

The Opportunity

The successful introduction of digital terrestrial television will provide benefits to viewers, industry and the economy.

Using their existing aerials, the vast majority of British viewers who do not currently subscribe to cable or satellite will be able to expand their choice of viewing with a wide range of additional channels. At the same time, they will also benefit from better reception, clearer pictures and an exciting set of additional viewing features such as an interactive electronic programme guide and programmes in widescreen.

British industry will gain from taking the lead in pioneering digital terrestrial technology at home, and subsequently, internationally. The British television production industry will gain from the launch of new British channels and more original programmes. Ultimately, digital terrestrial television will also allow the broadcasting spectrum - a valuable national resource - to be used more efficiently.

The Challenge

However, launching digital terrestrial television is one of the greatest challenges facing British broadcasting because of the complexity of the task involved, the scale of the resources required and the speed with which it must be completed.

The service must be developed quickly to exacting technical standards to cover up to 90% of the country. An attractive and competitively priced subscription programme service must be created and marketed. Conditional access, subscriber management and electronic programme guide services must be provided on terms which ensure fair and effective competition. The manufacture and sale of receiving equipment have to be pump primed through a complex partnership programme with retailers and manufacturers.

The Response: British Digital Broadcasting

British Digital Broadcasting is a partnership of Britain's three largest and most successful commercial television companies, Carlton Communications, Granada Group and BSkyB, with each owning a third of the company. We will also be able to draw on the strength of the BBC, whose new programme channels are one of the distinctive features of our applications.

We have applied for multiplex licences B, C and D separately and submitted further proposals for operating all three multiplexes together. We believe that operating three multiplexes gives the winning applicant the best prospect of taking a leadership role in the successful development of digital terrestrial television. In amending its original ownership limits from two to three multiplex licences, the Government implicitly recognised the strength of this argument as do the retailers and equipment manufacturers with whom we have had discussions.

Our applications are based on a year long process of evaluating the UK television market over the life of the licence period. In doing so, we have built a sophisticated and rigorous market model and have undertaken a detailed programme of research.

This identified three areas of operation which will be key to our success:

- Creating and then marketing the most attractive programme services
- Ensuring the widest take up of receiving equipment
- Developing and rolling out transmission plans for the service to achieve the widest coverage quickly

Our plans in each of these areas are set out below.

Programme Service

The strength of our programmes will be crucial to our success and, if we are awarded the three licences for which we are applying, will be a major factor in the success of digital terrestrial television as a whole. Customers will only buy receiving equipment if they are attracted by the extra programmes they will be able to watch.

This is why we have placed the greatest emphasis on creating an exciting and competitively priced programme service which will appeal to a wide variety of tastes and interests.

If our proposals for three multiplex licences are accepted, our programme service of twelve basic subscription and three premium channels (five per multiplex) would be as follows :

	<u>Multiplex B</u>	<u>Multiplex C</u>	<u>Multiplex D</u>
Basic Channels	Carlton Select Granada Plus BBC Horizon	Carlton Films Granada Good Life Sky 1 BBC Style / BBC Showcase	Public Eye Granada TV Shopping Carlton Entertainment BBC One TV Granada Sports Club
Premium Channels	Sky Movies Sky Sports	The Movie Channel	

Where possible, according to the coverage areas of the multiplex, our customers will receive all twelve basic channels as a “big value” package. Customers can then choose to subscribe to either one, two or three premium channels.

If awarded one multiplex, we will offer the following programme channels :

Basic Channels	Carlton Entertainment Granada Plus Sky 1 BBC Style / BBC Showcase
Premium Channel	Sky Movies

The programme service we will offer across three multiplexes consists of twelve basic channels which are either unique or among the best in their respective genres :

Carlton Select will be an enhanced version of the existing cable channel emphasising high quality original British production including drama, children's programmes and exclusive special events, particularly music and live European football. It will also draw on Carlton Food Network's extensive output of original programmes.

Granada Plus will be an all British programme service, including some of the most prestigious and popular drama, entertainment, comedy and children's programming ever produced in the UK, as well as award winning features and documentaries. The existing service will also be enhanced with more original programming.

BBC Horizon will be a new channel drawing on the BBC's pre-eminence in nature, science, history and technology documentaries. It will offer the unique richness of the BBC's factual archive in a concentrated and accessible form. Separately, in the morning period, we will offer children's programmes supplied by a number of high quality producers.

Carlton Films will also be a new channel, specifically launched for our service, providing a wide choice of high quality films and made for television movies. The films will span the history of the cinema and feature the work of the world's best talent on either side of the camera.

Granada Good Life will offer viewers a dedicated lifestyle programme channel featuring a broad range of programmes covering areas such as health, fitness, interior design, gardening, cooking and motoring. The channel will cater to audiences who have traditionally not been well served in the multi channel environment.

Sky 1 will provide a wide selection of family quality entertainment - comedy, drama, documentaries, science fiction and chat shows combining domestic and imported programmes to assure an appeal to a broad audience.

BBC Style and BBC Showcase will offer viewers the highest quality and most popular programmes from BBC1 and BBC2. Their programmes will include classic and contemporary, drama and comedy, presented in an innovative and refreshing format. In the morning, BBC Style will offer a wide array of programmes to those who follow the latest in style.

Public Eye will be a new channel, provided by Carlton, including programmes from drama and movies to documentaries, all linked by the theme of law and order. The channel will also incorporate the award winning Sky News service in the mornings and early afternoons.

Granada TV Shopping will be a new teleshopping channel with a difference: a strong British flavour which will feel familiar to British shoppers combined with high production values and a different creative approach. Viewers will be offered a daily stroll through a virtual department store and its individual departments.

Carlton Entertainment will also be a new channel provided by Carlton. It is designed to meet the enduring need for well executed popular entertainment including children's, drama, comedy and talk programmes. There will be a strong emphasis on British productions.

Granada Sports Club will be a further new channel featuring entertainment, gossip, news, debate, opinion, golden moments and the up and coming. It will offer football fans in depth and unrivalled coverage of the top clubs and their activities in specially dedicated club segments. The channel will also provide a late night music service.

BBC One TV is designed to appeal to pop music fans of all ages. Best described as a visual Radio One, the new channel will stand for music, new talent and youth and it will feature popular presenters who will have built a loyal following through Radio One.

British Digital Broadcasting's premium subscription channels will feature genres of programming which have a proven track record of success in pay television in the U.K. :

Sky Movies and The Movie Channel will screen a wide variety of films including top movies from around the world with a host of new films every month. Both channels will showcase these films 24 hours a day, seven days a week and all movies will be shown without commercial breaks. To cater to differing viewers lifestyles, the most popular movies will be re-screened at different times and on different days.

Sky Sports, with its current satellite service, is a trailblazer in sports broadcasting and production, based on its success in acquiring rights to a wide selection of events and its innovative and high quality production standards. Operating 20 hours a day, the digital terrestrial service will offer extensive sports coverage and sport related programmes with wide appeal.

Pay per view

In addition we recognise that pay per view programming offers an important opportunity for viewers to watch special events which they value highly and might not otherwise be able to see. This is particularly the case where competition for the television rights to these events is increasing and securing pay per view rights may offer the only means of televising them. We have therefore built a series of pay per view events into our programme plans. These are likely to include high profile events

in sports, entertainment and music such as boxing, concerts and other one off events of popular appeal. Looking over the full licence period, we believe that pay per view programming will develop into an important means of attracting customer support for our service.

Target audience and appeal

Taken as a whole, we believe that this combination of channels and programmes represents an exceptionally strong appeal to a wide variety of tastes and interests. The mainstream entertainment channels are of a high quality and wide appeal, offering many of the best movies, drama and comedy to be seen on British television. Viewers interested in sport, music, science, nature, food, the arts, lifestyle programmes, education and current affairs are served by dedicated channels or channel segments and there are a substantial number of programmes for children.

The strong emphasis on original British channels and programmes reflects the tastes and interests of British viewers and will have the added benefit of channelling new investment into the production industry. Carlton and Granada's participation in British Digital Broadcasting, together with our agreement with the BBC, gives us access to this country's three largest and most successful programme producers and their programme libraries.

The programme service we propose for multiplexes B, C and D is designed to complement the channels offered on the separate multiplexes assigned to the BBC, ITV and Channel 4. For example, we have chosen to supplement the BBC's plans for a 24 hour rolling news service by initially broadcasting B Sky B's award winning Sky News service in the mornings and early afternoons.

In a competitive market, we will offer our programme service to our customers on clear, uncomplicated terms at competitive prices as excellent value for money. This will encourage viewers to subscribe in the numbers needed to recoup the investment we will make in promoting the take up of equipment and also provide a satisfactory return to our shareholders.

Additional services

Once compression technology improves and our experience of operating digital terrestrial multiplexes increases, we will consider launching additional services as well as further programme channels as soon as possible. Our aim will be to respond quickly to any technical developments but ensure that broadcast quality is not compromised.

Over time, we will also seek to develop the capacity for interactivity offered by digital terrestrial technology and the presence of sophisticated receiving equipment in the home which would, for example, enhance the attractiveness of our teleshopping channel. However, our application is not dependent on launching additional services in the near future.

Electronic programme guide

If successful with our application for three licences, we intend to provide our customers with an electronic programme guide (EPG) which they can use to select programmes and channels. In providing this service, we will draw substantially on the work which BSkyB have undertaken over the last two years to develop a high quality, user friendly EPG. This guide will ensure that all channels available on digital terrestrial television will be displayed in a fair and non discriminatory way taking into account the need to ensure that popular channels are easily accessible.

Promoting the Take Up of Equipment

We have detailed plans to encourage the widespread take up of equipment capable of receiving digital terrestrial signals. In the early years, our emphasis will be to ensure that suitable set top boxes will be widely available.

In co-operation with other multiplex licensees, we therefore plan to encourage the large scale manufacture and sale of these boxes. Drawing on the expertise of our shareholders, including BSkyB and Granada's long standing relationships with set top box manufacturers and knowledge of the consumer electronics retail and rental market, we have developed a carefully thought out plan to promote the take up of the necessary consumer equipment.

Interoperability of our set top box

If successful with our application for three licences, we would take the lead in seeking arrangements with other multiplex operators to adopt a set top box capable of receiving the signals of all digital terrestrial programme services. We would expect such arrangements to ensure fair and effective competition.

In some countries, competing delivery systems with incompatible equipment have led to customer confusion and held back market development. Our proposals overcome this problem. With the collaboration of BSkyB we are able to design set top boxes for digital terrestrial television which, with the addition of a modestly priced "sidecar" module, will give access to digital satellite services.

Equally, with our collaboration, BSkyB will be able to design boxes for digital satellite which will allow similar modestly priced access to digital terrestrial television.

This will provide viewers with the confidence they need to purchase either kind of set top box, in the knowledge that they will be able to subscribe easily to either or both services without having to purchase an additional box.

Partnership programme

As part of our proposed partnership programme we will ensure that a selected number of capable manufacturers commit to the production of a substantial quantity of set top boxes. This will ensure that there are sufficient numbers of boxes widely available for consumers to purchase in the early years of the licence.

In addition, working with retailers and rental companies, we intend to subsidise set top boxes during the initial period of the licence and, through a mixture of promotional offers, provide retailers with the confidence to stock and sell set top boxes in outlets throughout the coverage area.

Marketing

We will implement a comprehensive marketing plan to build awareness of, interest in and loyalty to digital terrestrial television by emphasising the full range of consumer benefits offered by the new technology as well as the unique selling points of our own programme service. This plan will include an investment in advertising, media relations and direct marketing.

Over time, we believe that integrated television sets, capable of receiving both digital terrestrial and digital satellite signals, will replace set top boxes as the primary means of receiving digital television signals. Although it is difficult to be precise about the speed at which this process will take place, we believe that, once it starts, the natural replacement cycle for television receivers will push digital television to very high penetration rates relatively rapidly and thus establish digital terrestrial as a main delivery system for television in the U.K..

We believe that this integrated plan to promote the take up of receiving equipment provides the best launch pad for digital terrestrial television. We believe that it would be more difficult to implement such an effective plan, with similar financial backing, if arrangements have to be agreed between several different multiplex operators.

Development of Transmission and Roll Out of the Service

The introduction of digital terrestrial television technology represents a considerable technical challenge.

British Digital Broadcasting has the technical skills, experience and financial strength to help manage this change smoothly and rapidly. By December 1999, we plan to complete the construction of the infrastructure required to support the service.

To achieve this ambitious target we will :

- Agree a co-ordinated transmission roll out plan with the operators of the BBC, ITV/C4 and C5/S4C multiplexes and any other multiplex operators so that, as far as possible, all the multiplexes are introduced to a particular region at the same time.

- Draw up and implement a comprehensive plan to deal with any limited amount of interference to televisions or VCR equipment. This needs to be co-ordinated between all multiplex operators so that responsibility for viewers' problems is not passed between different parties. Our plans draw substantially on the expertise of Granada's TV rental business and BSkyB's subsidiary TAS, the acknowledged technical leaders in this field.
- Agree arrangements with other multiplex operators and programme service providers to provide common technical services such as multiplexing, conditional access, electronic programme guide and subscriber management services in such a way as to ensure fair and effective competition.
- Agree specifications with other operators for a single set top box to avoid consumer confusion over the choice of equipment.
- Agree, with other operators, how to minimise the cost of establishing the required infrastructure to avoid expensive duplication. This will enable us to maximise our investment in the programme service and in promoting the take up of receiving equipment.

The Strength and Experience of Our Shareholders

In delivering these plans, British Digital Broadcasting will be able to draw on the skills and experience of its three shareholders - Carlton, Granada and BSkyB - and our relationship with the BBC. Taken together, this provides an unrivalled combination of expertise :

- Outstanding creativity in programme production and channel creation
- In depth understanding of the UK pay television market and the retail, manufacturing and subscriber management issues involved
- A wealth of technical and project management experience directly relevant to the task of setting up the complex infrastructure required

Carlton

Carlton is the country's largest commercial terrestrial broadcaster, owning Carlton Television, Central Television and Westcountry Television. Carlton has a substantial programme production business and a library of over 5,500 hours of television programmes and films, largely made up of UK productions but also including 100 US TV movies. The company has a consistent track record of investment in high quality original production across all the main programme genres, including *Inspector Morse*, *Sharpe*, *Bramwell*, *The Wind in the Willows*, *Outside Edge*, *The Big Story* and *The Cook Report*.

Carlton's experience in setting up a complete terrestrial television broadcasting operation within 14 months of being awarded the weekday ITV licence for London is also of direct relevance to this application.

Granada

Granada is the country's most experienced commercial terrestrial television broadcaster and largest commercial programme producer, through its ownership of Granada TV and LWT. Granada's programme production businesses have produced many of the most popular and critically acclaimed television shows of the last decade including *The South Bank Show*, *Coronation Street*, *Blind Date*, *Cracker*, *Barrymore*, *Prime Suspect*, *World in Action* and *Dimbleby*. Granada also owns the UK's largest commercial television programme library with over 10,000 hours of programming, including many of the classics of British television.

In addition, Granada has experience of launching and running pay television services, having recently launched seven new programme channels. Through its TV rental and retail business, it also has substantial expertise in the television hardware and television subscription retail markets where the Group's retail outlet chain is the country's largest seller of pay television subscriptions.

BSkyB

BSkyB is the world's leading satellite pay television operator, offering a wide choice of channels to more than 6 million subscribers in the U.K. and Republic of Ireland. Created in 1990, following the merger of Sky Television and BSB, BSkyB has pioneered the introduction of multi channel television in the U.K.. Its key strengths lie in marketing, distribution, packaging and programming where it has developed a reputation for innovations such as live televised sports, 24 hours news and first run movies.

BSkyB has also pioneered the development of a subscriber management infrastructure and, through its supplier, NDS, the conditional access technology which is required to operate a successful multi channel subscription business. In 1996 it broadcast the first ever national pay per view event in the U.K., viewed in over 600,000 homes. British Digital Broadcasting will also benefit considerably from BSkyB's recent work on developing the technical infrastructure required to launch a digital satellite service, particularly in the area of developing electronic programme guides.

The three partners are already used to working in co-operation with each other in areas of direct relevance to this application. Carlton and Granada each own 20% of the national and international news provider ITN and 50% of London News Network which provides transmission and news gathering and production services to both companies. Granada is a shareholder in BSkyB and both companies jointly own Granada Sky Broadcasting (GSB), established last year to produce and broadcast seven new pay television channels.

Directors and Management

Equally relevant to the task of launching digital terrestrial television are two further qualities shared by all three shareholders - the financial and management strength required to undertake a venture of this size and complexity.

The combined market capitalisation of the three shareholders is approximately £20 billion. The companies employ some of Britain's leading media executives and the British Digital Broadcasting board will benefit from the combined experience of

The company's day to day operations will be the responsibility of a management team independent of the shareholders, including a Chief Executive, Director of Finance, Director of Programmes and Director of Marketing, all of whom, it is intended, will be members of the board.

We have decided to defer the appointments to these senior positions until the outcome of the licence process is known. We have taken this view because the nature of the appointments will be significantly influenced by the outcome of our applications. For instance, in the event that we are awarded three licences, the management task would be measurably greater and we would want to make appointments that reflected the wider range of skills required to take a leadership role in promoting digital terrestrial television. We are confident, however, that we will be able to appoint managers of the right calibre for these posts. Should we be successful with our applications, we will be able to start the planning process for the introduction of our service immediately by drawing on the combined management expertise of our shareholders. The large project team which has built our detailed business and technical plans is being held in readiness for this task.

Conclusion

British Digital Broadcasting is well equipped to take on the key leadership role in the development of digital terrestrial television.

In all the skills required - creativity in scheduling and programme production, technical and marketing expertise, financial and management resource, knowledge and understanding of pay television - we believe that we have the right credentials.

Our proposals for operating three multiplex licences can play a major part in developing a central role for digital terrestrial television as we move into a new century. By offering a wide choice of high quality, affordable programming viewed on easy to purchase and easy to install equipment, digital terrestrial television will be a natural medium of choice for British viewers.

For further information about British Digital Broadcasting's application, please contact:

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**Application to the Independent Television
Commission for Multiplex Service Licences**

Multiplex Service Licence B

Section A



**25 Knightsbridge
London
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Introduction

1. British Digital Broadcasting PLC (“British Digital Broadcasting”) is a wholly owned subsidiary of British Digital Broadcasting Holdings Limited, (British Digital Broadcasting Holdings”) a joint venture formed by Carlton Communications PLC (“Carlton”), Granada Group PLC (“Granada” or “Granada Group”) and British Sky Broadcasting Group PLC (“BSkyB”) for the specific purpose of applying for Multiplex Services Licences. Carlton, Granada and BSkyB are referred to in this application as the shareholders of British Digital Broadcasting.
2. This document is Section A of British Digital Broadcasting’s application for Multiplex Licence B. (It complements Section B, which provides confidential data and information for the ITC.)
3. The first half of the document is British Digital Broadcasting’s application for Multiplex B as an individual multiplex.
4. The second half of the document presents British Digital Broadcasting’s supplementary proposals should, in addition to Multiplex B, British Digital Broadcasting be awarded Multiplex Licences C and D.
5. At the end of each main sub-section in the individual application for Multiplex B there is a short description of how the equivalent sub-section of the supplementary proposals compares. In a similar manner, at the start of each sub-section of the supplementary proposals there is a short comparison with the equivalent section in the individual application for Multiplex B.
6. A separately bound Summary provides an overview of British Digital Broadcasting’s application. A set of confidential Annexes has also been provided to the ITC.

Glossary

API	Application Programming Interface
ATM	Asynchronous Transfer Mode
BAT	Bouquet Association Table
CA	Conditional Access
CAT	Conditional Access Table
CD	Compact Disc
CHI	Common Interface
CMC	Customer Management Center
COFDM	Coded Orthogonal Frequency Division Multiplexing
DVB	Digital Video Broadcasting
DVB-T	Digital Video Broadcasting - Terrestrial.
EBU	European Broadcasting Union
EIT	Event Information Table
EPG	Electronic Programme Guide
ETS	European Telecommunications Standard
ETSI	European Telecommunications Standard Institute
IRD	Integrated Receiver Decoder
ISDN	Integrated Services Digital Network
kbps	Kilobit per second (data rate)
LAN	Local Area Network
Mbps	Megabit per second (data rate)
MPEG	Motion Picture Experts Group (of ISO)
NIT	Network Information Table
OFDM	Orthogonal Frequency Division Multiplexing
PAL	Phase Alternate Line
PAT	Programme Association Table (one of the tables comprising the PSI defined below)
PMT	Programme Map Table (one of the tables comprising the PSI defined below)
PSI	Programme Specific Information (based on a number of tables, it allows MPEG-2 decoder to capture and decode packet structure)
PSTN	Public Switched Telephone Network
QAM	Quadrature Amplitude Modulation
ROM	Read-Only Memory
SAS	Subscriber Authorisation System (performs co-ordination of enablement messages prior to transmission to home)
SDT	Service Description Table
SHF	Super High Frequency (microwave frequency band used for transmission of broadcast material)
SI	Service Information (provides details of Programmes being broadcast etc)
Simulcrypt	A system allowing a single encrypted signal to be delivered to receivers with different conditional access systems
TVRO	Television Receive-Only (usually applied to receive-only satellite terminal for television reception)
VBI	Vertical Blanking Interval

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Section A

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Section A1 - The Licence Applied For

ITC Requirement

The applicant should state which multiplex licence he is applying for by means of this application. If the applicant is applying for more than one licence, and if this application contains supplementary proposals which would be implemented only if he were awarded more than one licence, then he should specify the other licences to which these supplementary proposals apply. If the applicant is applying for more than the number of licences he would be permitted to hold under any requirement imposed by or under Schedule 2 to the 1990 Act, he should state his preferences in relation to these licences (see paragraph 22).

1. This document is British Digital Broadcasting's application for Multiplex B.
2. This application also comprises supplementary proposals for Multiplex B should British Digital Broadcasting also be awarded Multiplexes C and D. British Digital Broadcasting, overall, is applying for three multiplexes (B, C and D).
3. British Digital Broadcasting hopes to be awarded all of the three multiplex licences for which it is applying. Should British Digital Broadcasting win one multiplex licence, its preference among the individual multiplexes is:-

Preference	Multiplex
First	B
Second	C
Third	D

Section A2 - Transmission Coverage and Roll-Out

ITC Requirement

Noting the information provided in paragraphs 4, 79 to 83 and 110 to 113, the applicant should describe in detail his proposed arrangements for the transmission, distribution and multiplexing of the proposed multiplex service, including a start date, build programme and final coverage.

Note:

“Start date” means the date of start of transmissions of the multiplex service. “Build programme” means the timetable by which progressive coverage might be achieved by the successive implementation of transmitters within the multiplex service transmitter plan. “Final coverage” means the extent of the coverage available under the transmitter plan which the applicant intends to implement. This should be expressed by means of predicted coverage figures based on specified transmission sites, aerial heights and power levels. Applicants for licences B, C or D should also state their policy concerning the possible extension of coverage were further frequencies to become available.

Summary

British Digital Broadcasting’s approach, drawing on its shareholders’ experience in terrestrial, satellite and cable television, comprises a set of solutions that limits the technological risks and maintains the high standards of quality and reliability that the shareholders of British Digital Broadcasting apply in their existing businesses.

British Digital Broadcasting’s intention is to launch digital terrestrial television services as soon as possible, consistent with the availability of components and reliability in the delivery of services. The intention is to launch this service by July 1998.

The launch of services will be supported by a rapid roll-out of the transmitter network, with a plan to achieve final coverage levels by the end of 1999.

In order to ensure picture quality is comparable to that of analogue transmissions, British Digital Broadcasting intends to commence operation with only five services per multiplex. As experience is gained with the technology it is expected that it will be possible to introduce further services as statistical multiplexing technology develops.

British Digital Broadcasting supports the provision of fair, reasonable and non-discriminatory access to receiver populations within the parameters of the regulatory regime, and is ready to work with other multiplex licence holders to achieve this.

British Digital Broadcasting believes that the most effective way to manage the successful launch of digital terrestrial television is through clear project leadership.

If British Digital Broadcasting is successful in its proposal for Multiplex B, the company would seek to work with all the other licensees to try to achieve a co-ordinated approach to managing the implementation phase of the project.

Introduction

1. Digital terrestrial television is one of the greatest technical challenges for television broadcasters since the introduction of colour. Broadcast technology now allows the delivery of digital television signals to the home, but the complexity of this technology will place substantial organisational and technical demands upon the individual multiplex operators. Issues such as managing the effects on existing consumer equipment will require significant logistical expertise. These are demanding tasks under any circumstances, but to achieve these with the additional target of an early launch date will require particularly innovative approaches and exceptional project management skills.
2. British Digital Broadcasting comprises three of the UK's major broadcasters, each a leading company in its field. As well as an unrivalled background in the provision of television services, these organisations have the technical experience and resources that will be needed to manage the successful launch of the new digital services in the shortest time possible.
3. **Carlton** has been involved at the leading edge of broadcast television technology long before being awarded the London weekday ITV franchise in 1991. Through the ownership of companies such as Quantel and Solid State Logic, it has developed a depth of understanding of the impact of digital systems throughout the production and broadcast chain. In association with NTL, Quantel and Sony, Carlton provided the first public demonstration of digital terrestrial television in the UK in 1994.
4. Carlton Television was established and equipped within the tight timescales required, drawing upon the skills existing in the group whilst also recruiting new management and operational staff. Since the acquisition of Central Television in 1994 Carlton has developed the technical facilities available in the Midlands culminating in the opening later this year of a new broadcasting and production centre in the centre of Birmingham. This new centre will employ state of the art technology including disk based editing and playout facilities along with a high degree of automation.
5. Carlton has been a lead broadcaster in the development of digital terrestrial technology. Through the Digital Television Group, and in several direct relationships with component manufacturers and suppliers, Carlton has sought to influence the course of development of the technology and to promote enthusiasm for the development of digital terrestrial broadcasting.
6. **Granada's** forty years of experience in commercial broadcasting in the UK is unmatched, and its recent launch of seven new satellite television channels gives it a detailed understanding of the issues involved in launching a number of new pay television channels. It is also one of the UK's largest electrical retailers through its ownership of the Granada Technology Group. It has developed close working

relationships with many of the world's leading manufacturers of consumer equipment and has been at the forefront in the introduction of new broadcast technology, from teletext and NICAM stereo through to satellite broadcasting. Granada's presence in the retail market has been aided by its development of the training and logistical infrastructures needed to provide quality service and care for customers. This experience has been used in the provision of technical and "on the ground" support for C5's current retuning exercise.

7. **BSkyB** introduced satellite broadcasting and Pay TV operations into the UK and in the process has become the world's leading satellite pay television operator. It brings unrivalled experience in the specification and integration of conditional access systems, both within transmission systems and within receivers. It has the substantial benefit of its history in managing these types of systems, the interaction process with viewers, and the introduction of new functionality into its services. BSkyB has also established close links with receiver manufacturers and the retail trade, ensuring widespread availability of competitively priced reception equipment and installation packages. BSkyB's technical staff have been active contributors to the DVB process and have helped formulate the standards for digital broadcasting, whilst also developing the concepts for new types of digital services, such as the Electronic Programme Guide.
8. British Digital Broadcasting's commitment to digital terrestrial television and its access to the resources and experience of its shareholders provides the best possible foundation for driving the implementation phase of the project through to an early and successful conclusion. Given the inherent technical challenges, this is a critical factor. British Digital Broadcasting believes that it is essential to have a single operator prepared to take the lead in areas such as the distribution and transmission planning of all the multiplexes, and in determining the strategy for the provision of consumer equipment at the right time and at the right price for the market. If British Digital Broadcasting is successful in its proposal for Multiplex B alone, the company would seek to work with all the other licensees to establish such a lead player.
9. The key elements of British Digital Broadcasting's technical plan are:-
 - a) The new channels will be assembled and played-out from a playout centre, which could either be at existing facilities, following any enhancements required to provide the additional capacity, or as a stand-alone facility. The playout centre will be responsible for quality control of the source materials and the programme output, compliance with legal and regulatory requirements, trafficking and assembly of service elements including programmes and commercials and insertion of promotional material and on-air graphics.
 - b) The Playout Centre will be the responsibility of the programme service providers.
 - c) All schedules relating to the programme services will be generated at the playout centre and will form the data that generates the Service Information (SI) data.

- d) The channels will then be conveyed to a multiplex centre where MPEG-2 encoding and statistical multiplexing will be carried out. Statistical multiplexing is a technique used to make best use of the available transport stream capacity, by dynamically adjusting bit rate of individual MPEG-2 encoders.
 - e) The signal will be distributed to terrestrial transmission locations by means of dual satellite links. British Digital Broadcasting has already established with satellite operators that appropriate capacity is available.
 - f) Transmissions will utilise the recommended implementation of the transmission specification, with a digital capacity of approximately 24 Mbit/s.
 - g) British Digital Broadcasting would favour the adoption of a common receiver and conditional access strategy that would eliminate consumer confusion and would provide the best path to low cost universal reception equipment. This would require agreement between multiplex licencees in adopting a common conditional access system and receiver specification. If different suppliers of conditional access are selected, British Digital Broadcasting fully supports and advocates the use of Simulcrypt.
 - h) The shareholders of British Digital Broadcasting have supported and participated in the development of a standard specification for the digital terrestrial television receiver through the Digital Television Group, including input into the selection process of a common Application Programming Interface (API).
10. It is intended to commence operation with five services carried within the multiplex. This will ensure that digital terrestrial television services are able to offer a picture quality comparable to that of analogue services. Perceived picture quality at a particular data rate is very dependent upon the programme content. The production and post production techniques used in making the programme can also have a significant effect.
11. In addition, the further development of statistical multiplexing techniques will allow the existing multiplex capacity to be used more efficiently, by freeing up unused capacity for particularly demanding picture sequences being carried by other services.
12. As experience is gained in the above areas it is expected that further services could be introduced without significant lowering of quality standards. As well as offering the potential for permanent extra channels, it will be British Digital Broadcasting's intention to offer a number of planned pay per view events each year at an early stage of the licence.
13. The capacity to transmit these events will be created by arranging the schedules in such

a way that some existing channels will be running a selection of less demanding (in terms of bit rate required) video streams which will allow higher levels of compression to be obtained. The demands of a normal schedule make this technique unsuitable for permanent operation using current technology, but British Digital Broadcasting is confident of being able to introduce additional programme streams for up to three hours on an occasional basis.

- 14. British Digital Broadcasting's response contained within this section provides a full description of its proposals for the implementation of digital terrestrial services, encompassing a wider range of topics than simply transmission, distribution and multiplexing. The response is structured around the logical flow from programme playout to consumer receivers, with additional sections on system-wide aspects such as integration and project management.
- 15. The overall multiplex delivery system is illustrated in Figure 1.

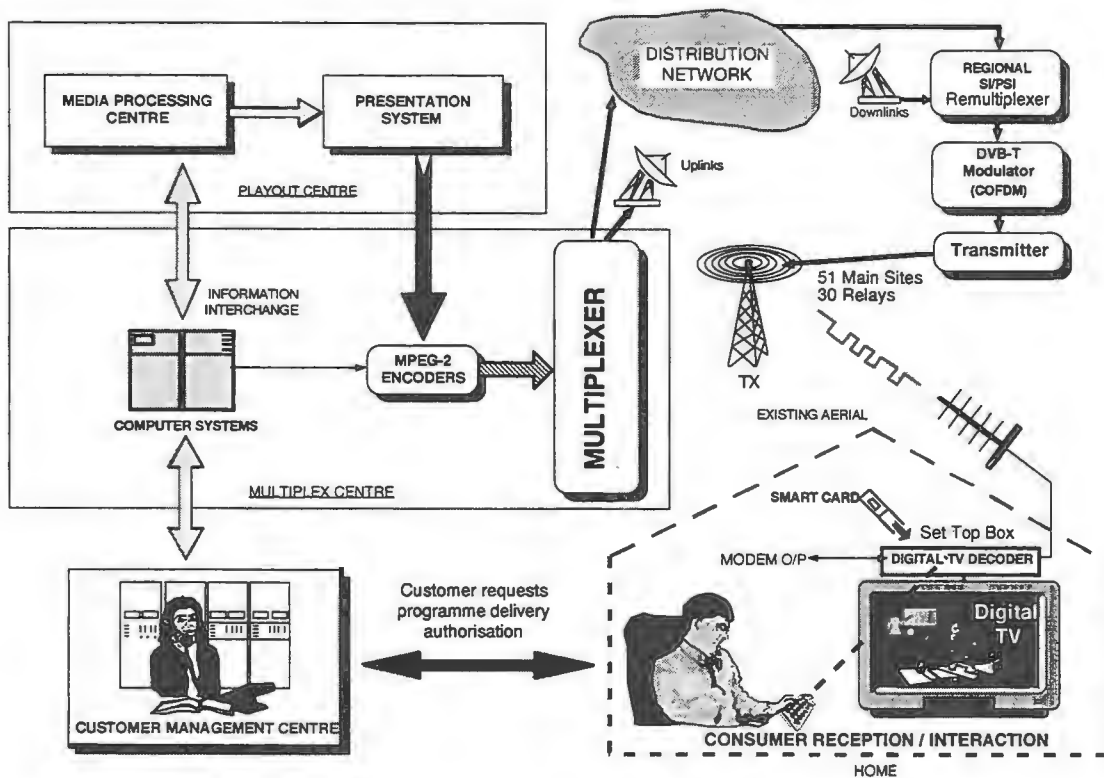


Figure 1 Multiplex Delivery System

System Integration

16. An early and rapid launch of digital terrestrial television services calls for a demanding schedule for the integration of head-end components, and to ensure that consumer equipment is available in shops and rental outlets to meet demand. These are critical items of the project.
17. If awarded the licence for Multiplex B, British Digital Broadcasting will seek to work with the other multiplex operators to establish a clear leadership for the management of these functions. The selection of a system integrator will be a key activity for the lead party.
18. British Digital Broadcasting has shared its plans with, and taken input from, a variety of reception equipment manufacturers and has received support for the creation of a partnership to be known as the Preferred Partners Plan. Members of the partnership will support the introduction of digital terrestrial television services with a range of reception equipment, including (as soon as practical) integrated television sets, available via normal retail and rental outlets.
19. The digital terrestrial project will require the provision of a number of different systems including :
 - a) Supply of digital compression and multiplexing equipment.
 - b) Network for distributing the new channels to terrestrial transmitters.
 - c) Terrestrial transmission network itself, including the integration of multiple SI streams.
 - d) Supply of the conditional access system.
 - e) Supply of a suitable Application Programming Interface and Electronic Programme Guide for receivers.
 - f) Where necessary, retuning of existing analogue receivers in certain areas.
20. In order to establish the required level of control over the integration timetable, British Digital Broadcasting has thoroughly reviewed all options and concluded that it will be necessary to appoint a systems integrator. The systems integrator will assist in the day-to-day management of the integration phase of the project. British Digital Broadcasting may choose to deal with the above aspects in direct contracts with suppliers, to ensure the availability of fully functional systems within the stated project timetable. The timescales quoted within this proposal reflect the dates provided to British Digital Broadcasting by potential suppliers.
21. The system integrator will have a contractual responsibility for:-
 - a) Bringing the different head-end elements together.

- b) Ensuring that the conditional access and application programming interface elements are available for receiver manufacturers.
 - c) The availability of test transmissions to enable manufacturers to verify their development work and move to production.
 - d) Monitoring the compliance of reception equipment with appropriate regulatory standards and with British Digital Broadcasting's own quality standards.
 - e) Interfaces between various parts of the British Digital Broadcasting infrastructure and with outside parties such as other multiplex licence holders.
22. This strategy will allow British Digital Broadcasting to concentrate its own resources on monitoring the development of the complete project, including the integration with the programme production and play-out elements. British Digital Broadcasting is in negotiation with a preferred supplier to carry out this work. This selection follows a thorough review of the options available and the detailed exchange of technical design and costing information.

Launch Date for Services

23. British Digital Broadcasting has carried out a detailed project plan for the launch phase of the project which has revealed that the most likely critical path is formed by the development and manufacture of COFDM demodulator chips. British Digital Broadcasting has evaluated the risks associated with the development of this chip and expects it to be available in time to support a start date of July 1998, though there is a risk that delays could be introduced if the development programme were to slip. Together with the other licensees British Digital Broadcasting will investigate possible steps to reduce the risk of the late availability of chips delaying the launch date.
24. Should manufacturers release COFDM chips in quantity earlier than the currently envisaged schedule, British Digital Broadcasting would take the opportunity to bring forward the launch of digital terrestrial television services in order to be as competitive as possible with the timing of any launch of digital satellite services. In order to establish a viable market for retailers, there will have to be sufficient transmitters installed to allow the market to expand. An accelerated start date thus brings other issues into play including international frequency clearances, and the requirement to negotiate with other multiplex licensees to ensure the compatibility of box specifications. It is not yet possible to determine which aspect will fall onto the critical path.

Playout Centre

25. Although the provision of playout facilities is the responsibility of the digital programme service providers, details are included here for completeness and, where

appropriate, standards, organisational structure and practices will be required by British Digital Broadcasting through the terms of a programme supply agreement.

26. In the event of being awarded a licence for Multiplex B, the programme service provider will either enhance existing facilities or provide a stand alone playout centre to provide the new services. The programme service providers already have extensive experience in the provision of playout facilities and would not have any difficulties in fulfilling requirements in time for the expected start of service.
27. It is planned to fit out the playout facilities with the capability of dealing with widescreen programme material. Widescreen presentation will form a part of British Digital Broadcasting's programming plans from the start of digital services and are expected to become an increasingly important part of the service.
28. Programmes and commercials (media) will be delivered to these facilities by videotape and land-line. Once there, the media delivered will be catalogued and logged into a computerised library system.
29. Media will be assessed technically to ensure that they meet standards derived from service providers' existing technical delivery specifications, copies of which are available if required. Programme material will be viewed for legal compliance, timed and scheduled using the latest computer-based, multi-channel scheduling systems.
30. For live material, a trained compliance officer will have responsibility for ensuring that material meets the ITC's regulatory and legal requirements. British Digital Broadcasting takes its compliance responsibilities very seriously and will ensure that the programme suppliers have a management structure that ensures that the quality of compliance on the new digital terrestrial services will meet the high standards demanded of existing terrestrial services.
31. British Digital Broadcasting's programme service providers will implement a system which will allow incorporation of the relevant information needed for the SI data system. This data will be passed on electronically to the on-air presentation automation system to control the transmitted output from the playout centre and also to the multiplex centre for incorporation into the final transport stream.
32. The playout facility will provide a highly automated presentation service comprising live programmes, pre-recorded programmes, promotions, stings etc. and commercials.
33. The programmes will be played out from automated cart machines. Commercials, promotions, stings etc. will be inserted from a disk based server which will be fully duplexed. The ability to provide voice-overs, superimpose captions and add a separate channel logo is included.
34. The service is based on limited intervention by transmission shift supervisors and although there will be the facilities for manual intervention, this would normally only be required where a channel has live programming in its schedule or in the case of technical malfunction.

- 35. Off-air monitoring using both high quality broadcast standard receiver decoders and domestic units will ensure that standards are met throughout the complete broadcast chain, although key technical quality monitoring of transmission will take place at the multiplex centre.
- 36. The centre will be equipped with the necessary power supplies and resilient air conditioning systems for 24 hour/day operation.
- 37. There will be communications facilities to deal with incoming and outgoing lines and satellite feeds. The playout centre will be linked to the multiplex centre by 5+1 redundant facility line feeds, or equivalent, allowing uncompressed 270 Mbps serial digital video signals to be delivered for final compression and multiplexing to ensure the highest quality at the final multiplex.
- 38. Staffing details for the playout centres are included in Annex 10.

Multiplexing

- 39. The multiplexing of programme services to form the transmitted multiplex transport stream will be carried out in a dedicated facility to be located in the London area. British Digital Broadcasting will make best use of the available data capacity by using “statistical multiplexing”. Statistical multiplexing achieves this by dynamically adjusting the bit rate for each service depending upon the picture content. This will optimise the number and quality of services carried via the multiplex. It is British Digital Broadcasting’s intention to offer initially five services within this multiplex, each maintaining a comparable technical quality to that of existing analogue services. Further services may be introduced at a later stage, following experience with the quality achievable in practice from the available multiplex capacity and any technical advances in encoding and multiplexing.

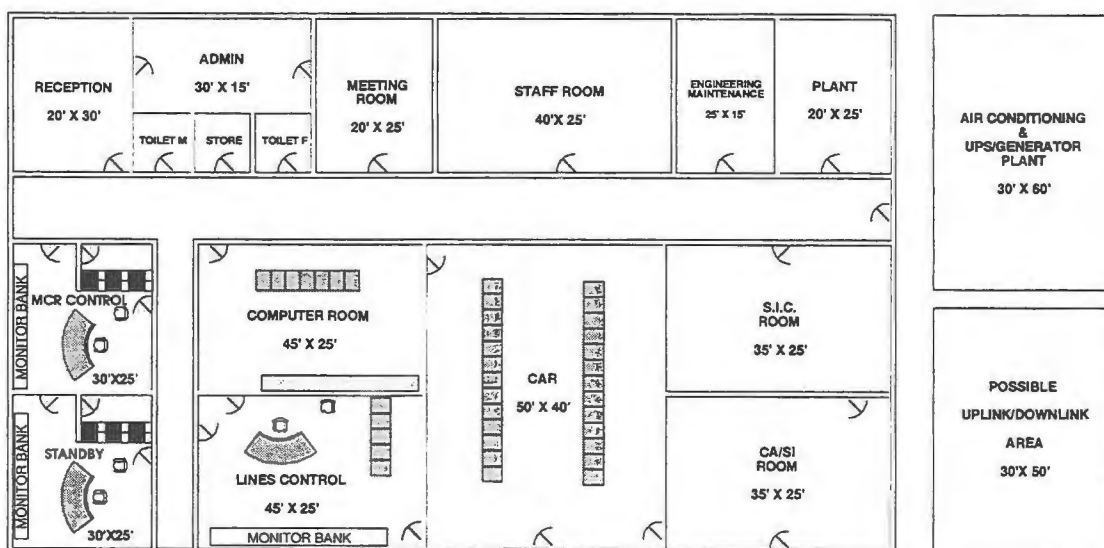


Figure 2 British Digital Broadcasting Multiplex Centre - Preliminary Planned Site Details

40. As well as offering the potential for permanent extra channels, statistical multiplexing will allow British Digital Broadcasting to offer a number of planned pay-per-view events each year at an early stage of the licence. The capacity to transmit these events will be created by so arranging the schedules such that all other channels will be showing less demanding material (in terms of bit rate required). The demands of a usual schedule make this technique unsuitable for permanent operation using current technology, but British Digital Broadcasting is confident of being able to introduce additional programme streams for up to three hours on an occasional basis.
41. The multiplex centre will be designed initially to support a five-programme transport stream and contain the capacity for occasional additional programmes, it is planned to have the following facilities:
- a) Incoming lines/satellite control facilities.
 - b) Central Multiplex Encoding area containing pre-processing and signal conditioning, MPEG-2 encoders for 5+1 redundancy (see below), together with 1+1 redundancy routed multiplexers.
 - c) The necessary power supplies and resilient air conditioning systems for 24 hour/day operation;
 - d) Master control and standby facilities for quality checking of the MPEG-2 transport stream including :
 - i) 24 hour/day transmission monitoring and off-air quality control;
 - ii) liaison with satellite distribution and transmission operations;
 - iii) co-ordination with playout centres;
 - iv) control of the multiplex management computer;
 - v) off-air logging of each channel;
 - e) Computer systems facilities for the monitoring and control of the following systems:
 - i) conditional access systems;
 - ii) subscriber authorisation systems;
 - iii) multiplex management computer;
 - iv) service information compiler computers;
 - v) computer data links to playout centre and customer management centre;
 - vi) subtitle and Audetel control computers;
 - vii) transmission automation computers;
 - f) Engineering maintenance room equipped with relevant MPEG-2 transport stream analysis and signal generating and testing equipment.
42. The multiplex centre will be staffed on a 24 hour/day basis. More detail on the staffing

and cost elements of this function is provided in Section B.7.

43. The multiplex centre will be the hub of British Digital Broadcasting's digital terrestrial television operation. The preparation of the data needed to make up the complete service will take place here. By use of the latest techniques in MPEG-2 encoding and multiplexing British Digital Broadcasting will provide a high quality reliable and consistent transmission feed to the distribution network. The multiplex centre is the first point of contact with the chosen distribution and transmission partners as well as the assembly point for all programme services, with respective subtitle and Audetel data, as well as the highly complex SI data, conditional access and subscriber authorisation systems.
44. Resilience in the operation is paramount. For this reason British Digital Broadcasting will provide one spare MPEG-2 encoder for up to five main encoders. This spare encoder is automatically selected and fed with signals if there is a failure of any one of the on-line encoders. The resultant output is fed through the routing matrix to either of two multiplexers which provide a redundant path for the outgoing MPEG-2 stream. Again, any failure of a multiplexer will lead to the other being selected to air automatically. This provides a highly effective redundant switching system which, through the use of automatic transport stream analysers, can take action in the case of system failure.
45. The programme playout automation system is closely coupled to the multiplex management system. British Digital Broadcasting's chosen supplier will provide control systems which will allow it to select the most appropriate video and audio coding system for the current programme material.
46. Programme schedules from the automation system at the playout centre will be delivered via permanent data link, so that up-to-date operational playlists will be available. This information will be combined with the SI data made available by other multiplex operators and the relevant PSI/SI tables inserted into the transmission multiplexer. The intention is to ensure mutual technical compatibility between the British Digital Broadcasting multiplex and all others so that details of services carried by all multiplexes are available to the viewer, no matter which service they are currently watching, and that the viewer can freely navigate between them.
47. The customer management centre which deals with subscriber enquiries and maintains service entitlements will be located at another site and will be linked via permanent data circuits to a subscriber authorisation system at the multiplex centre. Here the entitlements "enablement" messages, and new subscriber authorisation messages will be assembled and passed on to the multiplexer for transmission to the home. There will be a close operational link between the staff managing the subscriber authorisation system at the multiplex centre and the staff at the customer management centre to ensure an efficient and reliable service for the viewer. The customer management strategy is detailed in Annex 8.
48. News Digital Systems is British Digital Broadcasting's preferred supplier of conditional access systems, although this is subject to detailed commercial

negotiations. It will be a term of the systems supply contract that the chosen conditional access system supplier will provide support staff as required to provide 24 hour/day monitoring and control of the conditional access systems. At the end of the first year these staff will either be employed as British Digital Broadcasting employees or the supplier will have trained sufficient British Digital Broadcasting staff to the level required to manage these complex conditional access systems.

49. Each monitoring area will be equipped with the relevant MPEG-2 transport-stream analysis equipment as required. Off-air logging equipment will be fitted to allow British Digital Broadcasting to record the output of each multiplex channel as transmitted to allow later analysis if required. These tapes will be held for 28 days as required by the ITC's Digital Performance Code.

Distribution

50. At present analogue terrestrial broadcasters distribute most of their programming to transmitter sites via cable (copper and optical fibre), with some point-to-point microwave links. The systems in use at present have evolved over many years and have gradually expanded to cover every site in the United Kingdom.
51. A preliminary layout of the facilities to be provided in the multiplex centre is included in Figure 2
52. With the launch of digital terrestrial television, the operating companies will need to distribute their signals to all transmitter sites allocated to their licences. If awarded the licence for Multiplex B, British Digital Broadcasting will seek to work with the other multiplex operators to establish a consistent approach to the distribution network.
53. British Digital Broadcasting has reviewed the various options and concludes that the most cost effective method of distribution to the transmitter sites is by the use of satellite links. Not only would the costs of replicating the current cable-based infrastructure be extremely high, but the logistics of having a system installed and operational would mean that the required deadlines would not be met.
54. By using satellite, the available coverage will allow the signal to be received at any transmitter site in the United Kingdom. This has major advantages in that once this path is available for the first transmitter site, the marginal cost of distributing the signal to additional sites is relatively low and is made available as required by the installation of suitable Television Receive Only (TVRO) equipment.
55. If satellite is to be used as the distribution medium for digital terrestrial television, two important points need to be considered:
- a) The overall lifetime and reliability of the satellite itself is finite and approximately equal to the length of the digital terrestrial television franchise.

- b) Transitory conditions could lead to short losses of signal due to sun outage. (This occurs when the sun passes directly behind the satellite as viewed from the receive site, causing the receive chain briefly to be overloaded with sun noise which obscures the wanted signal.)
56. Distribution of signals to the transmitters will be by resilient satellite links, i.e. utilising dual uplinks to separate satellites. British Digital Broadcasting regards this dual resilient approach as essential to safeguard the integrity of the service. Dual antennas and receiver chains will be deployed at transmitter sites, and satellites with different orbital slots will be used for the space segments. Both channels will normally be fed with the output of the multiplex centre, and any failure of the main channel will cause a hot change to the reserve channel to preserve transmission.
57. Employing a dual-satellite solution also side-steps the problem of sun outage, since, as they have different orbital slots, only one satellite at a time will be blocked by sun noise. This allows the feed from the second satellite to be selected whilst the first is experiencing an outage. Figure 3 illustrates the overall transmission distribution system.
58. Dual satellite downlinks then feed the service to each main transmitter. At this stage it is not clear how many of the relay transmitters will be able to receive a signal from main transmitters as a rebroadcast link. Both transmission operators are currently evaluating the likely number of relay transmitters which may also need to be fed by satellite.
59. British Digital Broadcasting has undertaken a detailed review of the provision of satellite capacity and associated distribution services with a number of telecommunications suppliers. Through Carlton it is currently negotiating a contract with a suitable supplier and has a detailed quote which satisfies its requirements. It has been established that satellite capacity is available, with a reliability matching or exceeding that of alternative transmission media. The principal satellite operators have a programme of continual expansion, with a planned and structured roll-out of new spacecraft to replace ageing satellites as they approach the end of their useful life. This solution is expected therefore to remain a valid one throughout the franchise period.

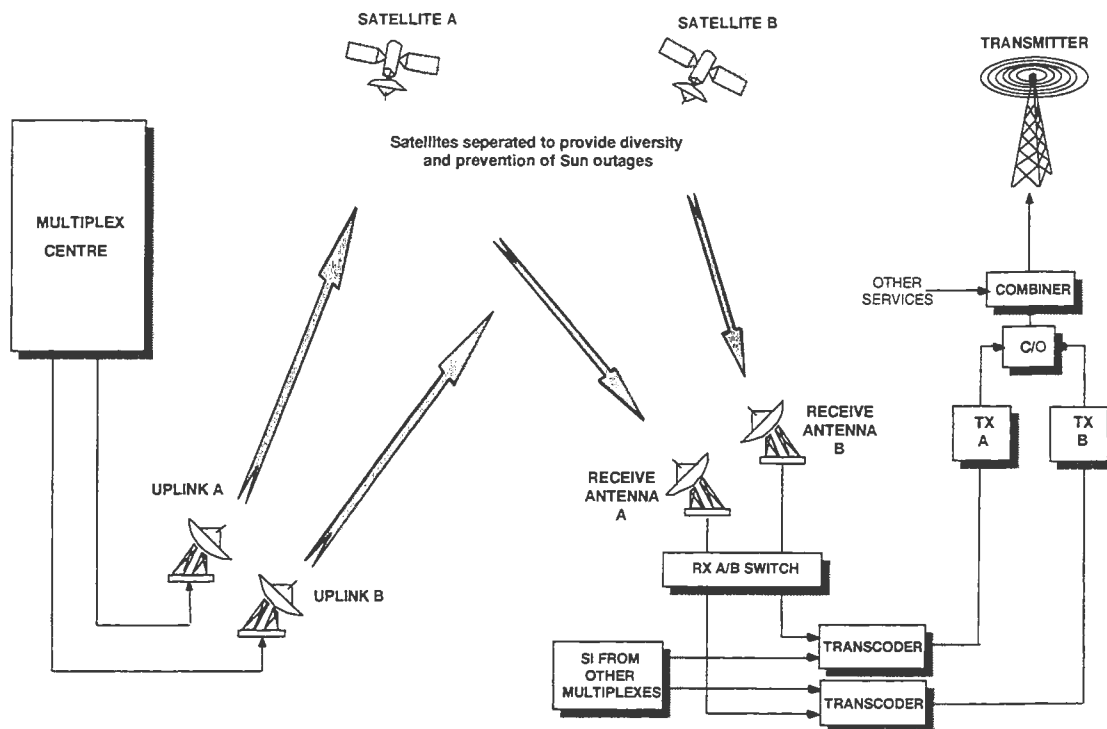


Figure 3 Transmission Distribution System

Transmission

60. British Digital Broadcasting recognises the importance of the provision of high quality transmission with a high level of service availability. The two existing transmission operators, BBC Transmission and NTL, who between them provide high quality analogue terrestrial transmission from all of the sites specified in the British Digital Broadcasting application, have been in the forefront of developments in terrestrial broadcasting technology for decades.
61. British Digital Broadcasting proposes to use one of these operators to provide, operate and maintain a high quality national transmission network. British Digital Broadcasting has established with both BBC Transmission and NTL that there is space on existing mast structures to accommodate antennas and feeders for the specified sites, although a programme of mast strengthening will be needed. It is understood that appropriate site-sharing agreements exist between both operators which would enable either to accommodate the required hardware. Nevertheless, because some structures are already heavily loaded, it is proposed to use existing antennas for at least some of the proposed services. Where necessary, new antennas will be designed to provide the required radiation patterns.
62. British Digital Broadcasting has received detailed quotations for the transmission infrastructure from both NTL and BBC Transmission, both of which satisfy operational requirements. This information has been used in the preparation of the financial analysis contained within Section B. Upon the receipt of the notification of the

multiplex licence award, British Digital Broadcasting will move quickly to secure a contract with the chosen supplier. In the event that additional liaison with other multiplex licensees and a different transmission operator is necessary, British Digital Broadcasting will work speedily with other parties involved to achieve mutually acceptable technical solutions.

63. Construction of transmitting stations will be based on the "TTC Note for Applicants on Coverage of Digital Television", dated 31st October 1996. The provisional transmitter roll-out plan covers a total of 51 main transmitting stations as shown in Appendix 1. The roll-out plan has been co-ordinated closely with that of Channel 3 and Channel 4 in the initial phases.
64. It is recognised that transmission sites and some equipment will be shared amongst the operators of the multiplexes offered to existing broadcasters, as well as the operators of Multiplexes A, B, C and D. There are therefore co-ordination and integration issues between all multiplex and transmission operators which increase with the number of parties involved. The resolution of these issues will be considerably easier if there is a single lead party co-ordinating this part of the project.
65. To ensure high quality transmission, monitoring will be provided at each transmitter site to enable any faults to be detected rapidly. This will include not only monitoring of the modulators and transmitter systems themselves, but also monitoring of the transport stream to ensure that it is properly formatted. Telemetry links will be provided for the main transmitters to enable alarms to be raised at a central control centre so that appropriate corrective action can be initiated. The monitoring and telemetry links will also provide the transmission operator with an overview of the total transmission network at all times. A high level version of this overview will be available to British Digital Broadcasting at its multiplexing centre.
66. Resilience will be built into the design of the transmitting stations in a number of ways. The transmitters themselves will be fully DVB-compliant and of all solid state, modular design in order to minimise the risk of spontaneous failure. Passive reserve rather than parallel transmitter systems will be employed in order to avoid, where possible, reduced power operation.
67. Antennas will be constructed in two halves with individual coaxial feeders. This arrangement is the same as that used in the existing analogue network and has proved itself over the years.
68. At those sites which are designated 'SI insertion points', provision will be made for insertion of not only the relevant SI for the multiplex, but also the appropriate SI relating to the other services being radiated from the same site.
69. British Digital Broadcasting intends to utilise a transmission rate of 24 Mbps. Together with the use of statistical multiplexing, this will optimise the number and quality of services carried via this multiplex. It is British Digital Broadcasting's intention initially to offer five services within this multiplex, each maintaining a comparable technical quality to that of existing analogue services. Further services

may be introduced at a later stage, following experience with the quality achievable in practice from the available multiplex capacity.

70. The final phase of the transmitter roll-out includes relay stations which are intended to extend the coverage of the main stations. Although it is normal practice to rebroadcast the incoming signal from a nearby main station without demodulation, both potential transmission suppliers have drawn attention to possible interference problems on the received signals at most of the relay station sites which may rule out rebroadcasting. If this proves to be the case, it will be necessary to use the satellite distribution system to feed the affected relay station.
71. Were further frequencies to become available for this multiplex, leading to opportunities for significant extensions in the population coverage at reasonable cost, British Digital Broadcasting would continue the relay station roll-out past the currently envisaged total. Where further frequencies would lead to only a marginal increase in population coverage, British Digital Broadcasting would review the position once the digital terrestrial television service has been established.
72. British Digital Broadcasting will monitor the technical performance and availability of the multiplexes by requiring its transmission operator to submit monthly reports detailing the performance levels and availability achieved, along with details of any part of the service which does not meet agreed thresholds. A summary of these reports will be made available to the ITC on an annual basis if required.

Implementation

73. If awarded the licence for Multiplex B alone, British Digital Broadcasting will enter into discussions with all the other multiplex operators to establish a lead party for the management of a single roll-out programme for all multiplexes. In doing this, British Digital Broadcasting will promote a fast-track approach to the start of digital terrestrial television services.

Transmitter Build Programme

74. British Digital Broadcasting's proposed transmitter roll-out is shown in Appendix 1 and is based on the following phases of construction:

Phase 1: 5 main sites for testing and development by September 1997

75. These stations should provide a total net population coverage of 19.56 million people, mainly in the South East, Midlands, North East England and South Wales. The selection of these particular transmitters has been co-ordinated with the DTG plan to allow test transmissions to begin in close proximity to the major television receiver manufacturers' plants to facilitate testing and quality control of sets.

Phase 2: 15 further main sites by December 1997

- 76. These will extend the coverage further, including parts of Scotland and Northern Ireland.

Two further main sites to follow by March 1998

- 77. This will enable a total of 22 main station sites to be brought into programme service in July 1998 providing a total net population coverage of 37.63 million people.

Phase 3: 21 further main sites by December 1998

- 78. Extending the net population coverage to 44.76 million people.

Phase 4: remaining 38 sites by the end of December 1999

- 79. This total of 81 main and relay station sites provides a net UK population coverage of 50.64 million people.

Final Coverage

- 80. The cumulative population coverage's for multiplex B is based on the proposed transmitter roll-out, as shown in Table 1. This provides total coverage of the area on offer for this multiplex, as shown in Appendix 1.

Multiplex B Cumulative Population Coverage			
rollout phase	number of transmitters	cumulative population 1000's	% of national population
1	5	19,562	34 %
2	17	37,629	65.4 %
3	21	44,757	77.8 %
4	38	50,640	88 %

Table 1.

Notes: An estimate has been made by Fremont Point based on analogue coverage figures. UK population is assumed to be 57.5 million.

- 81. The roll-out plan described above is predicted to provide a final coverage of 88% of the UK population based on the coverage predictions in the ITC document "Note for applicants on Coverage for Digital Television". This coverage is based on the 'net' figures in the ITC document which take account of the overlaps between adjacent transmitters.
- 82. The ITC document contains two figures for population coverage estimates for each multiplex at each transmitter site based on different methods of counting. Until further field work has been carried out to establish which prediction technique is the more appropriate, British Digital Broadcasting is assuming that the population covered is

based upon the proportional method of counting as referred to in the Invitation to Apply. Coverage figures for all multiplexes assume a transmitted data rate of 24 Mbps.

83. In principle, British Digital Broadcasting would like to extend the coverage of the service where additional frequencies become available and where these enable significant increases in population coverage to be achieved at a reasonable cost. British Digital Broadcasting is aware that the availability of additional frequencies depends on international co-ordination and clearances and would propose to discuss these matters at routine liaison meetings with the ITC.

Start Date

84. Based on the above transmitter build programme, the date of start of transmissions of the multiplex service is forecast to be July 1998.

Conditional Access

85. If awarded a single multiplex licence, British Digital Broadcasting will seek to work with the other licence holders to establish a common solution for all digital terrestrial services. A common solution for conditional access is regarded as essential for the development of the market. As several other parties will be involved, it is not yet possible to provide any firm indications of the outcome of these discussions. British Digital Broadcasting will advocate a solution that encourages the availability of low cost consumer equipment at the commencement of digital terrestrial television services, whilst still allowing the introduction of other strategies at a later stage.
86. British Digital Broadcasting also recognises that multiplex operators and other interested parties may have concerns regarding the possibility of conditional access technology being used to establish a dominant position in the market. British Digital Broadcasting's view is that competition in the provision of television services should be on the basis of programme quality and the quality of service offered to the viewer and that this competition should not be hindered or prevented as a result of "gate keeping" by conditional access operators. It is assumed that the conditional access system used to support British Digital Broadcasting's services will be available to all service providers on fair, reasonable and non-discriminatory terms as required by regulations and guidance notes issued by the DTI and OFTEL.
87. In the case that British Digital Broadcasting operates a conditional access authorisation service for other multiplex operators, British Digital Broadcasting will support an interface to that licensee's own customer management centre.

Section A2 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three licences for which it has applied.

British Digital Broadcasting's 'three multiplex' operation incorporates the same functions and processes as its 'single multiplex' equivalent but is resourced to a higher level to reflect the greater workload and wider role that British Digital Broadcasting would be able to take in leading the development of the market.

APPENDIX 1 TO A2

Proposed Transmitter Roll-Out Programme

Note: Shaded transmitter sites indicate Service Information insertion points.

	Transmitter Site	Date	Cumulative Population (net 1000's)	% of offered coverage
PHASE 1	Crystal Palace	01/09/97	9,530	18.8%
	Sutton Coldfield	01/09/97	12,890	25.5%
	Winter Hill	01/09/97	17,080	33.7%
	Wenvoe	01/09/97	18,012	35.6%
	Pontop Pike	01/09/97	19,562	38.6%
PHASE 2	Sandy Heath	31/12/97	21,212	41.9%
	Emley Moor	31/12/97	23,762	46.9%
	Belmont	31/12/97	25,702	50.8%
	Caldbeck	31/12/97	25,976	51.3%
	Waltham	31/12/97	27,966	55.2%
	Fremont Point	31/12/97	28,066	55.4%
	Durriss	31/12/97	28,357	56.0%
	Mendip	31/12/97	29,706	58.7%
	Rowridge	31/12/97	31,166	61.5%
	Hannington	31/12/97	31,935	63.1%
	Black Hill	31/12/97	33,475	66.1%
	Craigkelly	31/12/97	34,070	67.3%
	Bilsdale	31/12/97	35,170	69.5%
	Divis	31/12/97	36,200	71.5%
	Caradon Hill	31/12/97	36,428	71.9%
	Stockland Hill	31/03/98	36,935	72.9%
Tacolneston	31/03/98	37,629	74.3%	

Proposed Transmitter Roll-Out Programme

Note: Shaded transmitter sites indicate Service Information insertion points.

	Transmitter Site	Date	Cumulative Population (net 1000's)	% of offered coverage
PHASE 3	Sudbury	31/12/98	38,294	75.6%
	Oxford	31/12/98	38,889	76.8%
	Ridge Hill	31/12/98	39,299	77.6%
	Huntshaw Cross	31/12/98	39,418	77.8%
	Angus	31/12/98	39,878	78.7%
	Rosemarkie	31/12/98	39,996	79.0%
	Blaenplwyf	31/12/98	40,045	79.1%
	Carmel	31/12/98	40,229	79.4%
	Llanddona	31/12/98	40,339	79.7%
	Moel-y-parc	31/12/98	40,991	80.9%
	Presely	31/12/98	41,076	81.1%
	Beacon Hill	31/12/98	41,744	81.5%
	Dover	31/12/98	41,271	82.4%
	Midhurst	31/12/98	41,963	83.6%
	Heathfield	31/12/98	42,357	82.9%
	Darvel	31/12/98	42,833	84.6%
	Brougher Mtn	31/12/98	42,880	84.7%
	Limavady	31/12/98	43,021	85.0%
	The Wrekin	31/03/99	43,596	86.1%
Bluebell Hill	31/03/99	44,499	87.9%	
Redruth	31/03/99	44,757	88.4%	
PHASE 4	Salisbury	31/12/99	44,809	88.5%
	Tunbridge Wells	31/12/99	44,910	88.7%
	Guildford	31/12/99	45,057	89.0%
	Hemel Hempstead	31/12/99	45,205	89.3%
	Reigate	31/12/99	45,382	89.6%
	Brierly Hill	31/12/99	45,510	89.9%
	Bromsgrove	31/12/99	45,580	90.0%

Proposed Transmitter Roll-Out Programme

Note: Shaded transmitter sites indicate Service Information insertion points.

Transmitter Site	Date	Cumulative Population (net 1000's)	% of offered coverage
PHASE 4 Fenton	31/12/99	45,760	90.4%
Larkstoke	31/12/99	45,902	90.6%
Malvern	31/12/99	46,102	91.0%
Nottingham	31/12/99	46,454	91.7%
Bressay	31/12/99	46,465	91.8%
Eitshal	31/12/99	46,484	91.8%
Keelylang Hill	31/12/99	46,501	91.8%
Knock More	31/12/99	46,547	91.9%
Rumster Forest	31/12/99	46,607	92.0%
Aberdare	31/12/99	46,661	92.1%
Lancaster	31/12/99	46,910	92.6%
Pendle Forest	31/12/99	47,123	93.1%
Saddleworth	31/12/99	47,503	93.8%
Storeton	31/12/99	47,768	94.3%
Bristol I.C.	31/12/99	47,927	94.6%
Bristol K.W.	31/12/99	48,031	94.8%
Kilvey Hill	31/12/99	48,278	95.3%
Hastings	31/12/99	48,428	95.6%
Pontytpool	31/12/99	48,502	95.8%
Rosneath	31/12/99	48,630	96.0%
Chatton	31/12/99	48,781	96.3%
Fenham	31/12/99	49,097	97.0%
Plympton	31/12/99	49,272	97.3%
Chesterfield	31/12/99	49,514	97.8%
Idle	31/12/99	49,639	98.0%
Keighley	31/12/99	49,744	98.2%
Olivers Mount	31/12/99	49,807	98.4%
Sheffield	31/12/99	50,106	98.9%
Selkirk	31/12/99	50,176	99.1%
Torosay	31/12/99	50,189	99.1%
Whitehawk Hill	31/12/99	50,640	100.0%

Section A3 -Promoting or Assisting the Acquisition of Equipment

ITC Requirement

Noting the information contained in paragraphs 16, 36, 84 to 88 and 131, the applicant should state in detail what arrangements he has made to promote or assist the acquisition, including on hire or loan, of equipment capable of receiving all the multiplex services available in the coverage area of the proposed service. Confidential financial information, including details of expenditure underpinning these arrangements should be provided separately in Section B of the attachment to Part III. Without limiting the information to be supplied, applicants should cover the following issues:

- *what arrangements, if any, exist with manufacturers to support the development and production of the equipment, e.g. technical expertise, direct or indirect financial support (including subsidy), etc.;*
- *what arrangements, if any, exist with retailers to support the sale, hire or loan of equipment, e.g. marketing assistance; direct financial support;*
- *details, and the number of, retail outlets which will offer equipment for sale, hire or rent in the transmission coverage area;*
- *is it intended to offer equipment direct to households? If so, details of the associated marketing and sales strategy, including the number of people to be employed in this area, should be provided;*
- *details of marketing and publicity plans, identifying separately those to be undertaken jointly with manufacturers and/or retailers, including proposals for advertising on television, radio, in the press, by direct mail, etc. (Applicants should identify the target audience in each case. This information may be provided in Section B if wished);*
- *the extent to which the range and characteristics of the services to be offered will promote or assist the acquisition of receiving equipment by viewers.*

Summary

If British Digital Broadcasting was awarded the licence to operate Multiplex B, British Digital Broadcasting's plans to promote and assist the acquisition of digital terrestrial television equipment would be aimed at supporting the integrated plans of a 'lead' multiplex operator or a grouping that achieves a similar effect. British Digital Broadcasting will work to integrate its plans as fully as possible to ensure consumers receive a single clear marketing message.

1. The success of digital terrestrial television is in the national interest. Viewers will receive more choice, convenience and better reception. There will be a significant economic boost to the consumer electronics and television production industries. However, success requires, from the outset, a good match between supply and demand. British Digital Broadcasting's view is that there are three potential supply

and demand patterns:

- a) A slow start with manufacturers and retailers waiting for proof of demand levels before ordering and producing equipment, and consumers delaying their purchase decisions even though digital terrestrial television might offer the best value route into multi-channel television. This pattern would lead to the market only maturing in the later years of the initial licence period and possibly not reaching its full potential because of the establishment of competing delivery systems.
 - b) A medium pace initial market growth, with manufacturers and retailers slightly less cautious and some consumers making an early decision to buy. This pattern leads to the market maturing in the middle years of the initial licence period.
 - c) A buoyant and vibrant market from launch with manufacturers and retailers committed to high supply levels and consumers demanding equipment in large numbers at the launch date.
2. Creating the most buoyant market requires a fully resourced, and integrated marketing plan. British Digital Broadcasting believes that this can best be achieved realistically if led by an organisation with licences to operate three multiplexes, which is able and prepared to drive the market through investment in retail promotions and subsidy; and in marketing, programming and customer service.
 3. If British Digital Broadcasting and other organisations were each to be awarded single licences, then the inherent delays in agreeing a consensus position for the marketing effort, and the lack of economies of scale, would make a fully funded integrated marketing plan less certain. This would lead, at best, to the medium pace market growth scenario described above. In the absence of genuine integration the market would be left largely to find its own level which would delay the positive interaction of supply and demand and so favour the slow growth scenario outlined above.
 4. British Digital Broadcasting's proposals for promoting equipment if it were awarded three multiplexes are attached as Section A3 of its supplementary proposals, and describe British Digital Broadcasting's plans to implement an integrated marketing plan to promote digital terrestrial television both generically and for its own services.
 5. In this application, British Digital Broadcasting details its proposals for promoting or assisting the acquisition of equipment if it were awarded Multiplex B only. Given the commercial sensitivity of this information, much of the detail is contained in confidential Section B3.
 6. The base case assumption has been made that were British Digital Broadcasting to be awarded a single multiplex licence, there will be a 'lead' multiplex operator who will have proposed integrated promotional plans at least as strong as those contained in British Digital Broadcasting's own supplementary proposals. As a result, British Digital Broadcasting's proposals in this application assume that the levels of generic

promotion and subsidy of the digital terrestrial television market will be at least on the scale of those outlined in British Digital Broadcasting's supplementary proposal for three multiplexes.

Securing High Levels of Supply by Supporting Manufacturers in the Development and Introduction of Equipment

7. UK based manufacturers are, in principle, keen to see a new market in digital terrestrial televisions and, like the shareholders in British Digital Broadcasting, the majority of them have participated in the preparation of the Digital Television Group's project to develop core specifications and equipment inter-operability requirements. Understandably, however, they are looking for some level of security to underpin design work and the establishment of production capability.
8. In British Digital Broadcasting's integrated marketing plan, this need for security would be provided by creating a partnership with manufacturers to include underwriting orders for set-top boxes, ensuring future production capacity and joint marketing initiatives.
9. In the case of a single multiplex licence award, this generic activity is assumed to be carried out by other multiplex licence holders or by all licence holders acting together. British Digital Broadcasting would take part in this activity in any appropriate and financially viable way. British Digital Broadcasting believes that promotions in relation to manufacture and retailing have an important part to play and has planned contributions to such arrangements. In the event that the other licence holder(s) plan subsidies, British Digital Broadcasting will look to collaborate where practicable. The plans outlined in this proposal for promoting and assisting the acquisition of equipment are based on British Digital Broadcasting's best current views of the measures necessary to stimulate the fastest market growth for digital terrestrial television. These plans will be constantly reviewed through the period between the licence award and the launch of the service and will be adapted in the light of any changes to prevailing market conditions.

Securing High Levels of Supply by Means of Arrangements with Retailers to Support the Sale, Hire or Loan of Equipment

10. Electrical retailers are, in principle, keen to see a new market in digital terrestrial television equipment and, like the shareholders in British Digital Broadcasting, many of them have been involved in the DTG Group project to develop core specifications and create joint marketing objectives. Understandably, however, and like manufacturers, they are looking for some level of commitment from the multiplex holders regarding pricing and marketing support before they commit to orders.
11. In British Digital Broadcasting's integrated marketing plan, this commitment would be provided by creating a partnership with retailers to include subsidised set-top box prices, guaranteed retail availability, promotional offers and joint marketing initiatives.

12. In the case of a single multiplex licence award, British Digital Broadcasting would concentrate its market effort behind its own channels and would therefore concentrate on providing promotional offers through retailers. In addition, given the absence of economies of scale, the level of investment behind these offers, whilst still substantial, would be lower than in the integrated marketing plan. Dependent on market conditions at the time, British Digital Broadcasting may wish to combine its marketing support to retailers with the support of any other multiplex licence holders. Given its belief in the price sensitivity of the market, British Digital Broadcasting has put aside a contingency fund to enable British Digital Broadcasting to co-operate jointly with the marketing plans proposed by other multiplex licence holder(s).

Details and Numbers of Retail Outlets

13. British Digital Broadcasting has acquired substantial research data to help its understanding of consumer purchasing patterns for televisions and set-top box equipment, and to identify the main retail channels for these products. Full details of this analysis are set out in confidential Section B3 and Annex 18.
14. British Digital Broadcasting has, (through Carlton) over the last four months, held detailed discussions with all the major retail and TV rental chains. These companies account for over half of the UK market in equipment sales and rental. Following these briefings, they have provided assurances that they plan to stock digital terrestrial television receiving equipment at all stores within the transmission area, at the time of launch.
15. Based upon these discussions, British Digital Broadcasting estimates that a number of major store groups and independent retailers will stock digital terrestrial receiving equipment with a combined total of up to 5,500 outlets nationally within the coverage area. On this basis British Digital Broadcasting estimates that equipment will be stocked as follows:

Date	Outlets
July 1998	2000
January 1999	4000
January 2000	5500

Offering Equipment Direct to Households

16. British Digital Broadcasting believes that retailers are best placed to explain the concept and benefits of digital terrestrial television and also to provide the consumer with pre-sales advice, financing and after sales service. They are experienced in selling high value consumer electronics equipment and have staff and demonstration facilities to answer the inevitable queries of customers considering an investment in a new piece of technology. British Digital Broadcasting is aware that direct selling played a part in

the early introduction of analogue set-top boxes. It will therefore review whether direct selling could play a part in equipment sales but has not, at this stage, included this in its base case business plan.

Marketing and Publicity Plans

17. The BBC, ITV, Channel 4 and Channel 5 will be promoting their new digital services on their main analogue channels. This will provide initial generic marketing to raise the public's awareness of the launch of digital terrestrial television. Through their participation in ITV's plans for digital services, both Carlton and Granada intend to fully support this promotional activity and have supported the proposed arrangement with Digital 3 and 4 Ltd for Channel 4 and the ITV companies to broadcast up to one minute a day of digital terrestrial promotions.
18. British Digital Broadcasting has also been involved in the discussions with Digital 3 and 4 Ltd and the BBC regarding the possibility of a joint overall marketing campaign for digital terrestrial television programming. British Digital Broadcasting believes strongly that such a campaign would be of great value and fully supports the initiative, which would help ensure that digital terrestrial television services gain widespread public awareness.
19. If British Digital Broadcasting were only awarded Multiplex B, its marketing and publicity plans would be concentrated on promoting the uptake of digital equipment through promoting its own channels. This marketing would cover television, magazine and poster advertising which would be linked to the promotional offers through retailers as set out earlier in this section. This advertising activity would start just prior to the launch of the service and would continue throughout the licence period. Detailed plans and expenditure levels are set out in Section B3 of this application.
20. British Digital Broadcasting intends to offer its channels as a stand alone package to consumers. If, however, the commercial case were made for including British Digital Broadcasting's channels as part of the basic package offered by other licence holder(s), British Digital Broadcasting would look positively at the proposal.

Target Audience

21. Television viewing is the most popular leisure activity in the country with an average person watching in excess of 25 hours each week. Since the arrival of digital terrestrial television is potentially one of the biggest changes since colour, the target audience for digital terrestrial television must be the entire television viewing population.
22. In order to achieve the fastest take-up of equipment, British Digital Broadcasting has worked with the research company, NOP, to identify those consumers who are most likely to be the first purchasers of digital terrestrial receiving equipment. In conjunction with British Digital Broadcasting's advertising advisers, Lowe Howard-Spink, these consumers' socio-economic and age profiles, as detailed below, have been

used to create the advertising and promotional target audiences for British Digital Broadcasting’s marketing plans.

Table: Socio Economic Profile for Early Adopters of Digital Terrestrial Equipment

Socio Economic Group	Early Adopters %	Index v Population
AB	19	112
C1	36	133
C2	21	105
DE	24	65

Table: Age Profile for Early Adopters of Digital Terrestrial Equipment

Age Group	Early Adopters %	Index v Population
16-24	21	210
25-34	45	196
35-44	16	89
45-54	13	72
55-64	3	23
65+	2	11

- 23. As can be seen from the above tables, the profile of likely early adopters of digital terrestrial television equipment is mid to up market in socio-economic terms with a younger age bias.
- 24. British Digital Broadcasting’s marketing and advertising plans, as detailed in Section B3, are designed to target these early adopters, whilst still recognising the importance of the launch of digital terrestrial television to the whole population.

Regional Promotion

- 25. British Digital Broadcasting intends to offer a single national package of services. In doing so, it will need to be sensitive to the fact that some parts of the country will receive services later than others so that, overall, coverage will be less than 100%. British Digital Broadcasting’s promotional activity will be focused, as far as practicable, on those parts of the country able to receive its services.

Additional Marketing Support Services

- 26. To back up the marketing activity, British Digital Broadcasting will be creating a database which will allow consumers to register their interest in its digital services. These consumers will then be sent any relevant information, details or special offers that become available.
- 27. British Digital Broadcasting is aware that part of the success of pay-television is in retaining existing subscribers as well as encouraging new subscribers. To achieve this success, British Digital Broadcasting’s marketing plans include significant levels of investment in subscriber marketing. The objectives of British Digital Broadcasting’s

subscriber marketing would be to retain existing customers, ensure maximum subscription from each subscriber, persuade lapsed subscribers to re-subscribe, identify new subscribers and prevent potential bad debts. The main areas that subscriber marketing would cover are direct mail, contract distribution and telemarketing.

How the Service will Promote or Assist Equipment Acquisition

28. British Digital Broadcasting proposes to offer subscription channels. As part of its market research, it tested viewers' opinions on, and interest in a wide range of subscription channel concepts. There were some clear favourites in terms of channels that would achieve high viewing levels and channels that would be regarded as justifying the purchase and subscription costs. The results of this research are summarised in confidential Annex 1.
29. In the light of this research British Digital Broadcasting's proposed channel selection of Sky Movies, Carlton Entertainment, Granada Plus, Sky One, and BBC Showcase/BBC Style has been selected as the best choice to promote and assist the acquisition of equipment. The choice of one premium channel and four basic channels provides consumers with access to a premium channel, whilst at the same time providing a large and attractive basic package to appeal to consumers who are less certain to pay for premium channels. British Digital Broadcasting's research identified a premiere movie channel as being the single most popular choice amongst current terrestrial-only households. In respect of the basic channel line-up, British Digital Broadcasting's research shows that viewers are most receptive to general entertainment channels. Were British Digital Broadcasting to be awarded this single multiplex the assumption is made that the channels offered by other successful applicants will include other strong "driver" channels.

Section A3 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three licences for which it has applied.

In the event that British Digital Broadcasting were awarded three multiplex licences British Digital Broadcasting proposes to lead and fund an integrated marketing plan to drive the digital terrestrial television market.

Section A4 - Number and Characteristics of Services

ITC Requirement

Taking account of the guidance given in paragraphs 91 to 105 above, the applicant should state the number of digital programme services which he intends to broadcast and for each service he should describe:

- i) the date when the service will commence;*
- ii) the hours of the day and the days of the week during which the service will be broadcast;*
- iii) the coverage area;*
- iv) the type of programmes which will be broadcast, the style of programme service and the target audience (see notes);*
- v) the average proportion of total programme hours that will consist of original productions or commissions, i.e. programmes which have been made specifically for the digital programme service; and*
- vi) the average proportion of total programme hours that will consist of first-run material, i.e. material which has not previously been shown on the digital programme service.*

Notes:

- 1. An ITC Guidance Note on Programme Definitions is available which explains how programmes should be classified.*
- 2. Applicants may wish to refer to audience research findings which support the belief that the proposed services will appeal to a variety of tastes and interests and/or that different elements will appeal to particular target audiences.*
- 3. Applicants should note that it will not be sufficient to describe programme services in general terms without explaining what types of "entertainment" or "sport" for example will be provided in different parts of the schedule (evening, daytime etc.) for whom the programmes are intended and how they will be sourced (see A14).*
- 4. Applicants for Licence A should note the requirement to provide Gaelic language programming in Scotland, as described in paragraph 120.*

Summary

For Multiplex B, British Digital Broadcasting proposes four basic subscription channels: Carlton Entertainment, Granada Plus, Sky One, BBC Style and BBC Showcase and one premium subscription channel - Sky Movies. This 'one multiplex' proposal has been designed to complement the assumed prospective channels viewers would be receiving from the 'free-to-air' multiplexes and from other commercial multiplexes.

1. A central element of British Digital Broadcasting's proposal is its programme service. British Digital Broadcasting's service will be supplied by Carlton, Granada, BSkyB, and the BBC, respectively the major UK forces in commercial terrestrial television, pay television, and public service broadcasting.

2. British Digital Broadcasting has taken into account, particularly, the findings of research into viewers' interests and research into which subscription channel concepts will best supplement and complement the 'free-to-air' channels digital terrestrial viewers are likely to receive from other broadcasters. These 'free-to-air' channels will also play a vital role in the overall appeal of digital terrestrial television.
3. Carlton, on behalf of British Digital Broadcasting, has carried out a two phase research programme to help understand the channels that would, in combination, encourage the uptake of subscriptions and sustain viewers' interests so as to minimise churn. The first phase of survey research in September 1996 looked at 25 channel concepts. These results clearly identified the channels which captured high viewer interest and for which they were prepared to pay. The second phase of research in November 1996 concentrated on the most likely channels in more detail, using survey and focus group techniques. (A summary of the two phases of research is contained in confidential Annex 1). In the research it was explained to consumers that digital terrestrial television would combine 'free-to-air' channels from the BBC, ITV, C4, C5 and S4C, with around twenty pay-television channels. It was further explained that the 'free-to-air' channels would include, for example, a BBC 24 hours news channel and a second ITV channel.
4. British Digital Broadcasting's 'one multiplex' programme offer for Multiplex B comprises a set of four high quality basic channels: Carlton Entertainment, Granada Plus, Sky One and BBC Style/BBC Showcase and one premium channel, Sky Movies.

Carlton Entertainment	A new channel to meet the enduring demand for well executed popular entertainment. There will be a strong emphasis on British productions alongside quality acquired material from other sources.
Granada Plus	Programmes based predominantly on prestigious and popular British drama, entertainment, comedy and children's programming as well as critically acclaimed documentaries and features. The existing cable and satellite service will be enhanced with more high quality original programming from Granada TV and LWT's award winning production teams.
Sky One	Sky One will provide a range of quality family entertainment - comedy, drama, documentaries, science fiction, reality programmes and chat shows combining domestic and imported product.
BBC Style and BBC Showcase	BBC Style will feature fresh and first-rate leisure and lifestyle programming - from antiques to aspidistras, cooking to collecting, gardening to gastronomy, from what to wear to what to drive. BBC Showcase is designed to 'showcase' for viewers high quality and popular programmes from BBC1 and BBC2. Content will range from classic to contemporary, from drama to comedy.

<p>Sky Movies</p>	<p>Sky Movies will aim to screen hit movies from around the world, featuring British films as well as imports. The channel is scheduled to operate 24 hours a day, 7 days a week with all movies shown without commercial breaks. In order to cater to the widest range of viewers' lifestyles, the most popular shown movies will be re-screened at different times and on different days.</p>
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5. Should British Digital Broadcasting be awarded Multiplex B only, these channels have been designed to complement what British Digital Broadcasting has assumed would be attractive programme services on the other multiplexes.
6. The shareholders of British Digital Broadcasting have access to a substantial body of library material and rights which will be available to enhance British Digital Broadcasting's service proposition. An outline is included as Annex 17.
7. British Digital Broadcasting's content pricing approach is described in Section A3. British Digital Broadcasting's approach to particular genres is described in Section A6. Each channel is detailed overleaf. For each channel British Digital Broadcasting has indicated the percentage of programme hours that will consist of original productions or commissions in relation to that channel.
8. The BBC subscription channels which form part of this application and its supplementary proposals are intended to be offered through the joint venture between the BBC and Flextech. The BBC is engaged in further work to finalise and make public, details of these channels and information about schedules is, at this stage, in broad generic or illustrative form. The BBC will furnish British Digital Broadcasting with further information, including information as to the amount of original and first-run material and indicative schedules as soon as possible and this information will be available to the ITC upon request.

Carlton Entertainment

A new channel to meet the enduring demand for well executed popular entertainment. There will be a strong emphasis on British productions but integrating the 'best of the rest'.

Start Date, Hours of Broadcast and Coverage

9. Carlton Entertainment will be available from the date of the launch of the British Digital Broadcasting digital terrestrial television service. It is currently scheduled to transmit for 18 hours per day, seven days per week, 52 weeks a year. It will be transmitted on a national basis, using the full coverage capability of the multiplex.

Programme Type

10. Carlton Entertainment will meet the enduring consumer demand for well produced popular entertainment. The programmes are a mix of original UK productions and those bought in from other English-speaking countries.
11. Children's programming will begin the schedule each day and will run in a magazine format from 6am till 9am. Morning programmes are generally quiz and game-shows of all types; from those aiming to entertain to more brain-stretching fare. In the early afternoon, the channel concentrates on well-known soaps. From late afternoon to the early evening, family drama is the core of the schedule, while the early evening concentrates on comedy, with a mixture of British and American sitcoms. Later in the evening the menu is based around interview, talk and information programming, from "Hello"- style gossip and audience participation shows to more serious in-depth interviews. Approximately three-quarters of the talk-show programmes will be original British productions largely sourced through Action Time - a subsidiary of Carlton specialising in this genre.
12. Almost 30% of British Digital Broadcasting's channel research respondents were attracted to this channel as a 'family channel', with nearly equal number of terrestrial households saying it was 'for them', 'for partner' and 'for children'.

Indicative Schedule

13. The indicative schedule is shown overleaf. Detailed negotiations with some programme suppliers will be finalised once the results of the licence application are known. British Digital Broadcasting, in conjunction with Carlton, will constantly review audience response and the competitive environment and refine and adjust the programme line-up accordingly.

Carlton Entertainment Indicative Schedule: by Genre

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
06:00	Children's Magazine	Children's Magazine	Children's Magazine	Children's Magazine	Children's Magazine	Children's Magazine	Children's Magazine
07:00							
08:00							
09:00	Quiz	Quiz	Quiz	Quiz	Quiz	Children's Quiz	Children's Quiz
09:30	Quiz	Quiz	Quiz	Quiz	Quiz	Children's Quiz	Children's Quiz
10:00	Quiz	Quiz	Quiz	Quiz	Quiz	Quiz	Quiz
10:30	Quiz	Quiz	Quiz	Quiz	Quiz	Quiz	Quiz
11:00	Quiz	Quiz	Quiz	Quiz	Quiz	Quiz	Quiz
11:30	Quiz	Quiz	Quiz	Quiz	Quiz	Quiz	Quiz
12:00	Aus Soap	Aus Soap	Aus Soap	Aus Soap	Aus Soap	Aus Soap	Aus Soap
12:30	Aus Drama	Aus Drama	Aus Drama	Aus Drama	Aus Drama	Aus Drama	Aus Drama
13:00						UK Soap	UK Soap
13:30	UK Soap	UK Soap	UK Soap	UK Soap	UK Soap	UK Soap	UK Soap
14:00	UK Soap	UK Soap	UK Soap	UK Soap	UK Soap	UK Soap	UK Soap
14:30	US Drama	US Drama	US Drama	US Drama	US Drama	US Sci-Fi	US Sci-Fi
15:00							
15:30	US Series Drama	US Series Drama	US Series Drama	US Series Drama	US Series Drama	US Sci-Fi	US Sci-Fi
16:00							
16:30	Children's Drama	Children's Drama	Children's Drama	Children's Drama	Children's Drama	Children's Drama	Children's Drama
17:00	Aus Soap	Aus Soap	Aus Soap	Aus Soap	Aus Soap	Children's Drama	Children's Drama
17:30	Aus Drama	Aus Drama	Aus Drama	Aus Drama	Aus Drama	Children's Drama	Children's Drama
18:00						Children's Drama	Children's Drama
18:30	US Comedy	US Comedy	US Comedy	US Comedy	Film Comedy	UK Comedy	UK Comedy
19:00	UK Comedy	UK Comedy	UK Comedy	UK Comedy		US Comedy	US Comedy
19:30	UK Comedy	UK Comedy	UK Comedy	UK Comedy		US Comedy	US Comedy
20:00	US Comedy	US Comedy	US Comedy	US Comedy	US Comedy	UK Comedy	UK Comedy
20:30	UK Comedy	UK Comedy	UK Comedy	UK Comedy	UK Comedy		
21:00	Talk Show	Talk Show	Talk Show	Talk Show	Talk Show	Talk Show	Talk Show
22:00	Entertainment	Entertainment	Entertainment	Entertainment	Entertainment	Entertainment	Entertainment
22:30	US Talk Show	US Talk Show	US Talk Show	US Talk Show	US Talk Show	US Talk Show	US Talk Show
23:00	Chat Show	Chat Show	Chat Show	Chat Show	Chat Show	Chat Show	Chat Show

Carlton Entertainment Indicative Schedule: by Illustrative Programme

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
06:00	Children's Magazine	Children's Magazine	Children's Magazine	Children's Magazine	Children's Magazine	Children's Magazine	Children's Magazine
07:00							
08:00							
09:00	Catchphrase	Catchphrase	Catchphrase	Catchphrase	Catchphrase	Terror Towers	Terror Towers
09:30	Surprise Chefs	Surprise Chefs	Surprise Chefs	Surprise Chefs	Surprise Chefs	Crazy Cottage	Crazy Cottage
10:00	Lingo	Lingo	Lingo	Lingo	Lingo	Blockbusters Rpt	Blockbusters Rpt
10:30	Blockbusters	Blockbusters	Blockbusters	Blockbusters	Blockbusters	Blockbuster Rpt	Blockbuster Rpt
11:00	Family Fortunes	Family Fortunes	Family Fortunes	Family Fortunes	Family Fortunes	Family Fortunes Rpt	Family Fortunes Rpt
11:30	S/Sweep	S/Sweep	S/Sweep	S/Sweep	S/Sweep	Family Fortunes Rpt	Family Fortunes Rpt
12:00	Home & Away	Home & Away	Home & Away	Home & Away	Home & Away	Home & Away Rpt	Home & Away Rpt
12:30	Heartbreak High	Heartbreak High	Heartbreak High	Heartbreak High	Heartbreak High	Heartbreak High	Heartbreak High
13:00						UK Soap London Bridge	UK Soap Home & Away
13:30	London Bridge	London Bridge	London Bridge	London Bridge	London Bridge	London Bridge Rpt	London Bridge Rpt
14:00	Crossroads	Crossroads	Crossroads	Crossroads	Crossroads	London Bridge Rpt	London Bridge Rpt
14:30	Loveboat	Loveboat	Loveboat	Loveboat	Loveboat	Lost in Space	Lost in Space
15:00							
15:30	Drama Dynasty	Drama Dynasty	Drama Dynasty	Drama Dynasty	Drama Dynasty	Land of the Giants	Land of the Giants
16:00							
16:30	Woof!	Woof!	Woof!	Press Gang	Woof!	Beechcombers	Beechcombers
17:00	Home & Away	Home & Away	Home & Away	Home & Away	Home & Away	Danger Bay	Danger Bay
17:30	Heartbreak High	Heartbreak High	Heartbreak High	Heartbreak High	Heartbreak High	Murphy's Mob	Murphy's Mob
18:00						Harry's Mad	Harry's Mad
18:30	I Dream of Genie	Bewitched	I Dream of Genie	Bewitched	Film Comedy	A Kind of Living Rpt	A Kind of Living Rpt
19:00	Auf Wieder Pet	A Kind of Living	Auf Wieder Pet	A Kind of Living		Bewitched Rpt	Bewitched Rpt
19:30	Girls on Top	Galton & Simpson	Girls on Top	Galton & Simpson		The Single Guy Rpt	The Single Guy Rpt
20:00	Ned & Stacey	The Single Guy	Ned & Stacey	The Single Guy	Ned & Stacey	Auf Wieder Pet Rpt	Galton & Simpson Rpt
20:30	The Upper Hand	Is it Legal?	The Upper Hand	Is it Legal?	The Upper Hand		
21:00	Vanessa Late	Vanessa Late	Vanessa Late	Vanessa Late	Vanessa Late	Vanessa Late	Vanessa Late
22:00	Gossip Today	Gossip Today	Gossip Today	Gossip Today	Gossip Today	Gossip Today	Gossip Today
22:30	Classic Donahue	Classic Donahue	Classic Donahue	Classic Donahue	Classic Donahue	Classic Donahue	Classic Donahue
23:00	Celebrity Chat Show	Celebrity Chat Show	Celebrity Chat Show	Celebrity Chat Show	Celebrity Chat Show	Celebrity Chat Show	Celebrity Chat Show

14. A lively Children's Magazine will introduce the schedule each morning from 6am. Carlton is the largest producer of children's programming for ITV and has a widely based department producing magazine formats, drama, animation and entertainment programming for younger viewers. We will mix original production, library material and some acquired series to attract the widest possible children's audience.
15. Each weekday morning viewers will be able to switch on to six successive popular game shows. The first two hours on weekend mornings running game show entertainment for children and teenagers. This segment will offer viewers an increased variety of programmes in a very popular genre.
16. From noon until 4.30pm a mixture of classic and contemporary serials are scheduled for the predominantly female audience available at this time. Examples include *Shortland Street*, *Take the High Road*, *General Hospital* and *As The World Turns*.
17. From 4.30pm until 6pm the schedule targets family viewing with award winning programmes like *Woof!* and *Press Gang* followed by *Home and Away* and *Heartbreak High*. There is a different mix of acquired series and home-grown children's drama for the weekend.
18. From 6.30pm until 9pm, we are in the comedy zone, with a consistent mix of British and American situation comedies, films and comedy dramas. Titles include *Auf Wiedersen Pet* and *Is It Legal?*
19. Interviews, talk and chat then dominate until midnight. Some of the programmes are current affairs based, while others have a more entertainment oriented slant.

Target Audience

20. Carlton Entertainment offers something for everyone in an easily manageable schedule. The target audience is broadbased with a female bias during the day and a family orientation in the early evening. Peak time and late night is more male.

Original Hours

21. Approximately 30% of all the schedule will be composed of original productions and commissions.

First Run Material

22. Approximately 45% of the schedule will consist of first-run material.

Granada Plus

An all-British programme service, including some of the most prestigious and popular drama, entertainment, comedy and children's programming ever produced in the UK, as well as award-winning features and documentaries. The existing satellite and cable service will be enhanced with more original programming and additional hours of transmission.

Start of Service, Hours of Broadcast and Coverage

23. Granada Plus will be available from the date of launch of the British Digital Broadcasting digital terrestrial television service. It is currently scheduled to transmit for 18 hours per day, seven days per week, 52 weeks a year. However, as the service develops, Granada intends to increase the transmission hours of the service to 24 hours per day. It will be transmitted on a national basis using the full coverage capability of the allocated multiplex.

Programme Types

24. Granada Plus will be defined by the range, quality and diversity of its schedule. It will showcase programmes made to high production values, across the full range of drama, entertainment, comedy, childrens', documentary and features.
25. **Drama** on Granada Plus will include the best programmes from the extensive archives of Granada TV and LWT. It will cover the spectrum from Olivier's *King Lear* to *Classic Coronation Street*, from *The Professionals* to *Brideshead Revisited*. The schedule will include award-winning series such as *Sherlock Holmes*, *Poirot*, *Maigret*, *Prime Suspect* and *Cracker*, as well as important and high-profile drama events such as *My Left Foot* and *Hillsborough*.
26. **Entertainment** on Granada Plus will feature many of the UK's most successful shows such as *Surprise Surprise*, *Beadle's About*, *You've Been Framed*, *Hale and Pace* and *An Audience With.....*. Under contracted arrangements, Granada Plus will have access to many of the nation's favourite entertainment programmes, including a number made by LWT, the UK's leading supplier of this genre of programming. The channel will also originate some entertainment programmes.
27. Granada Plus has access to a full range of high-quality hit **comedy**, including classic favourites such as *On the Buses*, *Nearest and Dearest*, *Two's Company*, and *The Army Game*, to more modern pieces such as *A Fine Romance*, *Watching* and *Jeeves and Wooster*.
28. Granada Plus will feature a rich vein of **arts and documentary** from Granada's *Seven Up* and *Disappearing World* to LWT's *Summer on the Estate* and *The South Bank Show*.
29. A significant proportion of the Granada Plus schedule will consist of originally commissioned **lifestyle and features** material which will have its first run on the

channel. The Granada Plus flagship will be a successful magazine designed mostly for the female audience entitled *The Good Life Guide*. An original and specially commissioned episode of the programme will run in peaktime every weekday. In addition, the Granada Plus schedule will include popular outdoor programmes such as *Down to Earth* and classic series such as A.J.P. Taylor's *Edge of Britain*.

30. Granada Plus will choose programmes from the best of the Granada TV/LWT **children's** archives which contain a wealth of award winning output spread across a wide range of sub genres and aimed at children of all ages. Successful titles include *Sooty*, *Allsorts*, *Time for a Story*, *Return of the Antelope* and *Childrens' Ward*. Granada Plus will also draw on Granada TV and LWT's growing strength in animation through programmes such as *Tom and Vicky* and *The Treacle People*.

Indicative Schedule

31. The main features of the Granada Plus indicative schedule are as follows:
32. Most of the early part of the day caters for the young audience - giving children something other than cartoons to watch at breakfast time. At 8am we begin an hour of popular drama - e.g. *Classic Coronation Street*, *Albion Market*, *Families* etc. *Classic Coronation Street* is repeated at 12pm, 6pm and 9pm.
33. At 9am we will run a drama series or serial, such as *London's Burning* or *The Gentle Touch*. These popular series will repeat at 5pm and 10pm.
34. The regular comedy hour at 10am features popular favourites such as *Please Sir*, *On the Buses*, *The Doctor* series, *Watching*, etc. We also feature comedy hours at 4pm and 7pm.
35. Granada Plus at 11am will feature nostalgic drama such as *Lillie*, *Upstairs Downstairs*, *The Life and Times of Henry Pratt*, *A Family at War*, etc. These series will usually repeat at weekends.
36. At 3pm Granada Plus will feature more popular drama, such as *Poirot*, *Sherlock Holmes*, *Maigret*, *Jeeves and Wooster* etc. and these series will usually repeat at 8pm.
37. At 9.30pm Granada Plus features our daily original lifestyle magazine, *The Good Life Guide*. Meanwhile at 10pm and 11pm, Granada Plus will schedule post-watershed material such as *Prime Suspect*, *Cracker*, etc..
38. British Digital Broadcasting with Granada will constantly monitor audience response and the competitive environment. If, in the light of these considerations, it would appear beneficial to revise the schedule to better meet audience needs, Granada, in consultation with British Digital Broadcasting, will review ideas for making positive changes.

Granada Plus: Indicative Schedule

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
06:00	Quiz	Quiz	Quiz	Quiz	Quiz	Children	Children
06:30	Children	Children	Children	Children	Children	Children	Children
07:00	Children	Children	Children	Children	Children	Children	Children
07:30	Factual	Factual	Factual	Factual	Factual	Children	Children
08:00	Drama	Drama	Drama	Drama	Drama	Comedy	Comedy
08:30	Drama	Drama	Drama	Drama	Drama	Comedy	Comedy
09:00	Drama	Drama	Drama	Drama	Drama	Drama	Drama
09:30	Drama	Drama	Drama	Drama	Drama	Drama	Drama
10:00	Comedy	Comedy	Comedy	Comedy	Comedy	Drama	Drama
10:30	Comedy	Comedy	Comedy	Comedy	Comedy	Entertainment	Entertainment
11:00	Drama	Drama	Drama	Drama	Drama	Entertainment	Entertainment
11:30	Drama	Drama	Drama	Drama	Drama	Comedy	Comedy
12:00	Drama	Drama	Drama	Drama	Drama	Music	Comedy
12:30	Drama	Drama	Drama	Drama	Drama	Factual	Children
13:00	Drama	Drama	Drama	Drama	Drama	Factual	Factual
13:30	Drama	Drama	Drama	Drama	Drama	Factual	Factual
14:00	Drama	Drama	Drama	Drama	Drama	Drama	Drama
14:30	Drama	Drama	Drama	Drama	Drama	Drama	Drama
15:00	Entertainment	Entertainment	Entertainment	Entertainment	Entertainment	Drama	Drama
15:30	Entertainment	Entertainment	Entertainment	Entertainment	Entertainment	Drama	Drama
16:00	Comedy	Comedy	Comedy	Comedy	Comedy	Entertainment	Factual
16:30	Comedy	Comedy	Comedy	Comedy	Comedy	Entertainment	Factual
17:00	Drama	Drama	Drama	Drama	Drama	Comedy	Drama
17:30	Drama	Drama	Drama	Drama	Drama	Music	Drama
18:00	Drama	Drama	Drama	Drama	Drama	Factual	Drama
18:30	Drama	Drama	Drama	Drama	Drama	Factual	Drama
19:00	Comedy	Comedy	Comedy	Comedy	Comedy	Drama	Drama
19:30	Comedy	Comedy	Comedy	Comedy	Comedy	Drama	Comedy
20:00	Entertainment	Entertainment	Entertainment	Entertainment	Entertainment	Drama	Drama
20:30	Entertainment	Entertainment	Entertainment	Entertainment	Entertainment	Drama	Drama
21:00	Drama	Drama	Drama	Drama	Drama	Drama	Drama
21:30	Factual	Factual	Factual	Factual	Factual	Drama	Drama

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
22:30	Drama	Drama	Drama	Drama	Drama	Entertainment	Entertainment
23.00	Drama	Drama	Drama	Drama	Drama	Entertainment	Entertainment
23:30	Drama	Drama	Drama	Drama	Drama	Drama	Drama

Style of programme service

- 39. While the majority of the Granada Plus schedule will consist of the best of the Granada and LWT archive, the presentation and promotion style of the channel will be up to date and distinctive. For example, newly-shot contributions from the stars of the programmes will frequently set a context for a series. Equally programmes will be presented and packaged to create eye-catching events - from “The Great Detectives Weekend” featuring episodes of *Sherlock Holmes*, *Maigret*, *Poirot* etc., to “*The Ups and Downs of Stan and Hilda*”.

Target Audience

- 40. The majority of Granada Plus programmes are sourced from the archives of Granada TV and LWT. They are high-quality, high-production value programmes which were often hugely popular at their first transmission and have usually been seen only once.
- 41. The appeal of Granada Plus is primarily based on the view that a significant proportion of viewers who enjoyed a programme months or years ago, will wish to see it again. If only a relatively small proportion of the 24 million people who tuned in to watch Ken marry Deirdre on *Coronation Street* want to see the episode again, the channel will be serving a significant number of viewers. In addition there is a large potential audience of viewers who missed the first transmission of a whole range of classic programmes, and for whom Granada Plus provides a chance to catch up.
- 42. This means that Granada Plus will draw viewers from among older audiences who remember classic series such as *A Family at War* and *Upstairs Downstairs*, as well as younger people for whom series such as *Please Sir* and *On the Buses* have become cult viewing.
- 43. Much of the appeal of Granada Plus is for daytime audiences, who may already be well-served in magazine and talk-based programming, but remain under-served in high-quality drama and entertainment. Many of these are women - young mothers with children and older, perhaps retired, viewers.

Original Hours

- 44. Granada Plus emphasises quality, high-cost, award winning drama and entertainment from two of the UK’s leading programme producers, offering the chance to see some “best of British” programmes again.

45. It will be important for the rapid development of digital terrestrial television that viewers have the chance to see the widest range of original material. Granada Plus will therefore originate, from launch, attractive and high-quality programming. Two examples of this programming from the lifestyle and entertainment genres include *The Good Life Guide* - an original lifestyle magazine aimed at the female audience - which will feature in our schedules every weekday. Similarly *Stuart's Hall of Fame* is a weekly opportunity to showcase the full range of amateur talent in front of a live audience. Some of the original programming created can, as necessary, have secondary rights on other forms of distribution and in other territories.
46. As digital terrestrial television develops and take-up increases, Granada will wish to enhance and develop the quality and originality of Granada Plus. Within the lifetime of the licence, Granada would expect to be able to introduce first runs of high quality drama and entertainment on the channel.
47. It is intended that from launch on digital terrestrial television approximately 5% of the programming material will be specifically originated for the channel.

First Run Material

48. Experience of the multi-channel television environment suggests that viewers are pleased to have several opportunities in the same day to view their favourite programmes. Given the expanding number of channels available, viewers can often find that there are several programmes which they may wish to watch being transmitted simultaneously on different channels.
49. If another programme choice or commitment means that a viewer misses a transmission of a favourite programme, they seem to welcome the opportunity to "catch it later". For this reason a pattern of same day repeats in the multi-channel world has already proved attractive to viewers.
50. The Granada Plus strategy is to repeat the strongest elements in the schedule two, three or (in the case of *Classic Coronation Street*) four times in an eighteen hour period. Our overall schedule is then based on a repeat pattern of two "play-days" per year.
51. On average, it is therefore intended that around 40% of the total schedule of Granada Plus will be first run programming.

Future Development of the Service

52. It is intended that Granada Plus will be a basic channel at the outset of the licence. However, as the success of digital terrestrial television grows and the attractiveness of the premium, first run original programming available on Granada Plus in peak time grows, the channel may change into a channel in a premium entertainment tier.
53. British Digital Broadcasting also expects changes in compression technology to allow

greater channel capacity which would give Granada the opportunity to create further channels from the high quality programme segments that would already exist within Granada Plus. For example, the LWT premium arts archive could be supplemented with original and acquired arts material to provide a quality arts channel. The same principle could also apply to Granada TV's and LWT's distinctive supply of drama, entertainment, children's and factual programming.

Sky One

This channel on digital terrestrial television will aim to provide a range of family entertainment - comedy, drama, documentaries, science fiction, reality programming and chat shows - combining domestic and imported product to assure an appeal to a wide audience. It will also explore opportunities to create general entertainment programming especially for this digital terrestrial television channel.

Start of Service, Hours of Broadcast and Coverage

54. Sky One on digital terrestrial television will be available from the date of the launch of the British Digital Broadcasting digital terrestrial television service. It is currently scheduled to transmit for 24 hours per day, seven days per week, 52 weeks a year. It will be transmitted on a national basis, from the launch of the British Digital Broadcasting digital terrestrial television service using the full coverage capability of the multiplex.

Programme Types

55. Sky One on digital terrestrial television will be a high quality mixed entertainment channel. It will include top-produced programmes spanning the full range of drama, entertainment, comedy, documentary and features.
56. Running 24 hours a day, Sky One expects to provide an irresistible mix of entertainment for the entire family. The channel aims to combine the best of original programming with first- and re-runs of domestic product as well as US and Australian-produced material. It is anticipated that the channel will have series similar to those shown during the last year on its satellite service including Britain's own *Springhill*, *Jimmy's*, *Just Kidding* and *The Movie Show*; from the US, *3rd Rock From The Sun*, *Hercules: The Legendary Journeys*, *Murder One* and *New Adventures of Superman*; and from Australia, *The Feds* and *Fire*. This is in addition to established shows such as *The X-Files*, *Beverly Hills 90210* and the *Star Trek* series.

Drama

57. Drama on Sky One's digital terrestrial service is anticipated to include the best of original, first and re-run programmes from the UK and abroad. Illustrative dramas within this programme type include *The X-Files*, *Law & Order*, *High Incident*, *Picket Fences*, *JAG* and *Millennium*. It is expected that UK-produced dramas such as *Coppers*, *Dreamland*, *Jimmy's* and *Springhill* will occupy the digital terrestrial schedule as well.

Entertainment

58. Sky One's indicative schedule for its digital terrestrial television service expects to give ample time to a variety of Entertainment programming. The channel's daytime entertainment schedule expects to include soap operas and talk shows. Illustrative soap operas include *Another World*, *Hotel* and *Days of Our Lives*. Talk shows would include shows of the format of *Oprah Winfrey* and *Sally Jesse Raphael*. The evening schedule would expect to present a variety of shows, for example *The Movie Show*, *Walker's World* and *Southenders*.

Comedy

59. As noted in the Indicative Schedule, daytime and evening programming would aim to include comedy in its digital terrestrial line-up. For example, daytime shows might include *WKRP in Cincinnati*, *George* and *Designing Women*. The evening schedule, on the other hand, might include such potential programmes as *Mad About You*, *M.A.S.H.*, *The Lucy Show*, *The Simpsons*, *Married...With Children* and UK-produced *Just Kidding*.

Music

60. The current after-hours schedule for digital terrestrial television expects to include blocks for non-stop music shows which would primarily offer strings of music videos encompassing a wide variety of music styles, including rock, jazz, pop, dance, techno and so on. For example, illustrative shows in this programme type might include the UK-produced five hour *Hit Mix* followed by *Morning Glory* for three additional hours.

Sky One Indicative Schedule - Illustration of Programme Titles

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
06:00	Music (Morning Glory)	Music (Morning Glory)	Music (Morning Glory)	Music (Morning Glory)	Music (Morning Glory)	Music (Hit Mix Long Play)	Sunday A.M.
06:30							
07:00						Sitcom (WKRP in Cincinnati)	Sitcom (WKRP in Cincinnati)
07:30						Sitcom (George)	Sitcom (George)
08:00						Drama (Young Indiana Jones Chronicles)	Drama (Young Indiana Jones Chronicles)
09:00	Sitcom (Designing Women)	Sitcom (Designing Women)	Sitcom (Designing Women)	Sitcom (Designing Women)	Sitcom (Designing Women)	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)
09:30	Sitcom (Designing Women)	Sitcom (Designing Women)	Sitcom (Designing Women)	Sitcom (Designing Women)	Sitcom (Designing Women)		
10:00	Soap (Another World)	Soap (Another World)	Soap (Another World)	Soap (Another World)	Soap (Another World)	Drama (Quantum Leap)	Drama (Quantum Leap)
10:30							
11:00	Soap (Days Of Our Lives)	Soap (Days Of Our Lives)	Soap (Days Of Our Lives)	Soap (Days Of Our Lives)	Soap (Days Of Our Lives)	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)
11:30							
12:00	Talk Show (The Oprah Winfrey Show)	Talk Show (The Oprah Winfrey Show)	Talk Show (The Oprah Winfrey Show)	Talk Show (The Oprah Winfrey Show)	Talk Show (The Oprah Winfrey Show)	Sport Entertainment (Wrestling show)	Sport Entertainment (Wrestling show)
12:30							
13:00	Talk Show (Geraldo)	Talk Show (Geraldo)	Talk Show (Geraldo)	Talk Show (Geraldo)	Talk Show (Geraldo)	Sport (Wrestling show)	Drama (Lazarus Man)
13:30							
14:00	Talk Show (Sally Jessy Raphael)	Talk Show (Sally Jessy Raphael)	Talk Show (Sally Jessy Raphael)	Talk Show (Sally Jessy Raphael)	Talk Show (Sally Jessy Raphael)	Drama (Kung Fu)	Drama (Kung Fu)
14:30							
15:00	Talk Show (Jenny Jones)	Talk Show (Jenny Jones)	Talk Show (Jenny Jones)	Talk Show (Jenny Jones)	Talk Show (Jenny Jones)	Sci-Fi (Star Trek)	Sci-Fi (Star Trek - Deep Space Nine)
15:30							
16:00	Talk Show (The Oprah Winfrey Show)	Talk Show (The Oprah Winfrey Show)	Talk Show (The Oprah Winfrey Show)	Talk Show (The Oprah Winfrey Show)	Talk Show (The Oprah Winfrey Show)	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)
17:00	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)	Music (The Hit Mix)	Super Sunday Childrens (The Muppets) Travel (Walkers World)
17:30							
18:00	Factual (Real TV)	Factual (Real TV)	Factual (Real TV)	Factual (Real TV)	Factual (Real TV)	Drama (Kung Fu)	Comedy (The Simpsons)
18:30	Sitcom (Married with Children)	Sitcom (Married with Children)	Sitcom (Married with Children)	Sitcom (Married with Children)	Sitcom (Married with Children)		Comedy (The Simpsons)
19:00	Comedy (The Simpsons)	Comedy (The Simpsons)	Comedy (The Simpsons)	Comedy (The Simpsons)	Comedy (The Simpsons)	Comedy Drama (Hercules)	Drama (Early Edition)

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
19:30	Comedy Drama (M.A.S.H.)	Comedy Drama (M.A.S.H.)	Comedy Drama (M.A.S.H.)	Comedy Drama (M.A.S.H.)	Comedy Drama (M.A.S.H.)	Comedy Drama	Drama
20:00	Mini Series (Trade Winds Pt 1)	Drama (Springhill)	Factual (Sightings)	Must See TV Comedy (Just Kidding)	Drama (J.A.G.)	Arresting TV Factual Crime (Coppers)	Drama (New Adventures of Superman)
20:30		Factual (Real TV UK)		Sitcom (The Nanny)			
21:00		Drama (Picket Fences)	Drama (Silk Stalkings)	Sitcom (Seinfeld)	Drama (Walker Texas Ranger)	Factual Crime (Coppers)	Drama (The X-Files)
21:30				Sitcom (Mad About You)		Factual Crime (Cop Files)	
22:00	Big News at 10 Drama (Nash Bridges)	Big News at 10 Factual (Unsolved Mysteries)	Big News at 10 Drama (Murder One)	Big News at 10 Drama (Chicago Hope)	Big News at 10 Drama (High Incident)	Big News at 10 Drama (Law and Order)	Big News at 10 Drama (Millenium)
22:30							
23:00	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)	Adult (Red Shoe Diaries)	Drama (Forever Knight)
23:30						Factual (The Movie Show)	
00:00	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)
00:30	Sitcom (The Lucy Show)	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)
01:00	Music (Hit Mix Long Play) (01.00 - 06.00)	Music (Hit Mix Long Play) (01.00 - 06.00)	Music (Hit Mix Long Play) (01.00 - 06.00)	Music (Hit Mix Long Play) (0100 - 06.00)	Music (Hit Mix Long Play) (0100 - 06.00)	Sitcom (Dream On)	Drama (Civil Wars)
01:30						Drama (The Edge)	
02:00						Music (Hit Mix Long Play) (02.00 - 06.00)	Music (Hit Mix Long Play) (02.00 - 06.00)
02:30							
06:00							

61. Sky One’s digital terrestrial indicative schedule is currently divided into four segments: “Daytime on Sky One”, “Early Evening on Sky One”, “Primetime on Sky One”, and “Late Night on Sky One”. Details of these intended segments follow.
62. “Daytime on Sky One”: The focus of this segment would be to provide programming targeted at women who are at home during the day. The best of soap operas and chat shows are expected to be shown during this segment. Illustrative programmes include *Another World* and *Geraldo*.
63. “Early Evening on Sky One”: This segment is expected to target the entire family. Illustrative shows include *Real TV*, *The Simpsons* and *M.A.S.H.*
64. “Primetime on Sky One”: This 8pm to 11pm segment would include various themed nights as well as a different show each night at 10pm under a daily theme, “Big News at 10”. The themed nights would be as follows:

65. "Super Sunday": This would present essential viewing for the entire family with illustrative programmes such as *Muppets Tonight*, *Walkers World*, *The Simpsons*, *The X Files* and *Millenium*.
66. "Must See TV": This Thursday night theme is intended to be packed with the best in comedy entertainment with illustrative shows such as *Just Kidding* and *The Nanny*.
67. "Arresting Television": Scheduled for Saturdays, this themed evening would include both real-life law enforcement documentaries and illustrative shows such as *Coppers*, *Cops*, *Cop Files* and *Law & Order*.
68. "Big News at 10": Currently scheduled for every evening at 10pm, this theme would seek to deliver the best in drama series. On certain Mondays, for example, it is expected that a mini series would be shown at 8pm, followed by a programme like *Nash Bridges* at 10pm. On Tuesdays illustrative shows include *Springhill* and *Picket Fences* followed by *Unsolved Mysteries* at 10pm. The Wednesday night line-up might include, for example, *Sightings*, *Silk Stalkings* then *Murder One* at 10pm. Thursdays night's scheduled "Must See TV" (described above) might be followed by episodes of, for example, *Chicago Hope* at 10pm. As scheduled, the week would finish with a Friday schedule of, for instance, *JAG*, *Walker Texas Ranger* and, in the 10pm slot, *High Incident*.
69. "Late Night on Sky One" is expected to present a host of shows including shows such as *Red Shoe Diaries*, *The Edge* and *CPW* followed by the music shows mentioned earlier, *Hit Mix Long Play* and *Morning Glory*.
70. British Digital Broadcasting with Sky One will constantly review audience response and the competitive environment. If, in the light of these considerations, it would appear beneficial to revise the schedule to meet audience needs better, Sky One's digital terrestrial service, in consultation with British Digital Broadcasting, will review ideas for making positive changes.

Style of Programme Service

71. Sky One's style on digital terrestrial will be a modern reflection of contemporary programming combining dramas with light entertainment and an anticipated increasing emphasis on locally produced programmes such as *Springhill* and *Real TV UK*. Sky One's pacy, aggressive, bold and bright promotions will use modern music and cutting edge graphic styles to create a unique brand identity. The current individual themed nights will be highlighted by customised, purpose-built packaging which will add extra sparkle and reinforce the present "appointment viewing" marketing and programming strategy.

Target Audience

72. It is anticipated that the digital terrestrial channel's target audience will reflect the experience of Sky One as currently transmitted. It is therefore expected that it will be a predominantly family entertainment channel with a primary audience of young adults aged 25 to 44 years old - which would account for 43% of the Sky One average audience, compared to a national (UK) Sky One average of 30%. The daytime programmes would be of particular appeal to young housewives and housewives with children. Prime time programmes would be just as appealing to young housewives but might have a male (25 to 34 year old) bias as well. Family entertainment would help complete the all-round family offering which would be reflected in a 43% housewives with children profile - compared to a national (UK) average of 29%.

Proportion of Original Hours

73. The channel anticipates that on average 26% of its programming will be original.
74. Of note is that BSkyB has recently dramatically increased its commissioned UK production with shows such as *Just Kidding* and *Coppers* both made by Granada's LWT and also *Walker's World* produced by Wink Productions. Other UK-produced original general entertainment programmes include *The Movie Show*, *Real TV UK*, features such as *Di Catchers* and *Dreamland*, as well as shows in development including *Sky Café* and *Selina Scott Tonight*. BSkyB expects to continue to increase its quantity of original production over time and intends to explore opportunities to create programming especially for this digital terrestrial channel.

First Run Material

75. It is forecast that on average 70 hours per week (or 40%) of the programming will be first-run material. The average repeat factor is anticipated to be approximately three.

BBC Style

BBC Style will offer viewers a unique all British package of the BBC's top leisure and lifestyle programming. Content will range from antiques to aspidistras, gardening to gastronomy, from 'what to wear' to 'what to drive.'

Start of Service, Hours of Broadcast and Coverage

76. BBC Style will be available from the date of the launch of the British Digital Broadcasting television service and is provisionally scheduled to transmit eight hours a day from 6am until 2pm, seven days a week, 52 weeks per year.

Programme Types

77. The channel will appeal to people who care about where and how they live, active and aspirational viewers who like the good things in life. BBC Style will bring top BBC presenters and experts such as Jeremy Clarkson, Hugh Scully and Jeff Banks together for the first time on the same channel. It will bring the editorial quality and production values of popular and trusted BBC programmes such as *Holiday*, *Top Gear* and *Home Front*. BBC Style leisure and lifestyle programming will feature seasonal ideas such as DIY at Easter, Christmas cookery and a holiday season.

Target Audience

78. Style will be aspirational television, reaching out to a key audience demographic in multi-channel households - first time home owners, 'empty nesters' and viewers in their thirties with disposable income will be drawn to this channel.

BBC Showcase

BBC Showcase offers viewers the highest quality and most popular programming from BBC 1 and BBC 2. Content will range from classic to contemporary, from drama to comedy, all presented in an innovative and refreshing format.

Start of Service, Hours of Broadcast and Coverage

79. BBC Showcase will be available from the date of the launch of the British Digital Broadcasting digital terrestrial television service and is provisionally scheduled to be transmitted for 10 hours per day from 2pm, seven days per week, 52 weeks a year. It will be transmitted on a national basis, using the full coverage capability of the multiplex.

Programme Types

80. BBC Showcase will feature the highest quality and most popular programming from BBC1 and BBC2, offering viewers the best of British entertainment. Content will range from classic to contemporary, from drama to comedy, all presented in an innovative and refreshing format. Top contemporary shows, like *Ballykissangel* and *Absolutely Fabulous* will be combined with classics from the past such as *Fawlty Towers*. Celebrity introductions, special seasons and “event” screenings will be the hallmarks of BBC Showcase.
81. In British Digital Broadcasting’s channel research this channel was one of the most popular concepts researched, with 5.6 million homes (32% of terrestrial households) prepared to pay.

Indicative Schedule

82. BBC Showcase will establish strands from the BBC Hall of Fame, in addition to producing feature-length versions of timeless favourites. “BBC Classic” will be the best of the period costume drama that the BBC is so famous for. “BBC Mystery” is where Hetty Wainthropp will meet George Smiley - an irresistible nightly bill of crime stories and thrillers. The “Comedy Zone” will bring the outrageous humour of BBC2’s Friday night line-up to the screen every night of the week. “On the Edge” will have the best of adult drama - dangerous, sometimes disturbing but always enthralling, from *The Buddha of Suburbia* to *Cardiac Arrest*, *This Life* and *A Very Peculiar Practice*.
83. The Showcase schedule will regularly feature special events and stunts. *A Pride and Prejudice* weekend will run previous versions of Jane Austen’s classic back-to-back with the 1990s production. The Redoubtable Routeledge season will bring Hyacinth Bucket face-to-face with Alan Bennett’s *A Woman of No Importance*; and comedy stars of the day will choose the ten greatest sitcom hours ever written.

Target Audience

84. BBC Showcase will have widespread appeal to viewers who appreciate quality entertainment. The audience profile is expected to match that for high quality entertainment on terrestrial television.

Sky Movies

It is anticipated that this digital terrestrial movie channel will screen a wide variety of films including hit movies from around the world with a host of new movies every month. The channel is expected to operate 24 hours a day, 7 days a week with no commercial breaks during the movies. In order to cater to the widest range of viewers' lifestyles, the most popular movies shown will be rescreened at different times and on different days. Additionally, movie news programming will be shown between films. It is anticipated that additional programming will also be created especially for this digital terrestrial television channel.

Start of Service, Hours of Broadcast and Coverage

85. Sky Movies on digital terrestrial television will be available from the date of the launch of the British Digital Broadcasting digital terrestrial television service. It is currently scheduled to transmit for 24 hours a day, seven days a week, 52 weeks a year. It will be transmitted on a national basis using the full coverage capability of the allocated multiplex.

Programme Types

86. The schedule of this digital terrestrial movie channel is expected to include frequent screenings of international or domestic hit movies. This channel will also transmit behind-the-scenes features, star interviews and new movie reviews.
87. As part of the line up, it is anticipated that this channel will screen British-made as well as imported films. For example, *War of the Buttons*, *Jack and Sarah* and *The Browning Version* are all British made movies which would delight viewers. Sky's commitment to screening British film is evidenced by the fact that in 1996 the two current satellite movie channels together screened 24 British-made movies. It is hoped that a weekly slot for a number of months featuring major British films, for example, could be achieved on the digital terrestrial service. Sample recent British films which could run under such a theme include *Carrington* and *Land and Freedom*.

Comedy

88. Running 24 hours a day, this channel will have ample opportunity to air the best in comedy. Comedies illustrative of this programme type include *Dumb & Dumber*, *The Flintstones* and *Junior*.

Action

89. It is expected that the best in action hits will entertain viewers for hours. Illustrative movies of this kind are *Speed*, *Clear & Present Danger*, *Judge Dredd* and *Batman Forever*.

Drama/Suspense

90. Drama and suspense on the digital terrestrial Sky Movies channel will keep viewers glued to their seats. For example, *Disclosure*, *First Knight*, *Legends of the Fall* and *Schindler's List* are all movies illustrative of this genre.

Horror

91. Viewers will not be at a loss for gruesome, ghoulish screenings of horror films. For example, *Mary Shelley's Frankenstein* and *Interview with a Vampire* would send shivers down their spines.

True Stories

92. This occasional Monday night theme would cover a range of biographical movies. For example, it is expected that shows such as *Tyson* and *Madonna: Innocence Lost* would be shown on Mondays. Other sample films relevant to this programme type might include real life dramas, such as the award-winning *Indictment: The McMartin Trial*.

World Cinema

93. A prospective weekly World Cinema slot is under consideration to feature some of the most acclaimed foreign language films of recent years. Relevant illustrative titles within this programme type might include Gerard Depardieu in *Le Colonel Chabert* and *La Reine Margot* from France as well as films from top Peruvian, Belgian, Italian, Chinese and Russian directors.

Premieres

94. As further described in the Indicative Movie Schedule for digital terrestrial television, available premieres are expected to be shown mainly on Thursday and Saturday nights.

Children's

95. It is anticipated that the digital terrestrial channel's schedule will contain an array of children's movies. For example, relevant titles might include *Grizzly Adams*, *Richie Rich*, *Little Giants*, *Mighty Morphin Power Rangers* and *Miracle on 34th Street*.

Movie Programmes

96. In addition to themed nights, it is expected that special programmes during the week will be shown to keep viewers in touch with the movie world. These weekly shows might include bought-in programmes from the US which would update the viewer on the latest Hollywood gossip. Additionally, *The Movie Show*; *Special Features*; *Sky Interviews* and *The UK Top Ten* are all in-house productions which would further enhance viewers' knowledge of upcoming theatre premieres, the latest news, on-set interviews and previews. It is anticipated that selected support programming will also

be created especially for this digital terrestrial channel.

Sky Movies: Indicative Schedule - Illustration of Films

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
06:00	Drama (The Ranger, The Cook and a Hole in the Sky)	Comedy Drama (The In Crowd)	Children's Animation (Tom and Jerry - the movie)	Family Drama (The Spoils of War)	Family Adventure (Clarence the Cross Eyed Lion)	Sport/Musical (Kid Galahad)	Drama/Sport (Dreamer)
08:00	Children's Drama (Back Home)	Comedy Mystery (Radioland Murders)	Children's Adventure (The Black Stallion)	TV Movie Biography (Rita Hayworth - the Love Goddess)	Children's (The Sandlot)	Children's Adventure (Flipper)	Sci-Fi (The Neptune Factor)
10:00	Children's Drama (War of the Buttons)	Children's Drama (Dad, the Angel and Me)	Drama (Season of Change)	Comedy Drama (The Hudsucker Proxy)	Comedy (Revenge of the Nerds IV)	TV Movie (Family Reunion)	TV Movie Drama (Freefall - Flight 174)
12:00	Spy Drama (The Salzburg Connection)	Fantasy Comedy (The Mask)	Children's Fantasy (Miracle on 34 th Street)	Children's Adventure (Heck's Way Home)	Crime Comedy (Clean Slate)	Children's Fantasy Adventure (The Neverending Story III)	Spy Drama (Octopussy)
14:00	Spy Drama (The Games)	Biblical (The Nativity)	Family Comedy (Mrs Doubtfire)	Sport Comedy (Cool Runnings)	Family Comedy (Beethoven's 2 nd)	Crime Comedy (Son of the Pink Panther)	TV Movie Drama (Other Women's Children)
16:00	Drama (A Feast at Midnight)	Comedy Thriller (I Love Drama)	Family Fantasy (The Nutcracker)	Comedy (The Beverly Hillbillies)	Romantic Comedy (Only You)	Spy Adventure James Bond (Live and Let Die)	Spy Drama James Bond (Thunderball)
18:00	Children's Drama (War of the Buttons)	Children's Comedy (The Little Rascals)	Comedy Drama (Corrinna, Corrinna)	Children's Action (Mighty Morphin Power Rangers)	Family Adventure (Rudyard Kipling's The Jungle Book)	Children's Fantasy Adventure (The Neverending Story III)	Spy Adventure James Bond (Goldfinger)
20:00	True Life Drama (Rudy)	Fantasy Comedy Top 20 (The Mask)	Sci-Fi (Star Trek Generations)	Premiere Sport Comedy (Cool Runnings)	Family Comedy (Beethoven's 2 nd)	Fantasy Adventure (Hercules and the Lost Kingdom)	Fantasy Adventure (Hercules and the Amazon Women)
22:00	Comedy Top 20 (Dumb and Dumber)	Action Top 20 (True Lies)	Premiere Comedy Drama (Nobody's Fool)	Crime Drama (Pulp Fiction)	Horror Friday Night Sci Fi (Death machine)	Premiere Sci-Fi (The Puppet Masters)	Sunday Encore Fantasy Action Adventure (Judge Dredd)
00:00	Thriller (Killer)	Comedy (The Brady Movie Bunch)	Horror (Wolf)	Comedy Drama (Bullets Over Broadway)	Drama (Philadelphia)	Erotica (Prelude to Love)	Crime Drama Film Noir (Romeo is Bleeding)
01:30	Action (Day of Reckoning)					Mystery (Natural Causes)	
02:00		Thriller (Dead Air)	Drama Comedy/Romance (Barcelona)	Drama (Harry and Tonto)	Drama (Disclosure)		Thriller (Love in the Strangest Way)
03:00	TV Movie Drama (Trapped and Deceived)					Thriller (Ed McBain's 87 th Precinct: Lightning)	
03:30		Comedy (PCU)					
04:00			Adventure (White Mile)	Comedy (Hudsucker Proxy)	Crime Comedy (Clean Slate)		Thriller (New Eden)
04:30	Sports Drama (The Games)	Children's Comedy (The Little Rascals)					
06:00							

97. The indicative schedule for the digital terrestrial television service includes the themed 8pm or 10pm slots currently providing viewers with particular types of movies most

nights of the week, as described below.

98. On many Saturday nights, the currently planned theme is the “Saturday Night Premiere” which would show blockbuster premieres.
99. The Sunday theme is presently planned as “Sunday Encore” which would catch the previous week’s big premiere most Sundays for the subscriber’s second-chance viewing convenience.
100. On frequent Monday nights the presently scheduled theme is “True Stories” which might include movies such as *Tyson* and *Madonna: Innocence Lost*.
101. Tuesday night’s intended theme is “Tuesday Night Action” which would include blockbusters with stars such as Arnold Schwarzenegger, Stephen Seagal, Jean-Claude Van Damme and Sylvester Stallone.
102. On most Wednesdays, the “Wednesday Night Premiere” is expected to be dedicated to critically acclaimed films, including a season of British TV premieres.
103. The “Thursday Night Premiere” would endeavour to present a big Hollywood blockbuster for the entire family’s viewing enjoyment.
104. The week currently is scheduled to end with “Friday Night Horror” which would show the best of horror movies and all-round frightening movies.
105. In addition to themed slots, the movie channel would expect to feature different seasons of films each month - for example, a weekend of Bond films, a season of Australian film, “Arnimania” and many others.
106. British Digital Broadcasting with Sky Movies will constantly monitor audience response and the competitive environment. If, in the light of these considerations, it would appear beneficial to revise the schedule to better meet audience needs, Sky Movies’ digital terrestrial service, in consultation with British Digital Broadcasting, will review ideas for making positive changes.

Style of Programme Service

107. The set graphic style of the “Sky” brand combines with a montage of promotions, behind-the-scenes insights, interviews with Hollywood stars and production teams to create a Grandiose Hollywood cinematic theme for this digital terrestrial channel. Sky Movies’ internal stylistic mandate on digital terrestrial would be to provide a complete and up-to-the-minute service for movie fans which would reflect an informed and up-to-date knowledge of movie history.

Target Audience

108. It is anticipated that this digital terrestrial movie channel's target audience profile would run in parallel with that seen across the currently transmitted Sky satellite movie channels. The appeal of the service is expected therefore to be strongly in favour of adults aged between 16 and 44 years old, split evenly between male and female. As an example, the top rating movie of 1996 on the currently transmitted movie channels, *Forrest Gump*, with 2.04 million viewers, had a 58% adult ages 16 to 44 profile, equally split between male and female. The Top Ten rating movie of 1996 across both premium satellite movie channels had a 55% adults aged 16 to 44 profile, comparable to station averages of 54% (Sky Movies on satellite) and 53% (The Movie Channel on satellite). The national UK average profile for adults aged 16 to 44 is 41%.

Original Hours

109. Given the nature of this channel, few, if any, of the movies will be specifically commissioned for Sky Movies on digital terrestrial. Currently, however, BSkyB commissions an average of two hours of weekly shows on movie news and commentary such as *The Movie Show* and the *UK Top Ten* for its movie channels and it will explore opportunities to create additional support programmes especially for this digital terrestrial television channel.

First Run Material

110. It is expected that 55% of the material on the digital terrestrial channel will be first run. The repeat cycle is expected to be approximately 10 times a year.

Pay-per-view

111. British Digital Broadcasting takes a positive view of the potential of pay-per-view services to bring to the public events that they value highly and that they might otherwise not have the opportunity to see. This is particularly the case in an environment where competition for the rights to such events is increasing and pay-per-view may be the only basis on which the television rights for some events may be available in the future. British Digital Broadcasting recognises the recent developments in pay-per-view services in the UK and understands the importance of pay-per-view as an alternative form of programme entertainment, as the US market has demonstrated. Digital television capacity and advanced ordering technology mean that pay-per-view events will be an attractive part of digital programme services.
112. British Digital Broadcasting has therefore built into its programming plans the provision of a series of pay-per-view events on Multiplex B. These are likely to include high profile events in sport, entertainment and music, such as boxing, concerts and other one-off broad appeal events.

113. British Digital Broadcasting believe that this service will be popular, as BSkyB has already demonstrated successfully with its pay-per-view events. British Digital Broadcasting will draw from the technical, subscriber management and marketing experience of BSkyB to put in place a robust infrastructure to achieve a successful digital terrestrial pay-per-view service.

Future Programme Plans

114. Over the licence period, technological advance will most likely deliver significant expansion in the programme capacity of each multiplex, although it is too early to be precise about the rate of expansion. British Digital Broadcasting's policy towards this opportunity will be to take maximum advantage of the capacity to provide superior value and range to subscribers, while exercising prudence in remaining within the limits of multiplexing technology.
115. British Digital Broadcasting believe that there are good prospects of advanced statistical multiplexing techniques making possible the addition of a substantial number of additional channels in the future without loss of picture quality. While not including these in its business model in the interest of prudence, British Digital Broadcasting has devoted thought and preparation as to how to deploy effectively additional capacity. British Digital Broadcasting has been encouraged in this by presentations from several developers of multiplexing and compression technology who have indicated their preparedness to license their technology to British Digital Broadcasting.
116. Annex 20 provides an overview of British Digital Broadcasting's initial plans for utilising additional capacity. British Digital Broadcasting already has expressions of interest from several parties who would wish to provide services in the event of more capacity becoming available.

Section A4 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three licences for which it has applied.

This section has described the five channels British Digital Broadcasting would offer if it only won Multiplex B. If, in addition, British Digital Broadcasting were awarded Multiplexes C and D, its programme offer would comprise a further eight basic channels and two premium channels. The supplementary proposals describe also how they would work together as a whole. Some of the channels featured in British Digital Broadcasting's Multiplex B application appear on different multiplexes in British Digital Broadcasting's supplementary proposals.

Section A5 - Local or Regional Services

ITC Requirement

Taking account of guidance given in paragraph 102 the applicant should state what plans he has, if any, to provide local or regional services. He should state, in particular:

- i) the proposed location of any such services together with their start dates;*
- ii) the type and content of the programmes; and*
- iii) the period of the day for which such services would be provided.*

Summary

British Digital Broadcasting's proposals do not include local and regional services at launch. British Digital Broadcasting recognises the potential of such services and will review the case for launching local or regional services that complement existing local and regional services, when the subscriber base is established and when further channel capacity has become available on the multiplexes.

1. British Digital Broadcasting is conscious of both the capability of digital terrestrial television to offer local and regional programme services and of the potential value of this genre to the public. At launch, however, British Digital Broadcasting does not plan to offer local or regional services. This is for a combination of reasons. During the early years of the licence period the relatively low levels of subscribers projected lessens the economic case for investing substantially in local or regional programmes compared to investing in the overriding priority of establishing digital terrestrial television nationally as a mainstream force.
2. Furthermore, British Digital Broadcasting's market research shows broad consumer satisfaction with the current level of local and regional programmes provided by ITV and the BBC, as well as by a selection of other channels. ITV's regional news will also be broadcast in digital form through the ITV/Channel 4 multiplex. Research conducted by British Digital Broadcasting also shows that the early audience for digital terrestrial television is likely to be significantly more skewed towards younger demographic groups, in particular, than the audience for regional and local news.
3. In light of these factors, British Digital Broadcasting believes that the costs associated with producing alternative local or regional programmes for digital terrestrial television is initially better invested in programmes with broad national appeal.
4. However, British Digital Broadcasting through its ongoing research, will evaluate the demand for services which would complement existing local regional programmes. Having conducted research in the Central region, British Digital Broadcasting (through

Carlton) believes that local or city based services would probably be the more attractive to viewers (and provide the least duplication of existing services). British Digital Broadcasting will, therefore, research the case for these services first.

Section A5 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three of the licences for which it has applied.

The information in British Digital Broadcasting's supplementary proposal is essentially the same as that outlined above. However, having the capacity and scale benefits of three multiplexes could bring forward the time when it may be commercially viable to launch local and regional services.

Section A6 - Programmes of High Quality

ITC Requirement

Taking account in particular of the guidance given in paragraph 101, the applicant should give details of the types of programmes of high quality which will be included in the programme services to be provided on the multiplex.

Summary

British Digital Broadcasting's programme proposals include a highly successful premium subscription channel and four quality basic channels, including a new channel to start as part of the launch of digital terrestrial television.

1. British Digital Broadcasting's channels for Multiplex B are designed as a high quality basic subscription package with the addition of a highly compelling premium channel. The basic channels themselves bring to digital terrestrial television some of the best television available in Britain.
2. The proposed programme service will emphasise and showcase original British production and appeal to a variety of tastes and interests.
3. In addition, the channels:
 - a) Unite some of the strongest and most authoritative names in British television, namely Carlton, Granada, BSkyB and the BBC.
 - b) Offer a high proportion of original and first run programmes.
 - c) Complement and supplement the 'free-to-air' services that digital terrestrial television viewers will receive.
4. These channels also draw on the programme production, programme library and acquisition resources of Carlton, Granada, BSkyB and the BBC. This gives the proposals wide access to the breadth and depth of the most popular, quality genres as shown in the following table.

Genre → Channels ↓	Movies	Children's	Drama	Entertainment	Documentaries	Consumer Information	News	Arts	Comedy	Current Affairs	Music	Lifestyle
Granada Plus		■	■	■	■	■			■	■	■	■
Sky Movies	■											
Sky One			■	■	■		■	■	■	■	■	■
BBC Style / BBC Showcase		■	■	■		■			■			■
Carlton Entertainment	■	■		■					■			

5. British Digital Broadcasting programmes will include the following main genres:-

Drama

6. Quality drama is one of the hallmarks of British television and the best of both contemporary and period drama is reflected across British Digital Broadcasting's television channels. Granada Plus and BBC Showcase will have access to the work of the best writers, producers, directors and performers, and will be able to draw on programme libraries of unrivalled depth. Viewers will be able to enjoy costume drama such as *Martin Chuzzlewit* and *Pride and Prejudice* and contemporary drama such as *Poirot*. These programmes will sit alongside new and original productions and will be supplemented by strong dramas available from the UK, America and Australia on Sky One.

Documentaries

7. Natural history, science, human interest and other factual programmes will be available to the viewer. Documentary output will be available from the producers at Granada, the makers of *Seven Up*, *World in Action* and *Disappearing World*.

Children's

8. Children's programmes are an important component of British Digital Broadcasting's programme offering. The participation of the BBC, Carlton and Granada in British

Digital Broadcasting will give subscribers access to three of Britain's leading children's programme producers and libraries of children's programmes. The award winning children's departments of Carlton and Granada both intend to offer original children's programmes on the Granada Plus and Carlton Entertainment channels, including a lively children's magazine programme, drawing on Carlton's expertise in producing similar programmes for ITV and in providing presentation and packaging for the Children's ITV service. Granada Plus will choose programmes from the best of the Granada and Carlton libraries which contain award winning series such as *Sooty*, *Children's Ward*, *Press Gang* and *Woof* and, in the future, programmes such as *The Treasure Seekers* and *Willow in Winter*. This material will be carefully selected and scheduled to appeal across the age ranges alongside a wide range of genres including drama, entertainment and factual programmes specifically aimed at young audiences. In a similar vein, the BBC's Showcase channel will offer a chance to see many of the BBC's best, award winning, children's programmes.

Movies

9. British Digital Broadcasting will offer the Sky film channel on digital terrestrial - "Sky Movies" which will aim to bring viewers of all ages movies from around the world, including dramas, children's, comedies, action and art house films together with Hollywood updates, star biographies and programmes focusing on stories behind the movies and how they were made.

Entertainment

10. British Digital Broadcasting's channels will feature many of the UK's most successful entertainment programmes produced by the strong creative teams at LWT, the BBC, Carlton and its subsidiary Action Time - production teams that include *Blind Date*, *Gladiators*, *Family Fortunes* and *Noel's House Party* among their credits. Granada Plus and BBC Showcase will include the best of British quiz shows in their day-time and early peak schedules as an introduction to award winning comedy and drama. Carlton Select will feature special one-off events including concerts, sport and exhibitions, many of which will not have been seen before on television. Carlton proposes to secure rights to bring this original programming to digital terrestrial television. Carlton Entertainment will showcase a broad range of entertainment programmes across its regular scheduling pattern. Sky One will aim to provide its viewers with an array of talk shows, soap operas and light entertainment throughout the day. Original production will feature in the schedules of all four entertainment-based channels. Production values will be high.

Lifestyle and Consumer Information Programmes

11. Lifestyle and consumer information programming forms an important element of British Digital Broadcasting's programme plans.
12. BBC Style will provide a service dedicated to lifestyle programming drawing upon the BBC's editorial quality and production values, including programmes by famous BBC faces such as Delia Smith, Jeremy Clarkson and Hugh Scully.

13. Granada are acknowledged pioneers of high quality lifestyle programmes, having created the much imitated but rarely bettered *This Morning* programme, which anchors ITV's morning schedule. Its Royal Television Society award winning production team will be responsible for a wide range of original output on Granada Plus. Sky One will also contain further programming in this genre with programmes such as *Walker's World*.
14. The lifestyle programming on Granada Plus together with selected programmes on Sky One and the Public Eye channel, is intended to contain a high degree of consumer information.

News

15. Hourly 1-2 minute daytime news bulletins will be carried on Sky One. British Digital Broadcasting is conscious of the value that the BBC's new 24 hour news channel will provide to digital terrestrial viewers. British Digital Broadcasting has therefore constructed its approach to complement this BBC service.

Arts

16. British Digital Broadcasting's programme services will offer a range of high quality arts programming including live events, features and interviews. Opportunities to view a range of music performance will be available to viewers.
17. Granada Plus has access to original and archive programming produced by LWT's multi award winning arts department. The *South Bank Show*, in particular, offers a rich archive with an enormous range of material covering every artistic discipline from dance, film and classical music to photography, painting and literature. The channel already has exclusive rights to film this year's *South Bank Show Awards*, a major new arts awards ceremony, which it hopes to continue in future years. In addition, Granada Plus will provide a variety of music specials across all music genres in their schedules. And Sky Movies will, from time to time, feature art-house movies alongside the best of Hollywood. BBC Showcase also offers the opportunity to showcase some of the BBC's arts programming. Across its programme services, British Digital Broadcasting will offer a broad coverage of both arts in general, and performance arts in particular.

Comedy

18. Classic comedy continues to command large audiences on British terrestrial television. BBC Showcase will bring *Only Fools and Horses*, *Steptoe and Son*, *The Two Ronnies* and situation comedies of the unrivalled quality of *Ever Decreasing Circles* and *Open All Hours*. The richest comedy archive in Western Europe will be supplemented by the very best of British and American comedy - from stand-up to sitcom on Granada Plus, Carlton Entertainment and Sky One.

Current Affairs

19. British Digital Broadcasting recognises the strength in current affairs programming that the BBC, ITV, Channel 4 and Channel 5 will bring to digital terrestrial television. We have therefore been mindful to supplement and complement the strong primary service from these channels. Granada Plus will have access to the production team that has made *World in Action* a household name. Sky One will include fresh and innovative features.

Music

20. Sky One currently has eight hours of its indicative digital terrestrial schedule devoted to music programming. Programmes include *Hit Mix Long Play*, a DJ free music zone with material to appeal to every music taste, scheduled for late at night and *Morning Glory*, a three hour compilation of easy listening popular music.
21. It is a strength of British Digital Broadcasting's proposals that they rely largely upon channels supplied by their shareholders. In this way they can be more confident in including new programme investment and optimising choice across the channels. Relying solely on channels provided by third parties would mean that decisions on these important matters would be taken at one remove from the applicant.
22. The way in which each channel contributes to quality is detailed below.

Granada Plus

23. Granada Plus will be a showcase for some of the highest quality drama and entertainment ever produced for British television. The Granada Plus drama slate speaks for itself: *Sherlock Holmes*, *Poirot*, *Maigret*, *The Cloning of Joanna May*, *Brideshead Revisited*, *Prime Suspect*, *King Lear*, *Jewel in the Crown*, *London's Burning*, *Cracker*. All of these programmes have won a large number of awards as well as substantial and appreciative audiences on their first transmissions on ITV.
24. The comedy and entertainment programmes include the archive of ITV's major producer of quality entertainment, London Weekend Television, as well as Granada productions. Series available to Granada Plus include *A Fine Romance*, *Watching* and *Jeeves and Wooster*.
25. Similarly factual programmes on Granada Plus will include the best of the award-winning documentary and feature output of Granada TV and LWT - from *Disappearing World* to *Disguises*, from *World In Action* to *Summer on the Estate*.

26. Granada Plus will also have access to some of the best children's programming made on British television in recent years. Granada TV and LWT have produced award winning programmes across the range of children's drama, entertainment and factual programming with shows such as *Sooty*, *The Ward* and *Speakeasy*. Looking over a longer timescale, Granada Plus will also benefit from Granada TV and LWT's recent expansion into animation with programmes such as *Tom and Vicky* and *The Treacle People*.
27. The guarantee of continuing high-quality on Granada Plus comes from our long-term relationship with two of the major production powerhouses of ITV. Between them Granada and LWT produce nearly 40% of ITV's originally commissioned programme hours in addition to producing programmes and series for all the other UK terrestrial broadcasters and many of the satellite broadcasters. The reputation for high-quality programming of both producers is well-recognised and will be reflected both in original programming made specifically for the channel and in material made available after its initial showing on channels.

Carlton Entertainment

28. Carlton Entertainment will include many specially commissioned programmes. Under the direction of Carlton's highly experienced Entertainment Department, and utilising the skills of Britain's premier developer of entertainment formats, Action Time, the majority of the new programming will come from Carlton's Nottingham studio complex. Carlton has also forged strong links with entertainment based independent producers and will work with them to develop innovative shows across the genres of games, quizzes, comedy and talk.

Sky Movies

29. Sky Movies on digital terrestrial will continually strive to bring viewers hit movies from Hollywood and independent suppliers all over the world.
30. British films are expected to be a focus for the digital terrestrial channel as well. Sky's satellite movie channels screened 24 British made films in 1996. Moreover, in 1995-6, Sky spent £29 million helping to fund around 70 British movies - one of the most substantial movie investments made by a TV company to the British film industry. Examples such as these underline the commitment of Sky to British films of the highest quality. Along these lines, Sky will also endeavour to showcase British films on its digital terrestrial movie channel. Furthermore, the digital terrestrial channel expects to provide movie support programming through entertainment news shows, special features shows and so on - selected programmes of which Sky expects to create specifically for this digital terrestrial movie channel.

Sky One

31. Sky One on digital terrestrial intends to deliver first-run shows to the quality level that the channel's audience will demand, including UK first-runs of high quality domestic and international shows.

32. In addition, this Sky One service will endeavour to provide UK-originated and specially commissioned programming through its parent BSkyB. There are currently a number of shows in development with UK producers for its satellite channels including *Sky Cafe* and *Selina Scott Tonight* as well as shows previously commissioned such as *Springhill*, *Coppers* and *Walker's World*. Sky One will explore opportunities to create similar programmes especially for its digital terrestrial service.

BBC Style

33. BBC Style will be aspirational television carrying exclusively British programming, hosted by respected and expert presenters. It will appeal to viewers with a wide range of leisure and lifestyle interests such as cookery, gardening, travel, cars, antiques and fashion. BBC Style will bring to digital terrestrial television the editorial quality and production values of popular and tested BBC consumer programmes like *Holiday* and *Top Gear*. BBC Style will incorporate both archive and original production.

BBC Showcase

34. BBC Showcase will be a stage for the highest quality and most popular entertainment programming from BBC1 and BBC2. BBC Showcase's quality will derive from both top contemporary shows and classics. BBC Showcase will enhance significantly the perception of digital terrestrial television as delivering the best of British entertainment.

Section A6 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three of the multiplex licences for which it has applied.

British Digital Broadcasting's individual multiplex application provides a strong basic package. British Digital Broadcasting's supplementary proposals build upon those proposals offering twelve basic channels and three premium channels.

Section A7 - Additional Services

ITC Requirement

Noting the information contained in paragraphs 106 to 108, the applicant should state the nature of the digital additional services which he intends to include in his multiplex service, and (where known) the dates when they would commence, the hours of the day and days of the week during which they would be broadcast, the coverage area for the services (if restricted to less than the full multiplex coverage area), the digital capacity they would occupy and who would supply them. In particular, details should be given of any Electronic Programme Guide to be provided by these means.

Summary

Additional services, other than an Electronic Programme Guide, do not form part of British Digital Broadcasting's proposals for the initial implementation of the multiplex applied for.

It is British Digital Broadcasting's intention to offer a range of additional services at a later date when a viable business plan can be developed.

1. The shareholders of British Digital Broadcasting have each been involved in various trials and evaluations of additional services ranging from the use of teletext pages in the support of programming, through to full interactive, on-demand shopping and game playing. The enthusiasm amongst viewers for these additional services has been mixed, and it is clear that a considerable period of development and research is still required before service concepts emerge that will be both widely acceptable to a broad range of viewers, and commercially sustainable.
2. It is likely that digital terrestrial television will eventually provide an important means of offering new services to viewers and British Digital Broadcasting intends to include these services in its overall package in due course. However, British Digital Broadcasting believes that digital terrestrial television should concentrate initially on a broad range of family entertainment.
3. Furthermore, when seeking to persuade viewers to purchase digital television receivers, set top-boxes or integrated televisions, British Digital Broadcasting believes that a single, easy to understand proposition will have the best chance of success. There is a danger that a preponderance of new service concepts that are poorly understood, would prove something of a barrier, rather than a driver of early take-up.
4. It is also felt that the uncertainties surrounding the compression rates achievable in practice, and the desirability of offering as many programme services as possible, support a strategy of not launching any additional services (other than the Electronic Programme Guide) at the same time as the main multiplex service. British Digital Broadcasting intends to review the position after obtaining operational experience in

what data capacity can be made available for additional services, whilst still maintaining acceptable picture quality standards for programme services.

5. British Digital Broadcasting's business case does not depend upon revenue contributions from additional services, since it is felt that the market for such services has not yet developed to the point where accurate predictions can be made.
6. When introduced, additional services may take the form of both broadcast (one-way) and interactive (two-way) services, including those based on text-based magazine formats. The objective will be to build upon British Digital Broadcasting's existing experience in the provision of new types of service and demonstrate the advantages of digital television over current analogue services.
7. It is anticipated that other services will be introduced in collaboration with third parties, where appropriate, following a period of development and market evaluation to prove the initial concepts.
8. British Digital Broadcasting will support the services offered within its multiplex by providing information about schedules and events, within the SI system. Such information is intended to be freely available to anyone with a DVB compliant receiver and will support the development of an event service guide (ESG) should manufacturers choose to develop such a product.
9. An event service guide, if developed, will provide the viewer with a basic description of the services available, derived only from the SI data. This software might be developed and supplied by the receiver equipment manufacturer.
10. British Digital Broadcasting will seek to work with other multiplex operators in facilitating access, via an EPG, to all services in the multiplexes available within the coverage area.
11. British Digital Broadcasting is fully aware of the regulations and guidelines issued by both Ofcom and the ITC regarding the operation of EPG services. British Digital Broadcasting's intention is that any EPG selected for digital terrestrial television should list all available services in a manner consistent with the ITC and Ofcom requirements.

Next Generation Boxes

12. The specification of consumer equipment will reflect the services carried by the multiplex operators. As the market for additional services becomes clearer, it is expected that additional functionality will be included within second generation boxes, some of which will form fully integrated digital terrestrial/satellite television receivers. In particular, the next generation receiver is likely to be capable of providing enhanced EPG facilities to help the viewer navigate between the services being offered. Interactive services are also likely to become more widely accepted, based upon the inclusion of return path modem facilities within the receiver.

13. It is expected that additional interfaces will be provided in these boxes to support improved access to digital programme services, through high speed connections to digital storage media and in-home data networks, and connections to external units providing specialised functions such as Audetel, or more general data processing devices such as personal computers and network computers.
14. If agreement can be reached with other multiplex operators, British Digital Broadcasting intends to cooperate with manufacturers and third-party service providers in the development of next generation equipment as part of the development of the digital terrestrial market, demonstrating the advantages of the new technology over existing analogue services.

Section A7 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three of the licences for which it has applied.

This section has described the additional services that British Digital Broadcasting would provide if it were to win a single multiplex. If British Digital Broadcasting were awarded three multiplexes it would be prepared to offer a high quality Electronic Programme Guide. The features of this guide are described in British Digital Broadcasting's supplementary proposal.

Section A8 - Licence A

ITC Requirement

Applicants for Licence A should state their proposals for the broadcasting of Channel 5 in digital form and S4C Digital. They should also state which, if any, of the services proposed in response to questions A4 to A7 above would be provided on the capacity reserved for Channel 5 and for S4C.

1. British Digital Broadcasting is not applying for Licence A.

Section A9 - The Development of Digital Television Broadcasting

ITC Requirement

Taking account of specific proposals made in response to other questions, the applicant is invited to summarise any particular ways in which he would see the award of the licence to him to be calculated to promote the development of digital television broadcasting in the United Kingdom otherwise than by satellite.

Summary

Carlton, Granada and BSkyB have formed British Digital Broadcasting specifically for the purpose of successfully launching and sustaining digital terrestrial television. British Digital Broadcasting has exceptional financial, technical, programming and marketing and customer management credentials for the task. British Digital Broadcasting's plans provide the right content to make digital terrestrial television accessible and affordable and provide the technology and transmission solutions for timely and reliable roll-out. British Digital Broadcasting is ready to work with other multiplex operators, retailers, manufacturers and programme suppliers to make digital terrestrial television succeed. Specific letters of support from suppliers, manufacturers and retailers are attached as Annexes 2, 3 and 4.

1. British Digital Broadcasting believes that by 2005-2010 digital terrestrial television could become the main terrestrial television distribution medium in the UK, provided that an array of demanding conditions are met. The programme services must be compelling and high quality, incorporating the best available content as well as new and different elements. It must also include both basic and premium channels to provide a winning consumer proposition and a sustainable business model. Consumers must also be presented with coherent and unified messages about digital terrestrial television and its benefits as a whole. Customer service must be of the highest order. Access must be convenient and simple. Access must also be good value in terms of both initial equipment cost and ongoing subscription. Manufacturers and retailers must be incentivised to produce and promote equipment on sufficient scale. Consumers must have appropriate and flexible choices about what equipment to buy. The service must be delivered in a reliable manner and rolled-out as rapidly as possible. Multiplex operators must work together closely and have the financial resources to sustain a high fixed cost operation that will start with a no subscribers.
2. Carlton, Granada and BSkyB have formed British Digital Broadcasting precisely because meeting the above conditions is stretching and challenging. British Digital Broadcasting is a unique response to a unique challenge. Indeed, the UK is the first country to move forward decisively with the introduction of digital terrestrial television. Other countries such as the USA, Spain and Sweden are intending to follow. In some European markets there is concern that consumer confusion, resulting from competing and incompatible new digital services may deter take-up, British

Digital Broadcasting brings together three of the leading UK broadcasters to provide a unified approach and involving a concept for set-top boxes which will enable consumers to receive both digital terrestrial and digital satellite signals without replacing their equipment. British Digital Broadcasting is also ready to work with all other relevant parties to make digital terrestrial television succeed.

3. British Digital Broadcasting has the resources and experience to help make a success of digital terrestrial television. Carlton, Granada and BSkyB have unparalleled collective skill and capability in programming, technology, customer management and marketing. Importantly, the shareholders also have the depth of financial resources to sustain their contribution to digital terrestrial television even under pessimistic assumptions
4. **Carlton** has substantial media businesses in UK commercial television and in the supply of products and services to the film, video and television industries worldwide. Carlton is the largest commercial terrestrial broadcaster in the UK, holding three ITV licences, broadcasting to twenty two million people in London, the Midlands and the Westcountry. Carlton invests over £160 million a year in original programmes for ITV and other television channels. Carlton's principal focus is quality drama, for example *Kavanagh QC*, *Sharpe*, *Peak Practice*, *Bramwell*, *Inspector Morse*, *Rebecca*; award winning children's programmes including *Tots TV*, *Wind in the Willows*, *The Treasure Seekers* and *Old Bear Stories* and factual programmes. Carlton has a growing library of 5,500 hours of television programmes and films, including high quality British films and over 100 made-for-television movies. Carlton operates two UK cable channels, Carlton Select and the Carlton Food Network and has stakes in television stations in France, India and Singapore. Carlton's large Nottingham Studios are among the most modern and efficient in the UK. Television accounts for over 40% of Carlton's profits. Other businesses include Technicolor, the world's largest producer of pre-recorded videocassettes and processor of motion picture film, and Quantel, a world leader in the design and manufacture of image processing and editing equipment for the film, video and television industries. In 1996 Carlton made record pre-tax profits of £295 million from revenues of £1,678 million.
5. **Granada** is one of the UK's thirty largest companies by market capitalisation. Its ownership of Granada TV and LWT makes it the country's most experienced terrestrial television broadcaster and largest commercial programme producer. Through its TV rental and retail business, Granada has substantial expertise in the television hardware and television subscription retail markets. Its programme production businesses have produced many of the most popular and critically acclaimed television shows of the last decade including *The South Bank Show*, *Coronation Street*, *Blind Date*, *Cracker*, *Barrymore*, *Prime Suspect*, *You've Been Framed*, *World in Action* and *Dimbleby*. The Group owns the UK's largest commercial television programme library with over 10,000 hours of programming including many of the classics of British television. It also has experience of launching and running pay television services, having launched seven new programme channels last Autumn through GSB, its joint venture with BSkyB. The Group's ownership of Granada Technology Group (GTG) means that it is one of the UK's leading electrical

retailers with an in depth understanding of the television hardware manufacture and retail markets which will play a key role in determining the success of digital terrestrial television. At the same time, GTG's retail outlet chain is the country's largest seller of pay television subscriptions, giving the Group a detailed knowledge of the retailing and marketing issues involved in pay TV. GTG also has an unmatched expertise in retuning television receiving equipment as evidenced by the role they are playing in providing technical and 'on the ground' support to C5's current retuning exercise.

6. **BSkyB** is a world class satellite pay-television company, with over six million subscribers and in excess of fifteen million viewers in the UK and Eire. BSKyB offers its subscribers the highest quality channels, premium customer service, and continually endeavours to offer more choice and better value for money. Its commitment to deliver top movies from Hollywood, leading UK originated programmes, worldwide news, and the best in domestic and international sports, has resulted in strong and consistent increases on the subscriber base over the past five years. BSKyB has revenues in excess of £1bn, and is one of the UK's twenty largest companies by market capitalisation. Its established relationships with Hollywood studios, present deals with domestic and international sporting bodies, and arrangements with such renowned news organisations as Reuters, enable it to deliver ever improving quality levels of entertainment, sport and news to its valued viewers. BSKyB invests heavily in infrastructure, technology and people, the results of which are self evident with the significant reductions in subscription cancellations, increasing viewership and sustained financial performance. BSKyB views digital terrestrial television as an opportunity to invest in technology of the future.
7. Specifically, British Digital Broadcasting has a set of proposals for technology and transmission, receiver development, marketing, programming and for co-operation among multiplex operators designed to make digital terrestrial television a major new means of distribution. The benefits are high. The development of digital terrestrial television in the UK will deliver quality and affordable programme choice to the consumer, with very high levels of convenience, and also provide a significant stimulus to the UK production base, to UK electronics retailers and to the UK consumer electronics manufacturing industry. The early expertise developed in digital terrestrial television will be usable in future new international markets.

Working With Other Multiplex Operators

8. In the event that British Digital Broadcasting wins one multiplex licence, British Digital Broadcasting would seek to work very closely with all the other multiplex operators particularly on facets of the service that are important to the customers' perception of and satisfaction with digital terrestrial television as a delivery system, and which are critical to making the economics of a single multiplex work. Annex 16 sets out in more detail British Digital Broadcasting's approach to working with other multiplex operators.

British Digital Broadcasting's Technology and Transmission Proposals

9. Digital terrestrial television represents one of the greatest technical challenges for television broadcasters since the introduction of colour television. Digital terrestrial television is not an evolution of existing standards but a completely new approach to distribution and transmission. The task of the multiplex operators is to manage this change effectively.
10. British Digital Broadcasting has considered carefully all the elements in the technical roll-out requirements and has, through its shareholders' participation in industry forums such as the Digital Television Group and a series of individual meetings, discussed the best approach with other broadcasters, equipment manufacturers and service providers. British Digital Broadcasting's conclusion is that the best way to ensure a successful and timely roll-out of digital terrestrial television is for a single operator to take a lead position in order to drive plans forward.
11. British Digital Broadcasting is prepared to work with all the other successful applicants to try to create a dynamic partnership in the event of winning Multiplex B only. But this will take time, and may be only partly successful. This could delay the roll-out plans, lead to increased costs for all the licencees, and possibly blunt the marketing focus.
12. The most important elements of the project that British Digital Broadcasting would look to work with others on are:
 - a) Developing, together with the BBC and ITV/C4, a co-ordinated transmission roll-out plan that ensures that, as far as is possible, all the multiplexes are introduced in to a particular region at the same time. This will be the most cost effective solution, and will minimise viewer confusion.
 - b) Supporting the transmission roll-out with a comprehensive retuning plan that will eliminate the possibility of responsibility for viewer's problems being passed between parties.
 - c) Removing the potential for confusion over the choice of consumer equipment by supporting the development of a single technology that encompasses the technical requirements for British Digital Broadcasting's programming package but also the offerings of other multiplex operators.
 - d) Developing simple solutions to the unique problems of digital television and making those solutions available to other multiplex operators, rather than the expensive proliferation of alternative and perhaps incompatible designs.

- e) Sharing of core multiplexing infrastructure to allow licence holders to minimise start-up costs, and thereby maximising investment in programming, marketing and market development.
- f) Supporting a common Electronic Programme Guide.

British Digital Broadcasting's Receiver Development Strategy

13. British Digital Broadcasting supports the work of the Digital TV Group (DTG) and intends to comply, as far as commercially possible, with the guidelines and recommendations of that group.
14. However, the amount of software integration work necessary in order to successfully provide reception equipment for digital television services may have been underestimated. This is borne out by the experience in other markets where the launches of digital services have often been severely hampered by software related issues, especially in relation to the integration and debugging of Conditional Access systems and Electronic Programme Guides. Unless properly managed this will inevitably lead to serious delays and failure to grow the number of subscribers at a rate sufficient to match the commercial needs of the business.
15. Whilst the DTG receiver equipment recommendations give useful guidance to potential equipment manufacturers, British Digital Broadcasting is doubtful that the policy of leaving the development of the software entirely to the equipment manufacturer will lead to a successful market introduction of digital terrestrial television. British Digital Broadcasting believes that manufacturers will need very considerable technical assistance and commercial innovation if they are to be persuaded to commit aggressively to develop, launch and market digital terrestrial television receiving equipment in the necessary timescales.
16. Fortunately British Digital Broadcasting is able to exploit the expertise of its shareholders, in particular BSkyB. In this area, it is hoped that, in coordination with other multiplex operators, BSkyB's expertise can be exploited as BSkyB has spent the last two years actively designing and developing a fully featured digital set-top box for its proposed digital satellite services. BSkyB is in the process of completing the development of a complete set of operating software for digital set-top boxes.
17. In addition, a considerable amount of effort has already been made with the manufacturers of the critical Large Scale Integrated Circuits, without which low cost reception equipment will not be possible. British Digital Broadcasting is very mindful of the problems in this area during the attempted introduction of D-Mac technology into the United Kingdom and intends to take pro-active steps to ensure that there is adequate competition amongst suppliers in order to avoid depending on a single supplier. Where necessary British Digital Broadcasting will be pragmatic in its technology decisions in order not to prejudice the commercial opportunity in the interests of technical perfection.

18. Since, essentially, it is only the UHF tuner and COFDM demodulation circuitry that is necessarily unique to digital terrestrial television, British Digital Broadcasting will, with a modest amount of additional effort, be able to adopt BSkyB and NDS's existing work to be applicable to a digital terrestrial television environment. This will allow British Digital Broadcasting considerable advantage in achieving a rapid and reliable speed to market. British Digital Broadcasting is confident, at this stage, that it will be able to deploy properly debugged and proven digital terrestrial television set-top boxes by mid-1998.
19. British Digital Broadcasting is also supportive of the DTG's work in the area of Application Programming Interfaces (API). Both DTG and BSkyB are currently in the final stages of analysing and selecting an appropriate technology supplier for a suitable industry-wide API. British Digital Broadcasting is confident that its shareholding structure will allow it to maximise the likelihood that a common, or at least compatible API solution can be achieved for both satellite and digital terrestrial television markets, with the benefits that this would have for maximising market opportunities for new and innovative applications that could run above such a common API. British Digital Broadcasting is confident of this approach and hopes that the other multiplex operators will agree to utilise the work already undertaken by BSkyB.

British Digital Broadcasting's Marketing and Subsidy Proposals

20. By early next century, integrated television sets are likely to have become the predominant means for consumers to receive digital terrestrial television. The natural replacement cycle of televisions will then push, relatively swiftly, penetration of digital television to high levels. Digital terrestrial should by then be established as the main delivery system for television. In the period from launch however, set-top boxes will be the main way in which consumers will access digital terrestrial television. Set-top boxes are often described as an interim technology, but this underplays their 'market creating' importance.
21. The digital terrestrial television set-top box will be an innovative and sophisticated item of consumer electronics. At launch therefore, the unpromoted retail price will inevitably be high, so suppressing demand. Furthermore, economic and technical limits will constrain manufacturer's ability to gear up to mass production levels. British Digital Broadcasting, through BSkyB and Granada, has long standing relationships with set-top box manufacturers and the most developed appreciation of any UK broadcaster of the dynamics of the set-top box market. In consequence, British Digital Broadcasting has already invested considerable effort in designing an outline 'partnership' programme with manufacturers and retailers to create conditions conducive to optimising the supply of and demand for set-top boxes. These discussions have been predicated largely on British Digital Broadcasting being awarded three multiplex licences. The partnership initiative would have two strands, involving; underwriting the production of a quantity of set-top boxes if required from a small number of committed and capable suppliers and working with retailers and rental organisations through promotional offers to present the available volume of set-top boxes to consumers in ways that represented exceptional value for money. However,

it would only be feasible for British Digital Broadcasting to drive this programme if it were awarded three multiplex licences. The economics of a single multiplex are such that British Digital Broadcasting could not itself justify implementing the programme on its own. British Digital Broadcasting, if it were only awarded one multiplex licence, would therefore either support, where possible, any similar scheme designed by a 'lead' multiplex operator or share its thinking with a lead operator with a view to achieving the same effects but, again, obviously having to rely on the lead operator to fund the majority of the initiative.

22. The introduction of pay-television has sometimes been accompanied by sub-standard customer service operations with poorly trained staff unable to explain a relatively complex product and price offering to potential customers. In its early days, pay-television was prone to very high levels of churn. Digital terrestrial television is a similarly complex offering for most consumers (indeed, more complicated where coverage patterns are not coterminous). British Digital Broadcasting, through BSkyB, which operates two established world-class customer management centres in Livingston and Dunfermline, Scotland, has all the expertise to ensure that this aspect of launching and establishing digital terrestrial television is handled successfully. British Digital Broadcasting is ready to make this expertise available, on fair and reasonable terms, for enquiry handling for example, to the other multiplex operators.

British Digital Broadcasting's Programming Proposals

23. British Digital Broadcasting's programming offer is supplied by Carlton, Granada, BSkyB, and the BBC, respectively the major UK forces in commercial terrestrial television, pay television, and public service broadcasting. Collectively, they will give digital terrestrial television substantial authority and help ensure that digital terrestrial television is perceived as a competitive mainstream delivery system. The shareholders of British Digital Broadcasting also bring together very large production capabilities, programme libraries and ownership rights for television broadcasting which will be powerful assets to underpin the long term programme quality of British Digital Broadcasting.
24. British Digital Broadcasting's 'single multiplex' programme offer, should it only be awarded Multiplex B, comprises a balanced mix of four leading basic subscription channels and one premium channel; Carlton Select, Granada Plus, Sky One, BBC Style/BBC Showcase and Sky Movies. This package has been designed to fulfill the specific role described previously of complementing what British Digital Broadcasting has to presume would be a strong overall programming line-up on the other commercial multiplexes.

Section A9 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three licences for which it has applied.

The situation in which British Digital Broadcasting would be operating three multiplexes is very different to the situation in which British Digital Broadcasting would be operating one multiplex. If British Digital Broadcasting was awarded three multiplexes, British Digital Broadcasting would be able to take a strong market leadership role, offering a first class premium line up in addition to its basic subscription channels, with additional original programming as well as substantial additional investment in the marketing and promotion of receiving equipment.

Section A10 - Transmission Standard

ITC Requirement

Noting the information provided in paragraph 46 and in the draft ITC Rules of Operation on the use of DVB-T Specification, the applicant should give details of his proposed transmission standard, including the following items

- i) Modulation system and channel coding*
- ii) Guard interval*
- iii) SI data to be included*
- iv) Scrambling system to be used, if any*
- v) Subtitling system to be used*
- vi) Video coding details (e.g. type of pre-processing, range of bit rates possible)*
- vii) Audio coding details*

Summary

British Digital Broadcasting's proposals for digital terrestrial television are based upon the use of the relevant DVB-T specifications, together with the Draft ITC Rules of Operation on the use of the DVB-T specification (Rev-1) dated 31 October 1996. British Digital Broadcasting will do all that it reasonably can to comply with Article 2 of the European Directive on the use of standards for the transmission of television signals (95/47/EC).

Modulation System and Channel Coding

1. British Digital Broadcasting will use the modulation system as laid down in the ETS 300 744 standard for 64 QAM modulation together with the sub set that defines the OFDM parameters.

Guard Interval

2. The duration of the guard interval Δ will be $7\mu\text{s}$, i.e. $\Delta/T_u = 1/32$. The total symbol duration will be $T_s = 231\mu\text{s}$, which is the sum of the active symbol period T_u ($224\mu\text{s}$) plus the guard interval of $7\mu\text{s}$.

SI Data to be Included

3. As per the specification ETS 300 468, the Service Information will adhere to the guidelines provided by the ITC. British Digital Broadcasting intends to use up to the

maximum permitted data rate of 300 kbps. Also, any licensed service will contain viable data pertaining to that service without false data streams transpiring.

4. By working with other successful multiplex licensees British Digital Broadcasting will ensure that the SI data distribution system implemented will allow receivers to be mutually technically compatible. Further information on the implementation of the SI system is contained within Annex 15.

Scrambling System to be Used, if Any

5. The proposals detailed in this application are based upon the use of the DVB Common Scrambling Algorithm, as defined in the ETSI report ref. ETR 289.

Subtitling System to be Used

6. British Digital Broadcasting will use the DVB subtitling system as described in the prETS 300 743 standard. This system uses a look-up table in ROM, drawing on any other added characters or icons in order to aid flexibility and ease of use to the viewer.
7. Not enough experience has been gained yet with DVB subtitling systems to ensure that current display attributes which are familiar to the hard of hearing community can be followed exactly. It is hoped that, as experience develops, and as the parameters of the recommended API by the DTG are released, it will be possible to exceed the expectations of this community with the new technology display options offered by digital terrestrial television systems.
8. Further information on the subtitling proposals can be found in Annex 6 to this application.

Video Coding Details

9. British Digital Broadcasting will utilise MPEG-2 Main Level at Main Profile with full screen resolution and an appropriate aspect ratio to suit the original source material, i.e. 4x3 (or 12x9), 14x9 and 16x9.
10. The bit rate will be determined to best match programme source material and achieve the highest quality transmission possible. British Digital Broadcasting will seek to flex the multiplex to give appropriate programming a higher bit rate where required.

Audio Coding Details

11. The audio coding used for the main service will adhere to the bit rate set in ISO/IEC 13818-3. It will constitute 256 kbps for stereo and 192 kbps for joint stereo, with an agreed sample rate of 48 kHz. It will also follow the MPEG-2 layer 2 specification.
12. Where additional audio channels are carried, such as Audetel 'audio descriptive services', these will adhere to ETR 154 and the guidelines set out in the DTG

documentation 'Digital Terrestrial Television - Requirements for Interoperability' (the DTG Requirements) dated December 1996.

13. Further information on audio descriptive services proposals can be found in Annex 6.

Data transmission

14. At the time of writing it is not yet clear what options will be included within the DVB specification for data broadcasting. When implemented, any data services provided by British Digital Broadcasting will be implemented according to the DVB data broadcasting specification, subject to this providing suitable mechanisms for their delivery.
15. The SI data tables will carry information relating to the services offered and will be in accord with the recommendations of the DVB-SI DAT working party when these have been finalised.

Multiplexing

16. All multiplexing operations carried out at the Multiplex Centre and any subsequent re-multiplexing that may be called for in the delivery of the signals will conform to ISO/IEC 13818-1 and adhere to the guidelines contained in ETR 154. Multiplex systems will combine all components of the multiplexed signal into a coherent and compatible MPEG-2 transport stream.
17. British Digital Broadcasting has had discussions with manufacturers about the availability of new systems of MPEG-2 encoding and multiplexing available in time for viable delivery before the launch of services. British Digital Broadcasting favours the use of statistical multiplexing to make best use of the bandwidth available, both to maintain technical quality and yet allow for additional services where possible. Statistical multiplexing forms part of the offer currently available from our preferred supplier of multiplexer equipment.
18. Two illustrative bit budgets are outlined below in Tables 1 and 2. The first shows an even allocation of 4.27 Mbps for video in a five-channel multiplex, which would give a good quality to each channel. The second table shows a variable allocation of two channels at 6 Mbps for high quality, fast moving or sports programme sources, two at a medium setting of 3.43 Mbps for general programming and finally one channel at 2.51 Mbps for film-based original programming.
19. In practice it is possible to set the statistical multiplexer control computer to have upper and lower bit envelopes within which each channel can operate, allowing flexible use to be made of channel allocations. It has been established that film-based material can be encoded at a lower bit rate due to the nature of the film transfer, where 2 video fields will be encoded from an individual film frame thereby reducing the amount of data required to encode this type of programming.

20. The adaptable nature of a statistical multiplex system is such that additional programme and data streams can be introduced or removed at will with little impact on other programme channels, so long as care is taken in setting the bit rate allocation on those channels, and to the aggregate bit rate.
21. In this way it will be possible to introduce Pay Per View and special event programming into the multiplex by adjusting the bit rate dynamically on the existing channels, as the new event programme stream is introduced.

Illustrative Even Bit Rate 5 Channel Multiplex			
Service	Description	Bit Rate	
CHANNEL-1	Video Programme 1	4.274 Mbit/s	
	Stereo Audio 1	0.2560 Mbit/s	
	Audetel-1	0.0640 Mbit/s	<i>Only when required</i>
	DVB Subtitling-1	0.0080 Mbit/s	
CHANNEL-2	Video Programme 2	4.274 Mbit/s	
	Stereo Audio 2	0.2560 Mbit/s	
	Audetel-2	0.0640 Mbit/s	<i>Only when required</i>
	DVB Subtitling-2	0.0080 Mbit/s	
CHANNEL-3	Video Programme 3	4.274 Mbit/s	
	Stereo Audio 3	0.2560 Mbit/s	
	Audetel-3	0.0640 Mbit/s	<i>Only when required</i>
	DVB Subtitling-3	0.0080 Mbit/s	
CHANNEL-4	Video Programme 4	4.274 Mbit/s	
	Stereo Audio 4	0.2560 Mbit/s	
	Audetel-4	0.0640 Mbit/s	<i>Only when required</i>
	DVB Subtitling-4	0.0080 Mbit/s	
CHANNEL-5	Video Programme 5	4.274 Mbit/s	
	Stereo Audio 5	0.2560 Mbit/s	
	Audetel-5	0.0640 Mbit/s	<i>Only when required</i>
	DVB Subtitling-5	0.0080 Mbit/s	
	Total	23.010 Mbit/s	
Multiplex Overhead			
	Conditional Access	0.250 Mbit/s	
	PSI	0.075 Mbit/s	PAT / PMT / CAT
	SI	0.300 Mbit/s	EIT / NIT / SDT / BAT
	EPG	0.300 Mbit/s	
	Programme Clock	0.0655 Mbit/s	
	Data	0.000 Mbit/s	<i>Additional Later</i>
	TOTAL	0.990 Mbit/s	
	Grand Total	24.000 Mbit/s	

Table 1 Illustrative Even Bit Budget

For details of the SI data table allocation please refer to Annex 15.

22. British Digital Broadcasting will use compression and multiplexing equipment meeting MPEG-2 and DVB-T specifications, and has already had discussions with suppliers who can comply with its requirements. British Digital Broadcasting is aware of the rapid pace of development likely in this area and is closely monitoring the situation. The chosen equipment will include arrangements for redundancy, monitoring and

control facilities to provide the necessary level of reliability for this part of the system. This will be a high priority area, in order to provide test transmissions as soon as possible, primarily for the benefit of receiver manufacturers and installers. Letters have been included from MPEG-2 encoding and multiplex system manufacturers in support of this application; refer to Annex 3 for details.

Illustrative VARIABLE Bit Rate 5 Channel Multiplex			
Service	Description	Bit Rate	
CHANNEL-1	Video Programme 1	6.000 Mbit/s	Hi Quality/Sports
	Stereo Audio 1	0.2560 Mbit/s	
	Audotel-1	0.0640 Mbit/s	<i>Only when required</i>
	DVB Subtitling-1	0.0080 Mbit/s	
CHANNEL-2	Video Programme 2	6.000 Mbit/s	Hi Quality/Sports
	Stereo Audio 2	0.2560 Mbit/s	
	Audotel-2	0.0640 Mbit/s	<i>Only when required</i>
	DVB Subtitling-2	0.0080 Mbit/s	
CHANNEL-3	Video Programme 3	3.430 Mbit/s	Schedule General Progs.
	Stereo Audio 3	0.2560 Mbit/s	
	Audotel-3	0.0640 Mbit/s	<i>Only when required</i>
	DVB Subtitling-3	0.0080 Mbit/s	
CHANNEL-4	Video Programme 4	3.430 Mbit/s	Schedule General Progs.
	Stereo Audio 4	0.2560 Mbit/s	
	Audotel-4	0.0640 Mbit/s	<i>Only when required</i>
	DVB Subtitling-4	0.0080 Mbit/s	
CHANNEL-5	Video Programme 5	2.510 Mbit/s	Schedule Films etc
	Stereo Audio 5	0.2560 Mbit/s	
	Audotel-5	0.0640 Mbit/s	<i>Only when required</i>
	DVB Subtitling-5	0.0080 Mbit/s	
	Total	23.010 Mbit/s	
Multiplex Overhead			
Conditional Access		0.250 Mbit/s	
PSI		0.075 Mbit/s	PAT / PMT / CAT
SI		0.300 Mbit/s	EIT / NIT / SDT / BAT
EPG		0.300 Mbit/s	
Programme Clock		0.0650 Mbit/s	
Data		0.000 Mbit/s	<i>Additional Later</i>
	TOTAL	0.990 Mbit/s	
	Grand Total	24.000 Mbit/s	

Table 2 Illustrative Variable Bit Budget

For details of the SI data table allocation please refer to Annex 15.

Section A10 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three of the licences for which it has applied.

The policy outlined in British Digital Broadcasting's supplementary proposals is essentially the same as that outlined above. If awarded all three licences, British Digital Broadcasting will be in a better position to act as lead party in ensuring interoperability between the different multiplexes and consumer receivers.

Section A11 - Technical Quality and Reliability

ITC Requirement

The applicant should state in detail what operational and staffing arrangements he proposes to have in place to ensure that the Licensed Service complies with the technical quality and reliability requirements of the ITC Digital Technical Performance Code.

Summary

British Digital Broadcasting intends, by its approach to quality control, to ensure that the introduction of digital terrestrial television to the UK will present the viewer with a service that compares well with the existing quality being offered on analogue services and with the quality of video and audio that will become available through the introduction of pre-recorded digital video disks.

The experience of British Digital Broadcasting's shareholders in both terrestrial and satellite broadcasting and in distribution will ensure that the systems and delivery mechanisms chosen are backed up wherever possible by reserve equipment and that the reliability of transmission and distribution will match that attained in the operation of existing terrestrial services. British Digital Broadcasting will make every endeavour to meet the requirements of the ITC's Digital Technical Performance Code.

British Digital Broadcasting will train core technical staff to be conversant with the ITU-R (CCIR) 5-Point Quality Grading Scale and to apply these standards to programme quality monitoring. British Digital Broadcasting will have a hierarchical structure of technical management with written procedures for dealing with complaints from the trade, viewers and the ITC. British Digital Broadcasting intends to have a fully traceable database of programme quality complaints from which annual reports can be created for the ITC.

Background to Quality Measurement

1. British Digital Broadcasting's shareholders include major ITV licence holders, bringing a wide experience of monitoring and maintaining the technical quality of programming to the standards laid down by the ITC for analogue terrestrial television. This is coupled with BSkyB's experience in the operation of satellite-borne subscription television channels over a number of years, including decoder roll-out and receiver design. British Digital Broadcasting will thus have the ability to call on a broad base of experience to deal with the many and varied technical, quality, reliability and practical issues associated with the introduction of digital terrestrial television.
2. The above companies have experienced many changes in the production of programme material over the years. Experiences have ranged from the use of U-Matic, SVHS and

Hi-band for News etc., through one-inch videotape, to the introduction of Betacam 1/2" videotape formats. The transition to digital formats in acquisition and post-production has led to much greater flexibility, and ultimately improved quality, albeit at the expense of having to deal with new sets of problems. Use of uncompressed digital post-production techniques has introduced a quality threshold against which to measure all other programmes.

3. Recent years have seen a move towards the use of non-linear editing systems such as Quantel's Editbox, Avid, Lightworks, etc. Gradually these systems have moved from a purely off-line function to use, in a limited fashion, for on-line editing of programmes. The subtle changes introduced by the use of slightly compressed motion JPEG systems has led to new criteria for the measurement of picture distortions. Drawing on the experience gained in evaluating this type of programming, British Digital Broadcasting will be able gradually to adjust its technical quality criteria with the introduction of MPEG-2 encoding and multiplexing, in order to maintain an appropriate balance between technical quality, commercial requirements and viewer expectation.
4. Since these new distortions have no equivalent in analogue technology, British Digital Broadcasting believes that new test procedures and operational practices will have to be established. In the past, the use of various fixed test signals related directly to the programme quality through a broadcast chain. With MPEG-2 encoding, programme quality can change dependent on picture content. Image quality can also be affected by external factors such as the available bit rate, and any bit errors that occur during distribution of the transport stream.

Technical Quality

5. By establishing its own delivery requirements derived from shareholders' existing technical delivery specifications, British Digital Broadcasting aims to have the best available quality of programming prior to encoding. It is apparent from research that the best quality of encoding can be attained at a lower bit rate when the source material is of a high standard. This reduction in bit rate will allow the best possible use of the transport stream bandwidth to improve quality on other, more demanding, channels in the multiplex.
6. Dependent on the quality of delivered programmes for each channel, British Digital Broadcasting will consider the introduction of pre-processing techniques, either in the encoder or as a separate process, where this is proven to add benefit to the encoding process. British Digital Broadcasting will make every endeavour to comply with the ITC's Digital Technical Performance Code dated 31 October 1996 by closely monitoring the quality at both the programme delivery and the MPEG encoding and multiplexing stages.
7. When monitoring the compressed pictures, due regard will be given to the production process and any compression used will be logged to avoid any problems caused by concatenation of compression schemes which may lead to artifacts in the final picture.

For this reason, there will be close co-operation between the multiplex licensee and programme providers. British Digital Broadcasting will offer advice to programme supply companies if this cause of impairment is identified.

Operational Arrangements

8. The four stages of technical monitoring and resilience are described below:-

Playout Centre

9. Programmes and commercials will be assessed technically to ensure that they meet standards derived from shareholders' existing technical delivery standard. Reporting to the Digital Transmission Manager, the Shift Supervisors and their Engineers and Technicians will be jointly responsible for ensuring programme quality standards are met. The latest techniques of digital post production and presentation will be used to ensure that the best possible programme quality is delivered to the Multiplex Centre. British Digital Broadcasting will have a contract with the digital programme service providers which will specify the technical parameters to be observed by the Playout Centre technical staff.

Multiplex Centre

10. At the British Digital Broadcasting multiplex centre all relevant technical staff will be trained in the operation of MPEG-2 encoding and multiplex equipment, backed by a strong computer systems team familiar with the operation and support of programme automation and monitoring systems. These staff will monitor and log the performance of the multiplex or multiplexes created and transmitted from the multiplex centre. This will include the monitoring of both video and audio quality and the strict control of the subscriber authorisation systems. There will be five main plus one hot spare encoders with a dual multiplexer (main plus reserve), with full change-over facilities per multiplex channel. All computer systems will have a hot backup and power will be fed via an uninterruptible power supply system with generator backup.
11. The Multiplex Centre will be staffed on a 24 hour shift basis in accordance with the staffing plans shown in Annex 10.
12. Each monitoring room will be equipped with the relevant MPEG-2 transport-stream analysis equipment as required. Off-air logging equipment will be fitted to allow British Digital Broadcasting to record the output of each multiplex channel as transmitted to allow later analysis if required. These tapes will be held for 28 days as required by the ITC's Digital Performance Code.
13. Each outgoing multiplex transport stream will be monitored as off-air decoded sound and vision. British Digital Broadcasting intends to employ error logging which will also utilise a hard disk recorder to store the last five minutes of multiplex as transmitted. When problems are detected, this data will be stored and later archived

for a more detailed investigation. It is feasible that the PSI/SI data changes could also be logged on an ongoing basis by the computer systems for 'as run' logging.

Distribution Resilience

14. A contract will be placed with a satellite distribution provider for a dual service using two separate uplinks and satellites in different orbital positions. This will protect against sun outages and provide a reserve path for distribution in the case of failure.

Transmission Resilience

15. Transmission will be provided as total broadcast contract for service with an established transmission provider. The contract between this provider and British Digital Broadcasting will cover the necessary reliability and quality monitoring requirements in keeping with the ITC's standards of reliability as outlined in the ITC's Digital Performance Code, the details of which are outlined below.
16. To ensure high quality transmission, monitoring will be provided at each transmitter site to enable any faults to be detected rapidly. This will include not only monitoring of the modulators and transmitter systems themselves, but also monitoring of the transport stream to ensure that it is properly formatted. Telemetry links will be provided for the main transmitters to enable alarms to be raised at a central control centre so that appropriate corrective action can be initiated. The monitoring and telemetry links will also provide the transmission operator with an overview of the total transmission network at all times. A high level version of this overview will be available to British Digital Broadcasting at its multiplexing centre.
17. Resilience will be built into the design of the transmitting stations in a number of ways. The transmitters will be of solid state, modular design in order to minimise the risk of spontaneous failure. Passive reserve rather than parallel transmitter systems will be employed in order to avoid, where possible, reduced power operation which would deprive significant numbers of viewers of their service.
18. Antennas will be constructed in two halves with individual coaxial feeders. This arrangement is the same as that used in the existing analogue network and has proved itself to be very reliable over the years.
19. British Digital Broadcasting will monitor the technical performance and availability of the multiplexes by requiring its transmission operator to submit monthly reports detailing performance of the network which must exceed an agreed threshold. A summary of these reports will be made available to the ITC on an annual basis if required.

Section A11 of British Digital Broadcasting's *supplementary proposals* provides equivalent information should the company be awarded all three of the licences for which it has applied

The policy outlined in British Digital Broadcasting's supplementary proposal is essentially the same as that outlined above.

Section A12 - Changes to Existing Transmission and Reception Arrangements

ITC Requirement

Noting in particular the information given in paragraph 48 and the provisions of the Code of Practice on Changes to Existing Transmission Arrangements which is referred to in Annex B, the applicant should state in the form of a fully worked out plan what arrangements he would make to implement the changes to existing transmission and reception arrangements required in order to accommodate the proposed multiplex transmitter plan. Information on the costs involved both on the transmission side (e.g. frequency changes or the inclusion of precision offset control) and on the reception side (e.g. house visits or new receiving aerials) is required under section B of the attachment to Part III.

Summary

British Digital Broadcasting has drawn up a project plan for implementing the necessary changes to existing transmission and reception arrangements in order to allow the introduction of the new digital terrestrial services - see Annex 19. Assumptions about the costs associated with this work have been included within British Digital Broadcasting's business plan.

British Digital Broadcasting has adopted a cautious approach to the provision of financial resources to this aspect of the project but recognises that the likely scale of the problem is actually quite small.

If British Digital Broadcasting were to be awarded the licence for Multiplex B, British Digital Broadcasting would seek to co-operate with the operators of the other five multiplexes in order to accomplish this work in the most timely and cost-efficient manner.

British Digital Broadcasting's plans for retuning and aerial work have been drawn up in consultation with Granada Technology Group, Granada's TV rental division which has extensive experience and expertise in this area. This is evidenced by their key role in all aspects of the current retuning exercise for Channel 5 although British Digital Broadcasting recognises that the work now required is of a rather different nature and demands more local knowledge of potential problem areas and options for providing alternative services. Given the expertise and resources available to the company, British Digital Broadcasting is confident that it will be able to speedily identify and resolve problems in this area and thus ensure that the roll-out of the digital multiplexes is not impaired.

1. British Digital Broadcasting has studied the ITC's draft Code of Practice on Changes to Existing Transmission and Reception Arrangements and the document 'Impact of Digital Main Stations on UK Analogue Services: Initial Assessment'. In the light of

these documents and discussions with the two potential transmission suppliers, it has been concluded that the following changes may be necessary to existing transmission and reception arrangements in order to allow the introduction of digital terrestrial television services.

2. Considerable uncertainty exists regarding the effect of digital services on the reception of existing analogue services. It is very likely that interference will be experienced only by a very few viewers. However in order to present the business plan with the minimum number of uncertainties, British Digital Broadcasting has adopted a very cautious approach and assumed interference levels to be at the upper end of the possible range.

Transmission Changes

3. British Digital Broadcasting believes that the following work will be required at the relevant main stations:
 - a) Installation of special filters and combiners to allow digital terrestrial television services to be combined with analogue services into existing antennas.
 - b) Strengthening of structures where necessary to accommodate additional digital terrestrial television antennas.
 - c) Installation of new digital terrestrial television antennas where required.
 - d) Introduction of precision offset at a number of specified stations.
4. British Digital Broadcasting believes that the following work will be required at the relevant relay stations:
 - a) Installation of special filters and combiners to allow digital terrestrial television services to be combined with analogue services into existing antennas.
 - b) Strengthening of structures where necessary to accommodate additional digital terrestrial television antennas.
 - c) Installation of new antennas where required.
 - d) Changing one or more channels of specified relay stations.
 - e) Provision of up to 5 new relay stations.
 - f) Replacement of the re-broadcast link (RBL) feed with an SHF link at up to 5 stations.

- g) Improvement or modification of RBL feeds at specified stations.
- h) Increasing the effective radiated power (ERP) of specified stations.
- i) Introduction of precision offset at a number of specified stations.

Reception Changes

5. Although the large majority of television receivers are unlikely to be affected by the introduction of the new services, in certain areas digital terrestrial transmissions will interfere with existing analogue services and some viewers may no longer be able to obtain satisfactory reception on their existing channels. British Digital Broadcasting recognises that such problems must be addressed prior to bringing digital terrestrial stations into service wherever possible, and has devised a procedure for dealing with them. This procedure is detailed in the confidential Annex 19 and is intended for each relevant multiplex at each digital terrestrial site.
6. British Digital Broadcasting has made preliminary estimates of the total numbers of homes likely to be affected by interference. These estimates differentiate between those homes which will require retuning of TV sets and VCRs only, and those which will require both retuning and aerial re-alignment or replacement. A range of costs has been derived in each case based on ITC population figures with judgments made where appropriate in order to estimate the number of viewers and households likely to be affected.
7. A limited amount of data about the effects of digital terrestrial relay transmitters on existing services is available from the ITC at the present time. Notional estimates of the numbers of viewers likely to be affected have therefore been included by British Digital Broadcasting for costing purposes.
8. The results of British Digital Broadcasting's cost analysis are shown in Annex 19 based on the estimated worst case number of viewers affected.
9. It is assumed that the cost of the necessary retuning and aerial work will be apportioned between the six multiplex operators. Annex 19 shows the estimated costs for each multiplex of dealing with the worst case number of viewers that could be affected by that multiplex. In order to minimise disruption to viewers, and to keep expenditure to a minimum, British Digital Broadcasting considers it essential that the work is carried out on behalf of all the multiplex operators. If British Digital Broadcasting was awarded the licence for a single multiplex, it would seek to work with the other successful licence holders to co-ordinate the retuning and aerial work across all multiplexes.
10. British Digital Broadcasting places considerable emphasis on the need for comprehensive training for staff involved with retuning work and would want to see training in the following areas addressed by contractors carrying out this work.
 - a) The potential types of interference to be expected from digital

transmissions.

- b) The role of the retuner.
- c) Customer feedback and morale.
- d) Dealing with the customer in a professional manner.
- e) Retuning procedures.
- f) Escalation procedures to handle specific problems and complaints.
- g) Technical procedures to address specific complexities likely to be encountered.
- h) Practical training.
- i) The use of technical equipment.
- j) Health and safety.

Security

11. British Digital Broadcasting acknowledges the importance of taking adequate precautions to protect the public from fraud or criminal activity during the retuning exercise. British Digital Broadcasting would expect that all staff involved with retuning and aerial work should be screened to ensure that unsuitable persons are eliminated at an early stage. New staff should be required to produce an approved form of identification and references must be taken up.
12. British Digital Broadcasting recognises the importance of the public being able to identify easily the company's retuners and to have a secure means of checking identification. Contractors must provide uniforms, along with identification cards contained in a laminated holder featuring company logo, photograph, freephone contact number, ID number and expiry date. Information packs should be sent out in advance to all addresses to be visited explaining the security arrangements and how retuning staff can be properly identified.
13. Freephone calls will need to be directed to a central point, which must hold details of all staff including ID numbers, descriptions and passwords. Contractors must ensure that contact is made at the appropriate time with the local police station crime prevention and community liaison staff and any criminal allegations made against retuning staff by members of the public will have to be passed on immediately to the police.

Quality Standards

14. British Digital Broadcasting believes that rigorous quality standards for the re-tuning exercise must be part of any contract for the carrying out of this work.

Section A12 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three licences for which it has applied.

The policy outlined in British Digital Broadcasting's supplementary proposal is essentially the same as that outlined above. However, operating three multiplexes would allow British Digital Broadcasting to play a leading role in tackling the reception issues discussed above.

Section A13 - Receiving Equipment

ITC Requirement

Noting the information given in paragraphs 85 to 87 the applicant should state how he will ensure that the equipment covered by the arrangements set out in response to question A13 above will be capable of receiving all the multiplex services available in the proposed coverage area of his own service.

Summary

British Digital Broadcasting intends to implement its systems and procedures in a way that will allow consumer equipment to receive all the multiplex services available in the proposed area of coverage.

If awarded the licence for Multiplex B, British Digital Broadcasting will seek to work with other multiplex operators in order to establish interoperability between receiving equipment and multiplexes.

Service Information

1. British Digital Broadcasting will incorporate SI information from other multiplexes into its own, assuming that this is made available by other multiplex operators under appropriate reciprocal arrangements. The incorporation of this additional SI information will involve local processing and insertion arrangements at certain transmitter sites. Solutions are under consideration based around the reception of SI data off-air, or by the use of wide area data networks.
2. British Digital Broadcasting will ensure that the SI data carried in the Multiplex B transport stream will be compliant with the ITC's 'Draft Rules of Operation for the DVB-T Specification' and the DTG's 'Requirements for Interoperability'. British Digital Broadcasting will seek to work with the other successful multiplex licence holders to ensure a common technical solution to the issue of incorporation of local 'Network Information Tables' (NITs).
3. The frequencies of local relays available at each service insertion point in the transmission network will be inserted into the Multiplex 'B' transport stream by the use of transcoders which separate out the regional SI data and insert the data into the Multiplex 'B' ongoing signal. At the same time Multiplex 'B' SI data is extracted and inserted into all other multiplexes available at the service insertion point.
4. Further detailed discussion of the SI data tables can be found in Annex 15.

Conditional Access

5. British Digital Broadcasting intends to implement a strategy for conditional access which will allow viewers to receive all the services that they are entitled to, no matter in which multiplex these are carried or which conditional access system is used to protect them. This will be achieved by offering fair, reasonable and non-discriminatory access to British Digital Broadcasting's own conditional access system, or by entering into joint simulcrypt arrangements if requested by other operators.
6. Simulcrypt is a system where entitlement messages for more than one proprietary system of conditional access can be transmitted in the same multiplex transport stream. British Digital Broadcasting would seek to work with other multiplex licence holders to ensure that if such a system were necessary then a system of data links would be put in place between operators of different subscriber management systems to allow secure transfer of entitlement messages between operators.

Electronic Programme Guide

7. British Digital Broadcasting will seek to work with other multiplex operators in the establishment of a common electronic programme guide that will facilitate access to programming across all multiplexes available within the coverage area. British Digital Broadcasting is committed to the development of an EPG which is fully compliant with the regulatory requirements of Ofcom and the ITC and would be prepared to discuss participation in any industry initiative to establish an equitable approach to the issues raised by electronic programme guides.

Receiver Compliance Facility

8. If awarded the licence for Multiplex B, British Digital Broadcasting will seek to work with other multiplex operators in the establishment of a Receiver Compliance Facility. This facility would be equipped with test equipment and staff to ensure that the variety of set top boxes and integrated receivers developed for digital terrestrial television, will be mutually technically compatible and also that different implementations of API and EPG interoperate with each other. This facility would draw on the experience gained by BSkyB and News Digital Systems in developing their own facilities for the compliance testing of analogue satellite decoders.

Section A13 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three licences for which it has applied.

If awarded three multiplexes, British Digital Broadcasting would act as the lead party in receiving equipment interoperability discussions. British Digital Broadcasting would also be able to ensure that receivers would have access to both satellite and terrestrial digital services from the same equipment through the use of a satellite or terrestrial sidecar (plug-in module).

Section A14 - Supply of Programme Services

ITC Requirement

The applicant should indicate the sources of the programme services which he proposes to broadcast under the multiplex licence. Details of any agreements with suppliers should be given here or in a confidential annex.

Summary

Digital terrestrial television will start with no subscribers. In these circumstances relying entirely on third party programme providers to supply a differentiated package would be a risk, due to the level of investment required. In order to achieve the quality, balance and degree of distinctiveness most likely to encourage viewers to subscribe, British Digital Broadcasting's shareholders intend to provide and originate four of the five proposed channels.

1. This section sets out details for the supply of British Digital Broadcasting's channels on Multiplex B. Annex 4 includes a number of letters from suppliers confirming their willingness to supply programming.
2. A key asset that British Digital Broadcasting brings to digital terrestrial television is access to the content libraries and rights for broadcast television held by its shareholders, together with the relationships that those shareholders have built up over many years with major suppliers. Under the Shareholders Agreement each party has agreed to use reasonable endeavours to acquire digital terrestrial rights to programming acquired by it (where it does not already hold such rights).

Carlton Entertainment

3. Carlton Entertainment will supply the following material for its channels through in-house production: chat shows, entertainment and gameshows.
4. Carlton Entertainment intends to acquire the following material: drama, chat shows, games shows, drama, comedy.
5. Carlton Entertainment has reached, in principle, satisfactory assurances of supply from the following suppliers:
 - Warner Bros.
 - Universal
 - CBC
 - CBS
 - All American
 - Disney

Granada Plus

6. Granada Plus has in place a long term contract guaranteeing first rights of access to the entire programme libraries of Granada TV Productions and London Weekend Television Productions. This gives to Granada Plus first refusal on perhaps the largest unexploited archive of quality British-made programmes.
7. The Granada archive goes back more than 40 years to the beginning of ITV and includes the full range from Britain's most popular soap *Coronation Street*, to award-winning drama such as *Jewel in the Crown* and *Upstairs Downstairs*. In comedy and entertainment there is a diverse range of productions from *Wood and Walters* to cult favourites such as *The Army Game*. The LWT archive has nearly equal depth, and a range that goes from *The South Bank Show* to *The Professionals* and from *An Audience With Dame Edna* to *Surprise Surprise*.
8. Granada Plus will also commission a proportion of lifestyle, magazine and entertainment programmes. Again, these are subject to existing programme supply agreements between Granada Plus and the award winning production teams of Granada TV and LWT.

Sky Movies

9. Major Hollywood studios and independent production companies currently provide output product as well as library product for carriage on BSkyB's satellite movie channels. To demonstrate the depth of these supply arrangements, in the past 6 months studios have made 76 films available in the pay television window to BSkyB's present movie channels. Moreover, suppliers such as these currently help Sky provide the material for the 22,000+ hours of programming across these movie channels. In the context of these relationships, Sky believes that it is well placed to obtain digital terrestrial rights for programming the digital terrestrial Sky Movies channel where necessary.
10. European and British Film licensors, including British Screen and Chargeurs, currently provide product for Sky satellite movie channels as well. Moreover, BSkyB presently creates its own in-house support movie programming such as *The Movie Show*, *Special Features* and *The UK Top Ten* which it would plan to exploit on the digital terrestrial Sky Movies channel as well as explore opportunities to create additional support programmes especially for this channel.

Sky One

11. Major Hollywood studios and independent production companies currently provide product for carriage on BSkyB's satellite general entertainment channels. These long-established, contractual relationships help Sky source the 12,000+ hours of transmission on these channels a year. Current supply sources include Twentieth Century Fox, King World, Proctor & Gamble and Saban International as well as

European and UK suppliers such as LWT, Granada, Dandelion and Wink Productions. In the context of these relationships, Sky believes that it is well placed to obtain digital terrestrial rights for programming for the digital terrestrial Sky One channel where necessary.

12. Furthermore, in-house or commissioned programming made especially for the Sky general entertainment satellite channels in the recent past includes *Springhill*, *Jimmy's*, *Just Kidding*, *Walker's World* and *The Movie Show*. Sky has a number of shows planned or currently in production such as *Selina Scott* and *Sky Cafe*. Perhaps most importantly, BSkyB has reached a point in its lifecycle at which it can begin to build its own library. Additionally, BSkyB will explore opportunities to create original general entertainment programmes especially for the Sky One digital terrestrial channel.

BBC Style and Showcase

13. British Digital Broadcasting has secured an agreement in principle with the BBC for the supply, via the BBC's proposed joint venture with Flextech of its new BBC Style and Showcase channels. The arrangement also envisages the supply of a further new BBC channel as and when additional capacity permits.

Section A14 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three licences for which it has applied.

The channels, whose supply arrangements have been described above, also feature in British Digital Broadcasting's 'three multiplex' programme proposals. Section A14 of British Digital Broadcasting's supplementary proposals also describes supply arrangements for a further ten channels, including additional BBC channels.

Section A15 - Capacity for Programme Services

ITC Requirement

Noting the information given in paragraph 108, the applicant should state how he intends to ensure that at least 90 per cent of the digital capacity on the multiplex is available for the broadcasting of digital programme services, if appropriate also qualifying services, programme-related services or relevant technical services.

Summary

British Digital Broadcasting's business case for the introduction of a digital television service is based upon the broadcasting of digital programme services, together with relevant technical services. The company has no intention of utilising more than 10% of the multiplex for additional services which are not programme related services.

1. As noted in Section A7, British Digital Broadcasting intends, over time, to offer a variety of digital additional services within the multiplex. However, such services do not form part of the launch planning for digital terrestrial television. Such services will be introduced following careful evaluation of user demand and with a view to supporting the development of the market for digital terrestrial television in general.
2. The capacity utilised for additional services will not exceed 10% of the whole multiplex during normal viewing hours (i.e. between 0600 and 2400). As the market develops for these services, it is possible that advantage will be taken of under-utilisation of capacity for normal programming (e.g. during night time hours) to provide extended additional services. There are, however, no immediate plans to do so.
3. It is anticipated that further developments in multiplexing will allow more efficient use of the available capacity and it is British Digital Broadcasting's intention to utilise these improved multiplexing techniques as they become available. The intention, however, is initially to give priority to maintain or improve the quality or number of other programme or relevant technical services carried within the multiplex, such as the electronic programme guide, rather than for the carriage of additional services.

Section A15 of British Digital Broadcasting's supplementary proposals provides equivalent information should the company be awarded all three of the licences for which it has applied.

The policy outlined in British Digital Broadcasting's supplementary proposals is essentially the same as that outlined above.

Section A16 - Key Staff

ITC Requirement

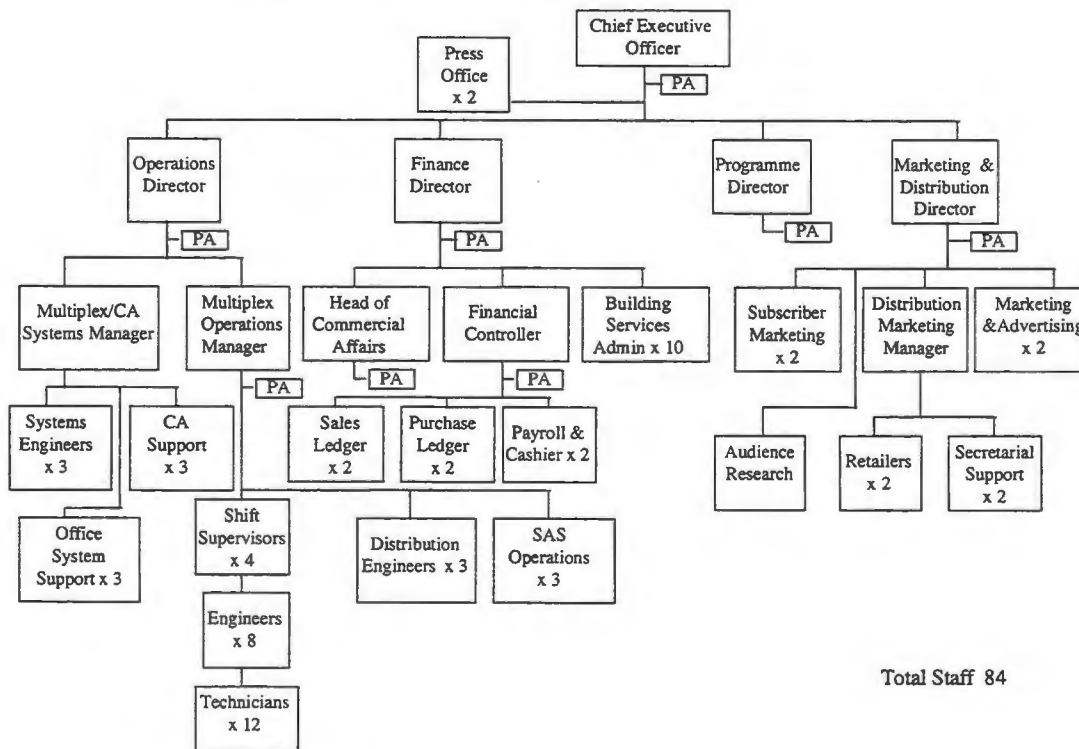
The applicant should identify the key posts and (where possible) the named post-holders who will be involved in establishing and running the multiplex service. Details should be given of the post-holders' experience and qualifications. If the applicant prefers, this information may be given in a confidential annex.

Summary

British Digital Broadcasting proposes an experienced and well resourced organisation designed around the core processes involved in delivering a digital terrestrial television service.

1. British Digital Broadcasting's proposed organisation for operating one multiplex is shown below:

BRITISH DIGITAL BROADCASTING ORGANISATION STRUCTURE



2. The organisation is built principally around the core processes involved in providing a digital terrestrial television service to the public, namely delivering the service (Operations), creating the multi-channel programme offer (Programming) and achieving customer awareness and uptake (Marketing). The five key posts are Chief Executive Officer, Operations Director, Finance Director, Programme Director and

Marketing Director. It should be noted that the shareholder companies of British Digital Broadcasting's parent company each have well resourced organisations for supplying their respective channels to British Digital Broadcasting. These organisations are described in confidential Annex 10.

3. The senior management team fulfilling the senior roles will combine the competence and experience required to run a major digital broadcasting company. Confidential Annex 9 summarises British Digital Broadcasting's approach to recruiting for the new posts and to resourcing the implementation of British Digital Broadcasting's digital terrestrial television services. Section B7 outlines detailed cost assumptions.
4. The executive management team will jointly share responsibility for ensuring compliance with the obligations of British Digital Broadcasting under its licence. British Digital Broadcasting will have comprehensive arrangements and procedures in place to ensure compliance with the licence conditions and compliance with Programme, Advertising, Sponsorship, Technical Performance and other Codes and directions issued by the ITC or any other competent authority. Appropriate legal representation will be sought directly at the request of the Chief Executive, or the Chief Executives duly appointed representative, as circumstances may dictate.

Section A16 of British Digital Broadcasting's *supplementary proposals* provides equivalent information should the company be awarded all three licences for which it has applied.

British Digital Broadcasting's 'three multiplex' organisation incorporates the same functions and processes as its 'single multiplex' equivalent but is resourced to a higher level to reflect the greater workload and wider role that British Digital Broadcasting would be able to take in leading the development of the market.

Section A17 - Composition and Identity of the Applicant - Directors

ITC Requirement

- (i) *Where the applicant is a body corporate, he should give for each of the following, the full names, addresses, nationality, country of residence, and other directorships, offices or employment's of the individuals concerned:*
 - a) *the directors of the applicant body;*
 - b) *if the applicant body is yet to be incorporated or formed, the proposed directors;*
 - c) *the directors of any body by which the applicant body is controlled (as defined in Schedule 2 of the 1990 Act);*
 - d) *the directors of any body that is a participant (as defined in Schedule 2 of the 1990 Act) with an interest of more than 20 per cent in the applicant.*
- (ii) *Where the applicant is not, or is not proposed to be, a body corporate, similar information should be provided about those responsible for management and policy-making.*

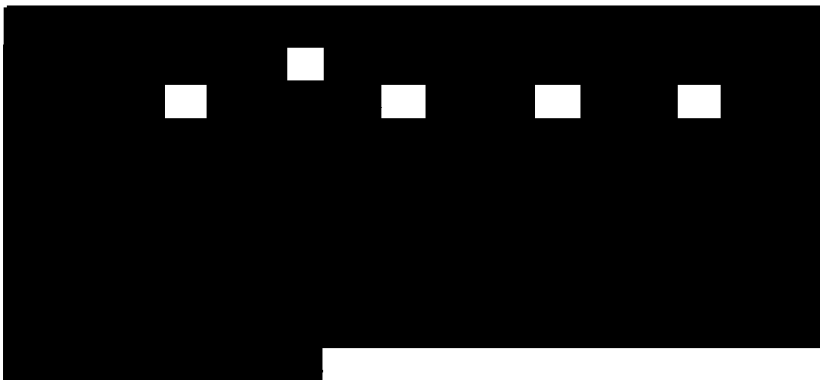
1. The Directors of British Digital Broadcasting are: (* denotes a non-executive director)

i)

[REDACTED]



- [Redacted text block]



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2. Carlton, BSkyB and Granada Group have agreed that [REDACTED] shall be the first Chairman of British Digital Broadcasting for a period of two years and thereafter the Chairman will first be a BSkyB appointee and then a Granada appointee. The right to appoint the Chairman will rotate every two years.
3. The applicant body has been incorporated and question (i) (b) is therefore not applicable.
4. The ITC requires details of directors of any body by which the applicant body is controlled (as defined by Schedule 2 of the 1990 Act). British Digital Broadcasting is controlled by British Digital Broadcasting Holdings, the directors of which are the same as those identified in paragraph 1 above.
5. In response to the request for information regarding the directors of any body that is a participant (as defined in Schedule 2 of the 1990 Act) with an interest of more than 20 per cent in the applicant, British Digital Broadcasting is 100% owned by British Digital Broadcasting Holdings, the directors of which are the same as those identified in paragraph 1 above. British Digital Broadcasting Holdings is owned as to one-third by Carlton, one-third by Granada Group and one-third by a wholly owned subsidiary of BSkyB. By virtue of the definition in Schedule 2 of the 1990 Act, none of these three bodies is a participant in British Digital Broadcasting. Details of the directors at Carlton, Granada Group and BSkyB can however be supplied on request.
6. British Digital Broadcasting is a body corporate and so question A17 (ii) is not applicable.

Section A17 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three licences for which it has applied.

The information supplied in Section A17 of British Digital Broadcasting's *supplementary* proposals is identical to that shown above.

Section A18 - Composition and Identity of the Applicant - Shareholders etc.

ITC Requirement

Where the applicant is a body corporate, he should give the names and addresses of the following (together with the number and class of shares held, or to be held):

- (a) participants with an interest of more than 5 per cent in the applicant;*
- (b) persons who it is intended will, following the award of a licence, be participants with an interest of more than 5 per cent in the applicant;*
- (c) participants with an interest of more than 5 per cent in any body which controls the applicant;*
- (d) participants with an interest of more than 5 per cent in any body which has an interest of more than 20 per cent or more in the applicant.*

Notes:

- 1) Where interests are held in the name of trustees or nominees, this should be stated and the above details should be given in relation to the beneficial owner.*
- 2) Five copies of the body's Memorandum and Articles of Association should be provided, together with a copy of any resolution amending or updating them.*

1. British Digital Broadcasting is a wholly-owned subsidiary of British Digital Broadcasting Holdings. British Digital Broadcasting Holdings is the beneficial owner of 100% of the shares of British Digital Broadcasting comprising 3,000,000 ordinary shares of 10p each issued fully paid for cash at £1 per share. As required by the ITC, the names and address of any participant with an interest of more than 5% in the applicant is detailed below:

British Digital Broadcasting Holdings

25 Knightsbridge

London SW1X 7RZ

100% of ordinary shares comprising 3,000,000 ordinary shares of 10p each

2. The ITC require the name and address of any persons who it is intended will, following the award of licence, be participants with an interest of more than 5% in the applicant. As stated in paragraph 1 above, British Digital Broadcasting is a wholly-owned subsidiary of British Digital Broadcasting Holdings. British Digital Broadcasting Holdings is the beneficial owner of 100% of the shares of British Digital Broadcasting comprising 3,000,000 ordinary shares of 10p each issued fully paid for cash at £1 per share.

3. The ITC requires details of participants with an interest of more than 5% in any body which controls the applicant, of British Digital Broadcasting Holdings, being the only body which controls British Digital Broadcasting. These are:

- a) **CARLTON COMMUNICATIONS PLC**
25 Knightsbridge
London SW1X 9RZ

Carlton is the beneficial owner of one-third of the shares in British Digital Broadcasting Holdings comprising 1,000,000 ordinary shares of 10p each issued fully paid for cash at £1 per share.

- b) **GRANADA GROUP PLC**
Stornoway House
13 Cleveland Row
London SW1A 1GG

Granada Group is the beneficial owner of one-third of the shares of British Digital Broadcasting Holdings comprising 1,000,000 ordinary shares of 10p each issued fully paid for cash at £1 per share.

- c) **BRITISH SKY BROADCASTING LIMITED (“BSkyB Limited”)**
6 Centaurs Business Park
Grant Way
Isleworth
Middlesex TW7 5QD

BSkyB Limited is the beneficial owner of one-third of the shares of British Digital Broadcasting Holdings comprising 1,000,000 ordinary shares of 10p each issued fully paid for cash at £1 per share. B SkyB Limited is a wholly owned subsidiary of British Sky Broadcasting Group Plc.

4. Sections B14 and B16 in the confidential section of this application give details of the agreements amongst the participants in British Digital Broadcasting Holdings to subscribe for shares if the application is successful.

5. By virtue of their interests in British Digital Broadcasting Holdings, each of Carlton, Granada Group and B SkyB Limited, although not participants in British Digital Broadcasting, could be said to have an interest of 20% or more in British Digital Broadcasting.

- a) There are no persons who hold more than 5% of Carlton.
- b) The following are the names and other details of the persons who hold more than 5% of Granada Group:

Mercury Asset Management plc
33 King William Street
London EC4R 9AS

10.97% of ordinary shares (93,728,092 ordinary shares)
(see note A)

- c) As noted above, BSkyB Limited is a wholly owned subsidiary of British Sky Broadcasting Group plc. The following are the names and other details of the persons who hold more than 5% of British Sky Broadcasting Group:

News International Television Limited
1 Virginia Street
London E1 9BD

39.88% of ordinary shares (686,021,700 ordinary shares)

BSB Holdings Limited
3 Burlington Gardens
London W1X 1LE

13.96% of ordinary shares (240,107,595 ordinary shares)

Pathe
5 Boulevard Malesherbes
75008 Paris
France

12.71% of ordinary shares (218,669,417 ordinary shares)

Granada Group plc (see note B)
Stornoway House
13 Cleveland Row
London SW1 1GG

6.48% of ordinary shares (111,478,527 shares)

6. Pathe and Granada Group (see note C) hold 30.29% per cent and 30.729 per cent respectively of the ordinary shares of BSB Holdings Limited. The total direct and indirect interest of Pathe and Granada Group in British Sky Broadcasting Group Plc are accordingly 16.94 per cent and 10.77 per cent respectively.
7. No interests are held in the name of trustees or nominees.
8. Five copies of British Digital Broadcasting's Memorandum and Articles of Association are provided with this application as required by the ITC.

Notes:

- A) At the time when this application was printed, Granada Group had been informed that Mercury Asset Management Plc's shareholding had fallen to below 10% but no precise figures were available. The figures quoted represent the last verifiable information.
- B) Shares held in the name of Triplereasons Ltd. (a wholly owned subsidiary of Granada Group PLC).
- C) Shares held in the name of 4 wholly owned subsidiaries of Granada Group PLC.

Section A18 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three of the licences for which it has applied.

The information supplied in Section A18 of British Digital Broadcasting's *supplementary* proposals is identical to that shown above.

Section A19 - Composition and Identity of the Applicant - Disqualified Persons etc.

ITC Requirement

- i) In relation to the details given in answer to A18(a) - (d), applicants should identify any body or individual who is:*
- a) a local authority;*
 - b) a body whose objects are wholly or mainly of a political nature, or which is affiliated to such a body;*
 - c) a body whose objects are wholly or mainly of a religious nature;*
 - d) an individual who is an officer of a body falling within (b) or (c);*
 - e) a body corporate which is an associate (as defined in paragraphs 1(1) and 1(1)(A) of Part 1 of Schedule 2 to the 1990 Act) of a body falling within (b) or (c);*
 - f) an advertising agency or an associate of an advertising agency.*
- ii) The applicant should give details of any other participant in the applicant body whose interest is or could be deemed to be incompatible with the requirements imposed by or under Schedule 2 to the 1990 Act.*

1. The British Digital Broadcasting application does not involve any body or individual who is a local authority.
2. The British Digital Broadcasting application does not include any body or individual whose objects are wholly or mainly of a political nature, and is not affiliated to such a body.
3. The British Digital Broadcasting application does not include any individual whose objectives are wholly or mainly of a religious nature.
4. The British Digital Broadcasting application does not include any individual who is an officer of a body falling within the categories defined in paragraphs 2 and 3 above.
5. The British Digital Broadcasting application does not include any body corporate which is an associate (as defined in paragraphs 1(1) and 1(1)(a) of Part 1 of Schedule 2 to the 1990 Act) of a body falling within the categories defined in paragraphs 2 and 3 above.
6. The British Digital Broadcasting application does not include any body or individual who is an advertising agency or an associate of an advertising agency.

7. No persons whose details are given in Sections A17 and A18 come within the categories set out in Section A19. With regard to the persons who are referred to in paragraph 4 of Section A18, in view of the need to keep the application confidential it has not been possible to formally confirm the answers given but British Digital Broadcasting believes that none of these persons fall within any of the relevant categories. To the extent (if at all) that this belief is wrong or that a change in circumstances might cause any of the above answers to be no longer be the case, it has been agreed in the Shareholders Agreement between Carlton, Granada Group and BSkyB Limited that provisions will be inserted in the Articles of Association of British Digital Broadcasting and British Digital Broadcasting Holdings and in the more detailed Shareholders Agreement to be entered into in the event that the application for this licence is successful, whereby, if any of them jeopardise the application (or the licence following award) the offending party will be required to offer its shares for purchase at fair value to the other parties.

Section A19 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three licences for which it has applied.

The information supplied in Section A19 of British Digital Broadcasting's supplementary proposals is identical to that shown above.

The Opportunity

The successful introduction of digital terrestrial television will provide benefits to viewers, industry and the economy.

Using their existing aerials, the vast majority of British viewers who do not currently subscribe to cable or satellite will be able to expand their choice of viewing with a wide range of additional channels. At the same time, they will also benefit from better reception, clearer pictures and an exciting set of additional viewing features such as an interactive electronic programme guide and programmes in widescreen.

British industry will gain from taking the lead in pioneering digital terrestrial technology at home, and subsequently, internationally. The British television production industry will gain from the launch of new British channels and more original programmes. Ultimately, digital terrestrial television will also allow the broadcasting spectrum - a valuable national resource - to be used more efficiently.

The Challenge

However, launching digital terrestrial television is one of the greatest challenges facing British broadcasting because of the complexity of the task involved, the scale of the resources required and the speed with which it must be completed.

The service must be developed quickly to exacting technical standards to cover up to 90% of the country. An attractive and competitively priced subscription programme service must be created and marketed. Conditional access, subscriber management and electronic programme guide services must be provided on terms which ensure fair and effective competition. The manufacture and sale of receiving equipment have to be pump primed through a complex partnership programme with retailers and manufacturers.

The Response: British Digital Broadcasting

British Digital Broadcasting is a partnership of Britain's three largest and most successful commercial television companies, Carlton Communications, Granada Group and BSkyB, with each owning a third of the company. We will also be able to draw on the strength of the BBC, whose new programme channels are one of the distinctive features of our applications.

We have applied for multiplex licences B, C and D separately and submitted further proposals for operating all three multiplexes together. We believe that operating three multiplexes gives the winning applicant the best prospect of taking a leadership role in the successful development of digital terrestrial television. In amending its original ownership limits from two to three multiplex licences, the Government implicitly recognised the strength of this argument as do the retailers and equipment manufacturers with whom we have had discussions.

Our applications are based on a year long process of evaluating the UK television market over the life of the licence period. In doing so, we have built a sophisticated and rigorous market model and have undertaken a detailed programme of research.

This identified three areas of operation which will be key to our success:

- Creating and then marketing the most attractive programme services
- Ensuring the widest take up of receiving equipment
- Developing and rolling out transmission plans for the service to achieve the widest coverage quickly

Our plans in each of these areas are set out below.

Programme Service

The strength of our programmes will be crucial to our success and, if we are awarded the three licences for which we are applying, will be a major factor in the success of digital terrestrial television as a whole. Customers will only buy receiving equipment if they are attracted by the extra programmes they will be able to watch.

This is why we have placed the greatest emphasis on creating an exciting and competitively priced programme service which will appeal to a wide variety of tastes and interests.

If our proposals for three multiplex licences are accepted, our programme service of twelve basic subscription and three premium channels (five per multiplex) would be as follows :

	<u>Multiplex B</u>	<u>Multiplex C</u>	<u>Multiplex D</u>
Basic Channels	Carlton Select Granada Plus BBC Horizon	Carlton Films Granada Good Life Sky 1 BBC Style / BBC Showcase	Public Eye Granada TV Shopping Carlton Entertainment BBC One TV Granada Sports Club
Premium Channels	Sky Movies Sky Sports	The Movie Channel	

Where possible, according to the coverage areas of the multiplex, our customers will receive all twelve basic channels as a “big value” package. Customers can then choose to subscribe to either one, two or three premium channels.

If awarded one multiplex, we will offer the following programme channels :

Basic Channels	Carlton Entertainment Granada Plus Sky 1 BBC Style / BBC Showcase
Premium Channel	Sky Movies

The programme service we will offer across three multiplexes consists of twelve basic channels which are either unique or among the best in their respective genres :

Carlton Select will be an enhanced version of the existing cable channel emphasising high quality original British production including drama, children’s programmes and exclusive special events, particularly music and live European football. It will also draw on Carlton Food Network’s extensive output of original programmes.

Granada Plus will be an all British programme service, including some of the most prestigious and popular drama, entertainment, comedy and children’s programming ever produced in the UK, as well as award winning features and documentaries. The existing service will also be enhanced with more original programming.

BBC Horizon will be a new channel drawing on the BBC’s pre-eminence in nature, science, history and technology documentaries. It will offer the unique richness of the BBC’s factual archive in a concentrated and accessible form. Separately, in the morning period, we will offer children’s programmes supplied by a number of high quality producers.

Carlton Films will also be a new channel, specifically launched for our service, providing a wide choice of high quality films and made for television movies. The films will span the history of the cinema and feature the work of the world’s best talent on either side of the camera.

Granada Good Life will offer viewers a dedicated lifestyle programme channel featuring a broad range of programmes covering areas such as health, fitness, interior design, gardening, cooking and motoring. The channel will cater to audiences who have traditionally not been well served in the multi channel environment.

Sky 1 will provide a wide selection of family quality entertainment - comedy, drama, documentaries, science fiction and chat shows combining domestic and imported programmes to assure an appeal to a broad audience.

BBC Style and BBC Showcase will offer viewers the highest quality and most popular programmes from BBC1 and BBC2. Their programmes will include classic and contemporary, drama and comedy, presented in an innovative and refreshing format. In the morning, BBC Style will offer a wide array of programmes to those who follow the latest in style.

Public Eye will be a new channel, provided by Carlton, including programmes from drama and movies to documentaries, all linked by the theme of law and order. The channel will also incorporate the award winning Sky News service in the mornings and early afternoons.

Granada TV Shopping will be a new teleshopping channel with a difference: a strong British flavour which will feel familiar to British shoppers combined with high production values and a different creative approach. Viewers will be offered a daily stroll through a virtual department store and its individual departments.

Carlton Entertainment will also be a new channel provided by Carlton. It is designed to meet the enduring need for well executed popular entertainment including children's, drama, comedy and talk programmes. There will be a strong emphasis on British productions.

Granada Sports Club will be a further new channel featuring entertainment, gossip, news, debate, opinion, golden moments and the up and coming. It will offer football fans in depth and unrivalled coverage of the top clubs and their activities in specially dedicated club segments. The channel will also provide a late night music service.

BBC One TV is designed to appeal to pop music fans of all ages. Best described as a visual Radio One, the new channel will stand for music, new talent and youth and it will feature popular presenters who will have built a loyal following through Radio One.

British Digital Broadcasting's premium subscription channels will feature genres of programming which have a proven track record of success in pay television in the U.K. :

Sky Movies and The Movie Channel will screen a wide variety of films including top movies from around the world with a host of new films every month. Both channels will showcase these films 24 hours a day, seven days a week and all movies will be shown without commercial breaks. To cater to differing viewers lifestyles, the most popular movies will be re-screened at different times and on different days.

Sky Sports, with its current satellite service, is a trailblazer in sports broadcasting and production, based on its success in acquiring rights to a wide selection of events and its innovative and high quality production standards. Operating 20 hours a day, the digital terrestrial service will offer extensive sports coverage and sport related programmes with wide appeal.

Pay per view

In addition we recognise that pay per view programming offers an important opportunity for viewers to watch special events which they value highly and might not otherwise be able to see. This is particularly the case where competition for the television rights to these events is increasing and securing pay per view rights may offer the only means of televising them. We have therefore built a series of pay per view events into our programme plans. These are likely to include high profile events

in sports, entertainment and music such as boxing, concerts and other one off events of popular appeal. Looking over the full licence period, we believe that pay per view programming will develop into an important means of attracting customer support for our service.

Target audience and appeal

Taken as a whole, we believe that this combination of channels and programmes represents an exceptionally strong appeal to a wide variety of tastes and interests. The mainstream entertainment channels are of a high quality and wide appeal, offering many of the best movies, drama and comedy to be seen on British television. Viewers interested in sport, music, science, nature, food, the arts, lifestyle programmes, education and current affairs are served by dedicated channels or channel segments and there are a substantial number of programmes for children.

The strong emphasis on original British channels and programmes reflects the tastes and interests of British viewers and will have the added benefit of channelling new investment into the production industry. Carlton and Granada's participation in British Digital Broadcasting, together with our agreement with the BBC, gives us access to this country's three largest and most successful programme producers and their programme libraries.

The programme service we propose for multiplexes B, C and D is designed to complement the channels offered on the separate multiplexes assigned to the BBC, ITV and Channel 4. For example, we have chosen to supplement the BBC's plans for a 24 hour rolling news service by initially broadcasting BSkyB's award winning Sky News service in the mornings and early afternoons.

In a competitive market, we will offer our programme service to our customers on clear, uncomplicated terms at competitive prices as excellent value for money. This will encourage viewers to subscribe in the numbers needed to recoup the investment we will make in promoting the take up of equipment and also provide a satisfactory return to our shareholders.

Additional services

Once compression technology improves and our experience of operating digital terrestrial multiplexes increases, we will consider launching additional services as well as further programme channels as soon as possible. Our aim will be to respond quickly to any technical developments but ensure that broadcast quality is not compromised.

Over time, we will also seek to develop the capacity for interactivity offered by digital terrestrial technology and the presence of sophisticated receiving equipment in the home which would, for example, enhance the attractiveness of our teleshopping channel. However, our application is not dependent on launching additional services in the near future.

Electronic programme guide

If successful with our application for three licences, we intend to provide our customers with an electronic programme guide (EPG) which they can use to select programmes and channels. In providing this service, we will draw substantially on the work which B Sky B have undertaken over the last two years to develop a high quality, user friendly EPG. This guide will ensure that all channels available on digital terrestrial television will be displayed in a fair and non discriminatory way taking into account the need to ensure that popular channels are easily accessible.

Promoting the Take Up of Equipment

We have detailed plans to encourage the widespread take up of equipment capable of receiving digital terrestrial signals. In the early years, our emphasis will be to ensure that suitable set top boxes will be widely available.

In co-operation with other multiplex licensees, we therefore plan to encourage the large scale manufacture and sale of these boxes. Drawing on the expertise of our shareholders, including B Sky B and Granada's long standing relationships with set top box manufacturers and knowledge of the consumer electronics retail and rental market, we have developed a carefully thought out plan to promote the take up of the necessary consumer equipment.

Interoperability of our set top box

If successful with our application for three licences, we would take the lead in seeking arrangements with other multiplex operators to adopt a set top box capable of receiving the signals of all digital terrestrial programme services. We would expect such arrangements to ensure fair and effective competition.

In some countries, competing delivery systems with incompatible equipment have led to customer confusion and held back market development. Our proposals overcome this problem. With the collaboration of B Sky B we are able to design set top boxes for digital terrestrial television which, with the addition of a modestly priced "sidecar" module, will give access to digital satellite services.

Equally, with our collaboration, B Sky B will be able to design boxes for digital satellite which will allow similar modestly priced access to digital terrestrial television.

This will provide viewers with the confidence they need to purchase either kind of set top box, in the knowledge that they will be able to subscribe easily to either or both services without having to purchase an additional box.

Partnership programme

As part of our proposed partnership programme we will ensure that a selected number of capable manufacturers commit to the production of a substantial quantity of set top boxes. This will ensure that there are sufficient numbers of boxes widely available for consumers to purchase in the early years of the licence.

In addition, working with retailers and rental companies, we intend to subsidise set top boxes during the initial period of the licence and, through a mixture of promotional offers, provide retailers with the confidence to stock and sell set top boxes in outlets throughout the coverage area.

Marketing

We will implement a comprehensive marketing plan to build awareness of, interest in and loyalty to digital terrestrial television by emphasising the full range of consumer benefits offered by the new technology as well as the unique selling points of our own programme service. This plan will include an investment in advertising, media relations and direct marketing.

Over time, we believe that integrated television sets, capable of receiving both digital terrestrial and digital satellite signals, will replace set top boxes as the primary means of receiving digital television signals. Although it is difficult to be precise about the speed at which this process will take place, we believe that, once it starts, the natural replacement cycle for television receivers will push digital television to very high penetration rates relatively rapidly and thus establish digital terrestrial as a main delivery system for television in the U.K..

We believe that this integrated plan to promote the take up of receiving equipment provides the best launch pad for digital terrestrial television. We believe that it would be more difficult to implement such an effective plan, with similar financial backing, if arrangements have to be agreed between several different multiplex operators.

Development of Transmission and Roll Out of the Service

The introduction of digital terrestrial television technology represents a considerable technical challenge.

British Digital Broadcasting has the technical skills, experience and financial strength to help manage this change smoothly and rapidly. By December 1999, we plan to complete the construction of the infrastructure required to support the service.

To achieve this ambitious target we will :

- Agree a co-ordinated transmission roll out plan with the operators of the BBC, ITV/C4 and C5/S4C multiplexes and any other multiplex operators so that, as far as possible, all the multiplexes are introduced to a particular region at the same time.

- Draw up and implement a comprehensive plan to deal with any limited amount of interference to televisions or VCR equipment. This needs to be co-ordinated between all multiplex operators so that responsibility for viewers' problems is not passed between different parties. Our plans draw substantially on the expertise of Granada's TV rental business and BSkyB's subsidiary TAS, the acknowledged technical leaders in this field.
- Agree arrangements with other multiplex operators and programme service providers to provide common technical services such as multiplexing, conditional access, electronic programme guide and subscriber management services in such a way as to ensure fair and effective competition.
- Agree specifications with other operators for a single set top box to avoid consumer confusion over the choice of equipment.
- Agree, with other operators, how to minimise the cost of establishing the required infrastructure to avoid expensive duplication. This will enable us to maximise our investment in the programme service and in promoting the take up of receiving equipment.

The Strength and Experience of Our Shareholders

In delivering these plans, British Digital Broadcasting will be able to draw on the skills and experience of its three shareholders - Carlton, Granada and BSkyB - and our relationship with the BBC. Taken together, this provides an unrivalled combination of expertise :

- Outstanding creativity in programme production and channel creation
- In depth understanding of the UK pay television market and the retail, manufacturing and subscriber management issues involved
- A wealth of technical and project management experience directly relevant to the task of setting up the complex infrastructure required

Carlton

Carlton is the country's largest commercial terrestrial broadcaster, owning Carlton Television, Central Television and Westcountry Television. Carlton has a substantial programme production business and a library of over 5,500 hours of television programmes and films, largely made up of UK productions but also including 100 US TV movies. The company has a consistent track record of investment in high quality original production across all the main programme genres, including *Inspector Morse*, *Sharpe*, *Bramwell*, *The Wind in the Willows*, *Outside Edge*, *The Big Story* and *The Cook Report*.

Carlton's experience in setting up a complete terrestrial television broadcasting operation within 14 months of being awarded the weekday ITV licence for London is also of direct relevance to this application.

Granada

Granada is the country's most experienced commercial terrestrial television broadcaster and largest commercial programme producer, through its ownership of Granada TV and LWT. Granada's programme production businesses have produced many of the most popular and critically acclaimed television shows of the last decade including *The South Bank Show*, *Coronation Street*, *Blind Date*, *Cracker*, *Barrymore*, *Prime Suspect*, *World in Action* and *Dimbleby*. Granada also owns the UK's largest commercial television programme library with over 10,000 hours of programming, including many of the classics of British television.

In addition, Granada has experience of launching and running pay television services, having recently launched seven new programme channels. Through its TV rental and retail business, it also has substantial expertise in the television hardware and television subscription retail markets where the Group's retail outlet chain is the country's largest seller of pay television subscriptions.

BSkyB

BSkyB is the world's leading satellite pay television operator, offering a wide choice of channels to more than 6 million subscribers in the U.K. and Republic of Ireland. Created in 1990, following the merger of Sky Television and BSB, BSkyB has pioneered the introduction of multi channel television in the U.K.. Its key strengths lie in marketing, distribution, packaging and programming where it has developed a reputation for innovations such as live televised sports, 24 hours news and first run movies.

BSkyB has also pioneered the development of a subscriber management infrastructure and, through its supplier, NDS, the conditional access technology which is required to operate a successful multi channel subscription business. In 1996 it broadcast the first ever national pay per view event in the U.K., viewed in over 600,000 homes. British Digital Broadcasting will also benefit considerably from BSkyB's recent work on developing the technical infrastructure required to launch a digital satellite service, particularly in the area of developing electronic programme guides.

The three partners are already used to working in co-operation with each other in areas of direct relevance to this application. Carlton and Granada each own 20% of the national and international news provider ITN and 50% of London News Network which provides transmission and news gathering and production services to both companies. Granada is a shareholder in BSkyB and both companies jointly own Granada Sky Broadcasting (GSB), established last year to produce and broadcast seven new pay television channels.

Directors and Management

Equally relevant to the task of launching digital terrestrial television are two further qualities shared by all three shareholders - the financial and management strength required to undertake a venture of this size and complexity.

The combined market capitalisation of the three shareholders is approximately £20 billion. The companies employ some of Britain's leading media executives and the British Digital Broadcasting board will benefit from the combined experience of

The company's day to day operations will be the responsibility of a management team independent of the shareholders, including a Chief Executive, Director of Finance, Director of Programmes and Director of Marketing, all of whom, it is intended, will be members of the board.

We have decided to defer the appointments to these senior positions until the outcome of the licence process is known. We have taken this view because the nature of the appointments will be significantly influenced by the outcome of our applications. For instance, in the event that we are awarded three licences, the management task would be measurably greater and we would want to make appointments that reflected the wider range of skills required to take a leadership role in promoting digital terrestrial television. We are confident, however, that we will be able to appoint managers of the right calibre for these posts. Should we be successful with our applications, we will be able to start the planning process for the introduction of our service immediately by drawing on the combined management expertise of our shareholders. The large project team which has built our detailed business and technical plans is being held in readiness for this task.

Conclusion

British Digital Broadcasting is well equipped to take on the key leadership role in the development of digital terrestrial television.

In all the skills required - creativity in scheduling and programme production, technical and marketing expertise, financial and management resource, knowledge and understanding of pay television - we believe that we have the right credentials.

Our proposals for operating three multiplex licences can play a major part in developing a central role for digital terrestrial television as we move into a new century.

By offering a wide choice of high quality, affordable programming viewed on easy to purchase and easy to install equipment, digital terrestrial television will be a natural medium of choice for British viewers.

For further information about British Digital Broadcasting's application, please contact:

[Redacted contact information]

R 0130 0 09

TA/1300/2

**Application to the Independent Television
Commission for Multiplex Service Licences**

Multiplex Service Licence C

Section A



**BRITISH DIGITAL
BROADCASTING**

**25 Knightsbridge
London
SW1X 7RZ**

Introduction

1. British Digital Broadcasting PLC (British Digital Broadcasting”) is a wholly owned subsidiary of British Digital Broadcasting Holdings Limited (“British Digital Broadcasting Holdings”), a joint venture formed by Carlton Communications PLC (“Carlton”), Granada Group PLC (“Granada” or “Granada Group”) and British Sky Broadcasting Group PLC (“BSkyB”) for the specific purpose of applying for Multiplex Services Licences. Carlton, Granada and BSkyB are referred to in this application as the shareholders of British Digital Broadcasting.
2. This document is Section A of British Digital Broadcasting’s application for Multiplex Licence C. (It complements Section B, which provides confidential data and information for the ITC.)
3. The first half of the document is British Digital Broadcasting’s application for Multiplex C as an individual multiplex.
4. The second half of the document presents British Digital Broadcasting’s supplementary proposals should, in addition to Multiplex C, British Digital Broadcasting be awarded Multiplex Licences B and D.
5. At the end of each main sub-section in the individual application for Multiplex C there is a short description of how the equivalent sub-section of the supplementary proposals compares. In a similar manner, at the start of each sub-section of the supplementary proposals there is a short comparison with the equivalent section in the individual application for Multiplex C.
6. A separately bound Summary provides an overview of British Digital Broadcasting’s application. A set of confidential Annexes has also been provided to the ITC.

Glossary

API	Application Programming Interface
ATM	Asynchronous Transfer Mode
BAT	Bouquet Association Table
CA	Conditional Access
CAT	Conditional Access Table
CD	Compact Disc
CI	Common Interface
CMC	Customer Management Centre
COFDM	Coded Orthogonal Frequency Division Multiplexing
DVB	Digital Video Broadcasting
DVB-T	Digital Video Broadcasting - Terrestrial.
EBU	European Broadcasting Union
EIT	Event Information Table
EPG	Electronic Programme Guide
ETS	European Telecommunications Standard
ETSI	European Telecommunications Standard Institute
IRD	Integrated Receiver-Decoder
ISDN	Integrated Services Digital Network
kbps	Kilobit per second (data rate)
LAN	Local Area Network
Mbps	Megabit per second (data rate)
MPEG	Motion Picture Experts Group (of ISO)
NIT	Network Information Table
OFDM	Orthogonal Frequency Division Multiplexing
PAL	Phase Alternate Line
PAT	Programme Association Table (one of the tables comprising the PSI defined below)
PMT	Programme Map Table (one of the tables comprising the PSI defined below)
PSI	Programme Specific Information (based on a number of tables, it allows MPEG-2 decoder to capture and decode packet structure)
PSTN	Public Switched Telephone Network
QAM	Quadrature Amplitude Modulation
ROM	Read-Only Memory
SAS	Subscriber Authorisation System (performs co-ordination of enablement messages prior to transmission to home)
SDT	Service Description Table
SHF	Super High Frequency (microwave frequency band used for transmission of broadcast material)
SI	Service Information (provides details of Programmes being broadcast etc)
Simulcrypt	A system allowing a single encrypted signal to be delivered to receivers with different conditional access systems
TVRO	Television Receive-Only (usually applied to receive-only satellite terminal for television reception)
VBI	Vertical Blanking Interval

Section A Table of Contents

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Section A1 - The Licence Applied For

ITC Requirement

The applicant should state which multiplex licence he is applying for by means of this application. If the applicant is applying for more than one licence, and if this application contains supplementary proposals which would be implemented only if he were awarded more than one licence, then he should specify the other licences to which these supplementary proposals apply. If the applicant is applying for more than the number of licences he would be permitted to hold under any requirement imposed by or under Schedule 2 to the 1990 Act, he should state his preferences in relation to these licences (see paragraph 22).

1. This document is British Digital Broadcasting's application for Multiplex C.
2. This application also comprises supplementary proposals for Multiplex C should British Digital Broadcasting also be awarded Multiplexes B and D.
3. British Digital Broadcasting hopes to be awarded all of the three multiplex licences for which it is applying. Should British Digital Broadcasting win one multiplex licence, its preference among the individual multiplexes is:-

Preference	Multiplex
First	B
Second	C
Third	D

Section A2 - Transmission Coverage and Roll-Out

ITC Requirement

Noting the information provided in paragraphs 4, 79 to 83 and 110 to 113, the applicant should describe in detail his proposed arrangements for the transmission, distribution and multiplexing of the proposed multiplex service, including a start date, build programme and final coverage.

Note:

“Start date” means the date of start of transmissions of the multiplex service. “Build programme” means the timetable by which progressive coverage might be achieved by the successive implementation of transmitters within the multiplex service transmitter plan. “Final coverage” means the extent of the coverage available under the transmitter plan which the applicant intends to implement. This should be expressed by means of predicted coverage figures based on specified transmission sites, aerial heights and power levels. Applicants for licences B, C or D should also state their policy concerning the possible extension of coverage were further frequencies to become available.

Summary

British Digital Broadcasting’s approach, drawing on its shareholders’ experience in terrestrial, satellite and cable television, comprises a set of solutions that limits the technological risks and maintains the high standards of quality and reliability that the shareholders of British Digital Broadcasting apply in their existing businesses.

British Digital Broadcasting’s intention is to launch digital terrestrial television services as soon as possible, consistent with the availability of components and reliability in the delivery of services. The intention is to launch this service by July 1998.

The launch of services will be supported by a rapid roll-out of the transmitter network, with a plan to achieve final coverage levels by the end of 1999.

In order to ensure picture quality is comparable to that of analogue transmissions, British Digital Broadcasting intends to commence operation with only five services per multiplex. As experience is gained with the technology it is expected that it will be possible to introduce further services as statistical multiplexing technology develops.

British Digital Broadcasting supports the provision of fair, reasonable and non-discriminatory access to receiver populations within the parameters of the regulatory regime, and is ready to work with other multiplex licence holders to achieve this.

British Digital Broadcasting believes that the most effective way to manage the successful launch of digital terrestrial television is through clear project leadership.

If British Digital Broadcasting is successful in its proposal for Multiplex C, the company would seek to work with all the other licensees to try to achieve a co-ordinated approach to managing the implementation phase of the project.

Introduction

1. Digital terrestrial television is one of the greatest technical challenges for television broadcasters since the introduction of colour. Broadcast technology now allows the delivery of digital television signals to the home, but the complexity of this technology will place substantial organisational and technical demands upon the individual multiplex operators. Issues such as managing the effects on existing consumer equipment will require significant logistical expertise. These are demanding tasks under any circumstances, but to achieve these with the additional target of an early launch date will require particularly innovative approaches and exceptional project management skills.
2. British Digital Broadcasting comprises three of the UK's major broadcasters, each a leading company in its field. As well as an unrivalled background in the provision of television services, these organisations have the technical experience and resources that will be needed to manage the successful launch of the new digital services in the shortest time possible.
3. **Carlton** has been involved at the leading edge of broadcast television technology long before being awarded the London weekday ITV franchise in 1991. Through the ownership of companies such as Quantel and Solid State Logic, it has developed a depth of understanding of the impact of digital systems throughout the production and broadcast chain. In association with NTL, Quantel and Sony, Carlton provided the first public demonstration of digital terrestrial television in the UK in 1994.
4. Carlton Television was established and equipped within the tight timescales required, drawing upon the skills existing in the group whilst also recruiting new management and operational staff. Since the acquisition of Central Television in 1994 Carlton has developed the technical facilities available in the Midlands culminating in the opening later this year of a new broadcasting and production centre in the centre of Birmingham. This new centre will employ state of the art technology including disk based editing and playout facilities along with a high degree of automation.
5. Carlton has been a lead broadcaster in the development of digital terrestrial technology. Through the Digital Television Group, and in several direct relationships with component manufacturers and suppliers, Carlton has sought to influence the course of development of the technology and to promote enthusiasm for the development of digital terrestrial broadcasting.
6. **Granada's** forty years of experience in commercial broadcasting in the UK is unmatched, and its recent launch of seven new satellite television channels gives it a detailed understanding of the issues involved in launching a number of new pay television channels. It is also one of the UK's largest electrical retailers through its ownership of the Granada Technology Group. It has developed close working

relationships with many of the world's leading manufacturers of consumer equipment and has been at the forefront in the introduction of new broadcast technology, from teletext and NICAM stereo through to satellite broadcasting. Granada's presence in the retail market has been aided by its development of the training and logistical infrastructures needed to provide quality service and care for customers. This experience has been used in the provision of technical and "on the ground" support for C5's current retuning exercise.

7. **BSkyB** introduced satellite broadcasting and Pay TV operations into the UK and in the process has become the world's leading satellite pay television operator. It brings unrivalled experience in the specification and integration of conditional access systems, both within transmission systems and within receivers. It has the substantial benefit of its history in managing these types of systems, the interaction process with viewers, and the introduction of new functionality into its services. BSkyB has also established close links with receiver manufacturers and the retail trade, ensuring widespread availability of competitively priced reception equipment and installation packages. BSkyB's technical staff have been active contributors to the DVB process and have helped formulate the standards for digital broadcasting, whilst also developing the concepts for new types of digital services, such as the Electronic Programme Guide.
8. British Digital Broadcasting's commitment to digital terrestrial television and its access to the resources and experience of its shareholders provides the best possible foundation for driving the implementation phase of the project through to an early and successful conclusion. Given the inherent technical challenges, this is a critical factor. British Digital Broadcasting believes that it is essential to have a single operator prepared to take the lead in areas such as the distribution and transmission planning of all the multiplexes, and in determining the strategy for the provision of consumer equipment at the right time and at the right price for the market. If British Digital Broadcasting is successful in its proposal for Multiplex C alone, the company would seek to work with all the other licensees to establish such a lead player.
9. The key elements of British Digital Broadcasting's technical plan are:-
 - a) The new channels will be assembled and played-out from a playout centre, which could either be at existing facilities, following any enhancements required to provide the additional capacity, or as a stand-alone facility. The playout centre will be responsible for quality control of the source materials and the programme output, compliance with legal and regulatory requirements, trafficking and assembly of service elements including programmes and commercials and insertion of promotional material and on-air graphics.
 - b) The Playout Centre will be the responsibility of the programme service providers.
 - c) All schedules relating to the programme services will be generated at the playout centre and will form the data that generates the Service Information (SI) data.

- d) The channels will then be conveyed to a multiplex centre where MPEG-2 encoding and statistical multiplexing will be carried out. Statistical multiplexing is a technique used to make best use of the available transport stream capacity, by dynamically adjusting bit rate of individual MPEG encoders.
 - e) The signal will be distributed to terrestrial transmission locations by means of dual satellite links. British Digital Broadcasting has already established with satellite operators that appropriate capacity is available.
 - f) Transmissions will utilise the recommended implementation of the transmission specification, with a digital capacity of approximately 24 Mbit/s.
 - g) British Digital Broadcasting would favour the adoption of a common receiver and conditional access strategy that would eliminate consumer confusion and would provide the best path to low cost universal reception equipment. This would require agreement between multiplex licencees in adopting a common conditional access system and receiver specification. If different suppliers of conditional access are selected, British Digital Broadcasting fully supports and advocates the use of Simulcrypt.
 - h) The shareholders of British Digital Broadcasting have supported and participated in the development of a standard specification for the digital terrestrial television receiver through the Digital Television Group, including input into the selection process of a common Application Programming Interface (API).
10. It is intended to commence operation with five services carried within the multiplex. This will ensure that digital terrestrial television services are able to offer a picture quality comparable to that of analogue services. Perceived picture quality at a particular data rate is very dependent upon the programme content. The production and post production techniques used in making the programme can also have a significant effect.
11. In addition, the further development of statistical multiplexing techniques will allow the existing multiplex capacity to be used more efficiently, by freeing up unused capacity for particularly demanding picture sequences being carried by other services.
12. As experience is gained in the above areas it is expected that further services could be introduced without significant lowering of quality standards. As well as offering the potential for permanent extra channels, it will be British Digital Broadcasting's intention to offer a number of planned pay per view events each year at an early stage of the licence.
13. The capacity to transmit these events will be created by arranging the schedules in such

a way that some existing channels will be running a selection of less demanding (in terms of bit rate required) video streams which will allow higher levels of compression to be obtained. The demands of a normal schedule make this technique unsuitable for permanent operation using current technology, but British Digital Broadcasting is confident of being able to introduce additional programme streams for up to three hours on an occasional basis.

- 14. British Digital Broadcasting’s response contained within this section provides a full description of its proposals for the implementation of digital terrestrial services, encompassing a wider range of topics than simply transmission, distribution and multiplexing. The response is structured around the logical flow from programme playout to consumer receivers, with additional sections on system-wide aspects such as integration and project management.
- 15. The overall multiplex delivery system is illustrated in Figure 1.

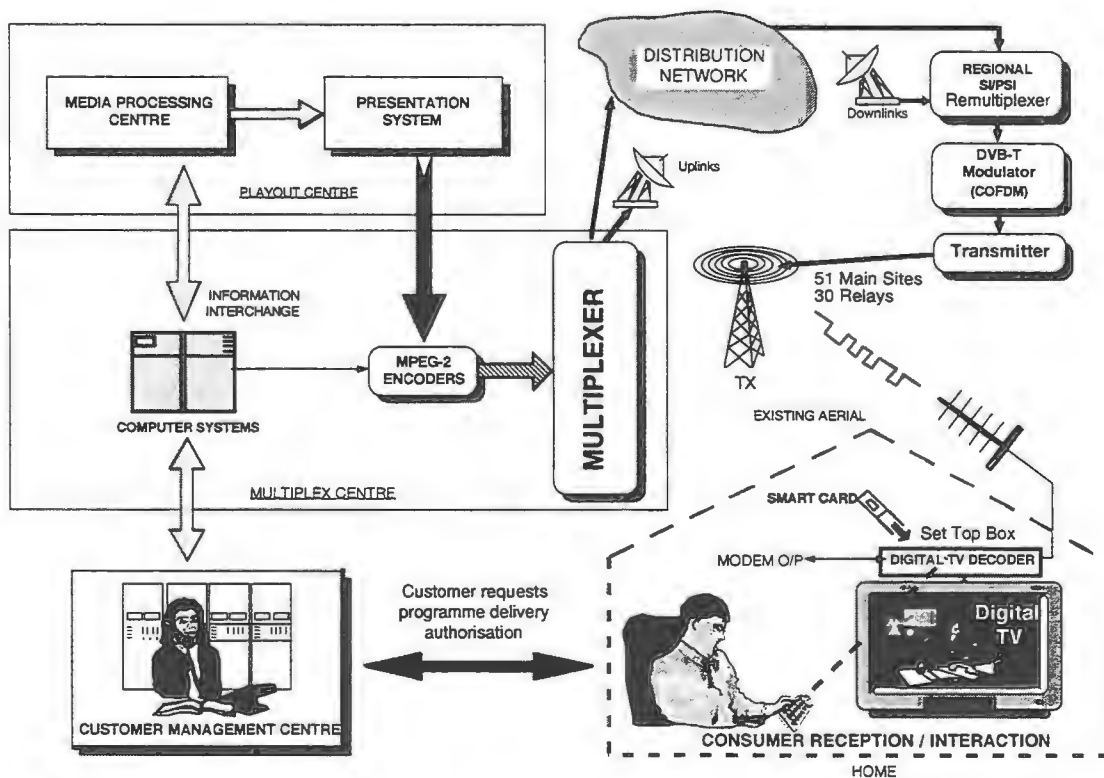


Figure 1 Multiplex Delivery System

System Integration

- 16. An early and rapid launch of digital terrestrial television services calls for a demanding schedule for the integration of head-end components, and to ensure that consumer equipment is available in shops and rental outlets to meet demand. These are critical items of the project.
- 17. If awarded the licence for Multiplex C, British Digital Broadcasting will seek to work

with the other multiplex operators to establish a clear leadership for the management of these functions. The selection of a system integrator will be a key activity for the lead party.

18. British Digital Broadcasting has shared its plans with, and taken input from, a variety of reception equipment manufacturers and has received support for the creation of a partnership to be known as the Preferred Partners Plan. Members of the partnership will support the introduction of digital terrestrial television services with a range of reception equipment, including (as soon as practical) integrated television sets, available via normal retail and rental outlets.
19. The digital terrestrial project will require the provision of a number of different systems including :
 - a) Supply of digital compression and multiplexing equipment.
 - b) Network for distributing the new channels to terrestrial transmitters.
 - c) Terrestrial transmission network itself, including the integration of multiple SI streams.
 - d) Supply of the conditional access system.
 - e) Supply of a suitable Application Programming Interface and Electronic Programme Guide for receivers.
 - f) Where necessary, retuning of existing analogue receivers in certain areas.
20. In order to establish the required level of control over the integration timetable, British Digital Broadcasting has thoroughly reviewed all options and concluded that it will be necessary to appoint a systems integrator. The systems integrator will assist in the day-to-day management of the integration phase of the project. British Digital Broadcasting may choose to deal with the above aspects in direct contracts with suppliers, to ensure the availability of fully functional systems within the stated project timetable. The timescales quoted within this proposal reflect the dates provided to British Digital Broadcasting by potential suppliers.
21. The system integrator will have a contractual responsibility for:-
 - a) Bringing the different head-end elements together.
 - b) Ensuring that the conditional access and application programming interface elements are available for receiver manufacturers.
 - c) The availability of test transmissions to enable manufacturers to verify their development work and move to production.

- d) Monitoring the compliance of reception equipment with appropriate regulatory standards and with British Digital Broadcasting's own quality standards.
 - e) Interfaces between various parts of the British Digital Broadcasting infrastructure and with outside parties such as other multiplex licence holders.
22. This strategy will allow British Digital Broadcasting to concentrate its own resources on monitoring the development of the complete project, including the integration with the programme production and play-out elements. British Digital Broadcasting is in negotiation with a preferred supplier to carry out this work. This selection follows a thorough review of the options available and the detailed exchange of technical design and costing information.

Launch Date for Services

23. British Digital Broadcasting has carried out a detailed project plan for the launch phase of the project which has revealed that the most likely critical path is formed by the development and manufacture of COFDM demodulator chips. British Digital Broadcasting has evaluated the risks associated with the development of this chip and expects it to be available in time to support a start date of July 1998, though there is a risk that delays could be introduced if the development programme were to slip. Together with the other licensees British Digital Broadcasting will investigate possible steps to reduce the risk of the late availability of chips delaying the launch date.
24. Should manufacturers release COFDM chips in quantity earlier than the currently envisaged schedule, British Digital Broadcasting would take the opportunity to bring forward the launch of digital terrestrial television services in order to be as competitive as possible with the timing of any launch of digital satellite services. In order to establish a viable market for retailers, there will have to be sufficient transmitters installed to allow the market to expand. An accelerated start date thus brings other issues into play including international frequency clearances, and the requirement to negotiate with other multiplex licensees to ensure the compatibility of box specifications. It is not yet possible to determine which aspect will fall onto the critical path.

Playout Centre

25. Although the provision of playout facilities is the responsibility of the digital programme service providers, details are included here for completeness and, where appropriate, standards, organisational structure and practices will be required by British Digital Broadcasting through the terms of a programme supply agreement.
26. In the event of being awarded a licence for Multiplex C, the programme service provider will either enhance existing facilities or provide a stand alone playout centre to provide the new services. The programme service providers already have extensive experience in the provision of playout facilities and would not have any difficulties in

fulfilling requirements in time for the expected start of service.

27. It is planned to fit out the playout facilities with the capability of dealing with widescreen programme material. Widescreen presentation will form a part of British Digital Broadcasting's programming plans from the start of digital services and are expected to become an increasingly important part of the service.
28. Programmes and commercials (media) will be delivered to these facilities by videotape and land-line. Once there, the media delivered will be catalogued and logged into a computerised library system.
29. Media will be assessed technically to ensure that they meet standards derived from service providers' existing technical delivery specifications, copies of which are available if required. Programme material will be viewed for legal compliance, timed and scheduled using the latest computer-based, multi-channel scheduling systems.
30. For live material, a trained compliance officer will have responsibility for ensuring that material meets the ITC's regulatory and legal requirements. British Digital Broadcasting takes its compliance responsibilities very seriously and will ensure that the programme suppliers have a management structure that ensures that the quality of compliance on the new digital terrestrial services will meet the high standards demanded of existing terrestrial services.
31. British Digital Broadcasting's programme service providers will implement a system which will allow incorporation of the relevant information needed for the SI data system. This data will be passed on electronically to the on-air presentation automation system to control the transmitted output from the playout centre and also to the multiplex centre for incorporation into the final transport stream.
32. The playout facility will provide a highly automated presentation service comprising live programmes, pre-recorded programmes, promotions, stings etc. and commercials.
33. The programmes will be played out from automated cart machines. Commercials, promotions, stings etc. will be inserted from a disk based server which will be fully duplexed. The ability to provide voice-overs, superimpose captions and add a separate channel logo is included.
34. The service is based on limited intervention by transmission shift supervisors and although there will be the facilities for manual intervention, this would normally only be required where a channel has live programming in its schedule or in the case of technical malfunction.
35. Off-air monitoring using both high quality broadcast standard receiver decoders and domestic units will ensure that standards are met throughout the complete broadcast chain, although key technical quality monitoring of transmission will take place at the multiplex centre.
36. The centre will be equipped with the necessary power supplies and resilient air

conditioning systems for 24 hour/day operation.

- 37. There will be communications facilities to deal with incoming and outgoing lines and satellite feeds. The playout centre will be linked to the multiplex centre by 5+1 redundant facility line feeds, or equivalent, allowing uncompressed 270 Mbps serial digital video signals to be delivered for final compression and multiplexing to ensure the highest quality at the final multiplex.
- 38. Staffing details for the playout centres are included in Annex 10.

Multiplexing

- 39. The multiplexing of programme services to form the transmitted multiplex transport stream will be carried out in a dedicated facility to be located in the London area. British Digital Broadcasting will make best use of the available data capacity by using “statistical multiplexing”. Statistical multiplexing achieves this by dynamically adjusting the bit rate for each service depending upon the picture content. This will optimise the number and quality of services carried via the multiplex. It is British Digital Broadcasting’s intention to offer initially five services within this multiplex, each maintaining a comparable technical quality to that of existing analogue services. Further services may be introduced at a later stage, following experience with the quality achievable in practice from the available multiplex capacity and any technical advances in encoding and multiplexing.

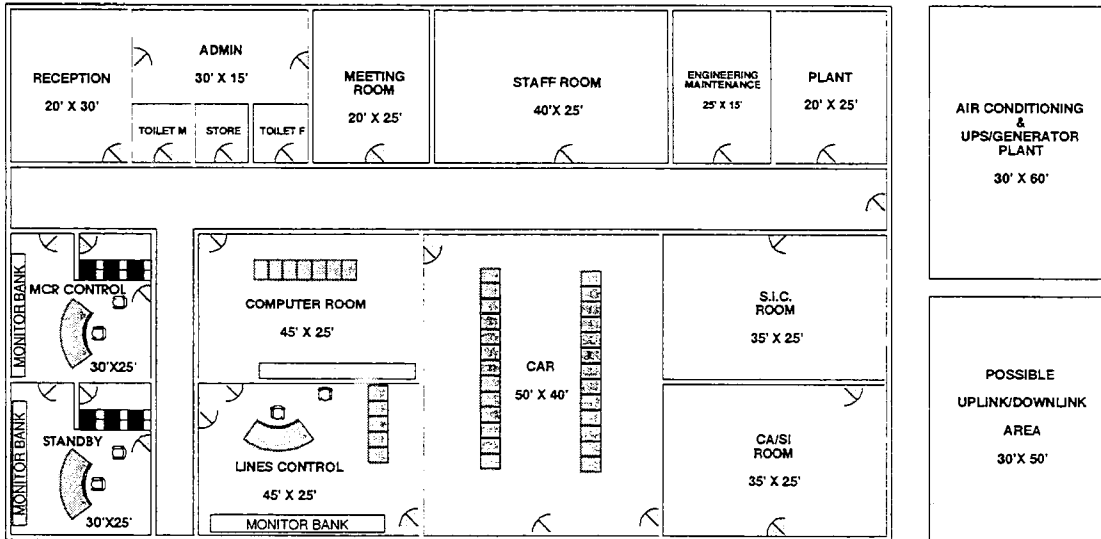


Figure 2 British Digital Broadcasting Multiplex Centre - Preliminary Planned Site Details

- 40. As well as offering the potential for permanent extra channels, statistical multiplexing will allow British Digital Broadcasting to offer a number of planned pay-per-view events each year at an early stage of the licence. The capacity to transmit these events will be created by so arranging the schedules such that all other channels will be showing less demanding material (in terms of bit rate required). The demands of a usual schedule make this technique unsuitable for permanent operation using current

technology, but British Digital Broadcasting is confident of being able to introduce additional programme streams for up to three hours on an occasional basis.

41. The multiplex centre will be designed initially to support a five-programme transport stream and contain the capacity for occasional additional programmes, it is planned to have the following facilities:
- a) Incoming lines/satellite control facilities.
 - b) Central Multiplex Encoding area containing pre-processing and signal conditioning, MPEG-2 encoders for 5+1 redundancy (see below), together with 1+1 redundancy routed multiplexers.
 - c) The necessary power supplies and resilient air conditioning systems for 24 hour/day operation;
 - d) Master control and standby facilities for quality checking of the MPEG-2 transport stream including :
 - i) 24 hour/day transmission monitoring and off-air quality control;
 - ii) liaison with satellite distribution and transmission operations;
 - iii) co-ordination with playout centres;
 - iv) control of the multiplex management computer;
 - v) off-air logging of each channel;
 - e) Computer systems facilities for the monitoring and control of the following systems:
 - i) conditional access systems;
 - ii) subscriber authorisation systems;
 - iii) multiplex management computer;
 - iv) service information compiler computers;
 - v) computer data links to playout centre and customer management centre;
 - vi) subtitle and Audetel control computers;
 - vii) transmission automation computers;
 - f) Engineering maintenance room equipped with relevant MPEG-2 transport stream analysis and signal generating and testing equipment.
42. The multiplex centre will be staffed on a 24 hour/day basis. More detail on the staffing and cost elements of this function is provided in Section B.7.
43. The multiplex centre will be the hub of British Digital Broadcasting's digital terrestrial television operation. The preparation of the data needed to make up the complete service will take place here. By use of the latest techniques in MPEG-2 encoding and multiplexing British Digital Broadcasting will provide a high quality reliable and consistent transmission feed to the distribution network. The multiplex centre is the

first point of contact with the chosen distribution and transmission partners as well as the assembly point for all programme services, with respective subtitle and Audetel data, as well as the highly complex SI data, conditional access and subscriber authorisation systems.

44. Resilience in the operation is paramount. For this reason British Digital Broadcasting will provide one spare MPEG-2 encoder for up to five main encoders. This spare encoder is automatically selected and fed with signals if there is a failure of any one of the on-line encoders. The resultant output is fed through the routing matrix to either of two multiplexers which provide a redundant path for the outgoing MPEG-2 stream. Again, any failure of a multiplexer will lead to the other being selected to air automatically. This provides a highly effective redundant switching system which, through the use of automatic transport stream analysers, can take action in the case of system failure.
45. The programme playout automation system is closely coupled to the multiplex management system. British Digital Broadcasting's chosen supplier will provide control systems which will allow it to select the most appropriate video and audio coding system for the current programme material.
46. Programme schedules from the automation system at the playout centre will be delivered via permanent data link, so that up-to-date operational playlists will be available. This information will be combined with the SI data made available by other multiplex operators and the relevant PSI/SI tables inserted into the transmission multiplexer. The intention is to ensure mutual technical compatibility between the British Digital Broadcasting multiplex and all others so that details of services carried by all multiplexes are available to the viewer, no matter which service they are currently watching, and that the viewer can freely navigate between them.
47. The customer management centre which deals with subscriber enquiries and maintains service entitlements will be located at another site and will be linked via permanent data circuits to a subscriber authorisation system at the multiplex centre. Here the entitlements "enablement" messages, and new subscriber authorisation messages will be assembled and passed on to the multiplexer for transmission to the home. There will be a close operational link between the staff managing the subscriber authorisation system at the multiplex centre and the staff at the customer management centre to ensure an efficient and reliable service for the viewer. The customer management strategy is detailed in Annex 8.
48. News Digital Systems is British Digital Broadcasting's preferred supplier of conditional access systems, although this is subject to detailed commercial negotiations. It will be a term of the systems supply contract that the chosen conditional access system supplier will provide support staff as required to provide 24 hour/day monitoring and control of the conditional access systems. At the end of the first year these staff will either be employed as British Digital Broadcasting employees or the supplier will have trained sufficient British Digital Broadcasting staff to the level required to manage these complex conditional access systems.

49. Each monitoring area will be equipped with the relevant MPEG-2 transport-stream analysis equipment as required. Off-air logging equipment will be fitted to allow British Digital Broadcasting to record the output of each multiplex channel as transmitted to allow later analysis if required. These tapes will be held for 28 days as required by the ITC's Digital Performance Code.

Distribution

50. At present analogue terrestrial broadcasters distribute most of their programming to transmitter sites via cable (copper and optical fibre), with some point-to-point microwave links. The systems in use at present have evolved over many years and have gradually expanded to cover every site in the United Kingdom.
51. A preliminary layout of the facilities to be provided in the multiplex centre is included in Figure 2
52. With the launch of digital terrestrial television, the operating companies will need to distribute their signals to all transmitter sites allocated to their licences. If awarded the licence for Multiplex C, British Digital Broadcasting will seek to work with the other multiplex operators to establish a consistent approach to the distribution network.
53. British Digital Broadcasting has reviewed the various options and concludes that the most cost effective method of distribution to the transmitter sites is by the use of satellite links. Not only would the costs of replicating the current cable-based infrastructure be extremely high, but the logistics of having a system installed and operational would mean that the required deadlines would not be met.
54. By using satellite, the available coverage will allow the signal to be received at any transmitter site in the United Kingdom. This has major advantages in that once this path is available for the first transmitter site, the marginal cost of distributing the signal to additional sites is relatively low and is made available as required by the installation of suitable Television Receive Only (TVRO) equipment.
55. If satellite is to be used as the distribution medium for digital terrestrial television, two important points need to be considered:
- a) The overall lifetime and reliability of the satellite itself is finite and approximately equal to the length of the digital terrestrial television franchise.
 - b) Transitory conditions could lead to short losses of signal due to sun outage. (This occurs when the sun passes directly behind the satellite as viewed from the receive site, causing the receive chain briefly to be overloaded with sun noise which obscures the wanted signal.)
56. Distribution of signals to the transmitters will be by resilient satellite links, i.e. utilising dual uplinks to separate satellites. British Digital Broadcasting regards this dual resilient approach as essential

orbital slots will be used for the space segments. Both channels will normally be fed with the output of the multiplex centre, and any failure of the main channel will cause a hot change to the reserve channel to preserve transmission.

- 57. Employing a dual-satellite solution also side-steps the problem of sun outage, since, as they have different orbital slots, only one satellite at a time will be blocked by sun noise. This allows the feed from the second satellite to be selected whilst the first is experiencing an outage. Figure 3 illustrates the overall transmission distribution system.
- 58. Dual satellite downlinks then feed the service to each main transmitter. At this stage it is not clear how many of the relay transmitters will be able to receive a signal from main transmitters as a rebroadcast link. Both transmission operators are currently evaluating the likely number of relay transmitters which may also need to be fed by satellite.

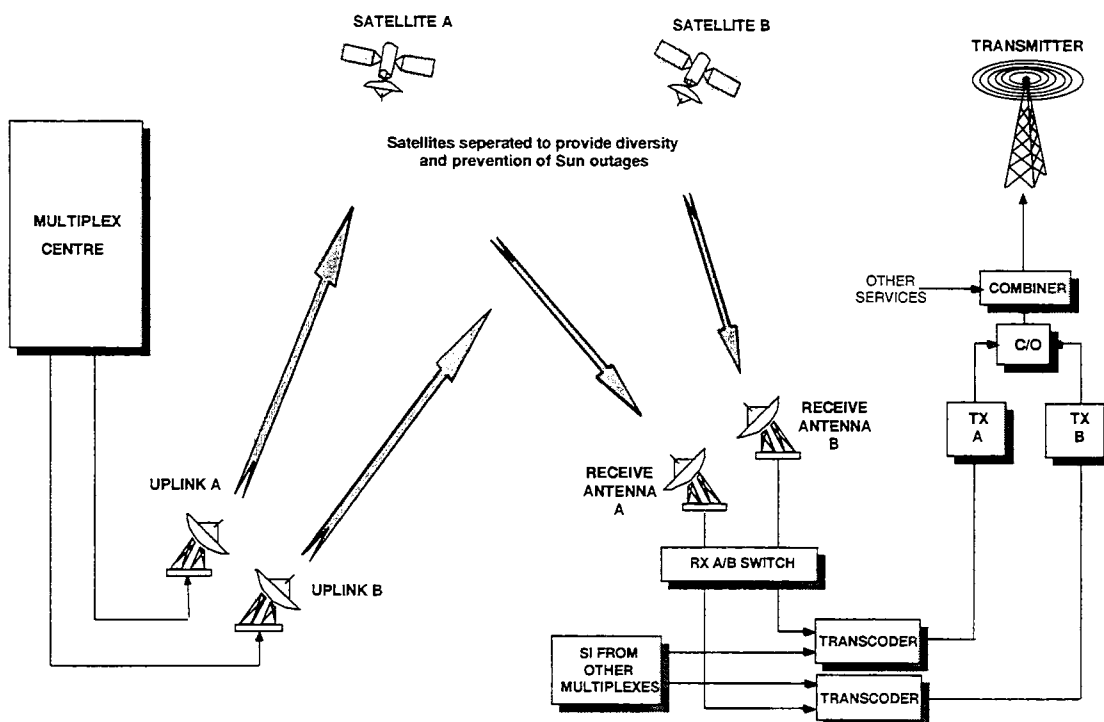


Figure 3 Transmission Distribution System

- 59. British Digital Broadcasting has undertaken a detailed review of the provision of satellite capacity and associated distribution services with a number of telecommunications suppliers. Through Carlton it is currently negotiating a contract with a suitable supplier and has a detailed quote which satisfies its requirements. It has been established that satellite capacity is available, with a reliability matching or exceeding that of alternative transmission media. The principal satellite operators have a programme of continual expansion, with a planned and structured roll-out of new spacecraft to replace ageing satellites as they approach the end of their useful life. This

solution is expected therefore to remain a valid one throughout the franchise period.

Transmission

60. British Digital Broadcasting recognises the importance of the provision of high quality transmission with a high level of service availability. The two existing transmission operators, BBC Transmission and NTL, who between them provide high quality analogue terrestrial transmission from all of the sites specified in the British Digital Broadcasting application, have been in the forefront of developments in terrestrial broadcasting technology for decades.
61. British Digital Broadcasting proposes to use one of these operators to provide, operate and maintain a high quality national transmission network. British Digital Broadcasting has established with both BBC Transmission and NTL that there is space on existing mast structures to accommodate antennas and feeders for the specified sites, although a programme of mast strengthening will be needed. It is understood that appropriate site-sharing agreements exist between both operators which would enable either to accommodate the required hardware. Nevertheless, because some structures are already heavily loaded, it is proposed to use existing antennas for at least some of the proposed services. Where necessary, new antennas will be designed to provide the required radiation patterns.
62. British Digital Broadcasting has received detailed quotations for the transmission infrastructure from both NTL and BBC Transmission, both of which satisfy operational requirements. This information has been used in the preparation of the financial analysis contained within Section B. Upon the receipt of the notification of the multiplex licence award, British Digital Broadcasting will move quickly to secure a contract with the chosen supplier. In the event that additional liaison with other multiplex licensees and a different transmission operator is necessary, British Digital Broadcasting will work speedily with other parties involved to achieve mutually acceptable technical solutions.
63. Construction of transmitting stations will be based on the "ITC Note for Applicants on Coverage of Digital Television", dated 31st October 1996. The provisional transmitter roll-out plan covers a total of 51 main transmitting stations as shown in Appendix 1. The roll-out plan has been co-ordinated closely with that of Channel 3 and Channel 4 in the initial phases.
64. It is recognised that transmission sites and some equipment will be shared amongst the operators of the multiplexes offered to existing broadcasters, as well as the operators of Multiplexes A, B, C and D. There are therefore co-ordination and integration issues between all multiplex and transmission operators which increase with the number of parties involved. The resolution of these issues will be considerably easier if there is a single lead party co-ordinating this part of the project.
65. To ensure high quality transmission, monitoring will be provided at each transmitter site to enable any faults to be detected rapidly. This will include not only monitoring of the modulators and transmitter systems themselves, but also monitoring of the

transport stream to ensure that it is properly formatted. Telemetry links will be provided for the main transmitters to enable alarms to be raised at a central control centre so that appropriate corrective action can be initiated. The monitoring and telemetry links will also provide the transmission operator with an overview of the total transmission network at all times. A high level version of this overview will be available to British Digital Broadcasting at its multiplexing centre.

66. Resilience will be built into the design of the transmitting stations in a number of ways. The transmitters themselves will be fully DVB-compliant and of all solid state, modular design in order to minimise the risk of spontaneous failure. Passive reserve rather than parallel transmitter systems will be employed in order to avoid, where possible, reduced power operation.
67. Antennas will be constructed in two halves with individual coaxial feeders. This arrangement is the same as that used in the existing analogue network and has proved itself over the years.
68. At those sites which are designated 'SI insertion points', provision will be made for insertion of not only the relevant SI for the multiplex, but also the appropriate SI relating to the other services being radiated from the same site.
69. British Digital Broadcasting intends to utilise a transmission rate of 24 Mbps. Together with the use of statistical multiplexing, this will optimise the number and quality of services carried via this multiplex. It is British Digital Broadcasting's intention initially to offer five services within this multiplex, each maintaining a comparable technical quality to that of existing analogue services. Further services may be introduced at a later stage, following experience with the quality achievable in practice from the available multiplex capacity.
70. The final phase of the transmitter roll-out includes relay stations which are intended to extend the coverage of the main stations. Although it is normal practice to rebroadcast the incoming signal from a nearby main station without demodulation, both potential transmission suppliers have drawn attention to possible interference problems on the received signals at most of the relay station sites which may rule out rebroadcasting. If this proves to be the case, it will be necessary to use the satellite distribution system to feed the affected relay station.
71. Were further frequencies to become available for this multiplex, leading to opportunities for significant extensions in the population coverage at reasonable cost, British Digital Broadcasting would continue the relay station roll-out past the currently envisaged total. Where further frequencies would lead to only a marginal increase in population coverage, British Digital Broadcasting would review the position once the digital terrestrial television service has been established.
72. British Digital Broadcasting will monitor the technical performance and availability of the multiplexes by requiring its transmission operator to submit monthly reports detailing the performance levels and availability achieved, along with details of any part of the service which does not meet agreed thresholds. A summary of these reports will

be made available to the ITC on an annual basis if required.

Implementation

73. If awarded the licence for Multiplex C alone, British Digital Broadcasting will enter into discussions with all the other multiplex operators to establish a lead party for the management of a single roll-out programme for all multiplexes. In doing this, British Digital Broadcasting will promote a fast-track approach to the start of digital terrestrial television services.

Transmitter Build Programme

74. British Digital Broadcasting's proposed transmitter roll-out is shown in Appendix 1 and is based on the following phases of construction:

Phase 1: 4 main sites for testing and development by September 1997

75. These stations should provide a total net population coverage of 17.64 million people, mainly in the South East, Midlands and North East England. The selection of these particular transmitters has been co-ordinated with the DTG plan to allow test transmissions to begin in close proximity to the major television receiver manufacturers' plants to facilitate testing and quality control of sets.

Phase 2: 15 further main sites by December 1997

76. These will extend the coverage further, including parts of Scotland and Northern Ireland.

Two further main sites to follow by March 1998

77. This will enable a total of 21 main station sites to be brought into programme service in July 1998 providing a total net population coverage of 32.72 million people.

Phase 3: 21 further main sites by December 1998

78. Extending the net population coverage to 39.1 million people.

Phase 4: remaining 35 sites by the end of December 1999

79. This total of 77 main and relay station sites provides a net UK population coverage of 44.51 million people.

Final Coverage

80. The cumulative population coverages for multiplex C based on the proposed transmitter roll-out, are shown in Table 1.

Multiplex C Cumulative Population Coverage			
rollout phase	number of transmitters	cumulative population 1000's	% of national population
1	4	17,640	30.7 %
2	17	32,724	56.9 %
3	21	39,099	68 %
4	35	44,514	77.4 %

Notes

An estimate has been made for Fremont Point based on analogue coverage figures. UK population is assumed to be 57.5 million.

81. The roll-out plan described above is predicted to provide a final coverage of 77% of the UK population based on the coverage predictions in the ITC document "Note for Applicants on Coverage for Digital Television". This coverage is based on the 'net' figures in the ITC document which take account of the overlaps between adjacent transmitters.
82. The ITC document contains two figures for population coverage estimates for each multiplex at each transmitter site based on different methods of counting. Until further field work has been carried out to establish which prediction technique is the more appropriate, British Digital Broadcasting is assuming that the population covered is based upon the proportional method of counting as referred to in the Invitation to Apply. Coverage figures for all multiplexes assume a transmitted data rate of 24 Mbps.
83. In principle, British Digital Broadcasting would like to extend the coverage of the service where additional frequencies become available and where these enable significant increases in population coverage to be achieved at a reasonable cost. British Digital Broadcasting is aware that the availability of additional frequencies depends on international co-ordination and clearances and would propose to discuss these matters at routine liaison meetings with the ITC.

Start Date

84. Based on the above transmitter build programme, the date of start of transmissions of the multiplex service is forecast to be July 1998.

Conditional Access

85. If awarded a single multiplex licence, British Digital Broadcasting will seek to work with the other licence holders to establish a common solution for all digital terrestrial services. A common solution for conditional access is regarded as essential for the development of the market. As several other parties will be involved, it is not yet possible to provide any firm indications of the outcome of these discussions. British Digital Broadcasting will advocate a solution that encourages the availability of low cost consumer equipment at the commencement of digital terrestrial television services, whilst still allowing the introduction of other strategies at a later stage.
86. British Digital Broadcasting also recognises that multiplex operators and other interested parties may have concerns regarding the possibility of conditional access technology being used to establish a dominant position in the market. British Digital Broadcasting's view is that competition in the provision of television services should be on the basis of programme quality and the quality of service offered to the viewer and that this competition should not be hindered or prevented as a result of "gate keeping" by conditional access operators. It is assumed that the conditional access system used to support British Digital Broadcasting's services will be available to all service providers on fair, reasonable and non-discriminatory terms as required by regulations and guidance notes issued by the DTI and OFTEL.
87. In the case that British Digital Broadcasting operates a conditional access authorisation service for other multiplex operators, British Digital Broadcasting will support an interface to that licensee's own customer management centre.

Section A2 of British Digital Broadcasting's *supplementary* proposals provides equivalent information, should the company be awarded all three of the licences for which it has applied.

This is British Digital Broadcasting's individual application for Multiplex C. It describes in detail British Digital Broadcasting's proposed approach to the issues, in particular, of multiplexing, distribution, transmission and overall system integration. There is a supplementary proposal which details the key, lead role which British Digital Broadcasting could play, particularly in the areas of the playout centre, conditional access and multiplexing, should the company be successful in winning Multiplexes B and D as well.

APPENDIX 1 TO A.2

Proposed Transmitter Roll-Out Programme

Note: Shaded transmitter sites indicate Service Information insertion points.

	Transmitter Site	Date	Cumulative Population (nett 1000's)	% of offered coverage
PHASE 1	Crystal Palace	01/09/97	8,480	19.1%
	Sutton Coldfield	01/09/97	11,380	25.6%
	Winter Hill	01/09/97	15,960	35.9%
	Wenvoe	01/09/97	No Mux C coverage	
	Pontop Pike	01/09/97	17,640	39.6%
PHASE 2	Sandy Heath	31/12/97	18,730	42.1%
	Emley Moor	31/12/97	21,280	47.8%
	Belmont	31/12/97	22,370	50.3%
	Caldbeck	31/12/97	22,646	50.9%
	Waltham	31/12/97	24,366	54.7%
	Fremont Point	31/12/97	24,466	55.0%
	Durris	31/12/97	24,738	55.6%
	Mendip	31/12/97	25,321	56.9%
	Rowridge	31/12/97	26,218	58.9%
	Hannington	31/12/97	26,943	60.5%
	Black Hill	31/12/97	28,433	63.9%
	Craigkelly	31/12/97	29,098	65.4%
	Bilsdale	31/12/97	30,208	67.9%
	Divis	31/12/97	31,288	70.3%
	Caradon Hill	31/12/97	31,526	70.8%
	Stockland Hill	31/03/98	31,990	71.9%
	Tacolneston	31/03/98	32,724	73.5%

Proposed Transmitter Roll-Out Programme

Note: Shaded transmitter sites indicate Service Information insertion points.

	Transmitter Site	Date	Cumulative Population (nett 1000's)	% of offered coverage
PHASE 3	Sudbury	31/12/98	33,248	74.7%
	Oxford	31/12/98	33,697	75.7%
	Ridge Hill	31/12/98	34,112	76.6%
	Huntshaw Cross	31/12/98	34,214	76.9%
	Angus	31/12/98	34,660	77.9%
	Rosemarkie	31/12/98	34,772	78.1%
	Blaenplwyf	31/12/98	34,820	78.2%
	Carmel	31/12/98	35,026	78.7%
	Llanddona	31/12/98	35,135	78.9%
	Moel-y-parc	31/12/98	35,269	79.2%
	Presely	31/12/98	35,344	79.4%
	Beacon Hill	31/12/98	35,537	79.8%
	Dover	31/12/98	35,832	80.5%
	Midhurst	31/12/98	36,122	81.1%
	Heathfield	31/12/98	36,595	82.2%
	Darvel	31/12/98	37,070	83.3%
	Brougher Mtn	31/12/98	37,119	83.4%
	Limavady	31/12/98	37,259	83.7%
	The Wrekin	31/03/99	37,902	85.1%
	Bluebell Hill	31/03/99	38,859	87.3%
Redruth	31/03/99	39,099	87.8%	
PHASE 4	Salisbury	31/12/99	39,154	88.0%
	Tunbridge Wells	31/12/99	39,264	88.2%
	Guildford	31/12/99	39,423	88.6%
	Hemel Hemstead	31/12/99	39,552	88.9%
	Reigate	31/12/99	No Mux C coverage	
	Brierly Hill	31/12/99	39,707	89.2%
	Bromsgrove	31/12/99	39,784	89.4%

Proposed Transmitter Roll-Out Programme

Note: Shaded transmitter sites indicate Service Information insertion points.

Transmitter Site	Date	Cumulative Population (nett 1000's)	% of offered coverage
PHASE 4 Fenton	31/12/99	39,967	89.8%
Larkstoke	31/12/99	No Mux C coverage	
Malvern	31/12/99	40,051	90.0%
Nottingham	31/12/99	40,373	90.7%
Bressay	31/12/99	40,386	90.7%
Eitshal	31/12/99	40,405	90.8%
Keelylang Hill	31/12/99	40,422	90.8%
Knock More	31/12/99	40,472	90.9%
Rumster Forest	31/12/99	40,534	91.1%
Aberdare	31/12/99	40,589	91.2%
Lancaster	31/12/99	40,853	91.8%
Pendle Forest	31/12/99	41,069	92.3%
Saddleworth	31/12/99	41,411	93.0%
Storeton	31/12/99	41,654	93.6%
Bristol I.C.	31/12/99	41,847	94.0%
Bristol K.W.	31/12/99	42,036	94.4%
Kilvey Hill	31/12/99	42,298	95.0%
Hastings	31/12/99	42,426	95.3%
Pontytpool	31/12/99	42,533	95.5%
Rosneath	31/12/99	42,660	95.8%
Chatton	31/12/99	42,770	96.1%
Fenham	31/12/99	43,106	96.8%
Plympton	31/12/99	43,280	97.2%
Chesterfield	31/12/99	43,536	97.8%
Idle	31/12/99	43,672	98.1%
Keighley	31/12/99	No Mux C coverage	
Olivers Mount	31/12/99	43,735	98.2%
Sheffield	31/12/99	44,074	99.0%
Selkirk	31/12/99	44,126	99.1%
Torosay	31/12/99	44,139	99.2%
Whitehawk Hill	31/12/99	44,514	100.0%

Section A3 -Promoting or Assisting the Acquisition of Equipment

ITC Requirement

Noting the information contained in paragraphs 16, 36, 84 to 88 and 131, the applicant should state in detail what arrangements he has made to promote or assist the acquisition, including on hire or loan, of equipment capable of receiving all the multiplex services available in the coverage area of the proposed service. Confidential financial information, including details of expenditure underpinning these arrangements should be provided separately in Section B of the attachment to Part III. Without limiting the information to be supplied, applicants should cover the following issues:

- *what arrangements, if any, exist with manufacturers to support the development and production of the equipment, e.g. technical expertise, direct or indirect financial support (including subsidy), etc.;*
- *what arrangements, if any, exist with retailers to support the sale, hire or loan of equipment, e.g. marketing assistance; direct financial support;*
- *details, and the number of, retail outlets which will offer equipment for sale, hire or rent in the transmission coverage area;*
- *is it intended to offer equipment direct to households? If so, details of the associated marketing and sales strategy, including the number of people to be employed in this area, should be provided;*
- *details of marketing and publicity plans, identifying separately those to be undertaken jointly with manufacturers and/or retailers, including proposals for advertising on television, radio, in the press, by direct mail, etc. (Applicants should identify the target audience in each case. This information may be provided in Section B if wished);*
- *the extent to which the range and characteristics of the services to be offered will promote or assist the acquisition of receiving equipment by viewers.*

Summary

If British Digital Broadcasting was awarded the licence to operate Multiplex C, British Digital Broadcasting's plans to promote and assist the acquisition of digital terrestrial television equipment would be aimed at supporting the integrated plans of a 'lead' multiplex operator or a grouping that achieves a similar effect. British Digital Broadcasting will work to integrate its plans as fully as possible to ensure consumers receive a single clear marketing message.

1. The success of digital terrestrial television is in the national interest. Viewers will receive more choice, convenience and better reception. There will be a significant economic boost to the consumer electronics and television production industries. However, success requires, from the outset, a good match between supply and demand. British Digital Broadcasting's view is that there are three potential supply

and demand patterns:

- a) A slow start with manufacturers and retailers waiting for proof of demand levels before ordering and producing equipment, and consumers delaying their purchase decisions even though digital terrestrial television might offer the best value route into multi-channel television. This pattern would lead to the market only maturing in the later years of the initial licence period and possibly not reaching its full potential because of the establishment of competing delivery systems.
 - b) A medium pace initial market growth, with manufacturers and retailers slightly less cautious and some consumers making an early decision to buy. This pattern leads to the market maturing in the middle years of the initial licence period.
 - c) A buoyant and vibrant market from launch with manufacturers and retailers committed to high supply levels and consumers demanding equipment in large numbers at the launch date.
2. Creating the most buoyant market requires a fully resourced, and integrated marketing plan. British Digital Broadcasting believes that this can best be achieved realistically if led by an organisation with licences to operate three multiplexes, which is able and prepared to drive the market through investment in retail promotions and subsidy; and in marketing, programming and customer service.
 3. If British Digital Broadcasting and other organisations were each to be awarded single licences, then the inherent delays in agreeing a consensus position for the marketing effort, and the lack of economies of scale, would make a fully funded integrated marketing plan less certain. This would lead, at best, to the medium pace market growth scenario described above. In the absence of genuine integration the market would be left largely to find its own level which would delay the positive interaction of supply and demand and so favour the slow growth scenario outlined above.
 4. British Digital Broadcasting's proposals for promoting equipment if it were awarded three multiplexes are attached as Section A3 of its supplementary proposals, and describe British Digital Broadcasting's plans to implement an integrated marketing plan to promote digital terrestrial television both generically and for its own services.
 5. In this application, British Digital Broadcasting details its proposals for promoting or assisting the acquisition of equipment if it were awarded Multiplex C only. Given the commercial sensitivity of this information, much of the detail is contained in confidential Section B3.
 6. The base case assumption has been made that were British Digital Broadcasting to be awarded a single multiplex licence, there will be a 'lead' multiplex operator who will have proposed integrated promotional plans at least as strong as those contained in British Digital Broadcasting's own supplementary proposals. As a result, British Digital Broadcasting's proposals in this application assume that the levels of generic
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promotion and subsidy of the digital terrestrial television market will be at least on the scale of those outlined in British Digital Broadcasting's supplementary proposal for three multiplexes.

Securing High Levels of Supply by Supporting Manufacturers in the Development and Introduction of Equipment

7. UK based manufacturers are, in principle, keen to see a new market in digital terrestrial televisions and, like the shareholders in British Digital Broadcasting, the majority of them have participated in the preparation of the Digital Television Group's project to develop core specifications and equipment inter-operability requirements. Understandably, however, they are looking for some level of security to underpin design work and the establishment of production capability.
8. In British Digital Broadcasting's integrated marketing plan, this need for security would be provided by creating a partnership with manufacturers to include underwriting orders for set-top boxes, ensuring future production capacity and joint marketing initiatives.
9. In the case of a single multiplex licence award, this generic activity is assumed to be carried out by other multiplex licence holders or by all licence holders acting together. British Digital Broadcasting would take part in this activity in any appropriate and financially viable way. British Digital Broadcasting believes that promotions in relation to manufacture and retailing have an important part to play and has planned contributions to such arrangements. In the event that the other licence holder(s) plan subsidies, British Digital Broadcasting will look to collaborate where practicable. The plans outlined in this proposal for promoting and assisting the acquisition of equipment are based on British Digital Broadcasting's best current views of the measures necessary to stimulate the fastest market growth for digital terrestrial television. These plans will be constantly reviewed through the period between the licence award and the launch of the service and will be adapted in the light of any changes to prevailing market conditions.

Securing High Levels of Supply by Means of Arrangements with Retailers to Support the Sale, Hire or Loan of Equipment

10. Electrical retailers are, in principle, keen to see a new market in digital terrestrial television equipment and, like the shareholders in British Digital Broadcasting, many of them have been involved in the DTG Group project to develop core specifications and create joint marketing objectives. Understandably, however, and like manufacturers, they are looking for some level of commitment from the multiplex holders regarding pricing and marketing support before they commit to orders.
11. In British Digital Broadcasting's integrated marketing plan, this commitment would be provided by creating a partnership with retailers to include subsidised set-top box prices, guaranteed retail availability, promotional offers and joint marketing initiatives.

12. In the case of a single multiplex licence award, British Digital Broadcasting would concentrate its market effort behind its own channels and would therefore concentrate on providing promotional offers through retailers. In addition, given the absence of economies of scale, the level of investment behind these offers, whilst still substantial, would be lower than in the integrated marketing plan. Dependent on market conditions at the time, British Digital Broadcasting may wish to combine its marketing support to retailers with the support of any other multiplex licence holders. Given its belief in the price sensitivity of the market, British Digital Broadcasting has put aside a contingency fund to enable British Digital Broadcasting to co-operate jointly with the marketing plans proposed by other multiplex licence holder(s).

Details and Numbers of Retail Outlets

13. British Digital Broadcasting has acquired substantial research data to help its understanding of consumer purchasing patterns for televisions and set-top box equipment, and to identify the main retail channels for these products. Full details of this analysis are set out in confidential Section B3 and Annex 18.
14. British Digital Broadcasting has, (through Carlton) over the last four months, held detailed discussions with all the major retail and TV rental chains. These companies account for over half of the UK market in equipment sales and rental. Following these briefings, they have provided assurances that they plan to stock digital terrestrial television receiving equipment at all stores within the transmission area, at the time of launch.
15. Based upon these discussions, British Digital Broadcasting estimates that a number of major store groups and independent retailers will stock digital terrestrial receiving equipment with a combined total of up to 5,500 outlets nationally within the coverage area. On this basis British Digital Broadcasting estimates that equipment will be stocked as follows:

Date	Outlets
July 1998	2000
January 1999	4000
January 2000	5500

Offering Equipment Direct to Households

16. British Digital Broadcasting believes that retailers are best placed to explain the concept and benefits of digital terrestrial television and also to provide the consumer with pre-sales advice, financing and after sales service. They are experienced in selling high value consumer electronics equipment and have staff and demonstration facilities to answer the inevitable queries of customers considering an investment in a new piece of technology. British Digital Broadcasting is aware that direct selling played a part in

the early introduction of analogue set-top boxes. It will therefore review whether direct selling could play a part in equipment sales but has not, at this stage, included this in its base case business plan.

Marketing and Publicity Plans

17. The BBC, ITV, Channel 4 and Channel 5 will be promoting their new digital services on their main analogue channels. This will provide initial generic marketing to raise the public's awareness of the launch of digital terrestrial television. Through their participation in ITV's plans for digital services, both Carlton and Granada intend to fully support this promotional activity and have supported the proposed arrangement with Digital 3 and 4 Ltd for Channel 4 and the ITV companies to broadcast up to one minute a day of digital terrestrial promotions.
18. British Digital Broadcasting has also been involved in the discussions with Digital 3 and 4 Ltd and the BBC regarding the possibility of a joint overall marketing campaign for digital terrestrial television programming. British Digital Broadcasting believes strongly that such a campaign would be of great value and fully supports the initiative, which would help ensure that digital terrestrial television services gain widespread public awareness.
19. If British Digital Broadcasting were only awarded Multiplex C, its marketing and publicity plans would be concentrated on promoting the uptake of digital equipment through promoting its own channels. This marketing would cover television, magazine and poster advertising which would be linked to the promotional offers through retailers as set out earlier in this section. This advertising activity would start just prior to the launch of the service and would continue throughout the licence period. Detailed plans and expenditure levels are set out in Section B3 of this application.
20. British Digital Broadcasting intends to offer its channels as a stand alone package to consumers. If, however, the commercial case were made for including British Digital Broadcasting's channels as part of the basic package offered by other licence holder(s), British Digital Broadcasting would look positively at the proposal.

Target Audience

21. Television viewing is the most popular leisure activity in the country with an average person watching in excess of 25 hours each week. Since the arrival of digital terrestrial television is potentially one of the biggest changes since colour, the target audience for digital terrestrial television must be the entire television viewing population.
22. In order to achieve the fastest take-up of equipment, British Digital Broadcasting has worked with the research company, NOP, to identify those consumers who are most likely to be the first purchasers of digital terrestrial receiving equipment. In conjunction with British Digital Broadcasting's advertising advisers, Lowe Howard-Spink, these consumers' socio-economic and age profiles, as detailed below, have been

used to create the advertising and promotional target audiences for British Digital Broadcasting’s marketing plans.

Table: Socio Economic Profile for Early Adopters of Digital Terrestrial Equipment

Socio Economic Group	Early Adopters %	Index v Population
AB	19	112
C1	36	133
C2	21	105
DE	24	65

Table: Age Profile for Early Adopters of Digital Terrestrial Equipment

Age Group	Early Adopters %	Index v Population
16-24	21	210
25-34	45	196
35-44	16	89
45-54	13	72
55-64	3	23
65+	2	11

- 23. As can be seen from the above tables, the profile of likely early adopters of digital terrestrial television equipment is mid to up market in socio-economic terms with a younger age bias.
- 24. British Digital Broadcasting’s marketing and advertising plans, as detailed in Section B3, are designed to target these early adopters, whilst still recognising the importance of the launch of digital terrestrial television to the whole population.

Regional Promotion

- 25. British Digital Broadcasting intends to offer a single national package of services. In doing so, it will need to be sensitive to the fact that some parts of the country will receive services later than others so that, overall, coverage will be less than 100%. British Digital Broadcasting’s promotional activity will be focused, as far as practicable, on those parts of the country able to receive its services.

Additional Marketing Support Services

- 26. To back up the marketing activity, British Digital Broadcasting will be creating a database which will allow consumers to register their interest in its digital services. These consumers will then be sent any relevant information, details or special offers that become available.
- 27. British Digital Broadcasting is aware that part of the success of pay-television is in retaining existing subscribers as well as encouraging new subscribers. To achieve this success, British Digital Broadcasting’s marketing plans include significant levels of investment in subscriber marketing. The objectives of British Digital Broadcasting’s

subscriber marketing would be to retain existing customers, ensure maximum subscription from each subscriber, persuade lapsed subscribers to re-subscribe, identify new subscribers and prevent potential bad debts. The main areas that subscriber marketing would cover are direct mail, contract distribution and telemarketing.

How the Service will Promote or Assist Equipment Acquisition

28. British Digital Broadcasting proposes to offer subscription channels. As part of its market research, it tested viewers' opinions on, and interest in a wide range of subscription channel concepts. There were some clear favourites in terms of channels that would achieve high viewing levels and channels that would be regarded as justifying the purchase and subscription costs. The results of this research are summarised in confidential Annex 1.
29. In the light of this research British Digital Broadcasting's proposed channel selection of Sky Movies, Carlton Entertainment, Granada Plus, Sky One, and BBC Showcase/BBC Style has been selected as the best choice to promote and assist the acquisition of equipment. The choice of one premium channel and four basic channels provides consumers with access to a premium channel, whilst at the same time providing a large and attractive basic package to appeal to consumers who are less certain to pay for premium channels. British Digital Broadcasting's research identified a premiere movie channel as being the single most popular choice amongst current terrestrial-only households. In respect of the basic channel line-up, British Digital Broadcasting's research shows that viewers are most receptive to general entertainment channels. Were British Digital Broadcasting to be awarded this single multiplex the assumption is made that the channels offered by other successful applicants will include other strong "driver" channels.

Section A3 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three licences for which it has applied.

In the event that British Digital Broadcasting were awarded three multiplex licences British Digital Broadcasting proposes to lead and fund an integrated marketing plan to drive the digital terrestrial television market.

Section A4 - Number and Characteristics of Services

ITC Requirement

Taking account of the guidance given in paragraphs 91 to 105 above, the applicant should state the number of digital programme services which he intends to broadcast and for each service he should describe:

- i) the date when the service will commence;*
- ii) the hours of the day and the days of the week during which the service will be broadcast;*
- iii) the coverage area;*
- iv) the type of programmes which will be broadcast, the style of programme service and the target audience (see notes);*
- v) the average proportion of total programme hours that will consist of original productions or commissions, i.e. programmes which have been made specifically for the digital programme service; and*
- vi) the average proportion of total programme hours that will consist of first-run material, i.e. material which has not previously been shown on the digital programme service.*

Notes:

- 1. An ITC Guidance Note on Programme Definitions is available which explains how programmes should be classified.*
- 2. Applicants may wish to refer to audience research findings which support the belief that the proposed services will appeal to a variety of tastes and interests and/or that different elements will appeal to particular target audiences.*
- 3. Applicants should note that it will not be sufficient to describe programme services in general terms without explaining what types of "entertainment" or "sport" for example will be provided in different parts of the schedule (evening, daytime etc.) for whom the programmes are intended and how they will be sourced (see A14).*
- 4. Applicants for Licence A should note the requirement to provide Gaelic language programming in Scotland, as described in paragraph 120.*

Summary

For Multiplex C, British Digital Broadcasting proposes four basic subscription channels: Carlton Entertainment, Granada Plus, Sky One, BBC Style and BBC Showcase and one premium subscription channel - Sky Movies. This 'one multiplex' proposal has been designed to complement the assumed prospective channels viewers would be receiving from the 'free-to-air' multiplexes and from other commercial multiplexes.

1. A central element of British Digital Broadcasting's proposal is its programme service. British Digital Broadcasting's service will be supplied by Carlton, Granada, BSkyB, and the BBC, respectively the major UK forces in commercial terrestrial television, pay television, and public service broadcasting.

2. British Digital Broadcasting has taken into account, particularly, the findings of research into viewers' interests and research into which subscription channel concepts will best supplement and complement the 'free-to-air' channels digital terrestrial viewers are likely to receive from other broadcasters. These 'free-to-air' channels will also play a vital role in the overall appeal of digital terrestrial television.
3. Carlton, on behalf of British Digital Broadcasting, has carried out a two phase research programme to help understand the channels that would, in combination, encourage the uptake of subscriptions and sustain viewers' interests so as to minimise churn. The first phase of survey research in September 1996 looked at 25 channel concepts. These results clearly identified the channels which captured high viewer interest and for which they were prepared to pay. The second phase of research in November 1996 concentrated on the most likely channels in more detail, using survey and focus group techniques. (A summary of the two phases of research is contained in confidential Annex 1). In the research it was explained to consumers that digital terrestrial television would combine 'free-to-air' channels from the BBC, ITV, C4, C5 and S4C, with around twenty pay-television channels. It was further explained that the 'free-to-air' channels would include, for example, a BBC 24 hours news channel and a second ITV channel.
4. British Digital Broadcasting's 'one multiplex' programme offer for Multiplex C comprises a set of four high quality basic channels: Carlton Entertainment, Granada Plus, Sky One and BBC Style/BBC Showcase and one premium channel, Sky Movies.

Carlton Entertainment	A new channel to meet the enduring demand for well executed popular entertainment. There will be a strong emphasis on British productions alongside quality acquired material from other sources.
Granada Plus	Programmes based predominantly on prestigious and popular British drama, entertainment, comedy and children's programming as well as critically acclaimed documentaries and features. The existing cable and satellite service will be enhanced with more high quality original programming from Granada TV and LWT's award winning production teams.
Sky One	Sky One will provide a range of quality family entertainment - comedy, drama, documentaries, science fiction, reality programmes and chat shows combining domestic and imported product.
BBC Style and BBC Showcase	BBC Style will feature fresh and first-rate leisure and lifestyle programming - from antiques to aspidistras, cooking to collecting, gardening to gastronomy, from what to wear to what to drive. BBC Showcase is designed to 'showcase' for viewers high quality and popular programmes from BBC1 and BBC2. Content will range from classic to contemporary, from drama to comedy.

<p>Sky Movies</p>	<p>Sky Movies will aim to screen hit movies from around the world, featuring British films as well as imports. The channel is scheduled to operate 24 hours a day, 7 days a week with all movies shown without commercial breaks. In order to cater to the widest range of viewers' lifestyles, the most popular shown movies will be re-screened at different times and on different days.</p>
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5. Should British Digital Broadcasting be awarded Multiplex C only, these channels have been designed to complement what British Digital Broadcasting has assumed would be attractive programme services on the other multiplexes.
6. The shareholders of British Digital Broadcasting have access to a substantial body of library material and rights which will be available to enhance British Digital Broadcasting's service proposition. An outline is included as Annex 17.
7. British Digital Broadcasting's content pricing approach is described in Section A3. British Digital Broadcasting's approach to particular genres is described in Section A6. Each channel is detailed overleaf. For each channel British Digital Broadcasting has indicated the percentage of programme hours that will consist of original productions or commissions in relation to that channel.
8. The BBC subscription channels which form part of this application and its supplementary proposals are intended to be offered through the joint venture between the BBC and Flextech. The BBC is engaged in further work to finalise and make public, details of these channels and information about schedules is, at this stage, in broad generic or illustrative form. The BBC will furnish British Digital Broadcasting with further information, including information as to the amount of original and first-run material and indicative schedules as soon as possible and this information will be available to the ITC upon request.

Carlton Entertainment

A new channel to meet the enduring demand for well executed popular entertainment. There will be a strong emphasis on British productions but integrating the 'best of the rest'.

Start Date, Hours of Broadcast and Coverage

9. Carlton Entertainment will be available from the date of the launch of the British Digital Broadcasting digital terrestrial television service. It is currently scheduled to transmit for 18 hours per day, seven days per week, 52 weeks a year. It will be transmitted on a national basis, using the full-coverage capability of the multiplex.

Programme Type

10. Carlton Entertainment will meet the enduring consumer demand for well produced popular entertainment. The programmes are a mix of original UK productions and those bought in from other English-speaking countries.
11. Children's programming will begin the schedule each day and will run in a magazine format from 6am till 9am. Morning programmes are generally quiz and game-shows of all types; from those aiming to entertain to more brain-stretching fare. In the early afternoon, the channel concentrates on well-known soaps. From late afternoon to the early evening, family drama is the core of the schedule, while the early evening concentrates on comedy, with a mixture of British and American sitcoms. Later in the evening the menu is based around interview, talk and information programming, from "Hello"- style gossip and audience participation shows to more serious in-depth interviews. Approximately three-quarters of the talk-show programmes will be original British productions largely sourced through Action Time - a subsidiary of Carlton specialising in this genre.
12. Almost 30% of British Digital Broadcasting's channel research respondents were attracted to this channel as a 'family channel', with nearly equal number of terrestrial households saying it was 'for them', 'for partner' and 'for children'.

Indicative Schedule

13. The indicative schedule is shown overleaf. Detailed negotiations with some programme suppliers will be finalised once the results of the licence application are known. British Digital Broadcasting, in conjunction with Carlton, will constantly review audience response and the competitive environment and refine and adjust the programme line-up accordingly.

Carlton Entertainment Indicative Schedule: by Genre

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
06:00	Children's Magazine	Children's Magazine	Children's Magazine	Children's Magazine	Children's Magazine	Children's Magazine	Children's Magazine
07:00							
08:00							
09:00	Quiz	Quiz	Quiz	Quiz	Quiz	Children's Quiz	Children's Quiz
09:30	Quiz	Quiz	Quiz	Quiz	Quiz	Children's Quiz	Children's Quiz
10:00	Quiz	Quiz	Quiz	Quiz	Quiz	Quiz	Quiz
10:30	Quiz	Quiz	Quiz	Quiz	Quiz	Quiz	Quiz
11:00	Quiz	Quiz	Quiz	Quiz	Quiz	Quiz	Quiz
11:30	Quiz	Quiz	Quiz	Quiz	Quiz	Quiz	Quiz
12:00	Aus Soap	Aus Soap	Aus Soap	Aus Soap	Aus Soap	Aus Soap	Aus Soap
12:30	Aus Drama	Aus Drama	Aus Drama	Aus Drama	Aus Drama	Aus Drama	Aus Drama
13:00						UK Soap	UK Soap
13:30	UK Soap	UK Soap	UK Soap	UK Soap	UK Soap	UK Soap	UK Soap
14:00	UK Soap	UK Soap	UK Soap	UK Soap	UK Soap	UK Soap	UK Soap
14:30	US Drama	US Drama	US Drama	US Drama	US Drama	US Sci-Fi	US Sci-Fi
15:00							
15:30	US Series Drama	US Series Drama	US Series Drama	US Series Drama	US Series Drama	US Sci-Fi	US Sci-Fi
16:00							
16:30	Children's Drama	Children's Drama	Children's Drama	Children's Drama	Children's Drama	Children's Drama	Children's Drama
17:00	Aus Soap	Aus Soap	Aus Soap	Aus Soap	Aus Soap	Children's Drama	Children's Drama
17:30	Aus Drama	Aus Drama	Aus Drama	Aus Drama	Aus Drama	Children's Drama	Children's Drama
18:00						Children's Drama	Children's Drama
18:30	US Comedy	US Comedy	US Comedy	US Comedy	Film Comedy	UK Comedy	UK Comedy
19:00	UK Comedy	UK Comedy	UK Comedy	UK Comedy		US Comedy	US Comedy
19:30	UK Comedy	UK Comedy	UK Comedy	UK Comedy		US Comedy	US Comedy
20:00	US Comedy	US Comedy	US Comedy	US Comedy	US Comedy	UK Comedy	UK Comedy
20:30	UK Comedy	UK Comedy	UK Comedy	UK Comedy	UK Comedy		
21:00	Talk Show	Talk Show	Talk Show	Talk Show	Talk Show	Talk Show	Talk Show
22:00	Entertainment	Entertainment	Entertainment	Entertainment	Entertainment	Entertainment	Entertainment
22:30	US Talk Show	US Talk Show	US Talk Show	US Talk Show	US Talk Show	US Talk Show	US Talk Show
23:00	Chat Show	Chat Show	Chat Show	Chat Show	Chat Show	Chat Show	Chat Show

Carlton Entertainment Indicative Schedule: by Illustrative Programme

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
06:00	Children's Magazine	Children's Magazine	Children's Magazine	Children's Magazine	Children's Magazine	Children's Magazine	Children's Magazine
07:00							
08:00							
09:00	Catchphrase	Catchphrase	Catchphrase	Catchphrase	Catchphrase	Terror Towers	Terror Towers
09:30	Surprise Chefs	Surprise Chefs	Surprise Chefs	Surprise Chefs	Surprise Chefs	Crazy Cottage	Crazy Cottage
10:00	Lingo	Lingo	Lingo	Lingo	Lingo	Blockbusters Rpt	Blockbusters Rpt
10:30	Blockbusters	Blockbusters	Blockbusters	Blockbusters	Blockbusters	Blockbuster Rpt	Blockbuster Rpt
11:00	Family Fortunes	Family Fortunes	Family Fortunes	Family Fortunes	Family Fortunes	Family Fortunes Rpt	Family Fortunes Rpt
11:30	S/Sweep	S/Sweep	S/Sweep	S/Sweep	S/Sweep	Family Fortunes Rpt	Family Fortunes Rpt
12:00	Home & Away	Home & Away	Home & Away	Home & Away	Home & Away	Home & Away Rpt	Home & Away Rpt
12:30	Heartbreak High	Heartbreak High	Heartbreak High	Heartbreak High	Heartbreak High	Heartbreak High	Heartbreak High
13:00						UK Soap London Bridge	UK Soap Home & Away
13:30	London Bridge	London Bridge	London Bridge	London Bridge	London Bridge	London Bridge Rpt	London Bridge Rpt
14:00	Crossroads	Crossroads	Crossroads	Crossroads	Crossroads	London Bridge Rpt	London Bridge Rpt
14:30	Loveboat	Loveboat	Loveboat	Loveboat	Loveboat	Lost in Space	Lost in Space
15:00							
15:30	Drama Dynasty	Drama Dynasty	Drama Dynasty	Drama Dynasty	Drama Dynasty	Land of the Giants	Land of the Giants
16:00							
16:30	Woof!	Woof!	Woof!	Press Gang	Woof!	Beechcombers	Beechcombers
17:00	Home & Away	Home & Away	Home & Away	Home & Away	Home & Away	Danger Bay	Danger Bay
17:30	Heartbreak High	Heartbreak High	Heartbreak High	Heartbreak High	Heartbreak High	Murphy's Mob	Murphy's Mob
18:00						Harry's Mad	Harry's Mad
18:30	I Dream of Genie	Bewitched	I Dream of Genie	Bewitched	Film Comedy	A Kind of Living Rpt	A Kind of Living Rpt
19:00	Auf Wieder Pet	A Kind of Living	Auf Wieder Pet	A Kind of Living		Bewitched Rpt	Bewitched Rpt
19:30	Girls on Top	Galton & Simpson	Girls on Top	Galton & Simpson		The Single Guy Rpt	The Single Guy Rpt
20:00	Ned & Stacey	The Single Guy	Ned & Stacey	The Single Guy	Ned & Stacey	Auf Wieder Pet Rpt	Galton & Simpson Rpt
20:30	The Upper Hand	Is it Legal?	The Upper Hand	Is it Legal?	The Upper Hand		
21:00	Vanessa Late	Vanessa Late	Vanessa Late	Vanessa Late	Vanessa Late	Vanessa Late	Vanessa Late
22:00	Gossip Today	Gossip Today	Gossip Today	Gossip Today	Gossip Today	Gossip Today	Gossip Today
22:30	Classic Donahue	Classic Donahue	Classic Donahue	Classic Donahue	Classic Donahue	Classic Donahue	Classic Donahue
23:00	Celebrity Chat Show	Celebrity Chat Show	Celebrity Chat Show	Celebrity Chat Show	Celebrity Chat Show	Celebrity Chat Show	Celebrity Chat Show

14. A lively Children's Magazine will introduce the schedule each morning from 6am. Carlton is the largest producer of children's programming for ITV and has a widely based department producing magazine formats, drama, animation and entertainment programming for younger viewers. We will mix original production, library material and some acquired series to attract the widest possible children's audience.
15. Each weekday morning viewers will be able to switch on to six successive popular game shows. The first two hours on weekend mornings running game show entertainment for children and teenagers. This segment will offer viewers an increased variety of programmes in a very popular genre.
16. From noon until 4.30pm a mixture of classic and contemporary serials are scheduled for the predominantly female audience available at this time. Examples include *Shortland Street*, *Take the High Road*, *General Hospital* and *As The World Turns*.
17. From 4.30pm until 6pm the schedule targets family viewing with award winning programmes like *Woof!* and *Press Gang* followed by *Home and Away* and *Heartbreak High*. There is a different mix of acquired series and home-grown children's drama for the weekend.
18. From 6.30pm until 9pm, we are in the comedy zone, with a consistent mix of British and American situation comedies, films and comedy dramas. Titles include *Auf Wiedersen Pet* and *Is It Legal?*
19. Interviews, talk and chat then dominate until midnight. Some of the programmes are current affairs based, while others have a more entertainment oriented slant.

Target Audience

20. Carlton Entertainment offers something for everyone in an easily manageable schedule. The target audience is broadbased with a female bias during the day and a family orientation in the early evening. Peak time and late night is more male.

Original Hours

21. Approximately 30% of all the schedule will be composed of original productions and commissions.

First Run Material

22. Approximately 45% of the schedule will consist of first-run material.

Granada Plus

An all-British programme service, including some of the most prestigious and popular drama, entertainment, comedy and children's programming ever produced in the UK, as well as award-winning features and documentaries. The existing satellite and cable service will be enhanced with more original programming and additional hours of transmission.

Start of Service, Hours of Broadcast and Coverage

23. Granada Plus will be available from the date of launch of the British Digital Broadcasting digital terrestrial television service. It is currently scheduled to transmit for 18 hours per day, seven days per week, 52 weeks a year. However, as the service develops, Granada intends to increase the transmission hours of the service to 24 hours per day. It will be transmitted on a national basis using the full coverage capability of the allocated multiplex.

Programme Types

24. Granada Plus will be defined by the range, quality and diversity of its schedule. It will showcase programmes made to high production values, across the full range of drama, entertainment, comedy, childrens', documentary and features.
25. **Drama** on Granada Plus will include the best programmes from the extensive archives of Granada TV and LWT. It will cover the spectrum from Olivier's *King Lear* to *Classic Coronation Street*, from *The Professionals* to *Brideshead Revisited*. The schedule will include award-winning series such as *Sherlock Holmes*, *Poirot*, *Maigret*, *Prime Suspect* and *Cracker*, as well as important and high-profile drama events such as *My Left Foot* and *Hillsborough*.
26. **Entertainment** on Granada Plus will feature many of the UK's most successful shows such as *Surprise Surprise*, *Beadle's About*, *You've Been Framed*, *Hale and Pace* and *An Audience With.....*. Under contracted arrangements, Granada Plus will have access to many of the nation's favourite entertainment programmes, including a number made by LWT, the UK's leading supplier of this genre of programming. The channel will also originate some entertainment programmes.
27. Granada Plus has access to a full range of high-quality hit **comedy**, including classic favourites such as *On the Buses*, *Nearest and Dearest*, *Two's Company*, and *The Army Game*, to more modern pieces such as *A Fine Romance*, *Watching* and *Jeeves and Wooster*.
28. Granada Plus will feature a rich vein of **arts and documentary** from Granada's *Seven Up* and *Disappearing World* to LWT's *Summer on the Estate* and *The South Bank Show*.
29. A significant proportion of the Granada Plus schedule will consist of originally commissioned **lifestyle and features** material which will have its first run on the

channel. The Granada Plus flagship will be a successful magazine designed mostly for the female audience entitled *The Good Life Guide*. An original and specially commissioned episode of the programme will run in peaktime every weekday. In addition, the Granada Plus schedule will include popular outdoor programmes such as *Down to Earth* and classic series such as A.J.P. Taylor's *Edge of Britain*.

30. Granada Plus will choose programmes from the best of the Granada TV/LWT **children's** archives which contain a wealth of award winning output spread across a wide range of sub genres and aimed at children of all ages. Successful titles include *Sooty*, *Allsorts*, *Time for a Story*, *Return of the Antelope* and *Childrens' Ward*. Granada Plus will also draw on Granada TV and LWT's growing strength in animation through programmes such as *Tom and Vicky* and *The Treacle People*.

Indicative Schedule

31. The main features of the Granada Plus indicative schedule are as follows:
32. Most of the early part of the day caters for the young audience - giving children something other than cartoons to watch at breakfast time. At 8am we begin an hour of popular drama - e.g. *Classic Coronation Street*, *Albion Market*, *Families* etc. *Classic Coronation Street* is repeated at 12pm, 6pm and 9pm.
33. At 9am we will run a drama series or serial, such as *London's Burning* or *The Gentle Touch*. These popular series will repeat at 5pm and 10pm.
34. The regular comedy hour at 10am features popular favourites such as *Please Sir*, *On the Buses*, *The Doctor* series, *Watching*, etc. We also feature comedy hours at 4pm and 7pm.
35. Granada Plus at 11am will feature nostalgic drama such as *Lillie*, *Upstairs Downstairs*, *The Life and Times of Henry Pratt*, *A Family at War*, etc. These series will usually repeat at weekends.
36. At 3pm Granada Plus will feature more popular drama, such as *Poirot*, *Sherlock Holmes*, *Maigret*, *Jeeves and Wooster* etc. and these series will usually repeat at 8pm.
37. At 9.30pm Granada Plus features our daily original lifestyle magazine, *The Good Life Guide*. Meanwhile at 10pm and 11pm, Granada Plus will schedule post-watershed material such as *Prime Suspect*, *Cracker*, etc..
38. British Digital Broadcasting with Granada will constantly monitor audience response and the competitive environment. If, in the light of these considerations, it would appear beneficial to revise the schedule to better meet audience needs, Granada, in consultation with British Digital Broadcasting, will review ideas for making positive changes.

Granada Plus: Indicative Schedule

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
06:00	Quiz	Quiz	Quiz	Quiz	Quiz	Children	Children
06:30	Children	Children	Children	Children	Children	Children	Children
07:00	Children	Children	Children	Children	Children	Children	Children
07:30	Factual	Factual	Factual	Factual	Factual	Children	Children
08:00	Drama	Drama	Drama	Drama	Drama	Comedy	Comedy
08:30	Drama	Drama	Drama	Drama	Drama	Comedy	Comedy
09:00	Drama	Drama	Drama	Drama	Drama	Drama	Drama
09:30	Drama	Drama	Drama	Drama	Drama	Drama	Drama
10:00	Comedy	Comedy	Comedy	Comedy	Comedy	Drama	Drama
10:30	Comedy	Comedy	Comedy	Comedy	Comedy	Entertainment	Entertainment
11:00	Drama	Drama	Drama	Drama	Drama	Entertainment	Entertainment
11:30	Drama	Drama	Drama	Drama	Drama	Comedy	Comedy
12:00	Drama	Drama	Drama	Drama	Drama	Music	Comedy
12:30	Drama	Drama	Drama	Drama	Drama	Factual	Children
13:00	Drama	Drama	Drama	Drama	Drama	Factual	Factual
13:30	Drama	Drama	Drama	Drama	Drama	Factual	Factual
14:00	Drama	Drama	Drama	Drama	Drama	Drama	Drama
14:30	Drama	Drama	Drama	Drama	Drama	Drama	Drama
15:00	Entertainment	Entertainment	Entertainment	Entertainment	Entertainment	Drama	Drama
15:30	Entertainment	Entertainment	Entertainment	Entertainment	Entertainment	Drama	Drama
16:00	Comedy	Comedy	Comedy	Comedy	Comedy	Entertainment	Factual
16:30	Comedy	Comedy	Comedy	Comedy	Comedy	Entertainment	Factual
17:00	Drama	Drama	Drama	Drama	Drama	Comedy	Drama
17:30	Drama	Drama	Drama	Drama	Drama	Music	Drama
18:00	Drama	Drama	Drama	Drama	Drama	Factual	Drama
18:30	Drama	Drama	Drama	Drama	Drama	Factual	Drama
19:00	Comedy	Comedy	Comedy	Comedy	Comedy	Drama	Drama
19:30	Comedy	Comedy	Comedy	Comedy	Comedy	Drama	Comedy
20:00	Entertainment	Entertainment	Entertainment	Entertainment	Entertainment	Drama	Drama
20:30	Entertainment	Entertainment	Entertainment	Entertainment	Entertainment	Drama	Drama
21:00	Drama	Drama	Drama	Drama	Drama	Drama	Drama
21:30	Factual	Factual	Factual	Factual	Factual	Drama	Drama

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
22:30	Drama	Drama	Drama	Drama	Drama	Entertainment	Entertainment
23:00	Drama	Drama	Drama	Drama	Drama	Entertainment	Entertainment
23:30	Drama	Drama	Drama	Drama	Drama	Drama	Drama

Style of programme service

- 39. While the majority of the Granada Plus schedule will consist of the best of the Granada and LWT archive, the presentation and promotion style of the channel will be up to date and distinctive. For example, newly-shot contributions from the stars of the programmes will frequently set a context for a series. Equally programmes will be presented and packaged to create eye-catching events - from “The Great Detectives Weekend” featuring episodes of *Sherlock Holmes*, *Maigret*, *Poirot* etc., to “*The Ups and Downs of Stan and Hilda*”.

Target Audience

- 40. The majority of Granada Plus programmes are sourced from the archives of Granada TV and LWT. They are high-quality, high-production value programmes which were often hugely popular at their first transmission and have usually been seen only once.
- 41. The appeal of Granada Plus is primarily based on the view that a significant proportion of viewers who enjoyed a programme months or years ago, will wish to see it again. If only a relatively small proportion of the 24 million people who tuned in to watch Ken marry Deirdre on *Coronation Street* want to see the episode again, the channel will be serving a significant number of viewers. In addition there is a large potential audience of viewers who missed the first transmission of a whole range of classic programmes, and for whom Granada Plus provides a chance to catch up.
- 42. This means that Granada Plus will draw viewers from among older audiences who remember classic series such as *A Family at War* and *Upstairs Downstairs*, as well as younger people for whom series such as *Please Sir* and *On the Buses* have become cult viewing.
- 43. Much of the appeal of Granada Plus is for daytime audiences, who may already be well-served in magazine and talk-based programming, but remain under-served in high-quality drama and entertainment. Many of these are women - young mothers with children and older, perhaps retired, viewers.

Original Hours

- 44. Granada Plus emphasises quality, high-cost, award winning drama and entertainment from two of the UK’s leading programme producers, offering the chance to see some “best of British” programmes again.

45. It will be important for the rapid development of digital terrestrial television that viewers have the chance to see the widest range of original material. Granada Plus will therefore originate, from launch, attractive and high-quality programming. Two examples of this programming from the lifestyle and entertainment genres include *The Good Life Guide* - an original lifestyle magazine aimed at the female audience - which will feature in our schedules every weekday. Similarly *Stuart's Hall of Fame* is a weekly opportunity to showcase the full range of amateur talent in front of a live audience. Some of the original programming created can, as necessary, have secondary rights on other forms of distribution and in other territories.
46. As digital terrestrial television develops and take-up increases, Granada will wish to enhance and develop the quality and originality of Granada Plus. Within the lifetime of the licence, Granada would expect to be able to introduce first runs of high quality drama and entertainment on the channel.
47. It is intended that from launch on digital terrestrial television approximately 5% of the programming material will be specifically originated for the channel.

First Run Material

48. Experience of the multi-channel television environment suggests that viewers are pleased to have several opportunities in the same day to view their favourite programmes. Given the expanding number of channels available, viewers can often find that there are several programmes which they may wish to watch being transmitted simultaneously on different channels.
49. If another programme choice or commitment means that a viewer misses a transmission of a favourite programme, they seem to welcome the opportunity to "catch it later". For this reason a pattern of same day repeats in the multi-channel world has already proved attractive to viewers.
50. The Granada Plus strategy is to repeat the strongest elements in the schedule two, three or (in the case of *Classic Coronation Street*) four times in an eighteen hour period. Our overall schedule is then based on a repeat pattern of two "play-days" per year.
51. On average, it is therefore intended that around 40% of the total schedule of Granada Plus will be first run programming.

Future Development of the Service

52. It is intended that Granada Plus will be a basic channel at the outset of the licence. However, as the success of digital terrestrial television grows and the attractiveness of the premium, first run original programming available on Granada Plus in peak time grows, the channel may change into a channel in a premium entertainment tier.
53. British Digital Broadcasting also expects changes in compression technology to allow

greater channel capacity which would give Granada the opportunity to create further channels from the high quality programme segments that would already exist within Granada Plus. For example, the LWT premium arts archive could be supplemented with original and acquired arts material to provide a quality arts channel. The same principle could also apply to Granada TV's and LWT's distinctive supply of drama, entertainment, children's and factual programming.

Sky One

This channel on digital terrestrial television will aim to provide a range of family entertainment - comedy, drama, documentaries, science fiction, reality programming and chat shows - combining domestic and imported product to assure an appeal to a wide audience. It will also explore opportunities to create general entertainment programming especially for this digital terrestrial television channel.

Start of Service, Hours of Broadcast and Coverage

54. Sky One on digital terrestrial television will be available from the date of the launch of the British Digital Broadcasting digital terrestrial television service. It is currently scheduled to transmit for 24 hours per day, seven days per week, 52 weeks a year. It will be transmitted on a national basis, from the launch of the British Digital Broadcasting digital terrestrial television service using the full coverage capability of the multiplex.

Programme Types

55. Sky One on digital terrestrial television will be a high quality mixed entertainment channel. It will include top-produced programmes spanning the full range of drama, entertainment, comedy, documentary and features.
56. Running 24 hours a day, Sky One expects to provide an irresistible mix of entertainment for the entire family. The channel aims to combine the best of original programming with first- and re-runs of domestic product as well as US and Australian-produced material. It is anticipated that the channel will have series similar to those shown during the last year on its satellite service including Britain's own *Springhill*, *Jimmy's*, *Just Kidding* and *The Movie Show*; from the US, *3rd Rock From The Sun*, *Hercules: The Legendary Journeys*, *Murder One* and *New Adventures of Superman*; and from Australia, *The Feds* and *Fire*. This is in addition to established shows such as *The X-Files*, *Beverly Hills 90210* and the *Star Trek* series.

Drama

57. Drama on Sky One's digital terrestrial service is anticipated to include the best of original, first and re-run programmes from the UK and abroad. Illustrative dramas within this programme type include *The X-Files*, *Law & Order*, *High Incident*, *Picket Fences*, *JAG* and *Millennium*. It is expected that UK-produced dramas such as *Coppers*, *Dreamland*, *Jimmy's* and *Springhill* will occupy the digital terrestrial schedule as well.

Entertainment

58. Sky One's indicative schedule for its digital terrestrial television service expects to give ample time to a variety of Entertainment programming. The channel's daytime entertainment schedule expects to include soap operas and talk shows. Illustrative soap operas include *Another World*, *Hotel* and *Days of Our Lives*. Talk shows would include shows of the format of *Oprah Winfrey* and *Sally Jesse Raphael*. The evening schedule would expect to present a variety of shows, for example *The Movie Show*, *Walker's World* and *Southenders*.

Comedy

59. As noted in the Indicative Schedule, daytime and evening programming would aim to include comedy in its digital terrestrial line-up. For example, daytime shows might include *WKRP in Cincinnati*, *George* and *Designing Women*. The evening schedule, on the other hand, might include such potential programmes as *Mad About You*, *M.A.S.H.*, *The Lucy Show*, *The Simpsons*, *Married...With Children* and UK-produced *Just Kidding*.

Music

60. The current after-hours schedule for digital terrestrial television expects to include blocks for non-stop music shows which would primarily offer strings of music videos encompassing a wide variety of music styles, including rock, jazz, pop, dance, techno and so on. For example, illustrative shows in this programme type might include the UK-produced five hour *Hit Mix* followed by *Morning Glory* for three additional hours.

Sky One Indicative Schedule - Illustration of Programme Titles

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY					
06:00	Music (Morning Glory)	Music (Morning Glory)	Music (Morning Glory)	Music (Morning Glory)	Music (Morning Glory)	Music (Hit Mix Long Play)	Sunday A.M.					
06:30												
07:00											Sitcom (WKRP in Cincinnati)	Sitcom (WKRP in Cincinnati)
07:30											Sitcom (George)	Sitcom (George)
08:00						Drama (Young Indiana Jones Chronicles)	Drama (Young Indiana Jones Chronicles)					
09:00	Sitcom (Designing Women)	Sitcom (Designing Women)	Sitcom (Designing Women)	Sitcom (Designing Women)	Sitcom (Designing Women)	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)					
09:30	Sitcom (Designing Women)	Sitcom (Designing Women)	Sitcom (Designing Women)	Sitcom (Designing Women)	Sitcom (Designing Women)							
10:00	Soap (Another World)	Soap (Another World)	Soap (Another World)	Soap (Another World)	Soap (Another World)	Drama (Quantum Leap)	Drama (Quantum Leap)					
10:30												
11:00	Soap (Days Of Our Lives)	Soap (Days Of Our Lives)	Soap (Days Of Our Lives)	Soap (Days Of Our Lives)	Soap (Days Of Our Lives)	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)					
11:30												
12:00	Talk Show (The Oprah Winfrey Show)	Talk Show (The Oprah Winfrey Show)	Talk Show (The Oprah Winfrey Show)	Talk Show (The Oprah Winfrey Show)	Talk Show (The Oprah Winfrey Show)	Sport Entertainment (Wrestling show)	Sport Entertainment (Wrestling show)					
12:30												
13:00	Talk Show (Geraldo)	Talk Show (Geraldo)	Talk Show (Geraldo)	Talk Show (Geraldo)	Talk Show (Geraldo)	Sport (Wrestling show)	Drama (Lazarus Man)					
13:30												
14:00	Talk Show (Sally Jessy Raphael)	Talk Show (Sally Jessy Raphael)	Talk Show (Sally Jessy Raphael)	Talk Show (Sally Jessy Raphael)	Talk Show (Sally Jessy Raphael)	Drama (Kung Fu)	Drama (Kung Fu)					
14:30												
15:00	Talk Show (Jenny Jones)	Talk Show (Jenny Jones)	Talk Show (Jenny Jones)	Talk Show (Jenny Jones)	Talk Show (Jenny Jones)	Sci-Fi (Star Trek)	Sci-Fi (Star Trek - Deep Space Nine)					
15:30												
16:00	Talk Show (The Oprah Winfrey Show)	Talk Show (The Oprah Winfrey Show)	Talk Show (The Oprah Winfrey Show)	Talk Show (The Oprah Winfrey Show)	Talk Show (The Oprah Winfrey Show)	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)					
17:00	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)	Music (The Hit Mix)	Super Sunday Childrens (The Muppets) Travel (Walkers World)					
17:30												
18:00	Factual (Real TV)	Factual (Real TV)	Factual (Real TV)	Factual (Real TV)	Factual (Real TV)	Drama (Kung Fu)	Comedy (The Simpsons)					
18:30	Sitcom (Married with Children)	Sitcom (Married with Children)	Sitcom (Married with Children)	Sitcom (Married with Children)	Sitcom (Married with Children)		Comedy (The Simpsons)					
19:00	Comedy (The Simpsons)	Comedy (The Simpsons)	Comedy (The Simpsons)	Comedy (The Simpsons)	Comedy (The Simpsons)	Comedy Drama (Hercules)	Drama (Early Edition)					

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
19:30	Comedy Drama (M.A.S.H.)	Comedy Drama (M.A.S.H.)	Comedy Drama (M.A.S.H.)	Comedy Drama (M.A.S.H.)	Comedy Drama (M.A.S.H.)	Comedy Drama	Drama
20:00	Mini Series (Trade Winds Pt 1)	Drama (Springhill)	Factual (Sightings)	Must See TV Comedy (Just Kidding)	Drama (J.A.G.)	Arresting TV Factual Crime (Coppers)	Drama (New Adventures of Superman)
20:30		Factual (Real TV UK)		Sitcom (The Nanny)			
21:00		Drama (Picket Fences)		Sitcom (Seinfeld)			
21:30				Sitcom (Mad About You)		Factual Crime (Cop Files)	Drama (The X-Files)
22:00	Big News at 10 Drama (Nash Bridges)	Big News at 10 Factual (Unsolved Mysteries)	Big News at 10 Drama (Murder One)	Big News at 10 Drama (Chicago Hope)	Big News at 10 Drama (High Incident)	Big News at 10 Drama (Law and Order)	Big News at 10 Drama (Millenium)
22:30							
23:00	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)	Adult (Red Shoe Diaries)	Drama (Forever Knight)
23:30						Factual (The Movie Show)	
00:00	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)
00:30	Sitcom (The Lucy Show)	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)
01:00	Music (Hit Mix Long Play) (01.00 - 06.00)	Music (Hit Mix Long Play) (01.00 - 06.00)	Music (Hit Mix Long Play) (01.00 - 06.00)	Music (Hit Mix Long Play) (0100 - 06.00)	Music (Hit Mix Long Play) (0100 - 06.00)	Sitcom (Dream On)	Drama (Civil Wars)
01:30						Drama (The Edge)	
02:00						Music (Hit Mix Long Play) (02.00 - 06.00)	Music (Hit Mix Long Play) (02.00 - 06.00)
02:30							
06:00							

61. Sky One’s digital terrestrial indicative schedule is currently divided into four segments: “Daytime on Sky One”, “Early Evening on Sky One”, “Primetime on Sky One”, and “Late Night on Sky One”. Details of these intended segments follow.
62. “Daytime on Sky One”: The focus of this segment would be to provide programming targeted at women who are at home during the day. The best of soap operas and chat shows are expected to be shown during this segment. Illustrative programmes include *Another World* and *Geraldo*.
63. “Early Evening on Sky One”: This segment is expected to target the entire family. Illustrative shows include *Real TV*, *The Simpsons* and *M.A.S.H.*
64. “Primetime on Sky One”: This 8pm to 11pm segment would include various themed nights as well as a different show each night at 10pm under a daily theme, “Big News at 10”. The themed nights would be as follows:

65. “Super Sunday”: This would present essential viewing for the entire family with illustrative programmes such as *Muppets Tonight*, *Walkers World*, *The Simpsons*, *The X Files* and *Millenium*.
66. “Must See TV”: This Thursday night theme is intended to be packed with the best in comedy entertainment with illustrative shows such as *Just Kidding* and *The Nanny*.
67. “Arresting Television”: Scheduled for Saturdays, this themed evening would include both real-life law enforcement documentaries and illustrative shows such as *Coppers*, *Cops*, *Cop Files* and *Law & Order*.
68. “Big News at 10”: Currently scheduled for every evening at 10pm, this theme would seek to deliver the best in drama series. On certain Mondays, for example, it is expected that a mini series would be shown at 8pm, followed by a programme like *Nash Bridges* at 10pm. On Tuesdays illustrative shows include *Springhill* and *Picket Fences* followed by *Unsolved Mysteries* at 10pm. The Wednesday night line-up might include, for example, *Sightings*, *Silk Stalkings* then *Murder One* at 10pm. Thursdays night’s scheduled “Must See TV” (described above) might be followed by episodes of, for example, *Chicago Hope* at 10pm. As scheduled, the week would finish with a Friday schedule of, for instance, *JAG*, *Walker Texas Ranger* and, in the 10pm slot, *High Incident*.
69. “Late Night on Sky One” is expected to present a host of shows including shows such as *Red Shoe Diaries*, *The Edge* and *CPW* followed by the music shows mentioned earlier, *Hit Mix Long Play* and *Morning Glory*.
70. British Digital Broadcasting with Sky One will constantly review audience response and the competitive environment. If, in the light of these considerations, it would appear beneficial to revise the schedule to meet audience needs better, Sky One’s digital terrestrial service, in consultation with British Digital Broadcasting, will review ideas for making positive changes.

Style of Programme Service

71. Sky One’s style on digital terrestrial will be a modern reflection of contemporary programming combining dramas with light entertainment and an anticipated increasing emphasis on locally produced programmes such as *Springhill* and *Real TV UK*. Sky One’s pacy, aggressive, bold and bright promotions will use modern music and cutting edge graphic styles to create a unique brand identity. The current individual themed nights will be highlighted by customised, purpose-built packaging which will add extra sparkle and reinforce the present “appointment viewing” marketing and programming strategy.

Target Audience

72. It is anticipated that the digital terrestrial channel's target audience will reflect the experience of Sky One as currently transmitted. It is therefore expected that it will be a predominantly family entertainment channel with a primary audience of young adults aged 25 to 44 years old - which would account for 43% of the Sky One average audience, compared to a national (UK) Sky One average of 30%. The daytime programmes would be of particular appeal to young housewives and housewives with children. Prime time programmes would be just as appealing to young housewives but might have a male (25 to 34 year old) bias as well. Family entertainment would help complete the all-round family offering which would be reflected in a 43% housewives with children profile - compared to a national (UK) average of 29%.

Proportion of Original Hours

73. The channel anticipates that on average 26% of its programming will be original.
74. Of note is that BSkyB has recently dramatically increased its commissioned UK production with shows such as *Just Kidding* and *Coppers* both made by Granada's LWT and also *Walker's World* produced by Wink Productions. Other UK-produced original general entertainment programmes include *The Movie Show*, *Real TV UK*, features such as *Di Catchers* and *Dreamland*, as well as shows in development including *Sky Café* and *Selina Scott Tonight*. BSkyB expects to continue to increase its quantity of original production over time and intends to explore opportunities to create programming especially for this digital terrestrial channel.

First Run Material

75. It is forecast that on average 70 hours per week (or 40%) of the programming will be first-run material. The average repeat factor is anticipated to be approximately three.

BBC Style

BBC Style will offer viewers a unique all British package of the BBC's top leisure and lifestyle programming. Content will range from antiques to aspidistras, gardening to gastronomy, from 'what to wear' to 'what to drive.'

Start of Service, Hours of Broadcast and Coverage

76. BBC Style will be available from the date of the launch of the British Digital Broadcasting television service and is provisionally scheduled to transmit eight hours a day from 6am until 2pm, seven days a week, 52 weeks per year.

Programme Types

77. The channel will appeal to people who care about where and how they live, active and aspirational viewers who like the good things in life. BBC Style will bring top BBC presenters and experts such as Jeremy Clarkson, Hugh Scully and Jeff Banks together for the first time on the same channel. It will bring the editorial quality and production values of popular and trusted BBC programmes such as *Holiday*, *Top Gear* and *Home Front*. BBC Style leisure and lifestyle programming will feature seasonal ideas such as DIY at Easter, Christmas cookery and a holiday season.

Target Audience

78. Style will be aspirational television, reaching out to a key audience demographic in multi-channel households - first time home owners, 'empty nesters' and viewers in their thirties with disposable income will be drawn to this channel.

BBC Showcase

BBC Showcase offers viewers the highest quality and most popular programming from BBC 1 and BBC 2. Content will range from classic to contemporary, from drama to comedy, all presented in an innovative and refreshing format.

Start of Service, Hours of Broadcast and Coverage

79. BBC Showcase will be available from the date of the launch of the British Digital Broadcasting digital terrestrial television service and is provisionally scheduled to be transmitted for 10 hours per day from 2pm, seven days per week, 52 weeks a year. It will be transmitted on a national basis, using the full coverage capability of the multiplex.

Programme Types

80. BBC Showcase will feature the highest quality and most popular programming from BBC1 and BBC2, offering viewers the best of British entertainment. Content will range from classic to contemporary, from drama to comedy, all presented in an innovative and refreshing format. Top contemporary shows, like *Ballykissangel* and *Absolutely Fabulous* will be combined with classics from the past such as *Fawlty Towers*. Celebrity introductions, special seasons and “event” screenings will be the hallmarks of BBC Showcase.
81. In British Digital Broadcasting’s channel research this channel was one of the most popular concepts researched, with 5.6 million homes (32% of terrestrial households) prepared to pay.

Indicative Schedule

82. BBC Showcase will establish strands from the BBC Hall of Fame, in addition to producing feature-length versions of timeless favourites. “BBC Classic” will be the best of the period costume drama that the BBC is so famous for. “BBC Mystery” is where Hetty Wainthropp will meet George Smiley - an irresistible nightly bill of crime stories and thrillers. The “Comedy Zone” will bring the outrageous humour of BBC2’s Friday night line-up to the screen every night of the week. “On the Edge” will have the best of adult drama - dangerous, sometimes disturbing but always enthralling, from *The Buddha of Suburbia* to *Cardiac Arrest*, *This Life* and *A Very Peculiar Practice*.
83. The Showcase schedule will regularly feature special events and stunts. *A Pride and Prejudice* weekend will run previous versions of Jane Austen’s classic back-to-back with the 1990s production. The Redoubtable Routeledge season will bring Hyacinth Bucket face-to-face with Alan Bennett’s *A Woman of No Importance*; and comedy stars of the day will choose the ten greatest sitcom hours ever written.

Target Audience

84. BBC Showcase will have widespread appeal to viewers who appreciate quality entertainment. The audience profile is expected to match that for high quality entertainment on terrestrial television.

Sky Movies

It is anticipated that this digital terrestrial movie channel will screen a wide variety of films including hit movies from around the world with a host of new movies every month. The channel is expected to operate 24 hours a day, 7 days a week with no commercial breaks during the movies. In order to cater to the widest range of viewers' lifestyles, the most popular movies shown will be rescreened at different times and on different days. Additionally, movie news programming will be shown between films. It is anticipated that additional programming will also be created especially for this digital terrestrial television channel.

Start of Service, Hours of Broadcast and Coverage

85. Sky Movies on digital terrestrial television will be available from the date of the launch of the British Digital Broadcasting digital terrestrial television service. It is currently scheduled to transmit for 24 hours a day, seven days a week, 52 weeks a year. It will be transmitted on a national basis using the full coverage capability of the allocated multiplex.

Programme Types

86. The schedule of this digital terrestrial movie channel is expected to include frequent screenings of international or domestic hit movies. This channel will also transmit behind-the-scenes features, star interviews and new movie reviews.
87. As part of the line up, it is anticipated that this channel will screen British-made as well as imported films. For example, *War of the Buttons*, *Jack and Sarah* and *The Browning Version* are all British made movies which would delight viewers. Sky's commitment to screening British film is evidenced by the fact that in 1996 the two current satellite movie channels together screened 24 British-made movies. It is hoped that a weekly slot for a number of months featuring major British films, for example, could be achieved on the digital terrestrial service. Sample recent British films which could run under such a theme include *Carrington* and *Land and Freedom*.

Comedy

88. Running 24 hours a day, this channel will have ample opportunity to air the best in comedy. Comedies illustrative of this programme type include *Dumb & Dumber*, *The Flintstones* and *Junior*.

Action

89. It is expected that the best in action hits will entertain viewers for hours. Illustrative movies of this kind are *Speed*, *Clear & Present Danger*, *Judge Dredd* and *Batman Forever*.

Drama/Suspense

90. Drama and suspense on the digital terrestrial Sky Movies channel will keep viewers glued to their seats. For example, *Disclosure*, *First Knight*, *Legends of the Fall* and *Schindler's List* are all movies illustrative of this genre.

Horror

91. Viewers will not be at a loss for gruesome, ghoulish screenings of horror films. For example, *Mary Shelley's Frankenstein* and *Interview with a Vampire* would send shivers down their spines.

True Stories

92. This occasional Monday night theme would cover a range of biographical movies. For example, it is expected that shows such as *Tyson* and *Madonna: Innocence Lost* would be shown on Mondays. Other sample films relevant to this programme type might include real life dramas, such as the award-winning *Indictment: The McMartin Trial*.

World Cinema

93. A prospective weekly World Cinema slot is under consideration to feature some of the most acclaimed foreign language films of recent years. Relevant illustrative titles within this programme type might include Gerard Depardieu in *Le Colonel Chabert* and *La Reine Margot* from France as well as films from top Peruvian, Belgian, Italian, Chinese and Russian directors.

Premieres

94. As further described in the Indicative Movie Schedule for digital terrestrial television, available premieres are expected to be shown mainly on Thursday and Saturday nights.

Children's

95. It is anticipated that the digital terrestrial channel's schedule will contain an array of children's movies. For example, relevant titles might include *Grizzly Adams*, *Richie Rich*, *Little Giants*, *Mighty Morphin Power Rangers* and *Miracle on 34th Street*.

Movie Programmes

96. In addition to themed nights, it is expected that special programmes during the week will be shown to keep viewers in touch with the movie world. These weekly shows might include bought-in programmes from the US which would update the viewer on the latest Hollywood gossip. Additionally, *The Movie Show*; *Special Features*; *Sky Interviews* and *The UK Top Ten* are all in-house productions which would further enhance viewers' knowledge of upcoming theatre premieres, the latest news, on-set interviews and previews. It is anticipated that selected support programming will also

be created especially for this digital terrestrial channel.

Sky Movies: Indicative Schedule - Illustration of Films

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
06:00	Drama (The Ranger, The Cook and a Hole in the Sky)	Comedy Drama (The In Crowd)	Children's Animation (Tom and Jerry - the movie)	Family Drama (The Spoils of War)	Family Adventure (Clarence the Cross Eyed Lion)	Sport/Musical (Kid Galahad)	Drama/Sport (Dreamer)
08:00	Children's Drama (Back Home)	Comedy Mystery (Radioland Murders)	Children's Adventure (The Black Stallion)	TV Movie Biography (Rita Hayworth - the Love Goddess)	Children's (The Sandlot)	Children's Adventure (Flipper)	Sci-Fi (The Neptune Factor)
10:00	Children's Drama (War of the Buttons)	Children's Drama (Dad, the Angel and Me)	Drama (Season of Change)	Comedy Drama (The Hudsucker Proxy)	Comedy (Revenge of the Nerds IV)	TV Movie (Family Reunion)	TV Movie Drama (Freefall - Flight 174)
12:00	Spy Drama (The Salzburg Connection)	Fantasy Comedy (The Mask)	Children's Fantasy (Miracle on 34 th Street)	Children's Adventure (Heck's Way Home)	Crime Comedy (Clean Slate)	Children's Fantasy Adventure (The Neverending Story III)	Spy Drama (Octopussy)
14:00	Spy Drama (The Games)	Biblical (The Nativity)	Family Comedy (Mrs Doubtfire)	Sport Comedy (Cool Runnings)	Family Comedy (Beethoven's 2 nd)	Crime Comedy (Son of the Pink Panther)	TV Movie Drama (Other Women's Children)
16:00	Drama (A Feast at Midnight)	Comedy Thriller (I Love Drama)	Family Fantasy (The Nutcracker)	Comedy (The Beverly Hillbillies)	Romantic Comedy (Only You)	Spy Adventure James Bond (Live and Let Die)	Spy Drama James Bond (Thunderball)
18:00	Children's Drama (War of the Buttons)	Children's Comedy (The Little Rascals)	Comedy Drama (Corrinna, Corrinna)	Children's Action (Mighty Morphin Power Rangers)	Family Adventure (Rudyard Kipling's The Jungle Book)	Children's Fantasy Adventure (The Neverending Story III)	Spy Adventure James Bond (Goldfinger)
20:00	True Life Drama (Rudy)	Fantasy Comedy Top 20 (The Mask)	Sci-Fi (Star Trek Generations)	Premiere Sport Comedy (Cool Runnings)	Family Comedy (Beethoven's 2 nd)	Fantasy Adventure (Hercules and the Lost Kingdom)	Fantasy Adventure (Hercules and the Amazon Women)
22:00	Comedy Top 20 (Dumb and Dumber)	Action Top 20 (True Lies)	Premiere Comedy Drama (Nobody's Fool)	Crime Drama (Pulp Fiction)	Horror Friday Night Sci Fi (Death machine)	Premiere Sci-Fi (The Puppet Masters)	Sunday Encore Fantasy Action Adventure (Judge Dredd)
00:00	Thriller (Killer)	Comedy (The Brady Movie Bunch)	Horror (Wolf)	Comedy Drama (Bullets Over Broadway)	Drama (Philadelphia)	Erotica (Prelude to Love)	Crime Drama Film Noir (Romeo is Bleeding)
01:30	Action (Day of Reckoning)					Mystery (Natural Causes)	
02:00		Thriller (Dead Air)	Drama Comedy/Romance (Barcelona)	Drama (Harry and Tonto)	Drama (Disclosure)		Thriller (Love in the Strangest Way)
3:00	TV Movie Drama (Trapped and Deceived)					Thriller (Ed McBain's 87 th Precinct: Lightning)	
03:30		Comedy (PCU)					
04:00			Adventure (White Mile)	Comedy (Hudsucker Proxy)	Crime Comedy (Clean Slate)		Thriller (New Eden)
04:30	Sports Drama (The Games)	Children's Comedy (The Little Rascals)					
06:00							

97. The indicative schedule for the digital terrestrial television service includes the themed 8pm or 10pm slots currently providing viewers with particular types of movies most

nights of the week, as described below.

98. On many Saturday nights, the currently planned theme is the “Saturday Night Premiere” which would show blockbuster premieres.
99. The Sunday theme is presently planned as “Sunday Encore” which would catch the previous week’s big premiere most Sundays for the subscriber’s second-chance viewing convenience.
100. On frequent Monday nights the presently scheduled theme is “True Stories” which might include movies such as *Tyson* and *Madonna: Innocence Lost*.
101. Tuesday night’s intended theme is “Tuesday Night Action” which would include blockbusters with stars such as Arnold Schwarzenegger, Stephen Seagal, Jean-Claude Van Damme and Sylvester Stallone.
102. On most Wednesdays, the “Wednesday Night Premiere” is expected to be dedicated to critically acclaimed films, including a season of British TV premieres.
103. The “Thursday Night Premiere” would endeavour to present a big Hollywood blockbuster for the entire family’s viewing enjoyment.
104. The week currently is scheduled to end with “Friday Night Horror” which would show the best of horror movies and all-round frightening movies.
105. In addition to themed slots, the movie channel would expect to feature different seasons of films each month - for example, a weekend of Bond films, a season of Australian film, “Arnimania” and many others.
106. British Digital Broadcasting with Sky Movies will constantly monitor audience response and the competitive environment. If, in the light of these considerations, it would appear beneficial to revise the schedule to better meet audience needs, Sky Movies’ digital terrestrial service, in consultation with British Digital Broadcasting, will review ideas for making positive changes.

Style of Programme Service

107. The set graphic style of the “Sky” brand combines with a montage of promotions, behind-the-scenes insights, interviews with Hollywood stars and production teams to create a Grandiose Hollywood cinematic theme for this digital terrestrial channel. Sky Movies’ internal stylistic mandate on digital terrestrial would be to provide a complete and up-to-the-minute service for movie fans which would reflect an informed and up-to-date knowledge of movie history.

Target Audience

108. It is anticipated that this digital terrestrial movie channel's target audience profile would run in parallel with that seen across the currently transmitted Sky satellite movie channels. The appeal of the service is expected therefore to be strongly in favour of adults aged between 16 and 44 years old, split evenly between male and female. As an example, the top rating movie of 1996 on the currently transmitted movie channels, *Forrest Gump*, with 2.04 million viewers, had a 58% adult ages 16 to 44 profile, equally split between male and female. The Top Ten rating movie of 1996 across both premium satellite movie channels had a 55% adults aged 16 to 44 profile, comparable to station averages of 54% (Sky Movies on satellite) and 53% (The Movie Channel on satellite). The national UK average profile for adults aged 16 to 44 is 41%.

Original Hours

109. Given the nature of this channel, few, if any, of the movies will be specifically commissioned for Sky Movies on digital terrestrial. Currently, however, BSkyB commissions an average of two hours of weekly shows on movie news and commentary such as *The Movie Show* and the *UK Top Ten* for its movie channels and it will explore opportunities to create additional support programmes especially for this digital terrestrial television channel.

First Run Material

110. It is expected that 55% of the material on the digital terrestrial channel will be first run. The repeat cycle is expected to be approximately 10 times a year.

Pay-per-view

111. British Digital Broadcasting takes a positive view of the potential of pay-per-view services to bring to the public events that they value highly and that they might otherwise not have the opportunity to see. This is particularly the case in an environment where competition for the rights to such events is increasing and pay-per-view may be the only basis on which the television rights for some events may be available in the future. British Digital Broadcasting recognises the recent developments in pay-per-view services in the UK and understands the importance of pay-per-view as an alternative form of programme entertainment, as the US market has demonstrated. Digital television capacity and advanced ordering technology mean that pay-per-view events will be an attractive part of digital programme services.
112. British Digital Broadcasting has therefore built into its programming plans the provision of a series of pay-per-view events on Multiplex C. These are likely to include high profile events in sport, entertainment and music, such as boxing, concerts and other one-off broad appeal events.

113. British Digital Broadcasting believe that this service will be popular, as BSkyB has already demonstrated successfully with its pay-per-view events. British Digital Broadcasting will draw from the technical, subscriber management and marketing experience of BSkyB to put in place a robust infrastructure to achieve a successful digital terrestrial pay-per-view service.

Future Programme Plans

114. Over the licence period, technological advance will most likely deliver significant expansion in the programme capacity of each multiplex, although it is too early to be precise about the rate of expansion. British Digital Broadcasting's policy towards this opportunity will be to take maximum advantage of the capacity to provide superior value and range to subscribers, while exercising prudence in remaining within the limits of multiplexing technology.
115. British Digital Broadcasting believe that there are good prospects of advanced statistical multiplexing techniques making possible the addition of a substantial number of additional channels in the future without loss of picture quality. While not including these in its business model in the interest of prudence, British Digital Broadcasting has devoted thought and preparation as to how to deploy effectively additional capacity. British Digital Broadcasting has been encouraged in this by presentations from several developers of multiplexing and compression technology who have indicated their preparedness to license their technology to British Digital Broadcasting.
116. Annex 20 provides an overview of British Digital Broadcasting's initial plans for utilising additional capacity. British Digital Broadcasting already has expressions of interest from several parties who would wish to provide services in the event of more capacity becoming available.

Section A4 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three licences for which it has applied.

This section has described the five channels British Digital Broadcasting would offer if it only won Multiplex C. If, in addition, British Digital Broadcasting were awarded Multiplexes B and D, its programme offer would comprise a further eight basic channels and two premium channels. The supplementary proposals describe also how they would work together as a whole. Some of the channels featured in British Digital Broadcasting's Multiplex C application appear on different multiplexes in British Digital Broadcasting's supplementary proposals.

Section A5 - Local or Regional Services

ITC Requirement

Taking account of guidance given in paragraph 102 the applicant should state what plans he has, if any, to provide local or regional services. He should state, in particular:

- i) the proposed location of any such services together with their start dates;*
- ii) the type and content of the programmes; and*
- iii) the period of the day for which such services would be provided.*

Summary

British Digital Broadcasting's proposals do not include local and regional services at launch. British Digital Broadcasting recognises the potential of such services and will review the case for launching local or regional services that complement existing local and regional services, when the subscriber base is established and when further channel capacity has become available on the multiplexes.

1. British Digital Broadcasting is conscious of both the capability of digital terrestrial television to offer local and regional programme services and of the potential value of this genre to the public. At launch, however, British Digital Broadcasting does not plan to offer local or regional services. This is for a combination of reasons. During the early years of the licence period the relatively low levels of subscribers projected lessens the economic case for investing substantially in local or regional programmes compared to investing in the overriding priority of establishing digital terrestrial television nationally as a mainstream force.
2. Furthermore, British Digital Broadcasting's market research shows broad consumer satisfaction with the current level of local and regional programmes provided by ITV and the BBC, as well as by a selection of other channels. ITV's regional news will also be broadcast in digital form through the ITV/Channel 4 multiplex. Research conducted by British Digital Broadcasting also shows that the early audience for digital terrestrial television is likely to be significantly more skewed towards younger demographic groups, in particular, than the audience for regional and local news.
3. In light of these factors, British Digital Broadcasting believes that the costs associated with producing alternative local or regional programmes for digital terrestrial television is initially better invested in programmes with broad national appeal.
4. However, British Digital Broadcasting through its ongoing research, will evaluate the demand for services which would complement existing local regional programmes. Having conducted research in the Central region, British Digital Broadcasting (through

Carlton) believes that local or city based services would probably be the more attractive to viewers (and provide the least duplication of existing services). British Digital Broadcasting will, therefore, research the case for these services first.

Section A5 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three of the licences for which it has applied.

The information in British Digital Broadcasting's supplementary proposal is essentially the same as that outlined above. However, having the capacity and scale benefits of three multiplexes could bring forward the time when it may be commercially viable to launch local and regional services.

Section A6 - Programmes of High Quality

ITC Requirement

Taking account in particular of the guidance given in paragraph 101, the applicant should give details of the types of programmes of high quality which will be included in the programme services to be provided on the multiplex.

Summary

British Digital Broadcasting's programme proposals include a highly successful premium subscription channel and four quality basic channels, including a new channel to start as part of the launch of digital terrestrial television.

1. British Digital Broadcasting's channels for Multiplex C are designed as a high quality basic subscription package with the addition of a highly compelling premium channel. The basic channels themselves bring to digital terrestrial television some of the best television available in Britain.
2. The proposed programme service will emphasise and showcase original British production and appeal to a variety of tastes and interests.
3. In addition, the channels:
 - a) Unite some of the strongest and most authoritative names in British television, namely Carlton, Granada, BSkyB and the BBC.
 - b) Offer a high proportion of original and first run programmes.
 - c) Complement and supplement the 'free-to-air' services that digital terrestrial television viewers will receive.
4. These channels also draw on the programme production, programme library and acquisition resources of Carlton, Granada, BSkyB and the BBC. This gives the proposals wide access to the breadth and depth of the most popular, quality genres as shown in the following table.

Genre → Channels ↓	Movies	Children's	Drama	Entertainment	Documentaries	Consumer Information	News	Arts	Comedy	Current Affairs	Music	Lifestyle
Granada Plus		■	■	■	■	■			■	■	■	■
Sky Movies	■											
Sky One			■	■	■		■	■	■	■	■	■
BBC Style / BBC Showcase		■	■	■		■			■			■
Carlton Entertainment	■	■		■					■			

5. British Digital Broadcasting programmes will include the following main genres:-

Drama

6. Quality drama is one of the hallmarks of British television and the best of both contemporary and period drama is reflected across British Digital Broadcasting's television channels. Granada Plus and BBC Showcase will have access to the work of the best writers, producers, directors and performers, and will be able to draw on programme libraries of unrivalled depth. Viewers will be able to enjoy costume drama such as *Martin Chuzzlewit* and *Pride and Prejudice* and contemporary drama such as *Poirot*. These programmes will sit alongside new and original productions and will be supplemented by strong dramas available from the UK, America and Australia on Sky One.

Documentaries

7. Natural history, science, human interest and other factual programmes will be available to the viewer. Documentary output will be available from the producers at Granada, the makers of *Seven Up*, *World in Action* and *Disappearing World*.

Children's

8. Children's programmes are an important component of British Digital Broadcasting's programme offering. The participation of the BBC, Carlton and Granada in British

Digital Broadcasting will give subscribers access to three of Britain's leading children's programme producers and libraries of children's programmes. The award winning children's departments of Carlton and Granada both intend to offer original children's programmes on the Granada Plus and Carlton Entertainment channels, including a lively children's magazine programme, drawing on Carlton's expertise in producing similar programmes for ITV and in providing presentation and packaging for the Children's ITV service. Granada Plus will choose programmes from the best of the Granada and Carlton libraries which contain award winning series such as *Sooty*, *Children's Ward*, *Press Gang* and *Woof* and, in the future, programmes such as *The Treasure Seekers* and *Willow in Winter*. This material will be carefully selected and scheduled to appeal across the age ranges alongside a wide range of genres including drama, entertainment and factual programmes specifically aimed at young audiences. In a similar vein, the BBC's Showcase channel will offer a chance to see many of the BBC's best, award winning, children's programmes.

Movies

9. British Digital Broadcasting will offer the Sky film channel on digital terrestrial - "Sky Movies" which will aim to bring viewers of all ages movies from around the world, including dramas, children's, comedies, action and art house films together with Hollywood updates, star biographies and programmes focusing on stories behind the movies and how they were made.

Entertainment

10. British Digital Broadcasting's channels will feature many of the UK's most successful entertainment programmes produced by the strong creative teams at LWT, the BBC, Carlton and its subsidiary Action Time - production teams that include *Blind Date*, *Gladiators*, *Family Fortunes* and *Noel's House Party* among their credits. Granada Plus and BBC Showcase will include the best of British quiz shows in their day-time and early peak schedules as an introduction to award winning comedy and drama. Carlton Select will feature special one-off events including concerts, sport and exhibitions, many of which will not have been seen before on television. Carlton proposes to secure rights to bring this original programming to digital terrestrial television. Carlton Entertainment will showcase a broad range of entertainment programmes across its regular scheduling pattern. Sky One will aim to provide its viewers with an array of talk shows, soap operas and light entertainment throughout the day. Original production will feature in the schedules of all four entertainment-based channels. Production values will be high.

Lifestyle and Consumer Information Programmes

11. Lifestyle and consumer information programming forms an important element of British Digital Broadcasting's programme plans.
12. BBC Style will provide a service dedicated to lifestyle programming drawing upon the BBC's editorial quality and production values, including programmes by famous BBC faces such as Delia Smith, Jeremy Clarkson and Hugh Scully.

13. Granada are acknowledged pioneers of high quality lifestyle programmes, having created the much imitated but rarely bettered *This Morning* programme, which anchors ITV's morning schedule. Its Royal Television Society award winning production team will be responsible for a wide range of original output on Granada Plus. Sky One will also contain further programming in this genre with programmes such as *Walker's World*.
14. The lifestyle programming on Granada Plus together with selected programmes on Sky One and the Public Eye channel, is intended to contain a high degree of consumer information.

News

15. Hourly 1-2 minute daytime news bulletins will be carried on Sky One. British Digital Broadcasting is conscious of the value that the BBC's new 24 hour news channel will provide to digital terrestrial viewers. British Digital Broadcasting has therefore constructed its approach to complement this BBC service.

Arts

16. British Digital Broadcasting's programme services will offer a range of high quality arts programming including live events, features and interviews. Opportunities to view a range of music performance will be available to viewers.
17. Granada Plus has access to original and archive programming produced by LWT's multi award winning arts department. The *South Bank Show*, in particular, offers a rich archive with an enormous range of material covering every artistic discipline from dance, film and classical music to photography, painting and literature. The channel already has exclusive rights to film this year's *South Bank Show Awards*, a major new arts awards ceremony, which it hopes to continue in future years. In addition, Granada Plus will provide a variety of music specials across all music genres in their schedules. And Sky Movies will, from time to time, feature art-house movies alongside the best of Hollywood. BBC Showcase also offers the opportunity to showcase some of the BBC's arts programming. Across its programme services, British Digital Broadcasting will offer a broad coverage of both arts in general, and performance arts in particular.

Comedy

18. Classic comedy continues to command large audiences on British terrestrial television. BBC Showcase will bring *Only Fools and Horses*, *Steptoe and Son*, *The Two Ronnies* and situation comedies of the unrivaled quality of *Ever Decreasing Circles* and *Open All Hours*. The richest comedy archive in Western Europe will be supplemented by the very best of British and American comedy - from stand-up to sitcom on Granada Plus, Carlton Entertainment and Sky One.

Current Affairs

19. British Digital Broadcasting recognises the strength in current affairs programming that the BBC, ITV, Channel 4 and Channel 5 will bring to digital terrestrial television. We have therefore been mindful to supplement and complement the strong primary service from these channels. Granada Plus will have access to the production team that has made *World in Action* a household name. Sky One will include fresh and innovative features.

Music

20. Sky One currently has eight hours of its indicative digital terrestrial schedule devoted to music programming. Programmes include *Hit Mix Long Play*, a DJ free music zone with material to appeal to every music taste, scheduled for late at night and *Morning Glory*, a three hour compilation of easy listening popular music.
21. It is a strength of British Digital Broadcasting's proposals that they rely largely upon channels supplied by their shareholders. In this way they can be more confident in including new programme investment and optimising choice across the channels. Relying solely on channels provided by third parties would mean that decisions on these important matters would be taken at one remove from the applicant.
22. The way in which each channel contributes to quality is detailed below.

Granada Plus

23. Granada Plus will be a showcase for some of the highest quality drama and entertainment ever produced for British television. The Granada Plus drama slate speaks for itself: *Sherlock Holmes*, *Poirot*, *Maigret*, *The Cloning of Joanna May*, *Brideshead Revisited*, *Prime Suspect*, *King Lear*, *Jewel in the Crown*, *London's Burning*, *Cracker*. All of these programmes have won a large number of awards as well as substantial and appreciative audiences on their first transmissions on ITV.
24. The comedy and entertainment programmes include the archive of ITV's major producer of quality entertainment, London Weekend Television, as well as Granada productions. Series available to Granada Plus include *A Fine Romance*, *Watching* and *Jeeves and Wooster*.
25. Similarly factual programmes on Granada Plus will include the best of the award-winning documentary and feature output of Granada TV and LWT - from *Disappearing World* to *Disguises*, from *World In Action* to *Summer on the Estate*.

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26. Granada Plus will also have access to some of the best children's programming made on British television in recent years. Granada TV and LWT have produced award winning programmes across the range of children's drama, entertainment and factual programming with shows such as *Sooty*, *The Ward* and *Speakeasy*. Looking over a longer timescale, Granada Plus will also benefit from Granada TV and LWT's recent expansion into animation with programmes such as *Tom and Vicky* and *The Treacle People*.
27. The guarantee of continuing high-quality on Granada Plus comes from our long-term relationship with two of the major production powerhouses of ITV. Between them Granada and LWT produce nearly 40% of ITV's originally commissioned programme hours in addition to producing programmes and series for all the other UK terrestrial broadcasters and many of the satellite broadcasters. The reputation for high-quality programming of both producers is well-recognised and will be reflected both in original programming made specifically for the channel and in material made available after its initial showing on channels.

Carlton Entertainment

28. Carlton Entertainment will include many specially commissioned programmes. Under the direction of Carlton's highly experienced Entertainment Department, and utilising the skills of Britain's premier developer of entertainment formats, Action Time, the majority of the new programming will come from Carlton's Nottingham studio complex. Carlton has also forged strong links with entertainment based independent producers and will work with them to develop innovative shows across the genres of games, quizzes, comedy and talk.

Sky Movies

29. Sky Movies on digital terrestrial will continually strive to bring viewers hit movies from Hollywood and independent suppliers all over the world.
30. British films are expected to be a focus for the digital terrestrial channel as well. Sky's satellite movie channels screened 24 British made films in 1996. Moreover, in 1995-6, Sky spent £29 million helping to fund around 70 British movies - one of the most substantial movie investments made by a TV company to the British film industry. Examples such as these underline the commitment of Sky to British films of the highest quality. Along these lines, Sky will also endeavour to showcase British films on its digital terrestrial movie channel. Furthermore, the digital terrestrial channel expects to provide movie support programming through entertainment news shows, special features shows and so on - selected programmes of which Sky expects to create specifically for this digital terrestrial movie channel.

Sky One

31. Sky One on digital terrestrial intends to deliver first-run shows to the quality level that the channel's audience will demand, including UK first-runs of high quality domestic and international shows.

32. In addition, this Sky One service will endeavour to provide UK-originated and specially commissioned programming through its parent BSkyB. There are currently a number of shows in development with UK producers for its satellite channels including *Sky Cafe* and *Selina Scott Tonight* as well as shows previously commissioned such as *Springhill*, *Coppers* and *Walker's World*. Sky One will explore opportunities to create similar programmes especially for its digital terrestrial service.

BBC Style

33. BBC Style will be aspirational television carrying exclusively British programming, hosted by respected and expert presenters. It will appeal to viewers with a wide range of leisure and lifestyle interests such as cookery, gardening, travel, cars, antiques and fashion. BBC Style will bring to digital terrestrial television the editorial quality and production values of popular and tested BBC consumer programmes like *Holiday* and *Top Gear*. BBC Style will incorporate both archive and original production.

BBC Showcase

34. BBC Showcase will be a stage for the highest quality and most popular entertainment programming from BBC1 and BBC2. BBC Showcase's quality will derive from both top contemporary shows and classics. BBC Showcase will enhance significantly the perception of digital terrestrial television as delivering the best of British entertainment.

Section A6 of British Digital Broadcasting's supplementary proposals provides equivalent information should the company be awarded all three of the multiplex licences for which it has applied.

British Digital Broadcasting's individual multiplex application provides a strong basic package. British Digital Broadcasting's supplementary proposals build upon those proposals offering twelve basic channels and three premium channels.

Section A7 - Additional Services

ITC Requirement

Noting the information contained in paragraphs 106 to 108, the applicant should state the nature of the digital additional services which he intends to include in his multiplex service, and (where known) the dates when they would commence, the hours of the day and days of the week during which they would be broadcast, the coverage area for the services (if restricted to less than the full multiplex coverage area), the digital capacity they would occupy and who would supply them. In particular, details should be given of any Electronic Programme Guide to be provided by these means.

Summary

Additional services, other than an Electronic Programme Guide, do not form part of British Digital Broadcasting's proposals for the initial implementation of the multiplex applied for.

It is British Digital Broadcasting's intention to offer a range of additional services at a later date when a viable business plan can be developed.

1. The shareholders of British Digital Broadcasting have each been involved in various trials and evaluations of additional services ranging from the use of teletext pages in the support of programming, through to full interactive, on-demand shopping and game playing. The enthusiasm amongst viewers for these additional services has been mixed, and it is clear that a considerable period of development and research is still required before service concepts emerge that will be both widely acceptable to a broad range of viewers, and commercially sustainable.
2. It is likely that digital terrestrial television will eventually provide an important means of offering new services to viewers and British Digital Broadcasting intends to include these services in its overall package in due course. However, British Digital Broadcasting believes that digital terrestrial television should concentrate initially on a broad range of family entertainment.
3. Furthermore, when seeking to persuade viewers to purchase digital television receivers, set top-boxes or integrated televisions, British Digital Broadcasting believes that a single, easy to understand proposition will have the best chance of success. There is a danger that a preponderance of new service concepts that are poorly understood, would prove something of a barrier, rather than a driver of early take-up.
4. It is also felt that the uncertainties surrounding the compression rates achievable in practice, and the desirability of offering as many programme services as possible, support a strategy of not launching any additional services (other than the Electronic Programme Guide) at the same time as the main multiplex service. British Digital Broadcasting intends to review the position after obtaining operational experience in

what data capacity can be made available for additional services, whilst still maintaining acceptable picture quality standards for programme services.

5. British Digital Broadcasting's business case does not depend upon revenue contributions from additional services, since it is felt that the market for such services has not yet developed to the point where accurate predictions can be made.
6. When introduced, additional services may take the form of both broadcast (one-way) and interactive (two-way) services, including those based on text-based magazine formats. The objective will be to build upon British Digital Broadcasting's existing experience in the provision of new types of service and demonstrate the advantages of digital television over current analogue services.
7. It is anticipated that other services will be introduced in collaboration with third parties, where appropriate, following a period of development and market evaluation to prove the initial concepts.
8. British Digital Broadcasting will support the services offered within its multiplex by providing information about schedules and events, within the SI system. Such information is intended to be freely available to anyone with a DVB compliant receiver and will support the development of an event service guide (ESG) should manufacturers choose to develop such a product.
9. An event service guide, if developed, will provide the viewer with a basic description of the services available, derived only from the SI data. This software might be developed and supplied by the receiver equipment manufacturer. British Digital Broadcasting will seek to work with other multiplex operators in facilitating access, via an EPG, to all services in the multiplexes available within the coverage area.
10. British Digital Broadcasting is fully aware of the regulations and guidelines issued by both Ofcom and the ITC regarding the operation of EPG services. British Digital Broadcasting's intention is that any EPG selected for digital terrestrial television should list all available services in a manner consistent with the ITC and Ofcom requirements.

Next Generation Boxes

11. The specification of consumer equipment will reflect the services carried by the multiplex operators. As the market for additional services becomes clearer, it is expected that additional functionality will be included within second generation boxes, some of which will form fully integrated digital terrestrial/satellite television receivers. In particular, the next generation receiver is likely to be capable of providing enhanced EPG facilities to help the viewer navigate between the services being offered. Interactive services are also likely to become more widely accepted, based upon the inclusion of return path modem facilities within the receiver.

12. It is expected that additional interfaces will be provided in these boxes to support improved access to digital programme services, through high speed connections to digital storage media and in-home data networks, and connections to external units providing specialised functions such as Audetel, or more general data processing devices such as personal computers and network computers.
13. If agreement can be reached with other multiplex operators, British Digital Broadcasting intends to cooperate with manufacturers and third-party service providers in the development of next generation equipment as part of the development of the digital terrestrial market, demonstrating the advantages of the new technology over existing analogue services.

Section A7 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three of the licences for which it has applied.

This section has described the additional services that British Digital Broadcasting would provide if it were to win a single multiplex. If British Digital Broadcasting were awarded three multiplexes it would be prepared to offer a high quality Electronic Programme Guide. The features of this guide are described in British Digital Broadcasting's supplementary proposal.

Section A8 - Licence A

ITC Requirement

Applicants for Licence A should state their proposals for the broadcasting of Channel 5 in digital form and S4C Digital. They should also state which, if any, of the services proposed in response to questions A4 to A7 above would be provided on the capacity reserved for Channel 5 and for S4C.

1. British Digital Broadcasting is not applying for Licence A.

Section A9 - The Development of Digital Television Broadcasting

ITC Requirement

Taking account of specific proposals made in response to other questions, the applicant is invited to summarise any particular ways in which he would see the award of the licence to him to be calculated to promote the development of digital television broadcasting in the United Kingdom otherwise than by satellite.

Summary

Carlton, Granada and BSkyB have formed British Digital Broadcasting specifically for the purpose of successfully launching and sustaining digital terrestrial television. British Digital Broadcasting has exceptional financial, technical, programming and marketing and customer management credentials for the task. British Digital Broadcasting's plans provide the right content to make digital terrestrial television accessible and affordable and provide the technology and transmission solutions for timely and reliable roll-out. British Digital Broadcasting is ready to work with other multiplex operators, retailers, manufacturers and programme suppliers to make digital terrestrial television succeed. Specific letters of support from suppliers, manufacturers and retailers are attached as Annexes 2, 3 and 4.

1. British Digital Broadcasting believes that by 2005-2010 digital terrestrial television could become the main terrestrial television distribution medium in the UK, provided that an array of demanding conditions are met. The programme services must be compelling and high quality, incorporating the best available content as well as new and different elements. It must also include both basic and premium channels to provide a winning consumer proposition and a sustainable business model. Consumers must also be presented with coherent and unified messages about digital terrestrial television and its benefits as a whole. Customer service must be of the highest order. Access must be convenient and simple. Access must also be good value in terms of both initial equipment cost and ongoing subscription. Manufacturers and retailers must be incentivised to produce and promote equipment on sufficient scale. Consumers must have appropriate and flexible choices about what equipment to buy. The service must be delivered in a reliable manner and rolled-out as rapidly as possible. Multiplex operators must work together closely and have the financial resources to sustain a high fixed cost operation that will start with a no subscribers.
2. Carlton, Granada and BSkyB have formed British Digital Broadcasting precisely because meeting the above conditions is stretching and challenging. British Digital Broadcasting is a unique response to a unique challenge. Indeed, the UK is the first country to move forward decisively with the introduction of digital terrestrial television. Other countries such as the USA, Spain and Sweden are intending to follow. In some European markets there is concern that consumer confusion, resulting from competing and incompatible new digital services may deter take-up, British

Digital Broadcasting brings together three of the leading UK broadcasters to provide a unified approach and involving a concept for set-top boxes which will enable consumers to receive both terrestrial and digital signals without replacing their equipment. British Digital Broadcasting is also ready to work with all other relevant parties to make digital terrestrial television succeed.

3. British Digital Broadcasting has the resources and experience to help make a success of digital terrestrial television. Carlton, Granada and BSkyB have unparalleled collective skill and capability in programming, technology, customer management and marketing. Importantly, the shareholders also have the depth of financial resources to sustain their contribution to digital terrestrial television even under pessimistic assumptions
4. **Carlton** has substantial media businesses in UK commercial television and in the supply of products and services to the film, video and television industries worldwide. Carlton is the largest commercial terrestrial broadcaster in the UK, holding three ITV licences, broadcasting to twenty two million people in London, the Midlands and the Westcountry. Carlton invests over £160 million a year in original programmes for ITV and other television channels. Carlton's principal focus is quality drama, for example *Kavanagh QC*, *Sharpe*, *Peak Practice*, *Bramwell*, *Inspector Morse*, *Rebecca*; award winning children's programmes including *Tots TV*, *Wind in the Willows*, *The Treasure Seekers* and *Old Bear Stories* and factual programmes. Carlton has a growing library of 5,500 hours of television programmes and films, including high quality British films and over 100 made-for-television movies. Carlton operates two UK cable channels, Carlton Select and the Carlton Food Network and has stakes in television stations in France, India and Singapore. Carlton's large Nottingham Studios are among the most modern and efficient in the UK. Television accounts for over 40% of Carlton's profits. Other businesses include Technicolor, the world's largest producer of pre-recorded videocassettes and processor of motion picture film, and Quantel, a world leader in the design and manufacture of image processing and editing equipment for the film, video and television industries. In 1996 Carlton made record pre-tax profits of £295 million from revenues of £1,678 million.
5. **Granada** is one of the UK's thirty largest companies by market capitalisation. Its ownership of Granada TV and LWT makes it the country's most experienced terrestrial television broadcaster and largest commercial programme producer. Through its TV rental and retail business, Granada has substantial expertise in the television hardware and television subscription retail markets. Its programme production businesses have produced many of the most popular and critically acclaimed television shows of the last decade including *The South Bank Show*, *Coronation Street*, *Blind Date*, *Cracker*, *Barrymore*, *Prime Suspect*, *You've Been Framed*, *World in Action* and *Dimbleby*. The Group owns the UK's largest commercial television programme library with over 10,000 hours of programming including many of the classics of British television. It also has experience of launching and running pay television services, having launched seven new programme channels last Autumn through GSB, its joint venture with BSkyB. The Group's ownership of Granada Technology Group (GTG) means that it is one of the UK's leading electrical

retailers with an in depth understanding of the television hardware manufacture and retail markets which will play a key role in determining the success of digital terrestrial television. At the same time, GTG's retail outlet chain is the country's largest seller of pay television subscriptions, giving the Group a detailed knowledge of the retailing and marketing issues involved in pay TV. GTG also has an unmatched expertise in retuning television receiving equipment as evidenced by the role they are playing in providing technical and 'on the ground' support to C5's current retuning exercise.

6. **BSkyB** is a world class pay-television company, with over six million subscribers and in excess of fifteen million viewers in the UK and Eire. BSkyB offers its subscribers the highest quality channels, premium customer service, and continually endeavours to offer more choice and better value for money. Its commitment to deliver top movies from Hollywood, leading UK originated programmes, worldwide news, and the best in domestic and international sports, has resulted in strong and consistent increases on the subscriber base over the past five years. BSkyB has revenues in excess of £1bn, and is one of the UK's twenty largest companies by market capitalisation. Its established relationships with Hollywood studios, present deals with domestic and international sporting bodies, and arrangements with such renowned news organisations as Reuters, enable it to deliver ever improving quality levels of entertainment, sport and news to its valued viewers. BSkyB invests heavily in infrastructure, technology and people, the results of which are self evident with the significant reductions in subscription cancellations, increasing viewership and sustained financial performance. BSkyB views digital terrestrial television as an opportunity to invest in technology of the future.
7. Specifically, British Digital Broadcasting has a set of proposals for technology and transmission, receiver development, marketing, programming and for co-operation among multiplex operators designed to make digital terrestrial television a major new means of distribution. The benefits are high. The development of digital terrestrial television in the UK cannot only deliver quality and affordable programme choice to the consumer, with very high levels of convenience, but also provide a significant stimulus to the UK production base, to UK electronics retailers and to the UK consumer electronics manufacturing industry. The early expertise developed in digital terrestrial television will be usable in future new international markets.

Working With Other Multiplex Operators

8. In the event that British Digital Broadcasting wins one multiplex licence, British Digital Broadcasting would seek to work very closely with all the other multiplex operators particularly on facets of the service that are important to the customers' perception of and satisfaction with digital terrestrial television as a delivery system, and which are critical to making the economics of a single multiplex work. Annex 16 sets out in more detail British Digital Broadcasting's approach to working with other multiplex operators.

British Digital Broadcasting's Technology and Transmission Proposals

9. Digital terrestrial television represents one of the greatest technical challenges for television broadcasters since the introduction of colour television. Digital terrestrial television is not an evolution of existing standards but a completely new approach to distribution and transmission. The task of the multiplex operators is to manage this change effectively.
10. British Digital Broadcasting has considered carefully all the elements in the technical roll-out requirements and has, through its shareholders' participation in industry forums such as the Digital Television Group and a series of individual meetings, discussed the best approach with other broadcasters, equipment manufacturers and service providers. British Digital Broadcasting's conclusion is that the best way to ensure a successful and timely roll-out of digital terrestrial television is for a single operator to take a lead position in order to drive plans forward.
11. British Digital Broadcasting is prepared to work with all the other successful applicants to try to create a dynamic partnership in the event of winning Multiplex C only. But this will take time, and may be only partly successful. This could delay the roll-out plans, lead to increased costs for all the licencees, and possibly blunt the marketing focus.
12. The most important elements of the project that British Digital Broadcasting would look to work with others on are:
 - a) Developing, together with the BBC and ITV/C4, a co-ordinated transmission roll-out plan that ensures that, as far as is possible, all the multiplexes are introduced in to a particular region at the same time. This will be the most cost effective solution, and will minimise viewer confusion.
 - b) Supporting the transmission roll-out with a comprehensive retuning plan that will eliminate the possibility of responsibility for viewer's problems being passed between parties.
 - c) Removing the potential for confusion over the choice of consumer equipment by supporting the development of a single technology that encompasses the technical requirements for British Digital Broadcasting's programming package but also the offerings of other multiplex operators.
 - d) Developing simple solutions to the unique problems of digital television and making those solutions available to other multiplex operators, rather than the expensive proliferation of alternative and perhaps incompatible designs.

- e) Sharing of core multiplexing infrastructure to allow licence holders to minimise start-up costs, and thereby maximising investment in programming, marketing and market development.
- f) Supporting a common Electronic Programme Guide.

British Digital Broadcasting's Receiver Development Strategy

13. British Digital Broadcasting supports the work of the Digital TV Group (DTG) and intends to comply, as far as commercially possible, with the guidelines and recommendations of that group.
14. However, the amount of software integration work necessary in order to successfully provide reception equipment for digital television services may have been underestimated. This is borne out by the experience in other markets where the launches of digital services have often been severely hampered by software related issues, especially in relation to the integration and debugging of Conditional Access systems and Electronic Programme Guides. Unless properly managed this will inevitably lead to serious delays and failure to grow the number of subscribers at a rate sufficient to match the commercial needs of the business.
15. Whilst the DTG receiver equipment recommendations give useful guidance to potential equipment manufacturers, British Digital Broadcasting is doubtful that the policy of leaving the development of the software entirely to the equipment manufacturer will lead to a successful market introduction of digital terrestrial television. British Digital Broadcasting believes that manufacturers will need very considerable technical assistance and commercial innovation if they are to be persuaded to commit aggressively to develop, launch and market digital terrestrial television receiving equipment in the necessary timescales.
16. Fortunately British Digital Broadcasting is able to exploit the expertise of its shareholders, in particular BSkyB. In this area, it is hoped that, in coordination with other multiplex operators, BSkyB's expertise can be exploited as BSkyB has spent the last two years actively designing and developing a fully featured digital set-top box for its proposed digital satellite services. BSkyB is in the process of completing the development of a complete set of operating software for digital set-top boxes.
17. In addition, a considerable amount of effort has already been made with the manufacturers of the critical Large Scale Integrated Circuits, without which low cost reception equipment will not be possible. British Digital Broadcasting is very mindful of the problems in this area during the attempted introduction of D-Mac technology into the United Kingdom and intends to take pro-active steps to ensure that there is adequate competition amongst suppliers in order to avoid depending on a single supplier. Where necessary British Digital Broadcasting will be pragmatic in its technology decisions in order not to prejudice the commercial opportunity in the interests of technical perfection.

18. Since, essentially, it is only the UHF tuner and COFDM demodulation circuitry that is necessarily unique to digital terrestrial television, British Digital Broadcasting will, with a modest amount of additional effort, be able to adopt BSkyB and NDS's existing work to be applicable to a digital terrestrial television environment. This will allow British Digital Broadcasting considerable advantage in achieving a rapid and reliable speed to market. British Digital Broadcasting is confident, at this stage, that it will be able to deploy properly debugged and proven digital terrestrial television set-top boxes by mid-1998.
19. British Digital Broadcasting is also supportive of the DTG's work in the area of Application Programming Interfaces (API). Both DTG and BSkyB are currently in the final stages of analysing and selecting an appropriate technology supplier for a suitable industry-wide API. British Digital Broadcasting is confident that its shareholding structure will allow it to maximise the likelihood that a common, or at least compatible API solution can be achieved for both satellite and digital terrestrial television markets, with the benefits that this would have for maximising market opportunities for new and innovative applications that could run above such a common API. British Digital Broadcasting is confident of this approach and hopes that the other multiplex operators will agree to utilise the work already undertaken by BSkyB.

British Digital Broadcasting's Marketing and Subsidy Proposals

20. By early next century, integrated television sets are likely to have become the predominant means for consumers to receive digital terrestrial television. The natural replacement cycle of televisions will then push, relatively swiftly, penetration of digital television to high levels. Digital terrestrial should by then be established as the main delivery system for television. In the period from launch however, set-top boxes will be the main way in which consumers will access digital terrestrial television. Set-top boxes are often described as an interim technology, but this underplays their 'market creating' importance.
21. The digital terrestrial television set-top box will be an innovative and sophisticated item of consumer electronics. At launch therefore, the unpromoted retail price will inevitably be high, so suppressing demand. Furthermore, economic and technical limits will constrain manufacturer's ability to gear up to mass production levels. British Digital Broadcasting, through BSkyB and Granada, has long standing relationships with set-top box manufacturers and the most developed appreciation of any UK broadcaster of the dynamics of the set-top box market. In consequence, British Digital Broadcasting has already invested considerable effort in designing an outline 'partnership' programme with manufacturers and retailers to create conditions conducive to optimising the supply of and demand for set-top boxes. These discussions have been predicated largely on British Digital Broadcasting being awarded three multiplex licences. The partnership initiative would have two strands, involving; underwriting the production of a quantity of set-top boxes if required from a small number of committed and capable suppliers and working with retailers and rental organisations through promotional offers to present the available volume of set-top boxes to consumers in ways that represent exceptional value for money. However, it

would only be feasible for British Digital Broadcasting to drive this programme if it were awarded three multiplex licences. The economics of a single multiplex are such that British Digital Broadcasting could not itself justify implementing the programme on its own. British Digital Broadcasting, if it were only awarded one multiplex licence, would therefore either support, where possible, any similar scheme designed by a 'lead' multiplex operator or share its thinking with a lead operator with a view to achieving the same effects but, again, obviously having to rely on the lead operator to fund the majority of the initiative.

22. The introduction of pay-television has sometimes been accompanied by sub-standard customer service operations with poorly trained staff unable to explain a relatively complex product and price offering to potential customers. In its early days, pay-television was prone to very high levels of churn. Digital terrestrial television is a similarly complex offering for most consumers (indeed, more complicated where coverage patterns are not coterminous). British Digital Broadcasting, through BSkyB, which operates two established world-class customer management centres in Livingston and Dunfermline, Scotland, has all the expertise to ensure that this aspect of launching and establishing digital terrestrial television is handled successfully. British Digital Broadcasting is ready to make this expertise available, on fair and reasonable terms, for enquiry handling for example, to the other multiplex operators.

British Digital Broadcasting's Programming Proposals

23. British Digital Broadcasting's programming offer is supplied by Carlton, Granada, BSkyB, and the BBC, respectively the major UK forces in commercial terrestrial television, pay television, and public service broadcasting. Collectively, they will give digital terrestrial television substantial authority and help ensure that digital terrestrial television is perceived as a competitive mainstream delivery system. The shareholders of British Digital Broadcasting also bring together very large production capabilities, programme libraries and ownership rights for television broadcasting which will be powerful assets to underpin the long term programme quality of British Digital Broadcasting.
24. British Digital Broadcasting's 'single multiplex' programme offer, should it only be awarded Multiplex C, comprises a balanced mix of four leading basic subscription channels and one premium channel; Carlton Entertainment, Granada Plus, Sky One, BBC Style, BBC Showcase and Sky Movies. This package has been designed to fulfill the specific role described previously of complementing what British Digital Broadcasting has to presume would be a strong overall programming line-up on the other commercial multiplexes.

Section A9 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should, in addition to Multiplex C, the company be awarded Multiplexes B and D.

The situation in which British Digital Broadcasting would be operating three multiplexes is very different to the situation in which British Digital Broadcasting would be operating one multiplex. If British Digital Broadcasting was awarded three multiplexes, British Digital Broadcasting would be able to take a strong market leadership role, offering a first class premium line up in addition to its basic subscription channels, with additional original programming as well as substantial additional investment in the marketing and promotion of receiving equipment.

Section A10 - Transmission Standard

ITC Requirement

Noting the information provided in paragraph 46 and in the draft ITC Rules of Operation on the use of DVB-T Specification, the applicant should give details of his proposed transmission standard, including the following items

- i) *Modulation system and channel coding*
- ii) *Guard interval*
- iii) *SI data to be included*
- iv) *Scrambling system to be used, if any*
- v) *Subtitling system to be used*
- vi) *Video coding details (e.g. type of pre-processing, range of bit rates possible)*
- vii) *Audio coding details*

Summary

British Digital Broadcasting's proposals for digital terrestrial television are based upon the use of the relevant DVB-T specifications, together with the Draft ITC Rules of Operation on the use of the DVB-T specification (Rev-1) dated 31 October 1996. British Digital Broadcasting will do all that it reasonably can to comply with Article 2 of the European Directive on the use of standards for the transmission of television signals (95/47/EC).

Modulation System and Channel Coding

1. British Digital Broadcasting will use the modulation system as laid down in the ETS 300 744 standard for 64 QAM modulation together with the sub set that defines the OFDM parameters.

Guard Interval

2. The duration of the guard interval Δ will be $7\mu\text{s}$, i.e. $\Delta/T_u = 1/32$. The total symbol duration will be $T_s = 231\mu\text{s}$, which is the sum of the active symbol period T_u ($224\mu\text{s}$) plus the guard interval of $7\mu\text{s}$.

SI Data to be Included

3. As per the specification ETS 300 468, the Service Information will adhere to the guidelines provided by the ITC. British Digital Broadcasting intends to use up to the

maximum permitted data rate of 300 kbps. Also, any licensed service will contain viable data pertaining to that service without false data streams transpiring.

4. By working with other successful multiplex licensees British Digital Broadcasting will ensure that the SI data distribution system implemented will allow receivers to be mutually technically compatible. Further information on the implementation of the SI system is contained within Annex 15.

Scrambling System to be Used, if Any

5. The proposals detailed in this application are based upon the use of the DVB Common Scrambling Algorithm, as defined in the ETSI report ref. ETR 289.

Subtitling System to be Used

6. British Digital Broadcasting will use the DVB subtitling system as described in the prETS 300 743 standard. This system uses a look-up table in ROM, drawing on any other added characters or icons in order to aid flexibility and ease of use to the viewer.
7. Not enough experience has been gained yet with DVB subtitling systems to ensure that current display attributes which are familiar to the hard of hearing community can be followed exactly. It is hoped that, as experience develops, and as the parameters of the recommended API by the DTG are released, it will be possible to exceed the expectations of this community with the new technology display options offered by digital terrestrial television systems.
8. Further information on the subtitling proposals can be found in Annex 6 to this application.

Video Coding Details

9. British Digital Broadcasting will utilise MPEG-2 Main Level at Main Profile with full screen resolution and an appropriate aspect ratio to suit the original source material, i.e. 4x3 (or 12x9), 14x9 and 16x9.
10. The bit rate will be determined to best match programme source material and achieve the highest quality transmission possible. British Digital Broadcasting will seek to flex the multiplex to give appropriate programming a higher bit rate where required.

Audio Coding Details

11. The audio coding used for the main service will adhere to the bit rate set in ISO/IEC 13818-3. It will constitute 256 kbps for stereo and 192 kbps for joint stereo, with an agreed sample rate of 48 kHz. It will also follow the MPEG-2 layer 2 specification.
12. Where additional audio channels are carried, such as Audetel 'audio descriptive services', these will adhere to ETR 154 and the guidelines set out in the DTG

documentation 'Digital Terrestrial Television - Requirements for Interoperability' (the DTG Requirements) dated December 1996.

13. Further information on audio descriptive services proposals can be found in Annex 6.

Data transmission

14. At the time of writing it is not yet clear what options will be included within the DVB specification for data broadcasting. When implemented, any data services provided by British Digital Broadcasting will be implemented according to the DVB data broadcasting specification, subject to this providing suitable mechanisms for their delivery.
15. The SI data tables will carry information relating to the services offered and will be in accord with the recommendations of the DVB-SI DAT working party when these have been finalised.

Multiplexing

16. All multiplexing operations carried out at the Multiplex Centre and any subsequent re-multiplexing that may be called for in the delivery of the signals will conform to ISO/IEC 13818-1 and adhere to the guidelines contained in ETR 154. Multiplex systems will combine all components of the multiplexed signal into a coherent and compatible MPEG-2 transport stream.
17. British Digital Broadcasting has had discussions with manufacturers about the availability of new systems of MPEG-2 encoding and multiplexing available in time for viable delivery before the launch of services. British Digital Broadcasting favours the use of statistical multiplexing to make best use of the bandwidth available, both to maintain technical quality and yet allow for additional services where possible. Statistical multiplexing forms part of the offer currently available from our preferred supplier of multiplexer equipment.
18. Two illustrative bit budgets are outlined below in Tables 1 and 2. The first shows an even allocation of 4.27 Mbps for video in a five-channel multiplex, which would give a good quality to each channel. The second table shows a variable allocation of two channels at 6 Mbps for high quality, fast moving or sports programme sources, two at a medium setting of 3.43 Mbps for general programming and finally one channel at 2.51 Mbps for film-based original programming.
19. In practice it is possible to set the statistical multiplexer control computer to have upper and lower bit envelopes within which each channel can operate, allowing flexible use to be made of channel allocations. It has been established that film-based material can be encoded at a lower bit rate due to the nature of the film transfer, where 2 video fields will be encoded from an individual film frame thereby reducing the amount of data required to encode this type of programming.

20. The adaptable nature of a statistical multiplex system is such that additional programme and data streams can be introduced or removed at will with little impact on other programme channels, so long as care is taken in setting the bit rate allocation on those channels, and on the aggregate bit rate.
21. In this way it will be possible to introduce Pay Per View and special event programming into the multiplex by adjusting the bit rate dynamically on the existing channels, as the new event programme stream is introduced.

Illustrative Even Bit Rate 5 Channel Multiplex			
Service	Description	Bit Rate	
CHANNEL-1	Video Programme 1	4.274 Mbit/s	
	Stereo Audio 1	0.2560 Mbit/s	
	Audotel-1	0.0640 Mbit/s	<i>Only when required</i>
	DVB Subtitling-1	0.0080 Mbit/s	
CHANNEL-2	Video Programme 2	4.274 Mbit/s	
	Stereo Audio 2	0.2560 Mbit/s	
	Audotel-2	0.0640 Mbit/s	<i>Only when required</i>
	DVB Subtitling-2	0.0080 Mbit/s	
CHANNEL-3	Video Programme 3	4.274 Mbit/s	
	Stereo Audio 3	0.2560 Mbit/s	
	Audotel-3	0.0640 Mbit/s	<i>Only when required</i>
	DVB Subtitling-3	0.0080 Mbit/s	
CHANNEL-4	Video Programme 4	4.274 Mbit/s	
	Stereo Audio 4	0.2560 Mbit/s	
	Audotel-4	0.0640 Mbit/s	<i>Only when required</i>
	DVB Subtitling-4	0.0080 Mbit/s	
CHANNEL-5	Video Programme 5	4.274 Mbit/s	
	Stereo Audio 5	0.2560 Mbit/s	
	Audotel-5	0.0640 Mbit/s	<i>Only when required</i>
	DVB Subtitling-5	0.0080 Mbit/s	
	Total	23.010 Mbit/s	
Multiplex Overhead			
	Conditional Access	0.250 Mbit/s	
	PSI	0.075 Mbit/s	PAT / PMT / CAT
	SI	0.300 Mbit/s	EIT / NIT / SDT / BAT
	EPG	0.300 Mbit/s	
	Programme Clock	0.0655 Mbit/s	
	Data	0.000 Mbit/s	<i>Additional Later</i>
	TOTAL	0.990 Mbit/s	
	Grand Total	24.000 Mbit/s	

Table 1 Illustrative Even Bit Budget

For details of the SI data table allocation please refer to Annex 15.

22. British Digital Broadcasting will use compression and multiplexing equipment meeting MPEG-2 and DVB-T specifications, and has already had discussions with suppliers who can comply with its requirements. British Digital Broadcasting is aware of the rapid pace of development likely in this area and is closely monitoring the situation. The chosen equipment will include arrangements for redundancy, monitoring and

control facilities to provide the necessary level of reliability for this part of the system. This will be a high priority area, in order to provide test transmissions as soon as possible, primarily for the benefit of receiver manufacturers and installers. Letters have been included from MPEG-2 encoding and multiplex system manufacturers in support of this application; refer to Annex 3 for details.

Illustrative VARIABLE Bit Rate 5 Channel Multiplex			
Service	Description	Bit Rate	
CHANNEL-1	Video Programme 1	6.000 Mbit/s	Hi Quality/Sports
	Stereo Audio 1	0.2560 Mbit/s	
	Audotel-1	0.0640 Mbit/s	<i>Only when required</i>
	DVB Subtitling-1	0.0080 Mbit/s	
CHANNEL-2	Video Programme 2	6.000 Mbit/s	Hi Quality/Sports
	Stereo Audio 2	0.2560 Mbit/s	
	Audotel-2	0.0640 Mbit/s	<i>Only when required</i>
	DVB Subtitling-2	0.0080 Mbit/s	
CHANNEL-3	Video Programme 3	3.430 Mbit/s	Schedule General Progs.
	Stereo Audio 3	0.2560 Mbit/s	
	Audotel-3	0.0640 Mbit/s	<i>Only when required</i>
	DVB Subtitling-3	0.0080 Mbit/s	
CHANNEL-4	Video Programme 4	3.430 Mbit/s	Schedule General Progs.
	Stereo Audio 4	0.2560 Mbit/s	
	Audotel-4	0.0640 Mbit/s	<i>Only when required</i>
	DVB Subtitling-4	0.0080 Mbit/s	
CHANNEL-5	Video Programme 5	2.510 Mbit/s	Schedule Films etc
	Stereo Audio 5	0.2560 Mbit/s	
	Audotel-5	0.0640 Mbit/s	<i>Only when required</i>
	DVB Subtitling-5	0.0080 Mbit/s	
	Total	23.010 Mbit/s	
Multiplex Overhead			
Conditional Access		0.250 Mbit/s	
PSI		0.075 Mbit/s	PAT / PMT / CAT
SI		0.300 Mbit/s	EIT / NIT / SDT / BAT
EPG		0.300 Mbit/s	
Programme Clock		0.0650 Mbit/s	
Data		0.000 Mbit/s	<i>Additional Later</i>
	TOTAL	0.990 Mbit/s	
	Grand Total	24.000 Mbit/s	

Table 2 Illustrative Variable Bit Budget

For details of the SI data table allocation please refer to Annex 15.

Section A10 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three of the licences for which it has applied.

The policy outlined in British Digital Broadcasting's supplementary proposals is essentially the same as that outlined above. If awarded all three licences, British Digital Broadcasting will be in a better position to act as lead party in ensuring interoperability between the different multiplexes and consumer receivers.

Section A11 - Technical Quality and Reliability

ITC Requirement

The applicant should state in detail what operational and staffing arrangements he proposes to have in place to ensure that the Licensed Service complies with the technical quality and reliability requirements of the ITC Digital Technical Performance Code.

Summary

British Digital Broadcasting intends, by its approach to quality control, to ensure that the introduction of digital terrestrial television to the UK will present the viewer with a service that compares well with the existing quality being offered on analogue services and with the quality of video and audio that will become available through the introduction of pre-recorded digital video disks.

The experience of British Digital Broadcasting's shareholders in both terrestrial and satellite broadcasting and in distribution will ensure that the systems and delivery mechanisms chosen are backed up wherever possible by reserve equipment and that the reliability of transmission and distribution will match that attained in the operation of existing terrestrial services. British Digital Broadcasting will make every endeavour to meet the requirements of the ITC's Digital Technical Performance Code.

British Digital Broadcasting will train core technical staff to be conversant with the ITU-R (CCIR) 5-Point Quality Grading Scale and to apply these standards to programme quality monitoring. British Digital Broadcasting will have a hierarchical structure of technical management with written procedures for dealing with complaints from the trade, viewers and the ITC. British Digital Broadcasting intends to have a fully traceable database of programme quality complaints from which annual reports can be created for the ITC.

Background to Quality Measurement

1. British Digital Broadcasting's shareholders include major ITV licence holders, bringing a wide experience of monitoring and maintaining the technical quality of programming to the standards laid down by the ITC for analogue terrestrial television. This is coupled with BSkyB's experience in the operation of satellite-borne subscription television channels over a number of years, including decoder roll-out and receiver design. British Digital Broadcasting will thus have the ability to call on a broad base of experience to deal with the many and varied technical, quality, reliability and practical issues associated with the introduction of digital terrestrial television.
2. The above companies have experienced many changes in the production of programme material over the years. Experiences have ranged from the use of U-Matic, SVHS and

Hi-band for News etc., through one-inch videotape, to the introduction of Betacam 1/2" videotape formats. The transition to digital formats in acquisition and post-production has led to much greater flexibility, and ultimately improved quality, albeit at the expense of having to deal with new sets of problems. Use of uncompressed digital post-production techniques has introduced a quality threshold against which to measure all other programmes.

3. Recent years have seen a move towards the use of non-linear editing systems such as Quantel's Editbox, Avid, Lightworks, etc. Gradually these systems have moved from a purely off-line function to use, in a limited fashion, for on-line editing of programmes. The subtle changes introduced by the use of slightly compressed motion JPEG systems has led to new criteria for the measurement of picture distortions. Drawing on the experience gained in evaluating this type of programming, British Digital Broadcasting will be able gradually to adjust its technical quality criteria with the introduction of MPEG-2 encoding and multiplexing, in order to maintain an appropriate balance between technical quality, commercial requirements and viewer expectation.
4. Since these new distortions have no equivalent in analogue technology, British Digital Broadcasting believes that new test procedures and operational practices will have to be established. In the past, the use of various fixed test signals related directly to the programme quality through a broadcast chain. With MPEG-2 encoding, programme quality can change dependent on picture content. Image quality can also be affected by external factors such as the available bit rate, and any bit errors that occur during distribution of the transport stream.

Technical Quality

5. By establishing its own delivery requirements derived from shareholders' existing technical delivery specifications, British Digital Broadcasting aims to have the best available quality of programming prior to encoding. It is apparent from research that the best quality of encoding can be attained at a lower bit rate when the source material is of a high standard. This reduction in bit rate will allow the best possible use of the transport stream bandwidth to improve quality on other, more demanding, channels in the multiplex.
6. Dependent on the quality of delivered programmes for each channel, British Digital Broadcasting will consider the introduction of pre-processing techniques, either in the encoder or as a separate process, where this is proven to add benefit to the encoding process. British Digital Broadcasting will make every endeavour to comply with the ITC's Digital Technical Performance Code dated 31 October 1996 by closely monitoring the quality at both the programme delivery and the MPEG encoding and multiplexing stages.
7. When monitoring the compressed pictures, due regard will be given to the production process and any compression used will be logged to avoid any problems caused by concatenation of compression schemes which may lead to artifacts in the final picture.

For this reason, there will be close co-operation between the multiplex licensee and programme providers. British Digital Broadcasting will offer advice to programme supply companies if this cause of impairment is identified.

Operational Arrangements

8. The four stages of technical monitoring and resilience are described below:-

Playout Centre

9. Programmes and commercials will be assessed technically to ensure that they meet standards derived from shareholders' existing technical delivery standard. Reporting to the Digital Transmission Manager, the Shift Supervisors and their Engineers and Technicians will be jointly responsible for ensuring programme quality standards are met. The latest techniques of digital post production and presentation will be used to ensure that the best possible programme quality is delivered to the Multiplex Centre. British Digital Broadcasting will have a contract with the digital programme service providers which will specify the technical parameters to be observed by the Playout Centre technical staff.

Multiplex Centre

10. At the British Digital Broadcasting multiplex centre all relevant technical staff will be trained in the operation of MPEG-2 encoding and multiplex equipment, backed by a strong computer systems team familiar with the operation and support of programme automation and monitoring systems. These staff will monitor and log the performance of the multiplex or multiplexes created and transmitted from the multiplex centre. This will include the monitoring of both video and audio quality and the strict control of the subscriber authorisation systems. There will be five main plus one hot spare encoders with a dual multiplexer (main plus reserve), with full change-over facilities per multiplex channel. All computer systems will have a hot backup and power will be fed via an uninterruptible power supply system with generator backup.
11. The Multiplex Centre will be staffed on a 24 hour shift basis in accordance with the staffing plans shown in Annex 10.
12. Each monitoring room will be equipped with the relevant MPEG-2 transport-stream analysis equipment as required. Off-air logging equipment will be fitted to allow British Digital Broadcasting to record the output of each multiplex channel as transmitted to allow later analysis if required. These tapes will be held for 28 days as required by the ITC's Digital Performance Code.
13. Each outgoing multiplex transport stream will be monitored as off-air decoded sound and vision. British Digital Broadcasting intends to employ error logging which will also utilise a hard disk recorder to store the last five minutes of multiplex as transmitted. When problems are detected, this data will be stored and later archived

for a more detailed investigation. It is feasible that the PSI/SI data changes could also be logged on an ongoing basis by the computer systems for 'as run' logging.

Distribution Resilience

14. A contract will be placed with a satellite distribution provider for a dual service using two separate uplinks and satellites in different orbital positions. This will protect against sun outages and provide a reserve path for distribution in the case of failure.

Transmission Resilience

15. Transmission will be provided as total broadcast contract for service with an established transmission provider. The contract between this provider and British Digital Broadcasting will cover the necessary reliability and quality monitoring requirements in keeping with the ITC's standards of reliability as outlined in the ITC's Digital Performance Code, the details of which are outlined below.
16. To ensure high quality transmission, monitoring will be provided at each transmitter site to enable any faults to be detected rapidly. This will include not only monitoring of the modulators and transmitter systems themselves, but also monitoring of the transport stream to ensure that it is properly formatted. Telemetry links will be provided for the main transmitters to enable alarms to be raised at a central control centre so that appropriate corrective action can be initiated. The monitoring and telemetry links will also provide the transmission operator with an overview of the total transmission network at all times. A high level version of this overview will be available to British Digital Broadcasting at its multiplexing centre.
17. Resilience will be built into the design of the transmitting stations in a number of ways. The transmitters will be of solid state, modular design in order to minimise the risk of spontaneous failure. Passive reserve rather than parallel transmitter systems will be employed in order to avoid, where possible, reduced power operation which would deprive significant numbers of viewers of their service.
18. Antennas will be constructed in two halves with individual coaxial feeders. This arrangement is the same as that used in the existing analogue network and has proved itself to be very reliable over the years.
19. British Digital Broadcasting will monitor the technical performance and availability of the multiplexes by requiring its transmission operator to submit monthly reports detailing performance of the network which must exceed an agreed threshold. A summary of these reports will be made available to the ITC on an annual basis if required.

Section A11 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three of the licences for which it has applied

The policy outlined in British Digital Broadcasting's supplementary proposal is essentially the same as that outlined above.

Section A12 - Changes to Existing Transmission and Reception Arrangements

ITC Requirement

Noting in particular the information given in paragraph 48 and the provisions of the Code of Practice on Changes to Existing Transmission Arrangements which is referred to in Annex B, the applicant should state in the form of a fully worked out plan what arrangements he would make to implement the changes to existing transmission and reception arrangements required in order to accommodate the proposed multiplex transmitter plan. Information on the costs involved both on the transmission side (e.g. frequency changes or the inclusion of precision offset control) and on the reception side (e.g. house visits or new receiving aerials) is required under section B of the attachment to Part III.

Summary

British Digital Broadcasting has drawn up a project plan for implementing the necessary changes to existing transmission and reception arrangements in order to allow the introduction of the new digital terrestrial services - see Annex 19. Assumptions about the costs associated with this work have been included within British Digital Broadcasting's business plan.

British Digital Broadcasting has adopted a cautious approach to the provision of financial resources to this aspect of the project but recognises that the likely scale of the problem is actually quite small.

If British Digital Broadcasting were to be awarded the licence for Multiplex C, British Digital Broadcasting would seek to co-operate with the operators of the other five multiplexes in order to accomplish this work in the most timely and cost-efficient manner.

British Digital Broadcasting's plans for retuning and aerial work have been drawn up in consultation with Granada Technology Group, Granada's TV rental division which has extensive experience and expertise in this area. This is evidenced by their key role in all aspects of the current retuning exercise for Channel 5 although British Digital Broadcasting recognises that the work now required is of a rather different nature and demands more local knowledge of potential problem areas and options for providing alternative services. Given the expertise and resources available to the company, British Digital Broadcasting is confident that it will be able to speedily identify and resolve problems in this area and thus ensure that the roll-out of the digital multiplexes is not impaired.

1. British Digital Broadcasting has studied the ITC's draft Code of Practice on Changes to Existing Transmission and Reception Arrangements and the document 'Impact of Digital Main Stations on UK Analogue Services: Initial Assessment'. In the light of

these documents and discussions with the two potential transmission suppliers, it has been concluded that the following changes may be necessary to existing transmission and reception arrangements in order to allow the introduction of digital terrestrial television services.

2. Considerable uncertainty exists regarding the effect of digital services on the reception of existing analogue services. It is very likely that interference will be experienced only by a very few viewers. However in order to present the business plan with the minimum number of uncertainties, British Digital Broadcasting has adopted a very cautious approach and assumed interference levels to be at the upper end of the possible range.

Transmission Changes

3. British Digital Broadcasting believes that the following work will be required at the relevant main stations:
 - a) Installation of special filters and combiners to allow digital terrestrial television services to be combined with analogue services into existing antennas.
 - b) Strengthening of structures where necessary to accommodate additional digital terrestrial television antennas.
 - c) Installation of new digital terrestrial television antennas where required.
 - d) Introduction of precision offset at a number of specified stations.

4. British Digital Broadcasting believes that the following work will be required at the relevant relay stations:
 - a) Installation of special filters and combiners to allow digital terrestrial television services to be combined with analogue services into existing antennas.
 - b) Strengthening of structures where necessary to accommodate additional digital terrestrial television antennas.
 - c) Installation of new antennas where required.
 - d) Changing one or more channels of specified relay stations.
 - e) Provision of up to 5 new relay stations.
 - f) Replacement of the re-broadcast link (RBL) feed with an SHF link at up to 5 stations.

- g) Improvement or modification of RBL feeds at specified stations.
- h) Increasing the effective radiated power (ERP) of specified stations.
- i) Introduction of precision offset at a number of specified stations.

Reception Changes

5. Although the large majority of television receivers are unlikely to be affected by the introduction of the new services, in certain areas digital terrestrial transmissions will interfere with existing analogue services and some viewers may no longer be able to obtain satisfactory reception on their existing channels. British Digital Broadcasting recognises that such problems must be addressed prior to bringing digital terrestrial stations into service wherever possible, and has devised a procedure for dealing with them. This procedure is detailed in the confidential Annex 19 and is intended for each relevant multiplex at each digital terrestrial site.
6. British Digital Broadcasting has made preliminary estimates of the total numbers of homes likely to be affected by interference. These estimates differentiate between those homes which will require retuning of TV sets and VCRs only, and those which will require both retuning and aerial re-alignment or replacement. A range of costs has been derived in each case based on ITC population figures with judgments made where appropriate in order to estimate the number of viewers and households likely to be affected.
7. A limited amount of data about the effects of digital terrestrial relay transmitters on existing services is available from the ITC at the present time. Notional estimates of the numbers of viewers likely to be affected have therefore been included by British Digital Broadcasting for costing purposes.
8. The results of British Digital Broadcasting's cost analysis are shown in Annex 19 based on the estimated worst case number of viewers affected.
9. It is assumed that the cost of the necessary retuning and aerial work will be apportioned between the six multiplex operators. Annex 19 shows the estimated costs for each multiplex of dealing with the worst case number of viewers that could be affected by that multiplex. In order to minimise disruption to viewers, and to keep expenditure to a minimum, British Digital Broadcasting considers it essential that the work is carried out on behalf of all the multiplex operators. If British Digital Broadcasting was awarded the licence for a single multiplex, it would seek to work with the other successful licence holders to co-ordinate the retuning and aerial work across all multiplexes.
10. British Digital Broadcasting places considerable emphasis on the need for comprehensive training for staff involved with retuning work and would want to see training in the following areas addressed by contractors carrying out this work.
 - a) The potential types of interference to be expected from digital

transmissions.

- b) The role of the retuner.
- c) Customer feedback and morale.
- d) Dealing with the customer in a professional manner.
- e) Retuning procedures.
- f) Escalation procedures to handle specific problems and complaints.
- g) Technical procedures to address specific complexities likely to be encountered.
- h) Practical training.
- i) The use of technical equipment.
- j) Health and safety.

Security

11. British Digital Broadcasting acknowledges the importance of taking adequate precautions to protect the public from fraud or criminal activity during the retuning exercise. British Digital Broadcasting would expect that all staff involved with retuning and aerial work should be screened to ensure that unsuitable persons are eliminated at an early stage. New staff should be required to produce an approved form of identification and references must be taken up.
12. British Digital Broadcasting recognises the importance of the public being able to identify easily the company's retuners and to have a secure means of checking identification. Contractors must provide uniforms, along with identification cards contained in a laminated holder featuring company logo, photograph, freephone contact number, ID number and expiry date. Information packs should be sent out in advance to all addresses to be visited explaining the security arrangements and how retuning staff can be properly identified.
13. Freephone calls will need to be directed to a central point, which must hold details of all staff including ID numbers, descriptions and passwords. Contractors must ensure that contact is made at the appropriate time with the local police station crime prevention and community liaison staff and any criminal allegations made against retuning staff by members of the public will have to be passed on immediately to the police.

Quality Standards

14. British Digital Broadcasting believes that rigorous quality standards for the re-tuning exercise must be part of any contract for the carrying out of this work.

Section A12 of British Digital Broadcasting's *supplementary proposals* provides equivalent information should the company be awarded all three licences for which it has applied.

The policy outlined in British Digital Broadcasting's supplementary proposal is essentially the same as that outlined above. However, operating three multiplexes would allow British Digital Broadcasting to play a leading role in tackling the reception issues discussed above.

Section A13 - Receiving Equipment

ITC Requirement

Noting the information given in paragraphs 85 to 87 the applicant should state how he will ensure that the equipment covered by the arrangements set out in response to question A13 above will be capable of receiving all the multiplex services available in the proposed coverage area of his own service.

Summary

British Digital Broadcasting intends to implement its systems and procedures in a way that will allow consumer equipment to receive all the multiplex services available in the proposed area of coverage.

If awarded the licence for Multiplex C, British Digital Broadcasting will seek to work with other multiplex operators in order to establish interoperability between receiving equipment and multiplexes.

Service Information

1. British Digital Broadcasting will incorporate SI information from other multiplexes into its own, assuming that this is made available by other multiplex operators under appropriate reciprocal arrangements. The incorporation of this additional SI information will involve local processing and insertion arrangements at certain transmitter sites. Solutions are under consideration based around the reception of SI data off-air, or by the use of wide area data networks.
2. British Digital Broadcasting will ensure that the SI data carried in the Multiplex C transport stream will be compliant with the ITC's 'Draft Rules of Operation for the DVB-T Specification' and the DTG's 'Requirements for Interoperability'. British Digital Broadcasting will seek to work with the other successful multiplex licence holders to ensure a common technical solution to the issue of incorporation of local 'Network Information Tables' (NITs).
3. The frequencies of local relays available at each service insertion point in the transmission network will be inserted into the Multiplex 'C' transport stream by the use of transcoders which separate out the regional SI data and insert the data into the Multiplex 'C' ongoing signal. At the same time Multiplex 'C' SI data is extracted and inserted into all other multiplexes available at the service insertion point.
4. Further detailed discussion of the SI data tables can be found in Annex 15.

Conditional Access

5. British Digital Broadcasting intends to implement a strategy for conditional access which will allow viewers to receive all the services that they are entitled to, no matter in which multiplex these are carried or which conditional access system is used to protect them. This will be achieved by offering fair, reasonable and non-discriminatory access to British Digital Broadcasting's own conditional access system, or by entering into joint simulcrypt arrangements if requested by other operators.
6. Simulcrypt is a system where entitlement messages for more than one proprietary system of conditional access can be transmitted in the same multiplex transport stream. British Digital Broadcasting would seek to work with other multiplex licence holders to ensure that if such a system were necessary then a system of data links would be put in place between operators of different subscriber management systems to allow secure transfer of entitlement messages between operators.

Electronic Programme Guide

7. British Digital Broadcasting will seek to work with other multiplex operators in the establishment of a common electronic programme guide that will facilitate access to programming across all multiplexes available within the coverage area. British Digital Broadcasting is committed to the development of an EPG which is fully compliant with the regulatory requirements of Ofcom and the ITC and would be prepared to discuss participation in any industry initiative to establish an equitable approach to the issues raised by electronic programme guides.

Receiver Compliance Facility

8. If awarded the licence for Multiplex C, British Digital Broadcasting will seek to work with other multiplex operators in the establishment of a Receiver Compliance Facility. This facility would be equipped with test equipment and staff to ensure that the variety of set top boxes and integrated receivers developed for digital terrestrial television, will be mutually technically compatible and also that different implementations of API and EPG interoperate with each other. This facility would draw on the experience gained by BSkyB and News Digital Systems in developing their own facilities for the compliance testing of analogue satellite decoders.

Section A13 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three licences for which it has applied.

If awarded three multiplexes, British Digital Broadcasting would act as the lead party in receiving equipment interoperability discussions. British Digital Broadcasting would also be able to ensure that receivers would have access to both satellite and terrestrial digital services from the same equipment through the use of a satellite or terrestrial sidecar (plug-in module).

Section A14 - Supply of Programme Services

ITC Requirement

The applicant should indicate the sources of the programme services which he proposes to broadcast under the multiplex licence. Details of any agreements with suppliers should be given here or in a confidential annex.

Summary

Digital terrestrial television will start with no subscribers. In these circumstances relying entirely on third party programme providers to supply a differentiated package would be a risk, due to the level of investment required. In order to achieve the quality, balance and degree of distinctiveness most likely to encourage viewers to subscribe, British Digital Broadcasting's shareholders intend to provide and originate four of the five proposed channels.

1. This section sets out details for the supply of British Digital Broadcasting's channels on Multiplex C. Annex 4 includes a number of letters from suppliers confirming their willingness to supply programming.
2. A key asset that British Digital Broadcasting brings to digital terrestrial television is access to the content libraries and rights for broadcast television held by its shareholders, together with the relationships that those shareholders have built up over many years with major suppliers. Under the Shareholders Agreement each party has agreed to use reasonable endeavours to acquire digital terrestrial rights to programming acquired by it (where it does not already hold such rights).

Carlton Entertainment

3. Carlton Entertainment will supply the following material for its channels through in-house production: chat shows, entertainment and gameshows.
4. Carlton Entertainment intends to acquire the following material: drama, chat shows, games shows, drama, comedy.
5. Carlton Entertainment has reached, in principle, satisfactory assurances of supply from the following suppliers:
 - Warner Bros.
 - Universal
 - CBC
 - CBS
 - All American
 - Disney

Granada Plus

6. Granada Plus has in place a long term contract guaranteeing first rights of access to the entire programme libraries of Granada TV Productions and London Weekend Television Productions. This gives to Granada Plus first refusal on perhaps the largest unexploited archive of quality British-made programmes.
7. The Granada archive goes back more than 40 years to the beginning of ITV and includes the full range from Britain's most popular soap *Coronation Street*, to award-winning drama such as *Jewel in the Crown* and *Upstairs Downstairs*. In comedy and entertainment there is a diverse range of productions from *Wood and Walters* to cult favourites such as *The Army Game*. The LWT archive has nearly equal depth, and a range that goes from *The South Bank Show* to *The Professionals* and from *An Audience With Dame Edna* to *Surprise Surprise*.
8. Granada Plus will also commission a proportion of lifestyle, magazine and entertainment programmes. Again, these are subject to existing programme supply agreements between Granada Plus and the award winning production teams of Granada TV and LWT.

Sky Movies

9. Major Hollywood studios and independent production companies currently provide output product as well as library product for carriage on BSkyB's satellite movie channels. To demonstrate the depth of these supply arrangements, in the past 6 months studios have made 76 films available in the pay television window to BSkyB's present movie channels. Moreover, suppliers such as these currently help Sky provide the material for the 22,000+ hours of programming across these movie channels. In the context of these relationships, Sky believes that it is well placed to obtain digital terrestrial rights for programming the digital terrestrial Sky Movies channel where necessary.
10. European and British Film licensors, including British Screen and Chargeurs, currently provide product for Sky satellite movie channels as well. Moreover, BSkyB presently creates its own in-house support movie programming such as *The Movie Show*, *Special Features* and *The UK Top Ten* which it would plan to exploit on the digital terrestrial Sky Movies channel as well as explore opportunities to create additional support programmes especially for this channel.

Sky One

11. Major Hollywood studios and independent production companies currently provide product for carriage on BSkyB's satellite general entertainment channels. These long-established, contractual relationships help Sky source the 12,000+ hours of transmission on these channels a year. Current supply sources include Twentieth Century Fox, King World, Proctor & Gamble and Saban International as well as

European and UK suppliers such as LWT, Granada, Dandelion and Wink Productions. In the context of these relationships, Sky believes that it is well placed to obtain digital terrestrial rights for programming for the digital terrestrial Sky One channel where necessary.

12. Furthermore, in-house or commissioned programming made especially for the Sky general entertainment satellite channels in the recent past includes *Springhill*, *Jimmy's*, *Just Kidding*, *Walker's World* and *The Movie Show*. Sky has a number of shows planned or currently in production such as *Selina Scott* and *Sky Cafe*. Perhaps most importantly, BSkyB has reached a point in its lifecycle at which it can begin to build its own library. Additionally, BSkyB will explore opportunities to create original general entertainment programmes especially for the Sky One digital terrestrial channel.

BBC Style and Showcase

13. British Digital Broadcasting has secured an agreement in principle with the BBC for the supply, via the BBC's proposed joint venture with Flextech of its new BBC Style and Showcase channels. The arrangement also envisages the supply of a further new BBC channel as and when additional capacity permits.

Section A14 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three licences for which it has applied.

The channels, whose supply arrangements have been described above, also feature in British Digital Broadcasting's 'three multiplex' programme proposals. Section A14 of British Digital Broadcasting's *supplementary* proposals also describes supply arrangements for a further ten channels, including additional BBC channels.

Section A15 - Capacity for Programme Services

ITC Requirement

Noting the information given in paragraph 108, the applicant should state how he intends to ensure that at least 90 per cent of the digital capacity on the multiplex is available for the broadcasting of digital programme services, if appropriate also qualifying services, programme-related services or relevant technical services.

Summary

British Digital Broadcasting's business case for the introduction of a digital television service is based upon the broadcasting of digital programme services, together with relevant technical services. The company has no intention of utilising more than 10% of the multiplex for additional services which are not programme related services.

1. As noted in Section A7, British Digital Broadcasting intends, over time, to offer a variety of digital additional services within the multiplex. However, such services do not form part of the launch planning for digital terrestrial television. Such services will be introduced following careful evaluation of user demand and with a view to supporting the development of the market for digital terrestrial television in general.
2. The capacity utilised for additional services will not exceed 10% of the whole multiplex during normal viewing hours (i.e. between 0600 and 2400). As the market develops for these services, it is possible that advantage will be taken of under-utilisation of capacity for normal programming (e.g. during night time hours) to provide extended additional services. There are, however, no immediate plans to do so.
3. It is anticipated that further developments in multiplexing will allow more efficient use of the available capacity and it is British Digital Broadcasting's intention to utilise these improved multiplexing techniques as they become available. The intention, however, is initially to give priority to maintain or improve the quality or number of other programme or relevant technical services carried within the multiplex, such as the electronic programme guide, rather than for the carriage of additional services.

Section A15 of British Digital Broadcasting's supplementary proposals provides equivalent information should the company be awarded all three of the licences for which it has applied.

The policy outlined in British Digital Broadcasting's supplementary proposals is essentially the same as that outlined above.

Section A16 - Key Staff

ITC Requirement

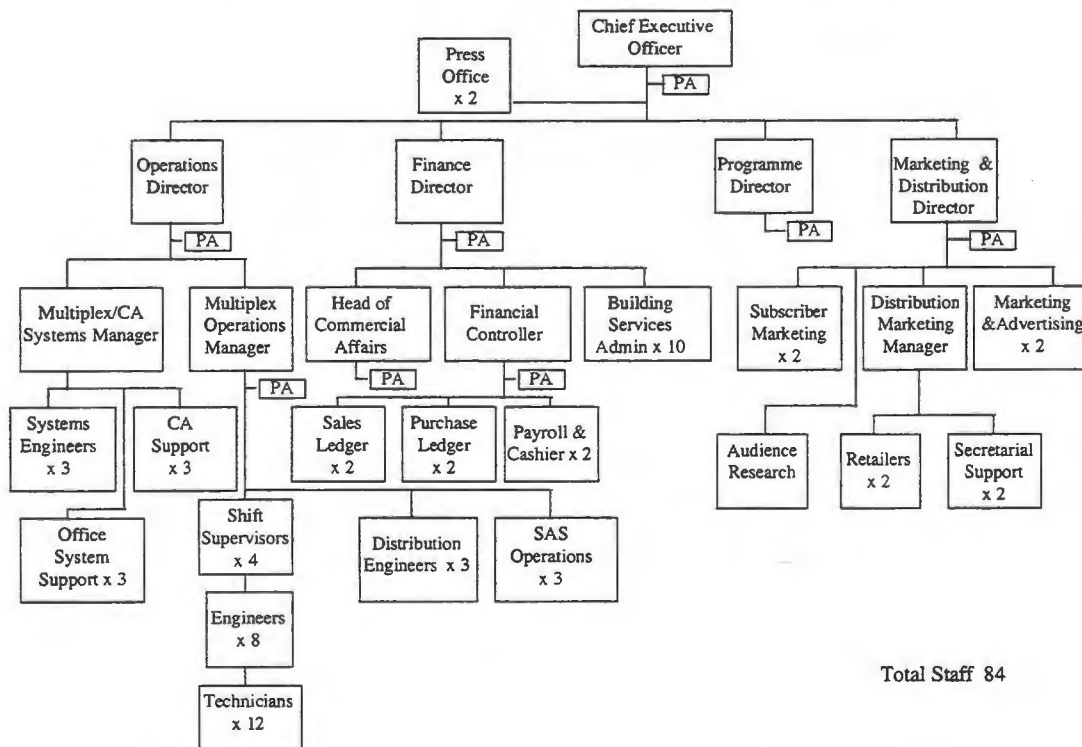
The applicant should identify the key posts and (where possible) the named post-holders who will be involved in establishing and running the multiplex service. Details should be given of the post-holders' experience and qualifications. If the applicant prefers, this information may be given in a confidential annex.

Summary

British Digital Broadcasting proposes an experienced and well resourced organisation designed around the core processes involved in delivering a digital terrestrial television service.

1. British Digital Broadcasting's proposed organisation for operating one multiplex is shown below:

BRITISH DIGITAL BROADCASTING ORGANISATION STRUCTURE



2. The organisation is built principally around the core processes involved in providing a digital terrestrial television service to the public, namely delivering the service (Operations), creating the multi-channel programme offer (Programming) and achieving customer awareness and uptake (Marketing). The five key posts are Chief Executive Officer, Operations Director, Finance Director, Programme Director and

Marketing Director. It should be noted that the shareholder companies of British Digital Broadcasting's parent company each have well resourced organisations for supplying their respective channels to British Digital Broadcasting. These organisations are described in confidential Annex 10.

3. The senior management team fulfilling the senior roles will combine the competence and experience required to run a major digital broadcasting company. Confidential Annex 9 summarises British Digital Broadcasting's approach to recruiting for the new posts and to resourcing the implementation of British Digital Broadcasting's digital terrestrial television services. Section B7 outlines detailed cost assumptions.
4. The executive management team will jointly share responsibility for ensuring compliance with the obligations of British Digital Broadcasting under its licence. British Digital Broadcasting will have comprehensive arrangements and procedures in place to ensure compliance with the licence conditions and compliance with Programme, Advertising, Sponsorship, Technical Performance and other Codes and directions issued by the ITC or any other competent authority. Appropriate legal representation will be sought directly at the request of the Chief Executive, or the Chief Executives duly appointed representative, as circumstances may dictate.

Section A16 of British Digital Broadcasting's *supplementary proposals* provides equivalent information should the company be awarded all three licences for which it has applied.

British Digital Broadcasting's 'three multiplex' organisation incorporates the same functions and processes as its 'single multiplex' equivalent but is resourced to a higher level to reflect the greater workload and wider role that British Digital Broadcasting would be able to take in leading the development of the market.

Section A17 - Composition and Identity of the Applicant - Directors

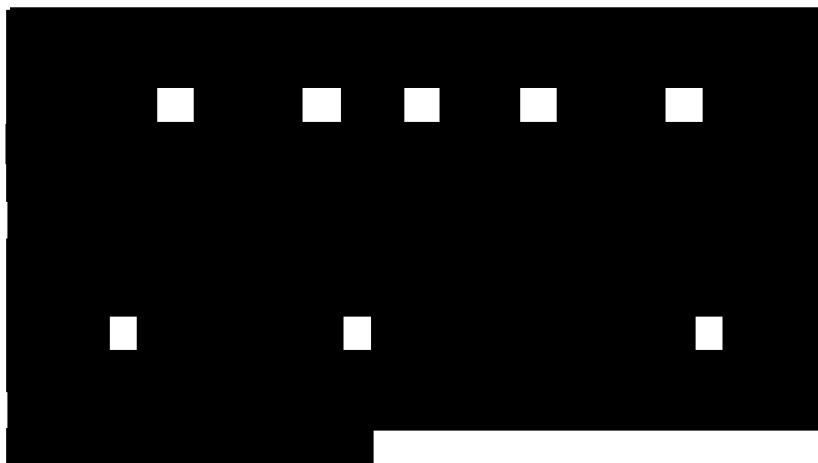
ITC Requirement

- (i) *Where the applicant is a body corporate, he should give for each of the following, the full names, addresses, nationality, country of residence, and other directorships, offices or employment's of the individuals concerned:*
 - a) *the directors of the applicant body;*
 - b) *if the applicant body is yet to be incorporated or formed, the proposed directors;*
 - c) *the directors of any body by which the applicant body is controlled (as defined in Schedule 2 of the 1990 Act);*
 - d) *the directors of any body that is a participant (as defined in Schedule 2 of the 1990 Act) with an interest of more than 20 per cent in the applicant.*
- (ii) *Where the applicant is not, or is not proposed to be, a body corporate, similar information should be provided about those responsible for management and policy-making.*

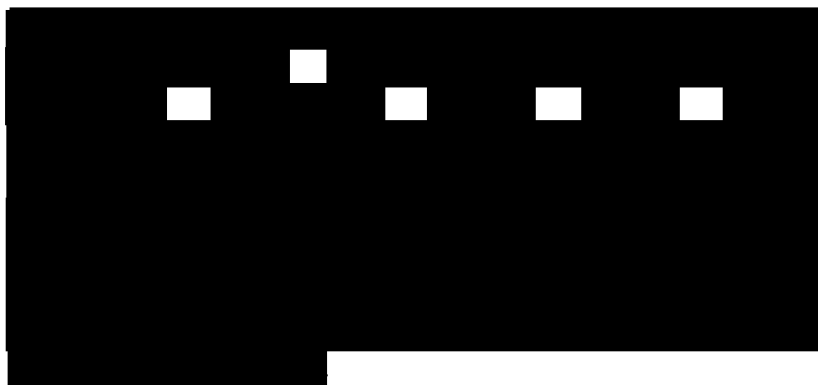
1. The Directors of British Digital Broadcasting are: (* denotes a non-executive director)

i)

[REDACTED]



- [Redacted text block]



- [Redacted text block]

[Redacted]

[Redacted]

iv)

[Redacted]

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v)

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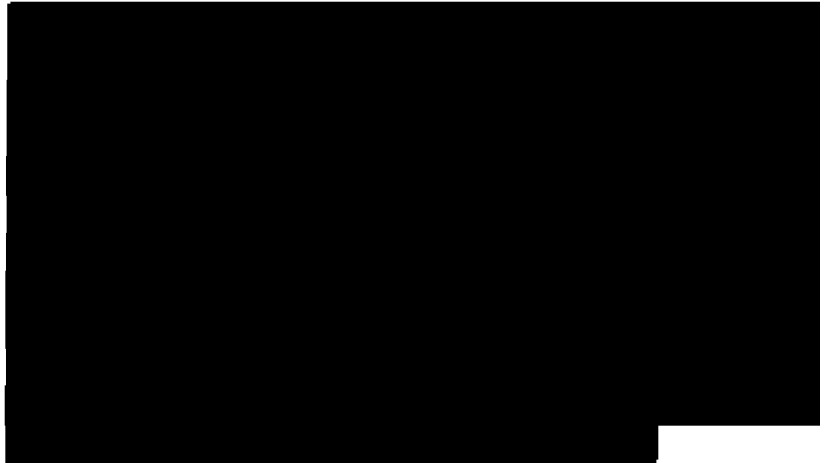
[Redacted]

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2. Carlton, BSkyB and Granada Group have agreed that [REDACTED] shall be the first Chairman of British Digital Broadcasting for a period of two years and thereafter the Chairman will first be a BSkyB appointee and then a Granada appointee. The right to appoint the Chairman will rotate every two years.
3. The applicant body has been incorporated and question (i) (b) is therefore not applicable.
4. The ITC requires details of directors of any body by which the applicant body is controlled (as defined by Schedule 2 of the 1990 Act). British Digital Broadcasting is controlled by British Digital Broadcasting Holdings, the directors of which are the same as those identified in paragraph 1 above.
5. In response to the request for information regarding the directors of any body that is a participant (as defined in Schedule 2 of the 1990 Act) with an interest of more than 20 per cent in the applicant, British Digital Broadcasting is 100% owned by British Digital Broadcasting Holdings, the directors of which are the same as those identified in paragraph 1 above. British Digital Broadcasting Holdings is owned as to one-third by Carlton, one-third by Granada Group and one-third by a wholly owned subsidiary of BSkyB. By virtue of the definition in Schedule 2 of the 1990 Act, none of these three bodies is a participant in British Digital Broadcasting. Details of the directors at Carlton, Granada Group and BSkyB can however be supplied on request.
6. British Digital Broadcasting is a body corporate and so question A17 (ii) is not applicable.

Section A17 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three licences for which it has applied.

The information supplied in Section A17 of British Digital Broadcasting's *supplementary* proposals is identical to that shown above.

Section A18 - Composition and Identity of the Applicant - Shareholders etc.

ITC Requirement

Where the applicant is a body corporate, he should give the names and addresses of the following (together with the number and class of shares held, or to be held):

- (a) participants with an interest of more than 5 per cent in the applicant;*
- (b) persons who it is intended will, following the award of a licence, be participants with an interest of more than 5 per cent in the applicant;*
- (c) participants with an interest of more than 5 per cent in any body which controls the applicant;*
- (d) participants with an interest of more than 5 per cent in any body which has an interest of more than 20 per cent or more in the applicant.*

Notes:

- 1) Where interests are held in the name of trustees or nominees, this should be stated and the above details should be given in relation to the beneficial owner.*
- 2) Five copies of the body's Memorandum and Articles of Association should be provided, together with a copy of any resolution amending or updating them.*

1. British Digital Broadcasting is a wholly-owned subsidiary of British Digital Broadcasting Holdings. British Digital Broadcasting Holdings is the beneficial owner of 100% of the shares of British Digital Broadcasting comprising 3,000,000 ordinary shares of 10p each issued fully paid for cash at £1 per share. As required by the ITC, the names and address of any participant with an interest of more than 5% in the applicant is detailed below:

British Digital Broadcasting Holdings

25 Knightsbridge

London SW1X 7RZ

100% of ordinary shares comprising 3,000,000 ordinary shares of 10p each

2. The ITC require the name and address of any persons who it is intended will, following the award of licence, be participants with an interest of more than 5% in the applicant. As stated in paragraph 1 above, British Digital Broadcasting is a wholly-owned subsidiary of British Digital Broadcasting Holdings. British Digital Broadcasting Holdings is the beneficial owner of 100% of the shares of British Digital Broadcasting comprising 3,000,000 ordinary shares of 10p each issued fully paid for cash at £1 per share.

3. The ITC requires details of participants with an interest of more than 5% in any body which controls the applicant, of British Digital Broadcasting Holdings, being the only body which controls British Digital Broadcasting. These are:

- a) CARLTON COMMUNICATIONS PLC
25 Knightsbridge
London SW1X 9RZ

Carlton is the beneficial owner of one-third of the shares in British Digital Broadcasting Holdings comprising 1,000,000 ordinary shares of 10p each issued fully paid for cash at £1 per share.

- b) GRANADA GROUP PLC
Stornoway House
13 Cleveland Row
London SW1A 1GG

Granada Group is the beneficial owner of one-third of the shares of British Digital Broadcasting Holdings comprising 1,000,000 ordinary shares of 10p each issued fully paid for cash at £1 per share.

- c) BRITISH SKY BROADCASTING LIMITED (“BSkyB Limited”)
6 Centaurs Business Park
Grant Way
Isleworth
Middlesex TW7 5QD

BSkyB Limited is the beneficial owner of one-third of the shares of British Digital Broadcasting Holdings comprising 1,000,000 ordinary shares of 10p each issued fully paid for cash at £1 per share. BSkyB Limited is a wholly owned subsidiary of British Sky Broadcasting Group Plc.

4. Sections B14 and B16 in the confidential section of this application give details of the agreements amongst the participants in British Digital Broadcasting Holdings to subscribe for shares if the application is successful.

5. By virtue of their interests in British Digital Broadcasting Holdings, each of Carlton, Granada Group and BSkyB Limited, although not participants in British Digital Broadcasting, could be said to have an interest of 20% or more in British Digital Broadcasting.

- a) There are no persons who hold more than 5% of Carlton.
- b) The following are the names and other details of the persons who hold more than 5% of Granada Group:

Mercury Asset Management plc
33 King William Street
London EC4R 9AS

10.97% of ordinary shares (93,728,092 ordinary shares)
(see note A)

- c) As noted above, BSkyB Limited is a wholly owned subsidiary of British Sky Broadcasting Group plc. The following are the names and other details of the persons who hold more than 5% of British Sky Broadcasting Group:

News International Television Limited
1 Virginia Street
London E1 9BD

39.88% of ordinary shares (686,021,700 ordinary shares)

BSB Holdings Limited
3 Burlington Gardens
London W1X 1LE

13.96% of ordinary shares (240,107,595 ordinary shares)

Pathe
5 Boulevard Malesherbes
75008 Paris
France

12.71% of ordinary shares (218,669,417 ordinary shares)

Granada Group plc (see note B)
Stornoway House
13 Cleveland Row
London SW1 1GG

6.48% of ordinary shares (111,478,527 shares)

6. Pathe and Granada Group (see note C) hold 30.29% per cent and 30.729 per cent respectively of the ordinary shares of BSB Holdings Limited. The total direct and indirect interest of Pathe and Granada Group in British Sky Broadcasting Group Plc are accordingly 16.94 per cent and 10.77 per cent respectively.
7. No interests are held in the name of trustees or nominees.
8. Five copies of British Digital Broadcasting's Memorandum and Articles of Association are provided with this application as required by the ITC.

Notes:

- A) At the time when this application was printed, Granada Group had been informed that Mercury Asset Management Plc's shareholding had fallen to below 10% but no precise figures were available. The figures quoted represent the last verifiable information.
- B) Shares held in the name of Triplereasons Ltd. (a wholly owned subsidiary of Granada Group PLC).
- C) Shares held in the name of 4 wholly owned subsidiaries of Granada Group PLC.

Section A18 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three of the licences for which it has applied.

The information supplied in Section A18 of British Digital Broadcasting's supplementary proposals is identical to that shown above.

Section A19 - Composition and Identity of the Applicant - Disqualified Persons etc.

ITC Requirement

- i) In relation to the details given in answer to A18(a) - (d), applicants should identify any body or individual who is:*
- a) a local authority;*
 - b) a body whose objects are wholly or mainly of a political nature, or which is affiliated to such a body;*
 - c) a body whose objects are wholly or mainly of a religious nature;*
 - d) an individual who is an officer of a body falling within (b) or (c);*
 - e) a body corporate which is an associate (as defined in paragraphs 1(1) and 1(1)(A) of Part 1 of Schedule 2 to the 1990 Act) of a body falling within (b) or (c);*
 - f) an advertising agency or an associate of an advertising agency.*
- ii) The applicant should give details of any other participant in the applicant body whose interest is or could be deemed to be incompatible with the requirements imposed by or under Schedule 2 to the 1990 Act.*

1. The British Digital Broadcasting application does not involve any body or individual who is a local authority.
2. The British Digital Broadcasting application does not include any body or individual whose objects are wholly or mainly of a political nature, and is not affiliated to such a body.
3. The British Digital Broadcasting application does not include any individual whose objectives are wholly or mainly of a religious nature.
4. The British Digital Broadcasting application does not include any individual who is an officer of a body falling within the categories defined in paragraphs 2 and 3 above.
5. The British Digital Broadcasting application does not include any body corporate which is an associate (as defined in paragraphs 1(1) and 1(1)(a) of Part 1 of Schedule 2 to the 1990 Act) of a body falling within the categories defined in paragraphs 2 and 3 above.
6. The British Digital Broadcasting application does not include any body or individual who is an advertising agency or an associate of an advertising agency.

7. No persons whose details are given in Sections A17 and A18 come within the categories set out in Section A19. With regard to the persons who are referred to in paragraph 4 of Section A18, in view of the need to keep the application confidential it has not been possible to formally confirm the answers given but British Digital Broadcasting believes that none of these persons fall within any of the relevant categories. To the extent (if at all) that this belief is wrong or that a change in circumstances might cause any of the above answers to be no longer be the case, it has been agreed in the Shareholders Agreement between Carlton, Granada Group and BSkyB Limited that provisions will be inserted in the Articles of Association of British Digital Broadcasting and British Digital Broadcasting Holdings and in the more detailed Shareholders Agreement to be entered into in the event that the application for this licence is successful, whereby, if any of them jeopardise the application (or the licence following award) the offending party will be required to offer its shares for purchase at fair value to the other parties.

Section A19 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three licences for which it has applied.

The information supplied in Section A19 of British Digital Broadcasting's supplementary proposals is identical to that shown above.

The Opportunity

The successful introduction of digital terrestrial television will provide benefits to viewers, industry and the economy.

Using their existing aerials, the vast majority of British viewers who do not currently subscribe to cable or satellite will be able to expand their choice of viewing with a wide range of additional channels. At the same time, they will also benefit from better reception, clearer pictures and an exciting set of additional viewing features such as an interactive electronic programme guide and programmes in widescreen.

British industry will gain from taking the lead in pioneering digital terrestrial technology at home, and subsequently, internationally. The British television production industry will gain from the launch of new British channels and more original programmes. Ultimately, digital terrestrial television will also allow the broadcasting spectrum - a valuable national resource - to be used more efficiently.

The Challenge

However, launching digital terrestrial television is one of the greatest challenges facing British broadcasting because of the complexity of the task involved, the scale of the resources required and the speed with which it must be completed.

The service must be developed quickly to exacting technical standards to cover up to 90% of the country. An attractive and competitively priced subscription programme service must be created and marketed. Conditional access, subscriber management and electronic programme guide services must be provided on terms which ensure fair and effective competition. The manufacture and sale of receiving equipment have to be pump primed through a complex partnership programme with retailers and manufacturers.

The Response: British Digital Broadcasting

British Digital Broadcasting is a partnership of Britain's three largest and most successful commercial television companies, Carlton Communications, Granada Group and BSkyB, with each owning a third of the company. We will also be able to draw on the strength of the BBC, whose new programme channels are one of the distinctive features of our applications.

We have applied for multiplex licences B, C and D separately and submitted further proposals for operating all three multiplexes together. We believe that operating three multiplexes gives the winning applicant the best prospect of taking a leadership role in the successful development of digital terrestrial television. In amending its original ownership limits from two to three multiplex licences, the Government implicitly recognised the strength of this argument as do the retailers and equipment manufacturers with whom we have had discussions.

Our applications are based on a year long process of evaluating the UK television market over the life of the licence period. In doing so, we have built a sophisticated and rigorous market model and have undertaken a detailed programme of research.

This identified three areas of operation which will be key to our success:

- Creating and then marketing the most attractive programme services
- Ensuring the widest take up of receiving equipment
- Developing and rolling out transmission plans for the service to achieve the widest coverage quickly

Our plans in each of these areas are set out below.

Programme Service

The strength of our programmes will be crucial to our success and, if we are awarded the three licences for which we are applying, will be a major factor in the success of digital terrestrial television as a whole. Customers will only buy receiving equipment if they are attracted by the extra programmes they will be able to watch.

This is why we have placed the greatest emphasis on creating an exciting and competitively priced programme service which will appeal to a wide variety of tastes and interests.

If our proposals for three multiplex licences are accepted, our programme service of twelve basic subscription and three premium channels (five per multiplex) would be as follows :

	<u>Multiplex B</u>	<u>Multiplex C</u>	<u>Multiplex D</u>
Basic Channels	Carlton Select Granada Plus BBC Horizon	Carlton Films Granada Good Life Sky 1 BBC Style / BBC Showcase	Public Eye Granada TV Shopping Carlton Entertainment BBC One TV Granada Sports Club
Premium Channels	Sky Movies Sky Sports	The Movie Channel	

Where possible, according to the coverage areas of the multiplex, our customers will receive all twelve basic channels as a “big value” package. Customers can then choose to subscribe to either one, two or three premium channels.

If awarded one multiplex, we will offer the following programme channels :

Basic Channels	Carlton Entertainment Granada Plus Sky 1 BBC Style / BBC Showcase
Premium Channel	Sky Movies

The programme service we will offer across three multiplexes consists of twelve basic channels which are either unique or among the best in their respective genres :

Carlton Select will be an enhanced version of the existing cable channel emphasising high quality original British production including drama, children's programmes and exclusive special events, particularly music and live European football. It will also draw on Carlton Food Network's extensive output of original programmes.

Granada Plus will be an all British programme service, including some of the most prestigious and popular drama, entertainment, comedy and children's programming ever produced in the UK, as well as award winning features and documentaries. The existing service will also be enhanced with more original programming.

BBC Horizon will be a new channel drawing on the BBC's pre-eminence in nature, science, history and technology documentaries. It will offer the unique richness of the BBC's factual archive in a concentrated and accessible form. Separately, in the morning period, we will offer children's programmes supplied by a number of high quality producers.

Carlton Films will also be a new channel, specifically launched for our service, providing a wide choice of high quality films and made for television movies. The films will span the history of the cinema and feature the work of the world's best talent on either side of the camera.

Granada Good Life will offer viewers a dedicated lifestyle programme channel featuring a broad range of programmes covering areas such as health, fitness, interior design, gardening, cooking and motoring. The channel will cater to audiences who have traditionally not been well served in the multi channel environment.

Sky 1 will provide a wide selection of family quality entertainment - comedy, drama, documentaries, science fiction and chat shows combining domestic and imported programmes to assure an appeal to a broad audience.

BBC Style and BBC Showcase will offer viewers the highest quality and most popular programmes from BBC1 and BBC2. Their programmes will include classic and contemporary, drama and comedy, presented in an innovative and refreshing format. In the morning, BBC Style will offer a wide array of programmes to those who follow the latest in style.

Public Eye will be a new channel, provided by Carlton, including programmes from drama and movies to documentaries, all linked by the theme of law and order. The channel will also incorporate the award winning Sky News service in the mornings and early afternoons.

Granada TV Shopping will be a new teleshopping channel with a difference: a strong British flavour which will feel familiar to British shoppers combined with high production values and a different creative approach. Viewers will be offered a daily stroll through a virtual department store and its individual departments.

Carlton Entertainment will also be a new channel provided by Carlton. It is designed to meet the enduring need for well executed popular entertainment including children's, drama, comedy and talk programmes. There will be a strong emphasis on British productions.

Granada Sports Club will be a further new channel featuring entertainment, gossip, news, debate, opinion, golden moments and the up and coming. It will offer football fans in depth and unrivalled coverage of the top clubs and their activities in specially dedicated club segments. The channel will also provide a late night music service.

BBC One TV is designed to appeal to pop music fans of all ages. Best described as a visual Radio One, the new channel will stand for music, new talent and youth and it will feature popular presenters who will have built a loyal following through Radio One.

British Digital Broadcasting's premium subscription channels will feature genres of programming which have a proven track record of success in pay television in the U.K. :

Sky Movies and The Movie Channel will screen a wide variety of films including top movies from around the world with a host of new films every month. Both channels will showcase these films 24 hours a day, seven days a week and all movies will be shown without commercial breaks. To cater to differing viewers lifestyles, the most popular movies will be re-screened at different times and on different days.

Sky Sports, with its current satellite service, is a trailblazer in sports broadcasting and production, based on its success in acquiring rights to a wide selection of events and its innovative and high quality production standards. Operating 20 hours a day, the digital terrestrial service will offer extensive sports coverage and sport related programmes with wide appeal.

Pay per view

In addition we recognise that pay per view programming offers an important opportunity for viewers to watch special events which they value highly and might not otherwise be able to see. This is particularly the case where competition for the television rights to these events is increasing and securing pay per view rights may offer the only means of televising them. We have therefore built a series of pay per view events into our programme plans. These are likely to include high profile events

in sports, entertainment and music such as boxing, concerts and other one off events of popular appeal. Looking over the full licence period, we believe that pay per view programming will develop into an important means of attracting customer support for our service.

Target audience and appeal

Taken as a whole, we believe that this combination of channels and programmes represents an exceptionally strong appeal to a wide variety of tastes and interests. The mainstream entertainment channels are of a high quality and wide appeal, offering many of the best movies, drama and comedy to be seen on British television. Viewers interested in sport, music, science, nature, food, the arts, lifestyle programmes, education and current affairs are served by dedicated channels or channel segments and there are a substantial number of programmes for children.

The strong emphasis on original British channels and programmes reflects the tastes and interests of British viewers and will have the added benefit of channelling new investment into the production industry. Carlton and Granada's participation in British Digital Broadcasting, together with our agreement with the BBC, gives us access to this country's three largest and most successful programme producers and their programme libraries.

The programme service we propose for multiplexes B, C and D is designed to complement the channels offered on the separate multiplexes assigned to the BBC, ITV and Channel 4. For example, we have chosen to supplement the BBC's plans for a 24 hour rolling news service by initially broadcasting B Sky B's award winning Sky News service in the mornings and early afternoons.

In a competitive market, we will offer our programme service to our customers on clear, uncomplicated terms at competitive prices as excellent value for money. This will encourage viewers to subscribe in the numbers needed to recoup the investment we will make in promoting the take up of equipment and also provide a satisfactory return to our shareholders.

Additional services

Once compression technology improves and our experience of operating digital terrestrial multiplexes increases, we will consider launching additional services as well as further programme channels as soon as possible. Our aim will be to respond quickly to any technical developments but ensure that broadcast quality is not compromised.

Over time, we will also seek to develop the capacity for interactivity offered by digital terrestrial technology and the presence of sophisticated receiving equipment in the home which would, for example, enhance the attractiveness of our teleshopping channel. However, our application is not dependent on launching additional services in the near future.

Electronic programme guide

If successful with our application for three licences, we intend to provide our customers with an electronic programme guide (EPG) which they can use to select programmes and channels. In providing this service, we will draw substantially on the work which BSKyB have undertaken over the last two years to develop a high quality, user friendly EPG. This guide will ensure that all channels available on digital terrestrial television will be displayed in a fair and non discriminatory way taking into account the need to ensure that popular channels are easily accessible.

Promoting the Take Up of Equipment

We have detailed plans to encourage the widespread take up of equipment capable of receiving digital terrestrial signals. In the early years, our emphasis will be to ensure that suitable set top boxes will be widely available.

In co-operation with other multiplex licensees, we therefore plan to encourage the large scale manufacture and sale of these boxes. Drawing on the expertise of our shareholders, including BSKyB and Granada's long standing relationships with set top box manufacturers and knowledge of the consumer electronics retail and rental market, we have developed a carefully thought out plan to promote the take up of the necessary consumer equipment.

Interoperability of our set top box

If successful with our application for three licences, we would take the lead in seeking arrangements with other multiplex operators to adopt a set top box capable of receiving the signals of all digital terrestrial programme services. We would expect such arrangements to ensure fair and effective competition.

In some countries, competing delivery systems with incompatible equipment have led to customer confusion and held back market development. Our proposals overcome this problem. With the collaboration of BSKyB we are able to design set top boxes for digital terrestrial television which, with the addition of a modestly priced "sidecar" module, will give access to digital satellite services.

Equally, with our collaboration, BSKyB will be able to design boxes for digital satellite which will allow similar modestly priced access to digital terrestrial television.

This will provide viewers with the confidence they need to purchase either kind of set top box, in the knowledge that they will be able to subscribe easily to either or both services without having to purchase an additional box.

Partnership programme

As part of our proposed partnership programme we will ensure that a selected number of capable manufacturers commit to the production of a substantial quantity of set top boxes. This will ensure that there are sufficient numbers of boxes widely available for consumers to purchase in the early years of the licence.

In addition, working with retailers and rental companies, we intend to subsidise set top boxes during the initial period of the licence and, through a mixture of promotional offers, provide retailers with the confidence to stock and sell set top boxes in outlets throughout the coverage area.

Marketing

We will implement a comprehensive marketing plan to build awareness of, interest in and loyalty to digital terrestrial television by emphasising the full range of consumer benefits offered by the new technology as well as the unique selling points of our own programme service. This plan will include an investment in advertising, media relations and direct marketing.

Over time, we believe that integrated television sets, capable of receiving both digital terrestrial and digital satellite signals, will replace set top boxes as the primary means of receiving digital television signals. Although it is difficult to be precise about the speed at which this process will take place, we believe that, once it starts, the natural replacement cycle for television receivers will push digital television to very high penetration rates relatively rapidly and thus establish digital terrestrial as a main delivery system for television in the U.K..

We believe that this integrated plan to promote the take up of receiving equipment provides the best launch pad for digital terrestrial television. We believe that it would be more difficult to implement such an effective plan, with similar financial backing, if arrangements have to be agreed between several different multiplex operators.

Development of Transmission and Roll Out of the Service

The introduction of digital terrestrial television technology represents a considerable technical challenge.

British Digital Broadcasting has the technical skills, experience and financial strength to help manage this change smoothly and rapidly. By December 1999, we plan to complete the construction of the infrastructure required to support the service.

To achieve this ambitious target we will :

- Agree a co-ordinated transmission roll out plan with the operators of the BBC, ITV/C4 and C5/S4C multiplexes and any other multiplex operators so that, as far as possible, all the multiplexes are introduced to a particular region at the same time.

- Draw up and implement a comprehensive plan to deal with any limited amount of interference to televisions or VCR equipment. This needs to be co-ordinated between all multiplex operators so that responsibility for viewers' problems is not passed between different parties. Our plans draw substantially on the expertise of Granada's TV rental business and BSkyB's subsidiary TAS, the acknowledged technical leaders in this field.
- Agree arrangements with other multiplex operators and programme service providers to provide common technical services such as multiplexing, conditional access, electronic programme guide and subscriber management services in such a way as to ensure fair and effective competition.
- Agree specifications with other operators for a single set top box to avoid consumer confusion over the choice of equipment.
- Agree, with other operators, how to minimise the cost of establishing the required infrastructure to avoid expensive duplication. This will enable us to maximise our investment in the programme service and in promoting the take up of receiving equipment.

The Strength and Experience of Our Shareholders

In delivering these plans, British Digital Broadcasting will be able to draw on the skills and experience of its three shareholders - Carlton, Granada and BSkyB - and our relationship with the BBC. Taken together, this provides an unrivalled combination of expertise :

- Outstanding creativity in programme production and channel creation
- In depth understanding of the UK pay television market and the retail, manufacturing and subscriber management issues involved
- A wealth of technical and project management experience directly relevant to the task of setting up the complex infrastructure required

Carlton

Carlton is the country's largest commercial terrestrial broadcaster, owning Carlton Television, Central Television and Westcountry Television. Carlton has a substantial programme production business and a library of over 5,500 hours of television programmes and films, largely made up of UK productions but also including 100 US TV movies. The company has a consistent track record of investment in high quality original production across all the main programme genres, including *Inspector Morse*, *Sharpe*, *Bramwell*, *The Wind in the Willows*, *Outside Edge*, *The Big Story* and *The Cook Report*.

Carlton's experience in setting up a complete terrestrial television broadcasting operation within 14 months of being awarded the weekday ITV licence for London is also of direct relevance to this application.

Granada

Granada is the country's most experienced commercial terrestrial television broadcaster and largest commercial programme producer, through its ownership of Granada TV and LWT. Granada's programme production businesses have produced many of the most popular and critically acclaimed television shows of the last decade including *The South Bank Show*, *Coronation Street*, *Blind Date*, *Cracker*, *Barrymore*, *Prime Suspect*, *World in Action* and *Dimbleby*. Granada also owns the UK's largest commercial television programme library with over 10,000 hours of programming, including many of the classics of British television.

In addition, Granada has experience of launching and running pay television services, having recently launched seven new programme channels. Through its TV rental and retail business, it also has substantial expertise in the television hardware and television subscription retail markets where the Group's retail outlet chain is the country's largest seller of pay television subscriptions.

BSkyB

BSkyB is the world's leading satellite pay television operator, offering a wide choice of channels to more than 6 million subscribers in the U.K. and Republic of Ireland. Created in 1990, following the merger of Sky Television and BSB, BSkyB has pioneered the introduction of multi channel television in the U.K.. Its key strengths lie in marketing, distribution, packaging and programming where it has developed a reputation for innovation such as live televised sports, 24 hours news and first run movies.

BSkyB has also pioneered the development of a subscriber management infrastructure and, through its supplier, NDS, the conditional access technology which is required to operate a successful multi channel subscription business. In 1996 it broadcast the first ever national pay per view event in the U.K., viewed in over 600,000 homes. British Digital Broadcasting will also benefit considerably from BSkyB's recent work on developing the technical infrastructure required to launch a digital satellite service, particularly in the area of developing electronic programme guides.

The three partners are already used to working in co-operation with each other in areas of direct relevance to this application. Carlton and Granada each own 20% of the national and international news provider ITN and 50% of London News Network which provides transmission and news gathering and production services to both companies. Granada is a shareholder in BSkyB and both companies jointly own Granada Sky Broadcasting (GSB), established last year to produce and broadcast seven new pay television channels.

Directors and Management

Equally relevant to the task of launching digital terrestrial television are two further qualities shared by all three shareholders - the financial and management strength required to undertake a venture of this size and complexity.

The combined market capitalisation of the three shareholders is approximately £20 billion. The companies employ some of Britain's leading media executives and the British Digital Broadcasting board will benefit from the combined experience of

The company's day to day operations will be the responsibility of a management team independent of the shareholders, including a Chief Executive, Director of Finance, Director of Programmes and Director of Marketing, all of whom, it is intended, will be members of the board.

We have decided to defer the appointments to these senior positions until the outcome of the licence process is known. We have taken this view because the nature of the appointments will be significantly influenced by the outcome of our applications. For instance, in the event that we are awarded three licences, the management task would be measurably greater and we would want to make appointments that reflected the wider range of skills required to take a leadership role in promoting digital terrestrial television. We are confident, however, that we will be able to appoint managers of the right calibre for these posts. Should we be successful with our applications, we will be able to start the planning process for the introduction of our service immediately by drawing on the combined management expertise of our shareholders. The large project team which has built our detailed business and technical plans is being held in readiness for this task.

Conclusion

British Digital Broadcasting is well equipped to take on the key leadership role in the development of digital terrestrial television.

In all the skills required - creativity in scheduling and programme production, technical and marketing expertise, financial and management resource, knowledge and understanding of pay television - we believe that we have the right credentials.

Our proposals for operating three multiplex licences can play a major part in developing a central role for digital terrestrial television as we move into a new century.

By offering a wide choice of high quality, affordable programming viewed on easy to purchase and easy to install equipment, digital terrestrial television will be a natural medium of choice for British viewers.

For further information about British Digital Broadcasting's application, please contact:

[REDACTED]

IA 1233-15

**Application to the Independent Television
Commission for Multiplex Service Licences**

Multiplex Service Licence D

Section A



**25 Knightsbridge
London
SW1X 7RZ**

Introduction

1. British Digital Broadcasting PLC (British Digital Broadcasting”) is a wholly owned subsidiary of British Digital Broadcasting Holdings Limited (“British Digital Broadcasting Holdings”), a joint venture formed by Carlton Communications PLC (“Carlton”), Granada Group PLC (“Granada” or “Granada Group”) and British Sky Broadcasting Group PLC (“BSkyB”) for the specific purpose of applying for Multiplex Services Licences. Carlton, Granada and BSkyB are referred to in this application as the shareholders of British Digital Broadcasting.
2. This document is Section A of British Digital Broadcasting’s application for Multiplex Licence D. (It complements Section B, which provides confidential data and information for the ITC.)
3. The first half of the document is British Digital Broadcasting’s application for Multiplex D as an individual multiplex.
4. The second half of the document presents British Digital Broadcasting’s supplementary proposals should, in addition to Multiplex D, British Digital Broadcasting be awarded Multiplex Licences B and C.
5. At the end of each main sub-section in the individual application for Multiplex D there is a short description of how the equivalent sub-section of the supplementary proposals compares. In a similar manner, at the start of each sub-section of the supplementary proposals there is a short comparison with the equivalent section in the individual application for Multiplex D.
6. A separately bound Summary provides an overview of British Digital Broadcasting’s application. A set of confidential Annexes has also been provided to the ITC.

Glossary

API	Application Programming Interface
ATM	Asynchronous Transfer Mode
BAT	Bouquet Association Table
CA	Conditional Access
CAT	Conditional Access Table
CD	Compact Disc
CI	Common Interface
CMC	Customer Management Centre
COFDM	Coded Orthogonal Frequency Division Multiplexing
DVB	Digital Video Broadcasting
DVB-T	Digital Video Broadcasting - Terrestrial.
EBU	European Broadcasting Union
EIT	Event Information Table
EPG	Electronic Programme Guide
ETS	European Telecommunications Standard
ETSI	European Telecommunications Standard Institute
IRD	Integrated Receiver-Decoder
ISDN	Integrated Services Digital Network
kbps	Kilobit per second (data rate)
LAN	Local Area Network
Mbps	Megabit per second (data rate)
MPEG	Motion Picture Experts Group (of ISO)
NIT	Network Information Table
OFDM	Orthogonal Frequency Division Multiplexing
PAL	Phase Alternate Line
PAT	Programme Association Table (one of the tables comprising the PSI defined below)
PMT	Programme Map Table (one of the tables comprising the PSI defined below)
PSI	Programme Specific Information (based on a number of tables, it allows MPEG-2 decoder to capture and decode packet structure)
PSTN	Public Switched Telephone Network
QAM	Quadrature Amplitude Modulation
ROM	Read-Only Memory
SAS	Subscriber Authorisation System (performs co-ordination of enablement messages prior to transmission to home)
SDT	Service Description Table
SHF	Super High Frequency (microwave frequency band used for transmission of broadcast material)
SI	Service Information (provides details of Programmes being broadcast etc)
Simulcrypt	A system allowing a single encrypted signal to be delivered to receivers with different conditional access systems
TVRO	Television Receive-Only (usually applied to receive-only satellite terminal for television reception)
VBI	Vertical Blanking Interval

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Section A

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Section A1 - The Licence Applied For

ITC Requirement

The applicant should state which multiplex licence he is applying for by means of this application. If the applicant is applying for more than one licence, and if this application contains supplementary proposals which would be implemented only if he were awarded more than one licence, then he should specify the other licences to which these supplementary proposals apply. If the applicant is applying for more than the number of licences he would be permitted to hold under any requirement imposed by or under Schedule 2 to the 1990 Act, he should state his preferences in relation to these licences (see paragraph 22).

1. This document is British Digital Broadcasting's application for Multiplex D.
2. This application also comprises supplementary proposals for Multiplex D should British Digital Broadcasting also be awarded Multiplexes B and C. British Digital Broadcasting, overall, is applying for three multiplexes (B, C and D).
3. British Digital Broadcasting hopes to be awarded all of the three multiplex licences for which it is applying. Should British Digital Broadcasting win one multiplex licence, its preference among the individual multiplexes is:-

Preference	Multiplex
First	B
Second	C
Third	D

Section A2 - Transmission Coverage and Roll-Out

ITC Requirement

Notizing the information provided in paragraphs 4, 79 to 83 and 110 to 113, the applicant should describe in detail his proposed arrangements for the transmission, distribution and multiplexing of the proposed multiplex service, including a start date, build programme and final coverage.

Note:

“Start date” means the date of start of transmissions of the multiplex service. “Build programme” means the timetable by which progressive coverage might be achieved by the successive implementation of transmitters within the multiplex service transmitter plan. “Final coverage” means the extent of the coverage available under the transmitter plan which the applicant intends to implement. This should be expressed by means of predicted coverage figures based on specified transmission sites, aerial heights and power levels. Applicants for licences B, C or D should also state their policy concerning the possible extension of coverage were further frequencies to become available.

Summary

British Digital Broadcasting’s approach, drawing on its shareholders’ experience in terrestrial, satellite and cable television, comprises a set of solutions that limits the technological risks and maintains the high standards of quality and reliability that the shareholders of British Digital Broadcasting apply in their existing businesses.

British Digital Broadcasting’s intention is to launch digital terrestrial television services as soon as possible, consistent with the availability of components and reliability in the delivery of services. The intention is to launch this service by July 1998.

The launch of services will be supported by a rapid roll-out of the transmitter network, with a plan to achieve final coverage levels by the end of 1999.

In order to ensure picture quality is comparable to that of analogue transmissions, British Digital Broadcasting intends to commence operation with only five services per multiplex. As experience is gained with the technology it is expected that it will be possible to introduce further services as statistical multiplexing technology develops.

British Digital Broadcasting supports the provision of fair, reasonable and non-discriminatory access to receiver populations within the parameters of the regulatory regime, and is ready to work with other multiplex licence holders to achieve this.

British Digital Broadcasting believes that the most effective way to manage the successful launch of digital terrestrial television is through clear project leadership.

If British Digital Broadcasting is successful in its proposal for Multiplex D, the company would seek to work with all the other licensees to try to achieve a co-ordinated approach to managing the implementation phase of the project.

Introduction

1. Digital terrestrial television is one of the greatest technical challenges for television broadcasters since the introduction of colour. Broadcast technology now allows the delivery of digital television signals to the home, but the complexity of this technology will place substantial organisational and technical demands upon the individual multiplex operators. Issues such as managing the effects on existing consumer equipment will require significant logistical expertise. These are demanding tasks under any circumstances, but to achieve these with the additional target of an early launch date will require particularly innovative approaches and exceptional project management skills.
2. British Digital Broadcasting comprises three of the UK's major broadcasters, each a leading company in its field. As well as an unrivalled background in the provision of television services, these organisations have the technical experience and resources that will be needed to manage the successful launch of the new digital services in the shortest time possible.
3. **Carlton** has been involved at the leading edge of broadcast television technology long before being awarded the London weekday ITV franchise in 1991. Through the ownership of companies such as Quantel and Solid State Logic, it has developed a depth of understanding of the impact of digital systems throughout the production and broadcast chain. In association with NTL, Quantel and Sony, Carlton provided the first public demonstration of digital terrestrial television in the UK in 1994.
4. Carlton Television was established and equipped within the tight timescales required, drawing upon the skills existing in the group whilst also recruiting new management and operational staff. Since the acquisition of Central Television in 1994 Carlton has developed the technical facilities available in the Midlands culminating in the opening later this year of a new broadcasting and production centre in the centre of Birmingham. This new centre will employ state of the art technology including disk based editing and playout facilities along with a high degree of automation.
5. Carlton has been a lead broadcaster in the development of digital terrestrial technology. Through the Digital Television Group, and in several direct relationships with component manufacturers and suppliers, Carlton has sought to influence the course of development of the technology and to promote enthusiasm for the development of digital terrestrial broadcasting.
6. **Granada's** forty years of experience in commercial broadcasting in the UK is unmatched, and its recent launch of seven new satellite television channels gives it a detailed understanding of the issues involved in launching a number of new pay television channels. It is also one of the UK's largest electrical retailers through its ownership of the Granada Technology Group. It has developed close working

relationships with many of the world's leading manufacturers of consumer equipment and has been at the forefront in the introduction of new broadcast technology, from teletext and NICAM stereo through to satellite broadcasting. Granada's presence in the retail market has been aided by its development of the training and logistical infrastructures needed to provide quality service and care for customers. This experience has been used in the provision of technical and "on the ground" support for C5's current retuning exercise.

7. **BSkyB** introduced satellite broadcasting and Pay TV operations into the UK and in the process has become the world's leading satellite pay television operator. It brings unrivalled experience in the specification and integration of conditional access systems, both within transmission systems and within receivers. It has the substantial benefit of its history in managing these types of systems, the interaction process with viewers, and the introduction of new functionality into its services. BSkyB has also established close links with receiver manufacturers and the retail trade, ensuring widespread availability of competitively priced reception equipment and installation packages. BSkyB's technical staff have been active contributors to the DVB process and have helped formulate the standards for digital broadcasting, whilst also developing the concepts for new types of digital services, such as the Electronic Programme Guide.
8. British Digital Broadcasting's commitment to digital terrestrial television and its access to the resources and experience of its shareholders provides the best possible foundation for driving the implementation phase of the project through to an early and successful conclusion. Given the inherent technical challenges, this is a critical factor. British Digital Broadcasting believes that it is essential to have a single operator prepared to take the lead in areas such as the distribution and transmission planning of all the multiplexes, and in determining the strategy for the provision of consumer equipment at the right time and at the right price for the market. If British Digital Broadcasting is successful in its proposal for Multiplex D alone, the company would seek to work with all the other licensees to establish such a lead player.
9. The key elements of British Digital Broadcasting's technical plan are:-
 - a) The new channels will be assembled and played-out from a playout centre, which could either be at existing facilities, following any enhancements required to provide the additional capacity, or as a stand-alone facility. The playout centre will be responsible for quality control of the source materials and the programme output, compliance with legal and regulatory requirements, trafficking and assembly of service elements including programmes and commercials and insertion of promotional material and on-air graphics.
 - b) The Playout Centre will be the responsibility of the programme service providers.
 - c) All schedules relating to the programme services will be generated at the playout centre and will form the data that generates the Service Information (SI) data.

- d) The channels will then be conveyed to a multiplex centre where MPEG-2 encoding and statistical multiplexing will be carried out. Statistical multiplexing is a technique used to make best use of the available transport stream capacity, by dynamically adjusting bit rate of individual MPEG encoders.
 - e) The signal will be distributed to terrestrial transmission locations by means of dual satellite links. British Digital Broadcasting has already established with satellite operators that appropriate capacity is available.
 - f) Transmissions will utilise the recommended implementation of the transmission specification, with a digital capacity of approximately 24 Mbit/s.
 - g) British Digital Broadcasting would favour the adoption of a common receiver and conditional access strategy that would eliminate consumer confusion and would provide the best path to low cost universal reception equipment. This would require agreement between multiplex licencees in adopting a common conditional access system and receiver specification. If different suppliers of conditional access are selected, British Digital Broadcasting fully supports and advocates the use of Simulcrypt.
 - h) The shareholders of British Digital Broadcasting have supported and participated in the development of a standard specification for the digital terrestrial television receiver through the Digital Television Group, including input into the selection process of a common Application Programming Interface (API).
10. It is intended to commence operation with five services carried within the multiplex. This will ensure that digital terrestrial television services are able to offer a picture quality comparable to that of analogue services. Perceived picture quality at a particular data rate is very dependent upon the programme content. The production and post production techniques used in making the programme can also have a significant effect.
11. In addition, the further development of statistical multiplexing techniques will allow the existing multiplex capacity to be used more efficiently, by freeing up unused capacity for particularly demanding picture sequences being carried by other services.
12. As experience is gained in the above areas it is expected that further services could be introduced without significant lowering of quality standards. As well as offering the potential for permanent extra channels, it will be British Digital Broadcasting's intention to offer a number of planned pay per view events each year at an early stage of the licence.
13. The capacity to transmit these events will be created by arranging the schedules in such

a way that some existing channels will be running a selection of less demanding (in terms of bit rate required) video streams which will allow higher levels of compression to be obtained. The demands of a normal schedule make this technique unsuitable for permanent operation using current technology, but British Digital Broadcasting is confident of being able to introduce additional programme streams for up to three hours on an occasional basis.

14. British Digital Broadcasting's response contained within this section provides a full description of its proposals for the implementation of digital terrestrial services, encompassing a wider range of topics than simply transmission, distribution and multiplexing. The response is structured around the logical flow from programme playout to consumer receivers, with additional sections on system-wide aspects such as integration and project management.
15. The overall multiplex delivery system is illustrated in Figure 1.

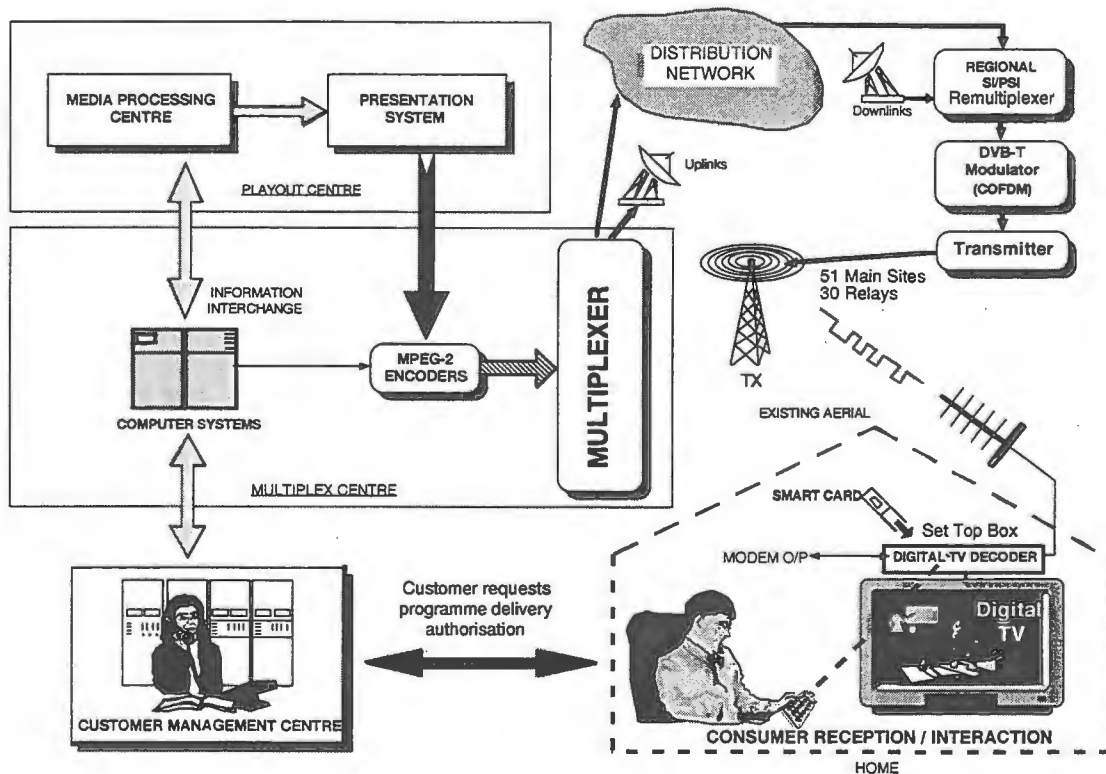


Figure 1 Multiplex Delivery System

System Integration

16. An early and rapid launch of digital terrestrial television services calls for a demanding schedule for the integration of head-end components, and to ensure that consumer equipment is available in shops and rental outlets to meet demand. These are critical items of the project.
17. If awarded the licence for Multiplex D, British Digital Broadcasting will seek to work

with the other multiplex operators to establish a clear leadership for the management of these functions. The selection of a system integrator will be a key activity for the lead party.

18. British Digital Broadcasting has shared its plans with, and taken input from, a variety of reception equipment manufacturers and has received support for the creation of a partnership to be known as the Preferred Partners Plan. Members of the partnership will support the introduction of digital terrestrial television services with a range of reception equipment, including (as soon as practical) integrated television sets, available via normal retail and rental outlets.

19. The digital terrestrial project will require the provision of a number of different systems including :
 - a) Supply of digital compression and multiplexing equipment.
 - b) Network for distributing the new channels to terrestrial transmitters.
 - c) Terrestrial transmission network itself, including the integration of multiple SI streams.
 - d) Supply of the conditional access system.
 - e) Supply of a suitable Application Programming Interface and Electronic Programme Guide for receivers.
 - f) Where necessary, retuning of existing analogue receivers in certain areas.

20. In order to establish the required level of control over the integration timetable, British Digital Broadcasting has thoroughly reviewed all options and concluded that it will be necessary to appoint a systems integrator. The systems integrator will assist in the day-to-day management of the integration phase of the project. British Digital Broadcasting may choose to deal with the above aspects in direct contracts with suppliers, to ensure the availability of fully functional systems within the stated project timetable. The timescales quoted within this proposal reflect the dates provided to British Digital Broadcasting by potential suppliers.

21. The system integrator will have a contractual responsibility for:-
 - a) Bringing the different head-end elements together.
 - b) Ensuring that the conditional access and application programming interface elements are available for receiver manufacturers.
 - c) The availability of test transmissions to enable manufacturers to verify their development work and move to production.

- d) Monitoring the compliance of reception equipment with appropriate regulatory standards and with British Digital Broadcasting's own quality standards.
 - e) Interfaces between various parts of the British Digital Broadcasting infrastructure and with outside parties such as other multiplex licence holders.
22. This strategy will allow British Digital Broadcasting to concentrate its own resources on monitoring the development of the complete project, including the integration with the programme production and play-out elements. British Digital Broadcasting is in negotiation with a preferred supplier to carry out this work. This selection follows a thorough review of the options available and the detailed exchange of technical design and costing information.

Launch Date for Services

23. British Digital Broadcasting has carried out a detailed project plan for the launch phase of the project which has revealed that the most likely critical path is formed by the development and manufacture of COFDM demodulator chips. British Digital Broadcasting has evaluated the risks associated with the development of this chip and expects it to be available in time to support a start date of July 1998, though there is a risk that delays could be introduced if the development programme were to slip. Together with the other licensees British Digital Broadcasting will investigate possible steps to reduce the risk of the late availability of chips delaying the launch date.
24. Should manufacturers release COFDM chips in quantity earlier than the currently envisaged schedule, British Digital Broadcasting would take the opportunity to bring forward the launch of digital terrestrial television services in order to be as competitive as possible with the timing of any launch of digital satellite services. In order to establish a viable market for retailers, there will have to be sufficient transmitters installed to allow the market to expand. An accelerated start date thus brings other issues into play including international frequency clearances, and the requirement to negotiate with other multiplex licensees to ensure the compatibility of box specifications. It is not yet possible to determine which aspect will fall onto the critical path.

Playout Centre

25. Although the provision of playout facilities is the responsibility of the digital programme service providers, details are included here for completeness and, where appropriate, standards, organisational structure and practices will be required by British Digital Broadcasting through the terms of a programme supply agreement.
26. In the event of being awarded a licence for Multiplex D, the programme service provider will either enhance existing facilities or provide a stand alone playout centre to provide the new services. The programme service providers already have extensive experience in the provision of playout facilities and would not have any difficulties in fulfilling requirements in time for the expected start of service.
27. It is planned to fit out the playout facilities with the capability of dealing with widescreen programme material. Widescreen presentation will form a part of British Digital Broadcasting's programming plans from the start of digital services and are expected to become an increasingly important part of the service.
28. Programmes and commercials (media) will be delivered to these facilities by videotape and land-line. Once there, the media delivered will be catalogued and logged into a computerised library system.
29. Media will be assessed technically to ensure that they meet standards derived from service providers' existing technical delivery specifications, copies of which are available if required. Programme material will be viewed for legal compliance, timed and scheduled using the latest computer-based, multi-channel scheduling systems.
30. For live material, a trained compliance officer will have responsibility for ensuring that material meets the ITC's regulatory and legal requirements. British Digital Broadcasting takes its compliance responsibilities very seriously and will ensure that the programme suppliers have a management structure that ensures that the quality of compliance on the new digital terrestrial services will meet the high standards demanded of existing terrestrial services.
31. British Digital Broadcasting's programme service providers will implement a system which will allow incorporation of the relevant information needed for the SI data system. This data will be passed on electronically to the on-air presentation automation system to control the transmitted output from the playout centre and also to the multiplex centre for incorporation into the final transport stream.
32. The playout facility will provide a highly automated presentation service comprising live programmes, pre-recorded programmes, promotions, stings etc. and commercials.
33. The programmes will be played out from automated cart machines. Commercials, promotions, stings etc. will be inserted from a disk based server which will be fully duplexed. The ability to provide voice-overs, superimpose captions and add a separate channel logo is included.

34. The service is based on limited intervention by transmission shift supervisors and although there will be the facilities for manual intervention, this would normally only be required where a channel has live programming in its schedule or in the case of technical malfunction.
35. Off-air monitoring using both high quality broadcast standard receiver decoders and domestic units will ensure that standards are met throughout the complete broadcast chain, although key technical quality monitoring of transmission will take place at the multiplex centre.
36. The centre will be equipped with the necessary power supplies and resilient air conditioning systems for 24 hour/day operation.
37. There will be communications facilities to deal with incoming and outgoing lines and satellite feeds. The playout centre will be linked to the multiplex centre by 5+1 redundant facility line feeds, or equivalent, allowing uncompressed 270 Mbps serial digital video signals to be delivered for final compression and multiplexing to ensure the highest quality at the final multiplex.
38. Staffing details for the playout centres are included in Annex 10.

Multiplexing

39. The multiplexing of programme services to form the transmitted multiplex transport stream will be carried out in a dedicated facility to be located in the London area. British Digital Broadcasting will make best use of the available data capacity by using "statistical multiplexing". Statistical multiplexing achieves this by dynamically adjusting the bit rate for each service depending upon the picture content. This will optimise the number and quality of services carried via the multiplex. It is British Digital Broadcasting's intention to offer initially five services within this multiplex, each maintaining a comparable technical quality to that of existing analogue services. Further services may be introduced at a later stage, following experience with the quality achievable in practice from the available multiplex capacity and any technical advances in encoding and multiplexing.

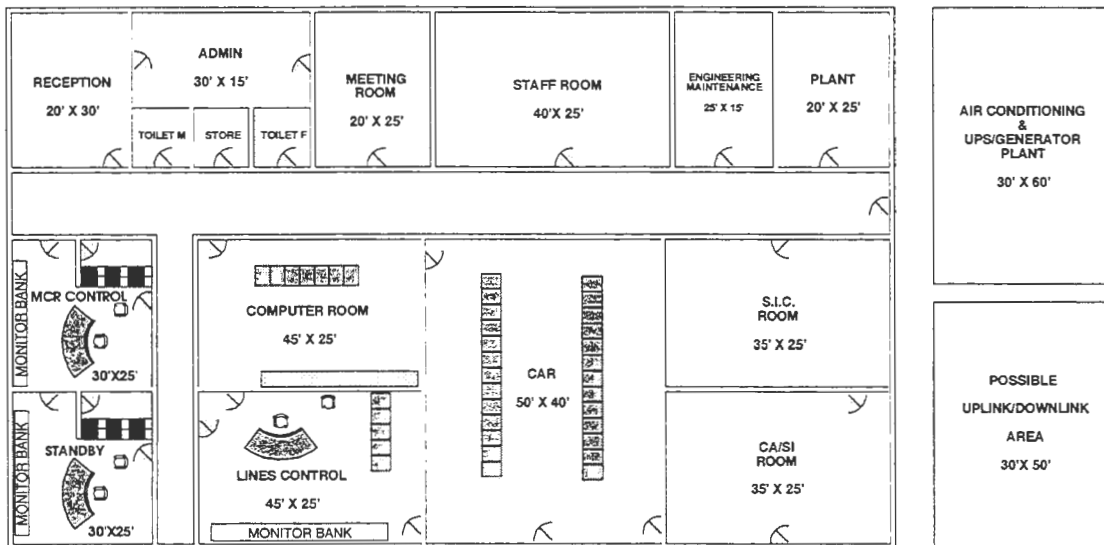


Figure 2 British Digital Broadcasting Multiplex Centre - Preliminary Planned Site Details

40. As well as offering the potential for permanent extra channels, statistical multiplexing will allow British Digital Broadcasting to offer a number of planned pay-per-view events each year at an early stage of the licence. The capacity to transmit these events will be created by arranging the schedules such that all other channels will be showing less demanding material (in terms of bit rate required). The demands of a usual schedule make this technique unsuitable for permanent operation using current technology, but British Digital Broadcasting is confident of being able to introduce additional programme streams for up to three hours on an occasional basis.
41. The multiplex centre will be designed initially to support a five-programme transport stream and contain the capacity for occasional additional programmes, it is planned to have the following facilities:
- a) Incoming lines/satellite control facilities.
 - b) Central Multiplex Encoding area containing pre-processing and signal conditioning, MPEG-2 encoders for 5+1 redundancy (see below), together with 1+1 redundancy routed multiplexers.
 - c) The necessary power supplies and resilient air conditioning systems for 24 hour/day operation;
 - d) Master control and standby facilities for quality checking of the MPEG-2 transport stream including :
 - i) 24 hour/day transmission monitoring and off-air quality control;
 - ii) liaison with satellite distribution and transmission operations;
 - iii) co-ordination with playout centres;
 - iv) control of the multiplex management computer;
 - v) off-air logging of each channel;

- e) Computer systems facilities for the monitoring and control of the following systems:
 - i) conditional access systems;
 - ii) subscriber authorisation systems;
 - iii) multiplex management computer;
 - iv) service information compiler computers;
 - v) computer data links to playout centre and customer management centre;
 - vi) subtitle and Audetel control computers;
 - vii) transmission automation computers;
 - f) Engineering maintenance room equipped with relevant MPEG-2 transport stream analysis and signal generating and testing equipment.
42. The multiplex centre will be staffed on a 24 hour/day basis. More detail on the staffing and cost elements of this function is provided in Section B.7.
43. The multiplex centre will be the hub of British Digital Broadcasting's digital terrestrial television operation. The preparation of the data needed to make up the complete service will take place here. By use of the latest techniques in MPEG-2 encoding and multiplexing British Digital Broadcasting will provide a high quality reliable and consistent transmission feed to the distribution network. The multiplex centre is the first point of contact with the chosen distribution and transmission partners as well as the assembly point for all programme services, with respective subtitle and Audetel data, as well as the highly complex SI data, conditional access and subscriber authorisation systems.
44. Resilience in the operation is paramount. For this reason British Digital Broadcasting will provide one spare MPEG-2 encoder for up to five main encoders. This spare encoder is automatically selected and fed with signals if there is a failure of any one of the on-line encoders. The resultant output is fed through the routing matrix to either of two multiplexers which provide a redundant path for the outgoing MPEG-2 stream. Again, any failure of a multiplexer will lead to the other being selected to air automatically. This provides a highly effective redundant switching system which, through the use of automatic transport stream analysers, can take action in the case of system failure.
45. The programme playout automation system is closely coupled to the multiplex management system. British Digital Broadcasting's chosen supplier will provide control systems which will allow it to select the most appropriate video and audio coding system for the current programme material.
46. Programme schedules from the automation system at the playout centre will be delivered via permanent data link, so that up-to-date operational playlists will be available. This information will be combined with the SI data made available by other multiplex operators and the relevant PSI/SI tables inserted into the transmission multiplexer. The intention is to ensure mutual technical compatibility between the

British Digital Broadcasting multiplex and all others so that details of services carried by all multiplexes are available to the viewer, no matter which service they are currently watching, and that the viewer can freely navigate between them.

47. The customer management centre which deals with subscriber enquiries and maintains service entitlements will be located at another site and will be linked via permanent data circuits to a subscriber authorisation system at the multiplex centre. Here the entitlements “enablement” messages, and new subscriber authorisation messages will be assembled and passed on to the multiplexer for transmission to the home. There will be a close operational link between the staff managing the subscriber authorisation system at the multiplex centre and the staff at the customer management centre to ensure an efficient and reliable service for the viewer. The customer management strategy is detailed in Annex 8.
48. News Digital Systems is British Digital Broadcasting’s preferred supplier of conditional access systems, although this is subject to detailed commercial negotiations. It will be a term of the systems supply contract that the chosen conditional access system supplier will provide support staff as required to provide 24 hour/day monitoring and control of the conditional access systems. At the end of the first year these staff will either be employed as British Digital Broadcasting employees or the supplier will have trained sufficient British Digital Broadcasting staff to the level required to manage these complex conditional access systems.
49. Each monitoring area will be equipped with the relevant MPEG-2 transport-stream analysis equipment as required. Off-air logging equipment will be fitted to allow British Digital Broadcasting to record the output of each multiplex channel as transmitted to allow later analysis if required. These tapes will be held for 28 days as required by the ITC’s Digital Performance Code.

Distribution

50. At present analogue terrestrial broadcasters distribute most of their programming to transmitter sites via cable (copper and optical fibre), with some point-to-point microwave links. The systems in use at present have evolved over many years and have gradually expanded to cover every site in the United Kingdom.
51. A preliminary layout of the facilities to be provided in the multiplex centre is included in Figure 2.
52. With the launch of digital terrestrial television, the operating companies will need to distribute their signals to all transmitter sites allocated to their licences. If awarded the licence for Multiplex D, British Digital Broadcasting will seek to work with the other multiplex operators to establish a consistent approach to the distribution network.
53. British Digital Broadcasting has reviewed the various options and concludes that the most cost effective method of distribution to the transmitter sites is by the use of satellite links. Not only would the costs of replicating the current cable-based infrastructure be extremely high, but the logistics of having a system installed and

operational would mean that the required deadlines would not be met.

54. By using satellite, the available coverage will allow the signal to be received at any transmitter site in the United Kingdom. This has major advantages in that once this path is available for the first transmitter site, the marginal cost of distributing the signal to additional sites is relatively low and is made available as required by the installation of suitable Television Receive Only (TVRO) equipment.
55. If satellite is to be used as the distribution medium for digital terrestrial television, two important points need to be considered:
- a) The overall lifetime and reliability of the satellite itself is finite and approximately equal to the length of the digital terrestrial television franchise.
 - b) Transitory conditions could lead to short losses of signal due to sun outage. (This occurs when the sun passes directly behind the satellite as viewed from the receive site, causing the receive chain briefly to be overloaded with sun noise which obscures the wanted signal.)
56. Distribution of signals to the transmitters will be by resilient satellite links, i.e. utilising dual uplinks to separate satellites. British Digital Broadcasting regards this dual resilient approach as essential to safeguard the integrity of the service. Dual antennas and receiver chains will be deployed at transmitter sites, and satellites with different orbital slots will be used for the space segments. Both channels will normally be fed with the output of the multiplex centre, and any failure of the main channel will cause a hot change to the reserve channel to preserve transmission.
57. Employing a dual-satellite solution also side-steps the problem of sun outage, since, as they have different orbital slots, only one satellite at a time will be blocked by sun noise. This allows the feed from the second satellite to be selected whilst the first is experiencing an outage. Figure 3 illustrates the overall transmission distribution system.
58. Dual satellite downlinks then feed the service to each main transmitter. At this stage it is not clear how many of the relay transmitters will be able to receive a signal from main transmitters as a rebroadcast link. Both transmission operators are currently evaluating the likely number of relay transmitters which may also need to be fed by satellite.

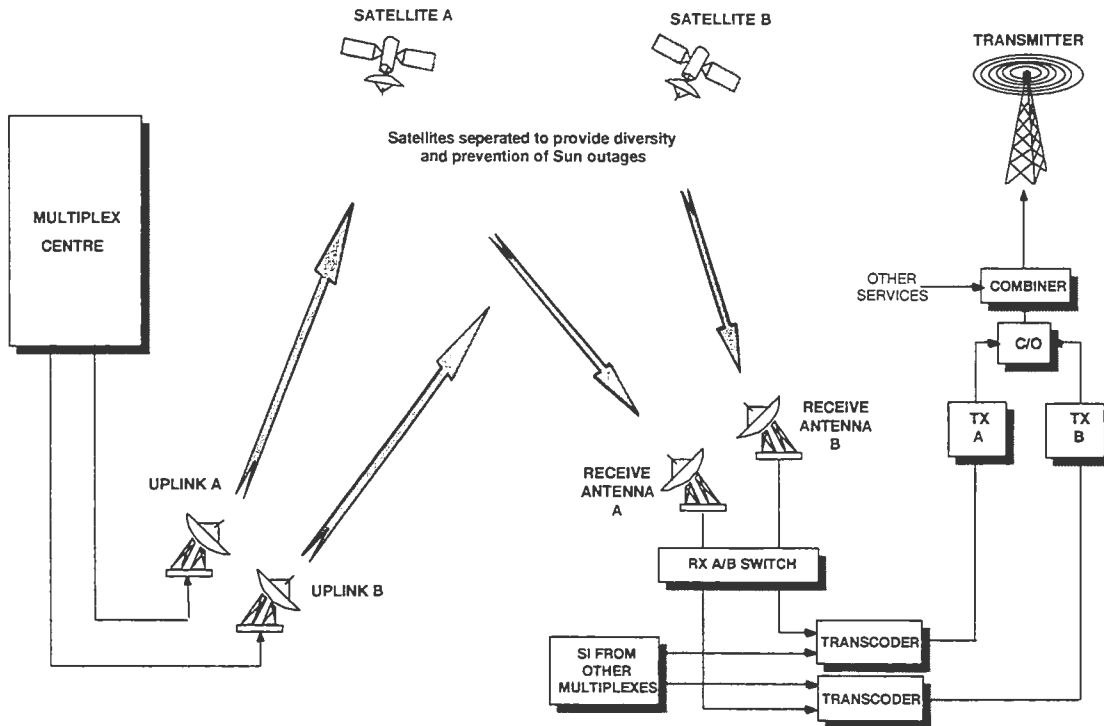


Figure 3 Transmission Distribution System

59. British Digital Broadcasting has undertaken a detailed review of the provision of satellite capacity and associated distribution services with a number of telecommunications suppliers. Through Carlton it is currently negotiating a contract with a suitable supplier and has a detailed quote which satisfies its requirements. It has been established that satellite capacity is available, with a reliability matching or exceeding that of alternative transmission media. The principal satellite operators have a programme of continual expansion, with a planned and structured roll-out of new spacecraft to replace ageing satellites as they approach the end of their useful life. This solution is expected therefore to remain a valid one throughout the franchise period.

Transmission

60. British Digital Broadcasting recognises the importance of the provision of high quality transmission with a high level of service availability. The two existing transmission operators, BBC Transmission and NTL, who between them provide high quality analogue terrestrial transmission from all of the sites specified in the British Digital Broadcasting application, have been in the forefront of developments in terrestrial broadcasting technology for decades.
61. British Digital Broadcasting proposes to use one of these operators to provide, operate and maintain a high quality national transmission network. British Digital Broadcasting has established with both BBC Transmission and NTL that there is space on existing mast structures to accommodate antennas and feeders for the specified sites, although a programme of mast strengthening will be needed. It is understood that appropriate

site-sharing agreements exist between both operators which would enable either to accommodate the required hardware. Nevertheless, because some structures are already heavily loaded, it is proposed to use existing antennas for at least some of the proposed services. Where necessary, new antennas will be designed to provide the required radiation patterns.

62. British Digital Broadcasting has received detailed quotations for the transmission infrastructure from both NTL and BBC Transmission, both of which satisfy operational requirements. This information has been used in the preparation of the financial analysis contained within Section B. Upon the receipt of the notification of the multiplex licence award, British Digital Broadcasting will move quickly to secure a contract with the chosen supplier. In the event that additional liaison with other multiplex licensees and a different transmission operator is necessary, British Digital Broadcasting will work speedily with other parties involved to achieve mutually acceptable technical solutions.
63. Construction of transmitting stations will be based on the "TTC Note for Applicants on Coverage of Digital Television", dated 31st October 1996. The provisional transmitter roll-out plan covers a total of 51 main transmitting stations as shown in Appendix 1. The roll-out plan has been co-ordinated closely with that of Channel 3 and Channel 4 in the initial phases.
64. It is recognised that transmission sites and some equipment will be shared amongst the operators of the multiplexes offered to existing broadcasters, as well as the operators of Multiplexes A, B, C and D. There are therefore co-ordination and integration issues between all multiplex and transmission operators which increase with the number of parties involved. The resolution of these issues will be considerably easier if there is a single lead party co-ordinating this part of the project.
65. To ensure high quality transmission, monitoring will be provided at each transmitter site to enable any faults to be detected rapidly. This will include not only monitoring of the modulators and transmitter systems themselves, but also monitoring of the transport stream to ensure that it is properly formatted. Telemetry links will be provided for the main transmitters to enable alarms to be raised at a central control centre so that appropriate corrective action can be initiated. The monitoring and telemetry links will also provide the transmission operator with an overview of the total transmission network at all times. A high level version of this overview will be available to British Digital Broadcasting at its multiplexing centre.
66. Resilience will be built into the design of the transmitting stations in a number of ways. The transmitters themselves will be fully DVB-compliant and of all solid state, modular design in order to minimise the risk of spontaneous failure. Passive reserve rather than parallel transmitter systems will be employed in order to avoid, where possible, reduced power operation.
67. Antennas will be constructed in two halves with individual coaxial feeders. This arrangement is the same as that used in the existing analogue network and has proved itself over the years.

68. At those sites which are designated 'SI insertion points', provision will be made for insertion of not only the relevant SI for the multiplex, but also the appropriate SI relating to the other services being radiated from the same site.
69. British Digital Broadcasting intends to utilise a transmission rate of 24 Mbps. Together with the use of statistical multiplexing, this will optimise the number and quality of services carried via this multiplex. It is British Digital Broadcasting's intention initially to offer five services within this multiplex, each maintaining a comparable technical quality to that of existing analogue services. Further services may be introduced at a later stage, following experience with the quality achievable in practice from the available multiplex capacity.
70. The final phase of the transmitter roll-out includes relay stations which are intended to extend the coverage of the main stations. Although it is normal practice to rebroadcast the incoming signal from a nearby main station without demodulation, both potential transmission suppliers have drawn attention to possible interference problems on the received signals at most of the relay station sites which may rule out rebroadcasting. If this proves to be the case, it will be necessary to use the satellite distribution system to feed the affected relay station.
71. Were further frequencies to become available for this multiplex, leading to opportunities for significant extensions in the population coverage at reasonable cost, British Digital Broadcasting would continue the relay station roll-out past the currently envisaged total. Where further frequencies would lead to only a marginal increase in population coverage, British Digital Broadcasting would review the position once the digital terrestrial television service has been established.
72. British Digital Broadcasting will monitor the technical performance and availability of the multiplexes by requiring its transmission operator to submit monthly reports detailing the performance levels and availability achieved, along with details of any part of the service which does not meet agreed thresholds. A summary of these reports will be made available to the ITC on an annual basis if required.

Implementation

73. If awarded the licence for Multiplex D alone, British Digital Broadcasting will enter into discussions with all the other multiplex operators to establish a lead party for the management of a single roll-out programme for all multiplexes. In doing this, British Digital Broadcasting will promote a fast-track approach to the start of digital terrestrial television services.

Transmitter Build Programme

74. British Digital Broadcasting's proposed transmitter roll-out is shown in Appendix 1 and is based on the following phases of construction:

Phase 1: 4 main sites for testing and development by September 1997

75. These stations should provide a total net population coverage of 14.83 million people, mainly in the South East, Midlands and North East England.. The selection of these particular transmitters has been co-ordinated with the DTG plan to allow test transmissions to begin in close proximity to the major television receiver manufacturers' plants to facilitate testing and quality control of sets.

Phase 2: 15 further main sites by December 1997

76. These will extend the coverage further, including parts of Scotland and Northern Ireland.

Two further main sites to follow by March 1998

77. This will enable a total of 21 main station sites to be brought into programme service in July 1998 providing a total net population coverage of 28.88 million people.

Phase 3: 21 further main sites by December 1998

78. Extending the net population coverage to 34.09 million people.

Phase 4: remaining 35 sites by the end of December 1999

79. This total of 77 main and relay station sites provides a net UK population coverage of 39.69 million people.

Final Coverage

80. The cumulative population coverages for multiplex D based on the proposed transmitter roll-out, are shown below.

Multiplex D Cumulative Population Coverage			
rollout phase	number of transmitters	cumulative population 1000's	% of national population
1	4	14,830	25.8 %
2	17	28,881	50.2 %
3	21	34,086	59.3 %
4	35	39,690	69 %

Notes

An estimate has been made for Fremont Point based on analogue coverage figures. UK population is assumed to be 57.5 million.

81. The roll-out plan described above is predicted to provide a final coverage of 69% of the UK population based on the coverage predictions in the ITC document "Note for

Applicants on Coverage for Digital Television". This coverage is based on the 'net' figures in the ITC document which take account of the overlaps between adjacent transmitters.

82. The ITC document contains two figures for population coverage estimates for each multiplex at each transmitter site based on different methods of counting. Until further field work has been carried out to establish which prediction technique is the more appropriate, British Digital Broadcasting is assuming that the population covered is based upon the proportional method of counting as referred to a number of times in the Invitation to Apply. Coverage figures for all multiplexes assume a transmitted data rate of 24 Mbps.
83. British Digital Broadcasting would like to extend the coverage of the service where additional frequencies become available and where these enable significant increases in population coverage to be achieved at a reasonable cost. British Digital Broadcasting is aware that the availability of additional frequencies depends on international co-ordination and clearances and would propose to discuss these matters at routine liaison meetings with the ITC.

Start Date

84. Based on the above transmitter build programme, the date of start of transmissions of the multiplex service is forecast to be July 1998.

Conditional Access

85. If awarded a single multiplex licence, British Digital Broadcasting will seek to work with the other licence holders to establish a common solution for all digital terrestrial services. A common solution for conditional access is regarded as essential for the development of the market. As several other parties will be involved, it is not yet possible to provide any firm indications of the outcome of these discussions. British Digital Broadcasting will advocate a solution that encourages the availability of low cost consumer equipment at the commencement of digital terrestrial television services, whilst still allowing the introduction of other strategies at a later stage.
86. British Digital Broadcasting also recognises that multiplex operators and other interested parties may have concerns regarding the possibility of conditional access technology being used to establish a dominant position in the market. British Digital Broadcasting's view is that competition in the provision of television services should be on the basis of programme quality and the quality of service offered to the viewer and that this competition should not be hindered or prevented as a result of "gate keeping" by conditional access operators. It is assumed that the conditional access system used to support British Digital Broadcasting's services will be available to all service providers on fair, reasonable and non-discriminatory terms as required by regulations and guidance notes issued by the DTI and OFTEL.
87. In the case that British Digital Broadcasting operates a conditional access authorisation service for other multiplex operators, British Digital Broadcasting will support an

interface to that licensee's own customer management centre.

Section A2 of British Digital Broadcasting's *supplementary* proposals provides equivalent information, should in addition to Multiplex D, the company be awarded Multiplexes B and C.

This is British Digital Broadcasting's individual application for Multiplex D. It describes in detail British Digital Broadcasting's proposed approach to the issues, in particular, of multiplexing, distribution, transmission and overall system integration. There is a supplementary proposal which details the key, lead role which British Digital Broadcasting could play, particularly in the areas of the playout centre, conditional access and multiplexing, should the company be successful in winning Multiplexes B and C as well.

APPENDIX 1 TO A.2

Proposed Transmitter Roll-Out Programme

Note: Shaded transmitter sites indicate Service Information insertion points.

	Transmitter Site	Date	Cumulative Population (nett 1000's)	% of offered coverage
PHASE 1	Crystal Palace	01/09/97	5,910	14.9%
	Sutton Coldfield	01/09/97	8,610	21.7%
	Winter Hill	01/09/97	13,130	33.1%
	Wenvoe	01/09/97	No Mux D coverage	
	Pontop Pike	01/09/97	14,830	37.4%
PHASE 2	Sandy Heath	31/12/97	15,594	39.3%
	Emley Moor	31/12/97	17,914	45.1%
	Belmont	31/12/97	18,964	47.8%
	Caldbeck	31/12/97	19,238	48.5%
	Waltham	31/12/97	20,678	52.1%
	Fremont Point	31/12/97	20,778	52.4%
	Durris	31/12/97	21,044	53.0%
	Mendip	31/12/97	21,582	54.4%
	Rowridge	31/12/97	22,482	56.6%
	Hannington	31/12/97	23,409	59.0%
	Black Hill	31/12/97	24,889	62.7%
	Craigkelly	31/12/97	25,629	64.6%
	Bilsdale	31/12/97	26,739	67.4%
	Divis	31/12/97	27,538	69.4%
	Caradon Hill	31/12/97	27,778	70.0%
	Stockland Hill	31/03/98	28,243	71.2%
	Tacolneston	31/03/98	28,881	72.8%

Proposed Transmitter Roll-Out Programme

Note: Shaded transmitter sites indicate Service Information insertion points.

	Transmitter Site	Date	Cumulative Population (nett 1000's)	% of offered coverage
PHASE 3	Sudbury	31/12/98	29,145	73.4%
	Oxford	31/12/98	29,555	74.5%
	Ridge Hill	31/12/98	29,959	75.5%
	Huntshaw Cross	31/12/98	30,062	75.7%
	Angus	31/12/98	30,446	76.7%
	Rosemarkie	31/12/98	30,559	77.0%
	Blaenplwyf	31/12/98	30,607	77.1%
	Carmel	31/12/98	30,625	77.2%
	Llanddona	31/12/98	30,695	77.3%
	Moel-y-parc	31/12/98	30,811	77.6%
	Presely	31/12/98	30,901	77.9%
	Beacon Hill	31/12/98	31,078	78.3%
	Dover	31/12/98	31,244	78.7%
	Midhurst	31/12/98	31,461	79.3%
	Heathfield	31/12/98	31,595	79.6%
	Darvel	31/12/98	32,063	80.8%
	Brougher Mtn	31/12/98	32,112	80.9%
	Limavady	31/12/98	32,255	81.3%
The Wrekin	31/03/99	32,783	82.6%	
Bluebell Hill	31/03/99	33,873	85.3%	
Redruth	31/03/99	34,086	85.9%	
PHASE 4	Salisbury	31/12/99	34,143	86.0%
	Tunbridge Wells	31/12/99	34,256	86.3%
	Guildford	31/12/99	34,630	87.3%
	Hemel Hemstead	31/12/99	34,792	87.7%
	Reigate	31/12/99	No Mux D coverage	
	Brierly Hill	31/12/99	34,940	88.0%
	Bromsgrove	31/12/99	35,059	88.3%

Proposed Transmitter Roll-Out Programme

Note: Shaded transmitter sites indicate Service Information insertion points.

Transmitter Site	Date	Cumulative Population (nett 1000's)	% of offered coverage
PHASE 4 Fenton	31/12/99	35,339	89.0%
Larkstoke	31/12/99	No Mux D coverage	
Malvern	31/12/99	35,416	89.2%
Nottingham	31/12/99	35,746	90.1%
Bressay	31/12/99	35,759	90.1%
Eitshal	31/12/99	35,778	90.1%
Keelylang Hill	31/12/99	35,795	90.2%
Knock More	31/12/99	35,842	90.3%
Rumster Forest	31/12/99	35,904	90.5%
Aberdare	31/12/99	35,961	90.6%
Lancaster	31/12/99	36,226	91.3%
Pendle Forest	31/12/99	36,441	91.8%
Saddleworth	31/12/99	36,603	92.2%
Storeton	31/12/99	36,858	92.9%
Bristol I.C.	31/12/99	37,036	93.3%
Bristol K.W.	31/12/99	37,226	93.8%
Kilvey Hill	31/12/99	37,530	94.6%
Hastings	31/12/99	37,663	94.9%
Pontytpool	31/12/99	37,769	95.2%
Rosneath	31/12/99	37,891	95.5%
Chatton	31/12/99	37,956	95.6%
Fenham	31/12/99	38,301	96.5%
Plympton	31/12/99	38,463	96.9%
Chesterfield	31/12/99	38,690	97.5%
Idle	31/12/99	38,848	97.9%
Keighley	31/12/99	No Mux D coverage	97.9%
Olivers Mount	31/12/99	38,921	98.1%
Sheffield	31/12/99	39,250	98.9%
Selkirk	31/12/99	39,302	99.0%
Torosay	31/12/99	39,315	99.1%
Whitehawk Hill	31/12/99	39,690	100.0%

Section A3 -Promoting or Assisting the Acquisition of Equipment

ITC Requirement

Noting the information contained in paragraphs 16, 36, 84 to 88 and 131, the applicant should state in detail what arrangements he has made to promote or assist the acquisition, including on hire or loan, of equipment capable of receiving all the multiplex services available in the coverage area of the proposed service. Confidential financial information, including details of expenditure underpinning these arrangements should be provided separately in Section B of the attachment to Part III. Without limiting the information to be supplied, applicants should cover the following issues:

- *what arrangements, if any, exist with manufacturers to support the development and production of the equipment, e.g. technical expertise, direct or indirect financial support (including subsidy), etc.;*
- *what arrangements, if any, exist with retailers to support the sale, hire or loan of equipment, e.g. marketing assistance; direct financial support;*
- *details, and the number of, retail outlets which will offer equipment for sale, hire or rent in the transmission coverage area;*
- *is it intended to offer equipment direct to households? If so, details of the associated marketing and sales strategy, including the number of people to be employed in this area, should be provided;*
- *details of marketing and publicity plans, identifying separately those to be undertaken jointly with manufacturers and/or retailers, including proposals for advertising on television, radio, in the press, by direct mail, etc. (Applicants should identify the target audience in each case. This information may be provided in Section B if wished);*
- *the extent to which the range and characteristics of the services to be offered will promote or assist the acquisition of receiving equipment by viewers.*

Summary

If British Digital Broadcasting was awarded the licence to operate Multiplex D, British Digital Broadcasting's plans to promote and assist the acquisition of digital terrestrial television equipment would be aimed at supporting the integrated plans of a 'lead' multiplex operator or a grouping that achieves a similar effect. British Digital Broadcasting will work to integrate its plans as fully as possible to ensure consumers receive a single clear marketing message.

1. The success of digital terrestrial television is in the national interest. Viewers will receive more choice, convenience and better reception. There will be a significant economic boost to the consumer electronics and television production industries. However, success requires, from the outset, a good match between supply and demand. British Digital Broadcasting's view is that there are three potential supply

and demand patterns:

- a) A slow start with manufacturers and retailers waiting for proof of demand levels before ordering and producing equipment, and consumers delaying their purchase decisions even though digital terrestrial television might offer the best value route into multi-channel television. This pattern would lead to the market only maturing in the later years of the initial licence period and possibly not reaching its full potential because of the establishment of competing delivery systems.
 - b) A medium pace initial market growth, with manufacturers and retailers slightly less cautious and some consumers making an early decision to buy. This pattern leads to the market maturing in the middle years of the initial licence period.
 - c) A buoyant and vibrant market from launch with manufacturers and retailers committed to high supply levels and consumers demanding equipment in large numbers at the launch date.
2. Creating the most buoyant market requires a fully resourced, and integrated marketing plan. British Digital Broadcasting believes that this can best be achieved realistically if led by an organisation with licences to operate three multiplexes, which is able and prepared to drive the market through investment in retail promotions and subsidy; and in marketing, programming and customer service.
 3. If British Digital Broadcasting and other organisations were each to be awarded single licences, then the inherent delays in agreeing a consensus position for the marketing effort, and the lack of economies of scale, would make a fully funded integrated marketing plan less certain. This would lead, at best, to the medium pace market growth scenario described above. In the absence of genuine integration the market would be left largely to find its own level which would delay the positive interaction of supply and demand and so favour the slow growth scenario outlined above.
 4. British Digital Broadcasting's proposals for promoting equipment if it were awarded three multiplexes are attached as Section A3 of its supplementary proposals, and describe British Digital Broadcasting's plans to implement an integrated marketing plan to promote digital terrestrial television both generically and for its own services.
 5. In this application, British Digital Broadcasting details its proposals for promoting or assisting the acquisition of equipment if it were awarded Multiplex D only. Given the commercial sensitivity of this information, much of the detail is contained in confidential Section B3.
 6. The base case assumption has been made that were British Digital Broadcasting to be awarded a single multiplex licence, there will be a 'lead' multiplex operator who will have proposed integrated promotional plans at least as strong as those contained in British Digital Broadcasting's own supplementary proposals. As a result, British Digital Broadcasting's proposals in this application assume that the levels of generic

promotion and subsidy of the digital terrestrial television market will be at least on the scale of those outlined in British Digital Broadcasting's supplementary proposal for three multiplexes.

Securing High Levels of Supply by Supporting Manufacturers in the Development and Introduction of Equipment

7. UK based manufacturers are, in principle, keen to see a new market in digital terrestrial televisions and, like the shareholders in British Digital Broadcasting, the majority of them have participated in the preparation of the Digital Television Group's project to develop core specifications and equipment inter-operability requirements. Understandably, however, they are looking for some level of security to underpin design work and the establishment of production capability.
8. In British Digital Broadcasting's integrated marketing plan, this need for security would be provided by creating a partnership with manufacturers to include underwriting orders for set-top boxes, ensuring future production capacity and joint marketing initiatives.
9. In the case of a single multiplex licence award, this generic activity is assumed to be carried out by other multiplex licence holders or by all licence holders acting together. British Digital Broadcasting would take part in this activity in any appropriate and financially viable way. British Digital Broadcasting believes that promotions in relation to manufacture and retailing have an important part to play and has planned contributions to such arrangements. In the event that the other licence holder(s) plan subsidies, British Digital Broadcasting will look to collaborate where practicable. The plans outlined in this proposal for promoting and assisting the acquisition of equipment are based on British Digital Broadcasting's best current views of the measures necessary to stimulate the fastest market growth for digital terrestrial television. These plans will be constantly reviewed through the period between the licence award and the launch of the service and will be adapted in the light of any changes to prevailing market conditions.

Securing High Levels of Supply by Means of Arrangements with Retailers to Support the Sale, Hire or Loan of Equipment

10. Electrical retailers are, in principle, keen to see a new market in digital terrestrial television equipment and, like the shareholders in British Digital Broadcasting, many of them have been involved in the DTG Group project to develop core specifications and create joint marketing objectives. Understandably, however, and like manufacturers, they are looking for some level of commitment from the multiplex holders regarding pricing and marketing support before they commit to orders.
11. In British Digital Broadcasting's integrated marketing plan, this commitment would be provided by creating a partnership with retailers to include subsidised set-top box prices, guaranteed retail availability, promotional offers and joint marketing initiatives.

12. In the case of a single multiplex licence award, British Digital Broadcasting would concentrate its market effort behind its own channels and would therefore concentrate on providing promotional offers through retailers. In addition, given the absence of economies of scale, the level of investment behind these offers, whilst still substantial, would be lower than in the integrated marketing plan. Dependent on market conditions at the time, British Digital Broadcasting may wish to combine its marketing support to retailers with the support of any other multiplex licence holders. Given its belief in the price sensitivity of the market, British Digital Broadcasting has put aside a contingency fund to enable British Digital Broadcasting to co-operate jointly with the marketing plans proposed by other multiplex licence holder(s).

Details and Numbers of Retail Outlets

13. British Digital Broadcasting has acquired substantial research data to help its understanding of consumer purchasing patterns for televisions and set-top box equipment, and to identify the main retail channels for these products. Full details of this analysis are set out in confidential Section B3 and Annex 18.
14. British Digital Broadcasting has, (through Carlton) over the last four months, held detailed discussions with all the major retail and TV rental chains. These companies account for over half of the UK market in equipment sales and rental. Following these briefings, they have provided assurances that they plan to stock digital terrestrial television receiving equipment at all stores within the transmission area, at the time of launch.
15. Based upon these discussions, British Digital Broadcasting estimates that a number of major store groups and independent retailers will stock digital terrestrial receiving equipment with a combined total of up to 5,500 outlets nationally within the coverage area. On this basis British Digital Broadcasting estimates that equipment will be stocked as follows:

Date	Outlets
July 1998	2000
January 1999	4000
January 2000	5500

Offering Equipment Direct to Households

16. British Digital Broadcasting believes that retailers are best placed to explain the concept and benefits of digital terrestrial television and also to provide the consumer with pre-sales advice, financing and after sales service. They are experienced in selling high value consumer electronics equipment and have staff and demonstration facilities to answer the inevitable queries of customers considering an investment in a new piece of technology. British Digital Broadcasting is aware that direct selling played a part in

the early introduction of analogue set-top boxes. It will therefore review whether direct selling could play a part in equipment sales but has not, at this stage, included this in its base case business plan.

Marketing and Publicity Plans

17. The BBC, ITV, Channel 4 and Channel 5 will be promoting their new digital services on their main analogue channels. This will provide initial generic marketing to raise the public's awareness of the launch of digital terrestrial television. Through their participation in ITV's plans for digital services, both Carlton and Granada intend to fully support this promotional activity and have supported the proposed arrangement with Digital 3 and 4 Ltd for Channel 4 and the ITV companies to broadcast up to one minute a day of digital terrestrial promotions.
18. British Digital Broadcasting has also been involved in the discussions with Digital 3 and 4 Ltd and the BBC regarding the possibility of a joint overall marketing campaign for digital terrestrial television programming. British Digital Broadcasting believes strongly that such a campaign would be of great value and fully supports the initiative, which would help ensure that digital terrestrial television services gain widespread public awareness.
19. If British Digital Broadcasting were only awarded Multiplex D, its marketing and publicity plans would be concentrated on promoting the uptake of digital equipment through promoting its own channels. This marketing would cover television, magazine and poster advertising which would be linked to the promotional offers through retailers as set out earlier in this section. This advertising activity would start just prior to the launch of the service and would continue throughout the licence period. Detailed plans and expenditure levels are set out in Section B3 of this application.
20. British Digital Broadcasting intends to offer its channels as a stand alone package to consumers. If, however, the commercial case were made for including British Digital Broadcasting's channels as part of the basic package offered by other licence holder(s), British Digital Broadcasting would look positively at the proposal.

Target Audience

21. Television viewing is the most popular leisure activity in the country with an average person watching in excess of 25 hours each week. Since the arrival of digital terrestrial television is potentially one of the biggest changes since colour, the target audience for digital terrestrial television must be the entire television viewing population.
22. In order to achieve the fastest take-up of equipment, British Digital Broadcasting has worked with the research company, NOP, to identify those consumers who are most likely to be the first purchasers of digital terrestrial receiving equipment. In conjunction with British Digital Broadcasting's advertising advisers, Lowe Howard-Spink, these consumers' socio-economic and age profiles, as detailed below, have been

used to create the advertising and promotional target audiences for British Digital Broadcasting’s marketing plans.

Table: Socio Economic Profile for Early Adopters of Digital Terrestrial Equipment

Socio Economic Group	Early Adopters %	Index v Population
AB	19	112
C1	36	133
C2	21	105
DE	24	65

Table: Age Profile for Early Adopters of Digital Terrestrial Equipment

Age Group	Early Adopters %	Index v Population
16-24	21	210
25-34	45	196
35-44	16	89
45-54	13	72
55-64	3	23
65+	2	11

- 23. As can be seen from the above tables, the profile of likely early adopters of digital terrestrial television equipment is mid to up market in socio-economic terms with a younger age bias.
- 24. British Digital Broadcasting’s marketing and advertising plans, as detailed in Section B3, are designed to target these early adopters, whilst still recognising the importance of the launch of digital terrestrial television to the whole population.

Regional Promotion

- 25. British Digital Broadcasting intends to offer a single national package of services. In doing so, it will need to be sensitive to the fact that some parts of the country will receive services later than others so that, overall, coverage will be less than 100%. British Digital Broadcasting’s promotional activity will be focused, as far as practicable, on those parts of the country able to receive its services.

Additional Marketing Support Services

- 26. To back up the marketing activity, British Digital Broadcasting will be creating a database which will allow consumers to register their interest in its digital services. These consumers will then be sent any relevant information, details or special offers that become available.
- 27. British Digital Broadcasting is aware that part of the success of pay-television is in retaining existing subscribers as well as encouraging new subscribers. To achieve this success, British Digital Broadcasting’s marketing plans include significant levels of investment in subscriber marketing. The objectives of British Digital Broadcasting’s

subscriber marketing would be to retain existing customers, ensure maximum subscription from each subscriber, persuade lapsed subscribers to re-subscribe, identify new subscribers and prevent potential bad debts. The main areas that subscriber marketing would cover are direct mail, contract distribution and telemarketing.

How the Service will Promote or Assist Equipment Acquisition

28. British Digital Broadcasting proposes to offer subscription channels. As part of its market research, it tested viewers' opinions on, and interest in a wide range of subscription channel concepts. There were some clear favourites in terms of channels that would achieve high viewing levels and channels that would be regarded as justifying the purchase and subscription costs. The results of this research are summarised in confidential Annex 1.
29. In the light of this research British Digital Broadcasting's proposed channel selection of Sky Movies, Carlton Entertainment, Granada Plus, Sky One, and BBC Showcase/BBC Style has been selected as the best choice to promote and assist the acquisition of equipment. The choice of one premium channel and four basic channels provides consumers with access to a premium channel, whilst at the same time providing a large and attractive basic package to appeal to consumers who are less certain to pay for premium channels. British Digital Broadcasting's research identified a premiere movie channel as being the single most popular choice amongst current terrestrial-only households. In respect of the basic channel line-up, British Digital Broadcasting's research shows that viewers are most receptive to general entertainment channels. Were British Digital Broadcasting to be awarded this single multiplex the assumption is made that the channels offered by other successful applicants will include other strong "driver" channels.

Section A3 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three licences for which it has applied.

In the event that British Digital Broadcasting were awarded three multiplex licences British Digital Broadcasting proposes to lead and fund an integrated marketing plan to drive the digital terrestrial television market.

Section A4 - Number and Characteristics of Services

ITC Requirement

Taking account of the guidance given in paragraphs 91 to 105 above, the applicant should state the number of digital programme services which he intends to broadcast and for each service he should describe:

- i) the date when the service will commence;*
- ii) the hours of the day and the days of the week during which the service will be broadcast;*
- iii) the coverage area;*
- iv) the type of programmes which will be broadcast, the style of programme service and the target audience (see notes);*
- v) the average proportion of total programme hours that will consist of original productions or commissions, i.e. programmes which have been made specifically for the digital programme service; and*
- vi) the average proportion of total programme hours that will consist of first-run material, i.e. material which has not previously been shown on the digital programme service.*

Notes:

- 1. An ITC Guidance Note on Programme Definitions is available which explains how programmes should be classified.*
- 2. Applicants may wish to refer to audience research findings which support the belief that the proposed services will appeal to a variety of tastes and interests and/or that different elements will appeal to particular target audiences.*
- 3. Applicants should note that it will not be sufficient to describe programme services in general terms without explaining what types of "entertainment" or "sport" for example will be provided in different parts of the schedule (evening, daytime etc.) for whom the programmes are intended and how they will be sourced (see A14).*
- 4. Applicants for Licence A should note the requirement to provide Gaelic language programming in Scotland, as described in paragraph 120.*

Summary

For Multiplex D, British Digital Broadcasting proposes four basic subscription channels: Carlton Entertainment, Granada Plus, Sky One, BBC Style and BBC Showcase and one premium subscription channel - Sky Movies. This 'one multiplex' proposal has been designed to complement the assumed prospective channels viewers would be receiving from the 'free-to-air' multiplexes and from other commercial multiplexes.

1. A central element of British Digital Broadcasting's proposal is its programme service. British Digital Broadcasting's service will be supplied by Carlton, Granada, BSkyB, and the BBC, respectively the major UK forces in commercial terrestrial television, pay television, and public service broadcasting.

2. British Digital Broadcasting has taken into account, particularly, the findings of research into viewers' interests and research into which subscription channel concepts will best supplement and complement the 'free-to-air' channels digital terrestrial viewers are likely to receive from other broadcasters. These 'free-to-air' channels will also play a vital role in the overall appeal of digital terrestrial television.
3. Carlton, on behalf of British Digital Broadcasting, has carried out a two phase research programme to help understand the channels that would, in combination, encourage the uptake of subscriptions and sustain viewers' interests so as to minimise churn. The first phase of survey research in September 1996 looked at 25 channel concepts. These results clearly identified the channels which captured high viewer interest and for which they were prepared to pay. The second phase of research in November 1996 concentrated on the most likely channels in more detail, using survey and focus group techniques. (A summary of the two phases of research is contained in confidential Annex 1). In the research it was explained to consumers that digital terrestrial television would combine 'free-to-air' channels from the BBC, ITV, C4, C5 and S4C, with around twenty pay-television channels. It was further explained that the 'free-to-air' channels would include, for example, a BBC 24 hours news channel and a second ITV channel.
4. British Digital Broadcasting's 'one multiplex' programme offer for Multiplex D comprises a set of four high quality basic channels: Carlton Entertainment, Granada Plus, Sky One and BBC Style/BBC Showcase and one premium channel, Sky Movies.

Carlton Entertainment	A new channel to meet the enduring demand for well executed popular entertainment. There will be a strong emphasis on British productions alongside quality acquired material from other sources.
Granada Plus	Programmes based predominantly on prestigious and popular British drama, entertainment, comedy and children's programming as well as critically acclaimed documentaries and features. The existing cable and satellite service will be enhanced with more high quality original programming from Granada TV and LWT's award winning production teams.
Sky One	Sky One will provide a range of quality family entertainment - comedy, drama, documentaries, science fiction, reality programmes and chat shows combining domestic and imported product.
BBC Style and BBC Showcase	BBC Style will feature fresh and first-rate leisure and lifestyle programming - from antiques to aspidistras, cooking to collecting, gardening to gastronomy, from what to wear to what to drive. BBC Showcase is designed to 'showcase' for viewers high quality and popular programmes from BBC1 and BBC2. Content will range from classic to contemporary, from drama to comedy.

<p>Sky Movies</p>	<p>Sky Movies will aim to screen hit movies from around the world, featuring British films as well as imports. The channel is scheduled to operate 24 hours a day, 7 days a week with all movies shown without commercial breaks. In order to cater to the widest range of viewers' lifestyles, the most popular shown movies will be re-screened at different times and on different days.</p>
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5. Should British Digital Broadcasting be awarded Multiplex D only, these channels have been designed to complement what British Digital Broadcasting has assumed would be attractive programme services on the other multiplexes.
6. The shareholders of British Digital Broadcasting have access to a substantial body of library material and rights which will be available to enhance British Digital Broadcasting's service proposition. An outline is included as Annex 17.
7. British Digital Broadcasting's content pricing approach is described in Section A3. British Digital Broadcasting's approach to particular genres is described in Section A6. Each channel is detailed overleaf. For each channel British Digital Broadcasting has indicated the percentage of programme hours that will consist of original productions or commissions in relation to that channel.
8. The BBC subscription channels which form part of this application and its supplementary proposals are intended to be offered through the joint venture between the BBC and Flextech. The BBC is engaged in further work to finalise and make public, details of these channels and information about schedules is, at this stage, in broad generic or illustrative form. The BBC will furnish British Digital Broadcasting with further information, including information as to the amount of original and first-run material and indicative schedules as soon as possible and this information will be available to the ITC upon request.

Carlton Entertainment

A new channel to meet the enduring demand for well executed popular entertainment. There will be a strong emphasis on British productions but integrating the 'best of the rest'.

Start Date, Hours of Broadcast and Coverage

9. Carlton Entertainment will be available from the date of the launch of the British Digital Broadcasting digital terrestrial television service. It is currently scheduled to transmit for 18 hours per day, seven days per week, 52 weeks a year. It will be transmitted on a national basis, using the full coverage capability of the multiplex.

Programme Type

10. Carlton Entertainment will meet the enduring consumer demand for well produced popular entertainment. The programmes are a mix of original UK productions and those bought in from other English-speaking countries.
11. Children's programming will begin the schedule each day and will run in a magazine format from 6am till 9am. Morning programmes are generally quiz and game-shows of all types; from those aiming to entertain to more brain-stretching fare. In the early afternoon, the channel concentrates on well-known soaps. From late afternoon to the early evening, family drama is the core of the schedule, while the early evening concentrates on comedy, with a mixture of British and American sitcoms. Later in the evening the menu is based around interview, talk and information programming, from "Hello"- style gossip and audience participation shows to more serious in-depth interviews. Approximately three-quarters of the talk-show programmes will be original British productions largely sourced through Action Time - a subsidiary of Carlton specialising in this genre.
12. Almost 30% of British Digital Broadcasting's channel research respondents were attracted to this channel as a 'family channel', with nearly equal number of terrestrial households saying it was 'for them', 'for partner' and 'for children'.

Indicative Schedule

13. The indicative schedule is shown overleaf. Detailed negotiations with some programme suppliers will be finalised once the results of the licence application are known. British Digital Broadcasting, in conjunction with Carlton, will constantly review audience response and the competitive environment and refine and adjust the programme line-up accordingly.

Carlton Entertainment Indicative Schedule: by Genre

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
06:00	Children's Magazine	Children's Magazine	Children's Magazine	Children's Magazine	Children's Magazine	Children's Magazine	Children's Magazine
07:00							
08:00							
09:00	Quiz	Quiz	Quiz	Quiz	Quiz	Children's Quiz	Children's Quiz
09:30	Quiz	Quiz	Quiz	Quiz	Quiz	Children's Quiz	Children's Quiz
10:00	Quiz	Quiz	Quiz	Quiz	Quiz	Quiz	Quiz
10:30	Quiz	Quiz	Quiz	Quiz	Quiz	Quiz	Quiz
11:00	Quiz	Quiz	Quiz	Quiz	Quiz	Quiz	Quiz
11:30	Quiz	Quiz	Quiz	Quiz	Quiz	Quiz	Quiz
12:00	Aus Soap	Aus Soap	Aus Soap	Aus Soap	Aus Soap	Aus Soap	Aus Soap
12:30	Aus Drama	Aus Drama	Aus Drama	Aus Drama	Aus Drama	Aus Drama	Aus Drama
13:00						UK Soap	UK Soap
13:30	UK Soap	UK Soap	UK Soap	UK Soap	UK Soap	UK Soap	UK Soap
14:00	UK Soap	UK Soap	UK Soap	UK Soap	UK Soap	UK Soap	UK Soap
14:30	US Drama	US Drama	US Drama	US Drama	US Drama	US Sci-Fi	US Sci-Fi
15:00							
15:30	US Series Drama	US Series Drama	US Series Drama	US Series Drama	US Series Drama	US Sci-Fi	US Sci-Fi
16:00							
16:30	Children's Drama	Children's Drama	Children's Drama	Children's Drama	Children's Drama	Children's Drama	Children's Drama
17:00	Aus Soap	Aus Soap	Aus Soap	Aus Soap	Aus Soap	Children's Drama	Children's Drama
17:30	Aus Drama	Aus Drama	Aus Drama	Aus Drama	Aus Drama	Children's Drama	Children's Drama
18:00						Children's Drama	Children's Drama
18:30	US Comedy	US Comedy	US Comedy	US Comedy	Film Comedy	UK Comedy	UK Comedy
19:00	UK Comedy	UK Comedy	UK Comedy	UK Comedy		US Comedy	US Comedy
19:30	UK Comedy	UK Comedy	UK Comedy	UK Comedy		US Comedy	US Comedy
20:00	US Comedy	US Comedy	US Comedy	US Comedy	US Comedy	UK Comedy	UK Comedy
20:30	UK Comedy	UK Comedy	UK Comedy	UK Comedy	UK Comedy		
21:00	Talk Show	Talk Show	Talk Show	Talk Show	Talk Show	Talk Show	Talk Show
22:00	Entertainment	Entertainment	Entertainment	Entertainment	Entertainment	Entertainment	Entertainment
22:30	US Talk Show	US Talk Show	US Talk Show	US Talk Show	US Talk Show	US Talk Show	US Talk Show
23:00	Chat Show	Chat Show	Chat Show	Chat Show	Chat Show	Chat Show	Chat Show

Carlton Entertainment Indicative Schedule: by Illustrative Programme

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
06:00	Children's Magazine	Children's Magazine	Children's Magazine	Children's Magazine	Children's Magazine	Children's Magazine	Children's Magazine
07:00							
08:00							
09:00	Catchphrase	Catchphrase	Catchphrase	Catchphrase	Catchphrase	Terror Towers	Terror Towers
09:30	Surprise Chefs	Surprise Chefs	Surprise Chefs	Surprise Chefs	Surprise Chefs	Crazy Cottage	Crazy Cottage
10:00	Lingo	Lingo	Lingo	Lingo	Lingo	Blockbusters Rpt	Blockbusters Rpt
10:30	Blockbusters	Blockbusters	Blockbusters	Blockbusters	Blockbusters	Blockbuster Rpt	Blockbuster Rpt
11:00	Family Fortunes	Family Fortunes	Family Fortunes	Family Fortunes	Family Fortunes	Family Fortunes Rpt	Family Fortunes Rpt
11:30	S/Sweep	S/Sweep	S/Sweep	S/Sweep	S/Sweep	Family Fortunes Rpt	Family Fortunes Rpt
12:00	Home & Away	Home & Away	Home & Away	Home & Away	Home & Away	Home & Away Rpt	Home & Away Rpt
12:30	Heartbreak High	Heartbreak High	Heartbreak High	Heartbreak High	Heartbreak High	Heartbreak High	Heartbreak High
13:00						UK Soap London Bridge	UK Soap Home & Away
13:30	London Bridge	London Bridge	London Bridge	London Bridge	London Bridge	London Bridge Rpt	London Bridge Rpt
14:00	Crossroads	Crossroads	Crossroads	Crossroads	Crossroads	London Bridge Rpt	London Bridge Rpt
14:30	Loveboat	Loveboat	Loveboat	Loveboat	Loveboat	Lost in Space	Lost in Space
15:00							
15:30	Drama Dynasty	Drama Dynasty	Drama Dynasty	Drama Dynasty	Drama Dynasty	Land of the Giants	Land of the Giants
16:00							
16:30	Woof!	Woof!	Woof!	Press Gang	Woof!	Beechcombers	Beechcombers
17:00	Home & Away	Home & Away	Home & Away	Home & Away	Home & Away	Danger Bay	Danger Bay
17:30	Heartbreak High	Heartbreak High	Heartbreak High	Heartbreak High	Heartbreak High	Murphy's Mob	Murphy's Mob
18:00						Harry's Mad	Harry's Mad
18:30	I Dream of Genie	Bewitched	I Dream of Genie	Bewitched	Film Comedy	A Kind of Living Rpt	A Kind of Living Rpt
19:00	Auf Wieder Pet	A Kind of Living	Auf Wieder Pet	A Kind of Living		Bewitched Rpt	Bewitched Rpt
19:30	Girls on Top	Galton & Simpson	Girls on Top	Galton & Simpson		The Single Guy Rpt	The Single Guy Rpt
20:00	Ned & Stacey	The Single Guy	Ned & Stacey	The Single Guy	Ned & Stacey	Auf Wieder Pet Rpt	Galton & Simpson Rpt
20:30	The Upper Hand	Is it Legal?	The Upper Hand	Is it Legal?	The Upper Hand		
21:00	Vanessa Late	Vanessa Late	Vanessa Late	Vanessa Late	Vanessa Late	Vanessa Late	Vanessa Late
22:00	Gossip Today	Gossip Today	Gossip Today	Gossip Today	Gossip Today	Gossip Today	Gossip Today
22:30	Classic Donahue	Classic Donahue	Classic Donahue	Classic Donahue	Classic Donahue	Classic Donahue	Classic Donahue
23:00	Celebrity Chat Show	Celebrity Chat Show	Celebrity Chat Show	Celebrity Chat Show	Celebrity Chat Show	Celebrity Chat Show	Celebrity Chat Show

14. A lively Children's Magazine will introduce the schedule each morning from 6am. Carlton is the largest producer of children's programming for ITV and has a widely based department producing magazine formats, drama, animation and entertainment programming for younger viewers. We will mix original production, library material and some acquired series to attract the widest possible children's audience.
15. Each weekday morning viewers will be able to switch on to six successive popular game shows. The first two hours on weekend mornings running game show entertainment for children and teenagers. This segment will offer viewers an increased variety of programmes in a very popular genre.
16. From noon until 4.30pm a mixture of classic and contemporary serials are scheduled for the predominantly female audience available at this time. Examples include *Shortland Street*, *Take the High Road*, *General Hospital* and *As The World Turns*.
17. From 4.30pm until 6pm the schedule targets family viewing with award winning programmes like *Woof!* and *Press Gang* followed by *Home and Away* and *Heartbreak High*. There is a different mix of acquired series and home-grown children's drama for the weekend.
18. From 6.30pm until 9pm, we are in the comedy zone, with a consistent mix of British and American situation comedies, films and comedy dramas. Titles include *Auf Wiedersen Pet* and *Is It Legal?*
19. Interviews, talk and chat then dominate until midnight. Some of the programmes are current affairs based, while others have a more entertainment oriented slant.

Target Audience

20. Carlton Entertainment offers something for everyone in an easily manageable schedule. The target audience is broadbased with a female bias during the day and a family orientation in the early evening. Peak time and late night is more male.

Original Hours

21. Approximately 30% of all the schedule will be composed of original productions and commissions.

First Run Material

22. Approximately 45% of the schedule will consist of first-run material.

Granada Plus

An all-British programme service, including some of the most prestigious and popular drama, entertainment, comedy and children's programming ever produced in the UK, as well as award-winning features and documentaries. The existing satellite and cable service will be enhanced with more original programming and additional hours of transmission.

Start of Service, Hours of Broadcast and Coverage

23. Granada Plus will be available from the date of launch of the British Digital Broadcasting digital terrestrial television service. It is currently scheduled to transmit for 18 hours per day, seven days per week, 52 weeks a year. However, as the service develops, Granada intends to increase the transmission hours of the service to 24 hours per day. It will be transmitted on a national basis using the full coverage capability of the allocated multiplex.

Programme Types

24. Granada Plus will be defined by the range, quality and diversity of its schedule. It will showcase programmes made to high production values, across the full range of drama, entertainment, comedy, childrens', documentary and features.
25. **Drama** on Granada Plus will include the best programmes from the extensive archives of Granada TV and LWT. It will cover the spectrum from Olivier's *King Lear* to *Classic Coronation Street*, from *The Professionals* to *Brideshead Revisited*. The schedule will include award-winning series such as *Sherlock Holmes*, *Poirot*, *Maigret*, *Prime Suspect* and *Cracker*, as well as important and high-profile drama events such as *My Left Foot* and *Hillsborough*.
26. **Entertainment** on Granada Plus will feature many of the UK's most successful shows such as *Surprise Surprise*, *Beadle's About*, *You've Been Framed*, *Hale and Pace* and *An Audience With.....*. Under contracted arrangements, Granada Plus will have access to many of the nation's favourite entertainment programmes, including a number made by LWT, the UK's leading supplier of this genre of programming. The channel will also originate some entertainment programmes.
27. Granada Plus has access to a full range of high-quality hit **comedy**, including classic favourites such as *On the Buses*, *Nearest and Dearest*, *Two's Company*, and *The Army Game*, to more modern pieces such as *A Fine Romance*, *Watching* and *Jeeves and Wooster*.
28. Granada Plus will feature a rich vein of **arts and documentary** from Granada's *Seven Up* and *Disappearing World* to LWT's *Summer on the Estate* and *The South Bank Show*.
29. A significant proportion of the Granada Plus schedule will consist of originally commissioned **lifestyle and features** material which will have its first run on the

channel. The Granada Plus flagship will be a successful magazine designed mostly for the female audience entitled *The Good Life Guide*. An original and specially commissioned episode of the programme will run in peaktime every weekday. In addition, the Granada Plus schedule will include popular outdoor programmes such as *Down to Earth* and classic series such as A.J.P. Taylor's *Edge of Britain*.

30. Granada Plus will choose programmes from the best of the Granada TV/LWT **children's** archives which contain a wealth of award winning output spread across a wide range of sub genres and aimed at children of all ages. Successful titles include *Sooty*, *Allsorts*, *Time for a Story*, *Return of the Antelope* and *Childrens' Ward*. Granada Plus will also draw on Granada TV and LWT's growing strength in animation through programmes such as *Tom and Vicky* and *The Treacle People*.

Indicative Schedule

31. The main features of the Granada Plus indicative schedule are as follows:
32. Most of the early part of the day caters for the young audience - giving children something other than cartoons to watch at breakfast time. At 8am we begin an hour of popular drama - e.g. *Classic Coronation Street*, *Albion Market*, *Families* etc. *Classic Coronation Street* is repeated at 12pm, 6pm and 9pm.
33. At 9am we will run a drama series or serial, such as *London's Burning* or *The Gentle Touch*. These popular series will repeat at 5pm and 10pm.
34. The regular comedy hour at 10am features popular favourites such as *Please Sir*, *On the Buses*, *The Doctor* series, *Watching*, etc. We also feature comedy hours at 4pm and 7pm.
35. Granada Plus at 11am will feature nostalgic drama such as *Lillie*, *Upstairs Downstairs*, *The Life and Times of Henry Pratt*, *A Family at War*, etc. These series will usually repeat at weekends.
36. At 3pm Granada Plus will feature more popular drama, such as *Poirot*, *Sherlock Holmes*, *Maigret*, *Jeeves and Wooster* etc. and these series will usually repeat at 8pm.
37. At 9.30pm Granada Plus features our daily original lifestyle magazine, *The Good Life Guide*. Meanwhile at 10pm and 11pm, Granada Plus will schedule post-watershed material such as *Prime Suspect*, *Cracker*, etc..
38. British Digital Broadcasting with Granada will constantly monitor audience response and the competitive environment. If, in the light of these considerations, it would appear beneficial to revise the schedule to better meet audience needs, Granada, in consultation with British Digital Broadcasting, will review ideas for making positive changes.

Granada Plus: Indicative Schedule

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
06:00	Quiz	Quiz	Quiz	Quiz	Quiz	Children	Children
06:30	Children	Children	Children	Children	Children	Children	Children
07:00	Children	Children	Children	Children	Children	Children	Children
07:30	Factual	Factual	Factual	Factual	Factual	Children	Children
08:00	Drama	Drama	Drama	Drama	Drama	Comedy	Comedy
08:30	Drama	Drama	Drama	Drama	Drama	Comedy	Comedy
09:00	Drama	Drama	Drama	Drama	Drama	Drama	Drama
09:30	Drama	Drama	Drama	Drama	Drama	Drama	Drama
10:00	Comedy	Comedy	Comedy	Comedy	Comedy	Drama	Drama
10:30	Comedy	Comedy	Comedy	Comedy	Comedy	Entertainment	Entertainment
11:00	Drama	Drama	Drama	Drama	Drama	Entertainment	Entertainment
11:30	Drama	Drama	Drama	Drama	Drama	Comedy	Comedy
12:00	Drama	Drama	Drama	Drama	Drama	Music	Comedy
12:30	Drama	Drama	Drama	Drama	Drama	Factual	Children
13:00	Drama	Drama	Drama	Drama	Drama	Factual	Factual
13:30	Drama	Drama	Drama	Drama	Drama	Factual	Factual
14:00	Drama	Drama	Drama	Drama	Drama	Drama	Drama
14:30	Drama	Drama	Drama	Drama	Drama	Drama	Drama
15:00	Entertainment	Entertainment	Entertainment	Entertainment	Entertainment	Drama	Drama
15:30	Entertainment	Entertainment	Entertainment	Entertainment	Entertainment	Drama	Drama
16:00	Comedy	Comedy	Comedy	Comedy	Comedy	Entertainment	Factual
16:30	Comedy	Comedy	Comedy	Comedy	Comedy	Entertainment	Factual
17:00	Drama	Drama	Drama	Drama	Drama	Comedy	Drama
17:30	Drama	Drama	Drama	Drama	Drama	Music	Drama
18:00	Drama	Drama	Drama	Drama	Drama	Factual	Drama
18:30	Drama	Drama	Drama	Drama	Drama	Factual	Drama
19:00	Comedy	Comedy	Comedy	Comedy	Comedy	Drama	Drama
19:30	Comedy	Comedy	Comedy	Comedy	Comedy	Drama	Comedy
20:00	Entertainment	Entertainment	Entertainment	Entertainment	Entertainment	Drama	Drama
20:30	Entertainment	Entertainment	Entertainment	Entertainment	Entertainment	Drama	Drama
21:00	Drama	Drama	Drama	Drama	Drama	Drama	Drama
21:30	Factual	Factual	Factual	Factual	Factual	Drama	Drama

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
22:30	Drama	Drama	Drama	Drama	Drama	Entertainment	Entertainment
23:00	Drama	Drama	Drama	Drama	Drama	Entertainment	Entertainment
23:30	Drama	Drama	Drama	Drama	Drama	Drama	Drama

Style of programme service

- 39. While the majority of the Granada Plus schedule will consist of the best of the Granada and LWT archive, the presentation and promotion style of the channel will be up to date and distinctive. For example, newly-shot contributions from the stars of the programmes will frequently set a context for a series. Equally programmes will be presented and packaged to create eye-catching events - from “The Great Detectives Weekend” featuring episodes of *Sherlock Holmes*, *Maigret*, *Poirot* etc., to “*The Ups and Downs of Stan and Hilda*”.

Target Audience

- 40. The majority of Granada Plus programmes are sourced from the archives of Granada TV and LWT. They are high-quality, high-production value programmes which were often hugely popular at their first transmission and have usually been seen only once.
- 41. The appeal of Granada Plus is primarily based on the view that a significant proportion of viewers who enjoyed a programme months or years ago, will wish to see it again. If only a relatively small proportion of the 24 million people who tuned in to watch Ken marry Deirdre on *Coronation Street* want to see the episode again, the channel will be serving a significant number of viewers. In addition there is a large potential audience of viewers who missed the first transmission of a whole range of classic programmes, and for whom Granada Plus provides a chance to catch up.
- 42. This means that Granada Plus will draw viewers from among older audiences who remember classic series such as *A Family at War* and *Upstairs Downstairs*, as well as younger people for whom series such as *Please Sir* and *On the Buses* have become cult viewing.
- 43. Much of the appeal of Granada Plus is for daytime audiences, who may already be well-served in magazine and talk-based programming, but remain under-served in high-quality drama and entertainment. Many of these are women - young mothers with children and older, perhaps retired, viewers.

Original Hours

- 44. Granada Plus emphasises quality, high-cost, award winning drama and entertainment from two of the UK’s leading programme producers, offering the chance to see some “best of British” programmes again.

45. It will be important for the rapid development of digital terrestrial television that viewers have the chance to see the widest range of original material. Granada Plus will therefore originate, from launch, attractive and high-quality programming. Two examples of this programming from the lifestyle and entertainment genres include *The Good Life Guide* - an original lifestyle magazine aimed at the female audience - which will feature in our schedules every weekday. Similarly *Stuart's Hall of Fame* is a weekly opportunity to showcase the full range of amateur talent in front of a live audience. Some of the original programming created can, as necessary, have secondary rights on other forms of distribution and in other territories.
46. As digital terrestrial television develops and take-up increases, Granada will wish to enhance and develop the quality and originality of Granada Plus. Within the lifetime of the licence, Granada would expect to be able to introduce first runs of high quality drama and entertainment on the channel.
47. It is intended that from launch on digital terrestrial television approximately 5% of the programming material will be specifically originated for the channel.

First Run Material

48. Experience of the multi-channel television environment suggests that viewers are pleased to have several opportunities in the same day to view their favourite programmes. Given the expanding number of channels available, viewers can often find that there are several programmes which they may wish to watch being transmitted simultaneously on different channels.
49. If another programme choice or commitment means that a viewer misses a transmission of a favourite programme, they seem to welcome the opportunity to "catch it later". For this reason a pattern of same day repeats in the multi-channel world has already proved attractive to viewers.
50. The Granada Plus strategy is to repeat the strongest elements in the schedule two, three or (in the case of *Classic Coronation Street*) four times in an eighteen hour period. Our overall schedule is then based on a repeat pattern of two "play-days" per year.
51. On average, it is therefore intended that around 40% of the total schedule of Granada Plus will be first run programming.

Future Development of the Service

52. It is intended that Granada Plus will be a basic channel at the outset of the licence. However, as the success of digital terrestrial television grows and the attractiveness of the premium, first run original programming available on Granada Plus in peak time grows, the channel may change into a channel in a premium entertainment tier.
53. British Digital Broadcasting also expects changes in compression technology to allow

greater channel capacity which would give Granada the opportunity to create further channels from the high quality programme segments that would already exist within Granada Plus. For example, the LWT premium arts archive could be supplemented with original and acquired arts material to provide a quality arts channel. The same principle could also apply to Granada TV's and LWT's distinctive supply of drama, entertainment, children's and factual programming.

Sky One

This channel on digital terrestrial television will aim to provide a range of family entertainment - comedy, drama, documentaries, science fiction, reality programming and chat shows - combining domestic and imported product to assure an appeal to a wide audience. It will also explore opportunities to create general entertainment programming especially for this digital terrestrial television channel.

Start of Service, Hours of Broadcast and Coverage

54. Sky One on digital terrestrial television will be available from the date of the launch of the British Digital Broadcasting digital terrestrial television service. It is currently scheduled to transmit for 24 hours per day, seven days per week, 52 weeks a year. It will be transmitted on a national basis, from the launch of the British Digital Broadcasting digital terrestrial television service using the full coverage capability of the multiplex.

Programme Types

55. Sky One on digital terrestrial television will be a high quality mixed entertainment channel. It will include top-produced programmes spanning the full range of drama, entertainment, comedy, documentary and features.
56. Running 24 hours a day, Sky One expects to provide an irresistible mix of entertainment for the entire family. The channel aims to combine the best of original programming with first- and re-runs of domestic product as well as US and Australian-produced material. It is anticipated that the channel will have series similar to those shown during the last year on its satellite service including Britain's own *Springhill*, *Jimmy's*, *Just Kidding* and *The Movie Show*; from the US, *3rd Rock From The Sun*, *Hercules: The Legendary Journeys*, *Murder One* and *New Adventures of Superman*; and from Australia, *The Feds* and *Fire*. This is in addition to established shows such as *The X-Files*, *Beverly Hills 90210* and the *Star Trek* series.

Drama

57. Drama on Sky One's digital terrestrial service is anticipated to include the best of original, first and re-run programmes from the UK and abroad. Illustrative dramas within this programme type include *The X-Files*, *Law & Order*, *High Incident*, *Picket Fences*, *JAG* and *Millennium*. It is expected that UK-produced dramas such as *Coppers*, *Dreamland*, *Jimmy's* and *Springhill* will occupy the digital terrestrial schedule as well.

Entertainment

58. Sky One's indicative schedule for its digital terrestrial television service expects to give ample time to a variety of Entertainment programming. The channel's daytime entertainment schedule expects to include soap operas and talk shows. Illustrative soap operas include *Another World*, *Hotel* and *Days of Our Lives*. Talk shows would include shows of the format of *Oprah Winfrey* and *Sally Jesse Raphael*. The evening schedule would expect to present a variety of shows, for example *The Movie Show*, *Walker's World* and *Southenders*.

Comedy

59. As noted in the Indicative Schedule, daytime and evening programming would aim to include comedy in its digital terrestrial line-up. For example, daytime shows might include *WKRP in Cincinnati*, *George* and *Designing Women*. The evening schedule, on the other hand, might include such potential programmes as *Mad About You*, *M.A.S.H.*, *The Lucy Show*, *The Simpsons*, *Married...With Children* and UK-produced *Just Kidding*.

Music

60. The current after-hours schedule for digital terrestrial television expects to include blocks for non-stop music shows which would primarily offer strings of music videos encompassing a wide variety of music styles, including rock, jazz, pop, dance, techno and so on. For example, illustrative shows in this programme type might include the UK-produced five hour *Hit Mix* followed by *Morning Glory* for three additional hours.

Sky One Indicative Schedule - Illustration of Programme Titles

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
06:00	Music (Morning Glory)	Music (Morning Glory)	Music (Morning Glory)	Music (Morning Glory)	Music (Morning Glory)	Music (Hit Mix Long Play)	Sunday A.M.
06:30							
07:00						Sitcom (WKRP in Cincinnati)	Sitcom (WKRP in Cincinnati)
07:30						Sitcom (George)	Sitcom (George)
08:00						Drama (Young Indiana Jones Chronicles)	Drama (Young Indiana Jones Chronicles)
09:00	Sitcom (Designing Women)	Sitcom (Designing Women)	Sitcom (Designing Women)	Sitcom (Designing Women)	Sitcom (Designing Women)	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)
09:30	Sitcom (Designing Women)	Sitcom (Designing Women)	Sitcom (Designing Women)	Sitcom (Designing Women)	Sitcom (Designing Women)		
10:00	Soap (Another World)	Soap (Another World)	Soap (Another World)	Soap (Another World)	Soap (Another World)	Drama (Quantum Leap)	Drama (Quantum Leap)
10:30							
11:00	Soap (Days Of Our Lives)	Soap (Days Of Our Lives)	Soap (Days Of Our Lives)	Soap (Days Of Our Lives)	Soap (Days Of Our Lives)	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)
11:30							
12:00	Talk Show (The Oprah Winfrey Show)	Talk Show (The Oprah Winfrey Show)	Talk Show (The Oprah Winfrey Show)	Talk Show (The Oprah Winfrey Show)	Talk Show (The Oprah Winfrey Show)	Sport Entertainment (Wrestling show)	Sport Entertainment (Wrestling show)
12:30							
13:00	Talk Show (Geraldo)	Talk Show (Geraldo)	Talk Show (Geraldo)	Talk Show (Geraldo)	Talk Show (Geraldo)	Sport (Wrestling show)	Drama (Lazarus Man)
13:30							
14:00	Talk Show (Sally Jessy Raphael)	Talk Show (Sally Jessy Raphael)	Talk Show (Sally Jessy Raphael)	Talk Show (Sally Jessy Raphael)	Talk Show (Sally Jessy Raphael)	Drama (Kung Fu)	Drama (Kung Fu)
14:30							
15:00	Talk Show (Jenny Jones)	Talk Show (Jenny Jones)	Talk Show (Jenny Jones)	Talk Show (Jenny Jones)	Talk Show (Jenny Jones)	Sci-Fi (Star Trek)	Sci-Fi (Star Trek - Deep Space Nine)
15:30							
16:00	Talk Show (The Oprah Winfrey Show)	Talk Show (The Oprah Winfrey Show)	Talk Show (The Oprah Winfrey Show)	Talk Show (The Oprah Winfrey Show)	Talk Show (The Oprah Winfrey Show)	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)
17:00	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)	Music (The Hit Mix)	Super Sunday Childrens (The Muppets) Travel (Walkers World)
17:30							
18:00	Factual (Real TV)	Factual (Real TV)	Factual (Real TV)	Factual (Real TV)	Factual (Real TV)	Drama (Kung Fu)	Comedy (The Simpsons)
18:30	Sitcom (Married with Children)	Sitcom (Married with Children)	Sitcom (Married with Children)	Sitcom (Married with Children)	Sitcom (Married with Children)		Comedy (The Simpsons)
19:00	Comedy (The Simpsons)	Comedy (The Simpsons)	Comedy (The Simpsons)	Comedy (The Simpsons)	Comedy (The Simpsons)	Comedy Drama (Hercules)	Drama (Early Edition)

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
19:30	Comedy Drama (M.A.S.H.)	Comedy Drama (M.A.S.H.)	Comedy Drama (M.A.S.H.)	Comedy Drama (M.A.S.H.)	Comedy Drama (M.A.S.H.)	Comedy Drama	Drama
20:00	Mini Series (Trade Winds Pt 1)	Drama (Springhill)	Factual (Sightings)	Must See TV Comedy (Just Kidding)	Drama (J.A.G.)	Arresting TV Factual Crime (Coppers)	Drama (New Adventures of Superman)
20:30		Factual (Real TV UK)		Sitcom (The Nanny)			
21:00		Drama (Picket Fences)	Drama (Silk Stalkings)	Sitcom (Seinfeld)	Drama (Walker Texas Ranger)	Factual Crime (Coppers)	Drama (The X-Files)
21:30				Sitcom (Mad About You)			
22:00	Big News at 10 Drama (Nash Bridges)	Big News at 10 Factual (Unsolved Mysteries)	Big News at 10 Drama (Murder One)	Big News at 10 Drama (Chicago Hope)	Big News at 10 Drama (High Incident)	Big News at 10 Drama (Law and Order)	Big News at 10 Drama (Millenium)
22:30							
23:00	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)	Sci-Fi (Star Trek)	Adult (Red Shoe Diaries)	Drama (Forever Knight)
23:30						Factual (The Movie Show)	
00:00	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)
00:30	Sitcom (The Lucy Show)	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)	Factual Crime (L.A.P.D.)
01:00	Music (Hit Mix Long Play) (01.00 - 06.00)	Music (Hit Mix Long Play) (01.00 - 06.00)	Music (Hit Mix Long Play) (01.00 - 06.00)	Music (Hit Mix Long Play) (0100 - 06.00)	Music (Hit Mix Long Play) (0100 - 06.00)	Sitcom (Dream On)	Drama (Civil Wars)
01:30						Drama (The Edge)	
02:00						Music (Hit Mix Long Play) (02.00 - 06.00)	Music (Hit Mix Long Play) (02.00 - 06.00)
02:30							
06:00							

61. Sky One’s digital terrestrial indicative schedule is currently divided into four segments: “Daytime on Sky One”, “Early Evening on Sky One”, “Primetime on Sky One”, and “Late Night on Sky One”. Details of these intended segments follow.
62. “Daytime on Sky One”: The focus of this segment would be to provide programming targeted at women who are at home during the day. The best of soap operas and chat shows are expected to be shown during this segment. Illustrative programmes include *Another World* and *Geraldo*.
63. “Early Evening on Sky One”: This segment is expected to target the entire family. Illustrative shows include *Real TV*, *The Simpsons* and *M.A.S.H.*
64. “Primetime on Sky One”: This 8pm to 11pm segment would include various themed nights as well as a different show each night at 10pm under a daily theme, “Big News at 10”. The themed nights would be as follows:

65. "Super Sunday": This would present essential viewing for the entire family with illustrative programmes such as *Muppets Tonight*, *Walkers World*, *The Simpsons*, *The X Files* and *Millenium*.
66. "Must See TV": This Thursday night theme is intended to be packed with the best in comedy entertainment with illustrative shows such as *Just Kidding* and *The Nanny*.
67. "Arresting Television": Scheduled for Saturdays, this themed evening would include both real-life law enforcement documentaries and illustrative shows such as *Coppers*, *Cops*, *Cop Files* and *Law & Order*.
68. "Big News at 10": Currently scheduled for every evening at 10pm, this theme would seek to deliver the best in drama series. On certain Mondays, for example, it is expected that a mini series would be shown at 8pm, followed by a programme like *Nash Bridges* at 10pm. On Tuesdays illustrative shows include *Springhill* and *Picket Fences* followed by *Unsolved Mysteries* at 10pm. The Wednesday night line-up might include, for example, *Sightings*, *Silk Stalkings* then *Murder One* at 10pm. Thursdays night's scheduled "Must See TV" (described above) might be followed by episodes of, for example, *Chicago Hope* at 10pm. As scheduled, the week would finish with a Friday schedule of, for instance, *JAG*, *Walker Texas Ranger* and, in the 10pm slot, *High Incident*.
69. "Late Night on Sky One" is expected to present a host of shows including shows such as *Red Shoe Diaries*, *The Edge* and *CPW* followed by the music shows mentioned earlier, *Hit Mix Long Play* and *Morning Glory*.
70. British Digital Broadcasting with Sky One will constantly review audience response and the competitive environment. If, in the light of these considerations, it would appear beneficial to revise the schedule to meet audience needs better, Sky One's digital terrestrial service, in consultation with British Digital Broadcasting, will review ideas for making positive changes.

Style of Programme Service

71. Sky One's style on digital terrestrial will be a modern reflection of contemporary programming combining dramas with light entertainment and an anticipated increasing emphasis on locally produced programmes such as *Springhill* and *Real TV UK*. Sky One's pacy, aggressive, bold and bright promotions will use modern music and cutting edge graphic styles to create a unique brand identity. The current individual themed nights will be highlighted by customised, purpose-built packaging which will add extra sparkle and reinforce the present "appointment viewing" marketing and programming strategy.

Target Audience

72. It is anticipated that the digital terrestrial channel's target audience will reflect the experience of Sky One as currently transmitted. It is therefore expected that it will be a predominantly family entertainment channel with a primary audience of young adults aged 25 to 44 years old - which would account for 43% of the Sky One average audience, compared to a national (UK) Sky One average of 30%. The daytime programmes would be of particular appeal to young housewives and housewives with children. Prime time programmes would be just as appealing to young housewives but might have a male (25 to 34 year old) bias as well. Family entertainment would help complete the all-round family offering which would be reflected in a 43% housewives with children profile - compared to a national (UK) average of 29%.

Proportion of Original Hours

73. The channel anticipates that on average 26% of its programming will be original.
74. Of note is that BSkyB has recently dramatically increased its commissioned UK production with shows such as *Just Kidding* and *Coppers* both made by Granada's LWT and also *Walker's World* produced by Wink Productions. Other UK-produced original general entertainment programmes include *The Movie Show*, *Real TV UK*, features such as *Di Catchers* and *Dreamland*, as well as shows in development including *Sky Café* and *Selina Scott Tonight*. BSkyB expects to continue to increase its quantity of original production over time and intends to explore opportunities to create programming especially for this digital terrestrial channel.

First Run Material

75. It is forecast that on average 70 hours per week (or 40%) of the programming will be first-run material. The average repeat factor is anticipated to be approximately three.

BBC Style

BBC Style will offer viewers a unique all British package of the BBC's top leisure and lifestyle programming. Content will range from antiques to aspidistras, gardening to gastronomy, from 'what to wear' to 'what to drive.'

Start of Service, Hours of Broadcast and Coverage

76. BBC Style will be available from the date of the launch of the British Digital Broadcasting television service and is provisionally scheduled to transmit eight hours a day from 6am until 2pm, seven days a week, 52 weeks per year.

Programme Types

77. The channel will appeal to people who care about where and how they live, active and aspirational viewers who like the good things in life. BBC Style will bring top BBC presenters and experts such as Jeremy Clarkson, Hugh Scully and Jeff Banks together for the first time on the same channel. It will bring the editorial quality and production values of popular and trusted BBC programmes such as *Holiday*, *Top Gear* and *Home Front*. BBC Style leisure and lifestyle programming will feature seasonal ideas such as DIY at Easter, Christmas cookery and a holiday season.

Target Audience

78. Style will be aspirational television, reaching out to a key audience demographic in multi-channel households - first time home owners, 'empty nesters' and viewers in their thirties with disposable income will be drawn to this channel.

BBC Showcase

BBC Showcase offers viewers the highest quality and most popular programming from BBC 1 and BBC 2. Content will range from classic to contemporary, from drama to comedy, all presented in an innovative and refreshing format.

Start of Service, Hours of Broadcast and Coverage

79. BBC Showcase will be available from the date of the launch of the British Digital Broadcasting digital terrestrial television service and is provisionally scheduled to be transmitted for 10 hours per day from 2pm, seven days per week, 52 weeks a year. It will be transmitted on a national basis, using the full coverage capability of the multiplex.

Programme Types

80. BBC Showcase will feature the highest quality and most popular programming from BBC1 and BBC2, offering viewers the best of British entertainment. Content will range from classic to contemporary, from drama to comedy, all presented in an innovative and refreshing format. Top contemporary shows, like *Ballykissangel* and *Absolutely Fabulous* will be combined with classics from the past such as *Fawlty Towers*. Celebrity introductions, special seasons and “event” screenings will be the hallmarks of BBC Showcase.
81. In British Digital Broadcasting’s channel research this channel was one of the most popular concepts researched, with 5.6 million homes (32% of terrestrial households) prepared to pay.

Indicative Schedule

82. BBC Showcase will establish strands from the BBC Hall of Fame, in addition to producing feature-length versions of timeless favourites. “BBC Classic” will be the best of the period costume drama that the BBC is so famous for. “BBC Mystery” is where Hetty Wainthropp will meet George Smiley - an irresistible nightly bill of crime stories and thrillers. The “Comedy Zone” will bring the outrageous humour of BBC2’s Friday night line-up to the screen every night of the week. “On the Edge” will have the best of adult drama - dangerous, sometimes disturbing but always enthralling, from *The Buddha of Suburbia* to *Cardiac Arrest*, *This Life* and *A Very Peculiar Practice*.
83. The Showcase schedule will regularly feature special events and stunts. *A Pride and Prejudice* weekend will run previous versions of Jane Austen’s classic back-to-back with the 1990s production. The Redoubtable Routeledge season will bring Hyacinth Bucket face-to-face with Alan Bennett’s *A Woman of No Importance*; and comedy stars of the day will choose the ten greatest sitcom hours ever written.

Target Audience

84. BBC Showcase will have widespread appeal to viewers who appreciate quality entertainment. The audience profile is expected to match that for high quality entertainment on terrestrial television.

Sky Movies

It is anticipated that this digital terrestrial movie channel will screen a wide variety of films including hit movies from around the world with a host of new movies every month. The channel is expected to operate 24 hours a day, 7 days a week with no commercial breaks during the movies. In order to cater to the widest range of viewers' lifestyles, the most popular movies shown will be rescreened at different times and on different days. Additionally, movie news programming will be shown between films. It is anticipated that additional programming will also be created especially for this digital terrestrial television channel.

Start of Service, Hours of Broadcast and Coverage

85. Sky Movies on digital terrestrial television will be available from the date of the launch of the British Digital Broadcasting digital terrestrial television service. It is currently scheduled to transmit for 24 hours a day, seven days a week, 52 weeks a year. It will be transmitted on a national basis using the full coverage capability of the allocated multiplex.

Programme Types

86. The schedule of this digital terrestrial movie channel is expected to include frequent screenings of international or domestic hit movies. This channel will also transmit behind-the-scenes features, star interviews and new movie reviews.
87. As part of the line up, it is anticipated that this channel will screen British-made as well as imported films. For example, *War of the Buttons*, *Jack and Sarah* and *The Browning Version* are all British made movies which would delight viewers. Sky's commitment to screening British film is evidenced by the fact that in 1996 the two current satellite movie channels together screened 24 British-made movies. It is hoped that a weekly slot for a number of months featuring major British films, for example, could be achieved on the digital terrestrial service. Sample recent British films which could run under such a theme include *Carrington* and *Land and Freedom*.

Comedy

88. Running 24 hours a day, this channel will have ample opportunity to air the best in comedy. Comedies illustrative of this programme type include *Dumb & Dumber*, *The Flintstones* and *Junior*.

Action

89. It is expected that the best in action hits will entertain viewers for hours. Illustrative movies of this kind are *Speed*, *Clear & Present Danger*, *Judge Dredd* and *Batman Forever*.

Drama/Suspense

90. Drama and suspense on the digital terrestrial Sky Movies channel will keep viewers glued to their seats. For example, *Disclosure*, *First Knight*, *Legends of the Fall* and *Schindler's List* are all movies illustrative of this genre.

Horror

91. Viewers will not be at a loss for gruesome, ghoulish screenings of horror films. For example, *Mary Shelley's Frankenstein* and *Interview with a Vampire* would send shivers down their spines.

True Stories

92. This occasional Monday night theme would cover a range of biographical movies. For example, it is expected that shows such as *Tyson* and *Madonna: Innocence Lost* would be shown on Mondays. Other sample films relevant to this programme type might include real life dramas, such as the award-winning *Indictment: The McMartin Trial*.

World Cinema

93. A prospective weekly World Cinema slot is under consideration to feature some of the most acclaimed foreign language films of recent years. Relevant illustrative titles within this programme type might include Gerard Depardieu in *Le Colonel Chabert* and *La Reine Margot* from France as well as films from top Peruvian, Belgian, Italian, Chinese and Russian directors.

Premieres

94. As further described in the Indicative Movie Schedule for digital terrestrial television, available premieres are expected to be shown mainly on Thursday and Saturday nights.

Children's

95. It is anticipated that the digital terrestrial channel's schedule will contain an array of children's movies. For example, relevant titles might include *Grizzly Adams*, *Richie Rich*, *Little Giants*, *Mighty Morphin Power Rangers* and *Miracle on 34th Street*.

Movie Programmes

96. In addition to themed nights, it is expected that special programmes during the week will be shown to keep viewers in touch with the movie world. These weekly shows might include bought-in programmes from the US which would update the viewer on the latest Hollywood gossip. Additionally, *The Movie Show*; *Special Features*; *Sky Interviews* and *The UK Top Ten* are all in-house productions which would further enhance viewers' knowledge of upcoming theatre premieres, the latest news, on-set interviews and previews. It is anticipated that selected support programming will also

be created especially for this digital terrestrial channel.

Sky Movies: Indicative Schedule - Illustration of Films

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
06:00	Drama (The Ranger, The Cook and a Hole in the Sky)	Comedy Drama (The In Crowd)	Children's Animation (Tom and Jerry - the movie)	Family Drama (The Spoils of War)	Family Adventure (Clarence the Cross Eyed Lion)	Sport/Musical (Kid Galahad)	Drama/Sport (Dreamer)
08:00	Children's Drama (Back Home)	Comedy Mystery (Radioland Murders)	Children's Adventure (The Black Stallion)	TV Movie Biography (Rita Hayworth - the Love Goddess)	Children's (The Sandlot)	Children's Adventure (Flipper)	Sci-Fi (The Neptune Factor)
10:00	Children's Drama (War of the Buttons)	Children's Drama (Dad, the Angel and Me)	Drama (Season of Change)	Comedy Drama (The Hudsucker Proxy)	Comedy (Revenge of the Nerds IV)	TV Movie (Family Reunion)	TV Movie Drama (Freefall - Flight 174)
12:00	Spy Drama (The Salzburg Connection)	Fantasy Comedy (The Mask)	Children's Fantasy (Miracle on 34 th Street)	Children's Adventure (Heck's Way Home)	Crime Comedy (Clean Slate)	Children's Fantasy Adventure (The Neverending Story III)	Spy Drama (Octopussy)
14:00	Spy Drama (The Games)	Biblical (The Nativity)	Family Comedy (Mrs Doubtfire)	Sport Comedy (Cool Runnings)	Family Comedy (Beethoven's 2 nd)	Crime Comedy (Son of the Pink Panther)	TV Movie Drama (Other Women's Children)
16:00	Drama (A Feast at Midnight)	Comedy Thriller (I Love Drama)	Family Fantasy (The Nutcracker)	Comedy (The Beverly Hillbillies)	Romantic Comedy (Only You)	Spy Adventure James Bond (Live and Let Die)	Spy Drama James Bond (Thunderball)
18:00	Children's Drama (War of the Buttons)	Children's Comedy (The Little Rascals)	Comedy Drama (Corrinna, Corrinna)	Children's Action (Mighty Morphin Power Rangers)	Family Adventure (Rudyard Kipling's The Jungle Book)	Children's Fantasy Adventure (The Neverending Story III)	Spy Adventure James Bond (Goldfinger)
20:00	True Life Drama (Rudy)	Fantasy Comedy Top 20 (The Mask)	Sci-Fi (Star Trek Generations)	Premiere Sport Comedy (Cool Runnings)	Family Comedy (Beethoven's 2 nd)	Fantasy Adventure (Hercules and the Lost Kingdom)	Fantasy Adventure (Hercules and the Amazon Women)
22:00	Comedy Top 20 (Dumb and Dumber)	Action Top 20 (True Lies)	Premiere Comedy Drama (Nobody's Fool)	Crime Drama (Pulp Fiction)	Horror Friday Night Sci Fi (Death machine)	Premiere Sci-Fi (The Puppet Masters)	Sunday Encore Fantasy Action Adventure (Judge Dredd)
00:00	Thriller (Killer)	Comedy (The Brady Movie Bunch)	Horror (Wolf)	Comedy Drama (Bullets Over Broadway)	Drama (Philadelphia)	Erotica (Prelude to Love)	Crime Drama Film Noir (Romeo is Bleeding)
01:30	Action (Day of Reckoning)	Thriller (Dead Air)	Drama Comedy/Romance (Barcelona)	Drama (Harry and Tonto)	Drama (Disclosure)	Mystery (Natural Causes)	Thriller (Love in the Strangest Way)
02:00							
3:00	TV Movie Drama (Trapped and Deceived)	Comedy (PCU)	Adventure (White Mile)	Comedy (Hudsucker Proxy)	Crime Comedy (Clean Slate)	Thriller (Ed McBain's 87 th Precinct: Lightning)	Thriller (New Eden)
03:30							
04:00	Sports Drama (The Games)	Children's Comedy (The Little Rascals)					
04:30							
06:00							

97. The indicative schedule for the digital terrestrial television service includes the themed 8pm or 10pm slots currently providing viewers with particular types of movies most nights of the week, as described below.
98. On many Saturday nights, the currently planned theme is the "Saturday Night Premiere" which would show blockbuster premieres.
99. The Sunday theme is presently planned as "Sunday Encore" which would catch the previous week's big premiere most Sundays for the subscriber's second-chance viewing convenience.
100. On frequent Monday nights the presently scheduled theme is "True Stories" which might include movies such as *Tyson* and *Madonna: Innocence Lost*.
101. Tuesday night's intended theme is "Tuesday Night Action" which would include blockbusters with stars such as Arnold Schwarzenegger, Stephen Seagal, Jean-Claude Van Damme and Sylvester Stallone.
102. On most Wednesdays, the "Wednesday Night Premiere" is expected to be dedicated to critically acclaimed films, including a season of British TV premieres.
103. The "Thursday Night Premiere" would endeavour to present a big Hollywood blockbuster for the entire family's viewing enjoyment.
104. The week currently is scheduled to end with "Friday Night Horror" which would show the best of horror movies and all-round frightening movies.
105. In addition to themed slots, the movie channel would expect to feature different seasons of films each month - for example, a weekend of Bond films, a season of Australian film, "Arnimania" and many others.
106. British Digital Broadcasting with Sky Movies will constantly monitor audience response and the competitive environment. If, in the light of these considerations, it would appear beneficial to revise the schedule to better meet audience needs, Sky Movies' digital terrestrial service, in consultation with British Digital Broadcasting, will review ideas for making positive changes.

Style of Programme Service

107. The set graphic style of the "Sky" brand combines with a montage of promotions, behind-the-scenes insights, interviews with Hollywood stars and production teams to create a Grandiose Hollywood cinematic theme for this digital terrestrial channel. Sky Movies' internal stylistic mandate on digital terrestrial would be to provide a complete and up-to-the-minute service for movie fans which would reflect an informed and up-to-date knowledge of movie history.

Target Audience

108. It is anticipated that this digital terrestrial movie channel's target audience profile would run in parallel with that seen across the currently transmitted Sky satellite movie channels. The appeal of the service is expected therefore to be strongly in favour of adults aged between 16 and 44 years old, split evenly between male and female. As an example, the top rating movie of 1996 on the currently transmitted movie channels, *Forrest Gump*, with 2.04 million viewers, had a 58% adult ages 16 to 44 profile, equally split between male and female. The Top Ten rating movie of 1996 across both premium satellite movie channels had a 55% adults aged 16 to 44 profile, comparable to station averages of 54% (Sky Movies on satellite) and 53% (The Movie Channel on satellite). The national UK average profile for adults aged 16 to 44 is 41%.

Original Hours

109. Given the nature of this channel, few, if any, of the movies will be specifically commissioned for Sky Movies on digital terrestrial. Currently, however, BSkyB commissions an average of two hours of weekly shows on movie news and commentary such as *The Movie Show* and the *UK Top Ten* for its movie channels and it will explore opportunities to create additional support programmes especially for this digital terrestrial television channel.

First Run Material

110. It is expected that 55% of the material on the digital terrestrial channel will be first run. The repeat cycle is expected to be approximately 10 times a year.

Pay-per-view

111. British Digital Broadcasting takes a positive view of the potential of pay-per-view services to bring to the public events that they value highly and that they might otherwise not have the opportunity to see. This is particularly the case in an environment where competition for the rights to such events is increasing and pay-per-view may be the only basis on which the television rights for some events may be available in the future. British Digital Broadcasting recognises the recent developments in pay-per-view services in the UK and understands the importance of pay-per-view as an alternative form of programme entertainment, as the US market has demonstrated. Digital television capacity and advanced ordering technology mean that pay-per-view events will be an attractive part of digital programme services.
112. British Digital Broadcasting has therefore built into its programming plans the provision of a series of pay-per-view events on Multiplex D. These are likely to include high profile events in sport, entertainment and music, such as boxing, concerts and other one-off broad appeal events.

113. British Digital Broadcasting believe that this service will be popular, as BSkyB has already demonstrated successfully with its pay-per-view events. British Digital Broadcasting will draw from the technical, subscriber management and marketing experience of BSkyB to put in place a robust infrastructure to achieve a successful digital terrestrial pay-per-view service.

Future Programme Plans

114. Over the licence period, technological advance will most likely deliver significant expansion in the programme capacity of each multiplex, although it is too early to be precise about the rate of expansion. British Digital Broadcasting's policy towards this opportunity will be to take maximum advantage of the capacity to provide superior value and range to subscribers, while exercising prudence in remaining within the limits of multiplexing technology.
115. British Digital Broadcasting believe that there are good prospects of advanced statistical multiplexing techniques making possible the addition of a substantial number of additional channels in the future without loss of picture quality. While not including these in its business model in the interest of prudence, British Digital Broadcasting has devoted thought and preparation as to how to deploy effectively additional capacity. British Digital Broadcasting has been encouraged in this by presentations from several developers of multiplexing and compression technology who have indicated their preparedness to license their technology to British Digital Broadcasting.
116. Annex 20 provides an overview of British Digital Broadcasting's initial plans for utilising additional capacity. British Digital Broadcasting already has expressions of interest from several parties who would wish to provide services in the event of more capacity becoming available.

Section A4 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three licences for which it has applied.

This section has described the five channels British Digital Broadcasting would offer if it only won Multiplex D. If, in addition, British Digital Broadcasting were awarded Multiplexes B and C, its programme offer would comprise a further eight basic channels and two premium channels. The supplementary proposals describe also how they would work together as a whole. Some of the channels featured in British Digital Broadcasting's Multiplex D application appear on different multiplexes in British Digital Broadcasting's supplementary proposals.

Section A5 - Local or Regional Services

ITC Requirement

Taking account of guidance given in paragraph 102 the applicant should state what plans he has, if any, to provide local or regional services. He should state, in particular:

- i) the proposed location of any such services together with their start dates;*
- ii) the type and content of the programmes; and*
- iii) the period of the day for which such services would be provided.*

Summary

British Digital Broadcasting's proposals do not include local and regional services at launch. British Digital Broadcasting recognises the potential of such services and will review the case for launching local or regional services that complement existing local and regional services, when the subscriber base is established and when further channel capacity has become available on the multiplexes.

1. British Digital Broadcasting is conscious of both the capability of digital terrestrial television to offer local and regional programme services and of the potential value of this genre to the public. At launch, however, British Digital Broadcasting does not plan to offer local or regional services. This is for a combination of reasons. During the early years of the licence period the relatively low levels of subscribers projected lessens the economic case for investing substantially in local or regional programmes compared to investing in the overriding priority of establishing digital terrestrial television nationally as a mainstream force.
2. Furthermore, British Digital Broadcasting's market research shows broad consumer satisfaction with the current level of local and regional programmes provided by ITV and the BBC, as well as by a selection of other channels. ITV's regional news will also be broadcast in digital form through the ITV/Channel 4 multiplex. Research conducted by British Digital Broadcasting also shows that the early audience for digital terrestrial television is likely to be significantly more skewed towards younger demographic groups, in particular, than the audience for regional and local news.
3. In light of these factors, British Digital Broadcasting believes that the costs associated with producing alternative local or regional programmes for digital terrestrial television is initially better invested in programmes with broad national appeal.
4. However, British Digital Broadcasting through its ongoing research, will evaluate the demand for services which would complement existing local regional programmes. Having conducted research in the Central region, British Digital Broadcasting (through

Carlton) believes that local or city based services would probably be the more attractive to viewers (and provide the least duplication of existing services). British Digital Broadcasting will, therefore, research the case for these services first.

Section A5 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three of the licences for which it has applied.

The information in British Digital Broadcasting's supplementary proposal is essentially the same as that outlined above. However, having the capacity and scale benefits of three multiplexes could bring forward the time when it may be commercially viable to launch local and regional services.

Section A6 - Programmes of High Quality

ITC Requirement

Taking account in particular of the guidance given in paragraph 101, the applicant should give details of the types of programmes of high quality which will be included in the programme services to be provided on the multiplex.

Summary

British Digital Broadcasting's programme proposals include a highly successful premium subscription channel and four quality basic channels, including a new channel to start as part of the launch of digital terrestrial television.

1. British Digital Broadcasting's channels for Multiplex D are designed as a high quality basic subscription package with the addition of a highly compelling premium channel. The basic channels themselves bring to digital terrestrial television some of the best television available in Britain.
2. The proposed programme service will emphasise and showcase original British production and appeal to a variety of tastes and interests.
3. In addition, the channels:
 - a) Unite some of the strongest and most authoritative names in British television, namely Carlton, Granada, BSkyB and the BBC.
 - b) Offer a high proportion of original and first run programmes.
 - c) Complement and supplement the 'free-to-air' services that digital terrestrial television viewers will receive.
4. These channels also draw on the programme production, programme library and acquisition resources of Carlton, Granada, BSkyB and the BBC. This gives the proposals wide access to the breadth and depth of the most popular, quality genres as shown in the following table.

Genre → Channels ↓	Movies	Children's	Drama	Entertainment	Documentaries	Consumer Information	News	Arts	Comedy	Current Affairs	Music	Lifestyle
Granada Plus		■	■	■	■	■			■	■	■	■
Sky Movies	■											
Sky One			■	■	■		■	■	■	■	■	■
BBC Style / BBC Showcase		■	■	■		■			■			■
Carlton Entertainment	■	■		■					■			

5. British Digital Broadcasting programmes will include the following main genres:-

Drama

6. Quality drama is one of the hallmarks of British television and the best of both contemporary and period drama is reflected across British Digital Broadcasting's television channels. Granada Plus and BBC Showcase will have access to the work of the best writers, producers, directors and performers, and will be able to draw on programme libraries of unrivalled depth. Viewers will be able to enjoy costume drama such as *Martin Chuzzlewit* and *Pride and Prejudice* and contemporary drama such as *Poirot*. These programmes will sit alongside new and original productions and will be supplemented by strong dramas available from the UK, America and Australia on Sky One.

Documentaries

7. Natural history, science, human interest and other factual programmes will be available to the viewer. Documentary output will be available from the producers at Granada, the makers of *Seven Up*, *World in Action* and *Disappearing World*.

Children's

8. Children's programmes are an important component of British Digital Broadcasting's programme offering. The participation of the BBC, Carlton and Granada in British

Digital Broadcasting will give subscribers access to three of Britain's leading children's programme producers and libraries of children's programmes. The award winning children's departments of Carlton and Granada both intend to offer original children's programmes on the Granada Plus and Carlton Entertainment channels, including a lively children's magazine programme, drawing on Carlton's expertise in producing similar programmes for ITV and in providing presentation and packaging for the Children's ITV service. Granada Plus will choose programmes from the best of the Granada and Carlton libraries which contain award winning series such as *Sooty*, *Children's Ward*, *Press Gang* and *Woof* and, in the future, programmes such as *The Treasure Seekers* and *Willow in Winter*. This material will be carefully selected and scheduled to appeal across the age ranges alongside a wide range of genres including drama, entertainment and factual programmes specifically aimed at young audiences. In a similar vein, the BBC's Showcase channel will offer a chance to see many of the BBC's best, award winning, children's programmes.

Movies

9. British Digital Broadcasting will offer the Sky film channel on digital terrestrial - "Sky Movies" which will aim to bring viewers of all ages movies from around the world, including dramas, children's, comedies, action and art house films together with Hollywood updates, star biographies and programmes focusing on stories behind the movies and how they were made.

Entertainment

10. British Digital Broadcasting's channels will feature many of the UK's most successful entertainment programmes produced by the strong creative teams at LWT, the BBC, Carlton and its subsidiary Action Time - production teams that include *Blind Date*, *Gladiators*, *Family Fortunes* and *Noel's House Party* among their credits. Granada Plus and BBC Showcase will include the best of British quiz shows in their day-time and early peak schedules as an introduction to award winning comedy and drama. Carlton Select will feature special one-off events including concerts, sport and exhibitions, many of which will not have been seen before on television. Carlton proposes to secure rights to bring this original programming to digital terrestrial television. Carlton Entertainment will showcase a broad range of entertainment programmes across its regular scheduling pattern. Sky One will aim to provide its viewers with an array of talk shows, soap operas and light entertainment throughout the day. Original production will feature in the schedules of all four entertainment-based channels. Production values will be high.

Lifestyle and Consumer Information Programmes

11. Lifestyle and consumer information programming forms an important element of British Digital Broadcasting's programme plans.
12. BBC Style will provide a service dedicated to lifestyle programming drawing upon the BBC's editorial quality and production values, including programmes by famous BBC faces such as Delia Smith, Jeremy Clarkson and Hugh Scully.

13. Granada are acknowledged pioneers of high quality lifestyle programmes, having created the much imitated but rarely bettered *This Morning* programme, which anchors ITV's morning schedule. Its Royal Television Society award winning production team will be responsible for a wide range of original output on Granada Plus. Sky One will also contain further programming in this genre with programmes such as *Walker's World*.
14. The lifestyle programming on Granada Plus together with selected programmes on Sky One and the Public Eye channel, is intended to contain a high degree of consumer information.

News

15. Hourly 1-2 minute daytime news bulletins will be carried on Sky One. British Digital Broadcasting is conscious of the value that the BBC's new 24 hour news channel will provide to digital terrestrial viewers. British Digital Broadcasting has therefore constructed its approach to complement this BBC service.

Arts

16. British Digital Broadcasting's programme services will offer a range of high quality arts programming including live events, features and interviews. Opportunities to view a range of music performance will be available to viewers.
17. Granada Plus has access to original and archive programming produced by LWT's multi award winning arts department. The *South Bank Show*, in particular, offers a rich archive with an enormous range of material covering every artistic discipline from dance, film and classical music to photography, painting and literature. The channel already has exclusive rights to film this year's *South Bank Show Awards*, a major new arts awards ceremony, which it hopes to continue in future years. In addition, Granada Plus will provide a variety of music specials across all music genres in their schedules. And Sky Movies will, from time to time, feature art-house movies alongside the best of Hollywood. BBC Showcase also offers the opportunity to showcase some of the BBC's arts programming. Across its programme services, British Digital Broadcasting will offer a broad coverage of both arts in general, and performance arts in particular.

Comedy

18. Classic comedy continues to command large audiences on British terrestrial television. BBC Showcase will bring *Only Fools and Horses*, *Steptoe and Son*, *The Two Ronnies* and situation comedies of the unrivaled quality of *Ever Decreasing Circles* and *Open All Hours*. The richest comedy archive in Western Europe will be supplemented by the very best of British and American comedy - from stand-up to sitcom on Granada Plus, Carlton Entertainment and Sky One.

Current Affairs

19. British Digital Broadcasting recognises the strength in current affairs programming that the BBC, ITV, Channel 4 and Channel 5 will bring to digital terrestrial television. We have therefore been mindful to supplement and complement the strong primary service from these channels. Granada Plus will have access to the production team that has made *World in Action* a household name. Sky One will include fresh and innovative features.

Music

20. Sky One currently has eight hours of its indicative digital terrestrial schedule devoted to music programming. Programmes include *Hit Mix Long Play*, a DJ free music zone with material to appeal to every music taste, scheduled for late at night and *Morning Glory*, a three hour compilation of easy listening popular music.
21. It is a strength of British Digital Broadcasting's proposals that they rely largely upon channels supplied by their shareholders. In this way they can be more confident in including new programme investment and optimising choice across the channels. Relying solely on channels provided by third parties would mean that decisions on these important matters would be taken at one remove from the applicant.
22. The way in which each channel contributes to quality is detailed below.

Granada Plus

23. Granada Plus will be a showcase for some of the highest quality drama and entertainment ever produced for British television. The Granada Plus drama slate speaks for itself: *Sherlock Holmes*, *Poirot*, *Maigret*, *The Cloning of Joanna May*, *Brideshead Revisited*, *Prime Suspect*, *King Lear*, *Jewel in the Crown*, *London's Burning*, *Cracker*. All of these programmes have won a large number of awards as well as substantial and appreciative audiences on their first transmissions on ITV.
24. The comedy and entertainment programmes include the archive of ITV's major producer of quality entertainment, London Weekend Television, as well as Granada productions. Series available to Granada Plus include *A Fine Romance*, *Watching* and *Jeeves and Wooster*.
25. Similarly factual programmes on Granada Plus will include the best of the award-winning documentary and feature output of Granada TV and LWT - from *Disappearing World* to *Disguises*, from *World In Action* to *Summer on the Estate*.

26. Granada Plus will also have access to some of the best children's programming made on British television in recent years. Granada TV and LWT have produced award winning programmes across the range of children's drama, entertainment and factual programming with shows such as *Sooty*, *The Ward* and *Speakeasy*. Looking over a longer timescale, Granada Plus will also benefit from Granada TV and LWT's recent expansion into animation with programmes such as *Tom and Vicky* and *The Treacle People*.
27. The guarantee of continuing high-quality on Granada Plus comes from our long-term relationship with two of the major production powerhouses of ITV. Between them Granada and LWT produce nearly 40% of ITV's originally commissioned programme hours in addition to producing programmes and series for all the other UK terrestrial broadcasters and many of the satellite broadcasters. The reputation for high-quality programming of both producers is well-recognised and will be reflected both in original programming made specifically for the channel and in material made available after its initial showing on channels.

Carlton Entertainment

28. Carlton Entertainment will include many specially commissioned programmes. Under the direction of Carlton's highly experienced Entertainment Department, and utilising the skills of Britain's premier developer of entertainment formats, Action Time, the majority of the new programming will come from Carlton's Nottingham studio complex. Carlton has also forged strong links with entertainment based independent producers and will work with them to develop innovative shows across the genres of games, quizzes, comedy and talk.

Sky Movies

29. Sky Movies on digital terrestrial will continually strive to bring viewers hit movies from Hollywood and independent suppliers all over the world.
30. British films are expected to be a focus for the digital terrestrial channel as well. Sky's satellite movie channels screened 24 British made films in 1996. Moreover, in 1995-6, Sky spent £29 million helping to fund around 70 British movies - one of the most substantial movie investments made by a TV company to the British film industry. Examples such as these underline the commitment of Sky to British films of the highest quality. Along these lines, Sky will also endeavour to showcase British films on its digital terrestrial movie channel. Furthermore, the digital terrestrial channel expects to provide movie support programming through entertainment news shows, special features shows and so on - selected programmes of which Sky expects to create specifically for this digital terrestrial movie channel.

Sky One

31. Sky One on digital terrestrial intends to deliver first-run shows to the quality level that the channel's audience will demand, including UK first-runs of high quality domestic and international shows.

32. In addition, this Sky One service will endeavour to provide UK-originated and specially commissioned programming through its parent BSkyB. There are currently a number of shows in development with UK producers for its satellite channels including *Sky Cafe* and *Selina Scott Tonight* as well as shows previously commissioned such as *Springhill*, *Coppers* and *Walker's World*. Sky One will explore opportunities to create similar programmes especially for its digital terrestrial service.

BBC Style

33. BBC Style will be aspirational television carrying exclusively British programming, hosted by respected and expert presenters. It will appeal to viewers with a wide range of leisure and lifestyle interests such as cookery, gardening, travel, cars, antiques and fashion. BBC Style will bring to digital terrestrial television the editorial quality and production values of popular and tested BBC consumer programmes like *Holiday* and *Top Gear*. BBC Style will incorporate both archive and original production.

BBC Showcase

34. BBC Showcase will be a stage for the highest quality and most popular entertainment programming from BBC1 and BBC2. BBC Showcase's quality will derive from both top contemporary shows and classics. BBC Showcase will enhance significantly the perception of digital terrestrial television as delivering the best of British entertainment.

Section A6 of British Digital Broadcasting's supplementary proposals provides equivalent information should the company be awarded all three of the multiplex licences for which it has applied.

British Digital Broadcasting's individual multiplex application provides a strong basic package. British Digital Broadcasting's supplementary proposals build upon those proposals offering twelve basic channels and three premium channels.

Section A7 - Additional Services

ITC Requirement

Noting the information contained in paragraphs 106 to 108, the applicant should state the nature of the digital additional services which he intends to include in his multiplex service, and (where known) the dates when they would commence, the hours of the day and days of the week during which they would be broadcast, the coverage area for the services (if restricted to less than the full multiplex coverage area), the digital capacity they would occupy and who would supply them. In particular, details should be given of any Electronic Programme Guide to be provided by these means.

Summary

Additional services, other than an Electronic Programme Guide, do not form part of British Digital Broadcasting's proposals for the initial implementation of the multiplex applied for.

It is British Digital Broadcasting's intention to offer a range of additional services at a later date when a viable business plan can be developed.

1. The shareholders of British Digital Broadcasting have each been involved in various trials and evaluations of additional services ranging from the use of teletext pages in the support of programming, through to full interactive, on-demand shopping and game playing. The enthusiasm amongst viewers for these additional services has been mixed, and it is clear that a considerable period of development and research is still required before service concepts emerge that will be both widely acceptable to a broad range of viewers, and commercially sustainable.
2. It is likely that digital terrestrial television will eventually provide an important means of offering new services to viewers and British Digital Broadcasting intends to include these services in its overall package in due course. However, British Digital Broadcasting believes that digital terrestrial television should concentrate initially on a broad range of family entertainment.
3. Furthermore, when seeking to persuade viewers to purchase digital television receivers, set top-boxes or integrated televisions, British Digital Broadcasting believes that a single, easy to understand proposition will have the best chance of success. There is a danger that a preponderance of new service concepts that are poorly understood, would prove something of a barrier, rather than a driver of early take-up.
4. It is also felt that the uncertainties surrounding the compression rates achievable in practice, and the desirability of offering as many programme services as possible, support a strategy of not launching any additional services (other than the Electronic Programme Guide) at the same time as the main multiplex service. British Digital Broadcasting intends to review the position after obtaining operational experience in

what data capacity can be made available for additional services, whilst still maintaining acceptable picture quality standards for programme services.

5. British Digital Broadcasting's business case does not depend upon revenue contributions from additional services, since it is felt that the market for such services has not yet developed to the point where accurate predictions can be made.
6. When introduced, additional services may take the form of both broadcast (one-way) and interactive (two-way) services, including those based on text-based magazine formats. The objective will be to build upon British Digital Broadcasting's existing experience in the provision of new types of service and demonstrate the advantages of digital television over current analogue services.
7. It is anticipated that other services will be introduced in collaboration with third parties, where appropriate, following a period of development and market evaluation to prove the initial concepts.
8. British Digital Broadcasting will support the services offered within its multiplex by providing information about schedules and events, within the SI system. Such information is intended to be freely available to anyone with a DVB compliant receiver and will support the development of an event service guide (ESG) should manufacturers choose to develop such a product.
9. An event service guide, if developed, will provide the viewer with a basic description of the services available, derived only from the SI data. This software might be developed and supplied by the receiver equipment manufacturer. British Digital Broadcasting will seek to work with other multiplex operators in facilitating access, via an EPG, to all services in the multiplexes available within the coverage area.
10. British Digital Broadcasting is fully aware of the regulations and guidelines issued by both OfTel and the ITC regarding the operation of EPG services. British Digital Broadcasting's intention is that any EPG selected for digital terrestrial television should list all available services in a manner consistent with the ITC and OfTel requirements.

Next Generation Boxes

11. The specification of consumer equipment will reflect the services carried by the multiplex operators. As the market for additional services becomes clearer, it is expected that additional functionality will be included within second generation boxes, some of which will form fully integrated digital terrestrial/satellite television receivers. In particular, the next generation receiver is likely to be capable of providing enhanced EPG facilities to help the viewer navigate between the services being offered. Interactive services are also likely to become more widely accepted, based upon the inclusion of return path modem facilities within the receiver.

12. It is expected that additional interfaces will be provided in these boxes to support improved access to digital programme services, through high speed connections to digital storage media and in-home data networks, and connections to external units providing specialised functions such as Audetel, or more general data processing devices such as personal computers and network computers.
13. If agreement can be reached with other multiplex operators, British Digital Broadcasting intends to cooperate with manufacturers and third-party service providers in the development of next generation equipment as part of the development of the digital terrestrial market, demonstrating the advantages of the new technology over existing analogue services.

Section A7 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three of the licences for which it has applied.

This section has described the additional services that British Digital Broadcasting would provide if it were to win a single multiplex. If British Digital Broadcasting were awarded three multiplexes it would be prepared to offer a high quality Electronic Programme Guide. The features of this guide are described in British Digital Broadcasting's supplementary proposal.

Section A8 - Licence A

ITC Requirement

Applicants for Licence A should state their proposals for the broadcasting of Channel 5 in digital form and S4C Digital. They should also state which, if any, of the services proposed in response to questions A4 to A7 above would be provided on the capacity reserved for Channel 5 and for S4C.

1. British Digital Broadcasting is not applying for Licence A.

Section A9 - The Development of Digital Television Broadcasting

ITC Requirement

Taking account of specific proposals made in response to other questions, the applicant is invited to summarise any particular ways in which he would see the award of the licence to him to be calculated to promote the development of digital television broadcasting in the United Kingdom otherwise than by satellite.

Summary

Carlton, Granada and BSkyB have formed British Digital Broadcasting specifically for the purpose of successfully launching and sustaining digital terrestrial television. British Digital Broadcasting has exceptional financial, technical, programming and marketing and customer management credentials for the task. British Digital Broadcasting's plans provide the right content to make digital terrestrial television accessible and affordable and provide the technology and transmission solutions for timely and reliable roll-out. British Digital Broadcasting is ready to work with other multiplex operators, retailers, manufacturers and programme suppliers to make digital terrestrial television succeed. Specific letters of support from suppliers, manufacturers and retailers are attached as Annexes 2, 3 and 4.

1. British Digital Broadcasting believes that by 2005-2010 digital terrestrial television could become the main terrestrial television distribution medium in the UK, provided that an array of demanding conditions are met. The programme services must be compelling and high quality, incorporating the best available content as well as new and different elements. It must also include both basic and premium channels to provide a winning consumer proposition and a sustainable business model. Consumers must also be presented with coherent and unified messages about digital terrestrial television and its benefits as a whole. Customer service must be of the highest order. Access must be convenient and simple. Access must also be good value in terms of both initial equipment cost and ongoing subscription. Manufacturers and retailers must be incentivised to produce and promote equipment on sufficient scale. Consumers must have appropriate and flexible choices about what equipment to buy. The service must be delivered in a reliable manner and rolled-out as rapidly as possible. Multiplex operators must work together closely and have the financial resources to sustain a high fixed cost operation that will start with a no subscribers.
2. Carlton, Granada and BSkyB have formed British Digital Broadcasting precisely because meeting the above conditions is stretching and challenging. British Digital Broadcasting is a unique response to a unique challenge. Indeed, the UK is the first country to move forward decisively with the introduction of digital terrestrial television. Other countries such as the USA, Spain and Sweden are intending to follow. In some European markets there is concern that consumer confusion, resulting from competing and incompatible new digital services may deter take-up, British

Digital Broadcasting brings together three of the leading UK broadcasters to provide a unified approach and involving a concept for set-top boxes which will enable consumers to receive both terrestrial and digital signals without replacing their equipment. British Digital Broadcasting is also ready to work with all other relevant parties to make digital terrestrial television succeed.

3. British Digital Broadcasting has the resources and experience to help make a success of digital terrestrial television. Carlton, Granada and BSkyB have unparalleled collective skill and capability in programming, technology, customer management and marketing. Importantly, the shareholders also have the depth of financial resources to sustain their contribution to digital terrestrial television even under pessimistic assumptions
4. **Carlton** has substantial media businesses in UK commercial television and in the supply of products and services to the film, video and television industries worldwide. Carlton is the largest commercial terrestrial broadcaster in the UK, holding three ITV licences, broadcasting to twenty two million people in London, the Midlands and the Westcountry. Carlton invests over £160 million a year in original programmes for ITV and other television channels. Carlton's principal focus is quality drama, for example *Kavanagh QC*, *Sharpe*, *Peak Practice*, *Bramwell*, *Inspector Morse*, *Rebecca*; award winning children's programmes including *Tots TV*, *Wind in the Willows*, *The Treasure Seekers* and *Old Bear Stories* and factual programmes. Carlton has a growing library of 5,500 hours of television programmes and films, including high quality British films and over 100 made-for-television movies. Carlton operates two UK cable channels, Carlton Select and the Carlton Food Network and has stakes in television stations in France, India and Singapore. Carlton's large Nottingham Studios are among the most modern and efficient in the UK. Television accounts for over 40% of Carlton's profits. Other businesses include Technicolor, the world's largest producer of pre-recorded videocassettes and processor of motion picture film, and Quantel, a world leader in the design and manufacture of image processing and editing equipment for the film, video and television industries. In 1996 Carlton made record pre-tax profits of £295 million from revenues of £1,678 million.
5. **Granada** is one of the UK's thirty largest companies by market capitalisation. Its ownership of Granada TV and LWT makes it the country's most experienced terrestrial television broadcaster and largest commercial programme producer. Through its TV rental and retail business, Granada has substantial expertise in the television hardware and television subscription retail markets. Its programme production businesses have produced many of the most popular and critically acclaimed television shows of the last decade including *The South Bank Show*, *Coronation Street*, *Blind Date*, *Cracker*, *Barrymore*, *Prime Suspect*, *You've Been Framed*, *World in Action* and *Dimbleby*. The Group owns the UK's largest commercial television programme library with over 10,000 hours of programming including many of the classics of British television. It also has experience of launching and running pay television services, having launched seven new programme channels last Autumn through GSB, its joint venture with BSkyB. The Group's ownership of Granada Technology Group (GTG) means that it is one of the UK's leading electrical

retailers with an in depth understanding of the television hardware manufacture and retail markets which will play a key role in determining the success of digital terrestrial television. At the same time, GTG's retail outlet chain is the country's largest seller of pay television subscriptions, giving the Group a detailed knowledge of the retailing and marketing issues involved in pay TV. GTG also has an unmatched expertise in retuning television receiving equipment as evidenced by the role they are playing in providing technical and 'on the ground' support to C5's current retuning exercise.

6. **BSkyB** is a world class pay-television company, with over six million subscribers and in excess of fifteen million viewers in the UK and Eire. BSKyB offers its subscribers the highest quality channels, premium customer service, and continually endeavours to offer more choice and better value for money. Its commitment to deliver top movies from Hollywood, leading UK originated programmes, worldwide news, and the best in domestic and international sports, has resulted in strong and consistent increases on the subscriber base over the past five years. BSKyB has revenues in excess of £1bn, and is one of the UK's twenty largest companies by market capitalisation. Its established relationships with Hollywood studios, present deals with domestic and international sporting bodies, and arrangements with such renowned news organisations as Reuters, enable it to deliver ever improving quality levels of entertainment, sport and news to its valued viewers. BSKyB invests heavily in infrastructure, technology and people, the results of which are self evident with the significant reductions in subscription cancellations, increasing viewership and sustained financial performance. BSKyB views digital terrestrial television as an opportunity to invest in technology of the future.
7. Specifically, British Digital Broadcasting has a set of proposals for technology and transmission, receiver development, marketing, programming and for co-operation among multiplex operators designed to make digital terrestrial television a major new means of distribution. The benefits are high. The development of digital terrestrial television in the UK cannot only deliver quality and affordable programme choice to the consumer, with very high levels of convenience, but also provide a significant stimulus to the UK production base, to UK electronics retailers and to the UK consumer electronics manufacturing industry. The early expertise developed in digital terrestrial television will be usable in future new international markets.

Working With Other Multiplex Operators

8. In the event that British Digital Broadcasting wins one multiplex licence, British Digital Broadcasting would seek to work very closely with all the other multiplex operators particularly on facets of the service that are important to the customers' perception of and satisfaction with digital terrestrial television as a delivery system, and which are critical to making the economics of a single multiplex work. Annex 16 sets out in more detail British Digital Broadcasting's approach to working with other multiplex operators.

British Digital Broadcasting's Technology and Transmission Proposals

9. Digital terrestrial television represents one of the greatest technical challenges for television broadcasters since the introduction of colour television. Digital terrestrial television is not an evolution of existing standards but a completely new approach to distribution and transmission. The task of the multiplex operators is to manage this change effectively.
10. British Digital Broadcasting has considered carefully all the elements in the technical roll-out requirements and has, through its shareholders' participation in industry forums such as the Digital Television Group and a series of individual meetings, discussed the best approach with other broadcasters, equipment manufacturers and service providers. British Digital Broadcasting's conclusion is that the best way to ensure a successful and timely roll-out of digital terrestrial television is for a single operator to take a lead position in order to drive plans forward.
11. British Digital Broadcasting is prepared to work with all the other successful applicants to try to create a dynamic partnership in the event of winning Multiplex B only. But this will take time, and may be only partly successful. This could delay the roll-out plans, lead to increased costs for all the licencees, and possibly blunt the marketing focus.
12. The most important elements of the project that British Digital Broadcasting would look to work with others on are:
 - a) Developing, together with the BBC and ITV/C4, a co-ordinated transmission roll-out plan that ensures that, as far as is possible, all the multiplexes are introduced in to a particular region at the same time. This will be the most cost effective solution, and will minimise viewer confusion.
 - b) Supporting the transmission roll-out with a comprehensive retuning plan that will eliminate the possibility of responsibility for viewer's problems being passed between parties.
 - c) Removing the potential for confusion over the choice of consumer equipment by supporting the development of a single technology that encompasses the technical requirements for British Digital Broadcasting's programming package but also the offerings of other multiplex operators.
 - d) Developing simple solutions to the unique problems of digital television and making those solutions available to other multiplex operators, rather than the expensive proliferation of alternative and perhaps incompatible designs.

- e) Sharing of core multiplexing infrastructure to allow licence holders to minimise start-up costs, and thereby maximising investment in programming, marketing and market development.
- f) Supporting a common Electronic Programme Guide.

British Digital Broadcasting's Receiver Development Strategy

13. British Digital Broadcasting supports the work of the Digital TV Group (DTG) and intends to comply, as far as commercially possible, with the guidelines and recommendations of that group.
14. However, the amount of software integration work necessary in order to successfully provide reception equipment for digital television services may have been underestimated. This is borne out by the experience in other markets where the launches of digital services have often been severely hampered by software related issues, especially in relation to the integration and debugging of Conditional Access systems and Electronic Programme Guides. Unless properly managed this will inevitably lead to serious delays and failure to grow the number of subscribers at a rate sufficient to match the commercial needs of the business.
15. Whilst the DTG receiver equipment recommendations give useful guidance to potential equipment manufacturers, British Digital Broadcasting is doubtful that the policy of leaving the development of the software entirely to the equipment manufacturer will lead to a successful market introduction of digital terrestrial television. British Digital Broadcasting believes that manufacturers will need very considerable technical assistance and commercial innovation if they are to be persuaded to commit aggressively to develop, launch and market digital terrestrial television receiving equipment in the necessary timescales.
16. Fortunately British Digital Broadcasting is able to exploit the expertise of its shareholders, in particular BSkyB. In this area, it is hoped that, in coordination with other multiplex operators, BSkyB's expertise can be exploited as BSkyB has spent the last two years actively designing and developing a fully featured digital set-top box for its proposed digital satellite services. BSkyB is in the process of completing the development of a complete set of operating software for digital set-top boxes.
17. In addition, a considerable amount of effort has already been made with the manufacturers of the critical Large Scale Integrated Circuits, without which low cost reception equipment will not be possible. British Digital Broadcasting is very mindful of the problems in this area during the attempted introduction of D-Mac technology into the United Kingdom and intends to take pro-active steps to ensure that there is adequate competition amongst suppliers in order to avoid depending on a single supplier. Where necessary British Digital Broadcasting will be pragmatic in its technology decisions in order not to prejudice the commercial opportunity in the interests of technical perfection.

18. Since, essentially, it is only the UHF tuner and COFDM^M demodulation circuitry that is necessarily unique to digital terrestrial television, British Digital Broadcasting will, with a modest amount of additional effort, be able to adopt BSkyB and NDS's existing work to be applicable to a digital terrestrial television environment. This will allow British Digital Broadcasting considerable advantage in achieving a rapid and reliable speed to market. British Digital Broadcasting is confident, at this stage, that it will be able to deploy properly debugged and proven digital terrestrial television set-top boxes by mid-1998.
19. British Digital Broadcasting is also supportive of the DTG's work in the area of Application Programming Interfaces (API). Both DTG and BSkyB are currently in the final stages of analysing and selecting an appropriate technology supplier for a suitable industry-wide API. British Digital Broadcasting is confident that its shareholding structure will allow it to maximise the likelihood that a common, or at least compatible API solution can be achieved for both satellite and digital terrestrial television markets, with the benefits that this would have for maximising market opportunities for new and innovative applications that could run above such a common API. British Digital Broadcasting is confident of this approach and hopes that the other multiplex operators will agree to utilise the work already undertaken by BSkyB.

British Digital Broadcasting's Marketing and Subsidy Proposals

20. By early next century, integrated television sets are likely to have become the predominant means for consumers to receive digital terrestrial television. The natural replacement cycle of televisions will then push, relatively swiftly, penetration of digital television to high levels. Digital terrestrial should by then be established as the main delivery system for television. In the period from launch however, set-top boxes will be the main way in which consumers will access digital terrestrial television. Set-top boxes are often described as an interim technology, but this underplays their 'market creating' importance.
21. The digital terrestrial television set-top box will be an innovative and sophisticated item of consumer electronics. At launch therefore, the unpromoted retail price will inevitably be high, so suppressing demand. Furthermore, economic and technical limits will constrain manufacturer's ability to gear up to mass production levels. British Digital Broadcasting, through BSkyB and Granada, has long standing relationships with set-top box manufacturers and the most developed appreciation of any UK broadcaster of the dynamics of the set-top box market. In consequence, British Digital Broadcasting has already invested considerable effort in designing an outline 'partnership' programme with manufacturers and retailers to create conditions conducive to optimising the supply of and demand for set-top boxes. These discussions have been predicated largely on British Digital Broadcasting being awarded three multiplex licences. The partnership initiative would have two strands, involving; underwriting the production of a quantity of set-top boxes if required from a small number of committed and capable suppliers and working with retailers and rental organisations through promotional offers to present the available volume of set-top boxes to consumers in ways that represent exceptional value for money. However, it

would only be feasible for British Digital Broadcasting to drive this programme if it were awarded three multiplex licences. The economics of a single multiplex are such that British Digital Broadcasting could not itself justify implementing the programme on its own. British Digital Broadcasting, if it were only awarded one multiplex licence, would therefore either support, where possible, any similar scheme designed by a 'lead' multiplex operator or share its thinking with a lead operator with a view to achieving the same effects but, again, obviously having to rely on the lead operator to fund the majority of the initiative.

22. The introduction of pay-television has sometimes been accompanied by sub-standard customer service operations with poorly trained staff unable to explain a relatively complex product and price offering to potential customers. In its early days, pay-television was prone to very high levels of churn. Digital terrestrial television is a similarly complex offering for most consumers (indeed, more complicated where coverage patterns are not coterminous). British Digital Broadcasting, through BSkyB, which operates two established world-class customer management centres in Livingston and Dunfermline, Scotland, has all the expertise to ensure that this aspect of launching and establishing digital terrestrial television is handled successfully. British Digital Broadcasting is ready to make this expertise available, on fair and reasonable terms, for enquiry handling for example, to the other multiplex operators.

British Digital Broadcasting's Programming Proposals

23. British Digital Broadcasting's programming offer is supplied by Carlton, Granada, BSkyB, and the BBC, respectively the major UK forces in commercial terrestrial television, pay television, and public service broadcasting. Collectively, they will give digital terrestrial television substantial authority and help ensure that digital terrestrial television is perceived as a competitive mainstream delivery system. The shareholders of British Digital Broadcasting also bring together very large production capabilities, programme libraries and ownership rights for television broadcasting which will be powerful assets to underpin the long term programme quality of British Digital Broadcasting.
24. British Digital Broadcasting's 'single multiplex' programme offer, should it only be awarded Multiplex D, comprises a balanced mix of four leading basic subscription channels and one premium channel; Carlton Select, Granada Plus, Sky One, BBC Style/BBC Showcase and Sky Movies. This package has been designed to fulfill the specific role described previously of complementing what British Digital Broadcasting has to presume would be a strong overall programming line-up on the other commercial multiplexes.

Section A9 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should, in addition to Multiplex D, the company be awarded Multiplexes B and C.

The situation in which British Digital Broadcasting would be operating three multiplexes is very different to the situation in which British Digital Broadcasting would be operating one multiplex. If British Digital Broadcasting was awarded three multiplexes, British Digital Broadcasting would be able to take a strong market leadership role, offering a first class premium line up in addition to its basic subscription channels, with additional original programming as well as substantial additional investment in the marketing and promotion of receiving equipment.

Section A10 - Transmission Standard

ITC Requirement

Noting the information provided in paragraph 46 and in the draft ITC Rules of Operation on the use of DVB-T Specification, the applicant should give details of his proposed transmission standard, including the following items

- i) *Modulation system and channel coding*
- ii) *Guard interval*
- iii) *SI data to be included*
- iv) *Scrambling system to be used, if any*
- v) *Subtitling system to be used*
- vi) *Video coding details (e.g. type of pre-processing, range of bit rates possible)*
- vii) *Audio coding details*

Summary

British Digital Broadcasting's proposals for digital terrestrial television are based upon the use of the relevant DVB-T specifications, together with the Draft ITC Rules of Operation on the use of the DVB-T specification (Rev-1) dated 31 October 1996. British Digital Broadcasting will do all that it reasonably can to comply with Article 2 of the European Directive on the use of standards for the transmission of television signals (95/47/EC).

Modulation System and Channel Coding

1. British Digital Broadcasting will use the modulation system as laid down in the ETS 300 744 standard for 64 QAM modulation together with the sub set that defines the OFDM parameters.

Guard Interval

2. The duration of the guard interval Δ will be $7\mu\text{s}$, i.e. $\Delta/T_u = 1/32$. The total symbol duration will be $T_s = 231\mu\text{s}$, which is the sum of the active symbol period T_u ($224\mu\text{s}$) plus the guard interval of $7\mu\text{s}$.

SI Data to be Included

3. As per the specification ETS 300 468, the Service Information will adhere to the guidelines provided by the ITC. British Digital Broadcasting intends to use up to the

maximum permitted data rate of 300 kbps. Also, any licensed service will contain viable data pertaining to that service without false data streams transpiring.

4. By working with other successful multiplex licensees British Digital Broadcasting will ensure that the SI data distribution system implemented will allow receivers to be mutually technically compatible. Further information on the implementation of the SI system is contained within Annex 15.

Scrambling System to be Used, if Any

5. The proposals detailed in this application are based upon the use of the DVB Common Scrambling Algorithm, as defined in the ETSI report ref. ETR 289.

Subtitling System to be Used

6. British Digital Broadcasting will use the DVB subtitling system as described in the prETS 300 743 standard. This system uses a look-up table in ROM, drawing on any other added characters or icons in order to aid flexibility and ease of use to the viewer.
7. Not enough experience has been gained yet with DVB subtitling systems to ensure that current display attributes which are familiar to the hard of hearing community can be followed exactly. It is hoped that, as experience develops, and as the parameters of the recommended API by the DTG are released, it will be possible to exceed the expectations of this community with the new technology display options offered by digital terrestrial television systems.
8. Further information on the subtitling proposals can be found in Annex 6 to this application.

Video Coding Details

9. British Digital Broadcasting will utilise MPEG-2 Main Level at Main Profile with full screen resolution and an appropriate aspect ratio to suit the original source material, i.e. 4x3 (or 12x9), 14x9 and 16x9.
10. The bit rate will be determined to best match programme source material and achieve the highest quality transmission possible. British Digital Broadcasting will seek to flex the multiplex to give appropriate programming a higher bit rate where required.

Audio Coding Details

11. The audio coding used for the main service will adhere to the bit rate set in ISO/IEC 13818-3. It will constitute 256 kbps for stereo and 192 kbps for joint stereo, with an agreed sample rate of 48 kHz. It will also follow the MPEG-2 layer 2 specification.
12. Where additional audio channels are carried, such as Audetel 'audio descriptive services', these will adhere to ETR 154 and the guidelines set out in the DTG

documentation 'Digital Terrestrial Television - Requirements for Interoperability' (the DTG Requirements) dated December 1996.

13. Further information on audio descriptive services proposals can be found in Annex 6.

Data transmission

14. At the time of writing it is not yet clear what options will be included within the DVB specification for data broadcasting. When implemented, any data services provided by British Digital Broadcasting will be implemented according to the DVB data broadcasting specification, subject to this providing suitable mechanisms for their delivery.
15. The SI data tables will carry information relating to the services offered and will be in accord with the recommendations of the DVB-SI DAT working party when these have been finalised.

Multiplexing

16. All multiplexing operations carried out at the Multiplex Centre and any subsequent re-multiplexing that may be called for in the delivery of the signals will conform to ISO/IEC 13818-1 and adhere to the guidelines contained in ETR 154. Multiplex systems will combine all components of the multiplexed signal into a coherent and compatible MPEG-2 transport stream.
17. British Digital Broadcasting has had discussions with manufacturers about the availability of new systems of MPEG-2 encoding and multiplexing available in time for viable delivery before the launch of services. British Digital Broadcasting favours the use of statistical multiplexing to make best use of the bandwidth available, both to maintain technical quality and yet allow for additional services where possible. Statistical multiplexing forms part of the offer currently available from our preferred supplier of multiplexer equipment.
18. Two illustrative bit budgets are outlined below in Tables 1 and 2. The first shows an even allocation of 4.27 Mbps for video in a five-channel multiplex, which would give a good quality to each channel. The second table shows a variable allocation of two channels at 6 Mbps for high quality, fast moving or sports programme sources, two at a medium setting of 3.43 Mbps for general programming and finally one channel at 2.51 Mbps for film-based original programming.
19. In practice it is possible to set the statistical multiplexer control computer to have upper and lower bit envelopes within which each channel can operate, allowing flexible use to be made of channel allocations. It has been established that film-based material can be encoded at a lower bit rate due to the nature of the film transfer, where 2 video fields will be encoded from an individual film frame thereby reducing the amount of data required to encode this type of programming.

20. The adaptable nature of a statistical multiplex system is such that additional programme and data streams can be introduced or removed at will with little impact on other programme channels, so long as care is taken in setting the bit rate allocation on those channels, and to the aggregate bit rate.
21. In this way it will be possible to introduce Pay Per View and special event programming into the multiplex by adjusting the bit rate dynamically on the existing channels, as the new event programme stream is introduced.

Illustrative Even Bit Rate 5 Channel Multiplex			
Service	Description	Bit Rate	
CHANNEL-1	Video Programme 1	4.274 Mbit/s	
	Stereo Audio 1	0.2560 Mbit/s	
	Audotel-1	0.0640 Mbit/s	<i>Only when required</i>
	DVB Subtitling-1	0.0080 Mbit/s	
CHANNEL-2	Video Programme 2	4.274 Mbit/s	
	Stereo Audio 2	0.2560 Mbit/s	
	Audotel-2	0.0640 Mbit/s	<i>Only when required</i>
	DVB Subtitling-2	0.0080 Mbit/s	
CHANNEL-3	Video Programme 3	4.274 Mbit/s	
	Stereo Audio 3	0.2560 Mbit/s	
	Audotel-3	0.0640 Mbit/s	<i>Only when required</i>
	DVB Subtitling-3	0.0080 Mbit/s	
CHANNEL-4	Video Programme 4	4.274 Mbit/s	
	Stereo Audio 4	0.2560 Mbit/s	
	Audotel-4	0.0640 Mbit/s	<i>Only when required</i>
	DVB Subtitling-4	0.0080 Mbit/s	
CHANNEL-5	Video Programme 5	4.274 Mbit/s	
	Stereo Audio 5	0.2560 Mbit/s	
	Audotel-5	0.0640 Mbit/s	<i>Only when required</i>
	DVB Subtitling-5	0.0080 Mbit/s	
	Total	23.010 Mbit/s	
Multiplex Overhead			
Conditional Access		0.250 Mbit/s	
PSI		0.075 Mbit/s	PAT / PMT / CAT
SI		0.300 Mbit/s	EIT / NIT / SDT / BAT
EPG		0.300 Mbit/s	
Programme Clock		0.0655 Mbit/s	
Data		0.000 Mbit/s	<i>Additional Later</i>
	TOTAL	0.990 Mbit/s	
	Grand Total	24.000 Mbit/s	

Table 1 Illustrative Even Bit Budget

For details of the SI data table allocation please refer to Annex 15.

22. British Digital Broadcasting will use compression and multiplexing equipment meeting MPEG-2 and DVB-T specifications, and has already had discussions with suppliers who can comply with its requirements. British Digital Broadcasting is aware of the rapid pace of development likely in this area and is closely monitoring the situation. The chosen equipment will include arrangements for redundancy, monitoring and

control facilities to provide the necessary level of reliability for this part of the system. This will be a high priority area, in order to provide test transmissions as soon as possible, primarily for the benefit of receiver manufacturers and installers. Letters have been included from MPEG-2 encoding and multiplex system manufacturers in support of this application; refer to Annex 3 for details.

Illustrative VARIABLE Bit Rate 5 Channel Multiplex			
Service	Description	Bit Rate	
CHANNEL-1	Video Programme 1	6.000 Mbit/s	Hi Quality/Sports
	Stereo Audio 1	0.2560 Mbit/s	
	Audetel-1	0.0640 Mbit/s	<i>Only when required</i>
	DVB Subtitling-1	0.0080 Mbit/s	
CHANNEL-2	Video Programme 2	6.000 Mbit/s	Hi Quality/Sports
	Stereo Audio 2	0.2560 Mbit/s	
	Audetel-2	0.0640 Mbit/s	<i>Only when required</i>
	DVB Subtitling-2	0.0080 Mbit/s	
CHANNEL-3	Video Programme 3	3.430 Mbit/s	Schedule General Progs.
	Stereo Audio 3	0.2560 Mbit/s	
	Audetel-3	0.0640 Mbit/s	<i>Only when required</i>
	DVB Subtitling-3	0.0080 Mbit/s	
CHANNEL-4	Video Programme 4	3.430 Mbit/s	Schedule General Progs.
	Stereo Audio 4	0.2560 Mbit/s	
	Audetel-4	0.0640 Mbit/s	<i>Only when required</i>
	DVB Subtitling-4	0.0080 Mbit/s	
CHANNEL-5	Video Programme 5	2.510 Mbit/s	Schedule Films etc
	Stereo Audio 5	0.2560 Mbit/s	
	Audetel-5	0.0640 Mbit/s	<i>Only when required</i>
	DVB Subtitling-5	0.0080 Mbit/s	
	Total	23.010 Mbit/s	
Multiplex Overhead			
Conditional Access		0.250 Mbit/s	
PSI		0.075 Mbit/s	PAT / PMT / CAT
SI		0.300 Mbit/s	EIT / NIT / SDT / BAT
EPG		0.300 Mbit/s	
Programme Clock		0.0650 Mbit/s	
Data		0.000 Mbit/s	<i>Additional Later</i>
TOTAL		0.990 Mbit/s	
Grand Total		24.000 Mbit/s	

Table 2 Illustrative Variable Bit Budget

For details of the SI data table allocation please refer to Annex 15.

Section A10 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three of the licences for which it has applied.

The policy outlined in British Digital Broadcasting's supplementary proposals is essentially the same as that outlined above. If awarded all three licences, British Digital Broadcasting will be in a better position to act as lead party in ensuring interoperability between the different multiplexes and consumer receivers.

Section A11 - Technical Quality and Reliability

ITC Requirement

The applicant should state in detail what operational and staffing arrangements he proposes to have in place to ensure that the Licensed Service complies with the technical quality and reliability requirements of the ITC Digital Technical Performance Code.

Summary

British Digital Broadcasting intends, by its approach to quality control, to ensure that the introduction of digital terrestrial television to the UK will present the viewer with a service that compares well with the existing quality being offered on analogue services and with the quality of video and audio that will become available through the introduction of pre-recorded digital video disks.

The experience of British Digital Broadcasting's shareholders in both terrestrial and satellite broadcasting and in distribution will ensure that the systems and delivery mechanisms chosen are backed up wherever possible by reserve equipment and that the reliability of transmission and distribution will match that attained in the operation of existing terrestrial services. British Digital Broadcasting will make every endeavour to meet the requirements of the ITC's Digital Technical Performance Code.

British Digital Broadcasting will train core technical staff to be conversant with the ITU-R (CCIR) 5-Point Quality Grading Scale and to apply these standards to programme quality monitoring. British Digital Broadcasting will have a hierarchical structure of technical management with written procedures for dealing with complaints from the trade, viewers and the ITC. British Digital Broadcasting intends to have a fully traceable database of programme quality complaints from which annual reports can be created for the ITC.

Background to Quality Measurement

1. British Digital Broadcasting's shareholders include major ITV licence holders, bringing a wide experience of monitoring and maintaining the technical quality of programming to the standards laid down by the ITC for analogue terrestrial television. This is coupled with BSkyB's experience in the operation of satellite-borne subscription television channels over a number of years, including decoder roll-out and receiver design. British Digital Broadcasting will thus have the ability to call on a broad base of experience to deal with the many and varied technical, quality, reliability and practical issues associated with the introduction of digital terrestrial television.
2. The above companies have experienced many changes in the production of programme material over the years. Experiences have ranged from the use of U-Matic, SVHS and

Hi-band for News etc., through one-inch videotape, to the introduction of Betacam 1/2" videotape formats. The transition to digital formats in acquisition and post-production has led to much greater flexibility, and ultimately improved quality, albeit at the expense of having to deal with new sets of problems. Use of uncompressed digital post-production techniques has introduced a quality threshold against which to measure all other programmes.

3. Recent years have seen a move towards the use of non-linear editing systems such as Quantel's Editbox, Avid, Lightworks, etc. Gradually these systems have moved from a purely off-line function to use, in a limited fashion, for on-line editing of programmes. The subtle changes introduced by the use of slightly compressed motion JPEG systems has led to new criteria for the measurement of picture distortions. Drawing on the experience gained in evaluating this type of programming, British Digital Broadcasting will be able gradually to adjust its technical quality criteria with the introduction of MPEG-2 encoding and multiplexing, in order to maintain an appropriate balance between technical quality, commercial requirements and viewer expectation.
4. Since these new distortions have no equivalent in analogue technology, British Digital Broadcasting believes that new test procedures and operational practices will have to be established. In the past, the use of various fixed test signals related directly to the programme quality through a broadcast chain. With MPEG-2 encoding, programme quality can change dependent on picture content. Image quality can also be affected by external factors such as the available bit rate, and any bit errors that occur during distribution of the transport stream.

Technical Quality

5. By establishing its own delivery requirements derived from shareholders' existing technical delivery specifications, British Digital Broadcasting aims to have the best available quality of programming prior to encoding. It is apparent from research that the best quality of encoding can be attained at a lower bit rate when the source material is of a high standard. This reduction in bit rate will allow the best possible use of the transport stream bandwidth to improve quality on other, more demanding, channels in the multiplex.
6. Dependent on the quality of delivered programmes for each channel, British Digital Broadcasting will consider the introduction of pre-processing techniques, either in the encoder or as a separate process, where this is proven to add benefit to the encoding process. British Digital Broadcasting will make every endeavour to comply with the ITC's Digital Technical Performance Code dated 31 October 1996 by closely monitoring the quality at both the programme delivery and the MPEG encoding and multiplexing stages.
7. When monitoring the compressed pictures, due regard will be given to the production process and any compression used will be logged to avoid any problems caused by concatenation of compression schemes which may lead to artifacts in the final picture.

For this reason, there will be close co-operation between the multiplex licensee and programme providers. British Digital Broadcasting will offer advice to programme supply companies if this cause of impairment is identified.

Operational Arrangements

8. The four stages of technical monitoring and resilience are described below:-

Playout Centre

9. Programmes and commercials will be assessed technically to ensure that they meet standards derived from shareholders' existing technical delivery standard. Reporting to the Digital Transmission Manager, the Shift Supervisors and their Engineers and Technicians will be jointly responsible for ensuring programme quality standards are met. The latest techniques of digital post production and presentation will be used to ensure that the best possible programme quality is delivered to the Multiplex Centre. British Digital Broadcasting will have a contract with the digital programme service providers which will specify the technical parameters to be observed by the Playout Centre technical staff.

Multiplex Centre

10. At the British Digital Broadcasting multiplex centre all relevant technical staff will be trained in the operation of MPEG-2 encoding and multiplex equipment, backed by a strong computer systems team familiar with the operation and support of programme automation and monitoring systems. These staff will monitor and log the performance of the multiplex or multiplexes created and transmitted from the multiplex centre. This will include the monitoring of both video and audio quality and the strict control of the subscriber authorisation systems. There will be five main plus one hot spare encoders with a dual multiplexer (main plus reserve), with full change-over facilities per multiplex channel. All computer systems will have a hot backup and power will be fed via an uninterruptible power supply system with generator backup.
11. The Multiplex Centre will be staffed on a 24 hour shift basis in accordance with the staffing plans shown in Annex 10.
12. Each monitoring room will be equipped with the relevant MPEG-2 transport-stream analysis equipment as required. Off-air logging equipment will be fitted to allow British Digital Broadcasting to record the output of each multiplex channel as transmitted to allow later analysis if required. These tapes will be held for 28 days as required by the ITC's Digital Performance Code.
13. Each outgoing multiplex transport stream will be monitored as off-air decoded sound and vision. British Digital Broadcasting intends to employ error logging which will also utilise a hard disk recorder to store the last five minutes of multiplex as transmitted. When problems are detected, this data will be stored and later archived

for a more detailed investigation. It is feasible that the PSI/SI data changes could also be logged on an ongoing basis by the computer systems for 'as run' logging.

Distribution Resilience

14. A contract will be placed with a satellite distribution provider for a dual service using two separate uplinks and satellites in different orbital positions. This will protect against sun outages and provide a reserve path for distribution in the case of failure.

Transmission Resilience

15. Transmission will be provided as total broadcast contract for service with an established transmission provider. The contract between this provider and British Digital Broadcasting will cover the necessary reliability and quality monitoring requirements in keeping with the ITC's standards of reliability as outlined in the ITC's Digital Performance Code, the details of which are outlined below.
16. To ensure high quality transmission, monitoring will be provided at each transmitter site to enable any faults to be detected rapidly. This will include not only monitoring of the modulators and transmitter systems themselves, but also monitoring of the transport stream to ensure that it is properly formatted. Telemetry links will be provided for the main transmitters to enable alarms to be raised at a central control centre so that appropriate corrective action can be initiated. The monitoring and telemetry links will also provide the transmission operator with an overview of the total transmission network at all times. A high level version of this overview will be available to British Digital Broadcasting at its multiplexing centre.
17. Resilience will be built into the design of the transmitting stations in a number of ways. The transmitters will be of solid state, modular design in order to minimise the risk of spontaneous failure. Passive reserve rather than parallel transmitter systems will be employed in order to avoid, where possible, reduced power operation which would deprive significant numbers of viewers of their service.
18. Antennas will be constructed in two halves with individual coaxial feeders. This arrangement is the same as that used in the existing analogue network and has proved itself to be very reliable over the years.
19. British Digital Broadcasting will monitor the technical performance and availability of the multiplexes by requiring its transmission operator to submit monthly reports detailing performance of the network which must exceed an agreed threshold. A summary of these reports will be made available to the ITC on an annual basis if required.

Section A11 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three of the licences for which it has applied

The policy outlined in British Digital Broadcasting's supplementary proposal is essentially the same as that outlined above.

Section A12 - Changes to Existing Transmission and Reception Arrangements

ITC Requirement

Noting in particular the information given in paragraph 48 and the provisions of the Code of Practice on Changes to Existing Transmission Arrangements which is referred to in Annex B, the applicant should state in the form of a fully worked out plan what arrangements he would make to implement the changes to existing transmission and reception arrangements required in order to accommodate the proposed multiplex transmitter plan. Information on the costs involved both on the transmission side (e.g. frequency changes or the inclusion of precision offset control) and on the reception side (e.g. house visits or new receiving aerials) is required under section B of the attachment to Part III.

Summary

British Digital Broadcasting has drawn up a project plan for implementing the necessary changes to existing transmission and reception arrangements in order to allow the introduction of the new digital terrestrial services - see Annex 19. Assumptions about the costs associated with this work have been included within British Digital Broadcasting's business plan.

British Digital Broadcasting has adopted a cautious approach to the provision of financial resources to this aspect of the project but recognises that the likely scale of the problem is actually quite small.

If British Digital Broadcasting were to be awarded the licence for Multiplex D, British Digital Broadcasting would seek to co-operate with the operators of the other five multiplexes in order to accomplish this work in the most timely and cost-efficient manner.

British Digital Broadcasting's plans for retuning and aerial work have been drawn up in consultation with Granada Technology Group, Granada's TV rental division which has extensive experience and expertise in this area. This is evidenced by their key role in all aspects of the current retuning exercise for Channel 5 although British Digital Broadcasting recognises that the work now required is of a rather different nature and demands more local knowledge of potential problem areas and options for providing alternative services. Given the expertise and resources available to the company, British Digital Broadcasting is confident that it will be able to speedily identify and resolve problems in this area and thus ensure that the roll-out of the digital multiplexes is not impaired.

1. British Digital Broadcasting has studied the ITC's draft Code of Practice on Changes to Existing Transmission and Reception Arrangements and the document 'Impact of Digital Main Stations on UK Analogue Services: Initial Assessment'. In the light of

these documents and discussions with the two potential transmission suppliers, it has been concluded that the following changes may be necessary to existing transmission and reception arrangements in order to allow the introduction of digital terrestrial television services.

2. Considerable uncertainty exists regarding the effect of digital services on the reception of existing analogue services. It is very likely that interference will be experienced only by a very few viewers. However in order to present the business plan with the minimum number of uncertainties, British Digital Broadcasting has adopted a very cautious approach and assumed interference levels to be at the upper end of the possible range.

Transmission Changes

3. British Digital Broadcasting believes that the following work will be required at the relevant main stations:
 - a) Installation of special filters and combiners to allow digital terrestrial television services to be combined with analogue services into existing antennas.
 - b) Strengthening of structures where necessary to accommodate additional digital terrestrial television antennas.
 - c) Installation of new digital terrestrial television antennas where required.
 - d) Introduction of precision offset at a number of specified stations.
4. British Digital Broadcasting believes that the following work will be required at the relevant relay stations:
 - a) Installation of special filters and combiners to allow digital terrestrial television services to be combined with analogue services into existing antennas.
 - b) Strengthening of structures where necessary to accommodate additional digital terrestrial television antennas.
 - c) Installation of new antennas where required.
 - d) Changing one or more channels of specified relay stations.
 - e) Provision of up to 5 new relay stations.
 - f) Replacement of the re-broadcast link (RBL) feed with an SHF link at up to 5 stations.

- g) Improvement or modification of RBL feeds at specified stations.
- h) Increasing the effective radiated power (ERP) of specified stations.
- i) Introduction of precision offset at a number of specified stations.

Reception Changes

5. Although the large majority of television receivers are unlikely to be affected by the introduction of the new services, in certain areas digital terrestrial transmissions will interfere with existing analogue services and some viewers may no longer be able to obtain satisfactory reception on their existing channels. British Digital Broadcasting recognises that such problems must be addressed prior to bringing digital terrestrial stations into service wherever possible, and has devised a procedure for dealing with them. This procedure is detailed in the confidential Annex 19 and is intended for each relevant multiplex at each digital terrestrial site.
6. British Digital Broadcasting has made preliminary estimates of the total numbers of homes likely to be affected by interference. These estimates differentiate between those homes which will require retuning of TV sets and VCRs only, and those which will require both retuning and aerial re-alignment or replacement. A range of costs has been derived in each case based on ITC population figures with judgments made where appropriate in order to estimate the number of viewers and households likely to be affected.
7. A limited amount of data about the effects of digital terrestrial relay transmitters on existing services is available from the ITC at the present time. Notional estimates of the numbers of viewers likely to be affected have therefore been included by British Digital Broadcasting for costing purposes.
8. The results of British Digital Broadcasting's cost analysis are shown in Annex 19 based on the estimated worst case number of viewers affected.
9. It is assumed that the cost of the necessary retuning and aerial work will be apportioned between the six multiplex operators. Annex 19 shows the estimated costs for each multiplex of dealing with the worst case number of viewers that could be affected by that multiplex. In order to minimise disruption to viewers, and to keep expenditure to a minimum, British Digital Broadcasting considers it essential that the work is carried out on behalf of all the multiplex operators. If British Digital Broadcasting was awarded the licence for a single multiplex, it would seek to work with the other successful licence holders to co-ordinate the retuning and aerial work across all multiplexes.
10. British Digital Broadcasting places considerable emphasis on the need for comprehensive training for staff involved with retuning work and would want to see training in the following areas addressed by contractors carrying out this work.
 - a) The potential types of interference to be expected from digital

transmissions.

- b) The role of the retuner.
- c) Customer feedback and morale.
- d) Dealing with the customer in a professional manner.
- e) Retuning procedures.
- f) Escalation procedures to handle specific problems and complaints.
- g) Technical procedures to address specific complexities likely to be encountered.
- h) Practical training.
- i) The use of technical equipment.
- j) Health and safety.

Security

11. British Digital Broadcasting acknowledges the importance of taking adequate precautions to protect the public from fraud or criminal activity during the retuning exercise. British Digital Broadcasting would expect that all staff involved with retuning and aerial work should be screened to ensure that unsuitable persons are eliminated at an early stage. New staff should be required to produce an approved form of identification and references must be taken up.
12. British Digital Broadcasting recognises the importance of the public being able to identify easily the company's retuners and to have a secure means of checking identification. Contractors must provide uniforms, along with identification cards contained in a laminated holder featuring company logo, photograph, freephone contact number, ID number and expiry date. Information packs should be sent out in advance to all addresses to be visited explaining the security arrangements and how retuning staff can be properly identified.
13. Freephone calls will need to be directed to a central point, which must hold details of all staff including ID numbers, descriptions and passwords. Contractors must ensure that contact is made at the appropriate time with the local police station crime prevention and community liaison staff and any criminal allegations made against retuning staff by members of the public will have to be passed on immediately to the police.

Quality Standards

14. British Digital Broadcasting believes that rigorous quality standards for the re-tuning exercise must be part of any contract for the carrying out of this work.

Section A12 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three licences for which it has applied.

The policy outlined in British Digital Broadcasting's supplementary proposal is essentially the same as that outlined above. However, operating three multiplexes would allow British Digital Broadcasting to play a leading role in tackling the reception issues discussed above.

Section A13 - Receiving Equipment

ITC Requirement

Noting the information given in paragraphs 85 to 87 the applicant should state how he will ensure that the equipment covered by the arrangements set out in response to question A13 above will be capable of receiving all the multiplex services available in the proposed coverage area of his own service.

Summary

British Digital Broadcasting intends to implement its systems and procedures in a way that will allow consumer equipment to receive all the multiplex services available in the proposed area of coverage.

If awarded the licence for Multiplex D, British Digital Broadcasting will seek to work with other multiplex operators in order to establish interoperability between receiving equipment and multiplexes.

Service Information

1. British Digital Broadcasting will incorporate SI information from other multiplexes into its own, assuming that this is made available by other multiplex operators under appropriate reciprocal arrangements. The incorporation of this additional SI information will involve local processing and insertion arrangements at certain transmitter sites. Solutions are under consideration based around the reception of SI data off-air, or by the use of wide area data networks.
2. British Digital Broadcasting will ensure that the SI data carried in the Multiplex D transport stream will be compliant with the ITC's 'Draft Rules of Operation for the DVB-T Specification' and the DTG's 'Requirements for Interoperability'. British Digital Broadcasting will seek to work with the other successful multiplex licence holders to ensure a common technical solution to the issue of incorporation of local 'Network Information Tables' (NITs).
3. The frequencies of local relays available at each service insertion point in the transmission network will be inserted into the Multiplex 'D' transport stream by the use of transcoders which separate out the regional SI data and insert the data into the Multiplex 'D' ongoing signal. At the same time Multiplex 'D' SI data is extracted and inserted into all other multiplexes available at the service insertion point.
4. Further detailed discussion of the SI data tables can be found in Annex 15.

Conditional Access

5. British Digital Broadcasting intends to implement a strategy for conditional access which will allow viewers to receive all the services that they are entitled to, no matter in which multiplex these are carried or which conditional access system is used to protect them. This will be achieved by offering fair, reasonable and non-discriminatory access to British Digital Broadcasting's own conditional access system, or by entering into joint simulcrypt arrangements if requested by other operators.
6. Simulcrypt is a system where entitlement messages for more than one proprietary system of conditional access can be transmitted in the same multiplex transport stream. British Digital Broadcasting would seek to work with other multiplex licence holders to ensure that if such a system were necessary then a system of data links would be put in place between operators of different subscriber management systems to allow secure transfer of entitlement messages between operators.

Electronic Programme Guide

7. British Digital Broadcasting will seek to work with other multiplex operators in the establishment of a common electronic programme guide that will facilitate access to programming across all multiplexes available within the coverage area. British Digital Broadcasting is committed to the development of an EPG which is fully compliant with the regulatory requirements of Ofcom and the ITC and would be prepared to discuss participation in any industry initiative to establish an equitable approach to the issues raised by electronic programme guides.

Receiver Compliance Facility

8. If awarded the licence for Multiplex D, British Digital Broadcasting will seek to work with other multiplex operators in the establishment of a Receiver Compliance Facility. This facility would be equipped with test equipment and staff to ensure that the variety of set top boxes and integrated receivers developed for digital terrestrial television, will be mutually technically compatible and also that different implementations of API and EPG interoperate with each other. This facility would draw on the experience gained by BSkyB and News Digital Systems in developing their own facilities for the compliance testing of analogue satellite decoders.

Section A13 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three licences for which it has applied.

If awarded three multiplexes, British Digital Broadcasting would act as the lead party in receiving equipment interoperability discussions. British Digital Broadcasting would also be able to ensure that receivers would have access to both satellite and terrestrial digital services from the same equipment through the use of a satellite or terrestrial sidecar (plug-in module).

Section A14 - Supply of Programme Services

ITC Requirement

The applicant should indicate the sources of the programme services which he proposes to broadcast under the multiplex licence. Details of any agreements with suppliers should be given here or in a confidential annex.

Summary

Digital terrestrial television will start with no subscribers. In these circumstances relying entirely on third party programme providers to supply a differentiated package would be a risk, due to the level of investment required. In order to achieve the quality, balance and degree of distinctiveness most likely to encourage viewers to subscribe, British Digital Broadcasting's shareholders intend to provide and originate four of the five proposed channels.

1. This section sets out details for the supply of British Digital Broadcasting's channels on Multiplex D. Annex 4 includes a number of letters from suppliers confirming their willingness to supply programming.
2. A key asset that British Digital Broadcasting brings to digital terrestrial television is access to the content libraries and rights for broadcast television held by its shareholders, together with the relationships that those shareholders have built up over many years with major suppliers. Under the Shareholders Agreement each party has agreed to use reasonable endeavours to acquire digital terrestrial rights to programming acquired by it (where it does not already hold such rights).

Carlton Entertainment

3. Carlton Entertainment will supply the following material for its channels through in-house production: chat shows, entertainment and gameshows.
4. Carlton Entertainment intends to acquire the following material: drama, chat shows, games shows and comedy.
5. Carlton Entertainment has reached, in principle, satisfactory assurances of supply from the following suppliers:
 - Warner Bros.
 - Universal
 - CBS
 - All American
 - CBC
 - Disney

Granada Plus

6. Granada Plus has in place a long term contract guaranteeing first rights of access to the entire programme libraries of Granada TV Productions and London Weekend Television Productions. This gives to Granada Plus first refusal on perhaps the largest unexploited archive of quality British-made programmes.
7. The Granada archive goes back more than 40 years to the beginning of ITV and includes the full range from Britain's most popular soap *Coronation Street*, to award-winning drama such as *Jewel in the Crown* and *Upstairs Downstairs*. In comedy and entertainment there is a diverse range of productions from *Wood and Walters* to cult favourites such as *The Army Game*. The LWT archive has nearly equal depth, and a range that goes from *The South Bank Show* to *The Professionals* and from *An Audience With Dame Edna* to *Surprise Surprise*.
8. Granada Plus will also commission a proportion of lifestyle, magazine and entertainment programmes. Again, these are subject to existing programme supply agreements between Granada Plus and the award winning production teams of Granada TV and LWT.

Sky Movies

9. Major Hollywood studios and independent production companies currently provide output product as well as library product for carriage on BSkyB's satellite movie channels. To demonstrate the depth of these supply arrangements, in the past 6 months studios have made 76 films available in the pay television window to BSkyB's present movie channels. Moreover, suppliers such as these currently help Sky provide the material for the 22,000+ hours of programming across these movie channels. In the context of these relationships, Sky believes that it is well placed to obtain digital terrestrial rights for programming the digital terrestrial Sky Movies channel where necessary.
10. European and British Film licensors, including British Screen and Chargeurs, currently provide product for Sky satellite movie channels as well. Moreover, BSkyB presently creates its own in-house support movie programming such as *The Movie Show*, *Special Features* and *The UK Top Ten* which it would plan to exploit on the digital terrestrial Sky Movies channel as well as explore opportunities to create additional support programmes especially for this channel.

Sky One

11. Major Hollywood studios and independent production companies currently provide product for carriage on BSkyB's satellite general entertainment channels. These long-established, contractual relationships help Sky source the 12,000+ hours of transmission on these channels a year. Current supply sources include Twentieth Century Fox, King World, Proctor & Gamble and Saban International as well as

European and UK suppliers such as LWT, Granada, Dandelion and Wink Productions. In the context of these relationships, Sky believes that it is well placed to obtain digital terrestrial rights for programming for the digital terrestrial Sky One channel where necessary.

12. Furthermore, in-house or commissioned programming made especially for the Sky general entertainment satellite channels in the recent past includes *Springhill*, *Jimmy's*, *Just Kidding*, *Walker's World* and *The Movie Show*. Sky has a number of shows planned or currently in production such as *Selina Scott* and *Sky Cafe*. Perhaps most importantly, BSkyB has reached a point in its lifecycle at which it can begin to build its own library. Additionally, BSkyB will explore opportunities to create original general entertainment programmes especially for the Sky One digital terrestrial channel.

BBC Style and Showcase

13. British Digital Broadcasting has secured an agreement in principle with the BBC for the supply, via the BBC's proposed joint venture with Flextech of its new BBC Style and Showcase channels. The arrangement also envisages the supply of a further new BBC channel as and when additional capacity permits.

Section A14 of British Digital Broadcasting's supplementary proposals provides equivalent information should the company be awarded all three licences for which it has applied.

The channels, whose supply arrangements have been described above, also feature in British Digital Broadcasting's 'three multiplex' programme proposals. Section A14 of British Digital Broadcasting's supplementary proposals also describes supply arrangements for a further ten channels, including additional BBC channels.

Section A15 - Capacity for Programme Services

ITC Requirement

Noting the information given in paragraph 108, the applicant should state how he intends to ensure that at least 90 per cent of the digital capacity on the multiplex is available for the broadcasting of digital programme services, if appropriate also qualifying services, programme-related services or relevant technical services.

Summary

British Digital Broadcasting's business case for the introduction of a digital television service is based upon the broadcasting of digital programme services, together with relevant technical services. The company has no intention of utilising more than 10% of the multiplex for additional services which are not programme related services.

1. As noted in Section A7, British Digital Broadcasting intends, over time, to offer a variety of digital additional services within the multiplex. However, such services do not form part of the launch planning for digital terrestrial television. Such services will be introduced following careful evaluation of user demand and with a view to supporting the development of the market for digital terrestrial television in general.
2. The capacity utilised for additional services will not exceed 10% of the whole multiplex during normal viewing hours (i.e. between 0600 and 2400). As the market develops for these services, it is possible that advantage will be taken of under-utilisation of capacity for normal programming (e.g. during night time hours) to provide extended additional services. There are, however, no immediate plans to do so,.
3. It is anticipated that further developments in multiplexing will allow more efficient use of the available capacity and it is British Digital Broadcasting's intention to utilise these improved multiplexing techniques as they become available. The intention, however, is initially to give priority to maintain or improve the quality or number of other programme or relevant technical services carried within the multiplex, such as the electronic programme guide, rather than for the carriage of additional services.

Section A15 of British Digital Broadcasting's supplementary proposals provides equivalent information should the company be awarded all three of the licences for which it has applied.

The policy outlined in British Digital Broadcasting's supplementary proposals is essentially the same as that outlined above.

Section A16 - Key Staff

ITC Requirement

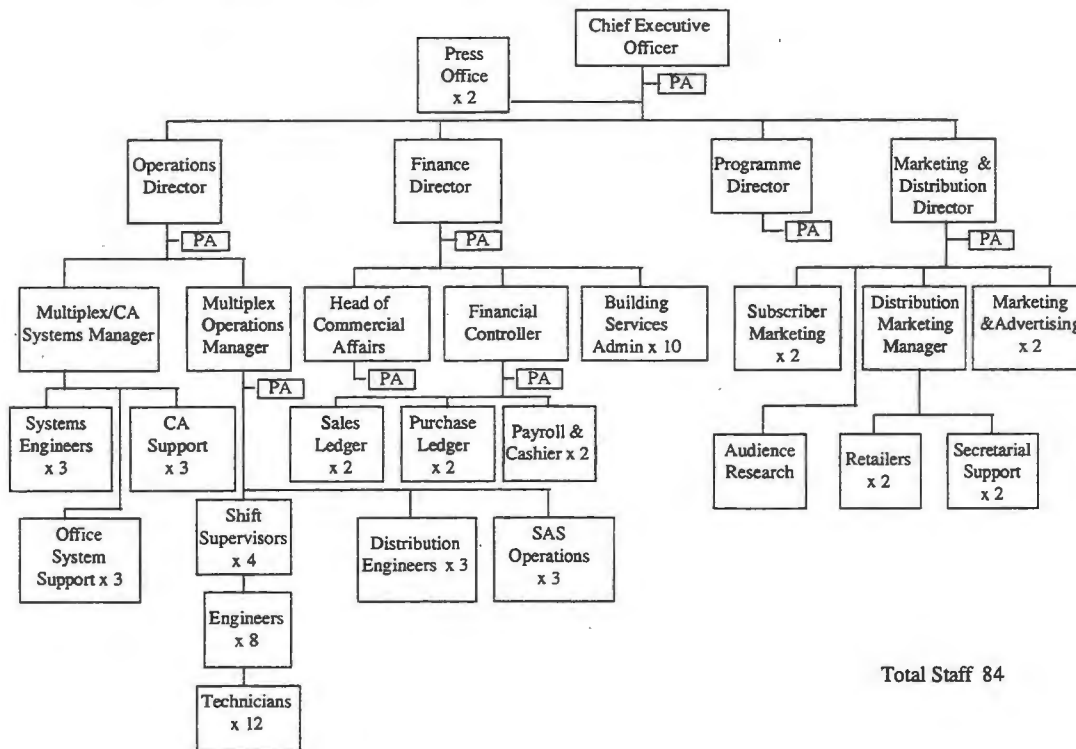
The applicant should identify the key posts and (where possible) the named post-holders who will be involved in establishing and running the multiplex service. Details should be given of the post-holders' experience and qualifications. If the applicant prefers, this information may be given in a confidential annex.

Summary

British Digital Broadcasting proposes an experienced and well resourced organisation designed around the core processes involved in delivering a digital terrestrial television service.

1. British Digital Broadcasting's proposed organisation for operating one multiplex is shown below:

BRITISH DIGITAL BROADCASTING ORGANISATION STRUCTURE



2. The organisation is built principally around the core processes involved in providing a digital terrestrial television service to the public, namely delivering the service (Operations), creating the multi-channel programme offer (Programming) and achieving customer awareness and uptake (Marketing). The five key posts are Chief Executive Officer, Operations Director, Finance Director, Programme Director and

Marketing Director. It should be noted that the shareholder companies of British Digital Broadcasting's parent company each have well resourced organisations for supplying their respective channels to British Digital Broadcasting. These organisations are described in confidential Annex 10.

3. The senior management team fulfilling the senior roles will combine the competence and experience required to run a major digital broadcasting company. Confidential Annex 9 summarises British Digital Broadcasting's approach to recruiting for the new posts and to resourcing the implementation of British Digital Broadcasting's digital terrestrial television services. Section B7 outlines detailed cost assumptions.
4. The executive management team will jointly share responsibility for ensuring compliance with the obligations of British Digital Broadcasting under its licence. British Digital Broadcasting will have comprehensive arrangements and procedures in place to ensure compliance with the licence conditions and compliance with Programme, Advertising, Sponsorship, Technical Performance and other Codes and directions issued by the ITC or any other competent authority. Appropriate legal representation will be sought directly at the request of the Chief Executive, or the Chief Executives duly appointed representative, as circumstances may dictate.

Section A16 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three licences for which it has applied.

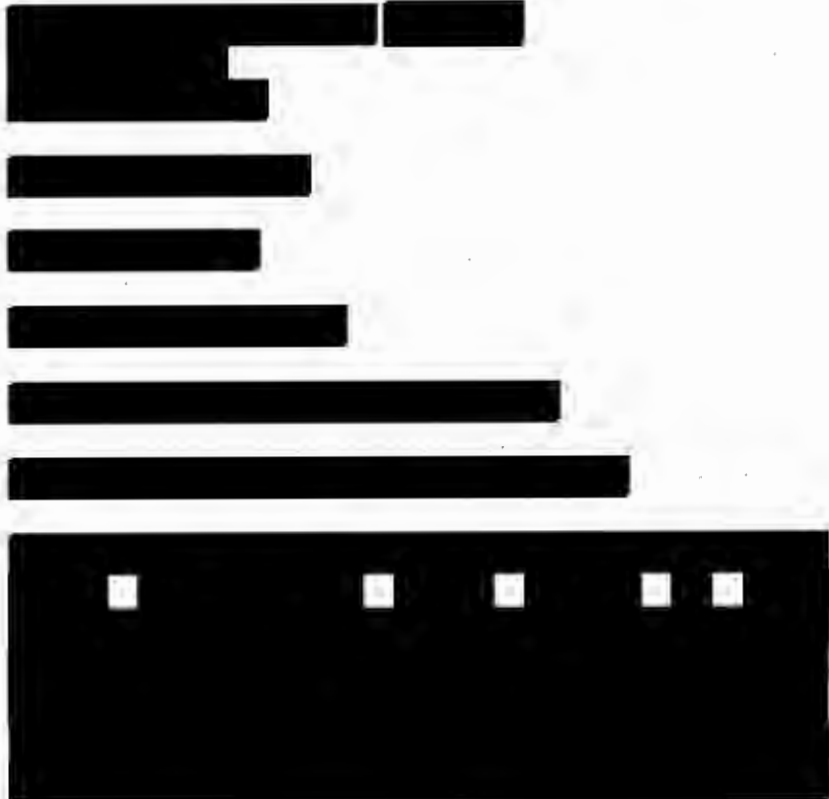
British Digital Broadcasting's 'three multiplex' organisation incorporates the same functions and processes as its 'single multiplex' equivalent but is resourced to a higher level to reflect the greater workload and wider role that British Digital Broadcasting would be able to take in leading the development of the market.

Section A17 - Composition and Identity of the Applicant - Directors

ITC Requirement

- (i) *Where the applicant is a body corporate, he should give for each of the following, the full names, addresses, nationality, country of residence, and other directorships, offices or employment's of the individuals concerned:*
 - a) *the directors of the applicant body;*
 - b) *if the applicant body is yet to be incorporated or formed, the proposed directors;*
 - c) *the directors of any body by which the applicant body is controlled (as defined in Schedule 2 of the 1990 Act);*
 - d) *the directors of any body that is a participant (as defined in Schedule 2 of the 1990 Act) with an interest of more than 20 per cent in the applicant.*
- (ii) *Where the applicant is not, or is not proposed to be, a body corporate, similar information should be provided about those responsible for management and policy-making.*

1. The Directors of British Digital Broadcasting are: (* denotes a non-executive director)

- i) A list of names and details for the directors of British Digital Broadcasting, which has been almost entirely redacted with black bars. Only five small white squares are visible in a row within the redacted area, likely representing initials or specific identifiers for each director.



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2. Carlton, BSkyB and Granada Group have agreed that [REDACTED] shall be the first Chairman of British Digital Broadcasting for a period of two years and thereafter the Chairman will first be a BSkyB appointee and then a Granada appointee. The right to appoint the Chairman will rotate every two years.
3. The applicant body has been incorporated and question (i) (b) is therefore not applicable.
4. The ITC requires details of directors of any body by which the applicant body is controlled (as defined by Schedule 2 of the 1990 Act). British Digital Broadcasting is controlled by British Digital Broadcasting Holdings, the directors of which are the same as those identified in paragraph 1 above.
5. In response to the request for information regarding the directors of any body that is a participant (as defined in Schedule 2 of the 1990 Act) with an interest of more than 20 per cent in the applicant, British Digital Broadcasting is 100% owned by British Digital Broadcasting Holdings, the directors of which are the same as those identified in paragraph 1 above. British Digital Broadcasting Holdings is owned as to one-third by Carlton, one-third by Granada Group and one-third by a wholly owned subsidiary of BSkyB. By virtue of the definition in Schedule 2 of the 1990 Act, none of these three bodies is a participant in British Digital Broadcasting. Details of the directors at Carlton, Granada Group and BSkyB can however be supplied on request.
6. British Digital Broadcasting is a body corporate and so question A17 (ii) is not applicable.

Section A17 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three licences for which it has applied.

The information supplied in Section A17 of British Digital Broadcasting's supplementary proposals is identical to that shown above.

Section A18 - Composition and Identity of the Applicant - Shareholders etc.

ITC Requirement

Where the applicant is a body corporate, he should give the names and addresses of the following (together with the number and class of shares held, or to be held):

- (a) participants with an interest of more than 5 per cent in the applicant;*
- (b) persons who it is intended will, following the award of a licence, be participants with an interest of more than 5 per cent in the applicant;*
- (c) participants with an interest of more than 5 per cent in any body which controls the applicant;*
- (d) participants with an interest of more than 5 per cent in any body which has an interest of more than 20 per cent or more in the applicant.*

Notes:

- 1) Where interests are held in the name of trustees or nominees, this should be stated and the above details should be given in relation to the beneficial owner.*
- 2) Five copies of the body's Memorandum and Articles of Association should be provided, together with a copy of any resolution amending or updating them.*

1. British Digital Broadcasting is a wholly-owned subsidiary of British Digital Broadcasting Holdings. British Digital Broadcasting Holdings is the beneficial owner of 100% of the shares of British Digital Broadcasting comprising 3,000,000 ordinary shares of 10p each issued fully paid for cash at £1 per share. As required by the ITC, the names and address of any participant with an interest of more than 5% in the applicant is detailed below:

British Digital Broadcasting Holdings

25 Knightsbridge

London SW1X 7RZ

100% of ordinary shares comprising 3,000,000 ordinary shares of 10p each

2. The ITC require the name and address of any persons who it is intended will, following the award of licence, be participants with an interest of more than 5% in the applicant. As stated in paragraph 1 above, British Digital Broadcasting is a wholly-owned subsidiary of British Digital Broadcasting Holdings. British Digital Broadcasting Holdings is the beneficial owner of 100% of the shares of British Digital Broadcasting comprising 3,000,000 ordinary shares of 10p each issued fully paid for cash at £1 per share.

3. The ITC requires details of participants with an interest of more than 5% in any body which controls the applicant. For British Digital Broadcasting Holdings, being the only body which controls British Digital Broadcasting, these are:

- a) **CARLTON COMMUNICATIONS PLC**
25 Knightsbridge
London SW1X 9RZ

Carlton is the beneficial owner of one-third of the shares in British Digital Broadcasting Holdings comprising 1,000,000 ordinary shares of 10p each issued fully paid for cash at £1 per share.

- b) **GRANADA GROUP PLC**
Stomoway House
13 Cleveland Row
London SW1A 1GG

Granada Group is the beneficial owner of one-third of the shares of British Digital Broadcasting Holdings comprising 1,000,000 ordinary shares of 10p each issued fully paid for cash at £1 per share.

- c) **BRITISH SKY BROADCASTING LIMITED (“BSkyB Limited”)**
6 Centaurs Business Park
Grant Way
Isleworth
Middlesex TW7 5QD

BSkyB Limited is the beneficial owner of one-third of the shares of British Digital Broadcasting Holdings comprising 1,000,000 ordinary shares of 10p each issued fully paid for cash at £1 per share. BSKyB Limited is a wholly owned subsidiary of British Sky Broadcasting Group Plc.

4. Sections B14 and B16 in the confidential section of this application give details of the agreements amongst the participants in British Digital Broadcasting Holdings to subscribe for shares if the application is successful.

5. By virtue of their interests in British Digital Broadcasting Holdings, each of Carlton, Granada Group and BSKyB Limited, although not participants in British Digital Broadcasting, could be said to have an interest of 20% or more in British Digital Broadcasting.

- a) There are no persons who hold more than 5% of Carlton.
- b) The following are the names and other details of the persons who hold more than 5% of Granada Group:

Mercury Asset Management plc
33 King William Street
London EC4R 9AS

10.97% of ordinary shares (93,728,092 ordinary shares)
(see note A)

- c) As noted above, BSkyB Limited is a wholly owned subsidiary of British Sky Broadcasting Group plc. The following are the names and other details of the persons who hold more than 5% of British Sky Broadcasting Group:

News International Television Limited
1 Virginia Street
London E1 9BD
39.88% of ordinary shares (686,021,700 ordinary shares)

BSB Holdings Limited
3 Burlington Gardens
London W1X 1LE
13.96% of ordinary shares (240,107,595 ordinary shares)

Pathe
5 Boulevard Malesherbes
75008 Paris
France
12.71% of ordinary shares (218,669,417 ordinary shares)

Granada Group plc (see note B)
Stornoway House
13 Cleveland Row
London SW1 1GG
6.48% of ordinary shares (111,478,527 shares)

6. Pathe and Granada Group (see note C) hold 30.29% per cent and 30.729 per cent respectively of the ordinary shares of BSB Holdings Limited. The total direct and indirect interest of Pathe and Granada Group in British Sky Broadcasting Group Plc are accordingly 16.94 per cent and 10.77 per cent respectively.
7. No interests are held in the name of trustees or nominees.
8. Five copies of British Digital Broadcasting's Memorandum and Articles of Association are provided with this application as required by the ITC.

Notes:

- A) At the time when this application was printed, Granada Group had been informed that Mercury Asset Management Plc's shareholding had fallen to below 10% but no precise figures were available. The figures quoted represent the last verifiable information.
- B) Shares held in the name of Triplereasons Ltd. (a wholly owned subsidiary of Granada Group PLC).
- C) Shares held in the name of 4 wholly owned subsidiaries of Granada Group PLC.

Section A18 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three of the licences for which it has applied.

The information supplied in Section A18 of British Digital Broadcasting's supplementary proposals is identical to that shown above.

Section A19 - Composition and Identity of the Applicant - Disqualified Persons etc.

ITC Requirement

- i) In relation to the details given in answer to A18(a) - (d), applicants should identify any body or individual who is:*
- a) a local authority;*
 - b) a body whose objects are wholly or mainly of a political nature, or which is affiliated to such a body;*
 - c) a body whose objects are wholly or mainly of a religious nature;*
 - d) an individual who is an officer of a body falling within (b) or (c);*
 - e) a body corporate which is an associate (as defined in paragraphs 1(1) and 1(1)(A) of Part 1 of Schedule 2 to the 1990 Act) of a body falling within (b) or (c);*
 - f) an advertising agency or an associate of an advertising agency.*
- ii) The applicant should give details of any other participant in the applicant body whose interest is or could be deemed to be incompatible with the requirements imposed by or under Schedule 2 to the 1990 Act.*

1. The British Digital Broadcasting application does not involve any body or individual who is a local authority.
2. The British Digital Broadcasting application does not include any body or individual whose objects are wholly or mainly of a political nature, and is not affiliated to such a body.
3. The British Digital Broadcasting application does not include any individual whose objectives are wholly or mainly of a religious nature.
4. The British Digital Broadcasting application does not include any individual who is an officer of a body falling within the categories defined in paragraphs 2 and 3 above.
5. The British Digital Broadcasting application does not include any body corporate which is an associate (as defined in paragraphs 1(1) and 1(1)(a) of Part 1 of Schedule 2 to the 1990 Act) of a body falling within the categories defined in paragraphs 2 and 3 above.
6. The British Digital Broadcasting application does not include any body or individual who is an advertising agency or an associate of an advertising agency.

7. No persons whose details are given in Sections A17 and A18 come within the categories set out in Section A19. With regard to the persons who are referred to in paragraph 4 of Section A18, in view of the need to keep the application confidential it has not been possible to formally confirm the answers given but British Digital Broadcasting believes that none of these persons fall within any of the relevant categories. To the extent (if at all) that this belief is wrong or that a change in circumstances might cause any of the above answers to be no longer be the case, it has been agreed in the Shareholders Agreement between Carlton, Granada Group and BSkyB Limited that provisions will be inserted in the Articles of Association of British Digital Broadcasting and British Digital Broadcasting Holdings and in the more detailed Shareholders Agreement to be entered into in the event that the application for this licence is successful, whereby, if any of them jeopardise the application (or the licence following award) the offending party will be required to offer its shares for purchase at fair value to the other parties.

Section A19 of British Digital Broadcasting's *supplementary* proposals provides equivalent information should the company be awarded all three licences for which it has applied.

The information supplied in Section A19 of British Digital Broadcasting's supplementary proposals is identical to that shown above.

