.

- 3.23 A small number of homes in the highest part of the village can receive analogue television signals from the Preseli main transmitter.

- 3.24 One property in this area was unable to receive any viable terrestrial television signals as Ferryside and Carmel are both blocked by a large tree on neighbouring land. The householder relies on digital satellite, and cannot be served by DTT.

- 3.25 The lower part of Llansteffan village includes a terrace of attractive cottages along the Green (the sea front), plus a small estate of local authority housing, many of which are now privately owned. The primary school is in this area, as is the Sunrise Bay Caravan Park, comprising 65 static caravans, occupied from March to October. The fact that the Caravan Park is centrally managed meant that switchover was enabled there without difficulty.

- 3.26 The lower part of Llansteffan is not well served by the Carmel transmitter, which is why the Ferryside relay was needed in the first place. Analogue reception from Ferryside was excellent.

- 3.27 The third part of the village presents difficult challenges in terms of terrestrial reception. Mill Pond Road and Old School Road are located in a narrow valley with limited line of sight to the Ferryside relay, and curving away on the 'wrong' side of the hill from the transmitter. Terrestrial television reception here has always been difficult, but we were able to provide a DTT service in all but two cases - both opted for the 'freesat from Sky' digital satellite solution.
- 3.28 There was a significant improvement in picture quality in this location when DTT became available, compared with analogue terrestrial reception.
- 3.29 Outside Llansteffan there are Trial homes to the north-east towards Llangain.

This area included 30 beach chalets, most of which were rarely occupied, but which needed to be served by DTT after switchover at Ferryside, albeit for occasional use on portable sets with loop aerials when the owners were present.

Several additional users were found around the Pilroath / Pantyrathro area on the road to Llangain. This area is heavily wooded, and the trees obscure the signals from Carmel. In most cases there was line of sight to Ferryside which provided robust signals. A Hotel and Chalet Park complex at Pantyrathro was found to be outside the Trial area, being well served from Carmel.

Coverage and Reception in the Trial Area

- 3.30 The original reception survey study undertaken by engineers from BBC R&D proved to be mostly accurate. Actual take-up from Ferryside matched the predicted take-up to a high degree.
- 3.31 The broadcasting of captions on the analogue services prior to switchover resulted in no additional homes being identified in Ferryside.
- 3.32 Because of the captions, 20 additional householders came forward on the Llansteffan side of the estuary, some of which had been noted as possible users, but who had not previously made contact with the Trial despite letters sent and extensive publicity locally.
- However, there were also 8 users not identified previously, who lived well outside the Trial area as originally mapped.
- 3.33 The experience of the Trial shows that:
- (i) coverage estimates for Ferryside were mostly accurate
 - (ii) many homes were viewing the 'wrong' transmitter, often for historical reasons
 - (iii) even where incentives were offered, a small number waited until the last moment before responding.
- 3.34 Within the Trial area, digital satellite take-up at 42% was lower than average in Wales (over 60%). Digital cable is not available in the Trial area.
- 3.35 Broadband was introduced to both communities in late 2004, during the Trial period.

Broadband may offer an alternative means of distribution to premises which cannot be served by DTT, and where a digital satellite option is either not technically possible or is unsuitable for some other reason.

- 3.36 We identified six properties in the Trial area (1.26% of the total) where it was difficult or impossible to provide a viable DTT service. There were 3 properties in the Trial area able to receive a poor quality analogue service but which could not be served at all by DTT. Another 2 were 'borderline', but DTT was successfully installed. A further property would have presented a major challenge because of the heavily wooded environment, but as the owner did not have a television this was not an issue for the Trial. .
- 3.37 We found three households where the owners had previously taken a positive decision not to have television and thus were not part of the Trial.

4. Services

DTT Services

- 4.1 Because the specification for the Trial required a net served area of c.500 homes it was clear that the Trial location would be a small relay site, but as a result the number and nature of digital terrestrial services that could be offered in the Trial would be reduced.

Around 40 television services are available across 6 multiplexes, transmitting from the 80 principal UK transmission sites. These include the 13 public service channels that today are spread across 4 of the multiplexes, but at UK switchover will be carried on just 3 multiplexes. These three multiplexes will be available from all terrestrial transmitter sites, including small relays such as Ferryside³.

Some relays are technically capable of carrying more than 3 multiplexes because the frequencies are available. Ferryside is an example of such a site - this was one of the main reasons for selecting it as the Trial site. There were sufficient frequencies at Ferryside to simulcast the existing 4 analogue services and all 6 DTT multiplexes.

- 4.2 The BBC and D3&4 multiplex operators were partners in the Trial. SDN, which currently operates Multiplex A, carrying Five, S4C and S4C2 also agreed to participate in the Trial. However, Crown Castle decided not to provide its two multiplexes (C and D) at Ferryside because from a commercial perspective they would not normally do so on such a small site.
- 4.3 The net effect was that Ferryside Trial households received a more extensive digital terrestrial package than is likely to be available from small local relays at switchover. The impact of moving from 4 channels to multi-channel is shown below and in Appendix 2.

³ Ofcom Statement: "Planning Options for Digital Switchover" Issued 1 June 2005
<http://www.ofcom.org.uk/consult/condocs/pods/statement/>

Analogue	Digital TV Services	Digital - Radio Services
Ch.No. 1 BBC ONE Wales 2 BBC TWO Wales 3 ITV Wales & Teletext 4 S4C	Ch.No. 1 BBC ONE Wales 2 BBC2W 3 ITV Wales 4 S4C Digital 5 Five 6 ITV2 7 BBC Three 8 Channel 4 9 Teletext 10 BBC Four 13 S4C2 14 E4 15 ABC1 (Disney) 23 Bid TV 24 Price-drop TV 30 CBBC 31 CBeebies 34 ITV3 40 BBC News 24 45 BBC Parliament 46 Community Channel 47 Teachers TV 50 Teletext on Four 51 BBCi 54 Teletext TV Guide Plus : Top-Up TV pay-tv Channels	Ch.No. 70 BBC Radio 1 71 1Xtra BBC 72 BBC Radio 2 73 BBC Radio 3 74 BBC Radio 4 75 BBC R5 Live 76 BBC 5L SportsX 77 BBC6 Music 78 BBC7 79 BBC Asian Net 84 Heat 89 BBC Radio Wales 90 BBC Radio Cymru91 Mojo

Digital Satellite Option - 'freesat from Sky'

- 4.4 In June 2003, the BBC opted to transmit its services on digital satellite 'in the clear', so removing the need for digital satellite viewers to use a viewing card to receive its services. S4C had already made its services available this way, but ITV1, Channel 4 and Five continued to be encrypted. For a period, to January 2004, these broadcasters funded the cost of a viewing card so that their services, like those from the BBC and S4C, were available free-to-view. However, for most of 2004 it was not possible for consumers to obtain new viewing cards without subscribing to BSkyB's services.
- 4.5 In October 2004, during the course of the Trial, BSkyB announced its "freesat from Sky" offer of a package of around 200 free to view TV and radio services delivered by digital satellite to a single set for a one-off charge of £150 (including digital box and dish, viewing card and installation) and no subscription thereafter. Trial households were advised of this offer in a Newsletter.

The 'freesat from Sky' offer includes all of the core public service channels, and is an attractive alternative to DTT for a household seeking a greater choice of channels through one or two sets.

Two households were provided with a 'freesat from Sky' digital satellite service by the Trial because they could not be served by DTT at their particular locations.

One household chose to change from DTT to a 'freesat from Sky' package on the main set, and one other chose to subscribe to 'Sky+' on the main set.

Pay-TV

- 4.6 Pay-tv on the DTT platform is broadcast on Multiplexes 2 and A, both of which are broadcast from the Ferryside site. Therefore the Trial households could receive the Top-Up TV pay-tv service if they wished to do so.

Sky Digital pay-tv was already available in the Trial area.

Anyone wishing to subscribe to pay-tv was referred to their preferred pay-tv operator and asked to make their own arrangements for installation. A one-off subsidy would be payable by the Trial (see para. 7.19) but the Trial would not subsidise pay-tv subscriptions.

Several householders told the Trial Team that they were considering stopping their Sky subscriptions when multi-channel DTT became available on the Ferryside transmitter. In some instances this was because Sky had previously been the only way of accessing Channel 4, Five or S4C Digital.

The standard advice offered in these circumstances was to point out the considerable difference between the wide choice offered by a Sky subscription service and the more restricted DTT offer - especially from a small relay such as Ferryside. People were advised to try out the DTT service before taking any view as to whether it offered a satisfactory alternative to a Sky subscription for their particular circumstances.

It was not an objective of the Trial to measure take-up (or otherwise) of digital pay-tv, and no information was collected on this.

BBC TWO Wales and BBC2W

- 4.7 In Wales, analogue BBC TWO is replaced by BBC TWO Wales. This has a different on-screen identity, and there is some time-shifting of content and the occasional opt-out (e.g. for key regional sports and events) but BBC TWO Wales is otherwise identical to the UK service.

However, on digital services in Wales, BBC TWO Wales is replaced by BBC 2W. This service is unique to Wales, offering regional programmes (in English) for 2 hours of peak-time viewing, 5 nights per week. As a result some UK network programmes are unavailable on a regular basis.

Some of the programmes not broadcast on BBC 2W have a loyal following (e.g. Chelsea Flower Show coverage). This is not an issue if viewers can also view the analogue version of BBC TWO Wales, but it is a problem if analogue has been switched off. The Trial highlighted the need to focus on this.

It was clear from the initial consultation with the Trial communities in May 2004 that reception of BBC 2W without BBC TWO Wales would be a problem. A vocal minority were unwilling to lose network programmes from the BBC TWO Wales analogue service. The issue was highlighted in the letters column of the local paper on more than one occasion.

The provision and scheduling of various versions of BBC TWO is a matter solely for the BBC. For the Trial the key concern was that loss of some BBC TWO network programmes should not impede the adoption of digital switchover at Ferryside. The point is also relevant to digital switchover in Wales as a whole.

Technical and/or scheduling solutions may resolve the conflicting interests of viewers of BBC TWO Wales and BBC 2W - this is being actively considered by the BBC.

In the meantime the solution in relation to the Trial was to leave the analogue BBC TWO Wales service in place for the time being so that Ferryside viewers could receive the same core PSB services as other digital viewers in Wales. In the event this proved very useful as the continuing availability of one analogue service at Ferryside confirmed that the television set was working, and allowed comparison of picture quality at the new higher transmission powers.

Main and Relay Transmitters

- 4.8 Trial households welcomed the significant increase in choice of services, but some had noted that their friends and family in other areas received more 'free' DTT channels than were available to them from the Ferryside relay.

We had made clear from the start that Trial households would not receive the full digital terrestrial package from a relay, but this did create a feeling of 'deprivation' amongst a few. Indeed, one of the very few households to 'vote' against digital switchover at Ferryside did so in order to protest that the full range of digital terrestrial services was not available.

Most homes in the Trial area cannot achieve acceptable DTT reception from the main transmitters at Preseli and Carmel, but several homes in the Trial area have more than one aerial feeding the same set. Trial households who tried to use their DTT equipment on an aerial tuned to a main transmitter in order to pick up the full range of digital terrestrial channels would experience the usual symptoms of weak signals (such as picture blocking, freezing, audio break-up). For the Trial we needed to identify complaints of poor reception and defective equipment that related to reception from transmitters other than Ferryside.

For UK switchover it would be helpful to distinguish clearly between the 'PSB' services, which will be universally available, and the full range of digital terrestrial services, which will not. There will be situations where, if DTT is to work effectively, viewers will need to point their aerials towards the transmitter that gives the best signal, even if it does not provide the widest choice of services.

5. Coverage and Transmission

Analogue and DTT Coverage

- 5.1 All coverage survey work was carried out for the Trial by a team of engineers from BBC Research and Development at Kingswood Warren. The work undertaken by the BBC team, and their practical support and help, were key contributions to the Trial.

In relation to coverage there were five key tasks, as detailed below:

- (i) When the Ferryside site had been selected the initial task was to define the analogue coverage area served by the Trial site based on projected coverage data held by the BBC.

This exercise would not be definitive - mapping actual coverage would need a far more detailed 'on the ground' study. However, it allowed the Trial team to identify the limits of the Trial area and (by using a postcode database) to list the properties likely to be affected. This exercise confirmed that the likely number of Trial homes was of the order of 450 - 500 as desired.

The initial coverage prediction proved to be mostly accurate, and was a useful tool for identifying Trial homes.

A copy of this map is in Appendix 1 (Map 1).

- (ii) During the Trial 'recruitment' period it was most helpful that the BBC engineers were able to show whether individual properties should be included in the Trial, based on analogue signal strength from the main and relay transmitters. At the edges of Ferryside transmitter coverage there were instances where householders wished to participate in the Trial, but this would be inappropriate if a stronger signal was available to them from a main transmitter.

The engineers were also able to identify a small number of properties where a sufficiently robust DTT signal would probably be unavailable, so that a digital satellite option might be more appropriate. These householders were advised to take no action until DTT had been switched on, when the actual signal strength could be measured.

- (iii) The next key stage was to confirm actual analogue coverage and DTT coverage during the simulcast period by undertaking a detailed survey on the ground. The results of this work are in Appendix 1 Map 2 (analogue coverage) and Appendix 1 Map 3 (DTT simulcast coverage).

This exercise showed that DTT coverage at Ferryside was slightly better than the analogue coverage with standard aerial installations, so that no households should suffer loss of service.

- (iv) The fourth task was to assess whether there was interference from the Ferryside transmitter to analogue services from the Kilvey Hill transmitter used by 160 homes in Tenby. This possibility was identified in the TPG Report for Ferryside (document 2403, May 2004). The Trial budget included a contingency for a re-tuning exercise in Tenby if

required, although any such interference would cease as soon as simulcast ended at Ferryside and the digital services could be moved to their permanent frequencies.

In the event, the BBC engineers reported that slight interference at Tenby was registering on their professional receiving equipment. Given this, it was decided to base any remedial action on complaints received. No complaints were made to local broadcasters nor transmission contractors. This slight interference ceased on 30 March.

- (v) Finally, a further brief measurement survey was undertaken to verify Ferryside DTT coverage after switchover, when digital transmission powers had been increased.

- 5.2 The key requirement was that DTT coverage for the 4 multiplexes transmitted from Ferryside should replicate or improve on analogue coverage from the same site. This was successfully achieved, as evidenced by the analogue and digital coverage maps (Appendix 1) and the absence of complaints from Trial households.

There was no recorded loss of or reduction in television coverage when analogue services were switched off at Ferryside and replaced with digital services.

Site Works and Installation

- 5.3 The Ferryside transmitter site is owned and managed by Crown Castle (UK) Ltd. ntl has access under a site-sharing agreement.

The 'transmitter mast' at Ferryside is a simple telegraph pole with separate receive and transmit aerials. This is typical of relay sites at this level of coverage. The 'nerve centre' of the transmitter site is contained in a fibreglass cabin at the foot of the pole.

Both contractors are very experienced, and no significant difficulties or delays were expected. Nevertheless, Ferryside was the first small relay in the UK to be converted to DTT, and it was inevitable that there would be some logistical issues that would not apply at the bigger sites.

Crown as the site owner was responsible for all site preparation works, including securing the necessary planning permission for a much larger cabin to accommodate the additional equipment for simulcasting and digital transmission. Preparation work was not entirely straightforward, but issues such as difficult access and limited space on a very small site were all eventually resolved.

Following approval of broadcaster commercial agreements, orders were placed for transmission equipment (which is built to order, not purchased from stock). Site works, installation and commissioning of the digital transmitters were all completed successfully and on time. Digital signals were switched on at Ferryside on 29 November 2004 as contracted, in readiness for the start of the Trial on 1 December.

Frequencies, Services and Transmitter Powers

- 5.4 Ferryside as a small relay site is unusual in that 'spare' frequencies are available which can carry additional services. This is because of its geographical location, and the absence of international frequency clearance issues.

There were sufficient frequencies available at Ferryside to simulcast the existing four analogue services and up to six DTT multiplexes. Thus this small relay site could accommodate the full range of digital terrestrial services if necessary. In the event, Multiplexes C and D (Crown) were not made available for the Trial, but the number of 'spare' frequencies made it possible to simulcast the analogue BBC TWO Wales service after Switchover in order to address the 'BBC 2W issue' (see Para. 4.7).

- 5.5 The table below sets out the details of available frequencies, services carried, and transmitter powers at Ferryside, pre and post Switchover, which received TPG approval on 17 June 2004 (TPG document 2403, dated May 2004).

Ch.No	Simulcast		Switchover	
	Service	Power	Service	Power
21	(A) BBC ONE Wales	23W	(D) BBC Mux 1	5W
23	(D) BBC Mux B	1W	Spare	
24	(A) ITV Wales	23W	(D) Mux A SDN	5W
26	(D) BBC Mux 1	1W	Spare	
27	(A) BBC TWO Wales	23W	(D) BBC Mux B	5W
29	Spare		Spare	
30	(D) Mux ITV/C4	5W	(D) Mux ITV/C4	5W
31	(A) S4C		(A) BBC TWO Wales	23W
33	Spare	23W	Spare	
34	(D) Mux A SDN	5W	Spare	

Note : The use of Ch31 for analogue BBC2 Wales was not approved by TPG 2403. This was approved subsequently by the agreement of an addendum to TPG 1517 dated March 2005

- 5.6 It is clear from the above table that DTT transmitters use less electricity than analogue terrestrial, but the digital coverage achieved is equivalent to, or better than, analogue (see Coverage Maps in Appendix 1) and the digital systems carry 6-8 times as many services.

Monitoring

- 5.7 Large transmitter sites are equipped with remote monitoring equipment that allows the transmission contractors' monitoring centres to locate and remedy faults within minutes.

Remote monitoring is not normally installed at small analogue relays such as Ferryside. The contractors rely on nominated individuals locally to notify faults, and an engineer would attend to fix the problem within the contracted time (normally a few hours, but longer for very remote sites).

The possibility of periods of loss of service because of transmitter faults was noted in the Risk Register for the Trial, but it was decided that the Ferryside relay should not be given 'special treatment, and there would not be a requirement for remote monitoring equipment to be installed.

Transmission Issues

- 5.8 During the Trial we received many complaints of reception difficulties, picture break-up, 'freezing' and lack of availability of services. Some Trial households who experienced these problems had assumed that they were caused by transmitters 'bedding down' or being 'trialled'.

The reality was very different. Such issues were invariably caused by aerial or connectivity problems. The transmitters were fully operational from the start, and there were no instances of breakdown during the Trial.

- 5.9 Excluding the planned work on 'switchover night' we know of only one instance where transmitter work affected services in the Trial area.

ntl undertook resilience tests on the RBL (re-broadcast links) feeds from Preseli in February 2005. This was not part of the Trial activity but it did result in reduced signal quality at Ferryside in the early afternoon for one day (this was noticed and reported by two Trial households).

- 5.10 There was an unexpected problem with one type of DTT set top box that would not scan Multiplex 2 services from Ferryside. The software in the receiver associated the frequency with another service broadcast in a different transmission mode on a main transmitter in the same broadcast region and thus ignored it. The problem was resolved for individual Trial households with a manual scan of the receiver to the correct frequency. However, full resolution of this problem needed a software download (which regrettably had not been successfully achieved by the manufacturer before switchover at Ferryside). This problem is discussed in greater detail in Section 7 (Receivers).

This issue was initially reported as a transmission fault. After careful investigation it became clear that it was a receiver issue, and that the transmission infrastructure was not at fault.

- 5.11 These issues illustrate the integrated nature of the 'end to end' process for transmission / reception of television signals, and drew attention to the range of possible reasons for failure at the consumer end of the chain.

Switchover

5.12 The model adopted for Ferryside was as follows:

- (i) Digital services were simulcast alongside analogue for 3 months. During this period everyone in the Trial area had the opportunity to acquire and install their digital equipment and to learn how to use it.
- (ii) Captions were broadcast on the analogue services 2 weeks before switchover to give due warning of imminent change.
- (iii) Frequencies used by the analogue services were allocated to digital services at switchover. All services were switched over in a single overnight exercise.
- (iv) Digital transmission powers were increased at switchover (except Multiplex 2, which was already at full power).

The consumer aspects of this exercise, and the need for re-tuning receivers, are discussed elsewhere in this Report (Section 8).

5.13 The technical work of switchover was implemented overnight / early morning on Tuesday 29th - Wednesday 30th March.

Analogue services from Ferryside were switched off, one by one, shortly after midnight and no services were transmitted during the early hours of Wednesday.

By 4.30 am Crown / ntl confirmed that all digital services had been fully restored on their new frequencies, and that BBC TWO Wales had been restored on its new analogue frequency.

5.14 There are no issues to report in respect of the technical / transmission aspects of digital switchover at Ferryside.

Conclusion

5.15 From the perspective of the transmission contractors Crown and ntl the Trial must be regarded as an unqualified success.

Digital transmitters were installed and brought into operation on time and worked without fault throughout the Trial period. The Switchover process was completed as planned. Analogue services were switched off at Ferryside, and the digital services and BBC TWO Wales re-introduced on their new frequencies without incident.

Coverage from the digital transmitters matched (and slightly improved upon) analogue coverage.

6. Aerials and Connectivity

Reception Problems

- 6.1 Most homes close to the transmitter site enjoyed good analogue pictures and good results from their DTT receivers, even when using set top portable aerials.

However, others experienced problems of lost or frozen pictures or mosaic 'blocking', or audio 'cracking'. Some such problems occurred close to the edge of predicted transmitter coverage. This could usually be demonstrated to the householder by using a signal meter displaying a simple percentage result for signal levels and carrier to noise ratio, and linked to a "pass" or "fail" result - easily understood by everyone. On the strength of such evidence most Trial households addressed their picture issues satisfactorily by adding a signal amplifier or buying a new aerial.

Ipsos report that 23% of Trial homes installed a new aerial in order to receive good reception from Ferryside, and a further 22% carried out remedial work (much of it minor) on their existing aerial installations that were not functioning properly. All such aerial work was undertaken at the Trial householder's own expense.

Aerial Problems

- 6.2 Poor pictures reported by Trial householders living close to the transmitter site, or well within coverage with good line of sight to the transmitter, were most likely to be caused by aerial-related problems.

Such issues may have been hidden previously because analogue reception is more forgiving, and could have provided "acceptable" results albeit with snow, ghosting or other interference. However, digital receivers would be affected by picture blocking or would deliver no pictures at all.

Wrong Aerial Type

- 6.3 Some homes had an aerial of the wrong group/band. Investigations revealed that they had either purchased an aerial based on price (typically from DIY retailers) and /or had brought it from elsewhere in the UK. (e.g. for a holiday home in the Trial area).

Wrong polarisation

- 6.4 More commonly, aerials were incorrectly polarised with the elements laid horizontally rather than vertically as required for Ferryside. A Trial newsletter had highlighted the need for a correctly-polarised Ferryside aerial. Even so, some tried to receive services by simply rotating their existing Carmel or Preseli aerial, and then suffered picture break-up.

Wrong direction

- 6.5 This was a particular issue in Llansteffan, where the Carmel transmitter lies in roughly the same direction as the Ferryside site.

- Prompted by the offer of subsidised equipment, some householders had indicated that they were receiving analogue TV signals from Ferryside but were actually still receiving from Carmel or Preseli using a horizontally polarised aerial.
- Others (particularly with loft aerials) were unsure of their aerial type or simply assumed that they pointed to Ferryside.
- A few homes had more than one aerial, one pointing to Ferryside and another to a main transmitter.

In all such cases, reception from the wrong transmitter resulted in lost or ‘frozen’ pictures or ‘blocking’. Investigation invariably revealed that the channels affected included Multiplex C or D, neither of which are broadcast from Ferryside, and thus are designated as being “out of coverage” in the Trial area.

- 6.6 In Ferryside, a home to the side of the transmitter suffered picture freezing because it was receiving fringe signals via a loft aerial. A full size aerial was needed, in a different location. The Ferryside transmissions are directional, and in this instance they were aimed away from the property.

Problems masked by Signal Strength

- 6.7 The strength of the Ferryside signal received by some homes hid some seriously flawed aerial installations. A Trial participant in Ferryside reported frequent picture break-up on his digital receiver. He was found to be using a standard set top aerial, (incorrectly) horizontally polarised, and facing away from the Ferryside transmitter which was visible up the hill. As a result signals were coming into the back of his aerial.

Old Installations

- 6.8 Some homes had continued to view (allegedly) “good” analogue pictures with damaged roof aerials. Some were hanging off the chimney, facing skyward or pointing towards the ground. Others had damaged or distorted elements that in a few cases were touching the reflector at the back of the aerial. At best, digital signals would be received periodically and would suffer regular freezing or break-up.

Back of the aerial reception

- 6.9 There were examples of homes high above Ferryside village with aerials aligned to the Ferryside mast but receiving weak signals from Preseli on the back of their aerial - Multiplex C or D services not transmitted from Ferryside. Reception of these services was poor, with freezing or loss of pictures, but the Trial participant had not understood or accepted that these services were outside the Trial, and therefore complained of poor reception.

Connectivity Problems

Co-ax Cables and Plugs

- 6.10 The majority of reception problems came from poor co-ax cables between the aerial and the TV equipment. Often the cables were old or had suffered water ingress. Some had poor quality plug connections.

This issue is likely to be a common problem in homes across the UK and needs to be addressed when preparing consumer information for switchover.



- 6.11 The picture above shows a co-ax cable from a Trial home. One co-ax plug had two problems - the braid clamp had been fastened so tight as to cut into the cable, and the central core spigot was missing, allowing the central core cable to touch the plug casing. The other plug had part of its outer casing missing. Any one of these elements could have generated the interference and picture blocking experienced by the Trial household



- 6.12 Examples shown above are all taken from Trial homes:
- Top left: (brown cable) the outer braid was exposed with the clamp well below the plug casing.
- Top right: The plug had been taped up to prevent further water ingress.
- Bottom left: had a braid clamp - it also had outer braid strands touching the inner core
- Bottom right: (end of brown cable) This plug suffered shorting problems. As there is no braid clamp, the braid was wrapped all round the inner core.

- 6.13 Such issues were found repeatedly when visiting Trial households complaining of poor reception and/or poor picture quality. Simply replacing the leads or rewiring a co-ax cable plug typically resolved such problems fully.
- 6.14 Over a period of years, Trial households had replaced their TV or VCR, or added new equipment (e.g. a DVD player) and some even changed their roof aerial. However, invariably they had retained the same co-ax cable or migrated it to other rooms.

DIY Installations

- 6.15 Some Trial households had elected to make new cables themselves and fitted the co-ax plugs incorrectly. They had not recognised the significance of strands from the outer braid cable touching the centre core. This leads to interference and lost signals.

Problems masked by Signal Strength

- 6.16 In Llansteffan, a home located directly across the water from the transmitter had several TVs fed by a single aerial and distribution system. Pictures were particularly poor in the kitchen, where there was a broken wall-mounted co-ax outlet. Removing the aerial feed cable to this set radically improved the picture. Signals coming into the house were very strong but they were lost in the distribution system because of a faulty distribution amp.

Other Causes of Interference

- 6.17 Serious interference problems in a Trial home were eventually traced to the digital telephone (DECT) base station, co-located with the TV distribution amplifier in the loft and sharing its power supply.

Summary

- 6.18 A key lesson from the Trial is that the switch from analogue to digital terrestrial reception exposes the inadequacies of the aerial and connectivity infrastructure in many homes.

This is an issue for UK switchover. Consumer awareness of the importance of good signal connectivity could avoid many complaints and difficulties, especially as the necessary remedial action is often simple and inexpensive.

7. Digital Receivers and Recording

Provision of Digital Equipment

- 7.1 The reasoning behind subsidising households' acquisition of digital receivers is set out in paras 2.20-2.23.

The use of householders' security numbers as receiver "credits" is described in para 2.41. Proof of acquisition, presented to the Trial Director, was required to trigger the redemption of credits by the DTI.

- 7.2 An early decision was made to base the changeover on conversion of existing domestic equipment rather than its replacement, on the grounds of cost and likely disruption to Trial households. This was consistent with views expressed by the community during the May 2004 consultation, where it became clear that they would not welcome having to replace existing TV sets.

- 7.3 Most consumers in the Trial area own at least one VCR, and Trial households had confirmed that they wished to continue to record one service whilst viewing a different service. This can be achieved easily with an ordinary analogue VCR, because it has a separate tuner from the TV, but not with a single-tuner set-top adaptor in the absence of an analogue signal.

For a TV/VCR cluster the issue was resolved by providing a twin-tuner digital PVR, which enables digital recording on a hard disc, which could be copied on to the VCR for archiving purposes if required.

If digital satellite is connected, this already provides the principal signal, and a single set top box is sufficient to provide a second signal to the VCR.

Selection of Product for the Trial

- 7.4 The limited range of suitable equipment on the market and the dearth of available consumer information was addressed by newsletters to the householders, and by selecting a limited range of DTT models meeting criteria set by the DTI (and which had been checked by an independent test house). This range of selected models included four DTT adaptors for use with televisions alone, a fifth DTT adaptor with audio-description capability, a single tuner PVR, and a twin tuner PVR for use with a TV/VCR cluster. The credits given to households covered the full cost of providing such selected equipment. The redemption value of the credits for other equipment chosen by the householder was based on the average cost of acquiring the equivalent piece of selected equipment - i.e. where more expensive equipment was chosen, the householder paid the difference.

- 7.5 The limited range of DTT models was selected during Summer 2004. Ben Evans, the contracted service provider, was required to secure an adequate supply of this equipment in readiness for 'switch-on' at the end of November, but was given no guarantee on sales as it had been made clear to householders that they had free choice of supplier and equipment model in redeeming their credits.

7.6 The following criteria were applied in selecting the limited range of DTT models:

- equipment had to be commercially available (no prototypes or test models)
- there should be no requirement for viewing cards or subscription in order to receive core PSB Services
- a high level of connectivity and flexibility for the future (e.g. at least two SCART connections). This implied that higher specified models would be needed, not lowest price products
- models should come close to the 'baseline receiver specification' agreed between TDN and DTG
- models must support 'RF loop-through' to allow feed through of analogue signals and/or services from other household equipment (e.g. DVD players)
- a SCART cable must be supplied
- support for MHEG functionality (e.g. digital text)
- 2k/8k compliant (future-proofing)
- 7 Day EPG using Open Standards
- availability of a manufacturer helpline that Trial households could contact direct
- minimum 12 months' warranty.

7.7 Many of the TVs used by Trial households were old, with no SCART socket. Also, many TVs with SCART sockets had no 'spare' socket for a digital set top box because they were already used for other equipment (e.g. DVD players, games consoles). Thus it was essential to provide some models with an RF modulator that could connect to the TV and/or VCR through conventional RF cables - this feature is not available on many digital receivers.

7.8 Certain models were excluded because of reliance on proprietary EPG data broadcast on a commercial multiplex from the main UK transmitters only, and thus unavailable from a relay such as Ferryside.

7.9 All models were type-tested by DTG Testing Ltd against a schedule of technical and usability criteria.

7.10 A primary "usability" factor influencing product selection was the availability of a remote control that could control the basic features of many TVs. This was intended to address the confusion caused by owners having to operate multiple handsets (a particular issue for the older generation).





7.11 It was a requirement that some models should be suitable for the elderly and the visually and/or aurally-impaired. Easy access to subtitles would be required, via a dedicated remote control button. One model was selected specifically because of its ability to offer audio-description.

- 7.12 Only models from manufacturers with access to DTG Engineering Channel were selected, as they could be sure of delivering software updates.
- 7.13 Unfortunately no suitable digital receiver commercially available by August 2004, complied with power consumption levels recommended by DEFRA and the EU.
- 7.14 For switchover at Ferryside it would have helped enormously if there were receivers capable of auto-rescanning. The current generation of set top boxes does not offer this functionality.

Manual re-scanning was successfully implemented for the Trial. Knowing the type of equipment in each Trial home provided a key advantage. It will be a much more difficult exercise on a larger scale, and is likely to be an important issue for regional switchovers as there are large numbers of 'legacy boxes' already in use.

For regional switchovers, 2 or 3 re-scans are likely to be needed, and it is particularly important that the elderly and other vulnerable consumers are given appropriate information and support.

- 7.15 The final selection of digital equipment for the Trial is set out in the chart below:

DTI Product Selection				
From Analogue	To Digital		Selected Models	
Aerial upgrade extra – standard install around £100				
For each TV/VCR Cluster or combi with twin tuners and without Skydigital	*Twin DTT PVR	1	Pace Twin	
*If preferred, triallist can select a single tuner alternative, capable of recording and viewing same channel only	Single tuner PVR	2	Humax PVR 8000 T	
Secondary TV or single tuner combi -e.g. kitchen, bedroom Or TV & VCR with Skydigital	DTT STB/Adaptor Sony and Philips have to connect by SCART	3	Humax F2-FOX T	
		4	Pioneer DBR-TF100GB	
		5	Sony VTX-D800U	
		6	Philips DTR 1500	
Homes with visually impaired person/s can elect to take this model offering audio description	DTT Adaptor with on board AD capability	7	Netgem iPlayer AD	

- 7.16 On average, Trial homes included 2.75 TV sets and 1.5 VCRs.

The average unit conversion cost per tuner for the Trial was £80, which reflects the high specification for equipment and prices current in mid 2004.

Subsequently set top box costs have come down, and the average cost for the Trial should be regarded as a maximum.

Procurement and Local Retailer Support

- 7.17 Following a competitive tendering process the DTI contracted with Ben Evans & Son Ltd to:

- have available adequate supplies of the DTI-selected equipment
- provide advice and support for Trial households during the Trial period
- provide the Trial Helpline.

Ben Evans is a long-established local independent retailer, well known and respected in the Trial area. The company employs an experienced team of service engineers, including Welsh speakers, and through its online business www.be-direct.co.uk maintains its own call centre operation.

- 7.18 Trial households were advised that they were entitled to purchase their equipment from any retailer of their choice, on the basis that:
- they would be reimbursed up to the cost of providing Trial equipment
 - their own supplier would be responsible for maintaining the equipment.

In the event, almost all Trial households were content to accept the digital equipment offered through the scheme set up by the Trial.

Additional Options

- 7.19 Trial households were also advised that if they wished to change to an iDTV or add services (e.g. Sky pay-tv or the 'freesat from Sky' offer, or Top-Up TV) they were entitled to do so and would be reimbursed by the Trial up to the cost of supplying the relevant Trial equipment.

In the event, very few Trial households did so.

Identifying Household Requirements

- 7.20 Many potential Trial households had seen some digital equipment working during the 'Open Days' held during the consultation period in May 2004.
- 7.21 To provide for an appropriate number of digital receivers we needed to know how many items of television and recording equipment were installed and working in each home and receiving signals from the Ferryside transmitter. Every item of analogue equipment needed to be converted, but proper care was needed to ensure that digital equipment collected by Trial households was actually needed by them and appropriate for their requirements.
- 7.22 From the Trial households' perspective they needed to select their digital equipment with a reasonable understanding of what would work best with the equipment already in their home, and therefore they needed impartial advice from the 'retailer' (in this instance, Ben Evans, supported by the Trial Team).
- 7.23 A comprehensive questionnaire was prepared, covering in particular:
- the type number and direction of aerials
 - the number, type, location and approximate age of TV sets
 - whether 'combi' units were single or twin tuner

- the number and type and approximate age of VCRs
- any other equipment connected to the TV (e.g. DVD, games console)
- the incidence and nature of any disabilities
- the number of people in the household, and approximate ages.

Information and Distribution of Equipment

7.24 In order to inform and assist Trial households, three separate series of events were held in both villages:

(i) Public Information Days - September / October 2004

These meetings allowed Trial households to view the full range of DTI selected models, and understand alternative options. They were encouraged to select the models they wanted so that Ben Evans could order the equipment. The venues allowed each Trial participant to be individually greeted and interviewed by Trial Team representatives to confirm their existing TV equipment and any accessibility issues. They were then passed to other Trial Team colleagues and Ben Evans, who went through the digital options and demonstrated the available models and services.

We were careful to ensure that demonstration models were tuned to new channels that Trial households currently did not have, e.g. BBC News 24, ITV2.

Trial households were advised that they would be required to collect and install their selected equipment at the end of November. The Trial Team identified those who would need help with installation.

(ii) Distribution and Information Days - November 2004

The final pre-launch opportunity for Trial households to register and view products was at the distribution sessions between 23 - 26 November.

These sessions were primarily designed for handing over digital equipment to Trial households prior to Ferryside digital transmissions going live on 29 November. Consequently space was given to storing and distributing equipment rather than demonstrating products.

As would be expected, large queues formed at both the Sticks Hotel (Llansteffan) and the Rugby Club (Ferryside) venues with Trial households keen to collect their equipment. Encouragingly this included many of the older residents who were eager to get new services.

Each Trial participant signed a form confirming the Trial requirements and listing the digital equipment to be issued. After the form was ratified by the Trial Team, Ben Evans handed over the equipment and a Ben Evans receipt and guarantee, consistent with retail practice.

(iii) Fieldwork and 'Clinics' - December 2004

In the week commencing 29 November and on 8/9 December, the Trial Team was on hand to ensure that Trial households could receive the new Ferryside digital services and to address any concerns. Ben Evans focused on home visits to check aerials and fit equipment for vulnerable residents.

Trial households were encouraged to use their digital equipment instead of analogue for viewing and recording, to understand the implications of losing analogue permanently.

- 7.25 With the exception of some elderly and physically impaired individuals (who were offered installation assistance) Trial households were requested to collect their Trial equipment at the November meetings, and take it home to try and connect to their existing equipment themselves.

If they needed help, they were encouraged to call the Trial Helpline, through which Ben Evans would try and resolve issues over the phone or arrange for an engineer to call if necessary.

- 7.26 A range of individual A4 double-sided installation guide sheets was offered to Trial households when collecting their equipment. These provided guidance for connecting a wide range of different configurations of domestic equipment to supplement the generic diagrams in individual instruction manuals. Trial households were encouraged to use the normal manual as their primary information source and the guidance sheet as a secondary source.

During discussions with residents it became clear that there are many different configurations of domestic equipment (the Trial identified more than 50) and that equipment is often configured as the owner sees fit, not in the manner in which an experienced engineer might assume or recommend.

- 7.27 An executive from Intellect attended many of the sessions from September to December to ensure that manufacturers' equipment was fairly represented, and to learn of any performance issues or Trial participant problems at first hand in order to report back to the relevant manufacturer individually.

After the Trial

- 7.28 Digital equipment provided for the Trial will be maintained by Ben Evans during the relevant guarantee period and thereafter subject to payment of reasonable charges.
- 7.29 Anyone moving into the Trial area after the Trial will have to provide their own receiving equipment for DTT (or D-Sat, if preferred) but they will have the significant benefit of a much broader choice of free digital television and radio services compared with the 4 analogue television services previously available.

8. Consumer and User Issues

Attitudes to the Trial

- 8.1 It was clear from the responses to the May 2004 Consultation that the residents of Ferryside and Llansteffan were delighted to be offered digital television in advance of the rest of the UK. The high response rate (85%) and the 100% 'Yes' vote speaks for itself.

By that stage these communities were very positive indeed about the Trial. The lack of Channel 4 (UK) and Five was a continuing issue for many. They saw the listings in their daily papers next to BBC/ITV/S4C, but couldn't receive the services without a Sky subscription - which many were unwilling to pay.

Then they were offered multi-channel digital television and subsidised equipment of their choice, including fully subsidised receivers.

One of the key questions is whether the reality of digital television fulfilled the expectations and hopes of potential Trial households in May 2004. There is plenty of evidence that, with a few minor caveats, it did so.

The Trial households voted overwhelmingly to keep digital television in place of analogue television.

Ipsos researchers undertaking quantitative and qualitative work on behalf of DCMS reported that the community was happy, and generally very pleased : *"the quantitative data bear out many of the key findings from the qualitative report and reflect a positive attitude to participation in the Trial and to the benefits of digital television."*

As summed up by one older Trial participant: "Now that we've got it, we like it!".

- 8.2 A key factor was an increase in consumer confidence as the Trial progressed.

The older generation in particular were keen on the idea of digital television. They appreciated more services from 'trusted' brands. Even so, many were reluctant initially to try out new technology, and the 3 months simulcast period was a very important 'familiarisation' period.

Another older Trial participant stated "I've gone from being quite a reluctant digital viewer to having three TVs all digitally-enabled and a DVD. Now I'm totally twenty-first century!".

- 8.3 The remainder of this section describes the main consumer and user issues raised by Trial households or reported by the Trial Team, which are relevant to UK regional switchover.

In the Trial the majority of issues were resolved to the reasonable satisfaction of Trial households and should be seen in the context of an exercise that was a generally positive experience for everyone involved.

Services

BBC 2W

- 8.4 The attitude of Trial households to the replacement of BBC TWO Wales with BBC 2W on digital services in Wales has been documented elsewhere in this Report (para 4.7). It is one of the major consumer issues from the Trial, with a significant minority of Trial households displaying strong negative feelings, although it should also be noted that some other Trial households welcomed the BBC 2W service.

The Trial allowed the BBC TWO Wales service to remain for a limited time after switchover at Ferryside. Nevertheless, the question is still open pending switchover in Wales, and will be considered further by the BBC.

Services from Main Transmitters in an area served by a Relay

- 8.5 This issue also has been noted elsewhere in this Report (para 4.8).

Relay transmitters 'fill gaps' in coverage from main transmitters. In the analogue domain the only difference between the services available from main sites and relays is that Five can be received from some (but not all) main sites. In the digital terrestrial domain the position is radically different. Most relays will carry half of the 'full' range of services available from main sites.

Digital receivers will usually scan into all available signals, regardless of source. Viewers to a relay often have another aerial enabling them to receive signals from a main transmitter. Unfortunately this can result in the digital receiver displaying many services that suffer loss of picture, 'mosaic blocking' etc. Furthermore, because television signals can be affected by factors such as weather conditions, such problems may be intermittent.

In Ferryside and Llansteffan this was relatively common. Some Trial households did not understand the difference between the signal sources but registered complaints of picture break-up and poor signals. The nature of the problem was obvious as soon as service names were mentioned.

Clear guidance was given to Trial householders as to what services were available, but the point still came up until custom and practice led the community to an understanding of what worked and what didn't.

Digital Text

- 8.6 Initial concerns that Trial households would object to the loss of analogue Ceefax and Teletext services proved largely unfounded. The re-introduction of three digit page numbers on the digital alternatives helped in this regard.

Some households commented that digital teletext was slower and did not carry as much information as analogue. It turned out that they were accessing only the Teletext service on Channel 9 and had not realised that other digital text services existed as separate channels on DTT.

These alternative services were welcomed, not least by those interested in horse racing and the financial pages.

Trial households who complained that there was far less information on the digital text services were reminded that they needed to scroll down to see all of the information.

Demonstrating Equipment and Building Consumer Confidence

- 8.7 The Trial Team found an initial reluctance about moving to digital television amongst a minority of residents. This was linked to a lack of confidence in their ability to select, install and operate the products, and lack of previous experience of digital television. The issue was compounded by perceptions of technical difficulties, of inferior channels/services, and of digital television as pay-tv. Typically such perceptions were based on conversations with other people.

- 8.8 The Trial addressed this issue up-front by demonstrating the digital equipment and the digital television and radio services that would be available from Ferryside.

Residents were able to see receivers in operation right from the initial consultation in May 2004, and at subsequent information sessions and 'Clinics'. They could see at first hand the various attributes of selected products, especially the different styles of EPG and the different designs of remote control handsets - key elements of digital TV usage. They could also appreciate the various free digital services on offer and the picture and sound quality offered by digital television.

- 8.9 Through seeing different items of digital equipment working side by side, and from conversations with Trial Team members, residents were better able to make informed decisions on the right product for them. With a better understanding of the issues they gained in confidence, and were keen to try the new services.
- 8.10 Confidence was maintained through newsletter updates on progress and information. The Trial helpline was a valuable resource to address specific issues but the older generation in particular preferred to visit the information sessions and clinics and discuss matters face to face. It was a great help to be able to answer residents' questions by showing them working equipment.
- 8.11 Offering people the opportunity to see the equipment working was a key factor in enabling residents to build their confidence and accept the concept of digital television.

Installation

- 8.12 In total, 81% of Trial households installed their digital equipment either themselves or with help from a friend or family member.

19% required some installation help from the Trial Team, including 35% of those aged 65+, and 40% of those with disabilities.

The level of confidence in attempting the installation fell rapidly with increased age. Just 4% of those aged 18-54 were 'not at all confident' they could cope, but this rose to 51% of those aged 75+.

8.13 Examples of installation issues identified by the Trial Team were:

- difficulty in connecting a set top box to a TV with no SCART. This was an issue with two leading brands in the DTI selection of set top boxes, both of which required a SCART connection. The Trial Team pointed this out to householders in advance but some still selected the 'wrong' type of receiver because they liked the design
- failure to maximise picture quality by using an available RGB SCART socket. This can make a significant difference, especially to the clarity of digital text, but is 'too technical' for most consumers even if they read through all of the instructions
- the set top box recommended by the RNIB for audio-description needs to be connected to a telephone line to enable the initial tuning process
- Trial households' dissatisfaction with some instruction manuals, especially the use of small black and white images to represent on-screen displays
- some older Trial households found difficulty in opening the thick plastic wrapping around the batteries supplied with a particular receiver.

8.14 Connectivity issues are a sub-set of installation issues and are described in Section 6, paras 6.10 - 6.18.

User Issues

- 8.15 The importance of the **Remote Control** should not be under-estimated. It is the interface between the consumer and the TV equipment / digital receiver. It is used every day - many times a day.
- 8.16 A common complaint is multiplicity of remotes as the number of individual items of equipment grows. Although many Trial households had received set top boxes equipped with multi-brand remotes they had apparently not realised that it was possible to re-programme the STB remote to control the TV as well. Some tried this, and found the set-up process very difficult or impossible.
- 8.17 Many older people would have preferred a simple remote control with big buttons for the three basic functions (on/off, channel change, and volume control) although some appreciated digital text functionality as well.

Having regard to the selection of receivers offered by the Trial, it is interesting to note that across all users the model offering the largest remote with the biggest and best-spaced buttons (with words rather than symbols) was the most popular. The model with the smallest remote and least distinguishable keys was the least popular.

8.18 Examples of remote control issues identified by the Trial Team were:

- failure to point the remote control at the digital receiver (some controls are very directional, and many consumers naturally point them in the general direction of the TV set)
- older Trial households tended to hold handset buttons down too long, which caused problems with menus and incorrect channel selection
- some handset batteries ran down very quickly for reasons that were unclear
- on a PVR remote, confusion between the 'red button' and the recording button which was also (mostly) red.

8.19 Other examples of user issues identified by the Trial Team were:

- the need to select AV channels to access the digital box caused confusion where the elderly Trial participant was used to selecting just 4 analogue channel numbers
- the Trial participant always unplugged everything before going to bed, and the TV defaulted to Ch1 (analogue BBC1) when switched back on in the morning. This was easily resolved by re-tuning default Ch1 to the DTT box.

8.20 For some elderly residents, a simple small screen iDTV would have been a preferred solution as it would offer the closest replacement for their analogue equipment, allowing channels to be found by just switching it on and pressing the right channel button. Currently the market does not provide this.

Digital Recording

8.21 Digital recording via the PVR was one of the big success stories of the Trial.

Although PVR technology is still new and 'settling down', Trial households who might be frustrated at occasional technical glitches were still delighted with their PVR overall. From a consumer perspective it is a huge advance, and many Trial households were surprised at the ease of use compared to a VCR.

The picture quality of programmes recorded on the PVR was deemed to be particularly impressive compared to VHS.

A number of older Trial households mentioned that it was very helpful not to have to struggle to bend down to put a tape in the machine.

8.22 The Trial showed the importance of demonstrating a PVR, especially the ease of recording via the EPG. Most Trial households were completely unaware of the product concept, and were relatively disinterested - until they saw it working.

Power Consumption

- 8.23 Trial households tended to leave digital set top boxes switched on and powered up all the time. This was not raised during the Trial, but it does seem appropriate to inform the public of the value and cost savings (both environmentally and financially) of putting electrical equipment in stand-by mode overnight or when not in use.

Attitudes to Switchover

- 8.24 In early March the Ferryside and Llansteffan Trial households were asked to indicate whether they wished to keep the digital services or revert to analogue.

Responses were received from 86.6% of Trial households (a slightly higher response than the 85% who responded to the initial consultation in May 2004)

99.2% of respondents voted to switch off analogue and keep the digital services.

45 respondents indicated that they still had unresolved reception and user issues, but nevertheless voted to keep the digital services and switch off the analogue services. In the event, most of the reception issues were resolved by the increase in digital transmission powers when the analogue service was switched off.

The Trial Team investigated outstanding user issues, which were resolved so far as was reasonably practicable.

The final outcome was that 3 individuals were still opposed to switchover, for the following reasons:

- ownership of specialised reception equipment that could not be converted to receive digital signals using current technology. This was an entirely understandable objection, although the individual concerned did have both digital satellite and DTT connected to ordinary TV sets in his home
- dissatisfaction that the full range of services was not being transmitted from Ferryside
- no reason stated. The individual could not be contacted, but there was no record of any previous complaint.

Re-Scanning

- 8.25 By the morning of Wednesday 30 March the Ferryside analogue services had been switched off (except BBC TWO Wales) and all digital receivers needed to be re-tuned to the digital services on their new frequencies.

This exercise replicated part of the work of installing and setting-up the digital receiver, which the majority of Trial households had achieved without undue difficulty. Nevertheless there was concern that the re-scanning requirement might give rise to issues, especially amongst vulnerable residents.

The Trial Team took three steps to prepare Trial households for Switchover:

- (i) **Re-Scanning Helpsheets** (A4, colour) were created to lead Trial households through the process, as most Instruction Books do not deal adequately (or at all) with re-scanning. The Helpsheets were targeted to the equipment in each Trial home, and mailed out in advance of switchover. Examples are included in Appendix 3.
- (ii) **Re-Scanning Clinics** were held in both villages in the week prior to switchover, in order to advise on the necessary steps, and address any other concerns that Trial households might have. In the event, these were very sparsely attended, and no significant issues were raised.
- (iii) **The most vulnerable residents** were contacted in advance, and arrangements were made for Ben Evans' service engineers to undertake the re-scanning for them. It was important to make these arrangements in advance, to avoid unnecessary concerns on the morning of the 30th.

- 8.26 On the morning of 30th March the Trial helpline took a large number of calls, but there were no significant issues. The majority of Trial households re-scanned successfully with the aid of the Re-Scanning Helpsheets.

All vulnerable residents had their services fully restored before 5 pm that day.

What was perceived to be one of the most difficult stages of the Trial passed without incident.

There were no consumer issues to report.

- 8.27 In preparation for the UK regional switchover, broadcasters and manufacturers are working on a plan to enable as many digital receivers as possible to re-scan automatically. This would have resolved one of the key issues that needed to be addressed in relation to the Trial.

9. Vulnerable Residents

Definition

- 9.1 For the purposes of the Trial the 'vulnerable' members of the community were defined as follows:
- elderly (75 and over)
 - suffering from a serious illness
 - suffering from physical disability or mobility issues
 - vision-impaired.
- 9.2 Hearing-impairment alone did not inhibit the ability to collect and install digital equipment, but additional information and guidance was needed as to the availability and use of the subtitling facilities of the digital receiver. In many cases, the hearing-impaired were also elderly, and thus eligible for help in any event.
- 9.3 The Trial Team took steps to identify vulnerable residents in the first Response Forms issued during the May 2004 Consultation and subsequently at the 'Information' phase in September/October 2004.

Special help

- 9.4 Special help was offered to vulnerable residents at all stages of the Trial, as follows:
- home visits could be arranged, to supply information about the Trial
 - equipment could be delivered (instead of having to be collected)
 - an engineer could undertake a home visit to install the equipment
 - further home visits could be arranged as necessary to give advice and help on the use of the equipment, and
 - on the day of switchover an engineer could call to carry out the re-scan.
- 9.5 Many individuals took advantage of the offer of help in relation to installation and re-scanning of digital equipment.
- 9.6 Not all 'vulnerable' residents needed special help. What they needed most was guidance and reassurance.

The vast majority of the elderly and disabled Trial households attended Trial events and sessions, and were able to discuss their issues and concerns with the Trial Team and build up their self-confidence in using the equipment.

The question of self-confidence in using digital equipment came up several times in discussion with Trial households across various age groups, but this was particularly important for the elderly. They were often reluctant to use the digital equipment, but when they tried it, reported back that they were surprised at how easy it was.

There were examples of people of 90+ using a PVR for digital recording when they would not have attempted recording on their VCR.

- 9.7 One vision-impaired Trial participant accepted the offer of a different set-top box with audio-description capability, as recommended by the RNIB. Others were offered the same box but rejected it in favour of a 'normal' receiver.

Consumer Experience

- 9.8 The consumer experience of vulnerable residents was broadly similar to the experience of Trial households generally, as outlined in Section 8. However, the following issues were particularly relevant for the elderly:
- a generally positive attitude towards digital television because they tend to watch more television and appreciate the extra choice
 - difficulty in installing their own equipment
 - difficulty in re-scanning
 - lack of confidence - extra advice and re-assurance needed in using the equipment
 - remote control issues
 - use of subtitles because of hearing difficulties
 - difficulty in bending down meant that it was difficult to put a tape in a VCR - the PVR was preferred, and was simpler to use.
- 9.9 The Trial relied to a significant extent on the assistance offered to elderly and other vulnerable residents by family, friends, neighbours and others within the community. This included some of the elderly residents who often contacted the Trial Team for advice or assistance on behalf of other elderly residents.

Such a system of informal support worked well in the Trial communities. Very few people have no support at all, and the ability of the elderly to help each other was a significant and positive factor.

10. Communications

Background

- 10.1 A key Trial objective was *'to acquire practical experience of synchronising (transmitter) changes with communications to consumers and with the process of converting consumers' reception equipment, and to learn lessons about consumer communications in relation to Switchover'*.

Effective communications were central to implementing the Trial. This Report lists the communications aspects separately. In reality they were integrated into all Trial activity.

- 10.2 Across the UK people will have had 2 - 4 years to assimilate information about digital television before analogue is switched off. The Trial communities were given just 6 months (September 2004 - February 2005) to reach the stage where they were comfortable with the prospect of losing the analogue services.

Messages

- 10.3 Communications activity was required to:
- (i) inform the community generally about the purposes and progress of the Trial
 - (ii) provide advance information to 'head off' problems in relation to key consumer issues (e.g. the Re-Scanning Helpsheets)
 - (iii) provide information to help manage and resolve issues that did arise
 - (iv) generally to create and maintain a good relationship with the community and gain their trust
 - (v) manage and service media queries about the Trial.
- 10.4 For the initial Consultation in May 2004, messages were simple and positive, stressing the benefits of participating in the Trial.
- They could receive:
 - Channel 4 as well as S4C (a long term issue for many in Wales)
 - Five (perceived as a core channel because its listings are featured prominently in most newspapers)
 - a wide range of new services, including:
 - all of the new BBC services that they see promoted on BBC ONE and BBC TWO analogue
 - extra commercial multi-channel services such as ITV2
 - a number of radio services in an area of limited choice
 - The receiving equipment would be subsidised, with a selection of suitable receivers fully subsidised
 - Were it not for the Trial, multi-channel DTT would not come to the area for several years (Ferryside is a small relay)
 - And Ferryside and Llansteffan would be the first places in the UK to be 'switched over'.

- 10.5 The **Information Phase** of the Trial needed a different approach, with more complex messages to be relayed to Trial households, e.g.:
- eligibility for the Trial depended on being able to receive a signal from Ferryside (televisions tuned only to Preseli or Carmel were not eligible)
 - an easy method of identifying aerial type is to look at the elements - vertical (relay) or horizontal (main transmitter)
 - information on the different types of digital set top boxes available
 - information on digital recording, and the use of EPG information to record in advance.

A series of 'Information Days' were held in each village in order to explain these issues, and to demonstrate the digital equipment. In addition, the more complex information was confirmed in one or more newsletters.

- 10.6 The **Implementation Phase** moved Trial households up a further gear in terms of complexity of information:

- Trial households needed to be 'registered' for the Trial, and the legal terms and conditions for acquiring digital receivers needed to be explained
- a clear written explanation of the full range of options (iDTV / 'freesat from Sky' / Sky pay-TV / Top-Up TV) needed to be included in a newsletter
- more specific information was needed as to the suitability of receivers for particular types of usage (e.g. old TVs with no SCART sockets)
- many elderly people needed information and support to select the most suitable remote control, and its correct use
- the significance of poorly aligned aerials and defective cables was becoming clear, and Trial households needed to be aware that they were the source of many instances of picture break-up
- unexpectedly, a popular make of digital set top box would not auto-tune into ITV/C4 services, and Trial households needed to be told how to implement a 'manual fix', which most of them achieved successfully. (Subsequently a software download resolved the 'auto-tune' issue.)
- and finally, reassurance was needed that a solution would be found to the concerns expressed regarding the possible loss of BBC TWO Wales.

- 10.7 The initial **Switchover Phase** messages were less complex, namely a letter:

- thanking Trial households for participating in the Trial
- confirming that BBC TWO Wales would not be switched off with the other analogue services, and
- inviting them to complete a form with their views as to whether analogue or digital services should remain.

Following a vote in favour of switching off the analogue services (other than BBC TWO Wales) it was necessary to ask the broadcasters for:

- on-screen captions informing any remaining analogue viewers that their services from Ferryside would cease shortly, and that they should make arrangements to convert to digital services.

However, at switchover, digital services would be changing frequencies, and the current generation of digital receivers do not automatically 're-scan'. On the day of switchover all Trial households needed to re-scan their digital equipment and thus needed re-scanning instructions tailored to their specific equipment (because the process for each type of receiver is slightly different).

- 10.8 Paras 10.4 - 10.7 show that Trial households in Ferryside and Llansteffan faced a steep learning curve over a short period. Both communities generally coped well, and were enthusiastic about switchover.

Communicating with the Community

- 10.9 There was a range of messages to be delivered to Trial households. The challenge was to communicate complex information in language that was easily understood. It was also important that householders could contact us easily and ask for help when it was needed.

Public Meetings

- 10.10 We made an early decision not to hold traditional 'public meetings'. We felt that the Trial objectives would be achieved much more effectively on a 'one to one' basis. Many people might be unwilling to speak out in a public forum, and genuine concerns might therefore not have been raised.
- 10.11 At each stage of the Trial we held a series of information / demonstration sessions in each village, giving plenty of opportunity for individuals to raise issues, in groups or individually as they preferred.

Trial Helpline

- 10.12 A Trial helpline was operational from mid September 2004 until the end of June 2005. This was operated by Ben Evans, and doubled as a technical helpline and an information line for Trial households.
- 10.13 In addition to the Trial helpline, direct line mobile numbers for the Project Director, Product Manager and Communications Manager were given to the Trial households from an early stage. These were used relatively frequently by Trial households, but were never abused. The strategy of providing direct access to the Trial management worked well, and helped to create good relationships throughout the Trial period.

Newsletters

- 10.14 Newsletters, circulated to Trial households on an occasional basis, fulfilled three functions namely:
- to ensure that the more complex information was confirmed in writing
 - to keep Trial households abreast of the progress of the Trial
 - to advise them of the dates and locations at which the Trial Team would be in each village.

Use of the Welsh Language

- 10.15 The Welsh Language Act 1993 requires that anyone 'exercising functions of a public nature' in Wales must be able to provide services through the medium of Welsh. The 2001 Census reveals that half of the residents of Ferryside and Llansteffan can speak Welsh, so it was important that the Trial Team could communicate with householders in whichever language was preferred by the individual.

Within the Trial Team the Project Director and the Communications Manager are both fluent in Welsh. Welsh speakers were available within the Trial call centre. Welsh-speaking engineers were on hand to provide technical support to Welsh speakers in their homes.

The digital switchover logo was re-created in Welsh in time for the requirements of the Trial.

Communications to Trial households were produced in English and Welsh. Members of the Trial Team undertook most of the translation work, with the objective that a Trial participant wishing to communicate wholly in Welsh would be in the same position as a Trial participant communicating in English. That objective appears to have been achieved. No complaints were received regarding the availability, standard nor complexity of Trial communications in Welsh.

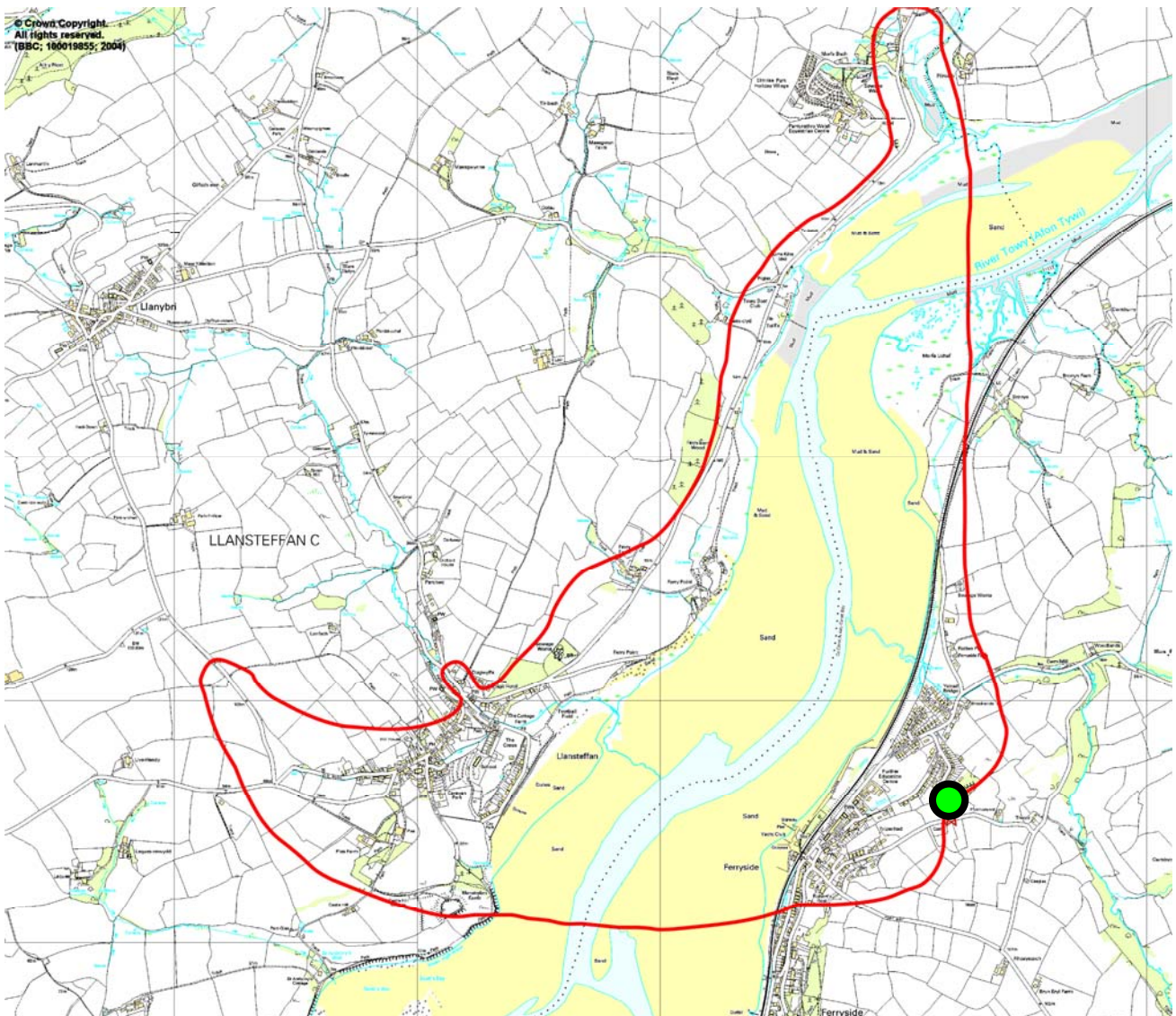
The positive effect of communicating with Trial households in their preferred language needs to be highlighted. The whole Trial Team was able to relate to the community and gain its trust more easily, especially in relation to some elderly members of the community who needed in-home support. A similar approach would be beneficial in any community where a substantial minority uses a language other than English.

APPENDIX 1 - MAP 1

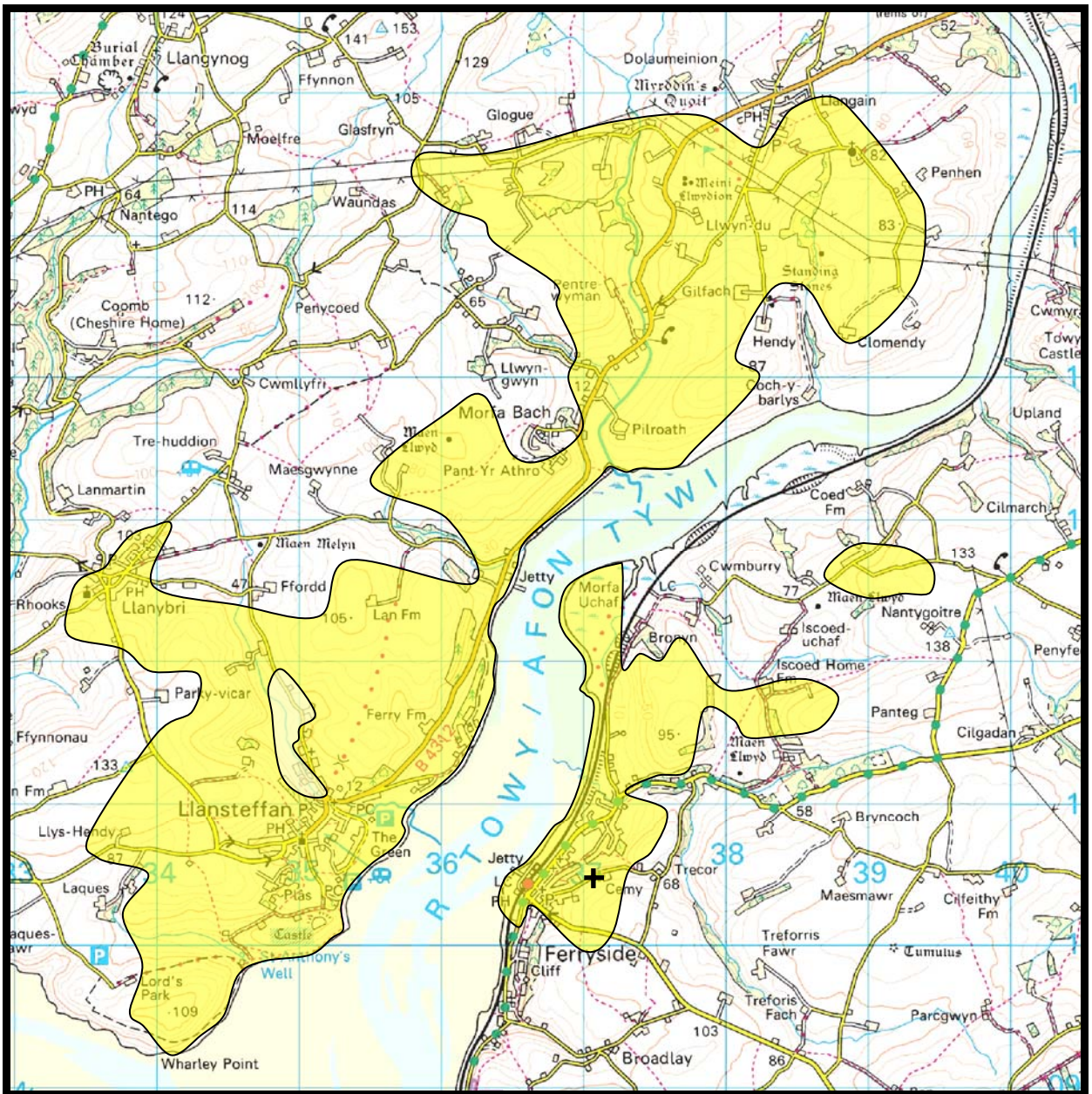
Original Estimate of Ferryside Analogue Coverage

The Trial Area ('Red Line' Map)

The green dot marks the Ferryside relay transmitter site



Map 2 - Ferryside Analogue Coverage



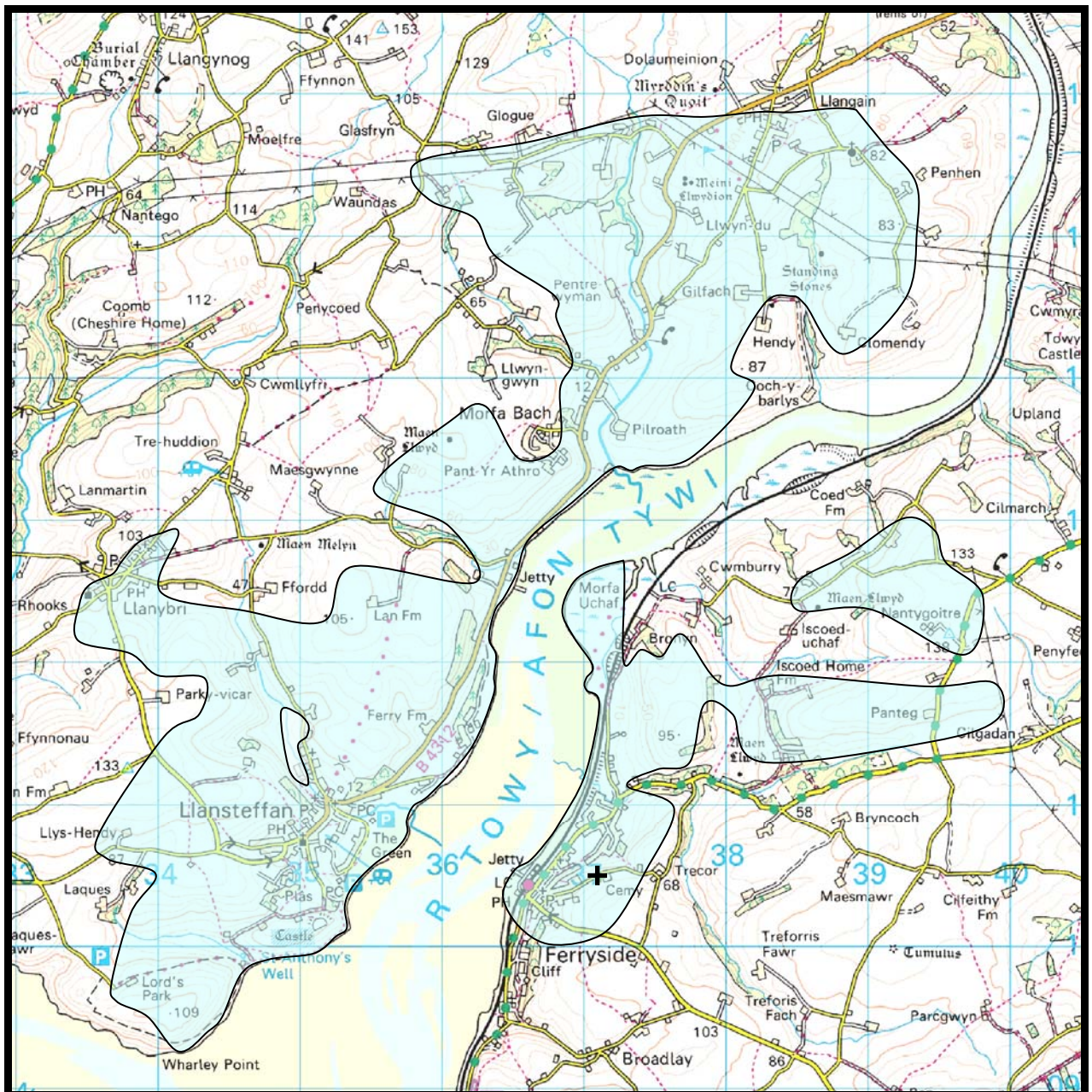
Ferryside (129.19) Analogue Reception Survey

Coverage contour based on a survey in November 2004 (simulcast period).

It should be noted that the coverage could be affected by:

- Levels of interference from distant sources at times of enhanced propagation. (For small percentages of time).
- Seasonal variations as trees come into leaf.
- Local obstructions

Map 3 - DTT Coverage during the simulcast period



Ferryside (829.19) DTT Reception Survey

Coverage contour based on a survey in November 2004 (simulcast period).

It should be noted that the coverage could be affected by:

- Levels of interference from distant sources at times of enhanced propagation. (For small percentages of time).
- Seasonal variations as trees come into leaf.
- Channel changes at analogue switch off.

APPENDIX 2

Analogue Services from Ferryside



Digital TV and Radio Services from Ferryside



APPENDIX 3

Humax Re-scan Helpsheet

Rescan Instructions

HUMAX F2 FOX T












To search for and store all digital services being broadcast from new higher power channels allocated to the Ferryside transmitter from 30th March 2005

Note: Rescanning restores the Humax Factory Default Settings. Any previous user configured data will be removed and have to be entered again. This includes Favorite Lists, Subtitle and Screen Ratio Settings. The PIN will return to 0000.



PROCEDURE

Using the Humax remote control and remembering always to point it towards the Humax receiver:

1. Press the "DTV"  key once
2. Press the "1"  key once, to power the Humax up
3. Press the "Menu"  key once and an on-screen menu appears as in Fig.1
4. Using the **down arrow**  select "Installation" on the third line in the menu. (Note: the word "installation" changes to yellow. The box before it moves to the right.)
5. A Password Pop-Up Menu appears as in Fig 2. Press the **zero**  key four times - or your own passcode if you have changed it. (A star appears in each of the four squares).
6. Press the "OK"  key once. The Installation menu appears as in Fig.3.
7. Use the **down arrow** key to select the 4th option **Default Setting** (Note: the selected option is highlighted in yellow). Press the "OK" key once
8. The Default Setting Menu appears with an alert message as in Fig.4.
9. Use the **left or right arrow** key   to select "Yes" (A yellow border wraps the selected option). Press the "OK" key once
10. A Password Pop-Up Menu appears as in Fig 2. Press the **zero**  key four times - or your own passcode if you have changed it. (A star appears in each of the four squares) Press the "OK" key once.
10. The **Installation Wizard** screen automatically appears as in Fig.5 The Humax will tune in all channels it can find and automatically store them in the right order.

You can now sit back and enjoy the reinstated services!

- Further guidance can be found on Pages 47 and 15 of the Instruction Manual provided with the product.
- If the above fails to deliver the new service please call the helpline: **01994 232258**
- **If you do not have HTV or Channel 4 services**, please refer to the "Manual Scan" sheet or call the helpline for assistance: **01994 232258**
- **If you need to reset subtitles or adjust the picture to fit your TV screen** please refer to sheets or call the helpline for assistance: **01994 232258**.



Fig.1



Fig.2



Fig.3



Fig.4



Fig.5

APPENDIX 3

Pace PVR Re-scan Helpsheet

Rescan Instructions

PACE TWIN PVR









To search for and store all digital services being broadcast from new higher power channels allocated to the Ferryside transmitter from 30th March 2005

Note: Rescanning restores the Pace Factory Default Settings. Any previous user configured data will be removed and have to be entered again. This includes Favorite Lists and Screen Ratio Settings. The PIN will return to 1234.

PROCEDURE

Using the Pace remote control and remembering always to point it towards the Pace receiver:

1. Press the **"power"**  key once to power up the Pace (Note: the Pace display lights up & changes from a time display to "init" - short for initializing. After a few seconds the Pace welcome screen appears, followed by the last digital channel viewed.)
2. Press the **"Menu"**  key once. The Main menu appears on screen menu as in Fig.1
3. Use the **"down arrow"**  to select **"Configuration"** (Note: the selected word changes from white to yellow)
4. Press the **"OK"** key  once to reveal the Configuration menu as in Fig.2.
5. Use the **"down arrow"**  key to select **"Reset"** (Note: the selected word changes from white to yellow). Press the **"OK"** key once. An alert appears on screen as in Fig.3 asking you to confirm the Reset process.
6. Confirm by pressing the **"red key without white dot"**  and the Pace will start the reset process. (It will shutdown and then restart the initialization process.)
7. A **Language** menu appears on screen asking you to choose your preferred language to display on screen messages. Use the **"down arrow"** key to select either **"English"** or **Cymraeg** and press the **"OK"** key once. The Pace will then commence the rescan process
8. Before proceeding a menu appears as in Fig.4 asking if you wish to retain recordings you have made to the Pace hard disk library.
9. Press the **"OK"** key to keep your stored recordings or the **"red key without white dot"** to delete all recordings.
10. The TV Settings Menu appears as in Fig.5. The **"TV Screen Format"** box shows **"Normal 4:3"** in yellow.
 - **If you have a traditional shaped TV screen**, leave this. If the **"16:9 Picture Handling"** box does not show **"Full Screen"**, use the **"right arrow"** key to change it to hold **"Full Screen"**. Press the **"OK"** key to save.
 - **If you have a new widescreen TV**, use the **"right arrow"** key to put **"Widescreen 16:9"** in the **"TV Screen Format"** box. The **"16:9 Picture Handling"** box changes to **"Automatic"** and cannot be changed. Press the OK key to save.
11. The rescanning process starts, leave until **"Channels Found"** is displayed. Press the **"OK"** key once

You can now sit back and enjoy the reinstated services!

- If the above fails to deliver the new service please call the helpline: 01994 232258

